UNIVERSIDAD DE COSTA RICA

SISTEMA DE ESTUDIOS DE POSGRADO

MEDICAL ENGLISH: AN ENGLISH COURSE FOR MEDICAL STUDENTS

Trabajo final de investigación aplicada sometido a la consideración de la Comisión del Programa de Estudios de Posgrado en la Enseñanza del Inglés como Lengua Extranjera para optar al grado y título de Maestría Profesional en Enseñanza del Inglés como Lengua Extranjera

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Ciudad Universitaria Rodrigo Facio, Costa Rica

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## Dedications

**Isela**

This has been an arduous journey and it would not have been possible without the love and support of the most important people in my life. I want to immensely thank my grandma, my mother, and my aunt: the strong women who have inspired me and continue to do so. Special thanks to Rafa. You gave me the motivation I needed when things got hard and I will always love you for that.
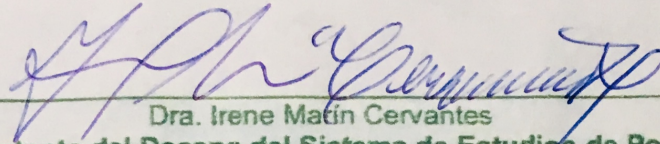
**Simone**

I dedicate this research project and all of the enriching experiences I had while enrolled in this Master's program to my beloved mother, who will always be one of my best friends and teachers. Through her constant prayer, support, sacrifice, and encouragement, I have found the strength to complete this challenging process. There are not enough words in the world to thank you sufficiently. I also dedicate this project to my loving fiancé, who has been there for me throughout every step of this process. You are my angel, and I am ever grateful for your presence in my life. Thank you for your constant unconditional love and support. I would like to thank all of the professors that participated in this Master's program for their valuable time and feedback, which has greatly assisted me throughout my studies. Finally, I thank God for always delivering me through the hardships that I experience, and constantly transforming me into a better version of myself.
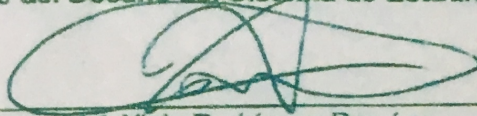
## Acknowledgments

"Este trabajo final de investigación aplicada fue aceptado por la Comisión del Programa de Estudios de Posgrado en Enseñanza del Inglés como Lengua Extranjera de la Universidad de Costa Rica, como requisito parcial para optar al grado y título de Maestría Profesional en Enseñanza del Inglés como Lengua Extranjera."

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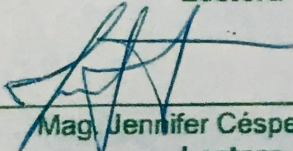
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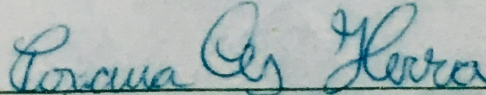
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**Resumen**

Este trabajo de graduación explora un estudio llevado a cabo en el contexto de una práctica de enseñanza, la cual era necesario para la conclusión de el programa de

Maestría en Enseñanza del Inglés como Lengua Extranjera en la Universidad de Costa Rica (UCR). Este estudio fue realizado también en el marco del contexto del Inglés para Fines Específicos e Inglés para Fines (Académicos) Médicos, y llevado a cabo usando el método de Enseñanza de idiomas basado en tareas. Los investigadores del presente estudio recolectaron y analizaron información de manera que se pudiera medir el grado en que los y las estudiantes alcanzaron los objetivos del curso. Para poder triangular la información recabada acerca del nivel de logro de los objetivos, los investigadores también recolectaron información a través d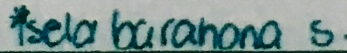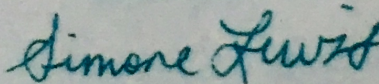e la administración de auto-evaluaciones, mediante las cuales los y las estudiantes expresaban los niveles de logro que ellos y ellas mismas percibían por medio de la evaluación de sus habilidades para llevar a cabo diferentes actividades relacionadas a los temas vistos en clase mediante la selección de opciones de frecuencia. Aún más triangulación fue lograda por medio de la inclusión de un evaluador externo, el cual valoró los exámenes orales de los y las estudiantes. De esta manera se determinó si la falta de fiabilidad, tanto de los investigadores como de este calificador externo pudo haber influído con las calificaciones dadas. En este estudio se discuten los niveles en los que se alcanzaron los objetivos, métodos para determinar ese alcance y también problemas en el diseño de evaluación. Los resultados de este estudio proporcionan información útil para los profesionales de Inglés para Fines Específicos e Inglés para Fines Médicos, diseñadores de cursos y profesores que deben evaluar la producción oral de los estudiantes en el idioma inglés.

*Palabras clave*: Inglés para Fines Específicos, Inglés para Fines Médicos, alcance de objetivos, Enseñanza de idiomas basado en tareas, evaluación

# Abstract

This paper examines a study that was carried out in the context of a teaching practicum, which was a necessary component for the completion of a Master's degree program in Teaching English as a Foreign Language (TEFL) at the University of Costa Rica (UCR). The study was performed in the setting of an English for Specific Purposes (ESP) and English for (Academic) Medical Purposes (EMP) context, and was carried out by means of Task-Based Language Teaching (TBLT). The researchers in this study collected and analyzed data in order to measure the extent to which the students were able to achieve the goals set for this course. In order to triangulate data related to the students' levels of goal achievement, the researchers also collected data through the administration of self-assessments, in which the students stated their perceived levels of goal achievement by rating their ability to perform tasks represented by can-do statements through the selection of frequency options. Further triangulation was achieved with the inclusion of an external evaluator, who evaluated the students' speaking assessments in order to determine if issues of inter-rater reliability had influenced the assessment scores given by the researchers. Levels of goal achievement, methods of determining such achievement, and issues in test design are addressed. The results of this study provide useful insights for practitioners of ESP and EMP, course designers, and teachers of speaking that must evaluate student production.

*Keywords*: English for Specific Purposes, English for Medical Purposes, English for Academic Purposes, goal achievement, Task-Based Language Teaching, assessment

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# List of Abbreviations

A: Assistant

CABG: Coronary Artery Bypass Grafting

CEFR: Common European Framework

EAP: English for Academic Purposes

EFL: English as a Foreign Language

ELL: English Language Learner

EMP: English for (Academic) Medical Purposes

EOP: English for Occupational Purposes

ESL: English as a Second Language

ESP: English for Specific Purposes

GP: General Practitioner

L: Listening

R: Reading

S: Speaking

Ss: Students

SNAQ: Student Needs Analysis Questionnaire

T: Teacher

TBLT: Task-Based Language Learning

TEFL: Teaching of English as a Foreign Language

TOEFL: Test of English as a Foreign Language

TOEIC: Test of English for International Communication

UCR: University of Costa Rica

UL: Useful Language

W: Writing

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Some authors have stated that learning English for general purposes is actually learning English for no purpose at all. Though this premise is sound, it poses a large challenge for course designers when it comes to designing an English for Specific Purposes (ESP) course. When designing a course that has a specific purpose, it is necessary to determine and analyze learners' needs, wants, and lacks, and due to the nature of using the language for occupational or academic purposes, it should be task-based. Thus, an ESP course must be tailored to students' specific contexts, and the course goals should reflect this. Since goals are a necessary component in an ESP course, practitioners must also find ways to measure students' levels of goal achievement. The measuring of such achievement can suggest the presence of students' language skills and abilities after corresponding units in a course.

This study presents the theoretical rationale for and information derived from a needs analysis process, a syllabus design process, and an action research investigation carried out on a population of medical students at the University of Costa Rica (UCR) between March and December of 2019. This project was conducted as a graduation requirement for the Master's program in Teaching English as a Foreign Language offered by the University of Costa Rica (UCR). The purposes of this study were to (1) design an ESP course that was specifically tailored to the participants and followed the recommendations of authoritative sources in the fields of Teaching English as a Foreign Language (TEFL), English for Specific Purposes (ESP), and Task-Based Language Teaching (TBLT); and (2)

conduct action research related to the participants' levels of goal achievement

after each unit of the ESP course.

**Chapter I: Needs Analysis**

This chapter of the project details and explains the needs analysis process, which was carried out before designing the Medical English course. This process consisted of designing and administering a student questionnaire, diagnostic test, second student questionnaire (for specific information), and stakeholder questionnaire. The methodology, results, and conclusions are explained and discussed below.

The first stage of the needs analysis process consisted of compiling an initial report by researching general information about the students' field of study: medicine. The student teachers compiled information related to the courses that medical students take at UCR (Universidad de Costa Rica, 2019, n.p.) and the types of tasks that practicing doctors must frequently do, and then which of those may require English skills. Based on that research, it was determined that Costa Rican doctors would most likely need English to interact with patients, other doctors, and medical texts. According to the available data, the researchers determined that, in order to effectively interact with patients, doctors may require training in the following areas: "listening comprehension of non-standard English," "using and understanding medical English," and "translating a medical diagnosis and follow-up treatment from medical terminology to layman's language" (Van Naerssen, 1978, p. 197). Doctors may also need to use English to greet and examine patients, and ask for their personal information, symptoms and medical history; for this reason, practicing general "oral communication" can be beneficial for doctors (Pavel, 2014, p. 41). Doctors must also be able to "read and

understand a medical text in English" (Pavel, 2014, p. 41). Another useful finding from that initial report is that medical English is characterized by the use of the present simple, past, present, and present perfect tenses; the use of the passive voice; and the use of words, namely nouns, verbs and adjectives "derived from either Greek or Latin" (Pavel, 2014, p. 41). After compiling an initial report, the general conclusions about the situations in which Costa Rican doctors may potentially need English or find it useful are as follows: conversing with, examining, and diagnosing foreign patients; reading, interpreting, and/or producing medical texts of various kinds (case studies, research papers, medical records, and academic medical textbooks), and contributing to medical research. This initial analysis of the students' field assisted the student teachers in developing a questionnaire for the participants in order to understand their specific needs, wants, and lacks.

The next stage in the needs analysis process was to determine the students' specific wants, needs, and lacks, as related to their knowledge (or lack thereof) of English as it is relevant to their field by creating and administering a questionnaire. As indicated by Graves (2000), "the teacher is not the only person who has views about the roles and power dynamic in the classroom or the needs of the learners" (p. 99); therefore, it was necessary to ask the students' opinions about their needs from their own perspectives since the course was tailored to them. Thus, in order to best design this course, many instruments were applied with the goal of collecting the necessary data from, and about the target population.

It is difficult to ignore the impact that the English language currently has on the globalized world of today. English has come to infiltrate the lives of many people, worldwide, regardless of whether or not it is an official language of their countries. Because of this fact, it comes as no surprise that medical students can benefit from it, since it allows them to share critical updates and advances internationally, so that people all over the world can receive sufficient medical care. As expected, much of the updated information about research and breakthroughs in medicine is published in English. Both medical students and practicing doctors must be informed about the latest advances in technology, resources, and treatments within their specializations. Additionally, per Arias (2017), Costa Rica is a popular destination for medical tourism, which brings many English-speaking foreigners, not all of whom speak sufficient Spanish to be able to communicate with their Costa Rican doctors without the use of English. Due to this fact, current and future doctors may come across and have to interact with patients that cannot speak Spanish, and therefore, they would greatly benefit from being able to communicate in English in order to inform those English-speaking patients about procedures, medicine, and care.

The main purpose of the study was to offer a group of medical students an English course that addressed their specific academic and professional needs. Since Graves (2000) recommends that teachers make the course design and administration processes "cyclical" and continuous (p. 100), flexibility was a crucial feature throughout this study. This idea is consistent with the research of Sysoyev (2000), who recommends that teachers be "open to making necessary changes

while teaching," and that course development be "an on-going process" with lots of teacher and course flexibility (Course-development section). For these reasons, the needs analysis process was essential to the creation of an effective and successful ESP course.

## General Information about the Field

The population selected for the present study is a group of medical students at the University of Costa Rica. The professional profile of these students is that of a physician. According to Merriam-Webster (n.d.), a physician is "a skilled health-care professional trained and licensed to practice medicine" (n.p.). Other terms that refer to this type of health professional are 'doctor' and 'general practitioner (GP).' A specific definition of a GP is provided by Olesen, Dickinson, and Hjortdahl (2000) as follows:

> The general practitioner is a specialist trained to work in the front line of a health care system and to take the initial steps to provide care for any health problem(s) that patients may have. The general practitioner takes care of individuals in a society, irrespective of the patient's type of disease or other personal and social characteristics, and organises the resources available in the health care system to the best advantage of the patients. The general practitioner engages with autonomous individuals across the fields of prevention, diagnosis, cure, care, and palliation, using and integrating the sciences of biomedicine, medical psychology, and medical sociology. (p. 355).

This definition is useful in defining the central responsibilities of doctors and the future responsibilities of medical students. According to the available research about English for Medical Purposes (EMP) and English for Specific Purposes (ESP), this population may use English to read academic research articles and textbooks directly related to the field of medicine in order to remain up-to-date with the latest advances in medicine (Pavel, 2014). Also, the individuals within this population may require listening skills in order to understand academic and/or informational medical videos and conferences, and in some cases, they may have to communicate verbally in English with patients who use this language as their only means of communication, in order to understand the symptoms and other vital information described by the patient(s), and to be able to inform patients about the procedures they may need to undergo and the medications they must take (Pavel, 2014; Van Naerssen, 1978; Ferguson, 2013). While doctors may sporadically use written English to share emails, formal research reports, and/or other information with their peers, authoritative sources in EMP have stated that writing in English does not represent an essential task for the population as a whole (Pavel, 2014; Van Naerssen, 1978; Ferguson, 2013).

**Methodology**

The needs analysis process is detailed and explained below. Specifically, this sections describes the research approach, types of data collected, context, participants, instruments, and procedure.

**Research Approach**

Based on the nature of this research study and the data needed to complete it successfully, the researchers used a mixed-method approach. According to Campbell and Fiske (as cited in Jick, 1979), it is best to use a combination of methods in order to make data more valid, which is achieved by providing different types of data to account for any potential variances in numbers within each individual type of data collected. While both quantitative and qualitative research methods have their own sets of strengths and advantages, they also have their own drawbacks. By using a mixed-method approach, the chance of having misguided or invalid information is lowered, as both methods complement each other. As mentioned by Johnson and Christensen (2008), "by combining two (or more) research methods with different strengths and weaknesses in a research study, you can make it less likely that you will miss something important or make a mistake" (p. 51). The authors illustrate this point by giving the example of a fishing net with holes. For example, if a fisherman places several fishing nets together, there will likely be no holes for the fish to slip through since the nets complement and support each other. The same idea is beneficial when related to research, since information that may otherwise have been missed while collecting data with a quantitative tool could be gathered with a qualitative instrument, and vice versa.

During this stage of the research process, several instruments were used to gather both quantitative and qualitative data, as explained below. The following instruments were used to obtain data about the students' needs, wants, and lacks as they relate to English for Medical Purposes: a student needs analysis

questionnaire (SNAQ), a stakeholder questionnaire, a second student

questionnaire, and semi-structured interviews with experts and/or stakeholders.

**Quantitative Data**

Quantitative data, a fundamental element in triangulation and providing

accurate and reliable information about any population, was gathered for this

project through the use of two instruments in particular: the Student Needs

Analysis Questionnaire (SNAQ) (see Appendix A) and the Stakeholder

Questionnaire (See Appendix B).

**Student Needs Analysis Questionnaire (SNAQ).** The SNAQ provided

quantitative data through percentages about the population that responded to its

questions (see Appendix A). Those percentages were able to be calculated due to

the mostly multiple-choice nature of this questionnaire. The quantitative results of

this instrument facilitated the categorization of the students' individual and group

needs, lacks, and wants. This instrument will be discussed and explained in

greater detail below (see Instruments and Procedure).

**Stakeholder questionnaire.** The Stakeholder Questionnaire was based on

multiple-choice questions, with "structured," pre-molded responses (see Appendix

B) (Richards, 2001, p. 60). Because of this aspect of the questionnaire, the

answers were easier to group into categories, as suggested by Richards (2001),

which allowed the researchers to view the data as a whole, rather than as

separate parts. This questionnaire, like the one mentioned above, resulted in

percentages about the stakeholders' preferences, ideas, and concerns for the ESP

course. Through the use of those percentages, the results were easier to apply to

the creation of the diagnostic test, and later to the design of the Medical English course. This instrument will be discussed and explained in greater detail below (see Instruments and Procedure).

**Qualitative Data**

Qualitative data was gathered for this project through the use of two instruments in particular: the Semi-structured Interview with Experts and/or Stakeholders (see Appendix C) and the Second Student Questionnaire (See Appendix D).

**Semi-structured interviews with experts and/or stakeholders.** This instrument (see Appendix C) served as one of the preliminary means of determining the participants' needs. This was done by first creating a template with qualitative questions about the situations in which practicing doctors and/or practicing medical teachers used English in their careers and/or the situations in which they felt that medical students would most need English in their future careers. These interviews were semi-structured, and the questions were open-ended, thus resulting in qualitative data given by each of the three experts/stakeholders who were available and willing to conduct a full interview. This instrument will be discussed and explained in greater detail below (see Instruments and Procedure).

**Second student questionnaire.** The second instrument that provided the researchers with qualitative data was the second student questionnaire (see Appendix D). This instrument was created after the students had responded to the SNAQ, since the results from the SNAQ were not quite specific enough to

effectively design a carefully-tailored ESP course for the particular group of participants. This questionnaire consisted mostly of open-ended questions, which resulted in more specific, qualitative data about the students' immediate needs. The students gave specific responses to the questions about the types of documents that they need to read and use for their classes. Some of the participants also attached electronic files of documents (mostly PDF files of medical articles) that they have had to read, and sent links to the academic medical videos that they have had to watch in order to give the researchers a better idea of the materials that they need to be able to understand in English to excel in their program. For example, one of the participants sent the researchers a PDF file of a medical journal article that he/she had previously read for one of his/her medical courses about urea transporters through the online, *Google Forms* version of the second student questionnaire (see Appendix D). This instrument will be discussed and explained in greater detail below (see Instruments and Procedure).

**Context**

This research study was conducted with participants —students— from the School of Medicine at the University of Costa Rica. They all belong to the Bachelor's degree program (*Bachillerato and Licenciatura*) in Medicine and Surgery. All of the participants attend the *Rodrigo Facio* campus, also known as the main campus, located in San Pedro, San José, Costa Rica.

**Participants**

      Initially, the researchers asked the Medical department at the UCR to ask all of the medical students if they would be interested in taking an English for Medical Purposes course, and were then presented with a list of 37 interested participants. However, after the first contact with the students was established through sending them an electronic questionnaire through *Google Forms* (see Appendix A), the researchers determined that there were only 32 students actively participating in the needs analysis process, since the others never responded to the questionnaire. Based on responses to the second student questionnaire (see Appendix D), the general range of the participants' ages is from 20 to 33 years old. The participants are all current students in the Bachelor's (*Bachillerato and Licenciatura*) in Medicine and Surgery at the University of Costa Rica. While some of the students are already working on completing their rotations as medical students, they do not currently work as doctors. As for their previous knowledge of and background in English, 75 percent of the participants (24 participants) reported that they had previously studied English, with only the remaining 25 percent (eight participants) reporting that they had not done so. Of those who reported to have previously studied English, almost half of the students (15) reported that they had studied it in high school for three or more years, with another eight students reporting that they had done so to some capacity, but only for one to three years. 14 of the students reported that they had also studied English at the university level, for one to four semesters. Nine of the participants also reported that they had studied in a language institute for one year or less, and

six participants stated that they had studied English either with a private tutor or in a different location, such as a private language institute. The participants chosen for this research study were selected by first emailing the director of the School of Medicine in order to obtain the contact information of a teacher that could serve as an administrative contact who would briefly serve as a medium through which the participants and the student teachers could get in contact with each other. The director was able to provide the student teachers with an administrative contact: a secretary in charge of student affairs in the medical department. Through correspondence with that secretary, the researchers were able to obtain a list of 37 interested students with their contact information. The secretary had emailed all of the students enrolled in the medical program, giving extra preference to those in the third year of the program or above. Then, the researchers contacted all of the students on the list given by the secretary to request their participation in the needs analysis process through completion of the SNAQ (see Appendix A), which only 32 of the students did. The above-mentioned procedure is how the researchers selected the students to participate in the needs analysis process.

**Instruments and Procedure**

As mentioned above, there were four instruments used to collect data. First, a student questionnaire was used to get general information about the population (see Appendix A). This instrument was administered digitally via an electronic link to a *Google Forms* questionnaire, which was sent to the students' emails, and took approximately ten to 15 minutes to complete. This questionnaire consisted of six parts that aimed to collect information relevant to the creation of a profile to aid in

the analysis of the population's needs. Part A of the questionnaire gathered contact and personal information regarding their major, future plans for medical specialization choice(s) and availability to take the diagnostic test. Part B focused on collecting information about the use of English in their major in all four skills, and included questions such as, "What topics are covered in the activities done in class in English?" and "How frequently do you have to read the following types of texts?" The aim of this section was to quantify the participants' use of English materials (such as academic medical texts, audios and videos) in their medical courses based on the types of materials assigned, the frequency with which such materials are assigned, and the contents and subjects of such materials. The third part, C, intended to determine how students plan to use English after graduating and which skills they thought would be most advantageous. Part D aimed to gather information regarding their previous knowledge of the English language. In this section, students were questioned about their experiences learning English, including institutions they had studied at and the approximate duration of their studies. Part E included questions for students to self-evaluate their English level in all four skills. Finally, Part F asked students which macro skills they were most interested in improving.

Additionally, a digital questionnaire, which took approximately ten minutes to complete, was administered to four medical professors at the UCR via *Google Forms* (see Appendix B). This questionnaire contained 21 questions that aimed to collect data about the professors' use of English activities within their courses, the

application(s) of the language in their daily professional activities, and their thoughts on the most useful and frequently-used English skills for doctors.

Then, a semi-structured face-to-face interview was conducted with three doctors in order to collect more authentic, qualitative data about the needs and uses of the English language in the medical field (see Appendix C). These interviews were recorded and then transcribed in order to keep a written record of the responses and analyze them more efficiently.

Finally, students were sent a second questionnaire with the goal of obtaining more specific information about the English materials used in their major, and this took approximately ten to 15 minutes to complete (see Appendix D). This questionnaire was also sent via a link to a *Google Forms* questionnaire, which was emailed to the participants. The questions for this questionnaire were based on the responses collected from the first questionnaire, and students were asked about the specific topics and names of documents and videos they had used in their medical courses before. Students were also requested to share links and digital documents they had previously studied during any of the medical courses they had taken.

**Interests of Primary Stakeholders**

A group of 13 professors from the School of Medicine was sent a questionnaire in order to learn their opinions about the English needs of practicing doctors and medical students throughout their courses. Of those 13, only four professors responded to the questionnaire. All of them reported having used English in their professions. All four of them claimed to use English to understand

the operation of a medical device and to comprehend the main idea of medical lectures given by foreign presenters at international conferences. Additionally, three out of the four respondents reported to have used English to communicate with English-speaking patients. Then, the medical professors were asked to volunteer other answers and recommendations that might not have been included in the options for the previous questions, and they added that they use the language for reading and writing medical articles, reading medical textbooks, and speaking with foreign patients. In general, the professors reported that, for work, they use reading and writing most frequently out of all the macro skills and that they use speaking and listening less. Only one of the professors reported speaking in English with patients one or more times a week. All four of the professors reported attending medical conferences around four times a year, and three of them indicated that they use English in order to understand foreign lecturers and to interact with colleagues from English-speaking countries.

When asked how important they considered the different macro skills in English to be for doctors, all of the professors selected the "Very Important" option for all the tasks, which were the following: a) understanding spoken English in medical conferences, b) writing medical research for international publication, c) reading and understanding textbooks and medical research articles, and d) fluently communicating in English with patients and colleagues. Following this question, professors were asked to share the type of vocabulary that they find most valuable for a doctor, and they reported that technical vocabulary dealing with symptoms was significant. The professors also indicated that teaching English idioms and

idiomatic phrases may be beneficial for medical students, but they did not specify examples or situations.

According to the professors, some of the problems a doctor could face on the job due to a low proficiency in English are as follows: making uninformed decisions in relation to patients due to misunderstandings, not being updated on medical issues, not being able to treat patients correctly, and missing opportunities for participating in conferences, workshops, or classes given in English.

The final section of the questionnaire (see Appendix B) questioned professors about their medical students' use and knowledge of English. All four of the professors indicated that medical students need English for the development of their major. Among the reasons they listed, the one that was repeated the most was that students need English to read and update themselves through medical articles and textbooks for in-class activities. Two of the professors reported that the level of the students was intermediate (low and high), which would suggest that students struggle to complete assignments in English if not given the right guidance. The other two professors claimed not to know their students' level(s) of English. Nevertheless, three of the four professors gave examples of English materials that they had used in their courses, which included medical articles, medical records, and textbooks. Only one of the professors reported that he/she did not assign his/her students any English class materials.

Lastly, professors were asked for any final recommendations for the designing of the Medical English course, and three of them responded. Two professors suggested that students be taught technical, medical vocabulary, and

another highlighted the issue that most of the students do not come from private high schools, and as a result, may not have a strong English foundation. Due to this concern, students may require basic English training in order to be fully prepared for their medical courses.

**Other Participants**

Apart from the questionnaires sent to faculty and students, a semi-structured interview was administered to other professionals in the field in order to obtain more information about authentic texts they have had to use in English. The semi-structured interview was originally intended to be administered to the UCR faculty professors and not to GPs, and for that reason some questions are related to teaching; however, due to the difficulty in getting appointments with the UCR professors, this interview was administered to GPs, and therefore those questions were dismissed or asked minimally. Two of the participants were general practitioners, and the other was a gynecologist. All three of these participants were chosen through convenience sampling due to their schedule availability during the student teachers' visits to local hospitals. Two of these interviews were conducted prior to the administration of the SNAQ and contributed to the initial information about the population, and thus to the types of questions included in the first student questionnaire. The third interview was conducted during the administration period of the SNAQ, and later contributed to the types of questions included in the second student questionnaire. For reference, the semi-structured interview was administered to one of the general practitioners and to the gynecologist. The other general practitioner was interviewed informally due to his/her limited scheduling

availability at that time; therefore, he/she was questioned without using the semi-structured interview questions, so the information obtained from that interview was more general. For reference, the informal interview was conducted on the phone, and the interviewee was asked general questions related to his/her use of English in the medical field, his/her current English abilities, his/her opinions on which grammatical and/or vocabulary aspects medical students may benefit from learning, and his/her experience with English-speaking patients.

The first interviewee was a general practitioner who works in Internal Medicine at Monseñor Sanabria Hospital in Puntarenas. This interview was conducted on March 24th, 2019, and was informal, i.e., based on general questions about the field. Those questions were open-ended and elicited information, such as the extent to which GPs need to use English in their professional practice, the most and least used macro skills regarding English use at work, the main tasks doctors have to accomplish through the use of English, the interviewee's self-perceived level of proficiency, and what he/she would like to improve in regard to his/her proficiency in English. This interview, along with the other two interviews mentioned below, provided the basis for the more specific questions included in the second student questionnaire. The second interviewee was a gynecologist at Monseñor Sanabria Hospital in Puntarenas. This interview was conducted on March 28th, 2019, and it was semi-structured (see Appendix C). The third interviewee was a general practitioner at the Pacific Campus of The University of Costa Rica, located in Puntarenas. This interview was conducted on April 8th, 2019, and it was semi-structured (see Appendix C).

The first two interviewees each have more than ten years of work experience in the field, and their age range is 35-40, whereas the third interviewee has about four years of experience and is in the 30-35 age range. The English level of the first two interviewees is basic, as they reported, and they have not taken any English courses since high school, so any knowledge of English after that time is related to the day-to-day practice of their profession, which involves reading academic articles in English for self-study, attending international conferences related to their field, and sporadic encounters with non-Spanish speaking patients. In the case of the third interviewee, he/she reported that his/her English level is highly competent and that he/she obtained a high score on the TOEIC test; in fact, he/she said he/she also has a second job, which consists of providing consulting services to the U.S.-based company, Premier Medical Associates, which is done completely in English. The other two doctors did not report having any other jobs.

Regarding the English language skills that doctors use the most, all of them agreed that reading academic articles in English is a necessity for any doctor. In second place, they converged upon the need to understand international conferences and videos in English. Last but not least, they referred to the importance of speaking in specific situations such as communicating with patients and exchanging knowledge with colleagues at conferences. These results are congruent with those derived from the UCR professors.

**General Group Profile**

This section of the report describes the group profile in depth. While the students are all broadly studying in the field of medicine, they reported that the specializations they would like to acquire in the future are varied. With that being said, many of the students either reported that they are still entirely unsure of the specialization that they would like to focus on later in their career, or they reported more than one option that they may later want to pursue, but they have not chosen yet. Based on the 32 students that responded to the SNAQ (see Appendix A), the specializations that the students are reportedly interested in pursuing are as follows: general surgery, pediatrics, pediatric surgery, chest (thorax) surgery, plastic surgery, cardiology, cardiovascular surgery, obstetrics and gynecology, neurology, dermatology, psychiatry, neurology, internal medicine, emergency medicine, family medicine, internal medicine, infectious disease, anesthesiology, pathology, immunology, geriatrics, sports medicine, and/or dermatology. The following sections will go into depth about the students' needs, wants, and lacks.

**Description of the Needs**

Since all of the students are currently studying to complete their Bachelor's Degree in Medicine and Surgery, they do not work in the medical field yet. Therefore, their immediate needs of English are those related to excelling in their medical courses (academic needs). Regarding their academic needs, 100 percent of the students that answered the SNAQ reported that they often have to read documents in English (such as textbooks, medical research papers, instructions for medical apparatuses, medical records, scientific reports, and academic medical

articles (see Appendix E for an example of a textbook that the participants use). Then, 97 percent reported that they sometimes have to listen to and comprehend videos or speakers (academic and/or instructional videos presented in class or needed to complete homework, and international speakers at medical conferences). Additionally, 27.3 percent stated that they rarely have to speak in English (for academic class presentations or with patients during their rotations), and the vast majority of participants indicated that they have to write the following documents with the following frequencies: academic medical research reports, clinical records, and/or scientific articles either occasionally (34 percent, 18.7 percent, and 28 percent, respectively) or never (50 percent, 78 percent, and 50 percent, respectively).

Based on the data collected from the questionnaires and interviews, it is clear that the most significant need for this population is to develop their reading skills. In the SNAQ (see Appendix A), 100 percent of the students who responded expressed that reading medical texts was a typical activity in their courses. Among the types of texts mentioned in the questionnaire, scientific articles and medical textbooks were repeated the most. In the second student questionnaire, when asked about what specific texts they have to read in class, students mentioned articles from different journals and websites, such as uptodate.com, *New England Journal of Medicine, Nature Medicine Journal, Clinicalkey,* and the *American Diabetes Association*. Most of these websites contain a vast collection of medical articles that, according to the students, are used for homework assignments and in-class presentations, as introductions to new topics, and as preparation for

exams. Students also mentioned that they need to read textbooks for those same types of activities. Among the textbooks they referred to are *Clinically Oriented Anatomy* by Keith Moore, *Medical Physiology* by Walter Boron and Emile Boulpaep, and Goodman & Gilman's *The Pharmacological Basis*. Not only are these written texts necessary for students when they are completing their courses for graduation, but also for remaining up-to-date when they are practicing as professionals. This need was explicitly expressed by one of the doctors from the University of Costa Rica, during a personal interview (see Appendix C). This doctor mentioned that "since you are a student for the rest of your life as a doctor, you have to read in English if you want to be updated on illnesses, treatments and others" (S. Gomez, personal communication, April 8, 2019). For this need, students must be introduced to different reading strategies, ways of identifying main ideas and details, and ways to recognize medical and technical vocabulary.

Listening is also considered a fundamental skill for students to develop during this course. Of the students who took the SNAQ (see Appendix A), 96.9 percent indicated that understanding videos either in class or as homework is one of the most typical English-related activities done in their major. When asked about the types of videos that they use during their classes, students shared hyperlinks to YouTube videos such as "Radiofrequency Ablation," "Lumbar Puncture," and "Enhance Mitochondrial Function." The YouTube channel and website "Osmosis" were also mentioned as sources of audiovisual material. Once again, preparing students with listening strategies and familiarizing them with vocabulary, pronunciation, and non-American accents is a necessity for this population.

Speaking may not be one of the major immediate needs for medical students, especially for use during their courses. Students highlighted this since only 25 percent of them expressed that they used English for oral presentations in class. Thinking about the future, it could be predicted that they will need to communicate in English every once in a while when speaking to colleagues, nurses, and/or patients. According to the results of the second student questionnaire (see Appendix D), communication with patients will entail filling in medical records, asking about symptoms, and describing treatments. Similarly, conversations with other doctors may revolve around patients' symptoms, admittance, and potential treatment strategies.

The writing skill was not considered a high priority for students as part of their immediate or future needs. Even though two of the professors who took the questionnaire described this skill as important, it was decided that they may have responded in such a manner since they currently work as professors, and thus most likely have to share their expertise through the publication of research articles. This, however, is not an immediate need for the population that will take the Medical English course.

**Description of the Wants**

The students' wants were largely determined through data received from the SNAQ. Based on the SNAQ (see Appendix A), in which students had to rate a list of nine tasks according to how much they wanted to improve them from most to least, the participants were very interested in improving their speaking skills for communicating with colleagues, as 25 percent of them chose this option as

number one. The second highest chosen alternative for first place was reading medical research (18.75 percent) in order to keep updated in the newest advances and treatments. In addition, 15.6 percent of the participants who completed the questionnaire selected the option "understanding spoken English for attending international medicine conferences." As it can be inferred from the three highest ranked choices, the students' wants match their needs at least in the macro skills that were chosen: speaking, reading, and listening. It is also clear from the results that students are not particularly interested in working with medical records, neither writing nor reading, as those tasks had the highest percentage of low rankings.

**Description of the Lacks**

In regard to the students' lacks, according to their self-assessment of their knowledge of the English language in the SNAQ (see Appendix A), two of the participants' lacks are the ability to recognize, understand, and use medical vocabulary in oral activities and the ability to give oral, academic presentations in their medical courses in English. While the participants did not indicate that the latter was a frequent assignment given in their medical courses, speaking in English about medical topics and using relevant medical vocabulary is clearly an area in which they need reinforcement.

Students' lacks in the listening skill are mostly related to the speed of the speech and understanding non-American accents. According to the results of the student questionnaire, 40.6 percent of the students reported not being able to understand a speaker when he/she speaks too fast, and 18.75 percent reported

not being able to understand other accents than the standard American one. Since listening is essential for this population and since most of the academic medical videos these students use in their courses are meant for native speakers of English, this area is key in the development of useful listening activities.

Out of the four skills, writing is the one in which students have more deficiencies. Around 50 percent of the students reported being unable to complete any of the four example tasks given on the SNAQ (see Appendix A). While writing is one of the least needed skills for this population in their academic environment, this information is significant for the development of the course, in case any writing is needed as scaffolding for a different activity.

Finally, not many students reported any serious challenges with reading tasks. The activity that is most likely to represent a serious challenge for this population is the reading of medical records without using a dictionary. The next-most likely activity to challenge the students is the reading of textbooks without using a dictionary, which 46.8 percent of them reported only being able to perform sometimes. Since reading has considerable importance in the field of medicine, and in the assignments these students have to complete for their courses, it is crucial to address these lacks in order to give students the basic tools to carry out the necessary tasks for their studies.

## Diagnostic Test

The third stage of the need analysis process, following the initial report and the administration of questionnaires, was composed of creating, administering, and analyzing the results of a diagnostic test to better understand the specific

lacks of the population. The following sections of this report will detail those processes, as well as that of arriving at the conclusions and implications that shaped the Medical English course, which was given during the second semester of the 2019 academic year. As stated by Coombe (2018), diagnostic tests serve the purpose of helping "both teachers and students identify or diagnose student strengths, weaknesses, and areas of difficulty" (p. 17), which emphasizes the need for them at the start of the process of designing an ESP course. Thus, due to the nature of diagnostic tests, the student teachers used this one to understand the participants' lacks more fully, and thus, the areas in which they still need improvement. The sections below will expand on the entire process through which the student teachers were able to create and administer a diagnostic to determine the participants' lacks, after which point they were able to come to certain conclusions about the results' implications on the design of the ESP course.

**General Administration Issues**

The diagnostic test (see Appendix F) was administered in three sessions. The first session was held on Saturday, April 27th, 2019, from 12:00 to 16:00, the second on Thursday, May 9th, 2019 from 13:00 to 16:00, and the third on Saturday, May 18th, 2019, from 8:30 to 11:40. Prior to the administration of the diagnostic test, the student teachers had asked the students to provide their availability schedules in order to program the test administration for the day when most of them were available to take it, and also to find a room available for that purpose. That request was included in the Student Needs Analysis Questionnaire (SNAQ) that was administered online via *Google Forms* (see Appendix F). Since

most of the students indicated that they were available on Saturday mornings, the first test administration was set for a Saturday. The student teachers were able to reserve the Joaquín Gutiérrez auditorium on the fourth floor of the Modern Languages School on the main campus of the University of Costa Rica. Despite numerous, timely reminders sent to the students via messaging services, three test administrations were needed in order to test all of them.

For the first test administration, only thirteen students attended to take the test, while only six students participated in the second test administration. For the third test administration, the remaining students were again contacted via WhatsApp. Another nine students were able to take the test on this day, which makes for a total of 28 students that took the diagnostic test. The third session was carried out in a small classroom in the Health Sciences Library basement again on the main campus of the University of Costa Rica, which the student teachers were able to reserve thanks to the collaboration of the director of the master's program.

For all three administrations, the diagnostic test was printed by the researchers and given to the students on-site; thus, no virtual administration was necessary. The test had three parts: the first evaluated listening comprehension, the second evaluated reading comprehension, and the third evaluated speaking. For reference, the administration of the speaking part was conducted before the listening and reading parts for two central reasons. Firstly, public speaking often generates higher anxiety and stress, which is well known by teachers and researchers. According to Hedge (2000), "the greatest anxiety seems to relate to

negative experiences in speaking activities" (p. 21); therefore, we decided to have the students complete the speaking part first with the hope that they would then be more relaxed while completing the other sections of the test. Secondly, the student teachers anticipated that, in the case that any of the students were unable to arrive on time, administering the oral part first would make it simpler for those students to complete the test since the oral part was done individually.

Two of the team members were in charge of the first two administrations since the third team member could not be present due to personal obligations; however, all three of the student teachers were able to score the oral portion of the exam individually since the students' oral performances were recorded. During the third administration, only one team member was present, so the oral part was again recorded and shared for individual evaluation. As previously mentioned, the first part of the test that was administered was the oral part, and each participant was recorded throughout all three of the administrations, after obtaining their permission to do so. In this way, any absent student teacher(s) were able to listen to the conversations and score them individually. For the oral part of the test, the student teachers designed three tasks in which students had to role-play doctor-patient situations. They played the role of doctors and one of the student teachers played the role of the patient. This type of test fulfills the requirements of authentic assessment, suitable for a task-based course, as described by Brown (2004) and Willis and Willis (2007). The tasks for the oral part are described below.

Task 1: Given a printed fill-in form, the student had to ask general information questions to the patient in order to fill out the form (though filling out the form was

not mandatory since the researchers were merely trying to determine whether the participants were able to form questions to elicit the necessary information and their difficulties in eliciting that information orally). Task 2: Given a short list of hints, students had to formulate questions in order to elicit information from the patient about her health problem and inform the patient about the procedures to determine her health condition. Task 3: Given a short list of hints, students had to explain to the patient what the health problem was and the subsequent actions to be taken as part of the treatment. Hedge (2000) states that "teachers have both the power and the responsibility to counter the development of anxiety by building self-confidence through positive early experiences" (p. 21); therefore, before the first task, the team members asked the students general questions about themselves and engaged in small talk for a few seconds or minutes in order to ease their potential nerves. The three speaking tasks were administered one right after the other, individually to each participant, and in the same order due to the fact that they were part of a sequence. The researchers chose not to set a time limit for the completion of the oral part of the test with the intent of eliminating a possible source of stress for the students and allowing them to express their ideas comfortably. For this reason, the students who were perceivably more skillful were able to finish in much less time than those who showed higher difficulty, and all students completed the three sections even if they had to struggle. The time for the completion of the three tasks ranged from about three minutes and 30 seconds for the fastest student to nearly 14 minutes for the slowest. Once all the students had finished the oral part of the test, they were all asked to enter the room

together, at which point the student teachers distributed the printed version of the test. The first step was to read the general instructions for them and ask if there were any questions. The student teachers informed them that for both the listening and reading parts combined, they would be allotted one hour. Then, the student teachers explained that for the listening part, the audio for each section would be played three times, and that the students should listen the first time to get a general idea of what the audio was about, the second to answer the questions, and the third to verify that their answers were correct. They were also given some time, approximately two minutes, to scan the questions and the answer choices prior to the start of each audio clip, per the recommendations of Coombe, Folse, and Hubley (2007). The listening part took approximately 20 minutes. After the listening part was completed, students were told to continue to the reading comprehension part, for which they had around 40 minutes to complete. Once they finished, they were thanked by the student teachers for their attendance and the time that they dedicated to taking the test.

The only macro skill that was not tested is writing. The researchers decided not to test this skill based on the results obtained from the SNAQ and the semi-structured interviews. When students were asked about their writing needs in the SNAQ, the results indicated that their needs regarding writing were very low, as shown in Table 1 below, which displays the students' writing needs in terms of frequency, by type of document. Furthermore, when they were asked to put the English language macro skills into a hierarchy from 1, the one they expected to use most in their future jobs, to 4, the one they would use the least, writing was

categorized as number 4 by 21 students, the highest number of students who agreed on the same category for the same skill.

**Table 1**

*Writing need frequency (by type of document)*

|  | **Frequently** | **Occasionally** | **Rarely** | **Never** |
|---|---|---|---|---|
| Scientific articles | 3% | 15.2% | 33.3% | 48.5% |
| Medical records | 0% | 6.1% | 18.2% | 75.8% |
| Academic research papers | 3% | 21.2% | 27.3% | 48.5% |
| Others | 3% | 0% | 12.1% | 84.8% |

In addition, the data obtained from the semi-structured interviews with three physicians are in alignment with these numbers. For example, one of the GPs mentioned that "writing, well, is not, I mean, obviously the four skills are important, but the priority is reading, speaking, listening, and last, writing" (J. Zumbado, personal communication, March 28, 2019). Also, another one of the GPs interviewed expressed, "reading, in first place, listening, to be able to at least interpret what a patient is saying, in case of a patient who only speaks [English]. . . or to understand the message from a video . . . what else? Speaking, to communicate, of course, not just listen. And last I would say . . . writing" (S. Gomez, personal communication, April 8, 2019).

**Test Constructs and Skills Addressed**

As previously stated, for the speaking section of the diagnostic test, students were asked to perform a role-play in which they had to play the part of a

doctor asking for personal information, assessing a patient, and giving recommendations to a patient. According to Brown (2004), "a diagnostic test is designed to diagnose specified aspects of a language" (p. 46). Therefore, in this type of task, the goal was to identify the students' current struggles and abilities in terms of the specific aspects of language that were being assessed. Some of the constructs that were assessed are as follows: fluency, task completion, grammatical and lexical accuracy (vocabulary) and pronunciation. All of these constructs were also reflected in the rubric, with each criteria being worth a minimum of zero points and a total of four, which reflected the working level of proficiency with which students were able to perform the tasks.

Role-plays fall, according to Brown (2004), into the category of interactive speaking since they include interaction between two or more participants (in this case, between the student being tested as the doctor, and the researcher playing the role of the patient) and incorporate "transactional language" through which specific information is requested and exchanged. Students were not asked to use technical vocabulary since they were talking to a patient, and in real life, they would not be required to do so. The speaking part of the evaluation mainly involved communicative competence, the degree to which students could get their ideas across by making use of correct grammatical and lexical structures, accurate pronunciation, and decent fluency. This was measured in the rubric and evaluated by the student teachers, which, according to Fulcher and Davidson (2007) and Brown (2004), means construct validity was present in this section of the diagnostic test. The first and second parts of the speaking section aimed at testing

students' skills in formulating questions that were grammatically, phonologically, and semantically correct, at basic and moderate levels of difficulty. Then, the third section was intended to determine the students' oral skills in giving specific, detailed, and accurate information to a patient using non-technical language.

In regard to the reading section of the diagnostic test, according to Brown (2004), the texts used correspond to the category of academic reading, as they were mainly composed of journal and online news articles related to the students' field of study. The texts included information about illnesses, health, and medical research (see Appendix F); more specifically, the excerpts dealt with the influence of coffee on health, a measles outbreak, and tools used to identify diabetes. For all three of these texts, students were required to demonstrate comprehension by answering a series of multiple-choice and true-false questions. These items demanded that the students identify the main idea of the text, scan the text for specific information, and guess the meaning of words through context, which are all fundamental reading strategies for the participants in both their academic and professional careers, as they have to read similar texts in order to remain updated on medical news and advances. Since the purpose of this part of the diagnostic test was for students to understand texts and show their comprehension by answering a series of questions, the items comply with construct validity.

Finally, the listening portion of the test consisted of three audios, also related to health/medicine, for which students had to answer different multiple-choice questions. Brown (2004) states that this type of listening is considered extensive, as it involves "listening to develop a top-down, global understanding of

spoken language" (p. 120). Other aspects of this type of listening activity include, but are not limited to the following: "listening for gist, for the main idea and making inferences" (Brown, 2004, p. 120). Some of the constructs for these items include understanding different sounds and pronunciation of words, as well as intonation, recognizing different word meanings and grammatical structures, and distinguishing the main ideas of the audios. All of these constructs were present and evaluated in the listening portion of the diagnostic test. In order to complete this task, students had to listen for specific bits of information, with increasing levels of difficulty. During the first task, the students had to listen for key points in the plot of the dialogue. This section served as a way to test the students' ability to comprehend a relatively easy audio. For the second task, the students had to listen to a more challenging conversation between a doctor and patient and then decide if a series of statements about it were true or false. One of the goals of this task was to find out if the students were able to determine the veracity of a statement based on context clues. Then, for the third task, the students again had multiple-choice questions, and had to listen for technical vocabulary, numbers, and statistics.

**Types of Items Used**

All of the items featured receptive response questions, rather than productive ones. The diagnostic test is comprised of a mix of true-false and multiple-choice questions. The use of receptive response questions instead of productive ones was done purposefully since the students had previously reported (through their responses to the SNAQ) that they did not need writing (not as part of

their immediate needs nor their future needs), and that they were not very proficient when it comes to their writing abilities. Therefore, the test was designed so that the students would not have to write nor be evaluated on their writing.

**Number of Items**

In order to make the diagnostic test reliable, the student teachers included three sections for each skill. By having three sections, as opposed to only one or two, there are more questions and therefore more points. According to Genesee and Upshur (1996), having more points makes a test more reliable because the test-takers are given more opportunities to show their actual abilities, whereas shorter tests with more questions can sometimes be inaccurate or unreliable, especially if they are multiple-choice. The present diagnostic test created consisted of a total of 71 points. For the speaking part of the test, a total of 16 points could be earned over the course of three parts of a role-play, which involved different vocabulary, grammatical structures, and sentence/question formations. The 16 points come from the students' ability to do well in the areas mentioned in the rubric. If a student did well in all four sections of the rubric, then he/she received the full four points for each of the four criteria, thus resulting in a full score of 16 points. Then, for the listening portion of the exam, there were three sections: Section A consisted of ten questions, and therefore ten points; Section B consisted of ten questions, and therefore ten points; and Section C consisted of eight questions, and therefore eight points. Finally, the reading portion consisted of three sections, with the last section separated into two parts: Section A consisted of nine questions (nine points), Section B of eight questions (eight points), and

Section C consisted of ten questions, and therefore ten points (five questions per each part). The researchers used three sections per skill and a total of 71 points in order to make the test more reliable since it more accurately displayed the students' English abilities than a test with fewer points and/or items.

**Test Design**

The speaking task consisted of a three-part role-play. In the first part, the students had to ask eight information questions in order to gather basic data about the patient, including full name, phone number, and date of birth, among other basic information questions typically asked by doctors. In this part, students were given a blank form similar to the ones used by practicing doctors to admit patients to a hospital. This form was in Spanish, as this process would authentically be carried out in Costa Rica, where most of the students would be working. However, the students had to create the questions in English in order to get the information from a foreign, English-speaking patient.

For the second part of the speaking test, students were given some prompts, such as "the reason for her visit," "the place(s) she feels pain," and "the action(s) that caused the pain to begin." From these prompts, the students had to formulate the appropriate questions with correct grammar. The purpose of this part of the test was to determine the students' strengths and weaknesses related to their ability to inquire about a patient's symptoms in order to later diagnose him/her. The last part of the speaking task consisted of another set of prompts, which forced the participants to tell their patient her diagnosis (a broken foot) and explain what the following procedure would be (surgery). Students were required

to inform the patient about this situation and answer any questions the patient might have about it.

Each part of the speaking section was graded with a rubric (see Appendix G). The participants were scored out of a potential maximum of 16 points, and the rubric evaluated delivery, task completion, pronunciation, and use of grammar. Each aspect was graded from zero (which indicated that the student could not produce in the target language at all) to four points (which indicated that, even with a few mistakes, the student was able to produce satisfactory results). Brown (2004) states that "while role play can be controlled or 'guided' by the interviewer, this technique takes test-takers beyond simple intensive and responsive levels to a level of creativity and complexity that approaches real world pragmatics" (p. 174). This means that the items forced students to produce the expected grammatical structures, use the appropriate vocabulary, and manage the situations professionally and creatively, as they would in real life.

The three parts of this task increased in difficulty as the students progressed from one to the next. Even though the purpose of the diagnostic test was clearly not to certify proficiency, the researchers used the guidelines from the Common European Framework (CEFR) as a loose guide of some activities that students should be able to accomplish at each level. However, it is of the utmost importance that the researchers stress here that the proficiency levels assigned to the students throughout this diagnostic process are by no means an accurate measure of their true proficiency levels, since the diagnostic test was not intended as a proficiency test, but rather as a measure of the students' current abilities in

each of the three macro skills tested. Additionally, the proficiency levels that were assigned to each student per macro skill by the student teachers, while based on the parameters used to determine proficiency levels according to the CEFR, do not correlate exactly, but rather the CEFR was used as a guide and a base around which this diagnostic test was created. Further, it is also necessary to clarify the explanation behind the selection of the CEFR guidelines and qualifications as a guide for this project. According to Willis and Willis (2007), while the *Common European Framework* "is far from perfect," it "provide[s] a useful starting point to illustrate the principles of syllabus specification" due to its "'can do' statements or learner outcomes together with a list of topics," which makes for a decent "starting point for syllabus design" (p. 186). Because of its usefulness in terms of syllabus design, the researchers decided to use it and its guidelines as a base for their diagnostic test, scoring system, and syllabus design. According to Kantarctoglu and Papageorgiou (2012), the *can do* statements used by the CEFR are particularly helpful when designing task-based courses like the one designed by the researchers.

According to the Council of Europe (2001), at a basic level of oral proficiency, A1, students should be able to "ask and answer simple questions in areas of immediate need" (p. 26). The first task in the oral section of the diagnostic test complies with this description, since its purpose was to determine whether the students were able to formulate the necessary basic, personal information questions to complete the task. The last part of the speaking section intended to require students to perform at a higher level since they had to develop more

advanced utterances in order to describe the patient's status, the procedures of the surgery, and any possible risks of the surgery.

The listening task also consisted of three items, which provided the researchers with more data about the students' proficiency in this skill. Additionally, the three items used audios with different levels of difficulty, which required the students to listen to, analyze and respond to them with varying degrees of difficulty.

The audio tracks selected for the listening task fall under the classification of academic listening. Gamboa and Sevilla (2015) state that:

> Academic listening [. . .] includes identifying the purpose and scope of a lecture, the topic, and its logical development; understanding the relationship among discourse units (main versus supporting details); recognizing lexical terms related to the topic; recognizing markers of cohesion (first, next, in conclusion, etc.) and intonation in a lecture, detecting the speaker's attitude toward the subject; and recognizing digressions (turning aside from the main subject) and non-verbal cues of emphasis. (p. 85)

For the first part of the listening section, for instance, students were required to listen to a conversation between a doctor and a patient. This audio was taken from an English teaching website, which means that it was recorded for academic purposes. It was chosen to be the first audio since it was the one that represented less of a challenge, compared to the others. Nevertheless, the participants had to identify main and specific ideas from the conversation, as well

as recognize key vocabulary. This task was designed at a beginner level, using the B1 CEFR parameters as a general base, which express that a speaker "can generally follow the main points of extended discussions around him/her, provided speech is clearly articulated in standard dialect" (Council of Europe, 2001, p. 66). This section consisted of ten multiple-choice items with three options each.

For the second part of the speaking section, students had to listen to a conversation between a doctor, a patient, and the patient's family member in which they discuss the patient's discharge plan before being able to leave the hospital. This audio included more specific information regarding medical procedures and terms, as well as different verb tenses, which represents greater difficulty than the first audio. The task consisted of ten true-or-false items. Even though this section was true-or-false, it was still an accurate measure of the students' abilities since it would have been unlikely for them to achieve a high score solely through guessing. As stated by Burton (2005), "random guessing on its own is extremely unlikely to give a high test score. Thus the probability of scoring 60 in a 70-item true/false test with no knowledge at all is only 0.0000000003" (p. 67). This quote confirms that with a higher number of questions that they must answer, the students are less likely to achieve a decent score without a fair amount of knowledge about the subject. The goal of this task was to determine if the students were able to perform a relatively intermediate level task, which was designed using the B2 CEFR parameters as a loose base. According to the CEFR parameters, students who perform at a B2 level according to their tests should be able to "understand standard spoken language, live or broadcast, on

both familiar and unfamiliar topics normally encountered in personal, social, academic or vocational life" (Council of Europe, 2001, p. 66). Because of this, the student teachers chose to increase the difficulty of this task from that of the previous one, by selecting an audio faster in pace, more similar to standard speech, and with some vocabulary probably unfamiliar to the students.

The third and final part of the listening section contained an extract of a *TED Talk*, which is an authentic audio. Melanlioglu (2013) suggests that one of the main reasons to use authentic listening tasks is to "be able to demonstrate how learning tasks, which students can encounter in their daily lives, would influence their learning" (p. 1178). This audio was chosen for the final, and most advanced task students had to complete as it used a more challenging audio, which only high-level students should be able to understand successfully. This section was based loosely on the C1 CEFR parameters, which indicate that speakers should be able to "follow most lectures, discussions and debates with relative ease" (Council of Europe, 2001, p. 67). Since the *TED Talk* was given by a North American cardiologist, it would be a real test for students to understand her accent and speed, given the previous results of their self-assessment of their skills in English. Students had to complete eight multiple-choice questions, which each included options such as illnesses, names, and large numbers.

Lastly, the reading section was also divided into three parts, which increased in difficulty in both register and items to solve. The first part of this section consisted of reading a short, basic text about aspects of coffee related to health. Students were required to answer nine multiple-choice questions regarding

information found within the short text. Each of the items had three options. This part was designed so that the first questions were straightforward, and the last ones required a little more thought and inference from the students. These items were based loosely on the A2 CEFR parameters, which specify that at this level in reading, a student should be able to "understand short, simple texts containing the highest frequency vocabulary, including a proportion of shared international vocabulary items" (Council of Europe, 2001, p. 69).

The second part of the reading section involved reading an excerpt from a news report from a website about a measles outbreak in the United States. This type of text is considered selective by Brown (2004), who asserts that one of the best ways to measure this type of reading is through the use of multiple-choice questions. For this part of the reading section, the multiple-choice questions followed a similar pattern to that of the previous one. According to the Council of Europe (2001), B1 CEFR parameters indicate that students should be able to "recognise significant points in straightforward . . . articles on familiar subjects" (p. 70). This idea is reflected in the second part of the reading section in which students had to demonstrate their understanding of the text by identifying the correct option to answer the question.

Lastly, the third part of the reading section included two different types of texts. The students were required to first, read a segment of a research report on diabetes and then, to analyze a questionnaire about diabetes. After that, students had to answer a series of ten true-false questions based on the information within the texts. This exercise required the students to make more inferences and

interpretations than the previous ones since it aimed to test for a higher level of proficiency. This part of the test was loosely based on the principles and parameters of level B2+ in the CEFR, which indicates that students should be able to "read with a large degree of independence, adapting style and speed of reading to different texts and purposes, and using appropriate reference sources selectively. [They should also have] a broad active vocabulary" (Council of Europe, 2001, p. 69). Based on these parameters, it could be assumed that a student who reaches the third part of this section of the diagnostic test with no problem would most likely be relatively proficient in reading in English.

**Speaking Rubric**

For the speaking section of the diagnostic test, the student teachers adapted a rubric based on reliable rubrics, guidelines, assessment categories, and recommendations set forth by the Council of Europe (2001); Coombe, Folse, and Hubley's example of a speaking assessment rubric (2007); Mertler's template for analytic rubrics (2001, p. 2; see Appendix H); O'Malley and Valdez Pierce (1996); and TOEFL's Speaking Rubrics (Educational Testing Service, n.d., n.p.; see Appendix I). Based on these sources, the student teachers decided to use an analytic scoring scale. According to O'Malley and Valdez Pierce (1996), one of the major advantages of using an analytic scale is that it is especially useful for the purpose of retaining "diagnostic information for planning instruction" (p. 144). Analytic scales are useful for diagnostic purposes since they "separate . . . features . . . into components that are each scored separately" (O'Malley & Valdez Pierce, 1996, p. 144), which, in this case, allowed the student teachers to more

precisely distinguish between the skills that the participants have already mastered

and the ones on which they need to improve. In other words, an analytic rubric

was used in order to obtain more precise information about the students' strengths

and weaknesses in regard to their speaking abilities in English. The general format

of the scale that the student teachers decided to use is based on a template for an

analytic rubric by Mertler (2001), which recommends the placement of the major

elements of the rubric, including the criteria, the descriptions for each level, the

score for each level, and the levels. Following Mertler's (2001) template, the

student teachers decided the rubric would have four levels of proficiency for each

of the four criteria, which were each given a quantitative label, and range from one

to four.

The constructs of speaking reflected in this rubric include the following: the

participants' ability to successfully complete the given tasks, use correct language,

pronounce words in English in a way that is easily intelligible, and deliver their

utterances fluently. These four constructs were selected based on those of the

TOEFL Speaking Rubric (Educational Testing Service, n.d., n.p.), those of

Coombe, Folse, and Hubley's (2007) Speaking Assessment rubric, and those

recommended by O'Malley and Valdez Pierce (1996), which are all authoritative

sources in the area of assessment, and one criterion of the rubric had to do with

the students' ability to complete the task since this class is based in both ESP and

task-based learning, and therefore, even the rubric must reflect this. The rubric

also was explicitly designed with four criteria because it was based on the TOEFL

Speaking Rubric (Educational Testing Service, n.d., n.p.) and Mertler's (2001)

template for analytic rubrics. The main elements of each of those constructs are as follows. In terms of the participants' ability to successfully complete the given tasks, the main element included in this section of the rubric consisted of the students being able to communicate all the points listed in the directions to their role-play patients. As for their ability to use correct language, the main elements were the use of correct grammar, accurate vocabulary, and correct subject-verb agreement. For the ability to deliver fluently, the main elements were to connect utterances smoothly, without choppiness, and to produce organized utterances. Finally, pronunciation focused on the ability to pronounce words correctly, and in such a way that is intelligible, and not distracting from the student's ability to communicate during the role-play, as recommended by Coombe, Folse, and Hubley (2007).

**Parameters Used to Assess Reading and Listening**

According to the CEFR classifications into the various levels (A1, A2, B1, B2, and C1), the researchers were able to create a point scoring system with the objective of classifying participants' abilities in each skill area as a very low level of proficiency, low beginner, high beginner, low intermediate, high intermediate, or advanced (see Appendix J). Here, it is necessary to reiterate that, as mentioned previously in this report, the proficiency levels assigned to the students per macro skill do not reflect their true proficiency levels, since the diagnostic test was not intended as a proficiency test. However, the assignment of working proficiency levels served as a guide when designing course materials for the students.

For the reading parameters, according to the Council of Europe (2001), the very low proficient students would only be able to recognize some words throughout the reading, as the A1 students according to the CEFR. Then, according to the same council, the low beginners would be able to demonstrate comprehension of short texts, as would the A2 students. Next, the high beginners and low intermediate students should be able to read a text, but probably not understand specific or technical vocabulary, similar to the B1 students. Then, somewhat similar to B2 level students, the high intermediates, according to the researchers' diagnostic test and scoring system (see Appendices F and J, respectively), should be able to demonstrate comprehension of the articles used in the diagnostic, some of the technical vocabulary, and definitely the author's viewpoints and main ideas, based on the CEFR guidelines (Council of Europe, 2001, n.p.). Finally, the students classified as advanced based on their scores on the diagnostic test, similarly to the students classified as having a C1 level by the CEFR, should be able to completely understand the text, with all of its technical vocabulary and grammatical structures (Council of Europe, 2001, n.p.). Due to this correlation between these two scoring systems and the questions asked throughout the reading sections of the test, it is clear why the scoring system created for the purposes of this project gives a higher perceived level of proficiency to the students who answer more questions correctly. If participants can only correctly answer the questions about specific details, then it correlates to a lower level of proficiency, whereas if they can answer those basic questions as well as the more complex ones related to main idea and technical and/or not-as-

common vocabulary, then it potentially signifies a higher level of proficiency. The

next section of the diagnostic test that was based on the CEFR guidelines is the

listening section. The CEFR, as with the reading qualifications, had several levels,

which the researchers used to correlate to a potential level of perceived

proficiency in listening according to the number of points scored in the listening

section of the diagnostic. The students corresponding to a very low level of

proficiency are the ones who can answer the least number of questions correctly,

therefore they relate to the A1 level, which according to the CEFR consists of

being able to understand only basic words and phrases about basic/familiar topics,

and only at a slow speed (Council of Europe, 2001, n.p.). Then, the low beginners

relate to the A2 level, which can understand "phrases and the highest frequency

vocabulary related to areas of most immediate personal relevance" (Council of

Europe, 2001, n.p.). The high beginners and low intermediates relate to the B1

level, and should be able to understand "the main points of clear standard

speech," and thus, should only be able to answer the questions that come directly

from the listening material (Council of Europe, 2001, n.p.). Next, the high

intermediates, who relate to the B2 level according to the CEFR, should be able to

understand "extended speech" about a variety of topics, including some complex

ones, meaning that while they might get a few wrong answers throughout this

section of the test, they should be able to get most of the answers correct (Council

of Europe, 2001, n.p.). Finally, the participants classified as advanced according to

the diagnostic test and scoring system created for the purposes of this project are

related to those classified as C1 by the CEFR since they represent a higher level

of proficiency. According to the CEFR, these students should be able to understand regular, extended speech, even about a variety of topics, including technical ones (Council of Europe, 2001, n.p.). Therefore, these students are the ones who have gotten most, if not all, of the questions in this section correct. With that said, the students' potential classifications of beginner, intermediate, or advanced levels of proficiency for each section are less relevant in and of themselves than their implications for the course which was created based on their needs, wants, and lacks. Since the student teachers had to take into account the students' lacks in order to better prepare a course tailored to their needs and individual levels, it was essential to first get at least somewhat of an understanding of the level of English that the students already had in each of the skills that would later be taught throughout the course. For this reason, these results were very useful to the student teachers.

## Results and Discussion

In this section of the report, the results of the administered diagnostic test will be displayed and analyzed.

### Analysis of Group Results

Based on the results obtained from the diagnostic test, the following data will be highlighted in order to analyze the students' performance, determine their estimated level of proficiency, and make decisions about the design of the course. Below, Table 2 displays the average, mode, and median results obtained by the participants on the diagnostic test, by section of the quiz. In regard to the reading section of the diagnostic test, a large percentage of the students (75 percent)

scored 80 percent or above overall in the three parts that comprise the reading section. This reflected that more than half of the students, around 64 percent of all who took the diagnostic test belong in the high intermediate level of proficiency, based on the Potential Reading Proficiency Level Based on Score chart (Appendix J). This would roughly relate to a B2 level according to the CEFR (Council of Europe, 2001, pp. 24-25), which is also known as "Independent User," and more specifically, "Vantage." According to the Council of Europe (2001), the following are among the list of abilities that speakers at this level may have: "read articles and reports concerned with contemporary problems in which the writers adopt particular attitudes or viewpoints" (Council of Europe, 2001, p. 27). The relevance of this fact is that, since a large percentage of the participants can carry out reading tasks efficiently, it allows them to accomplish objectives in one of the areas that they use the most in their major, as was observed through the results of the SNAQ. According to the results, the majority of the students has a decent level of proficiency in reading comprehension since the mean reading test score was 81 percent, the median was 85 percent, and the mode was 85 percent (see Table 2 below). For the majority of students that scored well on the test, their strengths include a vast vocabulary, the ability to use context clues to guess meaning, comprehension of an article, and the ability to understand both questions and rephrased information from the text said using different language. There was also a significant group of students, 36 percent, who scored less than 80 percent on the reading section. For this group, the weaknesses include not being able to understand short texts with common vocabulary or vocabulary related to their field,

only being able to identify basic phrases in texts, and having problems following even simple directions or instructions.

**Table 2**

*Average, mode, and median data of Individual diagnostic exam scores (see Table 3)*

| | Reading Test Score | Listening Test Score | Speaking Test Score | Total Score |
|---|---|---|---|---|
| **Average/Mean** | 22/27= 81% | 24/28= 86% | 12/16= 75% | 58/71= 82% |
| **Mode** | 23/27= 85% (8) | 27/28= 96% (8) | 11/16= 69%, 12/16= 75%, 15/16= 94%, 16/16= 100% (4 each) | 58/71= 82%, 61/71= 86%, 64/71= 90%, 65/71= 92% (3 each) |
| **Median** | 23/27= 85% | 26/28= 93% | 12/16= 75% | 61/71= 86% |

The results from the listening tasks showed that a vast number of students (around 82 percent of students who took the test) have an advanced level of proficiency in this skill, based on the Potential Listening Proficiency Level Based on Score chart (Appendix J). The majority of students scored well on this part of the test as well, since the mean score was 86 percent, the median was 93 percent, and the mode was 96 percent (see Table 2 above). Based on these results, the vast majority of the students should be able to easily comprehend spoken directions, long technical speeches (with vocabulary guidance), and short, casual conversations related to their field or otherwise. For the 17.8 percent of students who scored less than 80 percent on the listening section, some of their weaknesses relate to not being able to understand simple instructions, nor talks or lectures as they contain structures, vocabulary, and pronunciation that are

unknown to them. It could be hypothesized that these learners may parallel those who fit the CEFR A1 and A2 parameters, since those learners are only able to "follow speech which is very slow and carefully articulated, with long pauses for him/her to assimilate meaning" (Council of Europe, 2001, p. 66).

Lastly, the speaking section provided more varied results since it was the only section that evaluated a productive skill. Only 39.2 percent of all the students who participated in the diagnostic test achieved a grade higher than 80 percent. For this section of the test, the mean score was 75 percent, the median 75 percent, and the mode was a tie between 69 percent, 75 percent, 94 percent, and 100 percent (see Table 2 above). This means that the majority of the population (60.8 percent) possesses a low intermediate or lower level, according to the researchers' Scoring System (see Appendix J), and may encounter many obstacles when completing speaking activities in class and speaking tasks in real life. Based on Table 2, the results suggest that the majority of the participants will be able to hold casual conversations, not related to their field, and probably with mostly correct grammar and general vocabulary. The students' speaking issues clearly began when they were asked to use more medical terminology. Because of this fact, they will most likely face many challenges when it comes to discussing different illnesses, procedures, medical instructions, risks, side effects, and other technical, medical topics. On the other hand, the eleven students who scored higher than 80 percent will be able to perform a wider variety of activities related to their field, such as the ones stated above. The results were also quite varied, and

thus represented a group of participants with very different levels of speaking proficiency.

Below, Table 3 displays the participants' individual scores on the diagnostic exam, by section, and as a total score. These results show the same findings as Table 2, but display further individual variance in scores amongst the students. Table 3 (below) further contributed to the researchers' findings by indicating specific student lacks in each of the skills (reading, listening, and speaking). For example, the results in Table 3 show that 21 out of 28 students obtained a score of 80 percent or higher on the reading section, 23 out of 28 students obtained such a score on the listening section, and only 11 out of 28 students obtained such a score on the speaking section. These results suggest that most of the participants had a higher initial level of proficiency in reading and listening than in speaking. Further, the results show a potentially slightly higher initial level of proficiency in listening than in reading. It is necessary to restate that the results of this diagnostic test are not equivalent to accurate, reliable measures of true levels of proficiency since the test was made by three researchers, and was not peer-evaluated nor standardized. However, these results are surprising since the particiipants indicated that they use reading skills much more frequently than listening ones. For these reasons, the information shown in Table 3 (below) contributed to the researchers' conclusions about the participants' lacks, and ultimately to the syllabus design process later in this study.The syllabus design process is detailed in the second chapter of this report.

**Table 3**

*Individual diagnostic exam scores (by score per skill and total score)*

| Student | Reading Test Score (out of 27 points) | Listening Test Score (out of 28 points) | Speaking Test Score (out of 16 points) | Total Score |
|---|---|---|---|---|
| 1 | 23/27= 85% | 26/28= 93% | 15/16= 94% | 64/71= 90% |
| 2 | 21/27= 78% | 17/28= 61% | 9/16= 56% | 47/71= 66% |
| 3 | 26/27= 96% | 25/28= 89% | 16/16= 100% | 67/71= 94% |
| 4 | 24/27= 89% | 23/28= 82% | 9/16= 56% | 56/71= 79% |
| 5 | 23/27= 85% | 28/28= 100% | 16/16= 100% | 67/71= 94% |
| 6 | 23/27= 85% | 27/28= 96% | 15/16= 94% | 65/71= 92% |
| 7 | 23/27= 85% | 28/28= 100% | 10/16= 63% | 61/71= 86% |
| 8 | 22/27= 81% | 26/28= 93% | 10/16= 75% | 58/71= 82% |
| 9 | 20/27= 74% | 23/28= 82% | 8/16= 63% | 51/71= 72% |
| 10 | 22/27= 81% | 24/28= 86% | 15/16= 94% | 61/71= 86% |
| 11 | 26/27= 96% | 27/28= 96% | 16/16= 100% | 69/71= 97% |
| 12 | 14/27= 52% | 15/28= 54% | 6/16= 38% | 35/71= 49% |
| 13 | 24/27= 89% | 28/28= 100% | 12/16= 75% | 64/71= 90% |
| 14 | 23/27= 85% | 27/28= 96% | 10/16= 69% | 60/71= 85% |
| 15 | 23/27= 85% | 27/28= 96% | 14/16= 88% | 64/71= 90% |
| 16 | 24/27= 89% | 27/28= 96% | 15/16= 94% | 66/71= 93% |
| 17 | 17/27= 63% | 20/28= 71% | 7/16= 44% | 44/71= 62% |
| 18 | 19/27= 70% | 15/28= 54% | 5/16= 31% | 39/71= 55% |
| 19 | 23/27= 85% | 23/28= 82% | 12/16= 75% | 58/71= 82% |
| 20 | 24/27= 89% | 27/28= 96% | 14/16= 88% | 65/71= 92% |
| 21 | 24/27= 89% | 27/28= 96% | 14/16= 88% | 65/71= 92% |
| 22 | 20/27= 74% | 19/28= 68% | 5/16= 38% | 44/71= 62% |
| 23 | 21/27= 78% | 23/28= 82% | 10/16= 69% | 54/71= 76% |
| 24 | 22/27= 81% | 25/28= 89% | 11/16=69% | 58/71=82% |
| 25 | 26/27= 96% | 26/28= 93% | 16/16= 100% | 68/71= 96% |
| 26 | 23/27= 85% | 27/28= 96% | 13/16= 75% | 63/71= 89% |
| 27 | 24/27= 89% | 24/28= 86% | 11/16= 69% | 59/71= 83% |

**Table 3** (continued)

| Student | Reading Test Score (out of 27 points) | Listening Test Score (out of 28 points) | Speaking Test Score (out of 16 points) | Total Score |
|---------|---------|---------|---------|---------|
| 28 | 24/27= 89% | 26/28= 93% | 8/16= 50% | 58/71= 82% |

## Conclusions

The needs analysis process provided the researchers with useful data, which allowed them to design a course carefully tailored to the participants' needs, lacks, and wants. All of the results provided the researchers with valuable information about the population, how to best assist them in improving their English, and potential areas of struggle that may need extra reinforcement. Based on the results obtained from the reading section, it can be assumed that, while some students would be able to complete higher-order thinking exercises, a large portion of the students would need additional support in this area. Nevertheless, small adaptations can be made to the reading material in order to provide support to those students who struggle the most. For instance, supplying students with a shorter version of the text or with a glossary for new or challenging language and vocabulary would be helpful. According to the researchers' findings, reading is one of the skills doctors use the most, and having a significant number of intermediate or high intermediate students (in that skill) allowed the researchers to prepare ambitious goals and objectives regarding that skill.

The results collected regarding listening revealed considerable differences between the students. While most of them had an advanced level of proficiency in this area, there was a portion of the participants that demonstrated a need for further support when studying topics related to this skill. However, it remains clear

for the student teachers that activities in class will include technical vocabulary and thorough methods of checking comprehension. The results imply that most of the students may require support in order to complete these activities. For this reason, the students who scored less than 80 percent on this section of the diagnostic test were prioritized throughout the course and were provided with visual and written support in English and/or their native language, so that they could participate in the course activities.

Next, based on the variety of scores received on the speaking section of the diagnostic test, the researchers created and adapted the speaking tasks included in the course with the purpose of assisting the low-level students in reaching the course goals and objectives. The students were exposed to a lot of speaking throughout the course since all of the lessons integrated as many skills as possible, which served as a great opportunity for students with low levels of proficiency in this area to acquire expressions, vocabulary, and strategies in order to communicate at increasingly higher levels.

Finally, providing the participants with opportunities for course and teacher evaluation contributed to the achievement of the course objectives. A major lesson learned from the course design process, especially from the review of the relevant literature, is the significance of providing opportunities for the students to report on the strengths and weaknesses of the course. This allowed the researchers to make the pertinent modifications so that the course was able to improve continuously throughout the semester.

**Chapter II: Syllabus Design**

This chapter of the project presents a detailed description of the syllabus design and the rationale for the specific syllabus used for the Medical English course. It details and describes the course, the name and logo of the course, the goals and objectives for each unit of the course, methodology, assessment rationale, preliminary assessment instruments, and lesson plans.

The syllabus used for the Medical English course was a combination of a functional/task-based and skill-centered syllabus. According to Willis and Willis (2007), in a task-based syllabus, the following two starting points are possible: seeing meaning as primary or seeing form as primary. For the Medical English course, the student teachers chose to implement the former view since effective communication, rather than flawless communication, is crucial in the practice of medicine. In this ESP course, therefore, the focus of the receptive macro skills was on meaning- the gist and details of what is said or written-, and the focus of the productive oral skill was real-world situations, with emphasis on task completion in a non-memorized way in order to achieve a goal. It was also a skill-centered syllabus because "the aim is not to present and practice language items, but rather to provide opportunities for learners to employ and evaluate the skills and strategies considered necessary in the target situation" (Hutchinson & Waters, 1987, p. 91). The syllabus also relied largely on the use of authentic texts. Since a syllabus is a document for both teachers and students to guide themselves, this project contains the official syllabus used by the student teachers (detailed below) and a student-friendly version of the course syllabus (see Appendix K).

**Course Description**

This course was specifically designed for medical students who needed or wanted to improve their English for medical purposes. The population consisted of students enrolled in different years in the Bachelor's program in Medicine and Surgery at the University of Costa Rica. After administering a diagnostic test, it was determined that most of the students in the population performed at what was deemed a high-intermediate level of proficiency in listening and reading, and a low-intermediate level in speaking, according to the researchers' diagnostic test and scoring rubrics. The purpose of this course was to provide students with basic speaking, listening, and reading strategies and vocabulary related to their field in order to contribute to their successful completion of activities involving the use of English throughout their studies.

This course lasted 16 weeks, with weekly three-hour classes, meaning that the course consisted of a total of 48 hours of class time, at most. Three instructors were in charge of the course, and it was given on Monday's from 5 p.m. to 7:50 p.m. One of the main characteristics of the course was that it employed Task-Based Language Teaching (TBLT), which favors a focus on the teaching of the ability to communicate, completion of real-world tasks, and integration of skills over the direct teaching of grammar. According to Oxford (2001), using this approach allows students to see that the language "is not just an object of academic interest nor merely a key to passing an examination; instead, English becomes a real means of interaction and sharing among people" (p. 11). This course mostly focused on the students' ability to communicate and complete real-

world tasks, rather than solely on their grades or on their ability to produce grammatically flawless utterances in English. While the grades that the students received on their assignments throughout the course were not intended to be the main focus of the course, the students were still required to obtain an overall grade higher than 80 percent to pass the course and receive a certificate.

**Course Logo**
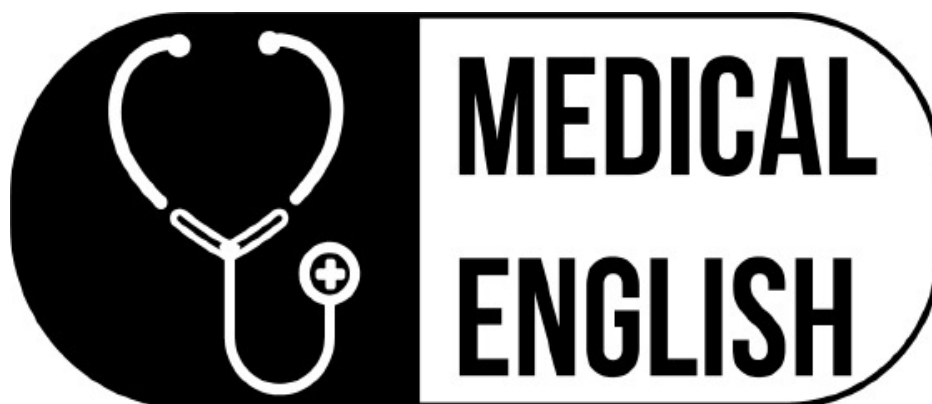


   The course logo (above) includes the name of the course on the right side and a stethoscope on the left. The stethoscope is a very easily recognizable symbol of medicine, and that is why it was chosen for the logo. The end of the stethoscope contains a plus sign, indicating an association with first aid. Both the stethoscope and course name are inside of a cylindrical border, illustrating a pill, which is another characteristic image of the medical field.

**Course Name**

Medical English: An English Course for Medical Students- Course designed by Barahona, I., Lewis, S., & Quesada, E.

**Statement of Goals and Objectives**

**Unit 1 Goal**: By the end of this unit, students will be able to successfully demonstrate comprehension of medical texts (an extract from a research article

and a section of a textbook) by identifying key vocabulary words and medical

prefixes and suffixes, summarizing, relaying and discussing information, and/or

recognizing areas affected by specific conditions.

    1. **General Objective:** By the end of the lesson, students will be able

    to demonstrate comprehension of a medical text in English by

    correctly answering different questions related to the text.

    2. **General Objective**: By the end of the lesson, students will be able

    to successfully distinguish relevant from irrelevant information by

    scanning extracts of medical articles for specific information

    according to a guide.

    3. **General Objective**: By the end of the lesson, students will be able

    to successfully demonstrate understanding of a medical condition

    explained in a textbook by identifying the causes, areas affected, and

    summary when explained by one of their classmates.

**Unit 2 Goal***:* By the end of this unit, students will be able to successfully

demonstrate comprehension of key medical vocabulary from an academic medical

video by outlining the video and/or reporting the information in it to their

classmates.

    1. **General Objective**: By the end of the lesson, students will be able

    to successfully demonstrate comprehension of the steps of a medical

    process (as will be described on a video) by correctly completing

    sentences with the most relevant information from a video.

2. **General Objective**: By the end of this lesson, students will be able to demonstrate comprehension of an academic, medical video by reporting specific aspects mentioned in it.

3. **General Objective**: By the end of the lesson, students will be able to develop a set of procedures they would follow in diagnosing a patient with a strange illness by correctly using conditional sentences in order to predict the ending of a medical Netflix series.

**Unit 3 Goal:** By the end of this unit, students will be able to effectively communicate orally with a patient about his/her medical record, diagnosis, medication, and/or discharge summary by identifying correct vocabulary, grammatical structures, and bedside manners used in videos or scripts and reproducing them during role-plays.

1. **General Objective**: By the end of this lesson, students will be able to correctly use the vocabulary and grammatical structures needed to complete a medical record orally by conducting a role-play between a doctor and a patient.

2. **General Objective**: By the end of the lesson, students will be able to properly break bad news to a patient based on his diagnosis by role-playing the situation as seen in a medical video.

3. **General Objective**: By the end of the lesson, students will be able to successfully prescribe the correct medication to a patient by using the language and performing the actions depicted in a video.

**Methodology**

This section of the report details and outlines the process through which the Medical English course was designed, and the rationale for it.

**Approach**

This course was designed following a Task-Based Language Teaching (TBLT) approach. In order to discuss the TBLT approach, it is necessary to define a task. Ellis (2003) defines tasks as "activities that call for primarily meaning-focused language use" (p. 3). Also, since TBLT is part of Communicative Language Teaching, a task is a communicative activity that motivates students to use English to develop and exchange meaning. During this course, this aspect of the approach represented a tremendously significant basis for the development of the activities. According to Nunan (2004), there are seven principles that underlie the approach of TBLT: scaffolding, task dependency, recycling, active learning, integration, reproduction to creation, and reflection. All of these principles allow for a task cycle in which the individual tasks increase in difficulty at a speed and manner at which students can follow and increase their knowledge. At the same time, this approach expects instructors to force students to recycle the information learned from previous lessons and tasks within a cycle in order to build up their mastery of the language, and to use that language as they are learning it. In other words, "learners learn best through doing - through actively constructing their own knowledge rather than having it transmitted to them by the teacher" (Nunan, 2004, p. 36). The principle of integration refers to the idea of having all the skills and parts of the language taught together, which is beneficial to students by creating a

context through which they are easily able to absorb new material. Finally, the last two principles place responsibility on the students. Not only does the idea of autonomous learning encourages students to use newly acquired structures and vocabulary by producing them in the target language, it also encourages them to review and consider their progress in an active and continuous manner. These principles were woven into the Medical English course during the course design stage.

Further, Ellis (2003) provides a description of each of the parts that make up a task-based lesson. First, the author describes the pre-task as "a phase to prepare students to perform the task in ways that will promote acquisition" (p. 244). This step is vital to the development of the rest of the cycle as it provides students with the motivation and scaffolding to learn the language for that task cycle. During this part of the cycle, the teacher is in charge of providing students with a similar, sometimes communicative, activity to the main task activity. In this way, learners get a model of what they are supposed to be able to achieve by the end of the main task. It is best to thoroughly plan this stage so as to ensure that the goals and objectives are fully and reasonably achievable by the end of the cycle.

Next is the during-task phase. According to Ellis (2003), there are different factors that can influence this stage, and that can be planned beforehand or decided at the moment of the lesson. Some of the aspects mentioned are the amount of time given to students to complete a task, whether or not they can have support when performing the task, or whether to include a surprise addition or not.

All of these components must be determined and balanced based on the given population in order to create an encouraging and motivational learning atmosphere in which students feel comfortable enough to complete the tasks and take risks.

Finally, the post-task phase can be used to fulfill one of several purposes. For example, the post-task can: "provide an opportunity for a repeat performance of the task," "encourage reflection on how the task was performed," and/or "encourage attention to form, in particular to those forms that proved problematic to the learners when they performed the task" (Ellis, 2003, p. 258). According to Ellis (2003), this phase of the cycle should be valued just as much as the others since it gives students a chance to reflect on their own performance and learning. This makes students aware of their learning process and helps them become independent and active learners.

**Role of Grammar**

Each of the units in the course focused on a different set of grammatical structures, which were taught, studied, and practiced throughout the classes. The primary grammatical structures studied during the course are as follows: from Unit 1, parts of speech (nouns, verbs, adverbs, and adjectives) and affixes; from Unit 2, some of the conditional and past tenses; and from Unit 3, modals and question formation (both yes/no and information questions). However, it was not the researchers' goal to focus solely on grammatical structures. According to Larsen-Freeman (2014), "grammatical structures not only have (morphosyntactic) form, they are also used to express meaning (semantics) in context-appropriate use (pragmatics)" (p. 252). Therefore, all three units of the course were created based

on this idea that grammar is three-dimensional, which means that while students were given explanations of and practice for the grammatical structures mentioned above, the main focus was on meaning and use, with the expectation that such a course would aid students in comprehension and provide them with a real-life and immediate use of the language.

**Classroom Dynamics**

The Medical English course was team-taught, which means that three facilitators took part in planning, teaching, and evaluating it. During lessons, one team member had the leading role, while the other two acted as assistants in activities such as monitoring students' work and progress, distributing materials, organizing and setting up the material for the activities, modeling conversations with the lead teacher, and providing support to the lead teacher. This type of classroom dynamic is based on the "one teaches, one observes" model of co-teaching, according to Friend, Reising, and Cook (as cited in Aliakbari and Nejad, 2013). However, this dynamic was rotational, which means that the leading teacher was not the same every lesson but every three lessons; in this way, all three researchers had the opportunity to gain experience from both perspectives.

**Tasks and Techniques and Their Rationale**

According to Nunan (2004), "one of the earliest curricular applications of TBLT to appear in the literature was the Bangalore project. In this project, three principal task types are used: information gap, reasoning gap, and opinion gap" (p. 56). For this course, the researchers used the first two types of tasks mentioned above, in the form of doctor-patient role-plays in which students had to exchange

key information correctly in order to complete charts or forms to identify and diagnose illnesses. Also, reasoning gaps were used during reading and listening activities, such as answering questions, getting meaning from context, and completing cloze activities. All of the previous activities required students to understand the text (written or oral) in order to complete the exercises successfully.

Pattison (as cited in Nunan, 2004) proposes seven task types that can be performed when using TBLT, for example, questions and answers, dialogues and role-plays, communication strategies, and discussions and decisions. These activities were present in the course in the form of role-plays, short speeches, and conversations. The students also had to use different strategies to accurately complete those activities, for example, using body language, paraphrasing, and summarizing. All of these activities were chosen with the aim of helping students improve the specific strategies and skills that they require for their professional development as determined through the administration of the student questionnaires used to ascertain their needs, lacks, and wants. The reading activities (answering questions, predicting, completing charts, getting meaning from context, and cloze exercises) focused on giving students the tools to comprehend and demonstrate comprehension of texts (such as abstracts and extracts of articles). The listening activities (answering questions, predicting, completing charts, and getting meaning from context) were based on the students' need to participate in events that required them to be attentive to and interpret different oral information. Finally, for the speaking activities (doctor-patient or

doctor-doctor role plays and short speeches), the students were required to use and combine all of their knowledge, both previous and learned in class, to complete the activities, which resemble the ones they encounter, or will encounter, in their professional careers.

**Role of the Learners**

Nunan (2004) cites different characteristics of good learners, which were added to the expected role of the medical students during the course. For instance, Nunan (2004) states that "good language learners find their own way, organize information about language and make their own opportunities" (p. 66). These characteristics imply that students should be in charge of their own learning. Students should be risk-takers in order to take advantage of the learning opportunities that are provided in class. Students were also expected to "let the context help them and make intelligent guesses" since these strategies were necessary to successfully complete the course and since the students would need these strategies later, as practicing doctors (Nunan, 2004, p. 67). Nunan (2004) recommends that students possess the aforementioned qualities since they become active learners, who are "in control of their own learning rather than as passive recipients of content provided by the teacher" (p. 67). This autonomy was necessary and beneficial to all of the participants in this course, aided in the students' achievement of the course goals and objectives, and hopefully contributed to long-term absorption of the course material.

**Role of the Teachers**

When developing a task-based syllabus, teachers must play certain roles.

According to Breen and Candlin (1980), among the different roles that the teacher

has in a communicative class, there are three that stand out and they are as

follows: as a facilitator of the communication that happens among students, as a

contributor to the communication, and, finally, as both a witness and learner of the

communicative process. The role of the student teachers in the Medical English

course was primarily as course designers and facilitators of communication. This

means that the student teachers were in charge of locating, assessing, and

adapting a sufficient amount of texts in order to provide students with materials to

generate the insights and building blocks they needed to use language effectively.

Another role that the researchers had in the course was as providers of guidance

and instruction to help students make appropriate use of the language they were

exposed to. While the students brought their knowledge of the medical field to the

classroom, the researchers provided them with guidance on the types of language

needed for specific situations. Furthermore, the student teachers were in charge of

planning and providing activities that motivated the learners and aided in the

language learning process, making it more efficient. Finally, one of the

researchers' prime roles was "to encourage learners to practice the language they

have been exposed to" (Willis & Willis, 2007, p. 189). In other words, they acted as

the participants' motivators to further their English through autonomous studies

outside of the classroom.

**Assessment Rationale**

The following sections of this report explain the types of assessment that were used throughout the Medical English course and why they were chosen.

**Formal and Informal Assessment**

Throughout the course, the student teachers used both formal and informal assessment in order to best evaluate and assess the participants, since both types of assessment are useful for different ends. According to Brown (2004), informal assessment can include various forms of assessment including "incidental, unplanned comments and responses, [as well as] coaching and other impromptu feedback to the students" (p. 5). The same author states that this type of assessment is beneficial for students because it occurs more frequently than formal assessments, is more specific to each student's individual English needs and lacks, and allows teachers to assess students without assigning them a grade or "making fixed judgments about [their] competence," which encourages class participation (p. 6). Other examples of informal assessment include "advice about how to better pronounce a word, a suggestion for a strategy for compensating for a reading difficulty, and showing how to modify a student's note-taking to better remember the content of a lecture" (Brown, 2004, p. 6). While formal assessments also assist teachers and students by providing them with information about their progress, they are quite different in nature. According to Brown (2004), formal assessments "are systematic, planned sampling techniques constructed to give teacher and student an appraisal of student achievement" (p. 6). Some examples of formal assessment include tests, student journals, and student portfolios, which

can all be used to formally assess students' levels of goal achievement. In this way, formal assessments can assist teachers by determining which concepts the students have fully grasped, and which require more instruction. Since both forms of assessment are useful in their own ways, the researchers designed the Medical English course to include both types throughout. As formal assessments, the researchers gave three quizzes, one after each unit, and two projects. For informal assessments, there were various opportunities for the researchers to correct pronunciation, word choice, grammar, and procedure, and then give constructive comments to the students throughout each lesson. Due to this distribution, informal assessment was used much more frequently than formal assessment.

**Formative and Summative Assessment**

The terms formative and summative, as related to assessment, are differentiated based on the purpose that an assessment serves. According to Brown (2004), formative assessment is used to evaluate students' progress in developing skills and competencies, and to help them progress further. The same author states that this type of assessment focuses on continuous development, and on providing students with feedback that is meant to help them improve their language skills and abilities, as opposed to summative assessment, which focuses on providing students with a summary of their current level or how they did on a test. Since informal assessments are almost always labeled as formative, it is evident that the Medical English course used formative assessment much more frequently than summative.

**Criterion- or Norm-Referenced Tests**

Between criterion- and norm-referenced tests, the researchers chose to include only criterion-referenced tests, which "give test-takers feedback, usually in the form of grades, on specific course or lesson objectives" (Brown, 2004, p. 7). The scoring system for criterion-referenced tests is more focused on an instrument's ability to assess relevant goals and objectives, as opposed to creating a competitive scale comparing students' scores against each other, as with norm-referenced tests.

**Performance-Based Assessment and Integration of Skills**

The assessments were somewhat performance-based. According to Brown (2004), performance-based assessment "of language typically involves oral production, written production, open-ended responses, integrated performance (across skill areas), group performance, and other interactive tasks" (p. 11). This method of assessment is effective because it assesses students' ability to complete tasks that more closely mirror the real-world tasks that they will have to complete in the future, which helps assess students more directly, more authentically, and with more (content) validity. One of the characteristics of performance-based assessment is the integration of skills throughout assessment, and this was a major characteristic of the course. As stated by O'Malley and Valdez Pierce (1996), "students learn most effectively through integrative experiences in programs that reflect the interdependence of listening, speaking, reading, writing, thinking, direct experience, and purposeful student interaction" (p.

10). It is for these reasons that the student teachers chose to include integration throughout both the assessments and the course as a whole.

**Combination of Traditional and Alternative Assessment**

The assessments that were given throughout the course consisted of a combination of traditional and alternative assessment. Based on Brown's (2004) examples of assessments, the student teachers utilized multiple-choice and fill-in-the-blanks items on the quizzes, which were each restricted to a limited amount of time as in traditional assessment. In regard to alternative assessment, the student teachers used evaluations that followed the principles of continuity (so that students receive feedback regularly), contextualization (in order to give students tasks that allow them to see a link to real life events), and washback. Additionally, the quizzes designed for the course were based on criterion-referenced scores and included open-ended questions in order to elicit original responses from students.

When designing assessments for the course, the student teachers considered the essential principles of assessment, which include practicality, reliability, validity, authenticity, and washback. According to Brown (2004), these principles "go a long way toward providing useful guidelines for both evaluating an existing assessment procedure and designing one on your own" (p. 30). The student teachers hoped that by combining elements of both traditional and alternative assessment and following the principles correctly, they would be able to create and administer dynamic and practical assessments that would challenge and benefit the students.

**Assessment Tasks**

The students were given three partial assessments, one after the completion of each unit. These partial assessments were included in the course to focus the students throughout the lessons, and to encourage them to study and complete their homework, with the thought of passing those assessments used as an incentive. Initially, the researchers also wanted to include a final exam at the end of the course, but due to time constraints and external limitations, they were unable to do so. The final assessment was going to be included as part of the students' evaluation as a means of measuring their improvement after the conclusion of the course as a way to evaluate the overall levels of goal; however, as stated previously, the final assessment was removed from the course due to external limitations. Two projects were assigned during the course to encourage the students to continue to work on their English outside of the classroom, which the researchers hoped would help students retain more of the language taught in class and become more autonomous. Both attendance and class participation also affected the students' final grades since the researchers reasoned that students must attend class and participate in it to retain and practice the language taught. Table 4 (below) displays the distribution of the students' final grades.

As shown in Table 4 (below), each of the three partial assessments was worth 20 percent of the students' final grade, for a total of 60 percent. The projects accounted for a total of 20 percent of the final grade, with each being worth ten percent. Finally, participation and attendance were each worth ten percent, which made up a total of 20 percent of the final grade.

**Table 4**

*Distribution of main formal tasks and evaluation*

| Element | Percentage of Final Grade |
| --- | --- |
| Partial Assessments (3) | 60% (20% each) |
| Projects (2) | 20% (10% each) |
| Participation | 10% |
| Attendance | 10% |
| Total | 100% |

## Assessment Instruments

Throughout the course, the student teachers utilized both formative and alternative assessment. As mentioned previously, formative assessment was used to provide the students with necessary feedback in order to continuously improve their English. Alternative assessment was used to challenge the students, give them continuous feedback, and provide contextualized assessments so that they would be better prepared for the real-world situations that they may face when working in their field. Summative assessment, while also effective in certain situations, did not have as strong of a role in the course since it was only used during the diagnostic test in order to obtain the students' starting levels of proficiency in English. With that being said, below are some of the assessment instruments which were used during the course.

### Student Performance Assessment Instrument

A preliminary student performance assessment instrument (see Appendix M) was created during the initial stages of the course design process to create a base for the final version, which was designed and finalized during the execution

of the Medical English course (see Appendix L). This instrument, a rubric to

measure students' success on a speaking assessment, is further discussed below.

**Authentic Assessment Task Description and Justification**

The researchers designed a preliminary version of an authentic assessment

task (role-play) for the speaking unit (see Appendix M). For this evaluation,

students would have had to demonstrate their understanding of the specific

grammatical structures and vocabulary studied in class by carrying out a

conversation in which they played the role of a doctor. While this preliminary

version was not used as the final quiz in the course, it served as a base for the

final version (see Appendix L, Lesson Plan #12). The final version of this

assessment was administered at the end of the speaking unit (Unit 3) after the

students had learned all of the relevant grammatical structures, vocabulary, and

oral strategies necessary to carry out this type of conversation between a doctor

and patient. During this assessment, the students worked in pairs and performed

two role-plays; however, they were only scored for the one in which they played

the role of the doctor. According to Davies and West (as cited in Hutchinson &

Waters, 1987), language testing has mostly revolved around assessing whether or

not students are capable of performing "the language tasks required of them" for

over 20 years (p. 149). This fact remains true and is clearly portrayed in this

assessment since students were required to perform an oral task similar to the

ones practiced during the lessons, which resembled the tasks they would need to

perform in real life. Throughout the unit, many of the objectives were related to the

ability to accomplish successful role-plays about the specific subjects taught and

practiced in class. Some of the authoritative authors on this subject mention that "assessment of oral language should focus on a student's ability to interpret and convey meaning for authentic purposes in interactive contexts. It should include both fluency and accuracy" (O'Malley & Valdez Pierce, 1996, p. 61). One of the main objectives of the Medical English course was to equip students with the necessary tools to develop their thoughts accurately and fluently in the target language. This objective was developed throughout the course involving different skills; nevertheless, for Unit 3, the main focus was the speaking skill. Therefore, students were evaluated on their ability to orally produce language in order to fulfill the purpose, which in this case, was to identify a patient's symptoms and convey a possible diagnosis.

Regarding the preliminary rubric (see Appendix M), Brown and Yule (as cited in O'Malley & Valdez Pierce, 1996) suggest "rating procedures that describe essential elements of effective communication; these can become the highest levels of performance, with less effective performances listed at power levels on the rating scale" (p. 65). It is for these reasons that the preliminary rubric was designed to evaluate the following basic components of communication: grammar and vocabulary, pronunciation and task completion, which in this case referred to the ability to successfully carry out a conversation by encouraging interaction and being fluent. The preliminary rubric also included a range from one ("minimally," being the lowest) to four ("absolutely," being the highest). This scale was designed to allow the researchers to assess the students' performance in the different aspects in a precise way. It is critical to mention here that the above-mentioned

assessment and accompanying rubric (see Appendix M) were not the finalized versions used in the execution of the Medical English course. They served as a stylistic and theoretical guide when the final versions were later created during the execution of the course. All of the central theoretical values were maintained in the improved versions (see Appendix L, Lesson Plan #12).

**Course Evaluation Instrument and Justification**

In order to collect students' opinions about the course during its execution, the researchers created a course evaluation instrument (see Appendix N). This evaluation instrument was created with the hope that the student teachers would be able to use the data it obtained to improve the course according to the students' needs and desires while there was still time allotted. In regard to course evaluation, many authoritative authors recommend including as many relevant aspects to the success of the course as possible. For example, Hutchinson and Waters (1987) state that, in terms of course evaluation, everything of significance should be evaluated. In this respect, Graves (2000) proposes seven aspects as follows: goals and objectives, course content, needs assessment, course organization, materials and methods, the learning assessment plan, and the course evaluation plan. Due to these recommendations, most of these aspects were included in the course evaluation form.

The course goals and objectives were evaluated using a table grid, in which students used an "X" to indicate their perceptions of the degree of goal and objective achievement, which ranges from minimally to fully. Middle points were avoided throughout the questionnaire in order to force respondents to decide

whether their sentiments were closer to one degree of achievement or the other. The students were also asked to provide written feedback about potential changes or improvements that could be made to the course to improve it. Finally, they were asked to assess their perceived degree of achievement regarding their personal goals and expectations. Section B was designed to collect information about the course contents, particularly the degree of relevance of those contents. Moreover, students were asked to indicate whether or not there were any contents that should be changed or improved. Next, section C addressed course organization, and focused on obtaining the students' perceptions about the sequencing of the units, their progression, and their balance. Then, section D dealt with the role of materials, and the questions were adapted from those of Graves (2000), which were clear, useful, and concise. Finally, section E referred to the evaluation instrument designed for the course. Again, a table grid was designed in order to elicit the students' opinions about the appropriateness of the unit quizzes, homework assignments, and projects.

**Student Teacher Performance Evaluation Description and Justification**

In order to obtain data about the students' perceptions of the student teachers, the researchers created a student teacher performance evaluation instrument, which was completed for each student teacher (see Appendix O). For this instrument, the student teachers decided to use a combination of closed-response and open-response questions. The use of a combination of the two types of questions was strategic, and was done for two main reasons: both types of questions, individually, "have both advantages and disadvantages" (Brown,

2005, p. 37), and, according to Brown (2005), using a combination allows for the receival of both "general information *and* related follow-up details at the same time" (p. 43). Two of the most useful advantages of using closed-response questions are that they are "easier to answer and less likely to be skipped by respondents," and that they are "relatively easy to code, analyze, and interpret because the data can readily be expressed numerically" (Brown, 2005, p. 38). One of the disadvantages is that "closed-response questions generally provide a fairly narrow range of possible answers," which can be resolved through the inclusion of open-response questions as a supplement (Brown, 2005, p. 38). One of the advantages of open-response questions is that they offer students a "wide range of possible answers," and thus have the potential to give more accurate representations of the students' opinions about the questions asked (Brown, 2005, p. 37). However, some of the disadvantages of using them include the following: students may write "irrelevant" responses, the answers may be subjective, the responses can be "relatively difficult to interpret," and the students are "more likely to skip" them (Brown, 2005, p. 37). It is for all of these reasons that the student teachers decided to use a mix of both types of questions. In terms of closed-response questions, the student teachers used alternative-answer and Likert-scale questions. Then, for open-response questions, the student teachers used short-answer questions. The questions were created with the intention of avoiding ambiguity, overlapping choices, double-barreled questions, and questions across two pages, per the recommendations of Brown (2005). Finally, in order to avoid neutral responses to the Likert-scale questions, per Brown's (2005)

recommendations, the researchers used an even number of options (never, rarely, often, or always).

The purpose of this instrument is to obtain information about the students' opinions about the student teachers, their teaching style, and the students' satisfaction with the student teachers and the class as a whole. The following elements were included in the survey: evidence of planning, ability to understand the instructions, use of time, ability to engage students' attention, ability to promote student participation, ability to create a positive learning environment, and evaluation procedures. It is necessary to mention that the students will be given one performance evaluation for each student teacher, so as to account for the possibility that each student teacher may obtain different ratings due to individual strengths and weaknesses as student teachers.

**Lesson Plans and Materials**

A total of 12 lesson plans and the corresponding handouts and materials were used to teach the Medical English course (see Appendix L). These lesson plans and materials were developed using many of the principles presented in the previous sections and were a result of the identification of the participants' needs, wants, and lacks, through the needs analysis process. Moreover, the activities and didactic materials were based on the students' initial level of proficiency in reading, listening, and speaking, as determined by the diagnostic test and potential scoring charts during the needs analysis process (see Appendix J).

**Chapter III: Course Evaluation Report**

This chapter of the project details and explains the action research investigation conducted by the researchers after the conclusion of the needs analysis and syllabus design processes mentioned above. This section includes the research questions used in this study, a review of the relevant literature, methodology, results and disucssion, conclusions, recommendations, and limitations related to this study.

Goal achievement is a fundamental part of English for Specific Purposes (ESP) and Task-Based Language Teaching (TBLT) courses. Course designers must always set measurable goals for students, which must be achieved before the conclusion of those courses. One method of measuring students' levels of goal achievement is analyzing their scores on course assessments, which can represent their language abilities and achievements if the assessment are made in compliance with the principles of validity and reliability. ESP practitioners can use self-assessment questionnaires to obtain students' perceptions about their language achievements, which can support their levels of goal achievement demonstrated by their assessment scores.

The current research report details the evaluation process carried out in the English for Academic Purposes (EAP) course taught to medical students studying at the University of Costa Rica (UCR). This study assessed and analyzed a major part of the course design and execution processes: goal achievement. This aspect of course design is relevant to all teachers, course designers, and practitioners of the ESP and TBLT branches of Teaching English as a Foreign Language (TEFL)

since it relates to students' ability to achieve course goals and thus, successfully learn and employ the tasks taught in a course.

The purpose of this study was to determine and/or measure the extent to which the students were able to achieve the course goals set forth by the researchers, which were developed based on their background in English as well as their needs, wants, and lacks as determined during the needs analysis process. This evaluation report includes the goals and instruments used to measure the students' achievement of them. This research study endeavored to answer the following research question and sub-questions:

**Research Question:**

To what extent did the students achieve the goals of the ESP course for medical students?

*Sub Questions:*

**A**. What was the level of achievement of the goal(s) in each unit as reflected by the students' performance on the formal assessment tasks (end-of-unit quizzes)?

**B**. What was the students' self-perception on their achievement of the goals of each unit?

**C**. Was the assessment of the final end-of-the unit speaking task carried out by an external evaluator similar to that of the researchers?[1]

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[1] Per the recommendations of Coombe, Folse, and Hubley (2007) and O'Malley and Valdez Pierce (1996) related to inter-rater reliability, the external evaluator's assessment of the students' oral production helped answer the research question by serving as a way to determine if the researchers' evaluations of the students' oral production were reliable as a method of determining skill success and goal achievement.

**Review of the Literature**

This section contains essential information needed to understand the importance of achieving objectives in the Medical English course. It discusses general information regarding ESP, the achievement of objectives, and evaluation in ESP courses.

**English for Specific Purposes (ESP)**

ESP is a vast subset of TEFL and has many definitions and characteristics. According to Dudley-Evans (1998), ESP has three absolute characteristics and two variable ones. The absolute characteristics include being "designed to meet specific needs of the learner," being designed according to the "underlying methodology and activities of the disciplines that it serves," and being focused on the language necessary to complete such activities "in terms of grammar, lexis, register, study skills, discourse and genre" (Dudley-Evans, 1998, p. 6). The variable characteristics are that an ESP course may be specifically designed for a particular field and that it "may use . . . a different methodology from that of General English" (Dudley-Evans, 1998, p. 6). Therefore, the most important elements of an ESP course are related to the specific needs of the learners, especially as related to their field. Additionally, ESP is characterized by specific steps or stages, which must be conducted for the course to be successful and labeled as ESP. According to Dudley-Evans and St. John (1998), those stages are "needs analysis, course (and syllabus) design, materials selection (and production), teaching and learning, and evaluation" (p. 121). Due to the nature of these stages, student participation is necessary to successfully design an ESP

course. The role of the teacher in ESP courses is also crucial. Dudley-Evans (1998) states that, based on the definition of ESP, practitioners have five main roles: they teach students, design courses and their accompanying materials, conduct research, evaluate students' production and progress, and collaborate with students and other practitioners. Per Dudley-Evans' (1998) description of ESP, assessment, specifically of students' achievement, should play a key role in ESP courses.

According to Robinson (1991) and Bojovic (2006), ESP is defined by two main criteria, which are as follows: (1) it must be guided by course goals and (2) it must be developed for a specific population through a needs analysis process. According to Bojovic (2006), another factor that usually affects ESP courses is that they must usually be carried out within a specific and restricted time frame, during which time course goals must be accomplished. Thus, one of the fundamental aspects of an ESP course is that it must support learners in the achievement of goals within the given time constraints. The same author also states that there are two main types of evaluation that ESP teachers must conduct before, during, or after giving an ESP course. These types of evaluation include the "testing of students [and] evaluation of courses and teaching materials" (Bojovic, 2006, p. 491). In regard to testing, Bojovic (2006) further asserts that practitioners should use tests to assess levels of goal achievement and to determine "whether students have the necessary language and skills to undertake a particular academic course or career" (p. 491). Just as Dudley-Evans (1998), Bojovic (2006) contends that a

major component of ESP courses is the aspect of students' achievement, which can be determined at least partially through testing.

**Two types of ESP.** Generally, there are two main types of ESP. According to Bojovic (2006), the two main types of ESP are English for Academic Purposes (EAP) and English for Occupational Purposes (EOP), which are distinguished by "when they take place" (Bojovic, 2006, p. 488). Specifically, this paper focuses on EAP, which is centered around students' immediate academic needs, but can also include some of the future occupational needs. EAP can further be divided by field of study and includes, but is not limited to, "English for (Academic) Medical Purposes (EMP)" (Bojovic, 2006, p. 488). Per Bojovic (2006), an EMP course should mainly focus on medical students' immediate academic needs, but may also focus on their future needs or a combination of the two.

## Task-Based Language Teaching

Task-based language teaching, henceforth known as TBLT, is an instructional approach to Teaching English as a Foreign Language (TEFL) that frames a lesson around a main task. One of the most important aspects of this approach is that it gives great importance to the task, which becomes the core of the methodology used to structure the lessons that form a course. Brown (2001) lists important aspects about TBLT; for example, as part of this approach, the "learning process" is viewed "as a set of communicative tasks that are directly linked to the curricular goals they serve," which indicates that the main focus of courses taught using TBLT is that students can complete communicative tasks rather than simply being able to recite decontextualized bits of grammar or

vocabulary. Moreover, when using this approach to structure a course, it is necessary to focus on real-world contexts, with communication as the main goal, contextualization at every stage possible, the use of specific objectives to determine if tasks have been successfully completed, and authenticity. Therefore, a task can be defined as an activity in which meaning, communication, authenticity, and task completion are the most important elements. Another important factor of TBLT is that assessment must be based "in terms of outcome" and the students' ability to complete the task well. This element of TBLT signifies that students are expected to produce a meaningful and authentic response to the tasks or activities they are presented with. Due to this feature of TBLT, teachers and course designers must strategically create or adapt test materials and rubrics so that they reflect the students' ability to complete the primary task(s).

**Evaluation**

Evaluation is essential in any ESP course design process. According to Dudley-Evans and St. John (1998), "there are many definitions of evaluation," but they can all be summarized by the following statement: "fundamentally evaluation is asking questions and acting on the responses" (p. 128). Therefore, evaluation is a tool that teachers can use to gauge students' levels of achievement, identify areas of difficulty, and then help them improve. Since evaluation is crucial to students' improvement, course designers must develop valid and reliable instruments to do so effectively. Further, per Mohan (2016), evaluation should focus on measuring students' current abilities and progress so that teachers can help them achieve goals and continue progressing.

Based on the available research, evaluation has many potential purposes. According to Downey (as cited in Mohan, 2016), some of the primary purposes are as follows: providing teachers with information for grading (which gives a more concrete representation of students' progress), evaluating the effectiveness of a single teaching technique (which allows educators to modify their teaching strategies to reach and satisfy students' expectations and needs), motivating students (this may be beneficial for students who see their grades as a sign of improvement, but instructors should not over-emphasize the importance of grades so that they do not discourage students who receive low grades), and collecting information for effective educational and vocational counselling (which becomes part of a reflective cycle for both teachers and students). For evaluation to gather accurate and useful information for the purposes mentioned above, it must be developed using the correct criteria. Dudley-Evans and St. John (1998) state that since evaluation "involves making judgments," it is necessary to "have criteria for comparative purposes" (p. 128). One of the main challenges of creating effective evaluation instruments, then, is knowing which criteria to evaluate. Dudley-Evans and St. John (1998) propose that the criteria be determined by the aspects being evaluated and the reason for which they are being evaluated, and be related to the course goals. This use of specific criteria makes the evaluation process more systematic since it is not simply based on "a set of random questions" (Dudley-Evans & St. John, 1998, pp. 128-9); instead, it measures students' abilities in the aspect(s) evaluated and helps teachers determine students' level of goal achievement. Further, evaluation in ESP is used for two specific purposes:

determining the level of achievement of goals and/or objectives, as mentioned above, and determining the "effectiveness and efficiency of learning" or teaching (Dudley-Evans & St. John, 1998, p. 129). For the former purpose to be accomplished, Dudley-Evans and St. John (1998) assert that course designers must set goals and objectives that are valid, so that they do not invalidate the results. This means that the outcome from students' evaluations becomes more authentic as the objectives are created taking into account the students, the performance and context in which both will be; that is, that they are valid.

Any of the materials assigned throughout the duration of a course can be evaluated. These materials can include "the classroom activities, the out-of-class support, the course design, methodologies, the role of assessment, that is any aspect of the teaching-learning situation" (Dudley-Evans & St. John, 1998, p. 129). While teachers have long used classroom activities (such as tests and in-class assignments) and out-of-class support (such as homework and projects), they can also make use of any other materials assigned to students throughout a course for the purpose of evaluation. For example, teachers can include peer evaluations in a course as a source of evaluation that comes from students. All methods of evaluation should be used to support students and teachers in the learning process. According to Dudley-Evans and St. John (1998), the main sources through which evaluation can be conducted are students, teachers, peers or colleagues, and the documents that they must use in their field. There are also two main types of evaluation (formative and summative), which are discussed below.

**Formative evaluation.** Formative evaluation is the most continuously useful of the two types of evaluation. It occurs throughout the span of a course and the results it produces "help to shape the course during its life-time" (Dudley-Evans & St. John, 1998, p. 128), for which reason it is done several times throughout a course. It is also usually carried out "at intervals and will consist of a series of 'mini-evaluations'" (Dudley-Evans & St. John, 1998, p. 128), which allows teachers to obtain the necessary data and information to change, fix, and/or improve elements of a course. Further, according to Brown (2001), formative evaluation is a method of conducting informal assessment, which aims to assess "students in the process of 'forming' their competencies and skills in order to help them continue that growth process" (p. 402). Therefore, this type of evaluation has the potential to provide instructors with the ability to alter a course if the students do not appear to be responding well to certain teaching styles, materials, pacing, or other aspects that may affect their success. The same author states that formative evaluation also provides both learners and instructors with helpful information about learners' progress toward the course goals and objectives, and their current English abilities at any given moment throughout the course, which provides learners and teachers with the specific areas that still need improvement. For this reason, formative evaluation should have a place in all ESP courses to best mold them to the students' needs and wants.

**Summative evaluation.** Conversely, according to Dudley-Evans and St. John (1998), summative evaluation generally only takes place at the end of a course or activity, as opposed to during and throughout as with formative

evaluation. Dudley-Evans and St. John (1998) state that summative evaluation "does not influence that version of the activity," but rather, assesses effects and yields "information that can be fed into repeat versions or related activities" (p. 128). While Dudley-Evans and St. John (1998) suggest that summative evaluation can be used to create different versions of an assessment or activity for the future, Brown (2001) states that it can also be used to collect data for research about learners' levels of goal achievement. Specifically, summative assessments, according to Brown (2001), "occur at the end of a lesson, unit, or course and therefore attempt to measure, or summarize, what a student has grasped" (pp. 402-403). Per Brown (2001), to properly measure students' success, teachers must use instruments that allow them to observe and evaluate the students' performance objectively, without also evaluating any part of the process by which students arrive at an end-point. This type of evaluation is crucial for students' development of a language as it provides them with a tangible result of the activities accomplished, either in the form of a grade or feedback. It is also useful for teachers as it provides them with specific information about how well students have accomplished the goals and objectives, based on their scores on a test. Then, teachers can use that information to restructure a course according to what students have and have not accomplished, if necessary. Without summative evaluation, teachers would not have a clear idea of students' progress; therefore, it is necessary for ESP courses.

**Self-Assessment**

Self-assessment plays a key role in the acquisition of language. Brown

(2001) asserts that self-assessment may be fundamental when it comes to "the

acquisition of any skill," and asks the following question: "What successful learner

has not developed the ability to monitor his or her own performance and to use the

data gathered for adjustments and corrections?" (p. 415). The author seems to

have concluded that learners who cannot be independent and autonomous will not

be able to attain a high level of success in their studies. Rather, Brown (2001)

declares that, to be successful, learners must continue to learn outside of the

classroom, "autonomously" (p. 415). This implies great effort from teachers and

instructors, as many students are not used to being responsible for their own

learning, especially outside of the classroom. Nevertheless, it is possible to raise

some student awareness by telling them about the advantages of self-

assessment. Brown (2001) lists some of the potential advantages of self-

assessment based on previous research, which include, among others, the "direct

involvement of students, the encouragement of autonomy, and increased

motivation because of self-involvement in the process of learning" (p. 415). While

there is a potential risk of students' subjectivity affecting their self-assessments,

their self-assessments can be used (1) as a source of encouragement for them to

become more autonomous and (2) as another instrument to gather information

about students' levels of goal achievement. Brown (2001) recommends some self-

assessment activities that may be useful in a course, which include, but are not

limited to the following: "self-checklists" and "listening to tape-recorded oral

production to detect pronunciation or grammar errors" to help improve oral production, "listening to an academic lecture and checking yourself on a 'quiz' of the content" and "setting goals for increasing opportunities for listening" to improve listening skills, and "reading textbook passages followed by self-check comprehension questions" and "self-assessment of reading habits" to improve reading skills (pp. 415-416). All of these activities can be effective ways to incorporate self-assessment into classrooms, which encourage students to work autonomously according to Boud (2013). This is very important as students should be responsible for their own learning process, using the teacher as a guide and support.

Further, Hismanoglu and Hismanoglu (2010) state that self-assessment serves three main purposes in ESL, one of which is determining whether or not learners "are meeting specifically established learning goals" (p. 675), which indicates that self-assessments can add to measurements of students progress toward course goals. The same authors conducted a study in 2010 to determine whether the use of a self-assessment instrument, which utilized can-do statements similar those used in the Common European Framework (Council of Europe, 2001), in an ESP course would support the presence of achievement. Their findings indicate that students who can effectively self-assess should eventually be able to "observe their [own] development," directly participate in their learning, and have a better understanding of their language abilities "in [the] specific situations and contexts" taught in a course (Hismanoglu and Hismanoglu, 2010, p. 681). Moreover, according to Lavrysh (2016), self-assessment "encourages students to

analyse mistakes, to set new goals, to improve learning methods, and to define [one's] own strengths and areas which need improvement" (p. 62). In a study related to self-assessment in ESP courses, the same researcher found that the students with lower and middle levels of proficiency generally "evaluated themselves higher" than the teacher, while the more advanced students rated themselves lower. These findings suggest that students' self-assessments may not always align with a professional's. Specifically, the students in Lavrysh's (2016) study indicated that they were unable to be objective with their own production since they sometimes "overestimated" their abilities compared to the scores given by their teacher (p. 67). However, the students also reported increased motivation and interest in self-improvement due to the use of self-assessments. Based on the relevant research in this area, while some students may be able to assess themselves accurately, others may be unable to do so. For this reason, it is best to use self-assessments as one element of many to contribute to triangulation, rather than using it as a sole instrument in research studies. In this way, students' self-assessments can contribute to the final data without invalidating the results.

**Student Perceptions of Achievement**

Students' perceptions, also known as opinions and/or self-ratings, can be used as a complementary measure of their language skills and achievement. While formal assessments are generally accepted as a more accurate and valid way to measure students' language skills since they directly measure students' competence to perform specific tasks in the target language, self-ratings designed

to elicit students' perceptions of their achievement can serve as an indirect way to measure their abilities. Per Brown (2005b), self-ratings "consist of scales that students . . . use to rate their knowledge or abilities" (p. 60). The same author states that ability questions on self-assessment instruments can be used to obtain data about students' perceptions, or opinions, about their language skills. To measure students' perceptions about their achievement, teachers can use self-assessment questionnaires. Within such questionnaires, Brown (2005b) recommends the use of Likert-scale questions, which are "effective for gathering respondents' views, opinions, and attitudes" (p. 40). Wilson (1999) further recommends the use of can-do statements in such self-assessments since they are easy for students' to understand and thus provide reliable responses. While Brown (2005b) warns that students' ratings may not be "100 percent accurate" (p. 34), there are some studies that show a clear correlation of accuracy between students' perceptions of their abilities and professionals' evaluations of their abilities. For example, in a study conducted by Wilson (1999) with the purpose of examining the validity of self-assessments, the researcher found that the participants' self-ratings of their speaking abilities were very close to professionals' opinions of their oral production. This study serves as evidence that some students' perceptions of their language abilities are accurate and valid. Nonetheless, Brown (2005b) states that both proficiency/achievement tests and self-assessment questionnaires can be used as valid measures of students' language abilities and achievements; thus, a combination of the two would aid in triangulation, accuracy, and reliability of data.

As was the case in a study conducted by Yang (2012) that examined learners' perceptions in an ESP context, it is evident that there is limited research in this area. In his study, Yang (2012) found that students' perceptions aligned with the "claimed benefits of GBAs [genre-based approaches]" (p. 68). The results of his study show that students' perceptions about their learning in ESP courses often align with other sources of data in a study, and that sometimes it can be more practical to test perceptions than knowledge due to issues of practicality and time constraints. In those cases, students' perceptions can be used to obtain information about their perceived knowledge when researchers are unable to test their knowledge directly. In another study conducted by González Ardeo (2003), which examined learners' perceptions and attitudes about English and ESP, and their relationship to students' ability to perform on formal tests, the researcher found that there was a correlation between students' perceptions and their performance. Further, Al-Busairi (1990) conducted a study about the potential predictive correlation between learners' attitudes and their achievement in an ESP setting, and found that a high level of self-esteem "correlate[d] significantly with achievement," which suggests that if students percieve a high level of success in their abilities, this may predict and/or align with their levels of achievement. The aforementioned studies suggest the benefits of including students' perceptions in research studies, and suggest their correlation with achievement.

**ESP Goals and Objectives**

It is necessary to define goals and objectives for this study. According to Brown (1995), the data and information gathered during the needs analysis

process should be accumulated to create the course goals and objectives, meaning that the goals and objectives should be directly influenced by the needs analysis process. While course goals may be more general, the objectives must be more specific. The same author describes goals as general and measurable assertions about the aspirations of a course based on the students' needs and lacks, as determined through a needs analysis process. Brown (1995) further identifies four main recommendations for creating the goals of a language course, which are as follows: the goals must be a general reflection of the purpose(s) of that course, they must focus on the aspects that the instructors and students intend to achieve by the end of the course, inspire the objectives, and be able to be changed throughout the course to fit the students' needs. Course goals must be created to reflect the tasks that students must be able to complete by the end of a course. Further, per the recommendations of Mihal and Purmensky (2016), course designers must develop course goals that best suit students' age ranges and proficiency levels, and the context and setting of the school they attend. Thus, goals must be specifically tailored to students' needs, wants, lacks, and setting. According to Brown (1995), once course goals have been set, they should shape the course curriculum and general and specific objectives.

Course objectives are described by Brown (1995) as being specific declarations about the exact knowledge, language, skills, and tasks that students must be able to demonstrate command of and/or perform by the end of a course. With objectives, specific is a key descriptor since that is one of the most distinctive differences between goals and objectives. According to the same author,

researchers or instructors can directly assess students' ability to complete either the objectives or goals of a course in order to determine whether or not the goals have been achieved, and thus whether or not the course has been successful. Further, in order for objectives to be as useful and valid as possible, they must contain three main "components," which are the "performance," which describes what students should be able to accomplish by the end of lessons and classes, the "conditions," or parameters by which the students are expected to be able to accomplish the performance, and the "criterion," or the level at which students must perform a task for teachers the consider it as goal achievement (Brown, 1995, p. 74). These guidelines can serve as a guide in the process of creating course goals and outlines since they put students' needs at the forefront.

**The Achievement of Objectives**

The available research supports the idea that stating the objectives for a course can help students' achieve them. For example, Baecher et al. (2014) found that stating objectives before classes "led to higher levels of achievement for ELLs" (p. 123). Additionally, the results of Hattie's (2017) meta-analyses indicate that informing students about the objectives of each lesson can have a high impact on their achievements. While it is necessary to understand how to aid students in achieving course goals, one must also consider how to measure such goal achievement. As Brown (1995) observes, teachers can directly assess the course objectives at the conclusion of a course to obtain proof of objective achievement, which in turn provides evidence of goal achievement. Thus, if teachers use course evaluations to assess the achievement of course objectives, by extension, they

also assess the achievement of course goals. Then, the analysis of students'

scores and the skills reflected in assessment instruments can be used to provide

insight about students' levels of goal achievement. Brown (2004) recommends that

a score of 80 percent on assessment instruments be used as a minimum threshold

to determine if students have attained high scores. Therefore, if a teacher's main

focus is to determine students' levels of goal achievement, then he/she should

create assessment instruments that reflect the skills necessary to perform the

course goals and then analyze students' achievement of them or lack thereof. This

analysis can then be used to suggest overall levels of goal achievement.

**Inter-rater Reliability**

Whenever two or more raters are tasked with rating the same participants'

production, inter-rater reliability can come into question. According to Brown

(2004), inter-rater reliability is present when multiple raters assign similar scores to

the same evaluation. One of the most significant goals when creating rubrics and

testing scales is reliability, but this is not always achieved in practice. The following

are some of the potential reasons for discrepancies between scores given by

different raters: "human error, subjectivity, and bias" (Brown, 2004, p. 21). The

same author indicates that individual raters can also assign students different

grades due to different amounts of experience in teaching and rating students'

language production, bias toward certain students, and an oversight of the scoring

criteria listed on a rubric. Another potential cause of a lack of inter-rater reliability is

the use of an unreliable rubric, which is unintentionally ambiguous and thus,

causes raters to apply different "standards" (Brown, 2004, p. 21). Additionally,

intra-rater reliability can be a cause for discrepancies in scores. Per Brown (2004), issues with intra-rater reliability are common for the same reasons as issues with inter-rater reliability, which include, but are not limited to, the use of ambiguous rubrics and rater bias toward students. Brown (2004) recommends that, to combat this lack of intra-rater reliability, teachers should design and use specific analytic rubrics to score oral production. Moreover, according to Brown and Abeywickrama (2010), while it can seem easy for teachers to use the criteria and descriptions within a scoring rubric to assign scores to students' production, it can be difficult to differentiate between one level and another since rubrics do not always include precise criteria to explain the exact differences between any two levels. Since the different levels on a scoring rubric can sometimes seem similar or be difficult to distinguish, raters should have "some training" and/or previous "experience" to be able to detect the nuances in ratings and be able to "make accurate assessments of oral production" (Brown & Abeywickrama, 2010, p. 211). Overall, as noted by Lee (2005), it can be difficult to determine how much of inter-rater variability is caused by "differences in severity among raters" and how much is caused by subjectivity and bias within raters (p. 30). Nonetheless, teachers must strive to achieve both inter- and intra-rater reliability since their absence can negatively affect students' grades and learning process.

This section reviewed the importance of ESP, TBLT, evaluation, self-assessment, the achievement of goals and objectives, and inter-rater reliability. To design an ESP course that follows a TBLT approach, instructors must develop relevant and achievable course goals and objectives to guide lessons and

evaluations and assess students' progress. These goals and objectives must be measurable in terms of an outcome and must relate to real-world situations that learners may encounter in their field. In such courses, evaluations, such as tests or quizzes, can be used to measure student goal achievement levels. When scoring speaking quizzes, practitioners must carefully account for inter-rater reliability to collect accurate and reliable data about students' levels of goal achievement. All of these elements contributed to the creation of research instruments and procedures for the present study, as detailed in the Methodology section below.

**Methodology**

This section details the relevant aspects related to the methodology, including the research approach, participants, context, data collection instruments, and the procedures followed to obtain the results of this study.

**Research Approach**

Throughout the course of this research project, the researchers used both quantitative and qualitative data. The use of a mixed-methods approach was chosen to increase accuracy and reliability, and aid in triangulation. While quantitative research largely focuses on numerical data, "which is then analysed primarily by statistical methods," and qualitative research focuses on "open-ended, non-numerical data which is then analysed primarily by non-statistical methods," a mixed-methods approach includes a combination of quantitative and qualitative approaches, be it "at the data collection or at the analysis levels" (Dörnyei, 2007, p. 24). Similarly, according to Campbell and Fiske (as cited in Jick, 1979), "more

than one method should be used in the validation process to ensure that the variance [reflects] that of the trait and not of the method" (p. 602). While these two methods of research have their own sets of strengths and advantages, they both have different drawbacks. By using a mixed-methods approach, the chance of collecting misguided or mistaken information is lowered, as both methods complement each other. Further, as stated by Johnson and Christensen (2008), "by combining two (or more) research methods with different strengths and weaknesses in a research study, you can make it less likely that you will miss something important or make a mistake" (p. 51). Thus, information that might have been missed by solely using quantitative data collection instruments may be gathered through qualitative ones, and vice versa. For this reason, a mixed-methods approach produces more reliable data, and thus more reliable conclusions, than exclusively quantitative or qualitative approaches. During the Medical English course, several instruments were used to gather quantitative and qualitative data as explained below. The following instruments were used to obtain data about the students' achievement of the goals for each unit or lack thereof.

**Quantitative data.** The researchers collected numerical data representing the students' achievement of the course goals through their quiz scores (one quiz per unit; see Appendices P, Q, and R). The third (speaking) quiz was evaluated by both the researchers and an expert in the field of ESP. The only quiz evaluated by an external evaluator was that of Unit 3 since it focused on language production while the others focused on receptive skills, with Unit 1 focusing on reading and Unit 2 on listening. The Unit 3 (speaking) quiz was graded using a rubric (see

Appendix S). Due to the nature of the speaking evaluation, grade assignment was subjective; in contrast, the other two quizzes evaluated students based on their ability to complete multiple-choice and fill-in-the-blank items correctly, which made grade assignment objective. For this reason, the researchers required the assistance of an expert's opinion about the students' grades on the Unit 3 quiz.

**Qualitative data.** As a source of qualitative data, the researchers used an instrument to collect the students' opinions about their ability to perform certain actions written in the form of can-do statements (see Appendices T, U, and V). The can-do statements given to the students for each unit were written based on that unit's goal and objectives.

## Context

This research study was conducted with students from the School of Medicine at the University of Costa Rica. They were all in the undergraduate program (*Bachillerato and Licenciatura*) in Medicine and Surgery. All of the participants attended the main campus, located in San Pedro, San José, during the second semester of the academic year of 2019.

## Participants

The participants chosen for this research study were selected by obtaining a list of interested students from the medical department. While the researchers originally obtained a list of 37 interested students, only 18 remained by the beginning of the Medical English course at the start of the second semester of 2019. However, the participants further decreased over time due to participants' personal situations. Out of those initial 18 students, only eight completed the

course. Some of the students were already working on completing their rotations in hospitals. The general age range of the participants at the moment of initial contact was between 18 and 33 years old. As for their previous knowledge of and background in English, according to the Student Needs Analysis Questionnaire (SNAQ) administered before the start of the Medical English course, almost all of the participants (seven out of the total eight that completed the course) reported that they had previously studied English, with only one student reporting that he/she had not done so. Of those who reported having previously studied English, a majority of the students, five out of eight, reported that they had studied it in high school for three or more years, with two students reporting that they had done so to some capacity, but only for around one year. Half of the students, four out of eight, reported that they had also studied English at the university level for less than six months, meaning around one semester. Four of the participants reported that they had studied at a language institute for a period of less than six months, and two participants indicated that they had studied English with a private tutor, one for less than six months and the other for more than three years. With these results in mind, it is clear that the majority of the participants began the Medical English course with some previous experience in taking English courses, but also had varying base levels of English at the start of this course.

**Instruments and Techniques**

The first set of instruments was comprised of three end-of-unit quizzes. The end-of-unit quizzes were one of the key instruments in this study since they collected data about the students' level of goal achievement after the completion

of each of the three units in the course. These quizzes, along with all of the assessments carried out during the Medical English course, were developed and administered following the principles of validity, reliability, practicality, and authenticity, as recommended by various authoritative authors in the field of TEFL (Brown, 2004; Brown & Abeywickrama, 2010; Gronlund, 1998; Brown, 2005b; Coombe, Folse, & Hubley, 2007), to ensure that they represented effective measures of the students' performance.

Here, it is relevant to include a brief description of the principles mentioned above (validity, reliability, practicality, and authenticity) and how they were included in the end-of-unit quizzes. Validity is defined as "the extent to which inferences made from assessment results are appropriate, meaningful, and useful in terms of the purpose of the assessment" (Gronlund, 1998, p. 226). While validity can be hard to measure, there are many types of "evidence" that can be used to demonstrate its presence in course materials, including the following: "the extent to which a test calls for performance that matches that of the course or unit of study being tested" or "how well [it] determines whether or not students have reached an established set of goals or level of competence" (Brown, 2004, p. 22). This aspect of validity was present in the quizzes since they were designed to test the students' ability to achieve the unit goals. Additionally, each unit focused on a specific macro skill and the corresponding quizzes focused on the same skills. Specifically, Unit 1 focused on reading, and the Unit 1 quiz (see Appendix P) assessed the students' ability to demonstrate comprehension of written texts. Then, Unit 2 focused on listening, and the corresponding quiz assessed the

students' ability to demonstrate comprehension of oral texts. Finally, Unit 3 focused on speaking, and the corresponding quiz assessed the students' ability to demonstrate their ability to speak about contexts related to their field, such as breaking bad news.

Further, per Brown (2004), a test can be considered valid if it provides evidence of content-related validity, criterion-related validity, and construct validity. Content-related validity states that a test must "[sample] the subject matter about which conclusions are to be drawn [and require] the test-taker to perform the behavior that is being measured" (Brown, 2004, p. 22), which, as mentioned above, was accomplished by separating the three units by macro skill, and then focusing the corresponding quizzes on each of those macro skills. Next, criterion-related validity is "the extent to which the 'criterion' of the test has actually been reached" (Brown, 2004, p. 22). Essentially, this signifies that a test must measure the specific course goals and corresponding objectives. One way of measuring if goals and objectives have been achieved is through the students' test scores, which should be compared to "implied predetermined levels of performance" (Brown, 2004, p. 22), which the students should be able to reach. In this case, a score of 80 percent or higher was used to indicate a passing score, and thus a high level of success in the skills needed to complete the quizzes. The successful and unsuccessful skills that the students used to complete the quizzes were then used as a measure of their goal achievement. The quizzes showed criterion-related validity since they measured the students' ability to demonstrate achievement of the course goals and objectives. For example, the Unit 1 goal was

as follows: "The students will be able to successfully demonstrate comprehension of medical texts (an extract from a research article and a section of a textbook) by identifying key vocabulary and medical prefixes and suffixes, summarizing, relaying and discussing information, and/or recognizing areas affected by specific conditions."

The Unit 1 quiz evaluated the students' ability to demonstrate comprehension of an extract of an academic medical article about diabetes during pregnancy, the medical prefixes and suffixes studied in class (an-, -emia, hyper-, hypo-, -itis, lympho-, -oma, over-, -rrhage or -rrhagia, and vasculo-), some of the key vocabulary studied in class (accurate, bind, diagnosis, malaise, hyperparathyroidism, hypoxemia, itch, onset, spread, and weakened), and the summaries of several short extracts from different academic medical articles by completing (1) multiple-choice questions related to reading comprehension, (2) multiple-choice questions related to selecting the meaning of new words based on their affixes, (3) fill-in-the-blank questions related to the comprehension of vocabulary words and the context in which they are used, (4) multiple-choice questions related to choosing the main idea of medical passages, respectively. Therefore, this quiz evaluated the students' ability to demonstrate comprehension of medical texts, identify key vocabulary and medical prefixes and suffixes, and summarize medical passages (by selecting their main ideas). The ability to recognize areas affected by specific conditions was related to the affixes taught in class (for example, vasulo- signified a relation to the heart or blood vessels), and was thus accomplished through the items on the quiz related to the affixes. The

relaying and discussion of the information found in medical texts was not included on this quiz due to issues of practicality. The students needed the entire time allotted for this assessment to read the texts and answer the questions, and there would not have been enough time to assess each student's speaking abilities.

Next, the Unit 2 goal was as follows: "Students will be able to successfully demonstrate comprehension of key medical vocabulary from an academic medical video by outlining the videos and/or reporting the information in them to their classmates." The Unit 2 quiz (see Appendix Q) evaluated the students' ability to show comprehension of three academic medical videos by demonstrating comprehension of the key vocabulary within them (a buildup of blood, be fed up, beam, blood vessel, brachytherapy, candidate, check someone in, cortical dysplasia, deliver, discuss, end up, enlarged, exenteration, freeze, follow up, freeze up, hand out, hysterectomy, in the blink of an eye, inflict, lightly, look someone over, lower end of the uterus, make up for, out of breath, out of nowhere, oxygen-rich blood, pattern, pinpoint, pump/pumping, quit, seizures, spread, stare, staring spells, stiff, stitches, tap/tapping, thickened, up-front, upper part of the vagina, wave, weakened, and white matter) by completing (1) multiple-choice items related to listening comprehension, (2) fill-in-the-blank items within a graphic organizer related to outlining the information in a video, and (3) short answer questions related to listening comprehension. Thus, the quiz measured the students' ability to achieve the goal for that unit. Again, due to practicality, the researchers did not include a speaking portion on this quiz to measure the students' achievement in terms of reporting the relevant information to their peers.

Finally, the Unit 3 goal was as follows: "By the end of this unit, students will be able to effectively communicate orally with a patient about his/her medical record, diagnosis, medication, and/or discharge summary by identifying correct vocabulary, grammatical structures, and bedside manners used in videos or scripts and reproducing them during role-plays." The Unit 3 quiz (see Appendix R) evaluated the students' ability to communicate orally with their peers to effectively complete one of three scenarios (complete a medical record, give bad news, or prescribe medication) by using the relevant vocabulary (abnormal reaction, AIDS, aspirin, currently, fainting, heart disease, high blood pressure, HIV, immunological disorders, kidney disease, medical record, medical treatment, nosebleed, penicillin, pregnant, prolonged bleeding, smoke/smoking, sore throat, suffer from, taking medicine, and vomit/vomiting) necessary grammatical structures (the formation of polite questions using modal auxiliaries- "Can you tell me ___?, Could you tell me ___?, Would you like to tell me ___?"), and bedside manners (the protocols to follow when giving patients bad news and/or diagnosing them) used in the videos shown during Unit 3 by conducting a role-play between a doctor and patient. Due to time constraints, students only performed one role-play each (one of the three scenarios) rather than all three since it would have taken too long for all eight students to perform all of the scenarios. For clarification, all three scenarios were similar in terms of linguistic demand and functions. They all required students to ask simple yes/no and information questions with the correct structure, and involved vocabulary related to symptoms. The vocabulary needed to complete Scenario 1 was slightly easier than that of the other two scenarios since

some of the words were more familiar to the students due to prior knowledge. Also, since all three of the quizzes measured the criteria set forth in the specific course goals and objectives, they demonstrated criterion-related validity.

A further source of evidence that can help show the presence of overall validity in assessment instruments is construct validity. A construct can be "any theory, hypothesis, or model that attempts to explain observed phenomena in our universe of perceptions" (Brown, 2004, p. 25), which means that the constructs within an exam should be the key theoretical elements for the students' success. The same author notes an example of an oral production rubric that included elements such as "pronunciation, fluency, grammatical accuracy, vocabulary use, and sociolinguistic appropriateness," which indicates that the creator(s) of such a rubric regarded those as "major components of oral proficiency" (p. 25). In the Unit 1 quiz, the major components of reading that the researchers wanted the students to demonstrate were comprehension, vocabulary knowledge, and summarizing (by identifying main ideas). In the Unit 2 quiz, the major components of listening that the researchers wanted the students to demonstrate were comprehension and vocabulary knowledge and identification. In the Unit 3 quiz, the researchers wanted the students to demonstrate the ability to communicate orally with fluency, grammatical accuracy, and vocabulary use, which also somewhat accounted for comprehensible pronunciation (see Appendix S). The researchers chose those constructs based on the data acquired during the needs analysis process, which indicated that the students have a greater need to comprehend written and verbal texts than to speak. Further, the quizzes incorporated construct validity since they

focused on the corresponding goals and objectives and had authentic items similar to the ones that the participants wanted to be able to complete by the end of the course.

Face validity was also taken into account when designing the instruments. The researchers designed them so that the students would view them as "fair, relevant, and useful for improving learning" (Brown, 2004, p. 26). Because of this, the researchers avoided overloading the students with long assessments that had to be completed within a short time. Rather, the assessments were designed to be as similar as possible to the in-class activities carried out during the lessons. Practicality and authenticity were also carefully woven into the instruments for this course. Practicality dictates that an effective assessment "stays within appropriate time constraints, is relatively easy to administer, and has a scoring/evaluation procedure that is specific and time-efficient" (Brown, 2004, p. 19). Thus, the assessments needed to be practical in terms of time, ease of administration, and the scoring process. Practicality contributed to the use of multiple-choice and fill-in-the-blank questions in the first two quizzes.

Another element taken into account during the design of the instruments was authenticity. Succinctly, authenticity indicates that a "task is likely to be enacted in the 'real world'" (Brown, 2004, p. 28). All of the course materials were designed to improve the students' English for the real situations in which they would use reading, listening, and speaking in their field. As determined during the needs analysis process, the students needed to use English immediately in their medical courses for the purposes listed in the goals and objectives woven into the

course. They also had a future need for the same skills. For this reason, the materials were purposely made authentic by using the actual textbooks, videos, and doctor-patient situations that the students may come across in the future.

The quizzes were administered directly after the completion of the corresponding units. The first unit focused on improving reading; therefore, the questions on the first quiz (see Appendix P) were related to reading comprehension. This quiz was written and consisted of the following four sections: reading comprehension with ten multiple-choice questions based on a text about diabetes, ten multiple-choice vocabulary items related to comprehension of the medical prefixes and suffixes studied in class (listed above), ten fill-in-the-blank items with vocabulary practiced in class (listed above), and finally, four texts, which the students read and then identify the main ideas of by selecting the correct multiple-choice items. This evaluation consisted of a total of 35 points, and was equivalent to 20 percent of the students' final grade. The researchers evaluated this quiz both as a whole and by the parts to identify specific areas of student success, for which 80 percent was used as a passing score.

The second quiz focused on listening, and included three different videos for students to watch and listen to in order to obtain the answers to different multiple-choice questions, an incomplete diagram and several WH questions (see Appendix Q). This quiz contained three parts. The first part had seven multiple-choice items based on an academic medical video that explained the effects and symptoms of heart failure on the body. The second part included a fill-in-the-blank chart that students had to complete based on an academic medical video that

explained treatment options for cervical cancer. The third part was a short-answer section with items that students had to answer either in English or Spanish based on an academic medical video that explained a medical case about a child who had epilepsy and required brain surgery. The listening quiz was also worth 20 percent of the students' final grade. The researchers evaluated this quiz both as a whole and by the parts to identify specific areas of student success, for which 80 percent was used as a passing score.

The third and final end-of-unit evaluation focused on speaking, and also accounted for 20 percent of the students' final grade in the course. This evaluation consisted of a role-play, which students performed spontaneously and in pairs. The students chose their partners and the order in which they wanted to perform the role-play. In this way, the researchers evaluated two students at a time, which was practical in terms of scheduling, and authentic since the students were conversing with their peers as they would with a patient in a work environment in their field. This evaluation was performed just outside of the classroom with two of the researchers, who recorded audio clips of all of the students performing their role-plays so that they and the external evaluator could listen to them later. Students were given three potential situations related to the medical field (see Appendix R) on three separate pieces of paper, face-down. Each student chose one slip of paper, without knowing the scenario written on it, and then had to perform that scenario as the doctor, while his/her partner played the role of the patient. After the first student completed his/her role-play, the partners switched roles and completed the role-play for the second scenario that they had selected.

The students were given the three following scenarios: complete a medical record, break bad news to a patient, and prescribe medicine. For each scenario, both students were given a guide for that specific situation (one for the doctor and one for the patient), which, for the doctor, included specific instructions related to the protocol and types of questions that they needed to follow and formulate, respectively (see Appendix R). The patient's guide for each scenario gave students a list of responses, symptoms, and health issues that they had to tell the doctor about (see Appendix R). The researchers gave the students playing patients a guide, which indicated the responses they had to give to the doctor, to minimize variation in student utterances, which may have otherwise affected the ability of the students playing doctors to complete the evaluation successfully. After all of the students had completed their evaluations, they were dismissed from class, and the researchers and the external evaluator used the rubric to grade them at a later time. The researchers evaluated this quiz both as a whole, for which 80 percent was used as a passing score, and by the parts, for which 77 percent was used as a passing score, to identify specific areas of student success. The researchers accepted a score of approximately 77 percent, per category, as a passing score on this quiz to account for the low number of potential points to be attained since the individual categories within the rubric were only worth a maximum of three points. According to Mertler (2001), "a rubric scoring system" should typically have "more scores at the average and above average categories" than at the below average categories (p. 4). Mertler (2001) warns that grading students based on the scores that they receive through the use of rubrics can be

challenging, and must be more of a "process of logic" than one of mathematics (p. 4). Therefore, even though a score of 77 percent is below the standard 80 percent recommended by Brown (2004), the researchers decided that it was more logical to award a passing score to any student that obtained a 77 percent or above, per category on the rubric (to measure skill success per category). While Brown (2004) recommends that oral production scores be weighted, the researchers followed Brown's (2005a) recommendations to maintain "ease of test scoring" (p. 29). To do this, the researchers lowered the threshold for a passing score, rather than doubling the students' scores to weight them.

The rubric for the third quiz (see Appendix S) evaluated the students based on their ability to speak with fluency, correct grammar, and proper vocabulary (which also somewhat accounted for the correct pronunciation of those key vocabulary words; see Appendix S). The researchers adapted this rubric based on reliable rubrics, guidelines, assessment categories, and recommendations from various authoritative sources in the field of TEFL (Council of Europe, 2001; Coombe, Folse, and Hubley, 2007; Mertler, 2001; O'Malley and Valdez Pierce, 1996). Based on these sources, the researchers decided to use an analytic scoring scale. According to O'Malley and Valdez Pierce (1996), analytic scales "separate . . . features . . . into components that are each scored separately" (p. 144), which was useful for the researchers in this study since they needed to measure the students' goal achievement, which they were able to do more precisely by distinguishing between the constructs that students demonstrated successfully, and which ones they did not. In other words, an analytic rubric was

used to obtain more precise information about the students' strengths and weaknesses regarding their speaking abilities in English while performing specific tasks. The researchers used a general format similar to a template for analytic rubrics by Mertler (2001). Per the same author's recommendations, the researchers initially decided the rubric should have four levels of achievement and four criteria, which were each given a quantitative label, and ranged from zero to three. However, while the researchers had initially included 'task completion' as one of the criteria on a preliminary version of the rubric, they decided not to include it in the final version after they presented the preliminary rubric to the expert evaluator, who recommended against it. After further investigation, the researchers found that it would have been redundant and invalid to include it as part of the criteria since the students were given step-by-step guides (see Appendix R), which aided them throughout the role-play by giving them explicit instructions as to what the researchers expected them to produce. As mentioned above, these guides made the test more reliable since according to Coombe, Folse, and Hubley (2007), students or other "interlocutors should work from a script so that all students get similar questions framed in the same way" (p. 116). Further, the guides in Appendix R are the same ones that the researchers used in class while teaching the students how to conduct those role-plays. Therefore, the students were given ample instruction as to how they were supposed to complete the task, and since they were able to look at the guides throughout the role-play, it would have been invalid to evaluate their ability to complete the task as the rubric would have measured "irrelevant or 'contaminating' variables" and would not have

offered "useful, meaningful information about the test-taker's ability" (Brown & Abeywickrama, 2010, p. 30). Further, in the opinion of De Silva (2014), proper rubrics should "help students to understand the goal of an assignment" (p. 137), which, in this case, was done through providing the students with guides and ample instructions, rather than with an exhaustive rubric that measured their ability to complete the task. De Silva (2014) recommends that teachers first give students the rubric and explain it to them in detail so that they know what they must do to complete a task successfully, but this step was completed by giving the students the instructions and guides separate from the rubric. Rather than evaluate the students' ability to complete the task, the researchers decided to evaluate how well they could perform the steps of the task in terms of their ability to properly convey the necessary messages through the use of fluency, correct grammar, and accurate vocabulary. In this way, the students knew how they would be evaluated and how to complete the task, which makes the rubric valid since it measured what it was supposed to, did "not measure irrelevant or 'contaminating' variables," relied "as much as possible on empirical evidence (performance)," gave the researchers "useful, meaningful information about" the students' abilities, and was "supported by a theoretical rationale or argument" (Brown & Abeywickrama, 2010, p. 30). As mentioned above, the rubric was also carefully designed to comply with practicality, authenticity, reliability, and validity. It was designed so that evaluators would not need to take an extraordinary amount of time to grade students' performances (practicality), was "consistent in its conditions" and scoring procedures for each of the students (reliability), gave "clear directions" (reliability),

did not measure "irrelevant or 'contaminating' variables" (validity), and was "supported by a theoretical rationale or argument" (Brown & Abeywickrama, 2010, pp. 26-30). Further, the constructs of speaking reflected in this rubric include the following: the participants' ability to successfully use grammatical structures correctly, use and pronounce relevant vocabulary words in English in an easily intelligible way, and deliver their utterances fluently. These three constructs were selected based on the recommendations of Coombe, Folse, and Hubley (2007) and O'Malley and Valdez Pierce (1996).

For clarification, while numerical data alone does not directly demonstrate goal achievement, high scores on quizzes represented success in the specific skills needed to correctly answer or perform the test items. Thus, the quiz scores were used to represent the success or failure of the students' skills and abilities, as they were relevant to each unit, which then suggested levels of goal achievement. The specific skills are described below in the Results and Discussion section.

The second set of instruments was comprised of three end-of-unit questionnaires about the students' self-perception of goal achievement, which were given to the students after the corresponding end-of-unit quizzes. The questionnaires (see Appendix S) each included ten can-do statements and three or four frequency options for the students to choose from to represent how often they felt they could perform certain contextualized actions that had been taught during each unit, per the recommendations of Willis and Willis (2007). For reference, the difference in the number of frequency options provided to students

between the three instruments is due to a flaw only noticed after the administration of the first two out of the three instruments. Originally, all three instruments were organized to offer students a selection of three frequency options; however, based on a recommendation by Brown (2005b) to give students an even number of options for Likert scales and their variations to force the students to choose a definite option, rather than letting them "sit on the fence" about their opinions (p. 41), the format of the third and final end-of-unit questionnaire was altered to accommodate these recommendations, and with the hope of receiving more accurate data from the participants. This set of instruments was used to obtain information about the students' perceptions of their achievement of the goals for each unit, and was included in this study to contribute to triangulation, and thus enrich the analysis. Triangulation is a necessity in any action research study since it increases the validity and "confidence" of the results and analysis because it provides several sources and "aspects that all 'point' to the same" conclusion (Forster & Eperjesi, 2017, p. 87). The questionnaires were designed with a minimal amount of items, ten each, and a space in which the students could write three aspects related to each corresponding macro skill in which they wanted to improve. They were made reliable by containing (1) can-do statements, which made the items unambiguous to the students, (2) clear instructions to minimize student confusion, and (3) a consistent format across all three instruments and their administrations, since they all contained ten main items and were administered after the conclusion of each unit quiz. The researchers designed the questionnaires so that they were not overly time-consuming for the students to

complete. The items were comprised of can-do statements, which students had to rate their ability to perform according to one of the frequency options, to provide students with a clear context for each ability, which made the items "unambiguous to the test-taker[s]" (Brown & Abeywickrama, 2010, p. 27). The questionnaires were valid since they provided evidence of construct-related validity by directly asking the students to quantify their ability to perform the tasks detailed in the unit goals and objectives. Additionally, according to Brown (2005a), when choosing aspects to include in a self-assessment, teachers must select the ones that they think "are most germane to what and how the students are learning in that particular course" (p. 59). For this reason, the researchers changed the ten lesson objectives from each unit that best reflected the unit goal into can-do statements. Further, the results of these questionnaires were then collated with the students' quiz scores. The end-of-unit questionnaires were used to obtain qualitative data about the students' perceived levels of goal achievement, which contributed to the triangulation of data in this study. For clarification, the qualitative data regarding the students' perceptions about their ability to successfully perform specific skills were used to determine perceived levels of goal achievement. Furthermore, the sections related to the abilities on which students still wanted to improve are not discussed in the Results and Discussion section of this report (below) since they were not related to the research questions; instead, they were used to provide the researchers with information about the abilities in which the students needed further guidance and practice, which was then incorporated into the Medical English course.

Finally, the third type of instrument used to obtain data for this research study was a rubric for the speaking quiz (see Appendix S). This rubric was used by both the researchers and an external evaluator to grade the students. The external evaluator was an English-speaking expert in the field of ESP who had previously taught a similar population. Per the recommendations of O'Malley and Valdez Pierce (1996) and Coombe, Folse, and Hubley (2007), the researchers included the expert's opinions about the students' production to determine if her evaluations were similar to the researchers' or not, which aided in answering the original research question by serving as a way to determine if the researchers' evaluations of the students' oral production were reliable as a method of determining skill success and goal achievement. Since the external evaluator had much more experience in grading ESP students, and since Luoma (2004) states that assessing and grading productive skills is very difficult to accomplish reliably, the researchers asked this expert to evaluate the quizzes from Unit 3 by using the same rubric that the researchers used in order to verify whether or not their scores were on par with those of an expert in the field. Not only did this aid in triangulation of data, but it served as a way for the researchers to determine if the rubric was reliable as a way or scoring students and determining levels of goal achievement.

For clarification, as part of the students' evaluation and overall grade in the course, they were also given two projects throughout the course. However, neither of those projects was included as part of the research study since they were both graded based on participation, and were not given scores, but rather, if they participated, they received full credit. These projects were used to encourage

student participation and autonomy outside of the classroom. Therefore, the researchers did not collect data from these projects, nor will their results be analyzed below. They are only mentioned here to clarify the relevance of their use in the course, and the reason for their absence in this research study.

**Procedures**

The aforementioned instruments were administered throughout the semester in a specific sequence to obtain the necessary results. Before the administration of the reading quiz, the teachers prepared the students by completing tasks that reviewed the technical vocabulary covered during that unit. This vocabulary, as mentioned above, included nouns related to diseases and medical procedures, and medical affixes that would be necessary to predict the meaning of words in context. This preparation for the test was carried out through games and other similar activities, including oral discussions and word reconstruction. Once the students had reviewed all of the relevant information, the researchers gave them the written quiz and allotted them 50 minutes to complete it. During that time, the students were not allowed to use dictionaries or any other external resources; instead, in the first part of the quiz, the researchers included a glossary of words that had not been taught previously in class and were considered difficult or potentially unknown to the students. In the remaining parts of the quiz, the students had to determine meaning through context, thus no extra support was provided. The quiz was printed and students answered it individually. After the first quiz was administered, students were given the Unit 1 questionnaire to measure their self-perceptions of their goal achievement corresponding to the

first unit. This questionnaire was digital and students only had to select one of the three levels of achievement they felt they were able to reach after the first unit. The three levels of achievement were options of frequency ('never,' 'sometimes,' and 'always').

Before the administration of the second quiz, the researchers followed a similar procedure to that of the first quiz. The students completed pre-tasks that prepared them for the quiz by providing them with a review of the relevant material that had been studied throughout Unit 2. For this quiz, three videos were used, and each was played three times. Even though authoritative sources such as Combe, Folse, and Hubley (2007) suggest playing audios twice when assessing detail, the researchers decided to give the students an extra opportunity since, based on the diagnostic test and the students' performance throughout the listening unit, their major struggle was associated with listening skills. The students were advised to listen the first time for the general idea of the audio, the second time to answer the questions, and the third time to finish incomplete responses and check completed ones. Per the recommendations of Coombe, Folse, and Hubley (2007), the students were given time to read each of the questions and corresponding answer choices before each audio was played. As the same authors recommend, all of the audio files used for this quiz contained speakers that spoke with the same (North American) accent and at the same (moderate) pace. The audio files were all played over a high-quality speaker, which all the students in the classroom were able to hear easily. One week after this quiz was given, students were asked to report their perceptions of goal achievement using a

self-evaluation questionnaire for Unit 2, which was printed, and students were allowed to take it home to complete.

Then, after three lessons on speaking, the third and final quiz was administered. Similarly to the previous units, the researchers again used a variety of pre-task activities to help prepare the students for the quiz. The three main tasks from the previous lessons on speaking were used as guides to prepare the pre-tasks for the last lesson as a review and implemented as the main situations to evaluate the students' speaking abilities. As Coombe, Folse, and Hubley (2007) recommend, the researchers chose to use a role-play as the speaking quiz since it best reflected the content taught in class and thus, the students were very familiar and comfortable with it. Each student chose one partner and the order in which they wanted to present their role-plays (Unit 3 quiz; see Appendix R). Then, one pair of students at a time went outside of the class to take the quiz with two of the researchers, while the third researcher stayed inside the classroom and guided the students in completing the second and final project of the course. Since it would have been impossible for the researchers to evaluate all eight students in all three scenarios due to practicality issues related to time constraints, this consistency was achieved by presenting each pair of students with three pieces of paper, face-down. Each piece of paper contained one of the scenarios (see Appendix R) and the students were allowed to select one, without knowing which scenario was written on the other side of their paper. After each pair completed their quizzes, the scenarios were rearranged to prevent the next pair of students from knowing the position of each scenario. Thus, their scenario selection was random.

The students were given explicit scenarios and guides to make the test more reliable since, according to Coombe, Folse, and Hubley (2007), students "should work from a script so that all students get similar questions framed in the same way" (p. 116). In this way, the guides that the students received made the quiz more reliable by having all students give their partner similar predetermined responses. Each student played the role of the doctor for the scenario that he/she had selected, and his/her partner, who was not assessed, played the role of the patient. Then, the students switched roles and only the second student was assessed as the doctor. As the students took their quizzes, the researchers audio-recorded their oral production for later analysis and scoring. As recommended by Coombe, Folse, and Hubley (2007), who state that "raters [should] either discuss their suggested marks and negotiate an agreed-upon score or take an average [of the scores given by each rater]" (p. 116), the researchers evaluated the students individually and then averaged their scores. Upon completion of the Unit 3 quiz, students completed the Unit 3 self-evaluation form (provided to them in print) to describe their perceptions of their personal achievement of the Unit 3 goal.

Subsequently, the researchers presented the external evaluator with a summary of Unit 3, which included the vocabulary and grammatical structures studied throughout the unit, sample questions and responses, and procedures students had to follow according to each scenario (see Appendix R). The external evaluator also received an oral description of the relevant grammatical structures, topics, vocabulary, and procedures taught during the two previous units (and the types of tasks used to do so). The researchers also orally informed the external

evaluator of how classes were typically developed and the population of the participants, including their general needs, wants, and proficiency level. Further, the researchers offered to present the external evaluator with electronic copies of any or all of the necessary lesson plans and/or the course syllabus, but he/she did not accept a copy since he/she had limited time to devote to participation in this research study. During a preliminary meeting, the researchers discussed the rubric with the evaluator, who, as mentioned above, recommended the exclusion of a 'task completion' category given the structure of the quiz and the inclusion of student guides. The researchers also spoke with the evaluator and answered all of her questions about how to score the students' performances using the rubric prior to having her do so. Then, she listened to the recordings of the students' oral quizzes and graded them individually, without knowing the students nor the grades which had been assigned to them by the researchers. Her completed rubrics were used to triangulate the results with those of the researchers. The inclusion of her opinions was necessary in this study since, as suggested by Mark and Shotland (as cited in Flick, 2018), triangulation of data leads to "convergence of findings" (Triangulation in the Discussion about Mixed Methods section, para. 1), which would reinforce the answer to the research questions found by the researchers. Further, her opinions were used to suggest whether the rubric was a reliable instrument of data collection, which also suggested if the researchers' qualifications of the students' levels of goal achievement were reliable or not.

As a preamble to the Results and Discussion section below, it is important to state that this study was carried out in the context of a teaching practicum,

which was a necessary component in the completion of a master's degree program in TEFL; therefore, the decisions the researchers made were predominantly driven by pedagogical needs, and were guided by the practicum supervisors. Due to this context and the myriad of details for which the researchers were concurrently responsible, some significant research considerations were unintentionally overlooked during the design and administration of the course. These errors are noted in the Results and Discussion section below. Further, as Ellis (2012) warns, results can be different when a study has been designed in a laboratory setting; therefore, the results of this study must be approached with the practicum context in mind.

## Results and Discussion

The results of this study are presented and analyzed below based on the research question and sub-questions to determine the students' ability to achieve the course goals.

### Unit Quiz Results and Analysis

To analyze the Unit 1 quiz results, it is necessary to state the goal for this unit, which was for students to demonstrate comprehension of medical texts by identifying key vocabulary and medical affixes, summarizing, relaying and discussing information, and/or recognizing areas affected by certain conditions. To assign grades and analyze results, the quizzes were graded on a whole, out of 35 points, and out of 100 percent. Table 5 (below) displays the points and scores that the students obtained on the Unit 1 quiz (see Appendix P), which focused on reading.

**Table 5**

*Unit 1 (reading) quiz scores per student*

| Student | Points Obtained (out of 35) | Scores (out of 100 percent) |
|---|---|---|
| 1 | 34 | 97 |
| 2 | 33 | 94 |
| 3 | 30 | 85 |
| 4 | 33 | 94 |
| 5 | 35 | 100 |
| 6 | 33 | 94 |
| 7 | 30 | 85 |
| 8 | 29 | 82 |

n=8

The data in Table 5 shows that all eight students who took this quiz achieved a passing score of 80 percent or above, with the lowest being 82 percent. Since all of the students attained high scores, this represents that their skills in reading for specific details, summarizing a text by identifying its main idea, and using medical affixes to determine meaning were highly successful on this quiz. The success of their skills suggests a high level of goal achievement in those areas. Table 6 (below) displays the students' scores on each part of the quiz, which required the successful use of specific skills, as discussed below.

**Table 6**

*Points obtained on Unit 1 (reading) quiz per part per student*

| Student | Points Obtained on Part 1 (out of 10) | Scores on Part 1 (out of 100 percent) | Points Obtained on Part 2 (out of 10) | Scores on Part 2 (out of 100 percent) | Points Obtained on Part 3 (out of 10) | Scores on Part 3 (out of 100 percent) | Points Obtained on Part 4 (out of 5) | Scores on Part 4 (out of 100 percent) |
|---|---|---|---|---|---|---|---|---|
| 1 | 10 | 100 | 10 | 100 | 10 | 100 | 4 | 80 |
| 2 | 10 | 100 | 10 | 100 | 10 | 100 | 3 | 60 |

**Table 6** (continued)

| Student | Points Obtained on Part 1 (out of 10) | Scores on Part 1 (out of 100 percent) | Points Obtained on Part 2 (out of 10) | Scores on Part 2 (out of 100 percent) | Points Obtained on Part 3 (out of 10) | Scores on Part 3 (out of 100 percent) | Points Obtained on Part 4 (out of 5) | Scores on Part 4 (out of 100 percent) |
|---|---|---|---|---|---|---|---|---|
| 3 | 8 | 80 | 9 | 90 | 9 | 90 | 4 | 80 |
| 4 | 9 | 90 | 10 | 100 | 10 | 100 | 4 | 80 |
| 5 | 10 | 100 | 10 | 100 | 10 | 100 | 5 | 100 |
| 6 | 9 | 90 | 10 | 100 | 10 | 100 | 4 | 80 |
| 7 | 8 | 80 | 10 | 100 | 10 | 100 | 2 | 40 |
| 8 | 7 | 70 | 10 | 100 | 7 | 70 | 5 | 100 |

n=8

Based on Table 6, it is clear that Parts 1 and 4 presented the students with the most difficulty, since only three out of eight students obtained a score of 100 percent on Part 1, and only two out of eight students obtained a score of 100 percent on Part 4. This is contrasted by the seven out of eight students that obtained a score of 100 percent on Part 2, and the six out of eight students that obtained a score of 100 percent on Part 3. As mentioned above, the goal of Unit 1 was for students to demonstrate comprehension of medical texts by identifying key vocabulary and medical prefixes and suffixes, summarizing, relaying and discussing information, and/or recognizing areas affected by specific conditions. To measure the students' successful or unsuccessful use of the skills to represent goal achievement, Part 1 of this quiz included an extract from a medical article, which the students had to read and answer questions about to demonstrate reading comprehension. By correctly answering the questions, the students demonstrated success in the skill of reading for specific details and using vocabulary studied in class to determine the meaning of a new text. For Part 2, the

students had to demonstrate their ability to determine the meanings of new words by recognizing and using the medical affixes studied in class. For Part 3, students had to demonstrate their ability to identify and use key vocabulary studied in class to complete coherent sentences. Finally, for Part 4, the students had to demonstrate their ability to summarize medical texts by selecting their main ideas. Based on Table 6 (above), the results of Part 1 indicate that seven out of eight students attained high scores, which represent success in the skill of reading for specific details and using vocabulary studied in class to understand new texts. These results suggest a high level of goal achievement related to being able to demonstrate comprehension of a medical text by identifying key vocabulary. The results of Part 2 show that all of the students attained high scores, which represents that they succeeded in determining the meanings of new words by recognizing key medical affixes studied in class. In turn, these results suggest a high level of goal achievement related to being able to demonstrate comprehension of medical texts by identifying key medical prefixes and suffixes, such as -cyte, -oma, and over-. The results of Part 3 show that seven out of the eight students attained high scores, which represents that they successfully demonstrated skills in identifying and using key vocabulary to complete sentences. In turn, these results suggest a high level of goal achievement related to being able to demonstrate comprehension of a medical text by identifying key vocabulary. Further, the results of Part 4 show that six out of the eight students attained high scores, which represents successful use of summarization through the selection of main ideas skills. These results suggest a high level of goal

achievement related to being able to demonstrate comprehension of a medical text by summarizing.

Further, the results show that one student, Student 8 in Table 6, while unable to achieve a passing score in Parts 1 and 3, achieved a perfect score in Parts 2 and 4. Then, both Students 2 and 7 in Table 6 achieved a passing score in Parts 1, 2, and 3, but only obtained three and two out of five points on Part 4, respectively. These results indicate that Student 8 was able to demonstrate success in the skills of summarizing medical texts by identifying main ideas and using key medical affixes to determine meaning of new words, but was unable to demonstrate success in the skill of reading for specific details and using key vocabulary to complete sentences. Both Students 2 and 7 achieved success in the skills of reading for specific information, using key medical affixes to determine meaning, and using key vocabulary to complete sentences, but demonstrated an underdeveloped skill in  summarizing medical texts by selecting their main idea. These results suggest that the majority of the students achieved the parts of the goal assessed in the quiz at a high level, but that three students struggled to do so. Since both Students 2 and 7 failed to attain passing scores on Part 4, they probably needed more practice and reinforcement in the area of summarizing medical texts by selecting main ideas. Other possible explanations for this occurrence are that the students were confused by the answer choices, did not know the vocabulary in the texts, did not study enough before the quiz, were fatigued by the time that they reached the final part of the quiz, and/or personally struggle to determine the main ideas of texts. Overall, the results show that the

students were able to demonstrate comprehension of the majority of the written text presented in this quiz, which may indicate a specific struggle in the area of summarization. For clarification, summarization was practiced during the course by orally summarizing a medical text, determining whether or not sentences from medical texts were relevant to the main idea, writing and discussing the main idea of medical passages in the students' own words, completing a homework assignment that entailed reading medical passages and writing their main ideas in the students' own words, completing a graphic organized with the most important information from a medical passage, and determining if main ideas accurately represented the most relevant information in medical passages. Thus, summarization was mostly practiced during the course by identifying main ideas, but also included orally summarizing texts. Student 8's results, however, are more difficult to explain. While the student was able to demonstrate comprehension of the five medical extracts presented in Part 4 by correctly selecting the main ideas, he/she was unable to demonstrate comprehension of the extract presented in Part 1. Perhaps this student failed to understand the questions in Part 1, or specifically did not understand the text in Part 1. This student was also unable to demonstrate comprehension of medical texts by identifying key vocabulary, which may indicate a lack of sufficient practice for the quiz, either inside or outside of the classroom. However, the available research on reading in the field of TEFL indicates that there may be other causes or ramifications of these results. In a study by Anderson (1991), the researcher found that even after students had been taught reading strategies, they were not all able to use them effectively to demonstrate

comprehension of a text. Therefore, another possible cause for these results was that the researchers did not sufficiently teach the students how to effectively apply the strategy of summarization by identification of main ideas. The same author also found that students need sufficient vocabulary to use strategies successfully. In this way, beginner students with less vocabulary knowledge and a weak foundation in English may not be able to employ this strategy as well as more advanced students, regardless of whether or not they learned how to perform the strategy. Since researchers, such as Anderson (2004), have found that the effective use of reading strategies helps greatly improve learners' reading abilities, especially in their second language, the results of the present study show that those students who were unable to obtain high scores in this area likely require further training in reading strategies for such strategies to become useful.

While the students struggled to complete Parts 1 and 4 of the quiz, they excelled in Parts 2 and 3, which represented a high level of success related to correctly identifying the affixes and vocabulary studied in class, respectively. Further, the results demonstrate that the students were able to use both the affixes and vocabulary studied in class to demonstrate comprehension of new academic medical texts. Thus, analysis of the students' performance on this quiz indicates a high level of goal achievement in those two areas. This success may have been due to sufficient in-class practice of the affixes and vocabulary and/or the similarity between affixes in English and Spanish. Overall, the results of the quiz clearly indicate that the majority of the students demonstrated a high level of achievement related to the Unit 1 goal.

Below, Table 7 displays the students' scores on the quiz from Unit 2, by points and scores obtained by each student. As mentioned above, the goal for Unit 2 was for students to demonstrate comprehension of key vocabulary from videos by outlining the videos and/or reporting the information in them to their classmates. Parts 1 and 2 of the quiz evaluated the students' ability to demonstrate comprehension of key medical vocabulary from an academic medical video by outlining the information in it, and Part 3 evaluated their ability to report the information from a medical video. Again, for reasons related to practicality, this quiz did not include speaking, and therefore, did not involve the students reporting the information to their classmates, but rather, to the researchers in written form.

**Table 7**

*Unit 2 (listening) quiz scores per student*

| Student | Points Obtained (out of 44) | Scores (out of 100 percent) |
|---------|-----------------------------|-----------------------------|
| 1 | 39 | 89 |
| 2 | 37 | 84 |
| 3 | 39 | 89 |
| 4 | 44 | 100 |
| 5 | 38 | 86 |
| 6 | 38 | 86 |
| 7 | 31 | 70 |
| 8 | 28 | 64 |

n=8

In general, the results in Table 7 (above) show that the majority of the students, six out of eight, passed the quiz. In this case, a passing score indicated that the students demonstrated listening comprehension skills by correctly outlining the information and identifying key details that they heard in medical

videos. Since passing scores indicated the presence of these skills, they also

indicated overall listening comprehension, which was the main goal for this unit. In

other words, those six students' scores suggested the presence of the skills

necessary to fulfill the unit goal. Thus, this data suggests that those six students

achieved the Unit 2 goal at a high level, while the other two students did not.

Overall, the students missed between zero and 16 points, out of the total 44, on

this quiz. While the lowest score obtained on the first quiz was 82 percent, the

lowest score on the second quiz was 64 percent. One possible explanation for the

students' lower level of achievement on the second quiz is that the students had

previously had to use the reading skill for their medical studies more often than the

listening skill, which they reported in the needs analysis process. Because of this

factor, the students may have scored lower in this area due to their lower initial

proficiency in listening, which was also confirmed during the needs analysis

process. Below, Table 8 displays the number of points obtained by the students on

each of the three parts of the Unit 2 quiz, by student.

According to the results in Table 8 (below), six out of eight students

obtained a passing score on Part 1, seven out of eight students obtained a

passing score on Part 2, and five out of eight students obtained a passing score of

80 percent or above on Part 3. Based on these results, it is evident that the

students struggled most with Part 3 since only five out of eight students obtained a

passing score. As mentioned above, Parts 1 and 2 evaluated the students' ability

to demonstrate comprehension of key medical vocabulary from an academic

medical video by outlining the information in it, and Part 3 evaluated their ability to

report the information from a medical video. In this way, the results show that the

students experienced the most difficulty in reporting the information from medical

videos, whereas they showed higher achievement in demonstrating

comprehension of key vocabulary. Thus, they performed better in reception than in

production.

**Table 8**

*Unit 2 (listening) quiz scores per part per student*

| Student | Points Obtained on Part 1 (out of 7) | Scores on Part 1 (out of 100 percent) | Points Obtained on Part 2 (out of 11) | Scores on Part 2 (out of 100 percent) | Points Obtained on Part 3 (out of 26) | Scores on Part 3 (out of 100 percent) |
|---|---|---|---|---|---|---|
| 1 | 7 | 100 | 10 | 91 | 22 | 85 |
| 2 | 6 | 86 | 11 | 100 | 20 | 77 |
| 3 | 7 | 100 | 11 | 100 | 21 | 81 |
| 4 | 7 | 100 | 11 | 100 | 26 | 100 |
| 5 | 6 | 86 | 10 | 91 | 22 | 85 |
| 6 | 5 | 71 | 11 | 100 | 22 | 85 |
| 7 | 7 | 100 | 8 | 73 | 16 | 62 |
| 8 | 4 | 57 | 9 | 82 | 15 | 58 |

n=8

Further, the high scores attained on all three parts of the quiz by the

majority of the students represent a high level of success in the ability to listen to

medical videos for specific information, details, and vocabulary. Since the

students' scores represented success in that skill, they show students' ability to

demonstrate comprehension of the key vocabulary and information found in

medical videos. The difference in scores relating to reception and production may

be partially related to the fact that the students did not have to write their own

responses for Parts 1 and 2, but they did for Part 3. This factor represents less

success of the students' information reporting skills. Another possible reason for

the lower scores on Part 3 is that it required more memorization. According to Rost

and Candlin (2014), "test taker[s] with limited memory skills, limited interest in test

topics or the test itself, limited background knowledge with test topics or the test

itself, [or] limited motivation to perform well, will negatively impact test

performance" (p. 219). For clarification, the skills of explaining and reporting

information from videos to peers had been practiced during the course by recalling

information from a video to create comprehension questions, orally discussing

specific details from videos, and writing down specific information from videos. In

general, these skills were less successful than that of listening for details. In terms

of points lost, the majority of the students lost between zero and three points on

Parts 1 and 2 of the quiz, and between zero and 11 points on Part 3. Only one

student, Student 4 in Table 8 (above), was able to obtain all 26 points on Part 3,

indicating that the remaining seven students attained low to moderate scores,

which represented low to moderate success of their skills in information reporting

and explaining. Since the videos used for both the in-class activities and the

evaluation were chosen based on authentic sources received from the participants

during the needs analysis process, it is unlikely that a lack of interest in the videos

caused the students to obtain lower scores. The videos used in this quiz were also

strategically chosen to match the degree of difficulty to the videos used in their

regular courses in regard to accent, speed, and quality, which should indicate a

level of familiarity with that type of listening material. Based on this information, the

results indicate that the students were least able to achieve the aspect of the goal related to being able to correctly report information heard within an academic medical video. While this aspect was evaluated on the quiz through written production instead of speaking, this means that students had more time to think carefully about how to properly convey the messages and ideas that they heard in the video through written production. Coombe, Folse, and Hubley (2007) recommend various points that teachers should include in listening tests. For example, the authors recommend that teachers provide students with "sufficient contextualization" of the listening materials within the instructions, and that they "give students a reason for listening" (p. 107), which should also be included in the instructions of the exam. Therefore, another possible cause of the students' lower level of achievement on the second quiz may be that the researchers did not include sufficient contextualization in the instructions. Admittedly, this issue was present throughout Unit 2 since all of the listening tasks carried out during the course were only contextualized after the students had already listened to the audios. For example, when the students listened to an academic video about endometrial carcinoma, they first had to complete comprehension questions without a specific context, and later had to role-play medical professors who had to teach the information given in the video to their students. Thus, the students had already practiced listening without being given specific contextualization in the instructions, indicating that this issue may only have had a limited effect on their levels of goal achievement. Finally, students may not have been sufficiently

prepared for the quiz in terms of their pre-existing levels of proficiency in listening and the strategies that they were taught in class.

Overall, the results of the quiz from Unit 2 suggest that the students performed at a high level of success in the skills related demonstrating listening comprehension, identifying vocabulary studied in class to understand new oral texts, and listening for specific details. The students' success in these areas suggests a high level of achievement, which may have been attained due to sufficient in-class practice of the key vocabulary and of listening for details.

Below, Table 9 shows the number of points that the students obtained on the Unit 3 (speaking) quiz, as given by each evaluator and as an average. The results in Table 9 show large differences between the number of points awarded to each student by each of the researchers and the external evaluator. These differences are discussed below in the External Evaluator Results and Analysis section below.

**Table 9**[2]

*Points obtained on Unit 3 (speaking) quiz from each researcher and the ESP expert, per student (by number of points obtained out of 9)*

| | Evaluator | | | | |
|---|---|---|---|---|---|
| Student | Researcher 1 | Researcher 2 | Researcher 3 | Average Score (taken from all three researchers) | ESP Expert |
| 1 | 8 | 7 | 6 | 7 | 8 |
| 2 | 7 | 9 | 6 | 7.3 | 5 |

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[2] For reference, Students 2, 4, 6, and 8 in this table completed Scenario 1, and Students 1, 3, 5, and 7 completed Scenario 2. Students selected the scenarios randomly, which means that Scenario 3 not being chosen is merely coincidental.

**Table 9**[3] (continued)

| | | Evaluator | | | |
|---|---|---|---|---|---|
| Student | Researcher 1 | Researcher 2 | Researcher 3 | Average Score (taken from all three researchers) | ESP Expert |
| 3 | 8 | 8 | 9 | 8.3 | 9 |
| 4 | 9 | 9 | 9 | 9 | 9 |
| 5 | 7 | 6 | 7 | 6.7 | 6 |
| 6 | 6 | 6 | 7 | 6.3 | 6 |
| 7 | 7 | 7 | 6 | 6.7 | 6 |
| 8 | 7 | 6 | 8 | 7 | 4 |

n=8

Below, Table 10 displays the same results as Table 9 (above), but as scores out of 100 percent. As shown in Table 10 (below), only one student, Student 4, was able to attain an averaged score of 100 percent on the quiz. The majority of the students, five out of eight, scored in the 70 percent range, and only three of the students obtained a passing score of 80 percent or above. These results represent that the majority of the students were unable to demonstrate success in the skills of effectively communicating orally to complete the given tasks, correctly pronouncing key vocabulary, correctly formulating yes/no and information questions, and formulating polite questions by using the relevant modals (can, could, and would). The students' lack of success in those skills suggest low levels of goal achievement related to communicating orally with a patient about his/her medical record, diagnosis, and/or medication and discharge

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[3] For reference, Students 2, 4, 6, and 8 in this table completed Scenario 1, and Students 1, 3, 5, and 7 completed Scenario 2. Students selected the scenarios randomly, which means that Scenario 3 not being chosen is merely coincidental.

summary by identifying correct vocabulary, grammatical structures, and bedside manner.

**Table 10**[4]

*Unit 3 (speaking) quiz scores by each researcher and ESP expert per student (out of 100 percent)*

| Student | Researcher 1 | Researcher 2 | Researcher 3 | Average (of all 3 scores) | ESP Expert |
|---------|--------------|--------------|--------------|---------------------------|------------|
| 1 | 89 | 78 | 67 | 78 | 89 |
| 2 | 78 | 100 | 67 | 81.7 | 56 |
| 3 | 89 | 89 | 100 | 92.7 | 100 |
| 4 | 100 | 100 | 100 | 100 | 100 |
| 5 | 78 | 67 | 78 | 74.3 | 67 |
| 6 | 67 | 67 | 78 | 70.7 | 67 |
| 7 | 78 | 78 | 67 | 74.3 | 67 |
| 8 | 78 | 67 | 89 | 78 | 44 |

n=8

The three students with passing scores, Students 2, 3, and 4 in Tables 9 and 10 (above), scored an average of approximately 82, 93, and 100 percent, respectively. As mentioned earlier, the goal for this unit was for the students to be able to communicate orally with a patient about his/her medical record, diagnosis, medication, and/or discharge summary by using vocabulary, grammatical structures, and bedside manners.

The averaged scores relating to Scenario 1 were approximately 82, 100, 71, and 78 percent. The averaged scores relating to Scenario 2 were approximately 78, 93, 74, and 74 percent. Based on those results, it seems that

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[4] For reference, Students 2, 4, 6, and 8 in this table completed Scenario 1, and Students 1, 3, 5, and 7 completed Scenario 2. Students selected the scenarios randomly, which means that Scenario 3 not being chosen is merely coincidental.

the students may have better succeeded at formulating information questions

related to requesting patient information than at using proper bedside manners to

diagnose a patient. Unfortunately, as explained above, none of the students

selected the third scenario, meaning that their skills related to asking yes/no and

information questions related to patient habits were not measured. Therefore, their

achievement of that aspect of the goal cannot be measured based on their quiz

scores. Out of the four students that role-played Scenario 1, Students 2, 4, 6, and

8 in Table 10, only two attained a high score, representing moderate to low overall

success in that skill area. Out of the four students that role-played Scenario 2, only

one received a high score, indicating low overall success in that skill area. These

results show that the students demonstrated higher success in the role-play that

tested their skills in formulating yes/no and information questions to ask personal

information questions than in the one that tested their skills in using proper

bedside manners to diagnose a patient. Therefore, the results suggest an overall

low level of goal achievement since they indicate that students do not possess the

skills necessary to achieve the goal. As a whole, the students need improvement

in both scenarios and likely also in the third scenario; however, since speaking is

secondary to reading on the list of skills that doctors may need to use in their field,

as determined during the needs analysis process, and since the students began

the Medical English course with a higher level of reading proficiency than speaking

(based on the results of the diagnostic test), these results align with the

researchers' expectations, which were that the students would perform better in

reading and listening than in speaking since they have had to use the first two

skills frequently in their regular courses, but they do not frequently use the speaking skill. Many factors accounted for the students' lower level of achievement in the second scenario. For example, the students that had to perform Scenario 2 may have had lower starting levels of proficiency in speaking than their classmates. Another potential cause for the discrepancy was "skill contamination" since the students playing the doctors in Scenario 2 had "lengthy written instructions that [had to be] read and understood before speaking" (Coombe, Folse, & Hubley, 2007, p. 129); thus, it is possible that the inclusion of this speaking guide (see Appendix R) hindered their ability to perform successfully. Even though this skill contamination is a concern, the students learned and practiced all three scenarios the same way in class; thus, the guides that they used during the quiz were the same ones that had been used in class. While the researchers spent an equal amount of time teaching the vocabulary, grammatical structures, and protocol to use in all three scenarios, it is possible that the students had more pre-existing knowledge of the vocabulary related to Scenario 1 than to the other two scenarios, since many students demonstrated knowledge of vocabulary related to asking for personal information during the administration of the diagnostic test.

One must also consider the large differences between the scores given by the three researchers. Table 10 (above) clearly shows that there was a lack of consensus about the students' scores on this quiz. For example, Student 1 in Table 10 received scores of 89, 78, and 67 percent from the each of the researchers, respectively. Table 10 also displays similar results for many of the

other students. These large differences may have been caused by the different amounts of experience that the researchers had in teaching and grading. One of the researchers had been teaching English for over seven years, another for over 15 years, and the final researchers had only been teaching for less than one year. Because of this difference in amount of experience, the researchers may have evaluated the students with varying levels of attention to the nuances in the scoring rubric. Further, each researcher may have unintentionally evaluated the students according to personal bias, which may have positively or negatively affected each student's score. Below, Table 11 displays the number of points that the students obtained on all three criteria listed on the scoring rubric (see Appendix S).

Based on Table 11 (below), the results show that four out of the eight students obtained a passing score on grammar, seven out of eight obtained a passing score on vocabulary, and only three out of eight obtained a passing score on fluency. These results represent a low level of success in the skills of speaking without fillers, unnatural pauses, and false starts. However, they also represent a high level of skill related to correctly pronouncing and using key vocabulary, and a moderate level of skill related to correctly formulating yes/no and information questions. This suggests that the students did not achieve the overall goal of being able to communicate orally to complete the given tasks since they did not demonstrate successful use of the skills necessary to do so. However, analysis of the students' scores indicates that they did achieve the part of the goal related to being able to produce the relevant vocabulary in conversation. Further, while four

students did not demonstrate a high level of skill in being able to produce the

correct grammatical structures in conversation, the other four students were able

to do so. These results likely indicate some success in the grammar training that

the students' received.

**Table 11**

*Average points obtained on Unit 3 (speaking) quiz per student per criteria on grading rubric (grammar, vocabulary, and fluency)*

| Student | Average Points Obtained for Grammar (out of 3) | Score for Grammar (out of 100 percent) | Average Points Obtained for Vocabulary (out of 3) | Score for Vocabulary (out of 100 percent) | Average Points Obtained for Fluency (out of 3) | Score for Fluency (out of 100 percent) |
|---|---|---|---|---|---|---|
| 1 | 2 | 67 | 2.7 | 90 | 2.3 | 77 |
| 2 | 2.7 | 90 | 2.7 | 90 | 2 | 67 |
| 3 | 3 | 100 | 3 | 100 | 2.3 | 77 |
| 4 | 3 | 100 | 3 | 100 | 3 | 100 |
| 5 | 2 | 67 | 2.7 | 90 | 2 | 67 |
| 6 | 2 | 67 | 2.7 | 90 | 1.7 | 57 |
| 7 | 2 | 67 | 3 | 100 | 1.7 | 57 |
| 8 | 2.3 | 77 | 2.7 | 90 | 2 | 67 |

n=8

The data in Table 11 (above) shows that the students received the lowest

scores in the fluency category, which represents the lowest level of success in the

skills of speaking without fillers, unnatural pauses, and false starts. These lower

levels of skill in fluency might be explained by the relatively short duration of the

course and thus, the insufficient amount of time that the students had to practice

their speaking skills before they were tested on them. Since the fluency category

took pauses and false starts into account, perhaps these results reflect a lack of

sureness and thus, practice. Another possible explanation for the students' low

levels of skills in this category is that perhaps the student did not give that aspect

of speaking as much importance as the other two aspects that were assessed.

However, even though the students did not achieve a passing score in fluency,

O'Malley and Valdez Pierce (1996) state that overall communication should be the

most important criteria when scoring students' oral production, and that

"pronunciation and fluency [should be the] least important" since they do not

always hinder communication (p. 65). Further, some of the students may have

been unable to speak with fluency solely because of their lower levels of

proficiency in speaking. Moreover, since the students obtained passing scores in

vocabulary, one could argue that they were still able to communicate effectively,

even without a high level of fluency, and since the goal was related to the

students' ability to communicate effectively, the low achievement in the area of

fluency does not immediately indicate a low level of goal achievement. The

students' scores in the vocabulary category represent that almost all of them were

highly successful in correctly pronouncing and using key vocabulary, which

suggests a high level of success in the skills of identifying and producing relevant

vocabulary in a doctor-patient conversation, which suggests a high level of goal

achievement in oral communication. The success in this area may be due to the

extensive practice with the vocabulary words throughout Unit 3 and/or the

possibility that the students studied the vocabulary sufficiently before the quiz. The

students' scores in the grammar category (see Table 11 above) showed that only

half of the students obtained a passing score, which represents that only half of

them demonstrated success in the skills formulating yes/no and information

questions and using formulating polite questions using the relevant modals, which

suggests that only half of them achieved the goal of being able to communicate

orally by identifying and producing correct grammatical structures, such as the

formulation of information questions (e.g., How often do you smoke?), polite

question using modals (e.g., Can/Could/Would you tell me why you came to the

hospital today?), and yes/no questions (e.g., Do you exercise regularly?). While

O'Malley and Valdez Pierce (1996) state that overall communication should be

more important than the correct use of grammatical structures, it seems that the

students needed further practice in this area. Due to the task-based design of this

course, the researchers placed a lower focus and importance on grammar than on

overall successful communication, which may be represented in the results. While

the students may have benefitted from more extensive and explicit "focus-on-

forms" instruction related to the relevant grammatical structures (Ellis et al., 2002,

p. 420), the practicum context of this study severely limited the amount of time that

the researchers were able to devote to focusing on grammatical forms.

Specifically, the students might have benefitted from "the intensive and systematic

treatment" of the relevant grammatical features since this type of instruction may

have further aided them in automatizing the production of correct grammatical

structures (Ellis et al., 2002, p. 420). However, the researchers dedicated most of

the class time to focus-on-form instruction related to vocabulary. Thus, more class

time was devoted to the teaching and practicing of vocabulary in context to

promote effective conversation, so it is not surprising that the students performed

at a higher level of achievement in that area. In terms of the Unit 3 goal, the results

show that the students only attained partial achievement in the following areas.

The majority of the students, seven out of eight, demonstrated an ability to

communicate orally with a patient about his/her medical record and/or diagnosis

by identifying and reproducing relevant vocabulary. However, only half of the

students demonstrated an ability to do so by producing the relevant grammatical

structures correctly. As mentioned earlier, the aspects of the goal related to using

proper bedside manners and communicating orally with a patient about his/her

medication and/or discharge summary could not to be measured by this quiz since

the students were given guides that assured their use of proper bedside manners

(see Appendix R), and none of the students selected the third scenario (which was

related to medication and discharge summary), which was purely coincidental.

Below, the results of the self-assessment questionnaires are displayed and

analyzed.

**Questionnaire Results and Analysis**

This section discusses the results of the students' perceptions of their own

goal achievement, as measured after the completion of each unit. Table 12

(shown below) displays the results of the first end-of-unit questionnaire, which

measured the students' perceptions about their levels of success in the skills

outlined in the Unit 1 goal. The results in Table 12 (below) are a summary of the

responses collected from the students. As shown in Table 12, the 'never' option

was not chosen for any of the ten descriptors, which shows that all of the students

thought they have achieved some level of success in that skill.

**Table 12**[5]

*Students' perceptions of their own achievement of the Unit 1 (reading) goal*

| Achievement descriptors | Number of respondents per achievement indicator | | |
|---|---|---|---|
| | Never | Sometimes | Always |
| 1. I can understand the medical texts read in class. | 0 | 1 | 5 |
| 2. I can understand the main idea of the medical texts read in class. | 0 | 2 | 4 |
| 3. I can discuss the main idea and supporting details of a medical text with my peers. | 0 | 1 | 5 |
| 4. I can summarize a short medical text. | 0 | 1 | 5 |
| 5. I can identify the vocabulary learned in this Medical English class in the texts I read for my medical class assignments. | 0 | 0 | 6 |
| 6. I can identify medical prefixes and suffixes in a medical text. | 0 | 0 | 6 |
| 7. I can understand the 10 common medical prefixes and suffixes learned in class. | 0 | 0 | 6 |
| 8. I can recognize the areas in the body that would be affected by vasculitis, hypopituitarism, hypersensitivity, and/or hyperparathyroidism. | 0 | 2 | 4 |
| 9. I can use the vocabulary learned in class to complete sentences by using the definitions. | 0 | 0 | 6 |
| 10. I can use the vocabulary learned in class to discuss medical conditions with my peers. | 0 | 0 | 6 |

n=6

The majority of the students, between four and six out of six students,

selected the 'always' option for all ten descriptors, indicating that they felt they had

achieved a high level of success in all of the skills specified in the questionnaire,

especially those related to the identification and use of the relevant vocabulary to

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[5] For reference, only six students completed this questionnaire, since it was given to them electronically as homework, and some students chose not to participate even though they were asked to do so.

understand medical texts and/or discuss them with peers. Further, Table 12

(above) also indicates that very few of the students thought they were only

sometimes able to perform the tasks within the descriptors. For the first descriptor,

which referred to understanding medical texts used in class, only one student

selected the 'sometimes' option, which shows that all but one of the students that

completed this questionnaire thought they had attained a high level of success in

their ability to understand the academic medical texts used in class. For the

second descriptor, which referred to understanding the main idea of the texts used

in class, and the eighth descriptor, which was concerned with identifying different

parts of the body that were related to and/or affected by the illnesses read about in

class, only two students responded with the 'sometimes' option, and the remaining

four responded with the 'always' option. Based on these results, it is clear that the

majority of the students felt that they would be able to perform those skills,

suggesting that they perceived a high level of achievement of the parts of the Unit

1 goal related to the identification of main ideas and the recognition of the

vocabulary taught in class. For the third and fourth descriptors, which were related

to the students' ability to orally discuss the main idea and supporting details of a

medical text and summarize a short medical text, respectively, only one student

answered that he/she was only able to complete them sometimes, and the

remaining students indicated that they were always able to do so. Finally, for the

remaining five descriptors, all six of the students indicated that they were always

able to perform the tasks. These descriptors referred mostly to the use of

vocabulary, including identification of it in medical texts, completion of sentences

with it by using definitions, understanding the relevant prefixes and suffixes in medical texts, and using the relevant vocabulary to discuss medical texts. The results also indicate that most of the students perceived that they would be able to perform the skills needed to achieve the Unit 1 goal, which were reading for details and identifying and using key vocabulary and relevant affixes to comprehend medical texts and discuss them with peers. Thus, their results suggest a high level of perceived goal achievement. While the students' estimations of their abilities can aid in the measurement of their levels of achievement, the analysis of their quiz scores and the skills and constructs needed to achieve high scores on those quizzes provide much stronger evidence of their levels of goal achievement. Therefore, it is necessary to collate the students' perceptions about their abilities with the abilities they demonstrated on their quizzes. In reference to the students' ability to demonstrate comprehension of medical texts by identifying key vocabulary, the results of the questionnaire (specifically, Descriptors one, five, eight, nine, and ten) indicate that all six of the students perceived that they were able to do so at a high level (with three of them indicating that they could only perform two of the descriptors sometimes). Similarly, the results from the Unit 1 quiz (specifically, Parts 1 and 3) indicated that the students were, in fact, able to identify and use key vocabulary to understand medical texts. Regarding their ability to demonstrate comprehension of medical texts by identifying key medical prefixes and suffixes, the results of the questionnaire (specifically, Descriptors six and seven) indicate that all of the students perceived that they had achieved a high level of goal achievement in that area. These perceptions agreed with the

skills they demonstrated to a high level of success on the Unit 1 quiz (specifically, on Part 2). In reference to the students' ability to demonstrate comprehension of medical texts by summarizing, the results of the questionnaire (specifically, Descriptors two, three, and four) indicate that they perceived a slightly lower level of overall achievement, since three of them indicated that they could only summarize medical texts by understanding or discussing the main idea sometimes, and one of them indicated that he/she could only summarize medical texts sometimes. According to the results and analysis of the Unit 1 quiz (specifically, Parts 1 and 4), the students' perceptions align with their performance, since seven out of eight students achieved a passing score on Part 1, which indicated a high level of success in the skill of identifying and using relevant vocabulary to understand texts, and only six out of eight students achieved a passing score on Part 4, which indicated a high, but slightly lower, level of success in the skill of summarizing texts by identifying main ideas. While these quiz results were still mostly positive, they show a lower level achievement than the other two parts of the quiz, which were related to the use of medical vocabulary and affixes to comprehend medical texts. Thus, the analysis of the relevant skills needed to complete the Unit quiz, the students' performance on the quiz, and their perceptions about their ability to perform those skills all suggest a higher level of achievement in demonstrating comprehension of the key vocabulary and affixes to comprehend medical texts than in summarization through they identification of main ideas.

Additionally, the questionnaire, unlike the quiz, was able to measure the students' perceptions of their ability to demonstrate comprehension of medical texts by discussing information and/or recognizing areas affected by specific conditions. The results regarding those descriptors (three, eight, and ten) indicate that the majority of the students felt that they were able to accomplish those tasks, but three of them indicated that they were only able to do so some of the time. Surprisingly, two out of six students indicated that they would only sometimes be able to recognize the areas in the body affected by specific conditions, even though all of the conditions had been reviewed explicitly during class. These results may have been caused by a lack of sufficient practice of those specific conditions in class, teaching the students several different conditions during the span of only three weeks, and/or separating the students into groups when discussing various conditions. Specifically, during one class in the course, the students were split into four groups, and each group had to read about one of the conditions mentioned in the questionnaire (vasculitis, hypopituitarism, hypersensitivity, and hyperparathyroidism; see Table 12 above). After reading, each group had to present the most significant information about the condition that they had read about. While each group listened and took notes about all four of the conditions, it is likely that not reading the texts about all four conditions lowered the students' confidence in recognizing the parts of the body that were affected by each condition.

Table 13 (shown below) displays the results of the second self-assessment questionnaire, which measured the students' perceptions about their achievement of the Unit 2 goal.

**Table 13**[6]

*Students' perceptions of their own achievement of the Unit 2 (listening) goal*

| Achievement descriptors | Number of respondents per achievement indicator | | |
|---|---|---|---|
| | Never | Sometimes | Always |
| 1. I can understand the medical audios and videos used in class. | 0 | 2 | 2 |
| 2. I can identify the main idea of the medical audios and videos shown in class. | 0 | 1 | 3 |
| 3. I can pronounce words with -ed endings confidently. For example, 'showed,' 'looked,' and 'enlarged'. | 0 | 3 | 1 |
| 4. I can identify the vocabulary learned in this Medical English course in the audios or videos I listen to or watch for my medical class assignments. | 0 | 1 | 3 |
| 5. I can use the vocabulary learned in class to discuss CABG[7]. | 0 | 1 | 3 |
| 6. I can use the vocabulary learned in class to discuss illnesses such as Rassmussen's and Lyme disease. | 0 | 3 | 1 |
| 7. I can use the vocabulary learned in class to discuss Endometrial carcinoma. | 0 | 2 | 2 |
| 8. I can create questions about the audio or video used in class to quiz my classmates. | 0 | 0 | 4 |
| 9. I can use the vocabulary learned in class to discuss medical treatments with my peers. | 0 | 0 | 4 |
| 10. I can formulate sentences to express what I would do if I were in certain situations (conditionals). | 0 | 0 | 4 |

n=4

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[6] For clarification, only four out of eight students completed this self-assessment since, as was the case with the first questionnaire, it was sent electronically as homework, and the remaining four students chose not to complete it even though they were requested to do so.

[7] CABG is the acronym used to refer to Coronary artery bypass grafting, which is "a procedure to improve poor blood flow to the heart" (National Heart, Lung, and Blood Institute, n.d.).

Based on Table 13 (above), the results of this questionnaire were varied. As in the previous self-assessment, none of the students selected the 'never' option, which shows that even though the students thought they were able to perform the tasks at different levels of achievement, they all believed that they had attained some level of goal achievement. Additionally, for two of the descriptors (three and six), three out of four students indicated that they were only able to perform the task sometimes, while the remaining student indicated that he/she was always able to do so. These descriptors measured the students' perceived ability to correctly pronounce words with -ed endings confidently and use the vocabulary learned in class to discuss relevant medical conditions, respectively.

For two of the descriptors (one and seven) shown in Table 13 (above), two out of four students indicated that they were only able to perform the tasks sometimes, while the remaining students indicated that they were always able to do so. These descriptors measured the students' perceived ability to understand academic medical videos and audios and use the medical vocabulary learned in class to discuss a medical condition discussed in class, respectively. For three of the descriptors (two, four, and five), one student indicated that he/she was only able to perform the tasks sometimes, while the remaining three students, per descriptor, indicated that they were always able to do so. These descriptors measured the students' perceived ability to identify the main idea of academic medical videos or audios, identify the vocabulary learned in the Medical English course in their medical courses, and use the vocabulary learned in class to orally discuss a medical procedure, respectively. Finally, for the remaining three

descriptors (eight, nine, and ten), all four out of four students indicated that they were always able to perform the tasks. These descriptors evaluated the students' perceived ability to create questions about the medical videos used in class to quiz their classmates, use the vocabulary learned in class to discuss medical treatments with their classmates, and formulate conditional sentences to express what they would do in hypothetical situations, respectively. Thus, Descriptors one, two, and four correlated with the part of the unit goal related to demonstrating comprehension of key medical vocabulary from an academic medical video. Descriptors five, six, seven, and nine correlated with the part of the goal related to demonstrating comprehension by reporting the information in the videos to their peers. Descriptor eight was relevant to the part of the goal related to demonstrating comprehension of an academic medical video by outlining it, and Descriptors three and ten were indirectly relevant to the parts related to being able to demonstrate comprehension by reporting information to their classmates since they measured their perceived ability to pronounce past tense words ending in -ed and use the relevant grammatical structure, which was the second conditional, correctly. Based on these results, the students perceived a moderate to high level of goal achievement related to the comprehension of the key medical vocabulary, a high level of achievement related to demonstrating comprehension of the information in medical videos by outlining it, and a moderate to high level of achievement related to demonstrating comprehension of medical videos by reporting the information in them to their classmates. These results show that the students felt they had only attained a moderate level of goal achievement after the

conclusion of Unit 2. Here, it is necessary to connect the students' perceptions to their quiz scores. About their ability to demonstrate comprehension of medical videos by identifying key vocabulary words by outlining the video, the results of the questionnaire (specifically, Descriptors one, two, and four) indicate that the majority of the students perceived that they were able to do so at a high level of success, with only two students indicating that they were only able to do so at a moderate level. Similarly, the results from the Unit 2 quiz (specifically, Parts 1 and 2) showed a high level of success in the following skill: listening to medical videos for specific information, details, and vocabulary. Thus, the students' perceived levels of success in the relevant skills were similar to those represented by the analysis of the Unit 2 quiz and the students' results since six out of eight students were able to demonstrate high levels of success in this area. Next, regarding their ability to demonstrate comprehension of medical videos by reporting the information in them, the results of the questionnaire (specifically, Descriptors three, five, six, seven, eight, nine, and ten) show that the majority of the students perceived that they were able to do so at a high level. The analysis of their quiz results (specifically, Part 3), on the other hand, only suggested a moderate level of achievement in this area, since only five out of eight students obtained a passing score. As mentioned earlier, the students may have struggled due to having to write out their responses, which they had not been tested on previously. However, they had practiced determining the main ideas of oral texts, listening for specific details to fill in blanks, and discussing these ideas and details orally throughout the unit. The students were also allowed to write their answers in Spanish if they

chose to do so. Another possible cause for this discrepancy is "skill contamination" (Coombe, Folse, & Hubley, 2007, p. 98), which may have affected the researchers' ability to measure the students' listening achievement since they also measured their ability to express themselves in written text. As mentioned earlier, the researchers tried to avoid such contamination by allowing students to answer the questions either in Spanish or in English, and also by only grading the responses themselves, without grading students' use of correct spelling and grammar. However, it seems that the quiz may not have been entirely successful in that regard. Here, the researchers also noted that there was more of a discrepancy between the students' perception and their quiz scores than in Unit 1. This may be due to the more extensive background in reading than in listening, which the students had developed before the start of the Medical English course, as determined during the needs analysis process.

Table 14 (below) shows the students' perceptions about their own achievement in Unit 3. Unlike the previous two questionnaires, this one was completed by all eight students. As shown in Table 14, none of the students selected the 'never' or 'rarely' options, which indicates a moderately high to high level of perceived achievement in every task listed on the instrument. Regarding the use of a dictionary to ask a patient about symptoms (Descriptor one), most of the respondents (five out of eight) reported that they did not need it to complete the task, compared to the three students that 'usually' need it for that purpose. The students' perceptions aligned with the analysis of their quiz scores, since their results in the vocabulary category on the Unit 3 quiz consisted entirely of passing

scores, which indicated a high level of achievement in the ability to use the

relevant vocabulary to communicate orally with patients.

**Table 14**[8]

*Students' perceptions of their own achievement of the Unit 3 (speaking) goal*

| Achievement descriptors | Number of respondents per achievement indicator | | | |
|---|---|---|---|---|
| | Never | Rarely | Usually | Always |
| 1. I can ask a patient about his/her current symptoms without using a dictionary. | 0 | 0 | 3 | 5 |
| 2. I can formulate grammatically correct yes/no questions. | 0 | 0 | 7 | 1 |
| 3. I can formulate grammatically correct information questions (using WH words). | 0 | 0 | 7 | 1 |
| 4. I can ask a patient all the questions to complete a medical record form. | 0 | 0 | 1 | 7 |
| 5. I can break bad news to a patient politely. | 0 | 0 | 2 | 6 |
| 6. I can prescribe a common medication to a patient without using a dictionary. | 0 | 0 | 5 | 3 |
| 7. I can suggest that a patient change his/her lifestyle to make it healthier. | 0 | 0 | 2 | 6 |
| 8. I can interview a patient in English without teacher assistance. | 0 | 0 | 4 | 4 |
| 9. I can properly respond to a patient's feelings after telling him/her some bad news. | 0 | 0 | 4 | 4 |
| 10. I can identify correct and incorrect ways of telling patients bad news in academic videos. | 0 | 0 | 2 | 6 |

n=8

Based on Table 14 (above), there were two descriptors (two and three) that

asked the students to rate their ability to formulate grammatically correct questions

(using the structures taught in class), and the majority of the students answered

with the 'usually' option, which shows a moderate level of uncertainty regarding

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[8] All eight students completed this questionnaire since it was administered during class.

their command of grammar, and thus a moderately high level of perceived goal achievement. These results align with the students' grammar production on the Unit 3 quiz, on which only four out of eight students demonstrated a high level of success in formulating yes/no and information questions to ask for patients' symptoms and personal information and using proper bedside manners by formulating polite questions using modals. These results suggested that the goal of being able to communicate orally with patients by producing the correct grammatical structures was only accomplished at a moderate level by only about half of the students. However, as mentioned above, grammar was not the main focus of this course since it followed a TBLT structure, which prioritized effective communication. Thus, the design of this course may have contributed to the students' moderate levels of (perceived) achievement in this area. Further, seven out of the eight students reported that they were 'always' able to ask patients the necessary questions to complete a medical record, which shows a high level of perceived achievement in that area. These results align with those of the Unit 3 quiz, which indicated that the majority of the students that performed this scenario (Students 2, 4, 6, and 8 in Tables 10 and 11 above) showed a high level of success in that skill. Most of the students (six out of eight) stated that they were 'always' able to break bad news to patients politely. These results also aligned with those of the Unit 3 quiz, which indicated that the majority of the students that performed this scenario (Students 1, 3, 5, and 7 in Tables 10 and 11 above) showed a high level of success in that skill. Only three students stated that they did not need a dictionary to prescribe medication to a patient, whereas most of

them (five out of eight) selected the 'usually' option, which indicates that they felt that they lacked sufficient relevant vocabulary to complete that task unassisted. As explained above, this aspect was not measured by the Unit 3 quiz; however, based solely on the students' questionnaires, the students may only have been able to obtain a moderately high level of achievement in this area. However, when they were asked if they were able to suggest that a patient change his/her lifestyle to make it healthier, most of them (six out of eight) selected the 'always' option, while the other two students chose 'usually.' These results show a high level of perceived achievement in being able to communicate orally with patients about making healthy lifestyle changes. Because of the structure of the Medical English course, this aspect was directly tied to being able to prescribe medicine. Therefore, this area was not tested by the quiz in Unit 3, but the results of the self-assessment questionnaire showed a high level of perceived achievement in this area. There were two tasks about which half of the participants chose 'usually' and the other half chose 'always,' which were (1) being able to interview a patient without a teacher's assistance and (2) being able to respond to a patient's feelings after telling him/her some bad news. For both of these descriptors, the students showed a moderately high level of perceived achievement, which again was in alignment with the analysis of their quiz scores, as described above. Finally, most students (six out of eight) indicated that they were 'always' able to identify correct and incorrect ways of telling patients bad news in academic videos, while the other two students stated that they were only usually able to do so.

In general, according to their own perceptions, the students believed they were able to achieve most of the tasks indicated on the questionnaire at a moderately high or high level. This was mostly only reflected on the quiz in the area of vocabulary, with some additional achievement demonstrated in the area of grammar. In terms of the goal, the students indicated that they were able to attain moderately high to high levels of achievement in all aspects, but the analysis of their quiz results and the relevant skills, they were only able to demonstrate an overall moderate level of skill and goal achievement. While the students were not able to attain the exact levels of achievement that they perceived, their performance on the Unit 3 quiz approached their levels of perceived achievement.

**External Evaluator Results and Analysis**

As mentioned above, an expert in the field of ESP was asked to evaluate the students' production on the speaking quiz as an external evaluator. Based on Tables 9 and 10 (shown above), there was significant variation between the scores given by the researchers and those given by the expert. In most cases, the researchers gave the students higher scores than the ESP expert even though the expert was told the specific elements that were taught throughout the course. In some cases, the difference between the scores was very large. For example, Table 10 (above) shows that Student 8 received an average score of 78 percent from the researchers, yet was given a 44 percent by the expert. The expert's comments about the student's performance included mostly grammatical errors, an incorrect collocation, and some pronunciation errors. While the researchers had also noted some of the same grammatical errors, it appears there was a difference

in opinion about the severity of the mistakes in terms of hindering comprehension. Another example is Student 2, who received an average of 81.7 percent from the researchers (henceforth known as average score) and a score of 56 percent from the expert (henceforth known as expert score). Again, the expert's comments highlighted the student's grammatical and pronunciation errors. In this case, the only mistake noted by the expert in the grammar section of the rubric was also noted by two out of three researchers; however, the researchers gave the student full credit (three points) while the expert gave two points. Similarly, the remaining six sets of comments were comparable in that all of the evaluators, including the expert, wrote similar comments for each student, which specified incidences of grammatical and/or pronunciation errors. Even though the comments for some students were nearly identical, many of the scores were different. Unfortunately, the researchers were unable to meet with the expert to discuss her opinions and rationale for giving each student the score that she did. However, this variation may indicate that 'hinder comprehension,' a phrase used on the rubric to describe a middle-level score (see Appendix S), was more subjective than the researchers had anticipated. Another probable cause of the variation is that the expert did not fully support the rubric that the researchers created. Specifically, after the expert had finished scoring all of the quizzes, she orally indicated that the rubric should have included other aspects, such as pronunciation and adherence to the protocols taught in class. While the researchers decided not to include these elements for reasons explained in the Methodology section, it is possible that the

expert gave many students lower scores in the given criteria to account for the missing criteria that he/she considered significant.

While most of the students received a lower score from the expert than from the researchers, Students 1 and 3 received a higher score from the expert than from the researchers. Student 4 was the only one who received the same score from all of the researchers and the expert. Since most of the students received higher grades from the researchers than from the expert, there was likely a lack of inter- and intra-rater reliability. In the case of this study, some bias toward the students likely caused this issue on the researchers' part, since they personally taught all of the participants, while the expert did not. The researchers probably unintentionally and unwittingly lowered their standards to accommodate the students' production, since they had been accustomed to their way of speaking and therefore, understood it more easily due to their constant presence throughout the course. Inexperience may also have played a role in the lack of inter-rater reliability since the researchers did not have master's degrees in TEFL, nor as many years of experience in teaching ESP (and assessing students' oral production in ESP settings) as the expert did. Another possible cause for these large differences between the scores was that the rubric left room for a minor amount of subjectivity. The researchers centered the rubric around the students' ability to communicate successfully (which was the most necessary part of the goal for Unit 3), rather than around precise parameters to measure the number of mistakes that each student made per category. However, this decision seemingly unintentionally caused the rubric to be susceptible to subjectivity, which likely

caused some of the variation in scores, even amongst the individual researchers. This aspect of the rubric calls into question its overall success in accurately and objectively rating the students' production and their level of goal achievement. The rubric could and should have been more specific in terms of the desired student production that would be worthy of receiving the full points. For example, the description of the highest level in the grammar category reads as follows: "Few or no grammar mistakes in the structures studied in the unit" (see Appendix S). The other two categories, vocabulary and fluency, display similar wording. The researchers could have made more of an effort to specify the types of acceptable mistakes that could have been made while still receiving full credit in each category since the descriptors for each level were unintentionally vague and thus, open to some subjectivity, which may have caused some of the variation between the scores.

Additionally, as mentioned above, issues related to intra-rater reliability are typical and most likely contributed to the differences in scores, even amongst the researchers. Specifically, the scoring criteria was vague and rater bias was most likely an issue. Perhaps in future studies, researchers can find a way to directly assess the students while also grading them blindly to increase intra-rater reliability by avoiding bias toward specific students. Unfortunately, this idea was impossible to execute in this study since the researchers administered the test personally and had the students identify themselves by their names in the audio-recordings of the quizzes, which means that the researchers always knew which students they were rating. Overall, while there is some difference between the

scores, the expert's scores still indicate that only three out of the eight students achieved the goal for Unit 3 at an overall level of 80 percent or above, which align with the researchers' scores, which also indicated three out of eight students achieved a passing score, which indicates that only three students demonstrated a high level of skill in the areas necessary to complete the quiz. These results show that while three students demonstrated goal achievement at a high level, the majority of the students, five out of eight, did not. These results may have been due to various factors mentioned above and/or student-related reliability possibly caused by test "anxiety" related to having to speak and be audio-recorded during the quiz, which was not a part of the previous two quizzes (Brown & Abeywickrama, 2010, p. 28). Finally, the external evaluator's opinions about the students' quiz scores suggest that the scoring rubric was not completely reliable and may not have accurately reflected the students' true levels of skill, and thus their levels of goal achievement in that area.

## Conclusions

Having completed the processes of creating course goals, developing instruments to measure the level of students' achievement of those goals, and analyzing the results, the researchers have come to the following conclusions.

Overall, the results indicated that most of the students attained a high level of achievement for the first two course goals, but were unable to do so for the third. While the goals were not achieved by all of the students, they all clearly demonstrated that they were able to perform at levels that approached goal achievement based on the analysis of their quiz scores and the skills and

components of the goals needed to successfully complete the quizzes. Regarding

the students' self-perceived levels of achievement, the results demonstrated that

they generally aligned with their performance on the end-of-unit quizzes. While

there is still room for improvement in the design and implementation of the course

(specifically, with the reliability and validity of the assessment instruments, as

explained in the Results and Discussion section above), the majority of the

students clearly demonstrated a moderate to high level of goal achievement. It

was difficult to precisely quantify and qualify the overall levels of goal achievement

that the participants attained because, while the researchers were able to assign

scores to their performance on class assessments and analyze the skills and

components of the goals reflected in the assessment instruments, these data only

provided support for the claim that the goals had been achieved, but no direct

proof. Due to both the statement above and issues of practicality (time constraints

and ease of scoring), reliability, and validity, the instruments used throughout this

course were only able to indirectly assess the students' level of goal achievement.

Further, the results indicated that it was likely that the students lacked sufficient

practice in listening and speaking, which probably contributed to their only

moderate level of goal achievement in those skill areas. However, to an extent,

this lack of sufficient practice was due to the context of the study, which severely

limited class time throughout the course.

The students' responses to the end-of-unit questionnaires demonstrated

that their perceptions of their levels of goal achievement were mostly in an

accurate range when collated with their skills and abilities, as they were reflected

in the quiz scores. Thus, the students seemed to be aware of their levels of success, and their perceptions reinforced their quiz scores as an accurate and reliable assessment of their abilities in the evaluated areas. The students were able to achieve the goal for Unit 1 to the highest extent; however, this conclusion is likely partially due to the students' initial levels of proficiency in reading (prior to the start of this course), their background knowledge, and the outside use of this skill for their university courses (based on the results of the needs analysis process). The following are further suspected causes for the students' different levels of goal achievement throughout the course.

Regarding Unit 1, the following contributing factors likely influenced the students' level of goal achievement. The teaching of reading strategies does not guarantee successful student employment of them; thus, the researchers likely did not sufficiently teach students how to effectively use the reading strategy of summarization through identification of main ideas prior to the administration of the assessment, which was caused by insufficient teaching time due to the context of this study. Since the students demonstrated high levels of goal achievement regardless of this fact, the researchers may have underestimated the students' initial abilities in reading comprehension after the needs analysis process, which was probably caused by a faulty and/or insufficient diagnostic test. The participants' high level of achievement of the first goal also demonstrated that, as the results of the diagnostic test showed, the students had a higher baseline proficiency in reading than in listening and speaking. Concerning Unit 2, the following contributing factors likely influenced the students' level of goal

achievement. The Unit 2 quiz did not provide the participants with explicit contextualization of the listening materials, the students did not have a sufficient amount of time to practice their listening abilities before the evaluation due to the context of this study, and the quiz may have put participants with limited memory skills at a disadvantage since they had to remember and record a lot of information from the videos. With Unit 3, while the scoring rubric used to evaluate the quiz was designed to maintain ease of scoring and practicality, it may have been ultimately unsuccessful since it was not weighted, did not include a criterion for task-completion for reasons explained earlier in this paper, and unintentionally included a minor amount of subjectivity. Because of that subjectivity, the scoring rubric used to assess the quiz from 3 was likely not as successful in accurately and objectively rating the students' production and their levels of goal achievement as the researchers had intended. Further, the lack of both inter- and intra-rater reliability affected the results of this study, as shown by the results. While these reliability issues are commonly experienced by language teachers that must assess students' speaking abilities and are hard to eradicate entirely, the researchers should have avoided them more carefully by (1) making the scoring criteria clearer and more specific, (2) setting parameters to prevent rater bias toward certain students, and (3) peer-evaluating the rubric prior to its administration to ensure that it did not contain elements and wording that contributed to subjective scoring. Moreover, due to the practicum context of this study, the students were not afforded sufficient time to practice their speaking skills before the evaluation. Student-related reliability may also have been a contributing factor in the level of

goal achievement, since the students may have experienced test anxiety related to being assessed on their ability to speak in English and/or being audio-recorded, which they had not previously experienced in the Medical English course.

Finally, skill contamination may have contributed to the lower-than-expected level of goal achievement on the Unit 3 quiz, since the participants were given long written guides that they had to read before performing their oral role-plays. With these factors in mind, the students were still able to communicate orally with their role-play patients, just at varying levels of achievement. Since the overarching goal of this course (and of the TBLT approach) was communication, the students still demonstrated goal achievement to an extent. Scores, especially when used to reflect students' levels of goal achievement and to determine course grades, must be fair and valid. Careful attention and deliberation must go into the creation of all rubrics used for any course, and especially for an ESP course.

Finally, it is necessary to highlight that the results of this study only indirectly answered the central research question posed at the beginning of this study, since the goals refer to real-world tasks that can only be unauthentically duplicated in a classroom setting. Since the goals of this course were ESP- and TBLT-based, they focused on communication and real-world situations. While the situations used in this course to evaluate the students' abilities were based on authentic scenarios, they were not 100 percent authentic, since they were conducted in a classroom. Another reason that these results do not provide a reliable answer to the research question is that only eight students finished all three end-of-unit quizzes, and even less completed all of the self-assessment

questionnaires. Therefore, there is not a sufficient amount of data to make reliable conclusions based solely on this study.

## Recommendations

This section presents some recommendations that may be useful to future researchers or student teachers who plan to conduct research about a similar topic or in a similar context.

All course designers must carefully design course evaluations based on the goals set for the course. While it can be easy to sometimes focus on other elements of the course that students need or want to improve on, if the main focus is to determine the students' levels of goal achievement, researchers must keep that in mind when designing every material that they create for the course. Additionally, it may be more helpful to group the units by topic rather than by skill. Since this study used the three main skills that the participants needed to organize the units, it was challenging at times to create quizzes that both (1) tested only the main skill of that unit and (2) accurately evaluated the students' levels of goal achievement. Further, the researchers specifically recommend that any future ESP course designers peer-evaluate their assessment instruments and scoring rubrics before their administration to avoid issues related to practicality, reliability, authenticity, validity, and inter-rater reliability. If future course designers plan to assess their students' levels of goal achievement in terms of speaking abilities, it is recommended that they find a way to exclude subjectivity and rater bias toward specific students from the scoring process to the best of their abilities. Furthermore, when designing speaking rubrics, future researchers should be more

specific and explicit in defining and describing the types of acceptable mistakes that students can make while still receiving full credit. If accomplished, future researchers will obtain less subjective results about students' levels of goal achievement.

Since this course was very short in duration, it may be better for future student teachers, given the same parameters and context, to plan as much in advance as possible. Specifically, future researchers should carefully design as many course goals, assessments, and scoring materials as possible before the start of their courses so that they have time to have their peers and supervisors evaluate and provide feedback on them. While this would present a great challenge due to time constraints, future researchers would likely obtain more reliable results than in this study.

Additionally, the more detailed one makes the instruments used during the needs analysis process, the easier it will be to find and teach materials that will be most beneficial to the students. Specifically, future researchers should first consult with teachers and experts in the students' field so that they can formulate questions that are specific enough to obtain the necessary information from the students. Further, future student teachers should directly ask some or all of the individual participants about their English needs as they relate to their field, and should request specific textbooks, audios, videos, assignments, and any other activity during which the students have to use English in their regular courses. This specific information contributes to the creation of a more specific diagnostic test, which will help future researchers tailor the course goals and materials to the

participants. The diagnostic test should be as specific and detailed as possible so that future researchers do not unintentionally under- or overestimate their students' abilities due to insufficient diagnostic testing.

Moreover, the researchers recommend that future student teachers who want to evaluate students' levels of goal achievement, as in this study, make the goals as achievable as possible within the given time constraints of the course. While it may be tempting to set very ambitious goals for the students, sometimes those goals may be too ambitious taking into account the given constraints of the course.

Finally, when assessing oral skills, future researchers should develop rubrics that include essential aspects such as pronunciation, protocol, and task achievement. Since these significant elements were not included in the rubric used in this study, the students' levels of goal achievement may have been misjudged. Future researchers should include these aspects to obtain valid and reliable data.

## Limitations

Three major limitations related to data collection were experienced. This first limitation was that, due to uncontrollable factors related to protesting at and/or around the University of Costa Rica, one class session of the course was cancelled since neither the students nor the researchers were able to attend the class that day. To make up for this loss, the researchers couldn't give the students a final exam as there was no longer time to administer it. Originally, the researchers planned to use the final exam scores to further measure levels of goal achievement, but this was made impossible. The second limitation was that the

number of students that completed all three of the quizzes and finished the course is significantly lower than the number of students that intended to start or started the course. Due to the changing number of students, the only ones included in this study were those who finished all three end-of-unit quizzes. The small number of participants severely limited the data the researchers could collect. The third limitation was that the students were assigned two of the three self-assessment questionnaires as homework. Therefore, some of the students chose not to complete them even though the researchers reminded them to do so several times and on more than one occasion. Therefore, only the data that the researchers were able to collect from the students could be recorded and analyzed. For this reason, the third and final questionnaires were administered in class rather than given as homework.

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# Appendices

## Appendix A

**Universidad de Costa Rica**
**Escuela de Lenguas Modernas**
**Posgrado en la Enseñanza del Inglés como Lengua Extranjera**
**Isela Barahona, Simone Lewis and Edwin Quesada**
**English for Medical Students**

Este cuestionario pretende recolectar información esencial acerca de la carrera y necesidades específicas del inglés de los estudiantes que desean tomar el curso de inglés para medicina en el segundo semestre del 2019. **Las respuestas a este cuestionario son de suma importancia** para orientar el diseño del curso y permanecerán confidenciales y serán utilizadas solamente para propósitos académicos para el curso PF-0309 Diseño de Práctica Profesional en la Universidad de Costa Rica. Su honestidad y tiempo son altamente apreciados.

### Cuestionario para estudiantes

**PARTE A: INFORMACIÓN PERSONAL**
1. Nombre: _____
2. Correo electrónico: _____
3. Nombre completo de la carrera o posgrado:
_____
4. Año y ciclo actual del programa de carrera que cursa:
_____
5. Especialidad médica que le gustaría ejercer:
_____
6. Horario en que está libre este semestre con hora(s) y día(s) de la semana (para realizar una prueba de diagnóstico):
_____

**PARTE B: INFORMACIÓN GENERAL SOBRE EL USO DEL INGLÉS EN LA CARRERA**

Marque con una equis X la opción u opciones que correspondan.

1. ¿Alguna vez tiene que usar inglés en los cursos de la carrera? **Si no tiene que usar el idioma inglés en ninguna clase de la carrera, por favor escoger "no" y pasar a la PARTE C.**
( ) Sí.
( ) No.

2. Actividades propias de la carrera que requieran inglés:
( ) Realizar lecturas propias de los cursos
( ) Comprender videos en clase / de tarea
( ) Comprender conferencias
( ) Participar en talleres
( ) Realizar presentaciones orales
( ) Otras. Especifique con ejemplos:
_____
( ) Ninguna

3. Por lo general, ¿sobre qué tema(s) tratan las actividades que se realizan en inglés en su carrera?
_____
_____
_____
_____
_____

4. ¿Con qué frecuencia tiene que leer los siguientes textos en inglés para su carrera? (**Frecuentemente**= una vez por semana o más, **Ocasionalmente**= alrededor de una vez por mes, **Rara vez**= unas cuantas veces al año, **Nunca**= usted no ha tenido que hablar con un paciente médico en inglés)

|  | Nunca | Rara vez | Ocasionalmente | Frecuentemente |
|---|---|---|---|---|
| · Libros de texto | 1 | 2 | 3 | 4 |
| · Lecturas científicas | 1 | 2 | 3 | 4 |
| · Historias clínicas | 1 | 2 | 3 | 4 |
| · Investigaciones académicas | 1 | 2 | 3 | 4 |
| · Instrucciones para aparatos médicos | 1 | 2 | 3 | 4 |
| · Otro | 1 | 2 | 3 | 4 |

o especifique _____

5. ¿Con qué frecuencia tiene que escribir los siguientes textos <u>en inglés para su carrera</u>? (**Frecuentemente**= una vez por semana o más, **Ocasionalmente**= alrededor de una vez por mes, **Rara vez**= unas cuantas veces al año, **Nunca**= usted no ha tenido que hablar con un paciente médico en inglés)

|  | Nunca | Rara vez | Ocasionalmente | Frecuentemente |
|---|---|---|---|---|
| · Lecturas científicas | 1 | 2 | 3 | 4 |
| · Historias clínicas | 1 | 2 | 3 | 4 |
| · Investigaciones | 1 | 2 | 3 | 4 |
| · Otro | 1 | 2 | 3 | 4 |

o especifique _____

6. ¿Con qué frecuencia tiene que escuchar las siguientes opciones <u>en inglés para su carrera</u>?  (**Frecuentemente**= una vez por semana o más, **Ocasionalmente**= alrededor de una vez por mes, **Rara vez**= unas cuantas veces al año, **Nunca**= usted no ha tenido que hablar con un paciente médico en inglés)

|  | Nunca | Rara vez | Ocasionalmente | Frecuentemente |
|---|---|---|---|---|
| · Vídeos académicos | 1 | 2 | 3 | 4 |
| · Oradores internacionales | 1 | 2 | 3 | 4 |
| · Conferencias internacionales de medicina | 1 | 2 | 3 | 4 |
| · Otro | 1 | 2 | 3 | 4 |

o especifique _____

7. ¿Con qué frecuencia tiene que hablar <u>en inglés</u> en las siguientes situaciones? (**Frecuentemente**= una vez por semana o más, **Ocasionalmente**= alrededor de una vez por mes, **Rara vez**= unas cuantas veces al año, **Nunca**= usted no ha tenido que hablar con un paciente médico en inglés)

|  | Nunca | Rara vez | Ocasionalmente | Frecuentemente |
|---|---|---|---|---|
| · Dar exposiciones académicas en clase | 1 | 2 | 3 | 4 |
| · Hablar con pacientes | 1 | 2 | 3 | 4 |
| · Otro | 1 | 2 | 3 | 4 |

o especifique _____

**PARTE C: INGLÉS PARA DESPUÉS DE GRADUARSE**
Marque con una equis X la opción u opciones que correspondan.

1. Una vez graduado(a), ¿cuáles actividades cree que va a realizar en inglés con respecto a su futuro trabajo?
( ) Lectura de investigaciones internacionales
( ) Redacción de trabajos de investigación
( ) Asistencia a conferencias, talleres y/o charlas en inglés
( ) Interacción con pacientes anglohablantes
( ) Interacción con colegas anglohablantes
( ) Redacción de correos
( ) Redacción de reportes de índole médica
( ) Otras. Especifique:

_____
_____
_____
_____

2. ¿ Cuáles son las destrezas que le parecen <u>más importantes</u> para su futuro trabajo? Ordene las siguientes habilidades, usando el número "1" para la habilidad que más piensa usar y el número "4" para la que menos piensa usar.

(   ) Escritura
(   ) Lectura
(   ) Escucha
(   ) Habla

**PARTE D: CONOCIMIENTO PREVIO DEL INGLÉS**
Lea cada enunciado y marque con X la opción que más aplique a su persona.

1.¿Ha estudiado el inglés anteriormente? **Si no ha estudiado anteriormente el idioma inglés, por favor escoger "no" y pasar a la PARTE E.**
( ) No, no he estudiado anteriormente el inglés.
( ) Sí, en clases en el colegio.
( ) Sí, en clases en una universidad.
( ) Sí, en tutorías.
( ) Sí, en un instituto.
( ) Sí, estudié en otro lugar. Especifíque:

_____
_____
_____

2. Si ha estudiado en alguno de los lugares anteriores, por favor indique la duración de su estudio. Por ejemplo, colegio - 5 años, instituto - 2 años.

| Lugar | Tiempo |
|---|---|
| | |
| | |
| | |
| | |

## PARTE E: DESTREZAS LINGÜÍSTICAS

Esta sección está diseñada para recolectar información acerca de sus destrezas lingüísticas en el idioma inglés. Por favor, lea cada enunciado y marque con una X la opción que más se ajuste a su persona.

### E.1 Lectura

| | Siempre | Usualmente | Algunas veces | No puedo |
|---|---|---|---|---|
| 1. Puedo leer libros de texto en inglés sin usar el diccionario. | | | | |
| 2. Puedo leer investigaciones médicas en inglés sin usar el diccionario. | | | | |
| 3. Puedo leer historias clínicas en inglés sin usar el diccionario. | | | | |
| 4. Puedo identificar prefijos latinos y griegos para entender términos médicos (por ejemplo, *hyper-* or *supra-*). | | | | |
| 5. Si no entiendo una palabra en un texto en inglés, puedo usar las palabras que lo rodean para entender su significado. | | | | |

**E.2 Escritura**

| | Siempre | Usualmente | Algunas veces | No puedo |
|---|---|---|---|---|
| 1. Puedo escribir historias clínicas en inglés con correcta ortografía. | | | | |
| 2. Puedo escribir reportes de investigaciones en inglés usando las estructuras gramáticas del inglés correctamente. | | | | |
| 3. Puedo expresarme claramente en el idioma inglés al escribir reportes de investigaciones. | | | | |
| 4. Puedo escribir con una variedad de vocabulario en inglés al escribir reportes de investigaciones. | | | | |

**E.3 Escucha**

| | Siempre | Usualmente | Algunas veces | No puedo |
|---|---|---|---|---|
| 1. Puedo entender instrucciones orales en inglés. | | | | |
| 2. Puedo entender la idea principal de una presentación académica oral en inglés. | | | | |
| 3. Puedo entender vídeos académicos en inglés si no hablan rápido. | | | | |

**Tengo dificultad para entender el inglés oralmente cuando:**

|  | Siempre | Usualmente | Algunas veces | No puedo |
|---|---|---|---|---|
| 4. La persona habla muy rápido. |  |  |  |  |
| 5. La persona tiene un acento particular (otro que no sea el inglés norteamericano estándar). |  |  |  |  |

**E.4 Habla**

|  | Siempre | Usualmente | Algunas veces | No puedo |
|---|---|---|---|---|
| 1. Puedo participar en una conversación básica (no referente a temas de mi carrera) en inglés con mis compañeros. |  |  |  |  |
| 2. Puedo participar en una conversación en inglés referente a temas de mi carrera. |  |  |  |  |
| 3. Puedo pronunciar el vocabulario en inglés referente a mi carrera. |  |  |  |  |
| 4. Puedo detectar mis errores cuando hablo en inglés. |  |  |  |  |
| 5. Puedo dar exposiciones de clase en inglés. |  |  |  |  |

**PARTE F: HABILIDADES QUE QUIERO MEJORAR**

Lea cada enunciado y ordene las siguientes habilidades, usando el número "1" para la habilidad que más quiere mejorar y el número "9" para la que menos quiere mejorar. Si no quiere mejorar en alguno, por favor no marcarlo.

1. Leer investigaciones sobre medicina en inglés ( )
2. Leer libros de texto sobre medicina en inglés ( )
3. Leer historias clínicas en inglés ( )
4. Escribir investigaciones sobre medicina en inglés ( )
5. Escribir historias científicas en inglés ( )
6. Comunicarme oralmente con pacientes en inglés ( )
7. Comunicarme oralmente en inglés con compañeros internacionales acerca de ( ) actualizaciones en la medicina
8. Comprender el inglés oral para asistir a conferencias de medicina con ( ) oradores internacionales
9. Otro (por favor especifique): ( )
_____

Gracias.

**Appendix B**

**Universidad de Costa Rica**
**Escuela de Lenguas Modernas**
**Maestría en la Enseñanza del Inglés como Lengua Extranjera**
**Isela Barahona, Simone Lewis, Edwin Quesada**
**English for Medical Students**

Este cuestionario pretende recolectar información esencial acerca de la carrera, profesión y necesidades específicas del inglés en la misma de los estudiantes que desean tomar el curso de inglés para medicina en el segundo semestre del 2019. Las respuestas de este cuestionario permanecerán confidenciales y serán utilizadas solamente para propósitos académicos para el curso PF-0309 Diseño de Práctica Profesional en la Universidad de Costa Rica. Su honestidad y tiempo son altamente apreciados.

**Cuestionario para docentes**

**Información Personal**

1. ¿Además de trabajar como profesor en la UCR, tiene usted otro lugar de trabajo como médico?

[  ] No.
[  ] Sí.

2. ¿Cuál es su otro lugar de trabajo como médico? Sírvase elegir la(s) opción(es) que aplique(n); puede elegir más de una y/o especificar.

[  ] Médico de empresa
[  ] Consultorio privado
[  ] Hospital privado
[  ] Hospital público
[  ] Otro. Por favor especifique sobre la línea siguiente:

_____

3. ¿Alguna vez usa el idioma inglés en el trabajo? **Si no tiene que usar el idioma inglés en el trabajo, por favor pasar a la pregunta 6.**

[  ] No.
[  ] Sí.

4. Si usa inglés en el trabajo, ¿en qué situaciones específicas lo necesita?

[ ] Para entender cómo usar aparatos médicos.
[ ] Para hablar con pacientes.
[ ] Para escuchar expositores extranjeros en conferencias médicas.
[ ] Otro. Por favor especifique sobre la línea siguiente:

_____

5. ¿Con qué frecuencia tiene que comunicarse usted con pacientes extranjeros en el idioma inglés?

[ ] Frecuentemente (una vez por semana o más)
[ ] Ocasionalmente (alrededor de una vez por mes)
[ ] Rara vez (unas cuantas veces al año)
[ ] Nunca (usted no ha tenido que hablar con un paciente médico en inglés)

6. Por favor, ordene las siguientes habilidades lingüísticas del inglés desde las que más use a las que menos use en su trabajo. Use el número "1" para la habilidad que use con más regularidad y el número "4" para la que use con menos regularidad.

[ ] Lectura
[ ] Escritura
[ ] Escucha
[ ] Habla

7. ¿Alguna vez ha deseado saber más inglés para situaciones específicas de su trabajo? (Por ejemplo: Si alguna vez fue a una conferencia y no pudo entender a un orador internacional sin traducción; o si alguna vez quiso leer un texto médico en inglés, pero no entendió sin la traducción; o si usted quiso publicar una investigación en inglés, etc.)

[ ] No.
[ ] Sí. Por favor especifique sobre la línea siguiente:

_____

8. ¿Con qué frecuencia asiste usted a conferencias médicas?

[ ] Frecuentemente (una vez por semana o más)
[ ] Ocasionalmente (alrededor de una vez por mes)
[ ] Rara vez (unas cuantas veces al año)
[ ] Nunca (usted no ha tenido que hablar con un paciente médico en inglés)

9. ¿Necesita usted utilizar el idioma inglés mientras está en conferencias médicas? (Por ejemplo, si usted necesita usar inglés con la intención de entender una presentación de un orador extranjero, o si utiliza el idioma inglés con la intención de comunicarse informalmente con sus colegas en la conferencia, etc.).

[ ] No.
[ ] Sí. Por favor especifique sobre la línea siguiente:
_____

**Información sobre el uso del idioma inglés de los médicos**

10. ¿Qué tan importante es para los doctores tener la habilidad de comunicarse fluidamente en el idioma inglés con sus pacientes?

[ ] Muy importante (los doctores necesitan utilizar esta habilidad frecuentemente)
[ ] No muy importante (los doctores no necesitan esta habilidad muy a menudo)
[ ] Para nada importante (los doctores no necesitan esta habilidad en lo absoluto)

11. ¿Qué tan importante es para los doctores la habilidad de poder comunicarse en el idioma inglés con colegas del área de la medicina con propósitos laborales?

[ ] Muy importante (los doctores necesitan utilizar esta habilidad frecuentemente)
[ ] No muy importante (los doctores no necesitan esta habilidad muy a menudo)
[ ] Para nada importante (los doctores no necesitan esta habilidad en lo absoluto)

12. ¿Qué tan importante es para los doctores tener la habilidad de leer y entender artículos de investigación médica en el idioma inglés?

[ ] Muy importante (los doctores necesitan utilizar esta habilidad frecuentemente)
[ ] No muy importante (los doctores no necesitan esta habilidad muy a menudo)
[ ] Para nada importante (los doctores no necesitan esta habilidad en lo absoluto)

13. ¿Qué tan importante es para los doctores tener la habilidad de leer y entender libros de texto en el idioma inglés?

[ ] Muy importante (los doctores necesitan utilizar esta habilidad frecuentemente)
[ ] No muy importante (los doctores no necesitan esta habilidad muy a menudo)
[ ] Para nada importante (los doctores no necesitan esta habilidad en lo absoluto)

14. ¿Qué tan importante es para los doctores tener la habilidad de escribir investigaciones en el área de la medicina para su publicación en el idioma inglés?

[ ] Muy importante (los doctores necesitan utilizar esta habilidad frecuentemente)
[ ] No muy importante (los doctores no necesitan esta habilidad muy a menudo)
[ ] Para nada importante (los doctores no necesitan esta habilidad en lo absoluto)

15. ¿Qué tan importante es para los doctores poder entender el idioma inglés hablado en conferencias médicas?

[ ] Muy importante (los doctores necesitan utilizar esta habilidad frecuentemente)
[ ] No muy importante (los doctores no necesitan esta habilidad muy a menudo)
[ ] Para nada importante (los doctores no necesitan esta habilidad en lo absoluto)

16. ¿Qué tipo de vocabulario considera que es más importante para los doctores aprender en el idioma inglés? (Por ejemplo: anatomía del cuerpo humano, síntomas de los pacientes, jerga médica usada en investigaciones en el área de la medicina, etc.) Por favor refiérase al tipo de vocabulario sobre la línea siguiente:

_____

17. ¿Qué tipo de problemas o conflictos considera usted que puede enfrentar un doctor si no sabe comunicarse en el idioma inglés?

_____

**Información sobre el uso del idioma inglés de los estudiantes de medicina**

18. ¿Considera usted que los estudiantes de medicina necesitan del idioma inglés para sus estudios en la UCR?

[ ] No.
[ ] Sí. (Por favor brinde ejemplos específicos de proyectos que los estudiantes deben de completar en inglés, videos que deben ver en inglés, tipos de textos que necesitan leer en inglés, etc.). Por favor utilice la línea siguiente para este fin:

_____

19. Basado en su interacción con estudiantes de medicina, ¿Qué nivel de inglés considera usted que tienen en general?

[  ] Principiante
[  ] Intermedio-bajo
[  ] Intermedio-alto
[  ] Avanzado
[  ] No tengo conocimiento del nivel de inglés de los estudiantes porque no uso inglés en mis clases.

20. ¿Qué tipo de documentos y proyectos se les asigna en la carrera de medicina regularmente? Por favor utilice la línea siguiente para este fin:
_____

21. ¿Tiene usted alguna otra recomendación para nosotros o para el curso?

[  ] No.
[  ] Sí. Por favor utilice la línea siguiente para este fin:
_____

Muchas gracias por su colaboración.

**Appendix C**

**Universidad de Costa Rica**
**Escuela de Lenguas Modernas**
**Posgrado en la Enseñanza del Inglés como Lengua Extranjera**
**Isela Barahona, Simone Lewis and Edwin Quesada**

**Entrevista Semi-estructurada**

El propósito de esta entrevista es conocer desde su perspectiva como médico, cuáles son las necesidades de manejo del idioma inglés en el ámbito de su profesión, con el fin de poder orientar el diseño de un curso de inglés con fines específicos para estudiantes de medicina de esta escuela. La información que usted pueda brindarnos es de suma importancia para el éxito de dicho curso y no será utilizada para ningún otro fin.

**A. INFORMACIÓN PERSONAL**

1. ¿Cuál es su nombre?
2. Experiencia laboral en años: _____

**B. EXPERIENCIA LABORAL**

1. ¿Ha fungido como docente de cursos de medicina? ¿Dónde?
2. ¿Usted es docente de esta escuela?
3. ¿Qué cursos imparte usualmente?
4. ¿Tiene usted que hacer uso del idioma inglés en alguno de sus cursos?
5. ¿Tienen sus estudiantes que hacer uso del idioma inglés en alguno de sus cursos?
6. ¿Considera usted que sus estudiantes enfrentan algún tipo de dificultad por tener que hacer uso del inglés en su(s) curso(s)?
7. ¿Qué dificultad(es)?
8. ¿Tiene otro trabajo como médico?

**C. USO DEL IDIOMA INGLÉS EN EL ÁMBITO LABORAL**

1. ¿Tiene usted que hacer uso del idioma inglés como médico? ¿Para qué propósitos o situaciones?

|  | ¿Para qué propósito(s) o situaciones? | ¿Con qué frecuencia? |
|---|---|---|
| Escucha |  |  |
| Escritura |  |  |
| Lectura |  |  |
| Conversación |  |  |

2. ¿Desde su experiencia, qué temas son los más populares en artículos de medicina? ¿Podría mencionar algunos?

3. ¿Desde su experiencia, qué temas son los más populares en conferencias de medicina? ¿Podría mencionar algunos?

4. ¿Desde su experiencia, qué temas/situaciones más comunes de comunicación verbal que tiene que enfrentar un médico? ¿Podría mencionar algunos?

5. ¿Desde su experiencia, qué temas/necesidades más comunes de escritura que tiene un médico? ¿Podría mencionar algunos?

**D. MACRO-HABILIDADES DEL IDIOMA INGLÉS**

1. En orden del uno al cuatro donde uno es la más importante y cuatro la menos importante, ¿cómo ordenaría usted las necesidades del idioma inglés en escucha, conversación, lectura, y escritura en su quehacer como médico?
2. ¿Tiene usted alguna recomendación que darme como futuro profesor de un curso de inglés para estudiantes de medicina?

Muchas gracias.

**Appendix D**

**Universidad de Costa Rica**
**Escuela de Lenguas Modernas**
**Posgrado en la Enseñanza del Inglés como Lengua Extranjera**
**Isela Barahona, Simone Lewis and Edwin Quesada**
**English for Medical Students**

Este cuestionario pretende recolectar información específica acerca del uso del inglés durante la carrera de medicina que usted cursa. Las respuestas de este cuestionario permanecerán confidenciales y serán utilizadas solamente para propósitos académicos para el curso PF-0309 Diseño de Práctica Profesional en la Universidad de Costa Rica. Su honestidad y tiempo son altamente apreciados.

**Segundo cuestionario para estudiantes**

1. Cuando debe escuchar videos académicos, ¿cuáles temas en específico se tratan? De ser posible, incluya títulos de videos o links.

_____
_____
_____
_____

2. ¿Existe algún sitio web, podcast, o canal de YouTube que sus profesores utilicen para desarrollar actividades en clase (ver videos, escuchar charlas, analizar textos)?
(   ) No
(   ) Sí. Por favor, indique cuáles:

_____
_____
_____
_____

3. ¿Ha utilizado libros de medicina en inglés para alguna actividad de un curso de la carrera?

(   ) No
(   ) Sí. Por favor, indique cuáles:

_____
_____
_____
_____

3.1 Si marcó "sí," ¿para qué tipo de actividades utilizó el recurso? (por ejemplo: presentación en clase, resumen, investigación, etc)

_____
_____
_____
_____

4. ¿Ha utilizado artículos de revista relacionados a medicina en inglés para alguna actividad de un curso de la carrera?

(   ) No.
(   ) Sí. Por favor, indique cuáles:

_____
_____
_____
_____

4.1 Si marcó "sí," ¿para qué tipo de actividades utilizó el recurso? (por ejemplo: presentación en clase, resumen, investigación, etc.)

_____
_____
_____
_____

5. ¿Se ha comunicado alguna vez con un paciente en inglés?

(   ) No. Si lo tuviera que hacer en el futuro, ¿acerca de qué trataría la conversación?

_____
_____
_____
_____

(   ) Sí. Por favor, indique en términos generales sobre qué trató la conversación:

_____
_____
_____
_____

6. ¿Se ha comunicado alguna vez con un doctor o colega en inglés?
(   ) No. Si lo tuviera que hacer en el futuro, ¿acerca de qué trataría la conversación?

_____
_____
_____
_____

(   ) Sí. Por favor, indique sobre qué trató la conversación:

_____

_____

_____

_____

7. ¿Cuenta usted con algún recurso digital en inglés utilizado para alguna de sus clases? Por ejemplo, video, documento en PDF o Word, una presentación en PowerPoint.

(   ) No

(   ) Sí. Por favor, adjuntar al menos un documento.

8. ¿Cuántos años tiene usted? _____

# Appendix E

# Structure and permeation mechanism of a mammalian urea transporter

Elena J. Levin[a,1], Yu Cao[a,1], Giray Enkavi[b], Matthias Quick[c], Yaping Pan[a], Emad Tajkhorshid[b,2], and Ming Zhou[a,2]

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As an adaptation to infrequent access to water, terrestrial mammals produce urine that is hyperosmotic to plasma. To prevent osmotic diuresis by the large quantity of urea generated by protein catabolism, the kidney epithelia contain facilitative urea transporters (UTs) that allow rapid equilibration between the urinary space and the hyperosmotic interstitium. Here we report the first X-ray crystal structure of a mammalian UT, UT-B, at a resolution of 2.36 Å. UT-B is a homotrimer and each protomer contains a urea conduction pore with a narrow selectivity filter. Structural analyses and molecular dynamics simulations showed that the selectivity filter has two urea binding sites separated by an approximately 5.0 kcal/mol energy barrier. Functional studies showed that the rate of urea conduction in UT-B is increased by hypoosmotic stress, and that the site of osmoregulation coincides with the location of the energy barrier.

channels | membrane proteins | renal physiology | osmosensing

**U**rea transporters (UTs) are a family of integral membrane proteins that mediate the rapid and passive diffusion of urea down its concentration gradient. In mammals, UTs are expressed in a wide variety of tissues, but their function is best understood in the kidney where they contribute to maintaining the high interstitial urea concentration necessary to limit the rate of water loss (1–3). During periods of water deprivation, the kidney develops a steep urea gradient from the cortex at 5–8 mM (roughly the concentration present in plasma), to as much as 100-fold higher in the inner medulla (4). While active transport of ions out of the renal tubules is currently thought to provide the main energetic driving force for creating this gradient, passive transport through UTs also contributes through a countercurrent exchange mechanism that slows the diffusion of urea away from the inner medulla (5). Additionally, UTs expressed in the inner medullary collecting ducts allow the rapid equilibration of urea between the lumen and the interstitium, preventing water loss driven by the high concentration of urea present in the urine (6). The importance of UTs in the urinary concentrating mechanism has been verified by extensive knockout studies in mice (7–11), and mutations in UT genes in humans have been linked to variations in blood pressure (12) and the incidence of bladder cancer (13, 14).

Two genes encode for UTs in mammals: *slc14a1* and *slc14a2*. The *slc14a1* gene contains a single UT domain encoding the protein UT-B, which is expressed in the vasa recta, the nephron's primary blood vessel, as well as in a number of other tissues including erythrocytes, heart, colon, and the brain (15). In contrast, the *slc14a2* gene, which encodes UT-A, contains two UT domains in tandem, produces a variety of isoforms via alternative splicing, and is regulated by phosphorylation induced by the antidiuretic hormone vasopressin (16–18). Both UTs facilitate permeation of urea down its concentration gradient, and although the UTs were originally predicted to be transporters, measurements of single-channel flux rates ranging from $10^4$–$10^6$ urea molecules/s (19, 20) were more consistent with a channel-like mechanism. This was confirmed with the solution of the structure of a bacterial

homolog (21), dvUT, which forms a trimer with a continuous membrane-spanning pore at the center of each protomer. However, it remained unclear how similar this structure was to that of the mammalian UTs, and the details of the permeation mechanism were unknown. To answer these questions, we solved the structure of a mammalian UT-B and investigated the permeation mechanism with molecular dynamics simulations and functional studies of UT-B mutants.

## Results

**The Crystal Structure of Bovine UT-B.** After screening several mammalian UT-A and UT-B homologs, we found that UT-B from both *Bos taurus* and *Homo sapiens* could be overexpressed in insect cells and purified in detergent-solubilized form. The bovine UT-B homolog produced small crystals, whose size and quality could be improved by subjecting the protein to partial proteolysis with trypsin. The structure was solved to a resolution of 2.36 Å by molecular replacement using the structure of dvUT (21) (PDB id 3K3F) as a search model. The final model contains three UT-B protomers with residues 31 to 376 resolved and 23 complete and partially ordered detergent and lipid molecules in the asymmetric unit (Table S1).

Bovine UT-B forms a trimer (Fig. 1*A*) with a total buried surface area of approximately 3500 Å$^2$. Purified human UT-B ran at a similar position as the bovine homolog on a size-exclusion column, suggesting that it is also a trimer (Fig. S1). Furthermore, the trimer interface is formed by equivalent helices in both the dvUT and UT-B structures (Fig. S2*A*), indicating that this quaternary structure may be conserved across the UT family. At the center of the trimer interface is a large cavity sealed off from the solvent, which is packed with partially ordered lipid or detergent molecules whose electron density is not of sufficient quality for identification. The individual protomers have the same overall fold as dvUT, and the root mean square deviation for main chain atoms in the transmembrane region is 0.7 Å (Fig. S2*B*). The UT fold contains two homologous halves with opposite orientations in the membrane, likely the product of duplication of an ancestral gene (22, 23), which give the structure an internal pseudo-twofold symmetry axis. Each half contains five transmembrane helices (T1a-5a and T1b-5b) and one tilted reentrant helix spanning roughly half of the membrane (Pa and Pb, Fig. 1*B*,

Fig. 1. *2.36 Å crystal structure of bovine UT-B.* (*A*) The UT-B trimer viewed from the extracellular side of the membrane, with the threefold symmetry axis (black triangle) labeled. (*B*) The structure of a UT-B protomer as viewed from within the plane of the membrane (*Left*) and from the extracellular side of the membrane (*Right*). The transmembrane helices are colored in pseudo-symmetry-related pairs. (*C*) The urea permeation pathway is shown viewed from two perpendicular orientations, with cross-sections of the wide (*Left*) and narrow (*Right*) dimensions of the pore marked in beige. *Insets* show residues lining the pore within the regions marked by black rectangles.

Fig. S2*C*). The largest difference between UT-B and dvUT lies in the orientation of a short amphipathic helix on the N-terminus; however, this helix forms key crystal contacts in the structure of dvUT (Fig. S3), and thus may be perturbed from its native conformation in the bacterial structure.

An amphipathic membrane-spanning pore is formed at the interface of the two halves in each protomer and is lined by residues from conserved urea signature sequences (22) (Fig. S4 *A* and *B*). The selectivity filter can be divided into three regions: the $S_o$ and $S_i$ sites, which are rectangular in cross-section with evenly-spaced arrays of carbonyl and side-chain oxygen atoms lining one side of the pathway (the oxygen ladders); and $S_m$, a constricted region at the center of the filter which is hydrophobic save for a pair of pseudo-symmetry related threonine residues (Figs. 1*C*, and 2 *A* and *B*). The largest difference between the pore-lining residues in the bacterial and mammalian UTs is a phenylalanine-to-glycine mutation in the $S_o$ site (position 230 in the mammalian structure), although this mutation appears to be compensated by a leucine residue on helix TM3a, whose side chain takes the place of the aromatic ring (Fig. S4*C*).

**Ligand Binding Sites in the Selectivity Filter.** We then attempted to solve a substrate-bound structure to visualize interactions between the substrate and the protein. Since efforts to obtain high-resolution crystals of the protein bound to urea were unsuccessful, we cocrystallized UT-B with 20 mM selenourea, which is chemically similar to urea and has the additional advantage of producing a strong anomalous signal. The structure of UT-B in complex with selenourea was solved by molecular replacement to a resolution of 2.5 Å with a dataset collected at a wavelength corresponding to the *K*-absorption edge of selenium (Table S1). The protein's conformation is unchanged, but two wedge-shaped densities consistent with selenourea appear in the $S_o$ and $S_i$ sites (Fig. 2*A*), coincident with two >13.0σ anomalous difference peaks that render the identity and orientation of the selenourea molecules unambiguous (Fig. 2*B*). Both substrates are oriented to form hydrogen bonds between their amide hydrogens and the

oxygen ladders. However, the two sites are not pseudo symmetrically equivalent: The $S_o$ site selenourea is positioned to straddle the outermost "rung" of the oxygen ladder, while the $S_i$ site ligand is level with the middle carbonyl. This suggests that as urea moves through the $S_o$ and $S_i$ regions, it may have more than one stable position. The substitution of one of the phenylalanines in the $S_o$ site, F190 in the bacterial structure, with a leucine residue at position 127 in the mammalian structure does not appear to have affected the suitability of this region as binding site, implying that aromatic residues are not specifically necessary for stabilizing the bound substrate. Intriguingly, the $S_m$ site, which appears to have a suitable configuration of hydrogen bond donors and acceptors for urea binding, was unoccupied in the selenourea-bound UT-B structure as well as in a previous dvUT structure bound to the urea analog 1,3-dimethylurea (21).

In order to provide a more dynamic description of the mechanism and pathway of permeation with the natural substrate, urea, and to characterize the energetics associated with the process, we then employed molecular dynamics simulations. Umbrella sampling (24) was used to reconstruct the potential of mean force (PMF) associated with urea permeation through UT-B using the projection of the carbon atom of urea along the pore axis as the reaction coordinate. Urea permeates the channel with minimal rotation around the channel axis (Movie S1), a configuration imposed by the hydrogen bonding pattern with the oxygen ladder in an otherwise hydrophobic pore. The projection of the dipole moment of urea on the pore axis exhibits a clear pattern of alternation reflecting its stepwise transition between adjacent, hydrogen-bonding sites (Fig. S5*A*). This "rocking" motion allows urea to permeate through the channel without causing significant perturbation, confirming that UTs indeed operate by a channel-like mechanism (Movie S1).

The PMF shows two almost symmetric pairs of energy minima in the $S_o$ and $S_i$ regions (Fig. 2*C*, Fig. S5*B*). Two of these minima, one in each of the $S_o$ and $S_i$ sites, agree well with the observed ligand positions in the selenourea-bound structure (Fig. 2*C*, yellow circles). In contrast, the $S_m$ site is characterized by a
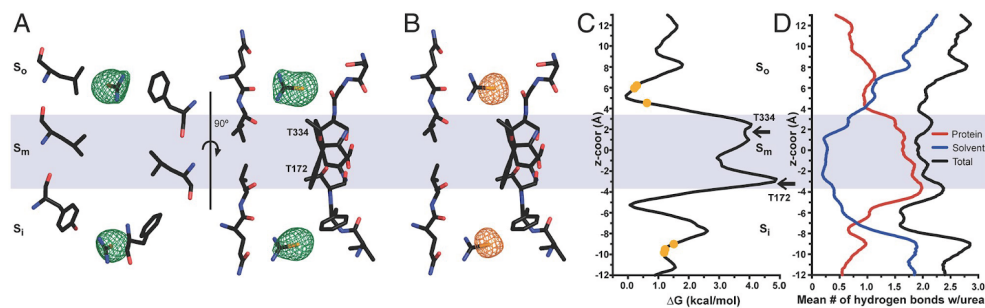
**Fig. 2.** *Energetics and binding sites in the UT-B pore.* (*A–B*) $F_o$-$F_c$ density calculated without ligands in the model (*A*), and anomalous difference density (*B*) are shown in the pore of the selenourea/UT-B structure along with key selectivity filter residues. The maps are contoured at 3 and 5σ, respectively. (*C*) MD simulations were used to reconstruct the potential of mean force of urea permeation through the UT-B pore. The yellow circles indicate the z-coordinates of the central carbons of bound selenourea in the three subunits of the crystal structure, black arrows indicate the z-coordinates of the $S_m$ site threonine CG atoms averaged over the three subunits. (*D*) The number of hydrogen bonds between urea and the protein (red), water molecules (blue), or both (black) averaged over the MD simulations as a function of the reaction coordinate.

large energy barrier with a maximum $\Delta G$ of approximately 5.0 kcal/mol with respect to the $S_i$ or $S_o$ sites. We attribute the energy barrier at the $S_m$ site primarily to the desolvation cost in this region; while in the $S_o$ and $S_i$ sites, urea is only partially dehydrated and maintains on the average approximately 1.5–2.0 hydrogen bonds with water molecules (Fig. 2*D*), whereas upon entering the $S_m$ site it becomes completely dehydrated.

**Role of the $S_m$ Site in Permeation and Modulation.** To verify this observation experimentally, we mutated an $S_m$ site threonine to valine to further diminish the ability of the protein to compensate for the dehydration penalty of urea in that region. The function of the mutant channels was measured by reconstituting them into liposomes preloaded with urea and using a fluorescence-based assay to measure the rate of urea efflux (25). The wild-type channel was functional and increased the initial rate over that of control liposomes by over 20-fold (Fig. 3*A*). As predicted by the simulations, the rate of urea efflux for the T334V mutant was close to that of control liposomes. In contrast, the T172S and T334S mutations, which conserve hydrogen bonding, had little effect on the rate of urea flux even when combined (Fig. 3*B*). Equilibrium MD simulations of both the T172V/T334V and the T172S/T334S double mutants show that in addition to increasing the hydrophobicity of the $S_m$ site, loss of the hydrogen bond between T172 and T334 in the valine mutants causes a rotation of V334 towards the pore, so that the hydrophobic side chain

obstructs the $S_m$ site to the degree that even water molecules are not able to readily cross this region (Fig. S6).

These results indicate that the UT selectivity filter does not form a contiguous series of binding sites, but instead contains a substantial energy barrier at the highly conserved $S_m$ site. We speculated that relatively small changes in the conformation of the pore at the $S_m$ site could have substantial effects on the rate of transport, and that $S_m$ could potentially serve as a site to regulate the rate of urea permeation. Given that the physiological role of UTs is closely linked to osmoregulation, we tested the channel for sensitivity to osmotic stress by measuring radiolabeled urea uptake into oocytes expressing UT-B in isotonic, hypotonic, and hypertonic buffer (Fig. 3*C*). Oocytes expressing wild type UT-B experienced an approximately twofold increase in urea uptake in the hypotonic buffer relative to uptake under isotonic conditions, indicating sensitivity of the channel to osmotic stress. In contrast, the hypertonic buffer did not alter the rate of urea uptake. This suggests that the effect cannot be attributed solely to cotransport of urea with water, since in that case reversing the direction of water permeation would be expected to have an inhibitory effect. To test whether the $S_m$ site was involved in the response of the channel to hypoosmotic stress, we also measured uptake for oocytes expressing the T172S/T334S double mutant under identical conditions. Consistent with the results of the liposome assay, the T172S/T334S mutant had a similar basal rate of urea permeation to the wild type channel under isotonic conditions. However, unlike the wild type channel, the
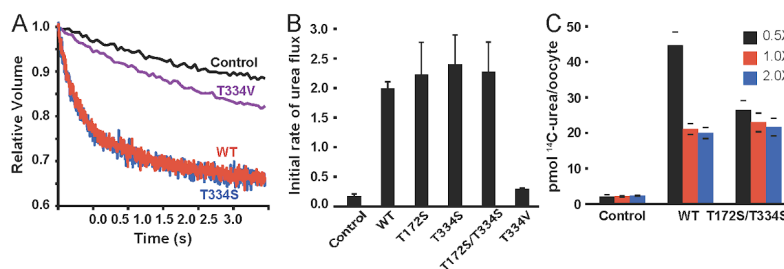


**Fig. 3.** Role of $S_m$ site residues in urea flux and osmosensing. (*A*) Averaged, background-corrected traces showing the change in fluorescence over time from quenching of entrapped dye in WT (red), T334V (violet), and T334S (blue) UT-B-containing proteoliposomes and control liposomes (black), driven by urea efflux, scaled to the theoretical change in volume. (*B*) Initial rates of urea efflux calculated from these curves and for additional mutants. Errors bars are standard deviations from three or four experiments. (*C*) $^{14}$C-labelled urea uptake in WT or T172S/T334S UT-B mRNA-injected oocytes or in control oocytes after 5 min placed in ND-96 buffer at 0.5, 1.0, and 2.0-fold concentration.

T172S/T334S mutant did not exhibit an increase in the rate of transport in a hypotonic buffer (Fig. 3C, Fig. S7). These results demonstrate a potential mechanism for modulation of UT-B function and support the hypothesis that the rate of urea conduction is regulated at the constricted region, the $S_m$ site, in the selectivity filter.

## Discussion

UT-B is a trimeric urea channel whose rate of permeation appears to be modulated by osmotic pressure. The energy barrier at $S_m$ in UT-B is reminiscent of that observed in the ar/R motifs of aquaporins (26–28) or the conserved pore histidines in ammonia channels (29, 30). The aquaporin ar/R motifs are known to be crucial for selectivity; the height of this barrier largely determines the difference between the canonical aquaporins that permeate only water and the comparatively promiscuous aquaglyceroporins (31–33). The $S_m$ site may likely play an analogous role in UTs, and confer the ability to block the flux of charged species like protons, ammonium and guanidinium that has been measured previously for other UT homologs (19, 34, 35). While the $S_m$ site does not contain charged residues to exclude ions through electrostatic repulsion, as the ar/R motifs do (36), it is relatively hydrophobic and too narrow to permit a hydration sphere; the helix dipoles may also help repel anions. The hydrophobicity of the $S_m$ site likely accounts for urea transporters' lower rate of water conduction relative to the canonical aquaporins (37), despite the strong structural similarities of the pores between the two families.

One notable difference between the UT-B and UT-A orthologs is that the latter is upregulated by the antidiuretic hormone vasopressin via phosphorylation of multiple sites on its long cytoplasmic N-terminus (16). Some of this increase in activity can be accounted for by increased localization of UT-A in the plasma membrane (38), but there is also evidence for an increase in urea transport activity that occurs on a more rapid time scale than the rate of accumulation of UT-A in the plasma membrane, possibly due to modulation of UT activity through phosphorylation of proteins already present at the cell surface (39). Given the high conservation of pore-lining residues between UT-B and UT-A, it is tempting to consider the possibility that the $S_m$ site barrier is also present in UT-A, but with phosphorylation rather than osmotic stress as the trigger for modulation.

In the kidney, UT-B is expressed in the descending vasa recta, the blood vessel that supplies the nephron. In addition to providing the nephron with blood, the vasa recta is thought to play a role in the counter-current exchange mechanism that prevents washout of the urea gradient in the inner medullary interstitium (40–42). Mice deficient in UT-B experience a 40% urine concentrating deficiency, and a substantially lowered ability to retain urea in the inner medulla (7). In contrast to UT-As in the inner medullary collecting ducts, which transport urea from the renal tubules into the hyperosmotic interstitium, UT-B mediates net efflux of urea out of the interstitium into the lumen of the vasa recta. Since the descending vasa recta also expresses aquaporins and is therefore highly water permeable (43), it is conceivable that a mismatch in osmolarity between the vasa recta and the interstitium could trigger membrane stretch and thereby upregulate UT-B. The modulation of UT-B by osmotic stress observed in this study therefore appears consistent with the known physiological role of UT-B in the kidney. Further studies would be necessary, however, to know how significant such an effect would be, or to determine the structural changes underlying this modulation.

## Methods

Cloning, Expression and Purification of WT and Mutant UT-B. The full-length bovine and human urea transporter genes (AAI05334.1 and BC05039) were subcloned into a modified pFastBac Dual vector (Invitrogen) for baculovirus expression in Sf9 insect cells with a C-terminal TEV protease recognition site followed by an octohistidine tag. Site-directed mutations were introduced by the Quickchange method (Stratagene) or by overlap-extension PCR.

The Bac-to-Bac protocol (Invitrogen) was used to produce recombinant baculovirus, and infected Sf9 insect cells were harvested 48–60 h after infection and collected by a low-speed centrifugation step (2,000 g, 10 min). The cells were lysed by sonication and their membranes solubilized with 40 mM n-decyl-β-D-maltoside (DM, Anatrace). UT-B was then purified by affinity chromatography using TALON Metal Affinity Resin (Clontech Inc.). After elution from the resin with 300 mM imidazole, bovine UT-B intended for crystallization was concentrated to 5 mg/ml and partially digested with trypsin protease for 10 min at room temperature in a ratio of 250:1 by weight. The protease digestion reaction was terminated by adding 1 mM PMSF, and the protease-resistant core was subjected to size exclusion chromatography on a Superdex 200 10/300 GL column (GE Health Sciences) preequalized in a buffer of 150 mM NaCl, 20 mM HEPES, pH 7.5, 5 mM β-mercaptoethanol and 36 mM n-octyl-β-D-glucopyranoside. The protein was concentrated to 8 mg/ml as approximated by ultraviolet absorbance. For protein intended for functional assays in liposomes, the trypsin proteolysis step was replaced with a 1 h digestion with 1:10 TEV protease to remove the C-terminal His tag, and the size exclusion step was carried out with 4 mM DM.

Crystallization and Structure Determination of UT-B. Crystals of the wild-type UT-B trypsin-resistant core were grown at 4 °C by the sitting-drop vapor diffusion method, where 1.5 µl of protein solution was mixed with an equal volume of crystallization solution containing 25% PEG 400, 50 mM sodium sulfate, 50 mM lithium sulfate, 0.2 mM decyldimethylamine N-oxide (DDAO) and 100 mM Tris, pH 8.0–8.5. Selenourea-bound crystals were obtained by the same method except that selenourea was added to the protein solution to a final concentration of 20 mM before mixing with crystallization solution. Before flash-freezing in liquid nitrogen, the crystals were cryoprotected by gradually increasing the concentration of PEG 400 in the well solution to 35% over 8 h.

X-ray diffraction data were collected at beamlines X25 and X29 of the National Synchrotron Light Source at Brookhaven National Lab, and beamline ID-24 of the Advanced Photon Source at Argonne National Lab. The molecular replacement solution was found for the unliganded structure using a polyalanine search model prepared from the dvUT structure (3K3F) and the program PHASER (44). A partial model was built with phenix.autobuild, and then completed by iterative rounds of manual model building in Coot (45) and refinement with phenix.refine (46) and Refmac (47). In the final stages of refinement, TLSMD was used to compute optimal TLS groups (48), and Molprobity (49) was used to validate geometry. The selenourea-bound structure was solved by molecular replacement using the unliganded structure as a search model, and refinement was carried out by the same methods as for the unliganded structure. Figures of the structures were prepared using PyMol (Schrödinger) and VMD (50).

Reconstitution into Liposomes and Solute Flux Assays. E. coli polar lipids in chloroform (Avanti) were dried under argon, and then further dried under vacuum for one hour. Liposomes were formed by rehydrating the lipids at a final concentration of 10 mg/mL in dialysis buffer (100 mM NaCl, 20 mM HEPES pH 7.5) at room temperature for 30 min, and then sonicated to clarity in a bath sonicator. To incorporate protein, the liposomes were incubated first with 10 mM DM for 2 h, followed by addition of protein at a ratio of 1:4000 (w:w). After incubation at room temperature for 30 min, the liposomes were transferred to dialysis cassettes and dialyzed against >500 volumes dialysis buffer for 72 h, with the buffer replaced every 12–24 h. After recovery from the dialysis cassettes, liposomes were frozen in liquid nitrogen and stored at −80 °C until use.

Prior to use in the urea flux assay, liposomes were incubated in 15 mM carboxyfluorescein (CF) overnight at 4 °C. To generate unilamellar vesicles of uniform size, liposomes were subjected to 3 freeze-thaw cycles and then extruded 20 times through a 400 nm filter. External CF dye was removed by passing the liposomes through a PD-10 desalting column (GE Healthcare) equilibrated with internal buffer (200 mM urea, 100 mM NaCl, 20 mM HEPES pH 7.5) and then incubated at room temperature for 30 min. Liposomes were then diluted 1:1 in a stopped flow device at 20 °C with either internal buffer (no urea gradient) or assay buffer (approximately 200 mM NaCl, 20 mM HEPES pH 7.5) with a salt concentration adjusted to identical osmolarity as the internal buffer as measured by a freezing-point depression osmometer (Fiske). The self-quenching of CF fluorescence resulting from shrinkage of the liposomes was monitored by a Fluoromax-3 fluorimeter (Horiba Jobin Yvon) with an excitation wavelength of 492 nm and an emission wavelength of 517 nm. Five traces were collected and averaged for both buffers, and the change in fluorescence for the no-gradient control was subtracted from the assay buffer trace as a background correction. The resulting curves were fitted with double exponentials and solved for the initial rates of flux. Each

experiment was repeated three or four times, using proteoliposomes reconstituted with protein from at least two separate purifications.

**Oocyte Uptake Assays.** The cRNA of *Bos taurus* UT-B was in vitro transcribed from a pBluescript derivative, purified, and 1 ng (Fig. S7) or 50 ng (Fig. 3C) were injected into stage V-VI *Xenopus laevis* oocytes. Oocytes were kept in ND96 (5 mM HEPES, pH 7.6, 96 mM NaCl, 2 mM KCl, 1.8 mM CaCl₂, 1 mM MgCl₂) for 48 h (Fig. S7) to 72 h (Fig. 3C) at 18 °C. For transport measurements, oocytes were transferred into 0.5–1 mL of assay buffer composed of 0.5 X-, 1 X-, or 2 X-strength ND96 supplemented with 168 μM ¹⁴C-urea (59.5 Ci/mol; American Radiolabeled Chemicals, Inc.) and incubated for the indicated time at 20 °C. To terminate the uptake reaction, oocytes were washed 4 times with ice-cold assay buffer without radiolabeled urea, individually placed in scintillation vials, solubilized with 10% SDS, and assayed for their ¹⁴C-urea content with scintillation counting. Known amounts of ¹⁴C-urea were used as standards to transform cpm into pmol.

**System Setup and Equilibrium Simulations.** The selenourea/UT-B trimer was used as the initial structure. The two bound selenourea molecules were replaced by urea, and the three lipid molecules in the central cavity of the trimer were modeled as three POPC molecules that were subsequently minimized to remove steric clashes. After removing all other detergent molecules, the trimer was embedded into a POPC lipid bilayer (120 × 120 Å²), with the membrane normal aligned along the z axis. After removing the lipids overlapping with the protein trimer, the system was solvated and ionized with 100 mM NaCl by randomly replacing water molecules with Na⁺ or Cl⁻ ions, resulting in system dimensions of 120 × 120 × 90 Å³ and approximately 109,000 atoms.

The lipid tails were then "melted" using 5000 steps of energy minimization and 1 ns of constant volume and temperature (NVT) MD simulation at 310 K while all other atoms of the system were fixed, in order to allow the initially ordered lipid tails to maximize their disorder and partially pack against the protein. In the next step, the whole system was simulated for 2 ns under constant pressure and temperature (NPT) conditions while all heavy atoms of the protein and the urea molecules were harmonically restrained ($k = 2$ kcal/mol/Å²) to allow further relaxation and packing of the lipids against the protein. During this phase, water molecules were prevented from entering the hydrophobic core of the membrane by employing additional constraints. The resulting relaxed configuration of the urea/UT-B system was used as the starting structure for the production simulations described below.

The *apo*-UT-B system was generated by removing the urea molecules from the system. T172S/T334S and T172V/T334V double mutant systems were constructed from the *apo*-UT-B system by mutating the respective residues and minimized for additional 10,000 steps before subjected to MD simula-

tions. The four simulation systems, namely, urea/UT-B, *apo*-UT-B, T172S/T334S, and T172V/T334V, were then each simulated for approximately 60 ns, 100 ns, 45 ns, and 25 ns, respectively, under NPT conditions.

**Umbrella Sampling Simulations.** In order to reconstruct the potential of mean force (PMF), umbrella sampling (US) simulations were initiated using the 50-ns equilibrated structure from the *apo*-UT-B simulation. 71 umbrella windows of 0.5 Å each were defined along the channel axis, covering a range from $z = -20 -$ þ 15 Å with the origin ($z = 0$) at the center of mass (COM) of the $C_α$ atoms of channel-lining residues ($S_i$, $S_m$, and $S_o$) of each monomer. The starting configuration for each US simulation was generated by adding a urea molecule to each monomer with the position of its carbon atom harmonically ($k = 10$ kcal/mol/Å²) restrained to the center of the respective window only along the z axis. Each starting configuration was separately minimized for 5000 steps and simulated for 5 ns. The restraining potential and the position of the substrate for each monomer were recorded at 0.1-ps intervals. Including only the last 4.5 ns of the US simulations (45,000 data points for each monomer and each window), the weighted histogram analysis method (WHAM) (51, 52) was used to reconstruct the PMF with 0.25 Å resolution for each monomer along with a combined PMF. The quality of the PMF was tested by examining the resulting profile from shorter simulation times (checked for 0.5 ns increments) for each window, clearly indicating convergence (Fig. S8).

**Simulation Protocols.** All the simulations were performed using NAMD 2.8 with CHARMM27 force field (53) with Φ/ψ cross term map (CMAP) corrections and CHARMM36 all-atom additive parameters for lipids (54). Force field parameters for urea were adopted from Caflisch et al. (55), and water was modeled as TIP3P (56). All production simulations were maintained at 1.0 atm pressure using the Nosé-Hoover Langevin piston method (57, 58) and at 310 K temperature using Langevin dynamics with a damping coefficient of 0.5 ps⁻¹ applied to all non-hydrogen atoms. Short-range interactions were cut off at 12 Å with a smoothing function applied after 10 Å, and long-range electrostatic forces were calculated using the particle mesh Ewald (PME) method (59) at a grid density of >1 Å⁻³. Bonded, non-bonded, and PME calculations were performed at 2-, 2-, and 4-fs intervals, respectively.

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BIOPHYSICS AND
COMPUTATIONAL BIOLOGY

## Appendix F

Universidad de Costa Rica
Escuela de Lenguas Modernas
Maestría en la Enseñanza del Inglés
Isela Barahona, Simone Lewis, Edwin Quesada
English for Medical Students

| Para los Profesores | |
|---|---|
| Puntaje total | 71 |
| Puntaje obtenido | |
| Porcentaje | |
| Nota | |

## Prueba de Diagnóstico

El siguiente examen diagnóstico tiene como propósito evaluar su nivel de inglés. Los resultados de este examen serán confidenciales y serán utilizados solamente para diseñar el curso de inglés con fines específicos para medicina. Estos resultados no tienen repercusión alguna para su participación en el curso. De no saber la respuesta a alguna pregunta, puede dejarla en blanco y continuar con el resto del examen. Muchas gracias.

Nombre: _____

Fecha: _____

**Instrucciones Generales:**
- Lea las instrucciones y cada pregunta cuidadosamente.
- Este examen consta de tres partes: **comprensión auditiva, comprensión de lectura, y comunicación oral**.
- Las partes de **comprensión auditiva** y **comprensión de lectura** tienen una duración de una hora aproximadamente.
- Una vez finalizadas las partes de **comprensión auditiva** y **comprensión de lectura**, se procederá individualmente para realizar la prueba oral.
- Durante la prueba oral utilice solo el idioma Inglés (en la medida de sus posibilidades).
- No debe utilizar ningún medio de comunicación o información electrónico o físico.
- Si tiene una pregunta acerca del examen, por favor levantar la mano.

**Part I: Listening (28 points)**

**A.** Listen to a conversation between a doctor and a patient. As you listen, circle the letter of the option that best answers the following questions. (10 points)

1. How does the man feel?
   a.  Great
   b.  Hungry
   c.  Dizzy

2. How long has the man been feeling that way?
   a.  About two weeks.
   b.  About a week.
   c.  About a day.

3. What caused the man to feel that way?
   a.  He fell off a ladder.
   b.  He had a car accident.
   c.  He does not know.

4. The doctor gives the man a prescription for _____.
   a.  Painkillers
   b.  Anti-inflammatories
   c.  Antihistamines

5. The prescription that the doctor gives the man is to _____
   a.  Help him with his allergies.
   b.  Stop his headaches.
   c.  Help him with his dizziness.

6. What is the man allergic to?
   a.  He does not have any allergies.
   b.  He is allergic to Paracetamol.
   c.  He is allergic to antihistamines.

7.  The doctor will refer the man to a _____ at the hospital.
   a.  Surgeon
   b.  Doctor
   c.  Specialist

8. According to the conversation, does the man have a serious illness?
   a.  Yes
   b.  No
   c.  It's not stated.

9. What does the doctor recommend to the man?
   a. To take his pills every hour.
   b. To not over-exert himself.
   c. Both a and b.

10. What does the man almost forget at the end of the conversation?
   a. To take his prescription.
   b. To pay for the appointment.
   c. To go to his appointment with the specialist.

**(Adapted from https://www.oxfordonlineenglish.com/going-to-the-doctor?utm_referrer=https://www.google.com/)**

**B**. Listen to the audio *CUSP: Effective Patient and Family Communication* all the way through, and decide whether the following statements are true or false. (10 points)

| | | | |
|---|---|---|---|
| 1. | The patient just finished a walk. | TRUE | FALSE |
| 2. | The patient just finished a surgery. | TRUE | FALSE |
| 3. | The patient wants to do the activity over and over again. | TRUE | FALSE |
| 4. | The man is probably the patient's husband. | TRUE | FALSE |
| 5. | The man is probably the patient's friend. | TRUE | FALSE |
| 6. | The patient received medication one hour before. | TRUE | FALSE |
| 7. | The medications may make the patient feel dizzy. | TRUE | FALSE |
| 8. | The patient walked for a minute. | TRUE | FALSE |
| 9. | The medication and the walking will help prevent clots. | TRUE | FALSE |
| 10. | The man wants the doctor to give him a calendar. | TRUE | FALSE |

**C.** Listen to an excerpt from a conference called *Shifting the Healthcare Paradigm: Dr. Mimi Guarneri at TEDxAmericasFinestCity*, and circle the letter of the option that best answers each of the following questions. (8 points)

1.   What is one of the mechanical tools for treating blocked coronary arteries that the speaker mentions?
   a.   Probe
   b.   Drill
   c.   Borer

2.   What does modern medicine allow doctors to do within 20 minutes?
   a.   Restore the blood flow.
   b.   Relieve chest pain.
   c.   Repair blood vessels.

3.   What was shocking about the person who got a blockage in a blood vessel?
   a.   The person had a bypass surgery.
   b.   There were wires inside the person.
   c.   The patient died suddenly.

4.   What's the death rate for cardiovascular disease (CVD) in the U.S.?
   a.   2200 deaths per year.
   b.   1 out of 6.
   c.   42.7 million per year.

5.   How many women suffer from cardiovascular disease (CVD)?
   a.   2200
   b.   1 out of 6
   c.   42.7 millions

6.   What's the reality drug companies don't say?
   a.   Statin therapy and stents are the solution to CVD.
   b.   Even with Statin therapy and stents there is risk of a cardiovascular event.
   c.   Statin therapy and stents are very cheap.

7.   What's a disease that is affecting the U.S. healthcare system?
   a.   Gastritis
   b.   Leukemia
   c.   Stroke

8.   In 2010 how much was spent by North America on pharmaceutical therapy?
   a.   $ 47.7 millions
   b.   $ 307 billions
   c.   $ 2.5 trillions

**Part II: Reading** (27 points)
**A.** Read the following text about the advantages and disadvantages of the consumption of coffee. Then, read the questions and select the correct answer. (9 points)

---

Coffee is one of the most popular drinks around the world. There are many different types of coffee and experts claim that there are more flavors of coffee than there are of wine. Coffee contains caffeine, a stimulant that raises our awareness, keeps us from falling asleep or simply gives us a kick in the morning or after lunch.

Food experts, however, are still undecided on how healthy coffee is. For a long time doctors have told people not to drink too much coffee, because it may lead to heart problems, high blood pressure, insomnia and headaches.

Scientists have now found out that it is the quality of coffee and the way it is brewed that holds the key to our health. Elderly people on the Greek island of Ikaria, live longer than normal. Among other things, this is linked to the consumption of a strong brew of coffee. Experts also point out that different roasts and types of coffee beans have different effects on our health. Milk and sugar change the different levels of caffeine in a cup of coffee.

A new study by a Harvard research group says that there is no link between coffee and health problems. Drinking several cups of strong coffee a day is not connected with premature death or other heart diseases. Doctors, however, warn against drinking too much coffee, as it can lead to stomach problems.

Coffee has many advantages, as the new study suggests. While alcohol makes people lethargic and slow-moving, coffee gives them energy. Getting together for a cup of coffee is also a form of socializing and has a positive effect on relationships.

Although a lot still needs to be uncovered about coffee, it seems to reduce the risk of cancer and diabetes. Reports show that people who drink coffee may develop Parkinson's disease later in life, or maybe not at all. Neurologists think that coffee may have a positive effect on connecting passageways in our brain.

---

Taken from https://www.english-online.at/news-articles/health-medicine/how-healthy-is-coffee-really.htm

1. The number flavors of coffee is compared to the number of flavors of:
   a. Juice
   b. Wine
   c. Beer

2.  Based on the article, food experts think that coffee:
    a.   Can reduce the risk of cancer.
    b.   Can cause premature death.
    c.   Always has the same amount of caffeine.

3.   Drinking too much coffee can cause:
    a.   Fatigue
    b.   Nausea
    c.   Headaches

4.   Based on the article, which of the following factors can change coffee's effect on your health?
    a.   The place where you buy the coffee.
    b.   The quality of the coffee beans you use.
    c.   The temperature at which you drink it.

5.   Experts have found that coffee has **no** connection to:
    a.   Dying too young
    b.   Cancer
    c.   Digestive problems

6. Neurologists believe coffee is good for our brains because it _____
    a.   Improves neuron functions.
    b.   Helps remembering passages.
    c.   Allows connections to be made.

7. How do the effects of coffee differ from those of alcoholic beverages?
    a.   The first makes you sleepy while the latter gives you energy.
    b.   The first makes you lose weight while the latter makes you lethargic.
    c.   The first makes you energetic while the latter makes you feel sluggish.

8. Which of the following is mentioned as a benefit of drinking coffee?
    a.   Meeting new people at public places.
    b.   Getting rid of sleeplessness.
    c.   Lessening the chance to get diseases, such as Parkinson's.

9.   What is the main idea of the text?
    a.   Coffee can be healthy or unhealthy, depending on how it is consumed.
    b.   Many people around the world drink coffee.
    c.   Experts have discovered that coffee may cause Parkinson's disease.

**B.** Read the following extract from an article about measles. Then, read the questions and choose the correct answer. (8 points)

---

# How Bad Can the NYC Measles Outbreak Get?

A growing measles outbreak in New York City has led officials to declare a public health emergency in parts of the city.

There have been nearly 300 confirmed measles cases in the city since the outbreak began last October, mainly in Orthodox Jewish communities in parts of Brooklyn, according to the New York City Department of Health and Mental Hygiene (DOHMH). But how much worse could the outbreak get, and how far could it spread?

"I would expect that this outbreak is going to get bigger before it comes under control," said Dr. Amesh Adalja, a senior scholar at The Johns Hopkins Center for Health Security in Baltimore.

The U.S. as a whole has fairly high vaccination rates against measles, and the vaccine is very effective at preventing the disease. But "there are pockets that have lower than required [vaccination rates] to keep measles at bay," Adalja told Live Science. It's in these areas where there's potential for a lot of measles spread.

Dr. Robert Glatter, an emergency-medicine physician at Lenox Hill Hospital in New York City, agreed that the outbreak "has the potential to escalate" if vaccination coverage isn't adequate in certain areas.

Measles is one of the most contagious infectious diseases out there, so if someone is unvaccinated, the "virus is likely to find them," Adalja said.

Adalja also noted that there are babies being born all the time, who usually can't be vaccinated until they are about 1 year old. "There's always going to be fresh victims for this virus to find," he said.

Still, high vaccination rates in other areas serve as a kind of "wall" to prevent the virus from spreading to those areas, Adalja said. But since there's always a small percentage of the population that can't be vaccinated (including young infants), "the wall is never going to be complete," he said.

The key to preventing measles outbreaks is adequate vaccination rates. "Vaccines are critical because they can reduce the frequency of outbreaks of disease and therefore can save lives," Glatter told Live Science.

Yesterday (April 9), New York City Mayor Bill de Blasio announced that unvaccinated people living in certain ZIP codes in Brooklyn will be required to be vaccinated if they may have been exposed to measles. Under the mandatory vaccination order, officials will check the vaccination records of anyone who may have been in contact with a person infected with measles, according to a statement from the DOHMH. People who haven't received the measles vaccine or don't have evidence of immunity could be fined up to $1,000.

This follows an order in Rockland County that barred unvaccinated children from public spaces for 30 days. (However, a New York judge recently ruled against the order.)

These efforts not only aim to stop the outbreak, but also to protect unvaccinated kids from getting sick themselves, Schaffner told Live Science. "We need to remember the second [reason] as well as the first," he added.

Taken and adapted from https://www.livescience.com/65193-nyc-measles-outbreak.html

---

1.  How many cases of measles have been identified in the city of New York?
    a.  More than 300
    b.  Exactly 300
    c.  Less than 300

2. Why do people who have not been vaccinated against measles have more chance to get the illness?
   a. Because they are already sick.
   b. Because the disease is very contagious.
   c. Because they are in New York City.

3. According to specialists, when is the outbreak going to stop?
   a. When everybody gets vaccinated.
   b. When they vaccinate all the newborns.
   c. When they are able to vaccinate babies.

4. How is the vaccination rate in the United States?
   a. Not good
   b. Good
   c. Excellent

5. What is one of the measures health authorities are taking to control this outbreak?
   a. Vaccinating people twice.
   b. Keeping unvaccinated people in quarantine.
   c. Checking vaccination archives.

6. What legal action could happen to people that have not been vaccinated?
   a. They could go to jail.
   b. They could be charged with a fee.
   c. They could be hospitalized.

7. What was happening to kids who were not vaccinated?
   a. They were hospitalized for undetermined time.
   b. They had to take treatment at a private clinic.
   c. They were banned from places like schools.

8. Why were kids asked to do that?
   a. To stop the outbreak.
   b. To protect them.
   c. Both of the above.

**C.** Section 1. Read the following introduction to a study about the Finnish Diabetes Risk Score. Then, read the statements and mark with an X whether they are **true** or **false**. (5 points)

According to the International Diabetes Federation (IDF) data in 2015 the number of people with diabetes in the world amounted to 415 million and by the end of 2040 IDF projects the increase of this number up to 642 million. It has a direct relationship with the obesity epidemic and the aging of the population. The annual cost of treating patients with diabetes in the world accounts for US $ 673 trillion, including $ 156 trillion in Europe. Currently, in Europe, 30.8% of the general population are people between 50 and 79 years of age and it is expected that this number will increase up to 35.6% by 2040. In Poland there are over 3 million people with diabetes, about 800,000 do not know about their disease, while the number of people with prediabetes symptoms is similar to or higher than the number of people with diabetes. On the basis of previous studies, it is already known that in the period of prediabetes the complications may develop typical for diabetes: diseases of the cardiovascular system, retinopathy, diabetic nephropathy and neuropathy. They can significantly shorten the survival time and be the cause of increased mortality. It is also known that hyperglycemia and hyperinsulinemia accelerate the aging process of cells and may also increase the risk of cancer. Therefore, the assessment of the risk of developing diabetes and taking measures which could hamper its development are becoming more and more critical. More than 10 years ago FINDRISC scale (Finnish Diabetes Risk Score) was developed in Finland enabling to assess the risk of developing diabetes. The aim of the study was to evaluate the risk of developing type 2 diabetes among middle-aged and elderly with the use of FINDRISC scale.

Taken and adapted from https://medtube.net/science/wp-content/uploads/2014/03/01-2016.pdf#page=8

1. According to the studies, diabetes has been directly linked to obesity and growing old.
   a. True
   b. False

2. In Europe, there will be a lower number of elderly people in the next twenty years.
   a. True
   b. False

3. Many different types of ailments present during the stage of prediabetes can increase the chance for premature death.
   a. True
   b. False

4. The Finnish scale has the purpose of hampering doctors to evaluate the patients at risk of developing diabetes.
   a. True
   b. False

5. Over half of the people with diabetes in Poland are unaware of their illness.
   a. True
   b. False

Section 2. Read the Finnish Diabetes Risk Score carefully. Then, read the statements and mark with an X whether they are **true** or **false**.  (5 points)



Taken from https://medtube.net/science/wp-content/uploads/2014/03/01-2016.pdf#page=8

1.  According to the assessment form above, the more frequent the consumption of vegetables, then the lower the risk of developing diabetes.
    a.  True
    b.  False

2. The probability that a person will develop diabetes is lower if he/she has previously taken antihypertensive medicine on a regular basis.
    a. True
    b. False

3. According to the assessment form above, a healthy measure of the waist is between 80 and 88 cm for females.
    a. True
    b. False

4. If any of a person's immediate family members, such as aunts or grandparents, suffers or has suffered from diabetes, then he/she has a higher risk of suffering from the disease as well.
    a. True
    b. False

5. According to the scale, it is estimated that one out of three people will acquire the illness if they obtain more than twenty points after taking the assessment.
    a. True
    b. False

**Part III: Speaking** (16 points)

**Instructions**: For this part of the test, you will be first be asked to play the role of a doctor for the situation in section **A: Patient Information**. If the teachers see that you are far above the level of that task, then they will ask you to try to the situation given in section **B: Patient Symptoms**. If the teachers see that you are still doing very well with that scenario, then they will ask you to try section **C: Explaining a Medical Procedure**. The goal of this task is to determine your current level of speaking abilities, therefore the teachers will only score the task that is closest to your level.

**A. Patient Information:** You are a doctor at Hospital la Católica, and you need to ask a patient for her personal information. Use the form below as a guide. Ask the patient questions in order to obtain all of the patient's personal information. You may fill in the form as you obtain the information, but the written work will not be scored. (16 points)

## Datos del Paciente

**Nombre Completo**

**Identificación**

**Fecha Nacimiento**

**Dirección**

**Nacionalidad**

**Estado Civil**

**Teléfono Celular**

**Correo Electrónico**

Adapted from: ("Formulario Pre-Ingreso Quirúrgico", n.d., n.p.)

**B. Patient Symptoms:** You are a doctor at Hospital la Católica, and you just asked about a patient's personal information. Now, you must ask about her symptoms. <u>Ask the patient all of the questions listed below</u>. Then, tell her that you think she has broken her foot. (16 points)

- Ask the patient:
    1. The reason for her visit the hospital
    2. The place(s) she feels pain
    3. The action(s) that caused the pain to begin
    4. Any other symptoms
- Tell the patient:
    1. What you think the problem is
    2. That you need to take scans in order to confirm your diagnosis

**C. Explaining a Medical Procedure:** You are a doctor at Hospital la Católica, and you just took x-rays of a patient's foot, and it turns out that her foot is badly broken. Now, you must inform her about the surgery she must have if she wants to get better. (16 points)

1. Inform the patient of the following things:
    a. The analyzed x-rays
    b. The condition of her foot
    c. The need for surgery
    d. General anesthesia for the surgery
    e. Possible risks of the surgery

## Appendix G

Name of student: _____     Score:_____

Name of evaluator: _____

### Analytic Speaking Rubric

| Score | Task Completion | Delivery | Correct Use of Language | Pronunciation | Comments |
|---|---|---|---|---|---|
| 4 | Student is able to ask and/or inform the patient about almost all of the points listed in the prompt and does so with fluidity. All of the utterances are easily intelligible. | Student connects most utterances fluidly and without choppiness. The student's utterances are organized and easily intelligible. | Student uses mostly correct grammar with only minor errors, none of which hinder intelligibility. Student uses accurate vocabulary throughout the role-play. Almost all of the student's utterances use correct subject-verb agreement and question form. | Student may make a few minor errors in pronunciation, but most words and utterances are pronounced correctly. All responses are easily intelligible, and none of the errors distract from the student's utterances. | |
| 3 | Student is able to ask and/or inform the patient about most of the points listed in the prompt, but struggles to fully develop and express his/her questions and/or responses while conducting the role play. | Student's utterances are intelligibile, but the responses show some minor issues with intonation and/or, slower fluency. | Student uses mostly correct grammar, subject-verb agreement, and question form, but makes some minor errors throughout the role play. The student uses mostly correct vocabulary, with minor errors. | Student makes a few errors in pronunciation, but most words and utterances are pronounced correctly. All responses are easily intelligible, but a couple of the errors distract from the student's utterances. | |
| 2 | Student's development of the questions and responses outlined in the prompt is limited, and the utterances are not always coherent. | Student's utterances are mostly intelligible, but only with some struggling on the part of the listener/evaluator. Some of the student's utterances may be choppy or articulated incorrectly. | Student uses a lot of correct grammar, subject-verb agreement, and question form, but makes some errors throughout the role play. The mistakes are enough to attract the attention of the listener. | Student makes frequent errors in pronunciation. While the student is intelligible, the listener's attention is frequently drawn to the errors in pronunciation. | |
| 1 | The student's utterances and overall coherence in order to complete the role play are severely limited. The student can only ask or inform the patient about a few of the required points. | Student connects words and phrases in a way that is mostly intelligible, but very choppy and fragmented. The student's responses also require a lot of listener effort in order to be understood. | Student uses some correct grammar, subject-verb agreement, and question form, but makes a distracting number of errors throughout the role play. The mistakes may even cause difficulty in understanding on the listener's part. | Student makes too many severe errors in pronunciation, to the point of being unintelligible several times throughout the role play. | |
| 0 | The student either (1) makes no effort to respond to conduct the role-play, (2) only does so mostly or entirely in Spanish, or (3) makes mostly utterances that have nothing to do with the situation presented in the prompt for the role-play. | | | | |

("Council of Europe", 2001, n.p.; Coombe, Folse, & Hubley, 2007, p. 127; Mertler, 2001, p. 2; O'Malley & Valdez Pierce, 1996, pp. 143-145; Educational Testing Service, n.d., n.p.)

**Appendix H**

| | | | | | |
|---|---|---|---|---|---|
| Table 2:<br>Template for analytic rubrics | | | | | |
| | Beginning 1 | Developing 2 | Accomplished 3 | Exemplary 4 | Score |
| Criteria #1 | Description reflecting beginning level of performance | Description reflecting movement toward mastery level of performance | Description reflecting achievement of mastery level of performance | Description reflecting highest level of performance | |
| Criteria #2 | Description reflecting beginning level of performance | Description reflecting movement toward mastery level of performance | Description reflecting achievement of mastery level of performance | Description reflecting highest level of performance | |
| Criteria #3 | Description reflecting beginning level of performance | Description reflecting movement toward mastery level of performance | Description reflecting achievement of mastery level of performance | Description reflecting highest level of performance | |
| Criteria #4 | Description reflecting beginning level of performance | Description reflecting movement toward mastery level of performance | Description reflecting achievement of mastery level of performance | Description reflecting highest level of performance | |

(Mertler, 2001, p. 2)

# Appendix I

## Independent SPEAKING Rubric

| | | | |
|---|---|---|---|
| 4 | The response fulfills the demands of the task, with at most minor lapses in completeness. It is highly intelligible and exhibits sustained, coherent discourse. A response at this level is characterized by all of the following: | Generally well-paced flow (fluid expression). Speech is clear. It may include minor lapses, or minor difficulties with pronunciation or intonation patterns, which do not affect overall intelligibility. | The response demonstrates effective use of grammar and vocabulary. It exhibits a fairly high degree of automaticity with good control of basic and complex structures (as appropriate). Some minor (or systematic) errors are noticeable but do not obscure meaning. | Response is sustained and sufficient to the task. It is generally well developed and coherent; relationships between ideas are clear (or clear progression of ideas). |
| 3 | The response addresses the task appropriately but may fall short of being fully developed. It is generally intelligible and coherent, with some fluidity of expression, though it exhibits some noticeable lapses in the expression of ideas. A response at this level is characterized by at least two of the following: | Speech is generally clear, with some fluidity of expression, though minor difficulties with pronunciation, intonation, or pacing are noticeable and may require listener effort at times (though overall intelligibility is not significantly affected). | The response demonstrates fairly automatic and effective use of grammar and vocabulary, and fairly coherent expression of relevant ideas. Response may exhibit some imprecise or inaccurate use of vocabulary or grammatical structures or be somewhat limited in the range of structures used. This may affect overall fluency, but it does not seriously interfere with the communication of the message. | Response is mostly coherent and sustained and conveys relevant ideas/information. Overall development is somewhat limited, usually lacks elaboration or specificity. Relationships between ideas may at times not be immediately clear. |
| 2 | The response addresses the task, but development of the topic is limited. It contains intelligible speech, although problems with delivery and/ or overall coherence occur; meaning may be obscured in places. A response at this level is characterized by at least two of the following: | Speech is basically intelligible, though listener effort is needed because of unclear articulation, awkward intonation, or choppy rhythm/pace; meaning may be obscured in places. | The response demonstrates limited range and control of grammar and vocabulary. These limitations often prevent full expression of ideas. For the most part, only basic sentence structures are used successfully and spoken with fluency. Structures and vocabulary may express mainly simple (short) and/or general propositions, with simple or unclear connections made among them (serial listing, conjunction, juxtaposition). | The response is connected to the task, though the number of ideas presented or the development of ideas is limited. Mostly basic ideas are expressed with limited elaboration (details and support). At times relevant substance may be vaguely expressed or repetitious. Connections of ideas may be unclear. |
| 1 | The response is very limited in content and/ or coherence or is only minimally connected to the task, or speech is largely unintelligible. A response at this level is characterized by at least two of the following: | Consistent pronunciation, stress and intonation difficulties cause considerable listener effort; delivery is choppy, fragmented, or telegraphic; frequent pauses and hesitations. | Range and control of grammar and vocabulary severely limit or prevent expression of ideas and connections among ideas. Some low-level responses may rely heavily on practiced or formulaic expressions. | Limited relevant content is expressed. The response generally lacks substance beyond expression of very basic ideas. Speaker may be unable to sustain speech to complete the task and may rely heavily on repetition of the prompt. |
| 0 | Speaker makes no attempt to respond OR response is unrelated to the topic. | | | |

(Educational Testing Service, n.d., n.p.)

**Appendix J**
**Potential Listening Proficiency Level Based on Score**

| Total Points Allotted | Potential Level Based on Diagnostic Test |
|---|---|
| 0-4 | Very low level of proficiency |
| 5-9 | Low Beginner |
| 10-14 | High Beginner |
| 15-19 | Low Intermediate |
| 20-23 | High Intermediate |
| 24-28 | Advanced |

**Potential Reading Proficiency Level Based on Score**

| Total Points Allotted | Potential Level Based on Diagnostic Test |
|---|---|
| 0-4 | Very low level of proficiency |
| 5-9 | Low Beginner |
| 10-13 | High Beginner |
| 14-18 | Low Intermediate |
| 19-23 | High Intermediate |
| 24-27 | Advanced |

**Potential Speaking Proficiency Level Based on Rubric**

| Total Points Allotted | Potential Level Based on Diagnostic Test |
|---|---|
| 0-3 | Very low level of proficiency |
| 4 | Low Beginner |
| 5-6 | High Beginner |
| 7-9 | Low Intermediate |
| 10-12 | High Intermediate |
| 13-16 | Advanced |

**Appendix K**

**Medical English: An English Course for Medical Students**
University of Costa Rica
Master's in Teaching English as a Foreign Language
Instructors: Isela Barahona, Simone Lewis, and Edwin Quesada
Monday, 5:00pm to 7:50pm
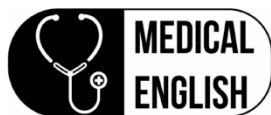


## I. Course Description

This course was specifically designed for medical students who need or want to improve their English for Medical Purposes. The population consists of students currently enrolled in different years of the Bachelor's in Medicine and Surgery program at the University of Costa Rica. After administering a diagnostic test, it was determined that most of the students in the population performed at what was deemed a high-intermediate level of proficiency in listening and reading, and a low-intermediate level in speaking according to the student teacher's scoring rubrics. The purpose of this course is to provide students with basic speaking, listening and reading strategies, and vocabulary related to their field in order to contribute to their successful completion of activities involving the use of English.

This course is set to last for sixteen weeks, with a weekly three-hour class, meaning that the course will consist of a total of 48 hours of class time at most. Three instructors will be in charge of the course: Isela Barahona, Simone Lewis, and Edwin Quesada. This course will meet on Monday evenings from 5 p.m. to 7:50 p.m. One of the main characteristics of the course is that it is based on Task-

Based Language Teaching, which focuses on teaching the ability to communicate, completing real-world tasks, and integrating skills, instead of directly teaching grammar. According to Oxford (2001), using this approach allows students to see that the language "is not just an object of academic interest nor merely a key to passing an examination; instead, English becomes a real means of interaction and sharing among people" (p. 11). This class will focus on the students' ability to communicate and complete real-world tasks, rather than solely on grammar and grades.

**II. Course Plan**

**Unit 1: "Up to Date with Medical Research: Reading in Medical English"**

**Goal**: By the end of this unit, students will be able to successfully demonstrate comprehension of medical texts (the extract of a research article and a section of a textbook) by identifying key vocabulary words and medical prefixes and suffixes, summarizing, relaying and discussing information, and/or recognizing areas affected by specific conditions.

**Unit 2: "Put on your stethoscope: Listening in Medical English"**

**Goal:** By the end of this unit, students will be able to successfully demonstrate comprehension of key medical vocabulary from an academic medical video by outlining the videos and/or reporting the information in them to their classmates.

**Unit 3: "Patient Talk: Speaking in Medical English"**

> **Goal:** By the end of this unit, students will be able to effectively communicate orally with a patient about his/her medical record, diagnosis, medication, and/or discharge summary by identifying correct vocabulary, grammatical stuctures, and bedside manners used in videos or scripts and reproducing them during role-plays.

**Activities and Classroom Techniques**

During this course, there will be many different activities that will help you achieve the course goals and objectives. Among the activities you will complete are the following: reading medical articles and textbooks, using reading strategies, making short presentations in which you talk about what you have learned from those readings, doing role-plays that are similar to situations you might encounter in a hospital, completing projects, and listening to examples of proper medical English, among others.

All of these activities will be carried out through a mix of group and individual work, depending on the exercise. Sometimes there will be games during class, which will always have a purpose for your learning in the course.

**Attendance and Participation**

Since there are only sixteen classes, it is essential that you attend classes as punctually and responsibly as possible. While emergencies and unexpected incidents might happen at any time, any student who misses **four** or more classes will not receive full points for attendance.

The dynamics of the course require you to be an active participant in the class. In order to take full advantage of the lessons and tasks, you are asked to always bring the necessary supplies and assignments, to be on time, to ask questions, and to participate in both individual and group activities. Also, good class participation requires the use of your cell phone **for academic purposes only.**

**Evaluation**

| Element | Percentage of Final Grade |
| --- | --- |
| Partial Assessments (3) | 60% (20% each) |
| Projects (2) | 20% (10% each) |
| Participation | 10% |
| Attendance | 10% |
| Total | 100% |

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**Appendix L**

University of Costa Rica
Master's Program in TEFL
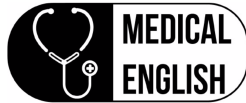
MEDICAL
ENGLISH

Barahona, Lewis & Quesada

Date: August 19, 2019
Lesson Plan #1
Student Teacher: Isela Barahona
Assistants: Simone Lewis and Edwin Quesada
Unit #1
Title of Unit: "Up to Date with Medical Research: Reading in Medical English"

**Unit Goal**: By the end of this unit, students will be able to successfully demonstrate comprehension of medical texts (the extract of a research article and a section of a textbook) by identifying key vocabulary words and medical prefixes and suffixes, summarizing, relaying and discussing information, and/or recognizing areas affected by specific conditions.

**General Objective 1**: By the end of the lesson, students will be able to demonstrate comprehension of a medical text in English by correctly answering different questions related to the text.

**Specific Objectives**: The students will be able to:
1. Use prior knowledge to select answers to a 5-question trivia about diseases.
2. Organize a text by reading the segments and putting them in the correct order.
3. Show understanding of a short text by explaining it orally using simpler language.
4. Answer ten questions correctly by using the information provided in a medical article.
5. Increase comprehension of reading material by giving and receiving feedback.

Abbreviations used:  T = teacher   A = assistant   Ss = students  UL= useful language      L = listening        S = speaking        R = reading        W = writing

| Objectives | Procedures | Macro-skills | Language (vocabulary, useful language, grammatical or phonetic features) | Strategies | Time |
|---|---|---|---|---|---|
| 1 | **Warm-up:**<br>1. Using Handout #1.1.2, the Ss will use their prior knowledge to respond or guess the answer or complete five sentences about different diseases. They will be given 1 minute to answer each question or complete the sentence; if they can't, the answer will be given by the teacher and explained by the assistants.<br><br><br>**Materials**:<br>Handout #1.1.1 (Trivia)<br>Handout #1.1.2 (Trivia answers) | ⌣ | **Vocabulary**:<br>**RL**: (herpes, albinism, mask of pregnancy, melasma Antabus, Anticol, Esperal, Disulfiram, lymphocytes, cortisol, oestrogens, aldosterone)<br><br>**UL**:<br>- I think/guess/believe/suppose # 1  is Mask of pregnancy<br>- I think/guess/believe/suppose (that) American disease does not refer to syphilis | Activating prior knowledge | 10 minutes |
| 2 | **Pre-task 1**:<br>1. Ss work in pairs, they will be given five words each. The words, which are from the text, will have the definition next to them. Ss will work in pairs using those words in a hangman game. Once their classmate has guessed the word, they will explain the definition for it.<br><br>2. Using Handout #1.2.1, Ss will carry out a text ordering activity. In small groups, they will read the text lines in a paper strip. Then, they will work together ordering the strips into the correct order. When they think they are ready, students will move to a different group and check their order. Ss will have finished the task successfully | R<br>S | **Vocabulary**:<br>**RL**: Hypoxemic, normocapnic, immunocompromised, noninvasive, valproic, titration, chromatography, metabolic clearance.<br><br>**UL**:<br>- I think this/that one goes before/after this/that one.<br><br>- This/that one goes/must go here.<br><br>- Where does this one go? | Using grammar and semantic cohesion | 15 minutes<br><br><br>20 minutes |

| | | | | | |
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| | when all the strip have been arranged in the correct order, which is the same as they appear in Handout #1.2.1<br>For checking this, the teacher and the assistants will check the order for each group.<br><br>**Materials**:<br>Handout #1.2.1 (Strips of paper with parts of an article) | | | | |
| 3 | **Pre-task 2**:<br>1. T shows the Ss a sentence from the text with a word they probably won't know. As a whole group they analyze it and learn how to guess meaning from context. **Note:** Ss quickly look through the text and find words they don't know the meaning of. They try to guess the meaning using the context and then check with a dictionary to see how correct they were.<br><br>2. Popcorn reading. Ss will read the text in groups. One person starts reading and after some lines, s/he says the name of a classmate that should continue reading.<br><br>3. After they are done reading, Ss will explain in their own words what they understand about the information just read.<br><br>**Materials**:<br>Handout #1.2.1 (This is the same handout used for Pre-task 1.) | R<br>S | **Vocabulary**:<br>Epithelial chloride channel, sinopulmonary, pansinusitis, nasal polyposis.<br><br>**UL**:<br>- How do you pronounce this word?<br><br>- Is this is pronounced /pænsɪnusaɪrɪs/?<br><br>- I don't know what <u>assess</u> means. | Using prior knowledge of prefixes and suffixes to predict the meaning of new words | 20 Minutes<br><br>20 minutes |
| 4 | **Main task**:<br>1. Ss will read a medical article extract provided in Handout #1.3.1. Then, they will answer 10 questions about it using Handout #1.3.2.<br><br>2. Ss will randomly be selected to read the answers to the questions out loud. Ss will | R<br>W | **Vocabulary**:<br>Acronyms CF, CFRD, CFTR, IRT Life-shortening, although, largely, concerns, screening, descent, end-stage, involvement, milder or later-onset, codon | Finding specific information (reading for details) | 70 minutes |

| | | | | | |
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| | receive teacher and classmates feedback as needed. Teacher feedback will be based on Handout #1.3.3.<br><br>**Materials**:<br>Handout #1.3.1 (Extract from Cystic Fibrosis)<br>Handout #1.3.2<br>Handout #1.3.3 (Answers to Handout #1.3.2) | | **UL**:<br> - Do you know what <u>this word</u> means?<br> - What's the meaning of <u>hinder</u>?<br> - What did you write in # <u>1</u>?<br> - How is this word pronounced? | | |
| 5 | **Post-task:**<br>1.Using Handout #1.4.1, Ss will complete word families with words from the reading.<br><br>**2.** Five minutes are spent at the end of the class for feedback and answering questions students might have.<br><br>**Materials**:<br>Handout #1.4.1<br>Handout #1.4.2 (Answers to Handout #1.4.1) | R<br>W<br>S | **Vocabulary**:<br>Progressive, nutrient, description, diagnosis<br>management, movement, characterized, surface<br>sequence, method, disease<br><br>**UL**:<br> - Is there a <u>verb</u> for the <u>noun</u> 'surface'? | Classifying words | 20 minutes |

**Homework**: None.

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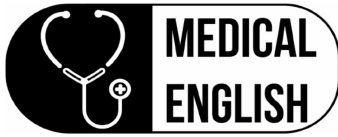
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**Handout #1.1.1**

**1. What is melasma also known as?**
    a. herpes
    b. albinism
    c. mask of pregnancy
    d. freckles

**2. Which of these names does NOT refer to syphilis?**
    a. Spanish disease
    b. Polish disease
    c. American disease
    d. Italian disease

**3. What is the name of an organic chemical compound used to treat alcoholism?**
    a. Antabus
    b. Anticol
    c. Esperal
    d. Disulfiram

**4. What is the Zika virus (ZIKV) named after?**
    a. mosquito
    b. forest
    c. beach
    d. monkey

**5. People with Cushing's syndrome have high levels of ...**
    a. lymphocytes
    b. cortisol
    c. oestrogens
    d. aldosterone

Taken from https://globalquiz.org/en/toughest-diseases-riddles/

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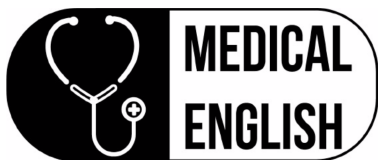
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**Handout #1.1.2**
(Handout #1.1.1 Answers)

1. Melasma is also known as?
   a. herpes
   b. albinism
   c. mask of pregnancy
   d. freckles

Melasma is a tan or dark skin discoloration. Melasma is thought to be caused by sun exposure, genetic predisposition, hormone changes, and skin irritation. Although it can affect anyone, melasma is particularly common in women, especially pregnant women and those who are taking oral or patch contraceptives or hormone replacement therapy (HRT) medication.

2. Which of these names does NOT refer to syphilis?
   a. Spanish disease
   b. Polish disease
   c. American disease
   d. Italian disease

Colloquial names of syphilis in European countries reflected the path of its spread through the continent. In Italy it was named French disease. In France it used to be called Italian or English disease, in the Netherlands a Spanish disease, German one in Poland and Lithuania, and Polish in Russian Muscovy. It never got named American one, despite the dominant hypothesis of its origin.

3. What is the name of an organic chemical compound used to treat alcoholism?
   a. Antabus
   b. Anticol
   c. Esperal
   d. Disulfiram

Disulfiram (sold under the trade names Antabuse and Antabus) is a drug used to support the treatment of chronic alcoholism by producing an acute sensitivity to ethanol (drinking alcohol).

4. What is the Zika virus (ZIKV) named after?
   a.  mosquito
   b.  forest
   c.  beach
   d.  monkey

Zika virus (ZIKV) is spread by daytime-active Aedes mosquitoes. Its name comes from the Ziika Forest of Uganda, where the virus was first isolated in 1947. Zika virus is related to the dengue, yellow fever, Japanese encephalitis, and West Nile viruses. From 2007 to 2016, the virus spread eastward, across the Pacific Ocean to the Americas, leading to the 2015–16 Zika virus epidemic.

5. People with Cushing's syndrome have high levels of ...
   a.  lymphocytes
   b.  cortisol
   c.  oestrogens
   d.  aldosterone

Cushing's syndrome is caused by either excessive cortisol-like medication such as prednisone or a tumor that either produces or results in the production of excessive cortisol by the adrenal glands. About two to three people per million are affected each year. It most commonly affects people who are 20 to 50 years of age.Women are affected three times more often than men.

**MEDICAL ENGLISH**

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**Handout #1.2.1**

A 62-year-old man with a history of chronic lymphocytic leukemia presented with a three-day history of fatigue, dyspnea, fever, and a cough. He had last received

chemotherapy three months earlier. His only medication was valproic acid (1500 mg daily), which he had been taking for several years after he had had a post-traumatic generalized seizure. On arrival at the hospital, the patient was alert and

oriented and was hypoxemic (partial pressure of arterial oxygen, 56 mm Hg; fraction of inspired oxygen, 0.21) but normocapnic (partial pressure of arterial carbon dioxide, 37 mm Hg). Clinical and radiologic findings

were compatible with bilateral pneumonia limited to the inferior lobes. Because of his immunocompromised state, bronchoalveolar lavage was performed. Preliminary results showed no Pneumocystis carinii but revealed yeast. Therapy with

ceftriaxone, clarithromycin, and voriconazole was initiated, and oral codeine (25 mg three times a day) was administered to relieve the cough. On hospital day 4, the patient's level of consciousness rapidly deteriorated, and he became unresponsive. His last dose of

codeine had been administered 12 hours earlier. Arterial blood gas measurements revealed a partial pressure of oxygen of 56 mm Hg, with a fraction of inspired oxygen of 0.5 and a partial

pressure of carbon dioxide of 80 mm Hg. The patient was treated with noninvasive ventilation and was transferred to the intensive care unit. Initial neurologic examination showed a score of 6

on the Glasgow Coma Scale (no eye opening, no verbal response, and limb withdrawal after pain stimulation). The patient's pupils were miotic, and no focal deficits were detected. Ninety minutes after the initiation of noninvasive ventilation, repeated measurements of arterial

blood gases showed that the partial pressure of oxygen was 68 mm Hg and the partial pressure of carbon dioxide was 56 mm Hg, but no neurologic improvement was observed. The serum urea nitrogen and creatinine

levels were elevated, at 45.4 mg per deciliter (16.2 mmol per liter) and 2.06 mg per deciliter (182 µmol per liter), respectively; the le els subsequently normalized ith hydra i n. The serum level of valproic aci

was 62.4 mg per liter (433 µmol per liter; normal range, 50.4 to 101 mg per liter [350 to 700 µmol per liter]) on the patient's usual dosage. The blood level of ammonia was normal. Intravenous administrati n of nalo o e (0.4 mg) that was repeated two times resulted in

a dramatic improvement in the patient's le el o cons iousness; with titration of naloxone (a continuous perfusion of 0.4 mg per hour for six hours), a normal level of consciousness was main ained and respiratory fai ure resolved. Two days after the acute event,

the patient had recovered completely.

METHODS
The blood levels of codeine, morphine, and their metabolites were determined by liquid chromatography–mass spectrometry. Duplication or multiduplication of the CYP2D6 gene was detected

by restriction-fragment–length polymorphism analysis of genomic DNA isolated from leukocytes, after digestion with restriction enzymes Xba I and Eco RI, as described elsewhere. The CYP2D6 and CYP3A4 phenotype was also determined. The widely used dextromethorphan substrate

was used as a probe drug to evaluate CYP phenotypic activity. In humans, dextromethorphan is metabolized into dextrorphan by CYP2D6 and into 3-methoxymorphinan, mainly by CYP3A4. Moreover, 3-hydroxymorphinan is obtained

through N - and O-didemethylation by CYP3A4 and CYP2D6, respectively. Hence, the partial metabolic clearance of dextromethorphan to the O-demethylated metabolites can be used as an index of CYP2D6 activity, whereas the partial metabolic clearance of dextromethorphan to the N -demethylated metabolites can be used as an index of CYP3A4 activity, as described by

Di Marco et al. To assess the relative activities of CYP2D6 and CYP3A4, we used both a traditional method based on a metabolic-ratio calculation obtained by dividing the amount of dextromethorphan

by the amount of deconjugated dextrorphan excreted in urine (for CYP2D6) and a partial metabolic-clearance approach as described above. According to a standardized protocol, a single 25-mg oral dose of dextromethorphan

was administered to our patient seven days after his discharge from the intensive care unit, after complete recovery of renal function but while he was still receiving clarithromycin and voriconazole. We used high-performance liquid chromatography

to assay deconjugated dextromethorphan and its metabolites in a hydrolyzed urine specimen obtained in the eight hours after the dose of dextromethorphan had been administered. The patient provided oral consent for testing and for publication of the report. Our institutional review board did not require written consent because the investigation was considered to be part of clinical care.
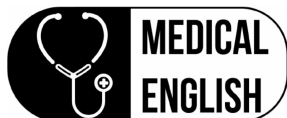
**Handout #1.3.1**

**Main task**

**Introduction**

Cystic fibrosis (CF), among the most common of life-shortening genetic diseases, is characterized by chronic, progressive obstructive lung disease along with other systemic manifestations, such as nutrient malabsorption and malnutrition due to pancreatic insufficiency, liver disease and cirrhosis, and CF-related diabetes mellitus (CFRD). Median survival has improved steadily from less than 2 years (1)(2) at the time of the initial description of the disease in 1938 (3) to 41.1 years currently. (4) This improvement in survival largely results from early diagnosis and implementation of therapies to optimize lung health and nutritional status, treat chronic respiratory infection, and improve quality of life. Although there is currently no cure for CF, newer therapies target the basic genetic defect and hold significant promise for continued improvement in overall health and survival. Because the role of the primary care physician is vital to the well-being of children with CF, this review covers the clinical presentation, diagnosis, and current management of CF and some of the common disease-related concerns and complications.

**Epidemiology**

On the basis of 2012 statistics from the Cystic Fibrosis Foundation, there are approximately 30,000 affected individuals in North America, with a predicted median survival of 41.1 years, and 49.1% are adults 18 years or older. (4) Approximately 1000 new cases are diagnosed annually; 70% of affected children are diagnosed by age 2 years, largely as a result of newborn screening, which was implemented in all 50 states by 2010. The incidence varies by race and ethnicity and is estimated to be 1:3200 in whites, (5) 1:15,000 in people of African descent, 1:35,000 in people of Asian descent, and 1:9200 to 1:13,500 in Hispanics. (6) Early disease diagnosis, treatment of chronic infection and malnutrition, and other interventions, such as lung transplantation for end-stage lung disease, have had a significant effect on survival during the past 40 years.

**Pathogenesis**

The disease results from genetic mutations located on chromosome 7q31.2, which codes for a protein known as the cystic fibrosis transmembrane conductance regulator (CFTR), which functions as an apical epithelial chloride channel. To date, more than 1900 mutations have been identified and categorized into 6 distinct classes that reflect abnormalities of CFTR synthesis, structure, and function (7)(8) (Figure 1). Class I mutations result in no functional CFTR protein being produced because of absent or defective protein biosynthesis. Class II mutations lead to protein variants that are improperly processed or transported to the apical cell membrane. For example, the most common and best characterized CFTR mutation, F508del, is a class II mutation. One copy of

F508del is present in 70% of the affected population, and 2 copies are present in approximately 50%. Class III mutations affect CFTR activation and hinder chloride movement through channels at the cell surface. For example, G551D is a class III gating mutation targeted by the medication ivacaftor, which improves chloride conductance in individuals with CF with at least one copy of this mutation. Class IV mutations result in defects that produce a normal or diminished amount of CFTR with decreased function at the apical epithelial cell membrane. Class V mutations result from decreased amounts of fully active CFTR. A sixth mutation class is characterized by diminished stability of a fully processed and functional CFTR at the cell surface and often results in the truncation of CFTR toward the carboxyl terminus. (9)

The disease results from 2 CFTR mutations; however, they need not be from the same class. The amount of functional CFTR present at the cell surface, which is determined by genotype, partially accounts for the wide spectrum of CF phenotypes and, to some extent, correlates with the degree of organ involvement and disease severity. Class I, II, and III mutations are typically associated with early involvement of respiratory and digestive manifestations (ie, chronic cough, recurrent sinopulmonary infections, and exocrine pancreatic insufficiency). Class IV and V mutations are generally associated with milder or later-onset lung disease and exocrine pancreatic sufficiency.

Diminished or absent chloride channel function results in dehydrated, viscid secretions that contribute to organ dysfunction (Figure 2). In the lungs, mucous plugging leads to inflammation, chronic infection, progressive small airways obstruction, and bronchiectasis. In the exocrine pancreas, intestinal tract, and liver, inspissation of viscid secretions leads to pancreatic insufficiency and results in the malabsorption of fat and protein, intestinal obstruction, and cholestasis. Other clinical manifestations include chronic pansinusitis, nasal polyposis, and reduced fertility. In the sweat gland, abnormal chloride channel function results in excessive salt loss in sweat and forms the basis of the gold standard pilocarpine iontophoresis sweat test for CF diagnosis. (10)

**Diagnosis**

In 2008, a Cystic Fibrosis Foundation Consensus Panel established diagnostic criteria (11) that include the following: (1) the presence of one or more characteristic phenotypic features of chronic, recurrent sinopulmonary disease, nutritional and gastrointestinal abnormalities, male urogenital abnormalities (eg, absence of vas deferens), and salt depletion syndromes; (2) a family history of CF in a sibling; and (3) a positive newborn screening test result associated with laboratory demonstrated evidence of CFTR dysfunction, such as elevation of sweat chloride concentration, identification of 2 disease-causing CFTR mutations, or demonstration in vivo of characteristic ion transport abnormalities across the nasal epithelium. Approximately 2% of cases are known as nonclassic, (12)(13) in which the genotype-CFTR functionality-phenotype correlations are less clear-cut and result in wide disease variability, which in turn is exaggerated further by the large number of identified mutations. A more appropriate diagnostic term for these individuals is CFTR-related disorder. Although the diagnosis of these cases can be challenging, the established diagnostic criteria should be used.

The gold standard for diagnosis of CF remains the pilocarpine iontophoresis sweat test developed by Gibson and Cooke in 1959, (10) which measures the chloride concentration in sweat that is typically elevated in those with CF. To maintain quality control, testing must be performed by experienced personnel using standardized methods in accredited laboratories. Normal sweat

chloride values are age dependent, but a chloride concentration ‡60 mEq/L (60 mmol/L) is indicative of CF in individuals of all ages (Table). Additional sweat testing or genetic testing should be performed to confirm abnormal sweat chloride test results.

Genetic analysis is often helpful to confirm diagnosis, particularly for cases that present with indeterminate sweat chloride measurements. The genotypic criteria for diagnosis (11) include identification of 2 disease-causing mutations on distinct chromosomes. CFTR mutations should meet at least one of the following conditions: (1) alteration of the CFTR sequence with the result of affecting protein structure and/or function; (2) introduction of a premature stop codon, such as with an insertion, deletion, or nonsense mutation; (3) alteration of intron splice sites; and (4) creation of a novel amino acid sequence that does not occur in the normal CFTR genes of the affected individual's ethnic group. Commercial laboratories test for the most common CFTR mutations (often referred to as CF carrier testing), which will identify most individuals with CF. Complete sequencing of the CFTR gene is also available and can be helpful for confirming diagnosis of clinically atypical cases. Information about the clinical features associated with individual CFTR mutations can be found in the CFTR2 database sponsored by the Cystic Fibrosis Foundation (www.cftr2.org).

Nasal potential difference measurements can be beneficial in establishing a CF diagnosis, especially in clinically atypical cases. (14)(15)(16) However, this test is not considered to be a standard diagnostic method and is only performed at a limited number of CF centers. Cystic fibrosis is caused by abnormalities in salt transport that result from a defective CFTR protein, which is a chloride channel that regulates the salt content in the fluid that covers the surface of the nasal passages and airways. Transport of ions, such as sodium and chloride, creates an electrical potential difference across the airway lining. This potential difference can be measured by placing an electrode on the lining of the nose. Because individuals with CF do not have normal CFTR function, the epithelial nasal potential difference responds differentially to administration of the various salt solutions to the nasal epithelium.

Newborn screening was pioneered in the United States in the 1980s and by 2010 was implemented in all 50 states. (17) The benefits of newborn screening include early diagnosis, slowing of lung disease progression, prevention of malnutrition, and provision of psychosocial and extended medical support, such as genetic counseling, for individuals with CF and their families. Potential risks of newborn screening include increased medical interventions and increased risk for complications (ie, early treatment of bacterial infection, leading to antimicrobial resistance), earlier exposure to pathogenic bacteria, financial considerations given the high costs of therapies, and psychosocial repercussions stemming from false-positive screening results. (18)

Newborn screening for CF is performed by measuring the amount of immunoreactive trypsinogen (IRT) in the newborn blood spots typically obtained by heelstick. State laboratories either perform 2 IRT measurements (IRT/ IRT) or perform CFTR mutation testing (IRT/DNA) if the IRT level is elevated. Positive screening results indicate that IRT levels remain persistently elevated by the time the neonate is ages 7 to 14 days or that at least one CFTR mutation has been identified. This result will trigger notification of the primary care physician and the infant's family. At this point, the infant should be referred to an accredited facility for definitive evaluation with a sweat test. A normal sweat chloride result (<30 mEq/L [<30 mmol/L]) means that CF is unlikely. An elevated (‡60 mEq/L [‡60 mmol/L]) sweat chloride measurement confirms the diagnosis, leading to further diagnostic measures (ie, genetic analysis to identify one or both CFTR mutations,

depending on the type of newborn screen performed) and clinical assessment at a CF center accredited by the Cystic Fibrosis Foundation. Indeterminate sweat chloride levels (30–59 mEq/L [30–50 mmol/L]) require further genetic analysis and clinical assessment. With the current practices for newborn screening, the possibility exists for identification of a CFTR abnormality at birth that does not immediately produce clinical manifestations, a syndrome known as CFTR-related metabolic syndrome. (19) (20) It is also important to remember that newborn screening for CF can have false-negative results as well, especially in infants with meconium ileus. Therefore, sweat testing should be performed if there is a clinical suspicion of CF regardless of the individual's age, even if he or she had a normal newborn screen result.

The present diagnostic methods take into account the wide clinical spectrum of disease and permit diagnosis of milder cases earlier in life. Early diagnosis has been found to have a profound effect on preventing lung disease progression and optimizing nutrition, which have had significant effects on survival and quality of life.

**Clinical Presentations**

The clinical diagnosis of CF in most individuals not detected by newborn screening is based on a triad of (1) recurrent sinopulmonary infections, (2) steatorrhea, and (3) failure to thrive. Exocrine pancreatic insufficiency is present in 85% of affected individuals. In infancy and early childhood, particular manifestations are strongly suggestive of a CF diagnosis. For example, the prenatal ultrasonographic finding of hyperechoic bowel is suggestive of intestinal obstruction; CF is present in approximately 10% of fetuses with this finding. Delayedmeconium passage, meconium plug syndrome, or meconium ileus are present in approximately 15% to 20% of neonates with CF and result from abnormal meconium with a high protein concentration. Meconium ileus results from inspissation in the small intestine, leading to bowel obstruction; is associated with the clinical findings of abdominal distension and dilated bowel loops on imaging studies; and is complicated by intestinal perforation and peritonitis in approximately 50% of cases. Treatment generally involves surgical intervention. Rectal prolapse occurs in 20% of untreated children with CF between ages6months and 3 years and results primarily from malabsorption, malnutrition, and the elimination of bulky stools. Other less common clinical presentations in infancy include the following: (1) salt depletion syndrome, which results in a hyponatremic, hypokalemic, and hypochloremic metabolic alkalosis; (2) prolonged neonatal jaundice, resulting from intrahepatic biliary stasis or extrahepatic bile duct obstruction; (3) edema, hypoproteinemia, and acrodermatitis enteropathica, resulting from malabsorption; and (4) hemorrhagic disease of the newborn secondary to vitamin K deficiency.

In older children, adolescents, and adults, clinical findings suggestive of a CF diagnosis include both respiratory and gastrointestinal presentations. Chronic and recurrent infections of the sinuses and respiratory tract, poorly controlled or refractory asthma, and the findings of nasal polyposis, bronchiectasis, and digital clubbing are typical of respiratory involvement. Alternatively, individuals in this age group may also present at diagnosis with gastrointestinal features, such as poor weight gain and growth, steatorrhea, rectal prolapse, intestinal obstruction, chronic constipation, or liver disease. Pancreatitis can be seen in individuals with pancreatic sufficient CF. These clinical presentations will become less common because most children diagnosed as having CF are now identified by newborn screening.

**Therapies to Maintain Optimal Lung Health and Nutritional Status**

Cystic fibrosis results in inspissation of mucous secretions in the airways, leading to chronic obstruction, infection, and inflammation that eventually lead to bronchiectasis and parenchymal destruction (Figure 3). As lung disease progresses, chronic respiratory symptoms such as cough and sputum production develop. The major aims of the treatment of respiratory disease focus on optimizing lung function and preventing disease progression and other disease-associated complications. The overall goals of treatment of CF gastrointestinal disease are to optimize nutritional status and attain age-appropriate growth and weight gain. For both pulmonary and gastrointestinal manifestations, treatment is lifelong and generally begins at the time of diagnosis. In the United States, individuals with CF require routine quarterly visits at a care center accredited by the Cystic Fibrosis Foundation, which provides multidisciplinary, patient- and family-centered care.

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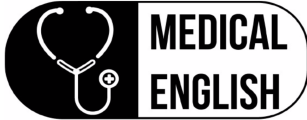
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**Handout #1.3.2**

**Questions**

1. What actions have improved the survival time of patients diagnosed with CFRD during the past 40 years?

2. Which world population is more prone to developing CFRD? What are the chances that they will develop it?

3. How many mutation classes affecting the CFTR synthesis have been identified?

4. What physical manifestations are associated with which mutation classes?

5. What is the standard test for diagnosis of CF? What does it measure?

6. What four conditions are considered indicators of CFTR mutations?

7. What does the newborn screening for CF measure?

8. In case of clinical suspicion of CF, what should be done?

9. In older children, adolescents, and adults, which clinical conditions would suggest that a CF diagnosis should be made?

10. What are the major aims of the treatment of both respiratory and gastrointestinal CF related diseases?
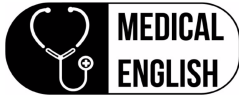
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## Handout #1.3.3

### Answers to Handout #1.3.2

1. Early diagnosis and implementation of therapies… (p.194)

Early disease diagnosis, treatment of chronic infection and malnutrition, and other interventions, such as lung transplantation for end-stage lung disease, have had a significant effect on survival during the past 40 years. (p.195)

2. People of Asian descent, the chances are of 1 in 35000. (p.195)

3. Six classes. (p.195)

4. Class I, II, and III mutations are typically associated with early involvement of respiratory and digestive manifestations (ie, chronic cough, recurrent sinopulmonary infections, and exocrine pancreatic insufficiency). Class IV and V mutations are generally associated with milder or later-onset lung disease and exocrine pancreatic sufficiency. (p.196)

5. It is the pilocarpine iontophoresis sweat test developed by Gibson and Cooke in 1959, (10) which measures the chloride concentration in sweat that is typically elevated in those with CF. (p.196)

6. At least one of the following: (1) alteration of the CFTR sequence with the result of affecting protein structure and/or function; (2) introduction of a premature stop codon, such as with an insertion, deletion, or nonsense mutation; (3) alteration of intron splice sites; and (4) creation of a novel amino acid sequence that does not occur in the normal CFTR genes of the affected individual's ethnic group. (p.197)

7. It measures. (p.197)

8. Sweat testing should be performed. (p.198)

9. In older children, adolescents, and adults, clinical findings suggestive of a CF diagnosis include both respiratory and gastrointestinal presentations. (p.198)

10. The major aims of the treatment of respiratory disease focus on optimizing lung function and preventing disease progression and other disease-associated complications. The overall goals of treatment of CF gastrointestinal disease are to optimize nutritional status and attain age-appropriate growth and weight gain. (p.198)

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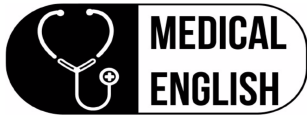
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**Handout #1.4.1**

**Word families**

**Instructions**: Complete the table with the missing words in each group.

| Noun | Adjective | Verb | Adverb |
|------|-----------|------|--------|
|  | genetic |  |  |
|  |  |  | approximately |
| effect |  |  |  |
| involvement |  |  |  |
|  |  | measure |  |
|  |  |  | clinically |
|  | early |  |  |
| screening |  |  |  |
|  | dilated |  |  |
|  |  | focus |  |

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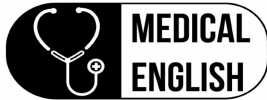
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**Handout #1.4.2**
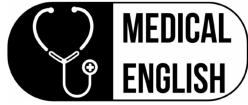
Answers to Handout #1.4.1

**Word families**

**Instructions**: Complete the table with the missing words in each group.

| Noun | Adjective | Verb | Adverb |
|---|---|---|---|
| genetics | genetic | | genetically |
| approximation | approximate | approximate | approximately |
| effect | effective | effect (have an effect on) | effectively |
| involvement | involved | involve | |
| measure/measurement | measurable | measure | measurably |
| clinic | clinical | | clinically |
| | early | | early |
| screening | screenable | screen | |
| dilation | dilated | dilate | |
| focus | | focus | |

University of Costa Rica
Master's Program in TEFL

MEDICAL ENGLISH

Barahona, Lewis & Quesada

Date: August 26, 2019
Lesson Plan #2
Student Teacher: Edwin Quesada
Assistants: Simone Lewis and Isela Barahona
Unit #1
Title of Unit: "Up to Date with Medical Research: Reading in Medical English"

**Unit Goal**: By the end of this unit, students will be able to successfully demonstrate comprehension of medical texts (the extract of a research article and a section of a textbook) by identifying key vocabulary words and medical prefixes and suffixes, summarizing, relaying and discussing information, and/or recognizing areas affected by specific conditions.

**General Objective**: By the end of the lesson, the students will be able to successfully distinguish relevant from irrelevant information by scanning extracts of medical articles for specific information according to a guide.

**Specific Objectives**: The students will be able to:
1. Use prior knowledge to provide answers to questions about diseases, medical instruments, medical procedures and body parts.
2. Show their knowledge of a sequence of words by reading them out loud and saying their meaning.
3. Demonstrate comprehension specific boldfaced words according to the context of the sentence they are in.
4. Associate terms with definitions by getting information from their classmates.
5. Analyze different passages from a text in order to identify the main idea and an irrelevant sentence.
6. Increase comprehension of reading material by giving and receiving feedback.

Abbreviations used:  T = teacher   A = assistant   Ss = students   UL= useful language      L = listening        S = speaking        R = reading        W = writing

| Objectives | Procedures | Macro-skills | Language (Vocabulary, expressions, useful language, grammatical or phonetic features) | Strategies | Time |
|---|---|---|---|---|---|
| | **Did you know that…?**<br>Before students enter the class, the ST(s) will write on the upper left corner of the board: "Did you know that…?" | S<br>R | | | |

| | | | | | |
|---|---|---|---|---|---|
| | followed by "The incidence of young people under 30 developing melanoma is increasing faster than any other group, soaring by 50% since 1980." www.melanoma.org<br><br>*This text will be used to make small talk with students in case just a very few of them have arrived in the class. If most are present, the warm up will get started at once and the text will be overlooked. | | | | |
| 1 | **Warm-up:**<br>1. Ss work in small groups (4-5 members) to play a mini game of jeopardy, which is electronic and projected in front of the class (see answers on Handout #2.1.1). They take turns choosing a category and an amount of points. They will get an answer and the first group to come up with the correct answer wins the points.<br><br>**Materials**:<br>Handout #2.1.1 (Answers to Jeopardy game)<br>https://jeopardylabs.com/play/medical-english-jeopardy | R<br>S | **Vocabulary**: Limbs, brain, veins and arteries, Biopsy, X-ray scanning, Cesarean (section), Stethoscope, Thermometer, Catheter, Allergy, Conjunctivitis, Bronchitis<br><br>**UL**: Not necessary. | Activating prior knowledge | 10 minutes |
| | **Check homework:**<br>1. The students will check their solution to Handout #1.5.1 from previous class, as the T asks them to say the missing words out loud and shows the correct solution on the projector.<br><br>**Materials**:<br>Handout #1.5.1 (From previous class)<br>Handout #1.5.2 (Answers to Handout #1.5.1; from previous class) | R<br>W<br>S | **Vocabulary**:<br>Progressive, nutrient, description, diagnosis, management,  movement, characterized, surface, sequence, method, disease<br><br>**UL**:<br> - Is there a <u>verb</u> for the <u>noun</u> 'surface'? | Sharing information<br><br>Asking for clarification | 10 minutes |
| 2 | **Pre-task 1:**<br>1. Using the PowerPoint slides with the vocabulary words, which will be projected for the whole class, Ss will guess the words' meaning (in Spanish or using a synonym in English) and pronounce a sequence of words from the main task reading. If Ss don't know a word, the | R<br>S | **Vocabulary**: deep, spread accurate, staging, apparent, reliable, drainage, omentum, dye, small bowel, mesentery, junction, biopsy, broad, ramus, lymphatic basin, founded, trial, | Translation | 20 minutes |

| | | | | | |
|---|---|---|---|---|---|
| | T will say its meaning and/or read it out loud for Ss to pronounce.<br><br>**Materials:**<br>PowerPoint slides<br>Projector | | lymphoscintigraphy, enable, feasible, undergo, meet, thickness, prognosis, attain, metastases, diminish, lymphadenectomy, indeed, adjuvant, follow-up, mitotic, remnant, bulk, leave room for, continuity, advent, hand-held, gamma probe, current vs. actual, radiotracer, lymphazurin, favor, tilmanocept, bind, mannose, agent, prepped, subcutaneous, sparse, wheal, clear of, a great deal of, blunt, grab, pull vs. push, lead, tear, reliable, beside, beneath, grasp, rule of thumb, stain, concomitant, hazard, randomized, biased, latent, equipoise, through<br>**UL**:<br>  - Do you know the meaning of <u>this word</u>? | | |
| 3 | **Pre-task 2:**<br>1. Using Handout #2.2.1, Ss will select the word that is closest in meaning to the boldfaced word in the previous sentence. Then, Ss will randomly be asked to read a sentence out loud individually, and then as a group, they will determine what the correct synonyms for each of the boldfaced words are.<br><br>**Materials:**<br>Handout #2.2.1<br>Handout #2.2.2 (Answers to Handout #2.2.1) | R | **Vocabulary**:Advent, Hand-held, gamma probe,<br>Current, Radiotracer,<br>Lymphazurin, technetium sulfur colloid, Tilmanocept, Bind, Mannose, Agent, Prepped, Subcutaneous, Sparse,  wheal | Identifying words and definitions | 20 minutes |

| | | | | | |
|---|---|---|---|---|---|
| 4 | **Pre task 3:**<br>1. Each student gets different versions of a chart with 15 definitions but only 1 definition contains its corresponding word/phrase. Ss have to stand up and ask their classmates for the missing words for the other 14 definitions (Handout #2.3.1). Once everybody's chart is complete, questions regarding meaning and pronunciation are solved by the teacher.<br><br>**Materials**<br>Handout #2.3.1 (with Answer Key) | R<br>L<br>S | **UL**:<br>- Do you know the meaning of <u>this word</u>?<br>- What definition with word do you have? - The definition I have says…<br>- How do you spell that word? It's a-b-c-d... | Identifying words and definitions | 20 minutes |
| 5 | **Main task:**<br>  1. Ss are given Handout #2.4.1 (article extract) and randomly asked to read one paragraph individually out loud. Only paragraphs in pages 1 and 2 are read this way.<br>  2. Ss work in pairs. They have to walk around the classroom and read the short passages (Handout #2.4.2) taped on the walls (the passages will contain the words from the previous activity). For each of the passages, they have to identify one sentence that is not important to the main idea. Ss take notes on the main idea of the passage, using their own words and the extra sentence.<br><br>**Materials:**<br>Handout #2.4.1<br>Handout #2.4.2 | R<br>W<br>L<br>S | **UL**:<br>- How do you pronounce <u>sparse</u>?<br>- I think this is the main idea.<br>- I don't think this sentence is necessary.<br>- What do you think? | Finding specific information (reading for details) | 50 minutes |
| 6 | **Post task:**<br>1. Ss will discuss the parts of the reading that were confusing or difficult for them, if any.<br>**Materials**:<br>None | S | | Locating areas of difficulty | 20 minutes |

**Homework**: None.

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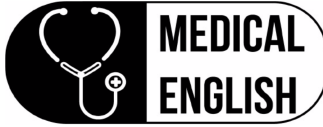
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**Handout #2.1.1**
Answers to Jeopardy Game

**Parts of the body**
They are the arms and legs of a person.
　　*Limbs*
This is the organ that controls sensations and intellectual reasoning.
　　*Brain*
They are the tubes where blood circulates.
　　*Veins and arteries*

**Medical procedures**
It is the procedure to examine tissue (tejido) to identify or study illnesses.
　　*Biopsy*
This is a treatment where electromagnetic radiation is used to get images of inside your body.
　　*X-ray scanning*
The use of surgery (cirugía) to deliver babies.
　　*Cesarean (section)*

**Medical instruments**
It is the instrument to hear sounds of movements inside the body (for example, heart beats).
　　*Stethoscope*
It is the instrument used to measure the temperature in the body.
　　*Thermometer*
It is a flexible tube inserted into a body cavity for removing fluid.
　　*Catheter*

**Illnesses**
It is an immune response by the body which has become hypersensitive to a substance. (pollen, a particular food, or dust (polvo).
　　*Allergy*
It is an inflammation of the transparent membrane that lines your eyelids and part of your eyeballs.
　　*Conjunctivitis*
It is a respiratory condition marked by spasms in the bronchi of the lungs, causing difficulty in breathing.
　　*Bronchitis*

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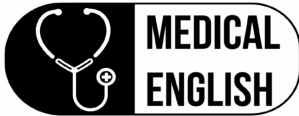
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**Handout #2.2.1**

**Instructions**: Circle the option that is closest in meaning to the **boldface** word in each of the following sentences.

1. The impact of SLN biopsy has now **spread** from melanoma to breast cancer.
    a. extended
    b. limited

2. SLN will provide a complete and **accurate** picture.
    a. compact
    b. detailed

3. Its selectivity allows this **staging** information to be obtained with relatively limited morbidity.
    a. relative to the phase
    b. important

4. None proved to be a **reliable** indicator of nodal staging that could be applied more generally.
    a. that can be trusted
    b. possible

5. The SLN technique initially used only blue **dye** intraoperatively.
    a. not alive, dead
    b. pigment

6. Channels can be followed in the **nodal basin** to identify the sentinel lymph node.
    a. lymph nodes
    b. pigment

7. Multiple single-institution studies have clearly demonstrated the **prognostic** value of SLN status.
    a. predictive
    b. productive

8. Patients also **underwent** complete node dissection.
    a. did not receive
    b. were subject to

9. This information may affect a patient's evaluation of potential **adjuvant** therapies.
   a. preventive
   b. expensive

10. Studies in a feline model confirmed that this process was technically **feasible**.
    a. reversible
    b. achievable

11. It became increasingly **apparent** that drainage was not to an entire basin.
    a. obvious
    b. strange

12. It became increasingly apparent that **drainage** was not to an entire basin.
    a. damage
    b. evacuation

13. All of these concepts were **founded** on the assumption that there was a consistent, anatomically determined lymph node that would act as sentinel.
    a. encountered
    b. based

14. This report was initially **met** with considerable skepticism.
    a. written
    b. received

15. For **thick** melanomas, the risk of systemic metastases is relatively high.
    a. big
    b. thin

16. The technique and the clinical data supporting its use are now both **broad** and deep.
    a. extensive
    b. limited

17. This information may affect a patient's evaluation of potential adjuvant therapies, clinical trials, and **follow-up** schedules.
    a. monitoring
    b. sleeping

18. It was hypothesized that regressed tumors were the **remnant** thicker, higher risk melanomas.
    a. stronger
    b. residue

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**Handout #2.2.2**
Answers to Handout #2.2.1

**Instructions**: Circle the option that is closest in meaning to the **boldface** word in each of the following sentences.

1. The impact of SLN biopsy has now **spread** from melanoma to breast cancer.
   a. extended
   b. limited

2. SLN will provide a complete and **accurate** picture.
   a. compact
   b. detailed

3. Its selectivity allows this **staging** information to be obtained with relatively limited morbidity.
   a. relative to the phase
   b. important

4. None proved to be a **reliable** indicator of nodal staging that could be applied more generally.
   a. that can be trusted
   b. possible

5. The SLN technique initially used only blue **dye** intraoperatively.
   a. not alive, dead
   b. pigment

6. Channels can be followed in the **nodal basin** to identify the sentinel lymph node.
   a. lymph nodes
   b. pigment

7. Multiple single-institution studies have clearly demonstrated the **prognostic** value of SLN status.
   a. predictive
   b. productive

8. Patients also **underwent** complete node dissection.
   a. did not receive
   b. were subject to

9. This information may affect a patient's evaluation of potential **adjuvant** therapies.
   a. preventive
   b. expensive

10. Studies in a feline model confirmed that this process was technically **feasible**.
    a. reversible
    b. achievable

11. It became increasingly **apparent** that drainage was not to an entire basin.
    a. obvious
    b. strange

12. It became increasingly apparent that **drainage** was not to an entire basin.
    a. damage
    b. evacuation

13. All of these concepts were **founded** on the assumption that there was a consistent, anatomically determined lymph node that would act as sentinel.
    a. encountered
    b. based

14. This report was initially **met** with considerable skepticism.
    a. written
    b. received

15. For **thick** melanomas, the risk of systemic metastases is relatively high.
    a. big
    b. thin

16. The technique and the clinical data supporting its use are now both **broad** and deep.
    a. extensive
    b. limited

17. This information may affect a patient's evaluation of potential adjuvant therapies, clinical trials, and **follow-up** schedules.
    a. monitoring
    b. sleeping

18. It was hypothesized that regressed tumors were the **remnant** thicker, higher risk melanomas.
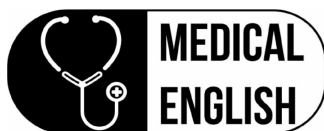    a. stronger
    b. residue

**Handout #2.3.1 (Version A)**

**Instructions**: Walk around the classroom and ask your classmates whether they have the words for the definitions you have. When you find the right words, write them in your chart. When your classmates ask you for the word and definition that you have, tell them the word and how to spell it.

**Useful language**:     Which word and definition do you have? The definition I have says…

How do you spell that word? It's a-b-c-d...

| | | | | |
|---|---|---|---|---|
| **Word**: bulk<br>**Definition**: the mass, size, or magnitude of something large | **Word**:<br>**Definition**: state or express indirectly | **Phrase**:<br><br>**Definition**: give opportunity for something to happen or be done | **Word**:<br>**Definition**: the arrival of a notable person, thing, or event | **Word**:<br><br>**Definition**: designed to be held in the hand |
| **Phrase**:<br><br>**Definition**: a handheld device containing a scintillation counter, for intraoperative use following injection of a radionuclide | **Word**:<br>**Definition**: belonging to the present time; happening or being used or done now | **Word**:<br>**Definition**: a chemical compound in which one or more atoms have been replaced by a radioisotope. | **Word**:<br><br>**Definition**: a sterile aqueous solution for subcutaneous administration. | **Word**:<br>**Definition**: give preference to one thing over another |
| **Word**:<br>**Definition**: radiopharmaceutical diagnostic imaging agent for the imaging of lymph nodes | **Word**:<br>**Definition**: to adhere or attach something to something else | **Word**:<br>**Definition**: a sugar of the hexose class which occurs as a component of many natural polysaccharides. | **Word**:<br>**Definition**: small in numbers or amount; thinly dispersed or scattered | **Word**:<br>**Definition**: a red, swollen mark left on flesh by a blow or pressure. |

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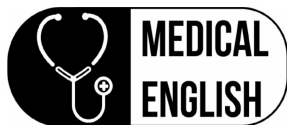Lewis, Barahona & Quesada

**Handout #2.3.1 (Version B)**

**Instructions**: Walk around the classroom and ask your classmates whether they have the words for the definitions you have. When you find the right words, write them in your chart. When your classmates ask you for the word and definition that you have, tell them the word and how to spell it.

**Useful language**:     Which word and definition do you have? The definition I have says…

How do you spell that word? It's a-b-c-d...

| | | | | |
|---|---|---|---|---|
| **Word**: <br> **Definition**: the mass, size, or magnitude of something large | **Word**: suggest <br> **Definition**: state or express indirectly | **Phrase**: <br><br> **Definition**: give opportunity for something to happen or be done | **Word**: <br> **Definition**: the arrival of a notable person, thing, or event | **Word**: <br><br> **Definition**: designed to be held in the hand |
| **Phrase**: <br><br> **Definition**: a handheld device containing a scintillation counter, for intraoperative use following injection of a radionuclide | **Word**: <br><br> **Definition**: belonging to the present time; happening or being used or done now | **Word**: <br> **Definition**: a chemical compound in which one or more atoms have been replaced by a radioisotope. | **Word**: <br> **Definition**: a sterile aqueous solution for subcutaneous administration. | **Word**: <br> **Definition**: give preference to one thing over another |
| **Word**: <br> **Definition**: radiopharmaceutical diagnostic imaging agent for the imaging of lymph nodes | **Word**: <br> **Definition**: to adhere or attach something to something else | **Word**: <br> **Definition**: a sugar of the hexose class which occurs as a component of many natural polysaccharides. | **Word**: <br> **Definition**: small in numbers or amount; thinly dispersed or scattered | **Word**: <br> **Definition**: a red, swollen mark left on flesh by a blow or pressure. |

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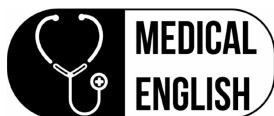Lewis, Barahona & Quesada

**Handout #2.3.1 (Version C)**

**Instructions**: Walk around the classroom and ask your classmates whether they have the words for the definitions you have. When you find the right words, write them in your chart. When your classmates ask you for the word and definition that you have, tell them the word and how to spell it.

**Useful language**: Which word and definition do you have? The definition I have says…

How do you spell that word? It's a-b-c-d...

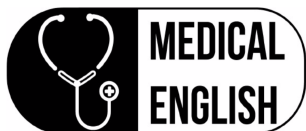| | | | | |
|---|---|---|---|---|
| **Word**: <br> **Definition**: the mass, size, or magnitude of something large | **Word**: <br> **Definition**: state or express indirectly | **Phrase**: leave room for <br> **Definition**: give opportunity for something to happen or be done | **Word**: <br> **Definition**: the arrival of a notable person, thing, or event | **Word**: <br><br> **Definition**: designed to be held in the hand |
| **Phrase**: <br><br> **Definition**: a handheld device containing a scintillation counter, for intraoperative use following injection of a radionuclide | **Word**: <br> **Definition**: belonging to the present time; happening or being used or done now | **Word**: <br> **Definition**: a chemical compound in which one or more atoms have been replaced by a radioisotope. | **Word**: <br><br> **Definition**: a sterile aqueous solution for subcutaneous administration. | **Word**: <br> **Definition**: give preference to one thing over another |
| **Word**: <br> **Definition**: radiopharmaceutical diagnostic imaging agent for the imaging of lymph nodes | **Word**: <br> **Definition**: to adhere or attach something to something else | **Word**: <br> **Definition**: a sugar of the hexose class which occurs as a component of many natural polysaccharides. | **Word**: <br> **Definition**: small in numbers or amount; thinly dispersed or scattered | **Word**: <br> **Definition**: a red, swollen mark left on flesh by a blow or pressure. |

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**Handout #2.3.1 (Version D)**

**Instructions**: Walk around the classroom and ask your classmates whether they have the words for the definitions you have. When you find the right words, write them in your chart. When your classmates ask you for the word and definition that you have, tell them the word and how to spell it.

**Useful language**:     Which word and definition do you have? The definition I have says…

How do you spell that word? It's a-b-c-d...

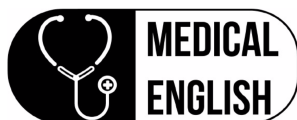| | | | | |
|---|---|---|---|---|
| **Word**: <br> **Definition**: the mass, size, or magnitude of something large | **Word**: <br><br> **Definition**: state or express indirectly | **Phrase**: <br><br> **Definition**: give opportunity for something to happen or be done | **Word**: advent <br> **Definition**: the arrival of a notable person, thing, or event | **Word**: <br><br> **Definition**: designed to be held in the hand |
| **Phrase**: <br><br> **Definition**: a handheld device containing a scintillation counter, for intraoperative use following injection of a radionuclide | **Word**: <br><br> **Definition**: belonging to the present time; happening or being used or done now | **Word**: <br> **Definition**: a chemical compound in which one or more atoms have been replaced by a radioisotope. | **Word**: <br> **Definition**: a sterile aqueous solution for subcutaneous administration. | **Word**: <br> **Definition**: give preference to one thing over another |
| **Word**: <br> **Definition**: radiopharmaceutical diagnostic imaging agent for the imaging of lymph nodes | **Word**: <br> **Definition**: to adhere or attach something to something else | **Word**: <br> **Definition**: a sugar of the hexose class which occurs as a component of many natural polysaccharides. | **Word**: <br> **Definition**: small in numbers or amount; thinly dispersed or scattered | **Word**: <br> **Definition**: a red, swollen mark left on flesh by a blow or pressure. |

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**Handout #2.3.1 (Version E)**

**Instructions**: Walk around the classroom and ask your classmates whether they have the words for the definitions you have. When you find the right words, write them in your chart. When your classmates ask you for the word and definition that you have, tell them the word and how to spell it.

**Useful language**: Which word and definition do you have? The definition I have says…

How do you spell that word? It's a-b-c-d...

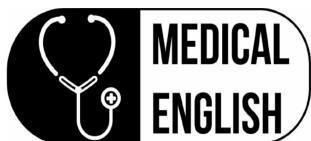| | | | | |
|---|---|---|---|---|
| **Word**: <br> **Definition**: the mass, size, or magnitude of something large | **Word**: <br> **Definition**: state or express indirectly | **Phrase**: <br><br> **Definition**: give opportunity for something to happen or be done | **Word**: <br> **Definition**: the arrival of a notable person, thing, or event | **Word**: hand-held <br> **Definition**: designed to be held in the hand |
| **Phrase**: <br><br> **Definition**: a handheld device containing a scintillation counter, for intraoperative use following injection of a radionuclide | **Word**: <br> **Definition**: belonging to the present time; happening or being used or done now | **Word**: <br> **Definition**: a chemical compound in which one or more atoms have been replaced by a radioisotope. | **Word**: <br> **Definition**: a sterile aqueous solution for subcutaneous administration. | **Word**: <br> **Definition**: give preference to one thing over another |
| **Word**: <br> **Definition**: radiopharmaceutical diagnostic imaging agent for the imaging of lymph nodes | **Word**: <br> **Definition**: to adhere or attach something to something else | **Word**: <br> **Definition**: a sugar of the hexose class which occurs as a component of many natural polysaccharides. | **Word**: <br> **Definition**: small in numbers or amount; thinly dispersed or scattered | **Word**: <br> **Definition**: a red, swollen mark left on flesh by a blow or pressure. |

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**Handout #2.3.1 (Version F)**

**Instructions**: Walk around the classroom and ask your classmates whether they have the words for the definitions you have. When you find the right words, write them in your chart. When your classmates ask you for the word and definition that you have, tell them the word and how to spell it.

**Useful language**:      Which word and definition do you have? The definition I have says…

How do you spell that word? It's a-b-c-d...

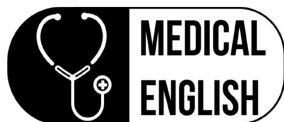| | | | | |
|---|---|---|---|---|
| **Word**:<br>**Definition**: the mass, size, or magnitude of something large | **Word**:<br>**Definition**: state or express indirectly | **Phrase**:<br><br>**Definition**: give opportunity for something to happen or be done | **Word**:<br>**Definition**: the arrival of a notable person, thing, or event | **Word**:<br><br>**Definition**: designed to be held in the hand |
| **Phrase**: gamma probe<br>**Definition**: a handheld device containing a scintillation counter, for intraoperative use following injection of a radionuclide | **Word**:<br>**Definition**: belonging to the present time; happening or being used or done now | **Word**:<br>**Definition**: a chemical compound in which one or more atoms have been replaced by a radioisotope. | **Word**:<br><br>**Definition**: a sterile aqueous solution for subcutaneous administration. | **Word**:<br>**Definition**: give preference to one thing over another |
| **Word**:<br>**Definition**: radiopharmaceutical diagnostic imaging agent for the imaging of lymph nodes | **Word**:<br>**Definition**: to adhere or attach something to something else | **Word**:<br>**Definition**: a sugar of the hexose class which occurs as a component of many natural polysaccharides. | **Word**:<br>**Definition**: small in numbers or amount; thinly dispersed or scattered | **Word**:<br>**Definition**: a red, swollen mark left on flesh by a blow or pressure. |

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**Handout #2.3.1 (Version G)**

**Instructions**: Walk around the classroom and ask your classmates whether they have the words for the definitions you have. When you find the right words, write them in your chart. When your classmates ask you for the word and definition that you have, tell them the word and how to spell it.

**Useful language**: Which word and definition do you have? The definition I have says…

How do you spell that word? It's a-b-c-d...

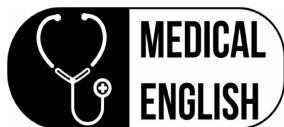| | | | | |
|---|---|---|---|---|
| **Word**: <br> **Definition**: the mass, size, or magnitude of something large | **Word**: <br> **Definition**: state or express indirectly | **Phrase**: <br><br> **Definition**: give opportunity for something to happen or be done | **Word**: <br> **Definition**: the arrival of a notable person, thing, or event | **Word**: <br><br> **Definition**: designed to be held in the hand |
| **Phrase**: <br><br> **Definition**: a handheld device containing a scintillation counter, for intraoperative use following injection of a radionuclide | **Word**: current <br> **Definition**: belonging to the present time; happening or being used or done now | **Word**: <br> **Definition**: a chemical compound in which one or more atoms have been replaced by a radioisotope. | **Word**: <br><br> **Definition**: a sterile aqueous solution for subcutaneous administration. | **Word**: <br> **Definition**: give preference to one thing over another |
| **Word**: <br> **Definition**: radiopharmaceutical diagnostic imaging agent for the imaging of lymph nodes | **Word**: <br> **Definition**: to adhere or attach something to something else | **Word**: <br> **Definition**: a sugar of the hexose class which occurs as a component of many natural polysaccharides. | **Word**: <br> **Definition**: small in numbers or amount; thinly dispersed or scattered | **Word**: <br> **Definition**: a red, swollen mark left on flesh by a blow or pressure. |

MEDICAL ENGLISH

Lewis, Barahona & Quesada

**Handout #2.3.1 (Version H)**

**Instructions**: Walk around the classroom and ask your classmates whether they have the words for the definitions you have. When you find the right words, write them in your chart. When your classmates ask you for the word and definition that you have, tell them the word and how to spell it.

**Useful language**:　　Which word and definition do you have? The definition I have says…

　　　　　　　　　How do you spell that word? It's a-b-c-d...

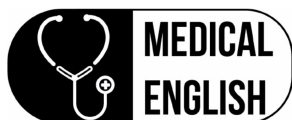| **Word**: **Definition**: the mass, size, or magnitude of something large | **Word**: **Definition**: state or express indirectly | **Phrase**: **Definition**: give opportunity for something to happen or be done | **Word**: **Definition**: the arrival of a notable person, thing, or event | **Word**: **Definition**: designed to be held in the hand |
|---|---|---|---|---|
| **Phrase**: **Definition**: a handheld device containing a scintillation counter, for intraoperative use following injection of a radionuclide | **Word**: **Definition**: belonging to the present time; happening or being used or done now | **Word**: radiotracer **Definition**: a chemical compound in which one or more atoms have been replaced by a radioisotope. | **Word**: **Definition**: a sterile aqueous solution for subcutaneous administration. | **Word**: **Definition**: give preference to one thing over another |
| **Word**: **Definition**: radiopharmaceutical diagnostic imaging agent for the imaging of lymph nodes | **Word**: **Definition**: to adhere or attach something to something else | **Word**: **Definition**: a sugar of the hexose class which occurs as a component of many natural polysaccharides. | **Word**: **Definition**: small in numbers or amount; thinly dispersed or scattered | **Word**: **Definition**: a red, swollen mark left on flesh by a blow or pressure. |

MEDICAL ENGLISH

Lewis, Barahona & Quesada

**Handout #2.3.1 (Version I)**

**Instructions**: Walk around the classroom and ask your classmates whether they have the words for the definitions you have. When you find the right words, write them in your chart. When your classmates ask you for the word and definition that you have, tell them the word and how to spell it.

**Useful language**:     Which word and definition do you have? The definition I have says…

How do you spell that word? It's a-b-c-d...

| | | | | |
|---|---|---|---|---|
| **Word**:<br>**Definition**: the mass, size, or magnitude of something large | **Word**:<br><br>**Definition**: state or express indirectly | **Phrase**:<br><br>**Definition**: give opportunity for something to happen or be done | **Word**:<br>**Definition**: the arrival of a notable person, thing, or event | **Word**:<br>**Definition**: designed to be held in the hand |
| **Phrase**:<br><br>**Definition**: a handheld device containing a scintillation counter, for intraoperative use following injection of a radionuclide | **Word**:<br><br>**Definition**: belonging to the present time; happening or being used or done now | **Word**:<br>**Definition**: a chemical compound in which one or more atoms have been replaced by a radioisotope. | **Word**:<br>lymphazurin<br>**Definition**: a sterile aqueous solution for subcutaneous administration. | **Word**:<br>**Definition**: give preference to one thing over another |
| **Word**:<br>**Definition**: radiopharmaceutical diagnostic imaging agent for the imaging of lymph nodes | **Word**:<br>**Definition**: to adhere or attach something to something else | **Word**:<br>**Definition**: a sugar of the hexose class which occurs as a component of many natural polysaccharides. | **Word**:<br>**Definition**: small in numbers or amount; thinly dispersed or scattered | **Word**:<br>**Definition**: a red, swollen mark left on flesh by a blow or pressure. |

**MEDICAL ENGLISH**
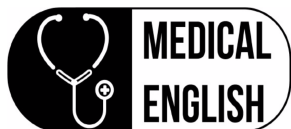
Lewis, Barahona & Quesada

**Handout #2.3.1 (Version J)**

**Instructions**: Walk around the classroom and ask your classmates whether they have the words for the definitions you have. When you find the right words, write them in your chart. When your classmates ask you for the word and definition that you have, tell them the word and how to spell it.

**Useful language**:     Which word and definition do you have? The definition I have says…

                How do you spell that word? It's a-b-c-d...

| | | | | |
|---|---|---|---|---|
| **Word**: <br> **Definition**: the mass, size, or magnitude of something large | **Word**: <br> **Definition**: state or express indirectly | **Phrase**: <br><br> **Definition**: give opportunity for something to happen or be done | **Word**: <br> **Definition**: the arrival of a notable person, thing, or event | **Word**: <br><br> **Definition**: designed to be held in the hand |
| **Phrase**: <br><br> **Definition**: a handheld device containing a scintillation counter, for intraoperative use following injection of a radionuclide | **Word**: <br> **Definition**: belonging to the present time; happening or being used or done now | **Word**: <br> **Definition**: a chemical compound in which one or more atoms have been replaced by a radioisotope. | **Word**: <br> **Definition**: a sterile aqueous solution for subcutaneous administration. | **Word**: to favor <br> **Definition**: give preference to one thing over another |
| **Word**: <br> **Definition**: radiopharmaceutical diagnostic imaging agent for the imaging of lymph nodes | **Word**: <br> **Definition**: to adhere or attach something to something else | **Word**: <br> **Definition**: a sugar of the hexose class which occurs as a component of many natural polysaccharides. | **Word**: <br> **Definition**: small in numbers or amount; thinly dispersed or scattered | **Word**: <br> **Definition**: a red, swollen mark left on flesh by a blow or pressure. |

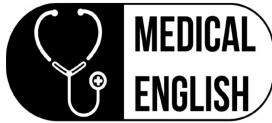MEDICAL ENGLISH

Lewis, Barahona & Quesada

**Handout #2.3.1 (Version K)**

**Instructions**: Walk around the classroom and ask your classmates whether they have the words for the definitions you have. When you find the right words, write them in your chart. When your classmates ask you for the word and definition that you have, tell them the word and how to spell it.

**Useful language**:      Which word and definition do you have? The definition I have says…

How do you spell that word? It's a-b-c-d...

| | | | | |
|---|---|---|---|---|
| **Word**:<br>**Definition**: the mass, size, or magnitude of something large | **Word**:<br>**Definition**: state or express indirectly | **Phrase**:<br><br>**Definition**: give opportunity for something to happen or be done | **Word**:<br>**Definition**: the arrival of a notable person, thing, or event | **Word**:<br><br>**Definition**: designed to be held in the hand |
| **Phrase**:<br><br>**Definition**: a handheld device containing a scintillation counter, for intraoperative use following injection of a radionuclide | **Word**:<br>**Definition**: belonging to the present time; happening or being used or done now | **Word**:<br>**Definition**: a chemical compound in which one or more atoms have been replaced by a radioisotope. | **Word**:<br><br>**Definition**: a sterile aqueous solution for subcutaneous administration. | **Word**:<br>**Definition**: give preference to one thing over another |
| **Word**: tilmanocept<br>**Definition**: radiopharmaceutical diagnostic imaging agent for the imaging of lymph nodes | **Word**:<br>**Definition**: to adhere or attach something to something else | **Word**:<br>**Definition**: a sugar of the hexose class which occurs as a component of many natural polysaccharides. | **Word**:<br>**Definition**: small in numbers or amount; thinly dispersed or scattered | **Word**:<br>**Definition**: a red, swollen mark left on flesh by a blow or pressure. |

MEDICAL ENGLISH

Lewis, Barahona & Quesada

**Handout #2.3.1 (Version L)**

**Instructions**: Walk around the classroom and ask your classmates whether they have the words for the definitions you have. When you find the right words, write them in your chart. When your classmates ask you for the word and definition that you have, tell them the word and how to spell it.

**Useful language**:     Which word and definition do you have? The definition I have says…

How do you spell that word? It's a-b-c-d...

| | | | | |
|---|---|---|---|---|
| **Word**: <br> **Definition**: the mass, size, or magnitude of something large | **Word**: <br> **Definition**: state or express indirectly | **Phrase**: <br><br> **Definition**: give opportunity for something to happen or be done | **Word**: <br> **Definition**: the arrival of a notable person, thing, or event | **Word**: <br><br> **Definition**: designed to be held in the hand |
| **Phrase**: <br><br> **Definition**: a handheld device containing a scintillation counter, for intraoperative use following injection of a radionuclide | **Word**: <br> **Definition**: belonging to the present time; happening or being used or done now | **Word**: <br> **Definition**: a chemical compound in which one or more atoms have been replaced by a radioisotope. | **Word**: <br><br> **Definition**: a sterile aqueous solution for subcutaneous administration. | **Word**: <br> **Definition**: give preference to one thing over another |
| **Word**: <br> **Definition**: radiopharmaceutical diagnostic imaging agent for the imaging of lymph nodes | **Word**: bind <br> **Definition**: to adhere or attach something to something else | **Word**: <br> **Definition**: a sugar of the hexose class which occurs as a component of many natural polysaccharides. | **Word**: <br> **Definition**: small in numbers or amount; thinly dispersed or scattered | **Word**: <br> **Definition**: a red, swollen mark left on flesh by a blow or pressure. |

MEDICAL
ENGLISH

Lewis, Barahona & Quesada

**Handout #2.3.1 (Version M)**

**Instructions**: Walk around the classroom and ask your classmates whether they have the words for the definitions you have. When you find the right words, write them in your chart. When your classmates ask you for the word and definition that you have, tell them the word and how to spell it.

**Useful language**: Which word and definition do you have? The definition I have says…

How do you spell that word? It's a-b-c-d...

| | | | | |
|---|---|---|---|---|
| **Word**: <br> **Definition**: the mass, size, or magnitude of something large | **Word**: <br> **Definition**: state or express indirectly | **Phrase**: <br><br> **Definition**: give opportunity for something to happen or be done | **Word**: <br> **Definition**: the arrival of a notable person, thing, or event | **Word**: <br> **Definition**: designed to be held in the hand |
| **Phrase**: <br><br> **Definition**: a handheld device containing a scintillation counter, for intraoperative use following injection of a radionuclide | **Word**: <br> **Definition**: belonging to the present time; happening or being used or done now | **Word**: <br> **Definition**: a chemical compound in which one or more atoms have been replaced by a radioisotope. | **Word**: <br> **Definition**: a sterile aqueous solution for subcutaneous administration. | **Word**: <br> **Definition**: give preference to one thing over another |
| **Word**: <br> **Definition**: radiopharmaceutical diagnostic imaging agent for the imaging of lymph nodes | **Word**: <br> **Definition**: to adhere or attach something to something else | **Word**: mannose <br> **Definition**: a sugar of the hexose class which occurs as a component of many natural polysaccharides. | **Word**: <br> **Definition**: small in numbers or amount; thinly dispersed or scattered | **Word**: <br> **Definition**: a red, swollen mark left on flesh by a blow or pressure. |

MEDICAL ENGLISH

Lewis, Barahona & Quesada

**Handout #2.3.1 (Version N)**

**Instructions**: Walk around the classroom and ask your classmates whether they have the words for the definitions you have. When you find the right words, write them in your chart. When your classmates ask you for the word and definition that you have, tell them the word and how to spell it.

**Useful language**:  Which word and definition do you have? The definition I have says…

How do you spell that word? It's a-b-c-d...

| **Word**: **Definition**: the mass, size, or magnitude of something large | **Word**: **Definition**: state or express indirectly | **Phrase**: **Definition**: give opportunity for something to happen or be done | **Word**: **Definition**: the arrival of a notable person, thing, or event | **Word**: **Definition**: designed to be held in the hand |
|---|---|---|---|---|
| **Phrase**: **Definition**: a handheld device containing a scintillation counter, for intraoperative use following injection of a radionuclide | **Word**: **Definition**: belonging to the present time; happening or being used or done now | **Word**: **Definition**: a chemical compound in which one or more atoms have been replaced by a radioisotope. | **Word**: **Definition**: a sterile aqueous solution for subcutaneous administration. | **Word**: **Definition**: give preference to one thing over another |
| **Word**: **Definition**: radiopharmaceutical diagnostic imaging agent for the imaging of lymph nodes | **Word**: **Definition**: to adhere or attach something to something else | **Word**: **Definition**: a sugar of the hexose class which occurs as a component of many natural polysaccharides. | **Word**: sparse **Definition**: small in numbers or amount; thinly dispersed or scattered | **Word**: **Definition**: a red, swollen mark left on flesh by a blow or pressure. |

MEDICAL ENGLISH

Lewis, Barahona & Quesada

**Handout #2.3.1 (Version O)**

**Instructions**: Walk around the classroom and ask your classmates whether they have the words for the definitions you have. When you find the right words, write them in your chart. When your classmates ask you for the word and definition that you have, tell them the word and how to spell it.

**Useful language**: Which word and definition do you have? The definition I have says…

How do you spell that word? It's a-b-c-d...

| | | | | |
|---|---|---|---|---|
| **Word**: <br> **Definition**: the mass, size, or magnitude of something large | **Word**: <br> **Definition**: state or express indirectly | **Phrase**: <br><br> **Definition**: give opportunity for something to happen or be done | **Word**: <br> **Definition**: the arrival of a notable person, thing, or event | **Word**: <br><br> **Definition**: designed to be held in the hand |
| **Phrase**: <br><br> **Definition**: a handheld device containing a scintillation counter, for intraoperative use following injection of a radionuclide | **Word**: <br> **Definition**: belonging to the present time; happening or being used or done now | **Word**: <br> **Definition**: a chemical compound in which one or more atoms have been replaced by a radioisotope. | **Word**: <br> **Definition**: a sterile aqueous solution for subcutaneous administration. | **Word**: <br> **Definition**: give preference to one thing over another |
| **Word**: <br> **Definition**: radiopharmaceutical diagnostic imaging agent for the imaging of lymph nodes | **Word**: <br> **Definition**: to adhere or attach something to something else | **Word**: <br> **Definition**: a sugar of the hexose class which occurs as a component of many natural polysaccharides. | **Word**: <br> **Definition**: small in numbers or amount; thinly dispersed or scattered | **Word**: wheal <br> **Definition**: a red, swollen mark left on flesh by a blow or pressure. |

MEDICAL ENGLISH

Lewis, Barahona & Quesada

**Handout #2.3.1 (ANSWER KEY)**

**Instructions**: Walk around the classroom and ask your classmates whether they have the words for the definitions you have. When you find the right words, write them in your chart. When your classmates ask you for the word and definition that you have, tell them the word and how to spell it.

**Useful language**: Which word and definition do you have? The definition I have says…

How do you spell that word? It's a-b-c-d...

| | | | | |
|---|---|---|---|---|
| **Word**: bulk **Definition**: the mass, size, or magnitude of something large | **Word**: suggest **Definition**: state or express indirectly | **Phrase**: leave room for **Definition**: give opportunity for something to happen or be done | **Word**: advent **Definition**: the arrival of a notable person, thing, or event | **Word**: hand-held **Definition**: designed to be held in the hand |
| **Phrase**: gamma probe **Definition**: a handheld device containing a scintillation counter, for intraoperative use following injection of a radionuclide | **Word**: current **Definition**: belonging to the present time; happening or being used or done now | **Word**: radiotracer **Definition**: a chemical compound in which one or more atoms have been replaced by a radioisotope. | **Word**: lymphazurin **Definition**: a sterile aqueous solution for subcutaneous administration. | **Word**: to favor **Definition**: give preference to one thing over another |
| **Word**: tilmanocept **Definition**: radiopharmaceutical diagnostic imaging agent for the imaging of lymph nodes | **Word**: bind **Definition**: to adhere or attach something to something else | **Word**: mannose **Definition**: a sugar of the hexose class which occurs as a component of many natural polysaccharides. | **Word**: sparse **Definition**: small in numbers or amount; thinly dispersed or scattered | **Word**: wheal **Definition**: a red, swollen mark left on flesh by a blow or pressure. |

**MEDICAL ENGLISH**

Lewis, Barahona & Quesada

**Handout #2.4.1**

Textbook of Complex General Surgical Oncology

# Chapter 14: Sentinel Lymph Node Biopsy for Melanoma

Mark B. Faries

## INTRODUCTION

Sentinel lymph node (SLN) biopsy is now a standard component of the treatment of many melanomas, and its use is accepted as routine.[1,2] So routine, in fact, that the revolutionary nature of its beginning is little remembered. This is appropriate as the technique and the clinical data supporting its use are now both broad and deep. However, even with our familiarity with the procedure, it is important to remember that the technique requires skill and coordination of multiple disciplines and that appropriate selection of candidates for SLN biopsy is necessary.

The impact of SLN biopsy has now spread from melanoma to breast cancer, and may become more common in other solid tumors. The benefits it has produced for melanoma patients around the world including more accurate staging and less morbid treatment of regional lymph nodes are remarkable and will ensure that SLN biopsy will continue to be a vital component of melanoma treatment into the future.

## HISTORY

The history of SLN biopsy is, in some respects, quite old. Indeed, since the apparent orderly progression of cancer from primary tumor to lymph nodes and then subsequently to distant sites has been observed for centuries, the concept of determining a reliable means of mapping that progression is not new. For example, Rudolph Virchow, father of modern pathology, noted drainage of carbon pigment from a skin tattoo to specific lymph nodes.[3] Leonard Brathwaite, a British surgeon, examined lymphatic drainage from the omentum using blue dye and described a "gland sentinel" at the root of the small bowel mesentery that received the drainage.[4]

Gould et al[5] described a "sentinel" node located close to the junction of the facial and jugular veins that was the drainage point for tumors of the parotid gland. Cabanas[6] described a "sentinel" node located adjacent to the superficial epigastric vein at the level of the junction of the femoral head and ascending pubic ramus that received drainage from tumors of the penis. He postulated that this node would provide information representative of the tumor status of the entire nodal basin.

However, all of these concepts were founded on the assumption that there was a consistent, anatomically determined lymph node that would act as sentinel. None proved to be a reliable indicator of nodal staging that could be applied more generally. What was required was a procedure that took into account functional information in determining the drainage pattern of a primary tumor. This accomplishment was not achieved until the 1980s, and was arrived via another route of investigation.

In melanoma, the subject of treatment of clinically negative regional lymph nodes has been controversial at least since "anticipatory gland excision" was proposed by Herbert Snow[7] at the end of the 19th century. Over most of the 20th century, there were proponents and opponents of elective regional nodal dissection, eventually leading to a series of randomized clinical trials.[8-10] However, for patients with primary tumors located in regions with ambiguous lymphatic drainage, the appropriate basin for elective dissection was frequently unclear. In 1977, Holmes et al[11] recommended a rational approach to determine what basin(s) was(were) at risk. This approach used lymphoscintigraphy, initially with radioactive colloidal gold, to determine which nodal basin received drainage from the primary tumor site and selectively dissect that basin. In their examination of this approach, no nodal disease was encountered in basins that also did not show drainage by the exam.

As radiotracers and imaging equipment improved, it became increasingly apparent that drainage was not to an entire basin, but rather to a specific lymph node or small number of nodes. Holmes et al[11] hypothesized that identification of that particular node would enable determination of the pathologic status of the nodal basin, without the need for a complete dissection. He proposed mapping of the lymphatic drainage using vital blue dye injected at the primary tumor site.

Studies in a feline model confirmed that this process was technically feasible.[12] Initially in patients, the entire path of the lymphatic channels was opened and followed, and all patients also underwent complete node dissection to determine if the mapping had been accurate.[13]

This initial patient experience was reported at the Society of Surgical Oncology Symposium in 1990 and demonstrated that, indeed, the status of the basin was accurately represented by the SLN.[14] Among 237 lymphadenectomies, only 2 (0.8%) had metastases in basins in which the identified SLN was negative. It was therefore possible to determine

in which patients a regional nodal dissection was indicated without having to subject everyone to the morbidity of that procedure. This report was initially met with considerable skepticism. Publication of the result was not achieved for nearly 2 years.[13] History has now confirmed the reliability of SLN biopsy as the gold standard for regional disease staging in melanoma, and that initial publication is now the most highly cited surgical oncology paper of all time.[15]

## INDICATIONS

# Intermediate-Thickness Melanomas

As discussed below, the value of SLN biopsy for patients with intermediate-thickness melanomas in determining prognosis, attaining regional control, and possibly improving long- term survival is sufficient to merit offering the procedure to operative candidates. This recommendation is now standard in the National Comprehensive Cancer Network (NCCN) guidelines as well as guidelines endorsed by the American Society of Clinical Oncology and Society of Surgical Oncology.[1,2] Certainly all patients in this group should be informed about the procedure and allowed to consider it as a standard option.

# Thick Melanomas

For thick melanomas, the risk of systemic metastases is relatively high, which may diminish the importance of regional nodal staging. This group was not considered for elective lymphadenectomy for this reason, and indeed, in the World Health Organization study of elective node dissection, patients with thicker primary melanomas did not have any indication of benefit from the procedure.[16] However, since SLN biopsy can be performed with relatively little morbidity, the procedure has been evaluated in these patients to determine its prognostic value.

Several series have been published showing a strong relationship of the status of the SLN and survival for patients with melanomas >3.5 or 4 mm in thickness. Gershenwald et al[17] examined 131 patients with thick melanoma and found the SLN status to be a strong independent prognostic indicator with 3-year overall survivals of 89.8% and 66.4% for SLN negative and positive, respectively. Together with ulceration status, SLN biopsy was able to segregate patients in to higher or lower risk categories. This information may affect a patient's evaluation of potential adjuvant therapies, clinical trials, and follow-up schedules. The Italian Intergroup and the Sunbelt Melanoma Trial Groups have also published large experiences of these patients, both showing significant prognostic value of SLN status.[18,19]

## Thin Melanomas

Most thin melanomas have very low risk of nodal metastases, but there is a subgroup that has nodal disease even with thin lesions. Given the large number of thin melanomas, a relatively small percentage with nodal metastases results in a substantial *absolute* number of positive lymph node patients. The challenge, then, is to identify appropriate patients within the thin population for SLN biopsy since the vast majority of these patients have risks too low to justify the procedure.

Two approaches have been taken to study this question. The first is to examine patients with thin melanoma who have undergone SLN biopsy and determine which factors were associated with nodal involvement.[18,20-22] This approach is intuitive but has inherent limitations. First, patients undergoing SLN biopsy have already undergone selection and may not be representative of the overall thin melanoma population. Second, false-negative biopsies would weaken the analysis. In the series that have been reported, there is little agreement on appropriate selection criteria for biopsy. Commonly, measures of thickness or invasion have been used with tumors thicker than

0.75 mm or Clark level IV felt to be at higher risk. Other features such as ulceration or a high mitotic rate are rare in thin melanoma and may not be of much practical help. Two other features that may play a role are the age of the patient, which appears to be inversely related to the risk of nodal involvement, and regression. Regression was classically considered to be an adverse prognostic indicator. It was hypothesized that regressed tumors were the remnant thicker, higher risk melanomas and were attended by a worse prognosis than nonregressed tumors of similar final thickness. However, more recent series suggest that thin melanomas with regression are less aggressive and less likely to be associated with nodal disease, and this now forms the bulk of the available data. The source of this change in the prognostic meaning of regression is not clear, but it is possible that the nature of pathologic evaluation would have changed over the years, but no objective data provide a clear explanation.

An alternate study design utilizes the population of patients with thin melanoma who did not undergo SLN mapping and determines nodal involvement by a clinical nodal recurrence.[23,24] While this approach requires extensive follow-up, it avoids the issue of operative selection and false-negative tests. Several such studies have been performed and also suggest a relationship of nodal involvement to thickness (by Breslow or Clark) to nodal recurrence, even in this thin population. Several studies also suggest gender as a factor with males having greater risk.

The inconsistency of these studies has led to a lack of clarity from the available data regarding precise selection features. The NCCN guidelines leave room for interpretation by the patient and surgeon.[1] They suggest that for melanoma <0.75 mm without adverse features, SLN biopsy should rarely be considered except in cases with uncertain primary tumor staging. In tumors >0.75 mm in thickness with no adverse features, SLN biopsy should be discussed and

considered. For tumors >0.75 mm in thickness with adverse features, SLN biopsy should be discussed and offered.

## TECHNICAL PERFORMANCE OF SENTINEL LYMPH NODE BIOPSY

As noted above, the SLN technique initially used only blue dye intraoperatively, with a preoperative lymphoscintigram used only to determine which nodal basin was at risk.[13] In addition, the entire course of the lymph channel was dissected in continuity. The advent of improved imaging and of hand-held, intraoperative gamma probes enabled more accurate and less involved procedures. The current standard approach uses a combination of vital blue dye and radiotracer. The dyes in routine use now include lymphazurin and methylene blue. The two dyes appear to have similar utility. Some favor methylene blue due to the risk of allergic reaction with lymphazurin. However, the rate of such a reaction in melanoma patients appears quite low  (relative to studies in breast cancer). In two large prospective clinical trials, the rate of allergic reaction to blue dye was <0.1% and 0.17%.[25,26] Methylene blue has also been associated with  skin necrosis, and would be relatively contraindicated if the injection site is not to be excised   (e.g., if a wide excision has previously been performed).[27] Surgeon preference also plays a role   in selecting dyes.
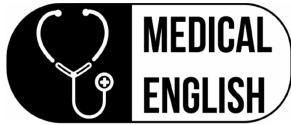
**Handout #2.4.2**

The doctor suggested that they left room for another stretcher in the room. <mark>The stretchers were bought many years ago and could be moved easily.</mark> If the nurses helped moving the bulk of clothes out of the way, it could be possible. In the advent of the flu season, it was important to have space for all the patients.

---

In order to favor the doctors who travel to indigenous zones, the government has implemented the use of different handheld devices. <mark>Many people use those devices in current times.</mark> One of the devices provided was gamma probe. Doctors and patients are very thankful for the resources.

---

Scientists are worried about the quick spread of a new type of bacteria. The results from different studies are not accurate because not much is known about this. ==They have been working in a laboratory in New England.== The investigations are broad and require much skill, but they are sure with more effort they will be able to come up with a treatment.

University of Costa Rica

Master's Program in TEFL

MEDICAL ENGLISH

Barahona, Lewis & Quesada

Date: September 2, 2019

Lesson Plan #3

Student Teacher: Simone Lewis

Assistants: Isela Barahona and Edwin Quesada

Unit #1

Title of Unit: "Up to Date with Medical Research: Reading in Medical English"

**Unit Goal**: By the end of this unit, students will be able to successfully demonstrate comprehension of medical texts (the extract of a research article and a section of a textbook) by identifying key vocabulary words and medical prefixes and suffixes, summarizing, relaying and discussing information, and/or recognizing areas affected by specific conditions.

**General Objective**: By the end of the lesson, students will be able to successfully demonstrate understanding of a medical condition explained in a textbook by identifying the causes, areas affected, and summary when explained by one of their classmates.

**Specific Objectives**: The students will be able to:

1. Identify vocabulary from the previous class by listening to a definition given by a classmate in order to find the words in a word search
   puzzle.
1.1. Demonstrate the ability to elicit main ideas from three short paragraphs by reporting them orally when requested by the teacher.
2. Demonstrate comprehension of specific affixes used in the medical textbook extracts that will be read during the main task by creating a dialogue.
3. Demonstrate comprehension of vocabulary words used in the medical textbook extracts that will be read during the main task by completing sentences with the correct vocabulary words.
4. a. Distinguish important information related to a disease and/or condition by reading one or two pages from a medical textbook in order to complete a chart with a summary.
   b. Determine an illness by listening to the description given by their classmates in order to match symptoms and diseases.

5. Evaluate their ability to learn the vocabulary and information about the diseases and conditions by completing a chart and sharing what they have learned with the class.

Abbreviations used:  T = teacher   A = assistant   Ss = students  UL= useful language      L = listening        S = speaking        R = reading        W = writing

| Objectives | Procedures | Macro-skills | Language (vocabulary, useful language, grammatical or phonetic features) | Strategies | Time |
|---|---|---|---|---|---|
| 1 | **Warm-up:**<br>1. Students work in pairs (Student A and Student B) and each of them gets a handout with a word search puzzle (Handout #3.1.1). They will also get a handout with clues (for the observer, this is included in Handout #3.1.1). Student A gives one clue to student B to find that word in student B's puzzle.<br>They switch roles when all the clues have been solved and all the words have been found (they could also alternate roles after every clue).<br><br>**Materials:**<br>Handout #3.1.1 (includes handout for students and answer key on second page)<br>PowerPoint slide (to present useful language) | R<br>L<br>S | **Vocabulary:**<br>**RL**: limb, biopsy, spread, mannose, reliable, accurate, omentum, handheld, drainage, probe<br><br>**UL:**<br>- The clue is "These are your arms and legs."<br>- The next clue is "This is an instrument for exploring a wound in a part of the body."<br>- Is it "probe"?<br>- Can you repeat, please? | Sharing information<br><br>Asking for clarification | 10 minutes<br><br>5:00-5:10pm |
| 1.1 | **Check homework:**<br>1. Ss are reminded of the homework assigned last class. In pairs, they are asked to compare the main ideas they found from three paragraphs in a text on SLN biopsy. After three minutes, they are asked randomly to report the ideas they got from each text. If a S cannot answer, the rest of the group or another S will be asked to report it.<br><br>**Materials:**<br>None | R<br>L<br>S | **Vocabulary:**<br>**RL**: standard, melanoma, supported by clinical data, accurate staging, less morbid treatment, coordination of multiple disciplines<br><br>**UL:**<br>- What did you write for the main idea of the first/second/third paragraph?<br>- I think the main idea of the first/second/third paragraph is... | Sharing information<br><br>Reporting main ideas | 5 minutes<br><br>5:10-5:15pm |

| 2 | **Pre-task 1**:<br>1. Ss work in pairs or groups of three to complete a multiple-choice exercise to test their knowledge of the meaning of prefixes and suffixes taken from the readings which will be used during the main task (Handout #3.2.1). Then, the T goes over the answers by having ss hold up the number of fingers to signify the letter choice (1 finger for a, 2 fingers for b, and 3 for c). Then, the T will present the correct answer using the PowerPoint. The T asks if there are any questions.<br><br>2. The T present the affixes, one by one, using a PowerPoint presentation. Then, T asks if there are any questions about meaning or use.<br><br>3. Ss work in pairs or groups of three to do an activity where they must create 4 new words using those affixes to create a dialogue/conversation about any subject they would like. They can use the example handout as a guide (Handout #3.2.2). The T models the instructions and guide before the Ss begin. Then, after they have finished or once time is almost up for this pre-task, the T will have each pair or group present their conversation for the class, but from their seats.<br><br>**Materials**:<br>Handout #3.2.1(includes handout for students and answer key on second page)<br>Handout #3.2.2<br>PowerPoint slides (one for each prefix or suffix) | R<br>L<br>S | **Vocabulary**:<br>**RL**: vasculo-, hyper-, over-, -rrhage, -oma, hypo-, -itis, -cyte and cyto-, -emia, a-<br><br>**UL**:<br>- What did you put for number 1?<br>- How do you pronounce this? | Identifying word definition based on prefixes and suffixes | 25-30 minutes<br><br>5:15-5:40pm |
| 3 | **Pre-task 2**:<br>1. Ss work in pairs or groups of three (depending on the number of Ss present that day) to complete a matching exercise to test their knowledge of the vocabulary (Handout #3.3.1). Then, the T goes | R<br>L<br>S | **Vocabulary**:<br>**RL**: vessel, teeming, disease, underlying, acute, growth, weakened, harmful, itch, stand out, decreased, findings, malaise, bind, onset | Identifying words and definitions | 30 minutes<br><br>5:40-6:10pm |

| | | over the answers by asking ss the answers one by one (they must read out the question and answer). The T will record the answers on the board.<br><br>2. Ss work in pairs or groups of three to do a gap-fill using the new vocabulary to complete the sentences that they are in, as taken from the texts used in the main task (Handout #3.3.2). The T goes over the answers by having volunteers read the sentences one by one, and recording the words on the board. Then, asks if the meanings of all the vocabulary words are clear. If not, T explains further. If so, T moves on to the main task.<br><br>**Materials**:<br>Handout #3.3.1 (includes handout for students and answer key on second page)<br>Handout #3.3.2 (includes handout for students and answer key on second page)<br>PowerPoint slides (for the directions and UL of each activity) | | **UL**:<br>- What do you think for number <u>1</u>?<br>- I think number <u>7</u> is <u>B</u>.<br>- I don't understand that word. What does it mean?<br>- Which word goes <u>here</u>?<br>- What did you put for number <u>2</u>? | | |
| 4 | | **Main task**:<br>1. Ss are divided into four groups by having them count from 1-4, one number per person, until every student has a number. All the 1's will form a group, the 2's, 3's, and 4's. Ss are given a chart (Handout #3.4.1) in order to record the things they know and want to know about the subject (the 4 diseases or conditions: hypopituitarism, hypersensitivity, vasculitis, and hyperparathyroidism). The Ss can volunteer to share if they want. They will complete the section about what they have learned and what they want to learn after they have completed the main task. | R<br>W<br>L<br>S | **Vocabulary**:<br>**RL**: vessel, teeming, disease, underlying, acute, growth, weakened, harmful, itch, stand out, decreased, findings, malaise, bind, onset, vasculo-, hyper-, over-, -rrhage, -oma, hypo-, -itis, -cyte and cyto-, -emia, a-, hypopituitarism, hypersensitivity, vasculitis, hyperparathyroidism<br><br>**UL**:<br>- What did you put <u>here</u>? | Identifying important information in a text, giving explanations | 45-55 minutes<br><br>6:10-7:00pm |

| | | | | | |
|---|---|---|---|---|---|
| | 2. Each group will be given a different text from a medical textbook, "Pathologic Basis of Disease" by Robins & Cotran (Handout #3.4.2). Before Ss read, the T models the names of each diseases and the UL. Ss read their assigned texts and identify different aspects to complete a chart (Handout #3.4.3).<br><br>3. When all the groups are ready, new groups will be made (with one student from every previous group, so the new groups must have a 1, 2, 3, and 4). Taking turns, Ss explain the information they have in their charts and everyone takes notes. T will project the different names of the diseases on the board and Ss will try to identify which is the one being described. The Ss stay in their teams, create names for their teams, and are given 1-2 minutes to review before the game begins. Then, Ss try to guess the diseases that the T describes correctly first. They must raise their hand to answer, and the first one to raise his/her hand will be called on first. Each first correct answer will be given one point per team, and the group with the most points at the end of the game wins.<br><br>**Materials**:<br>Handout #3.4.1<br>Handout #3.4.2<br>Handout #3.4.3 (includes all the readings for all four groups)<br>PowerPoint slide (for the names of the diseases and the UL) | | - What are the causes of Hypopituitarism?<br>- Where did you find this? | | |
| 5 | **Post-task:**<br>1. As a group (the same teams from the previous | R<br>W | **Vocabulary**:<br>**RL**: vessel, teeming, disease, | Recalling, summarizin | 30 minutes |

| | task), the Ss will finish the chart given during the main task (Handout #3.4.1) by taking a few moments to look over their readings and creating a list of four things that they have learned (at least one per reading- each student will have to present one of the four findings). Then, they must also create a list of two or three things that they would like to learn about the subject.<br><br>2. Once all of the groups have finished, the T will have each group present their findings. Then, the T will have the groups share the information that the students would still like to learn about the topic. Finally, T will present the homework.<br><br>**Materials**:<br>Handout #3.4.1 (from previous task)<br>PowerPoint slide (to project UL, and then homework) | L<br>S | underlying, acute, growth, weakened, harmful, itch, stand out, decreased, findings, malaise, bind, onset, vasculo-, hyper-, over-, -rrhage, -oma, hypo-, -itis, -cyte and cyto-, -emia, a-, hypopituitarism, hypersensitivity, vasculitis, hyperparathyroidism<br><br>**UL**:<br>- I learned that hyperparathyroidism is caused by elevated parathyroid hormone.<br>- I learned how to pronounce vasculitis.<br>- I want to know more about hypopituitarism.<br>- I want to know how to cure hypopituitarism. | g<br>information | 7:00-<br>7:30pm |
|---|---|---|---|---|---|

**Homework**: 1. Look up one of the things that you are interested in learning about the subject and you can share with the class next week. 2. Work on your blog project, which is due on September 8th. 3. Study for your quiz next week.

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**Handout #3.1.1**

**Student A**

```
C  X  I  Q  O  Y  R  C  B  L  A  B  R  G  C
W  T  U  E  O  D  E  Y  S  P  O  I  B  N  S
D  Y  U  A  B  S  L  W  W  J  Q  X  M  N  M
H  B  X  Y  I  E  I  D  T  Q  L  D  I  M  O
N  P  I  Q  R  F  A  M  I  D  J  D  L  V  B
B  S  U  R  B  G  B  L  X  M  A  B  O  Z  F
K  A  J  X  Z  P  L  D  A  M  D  E  Q  N  C
E  C  Y  P  N  Z  E  N  S  H  U  D  R  Q  Q
Q  C  L  O  D  G  N  B  H  E  O  H  R  P  H
W  P  E  R  F  O  K  S  L  T  I  K  E  L  S
Y  P  P  P  S  R  F  Q  W  U  K  U  M  Y  H
M  R  T  E  B  Y  J  R  H  D  E  G  Q  C  P
J  M  K  L  X  D  Z  M  S  C  C  N  T  R  O
P  J  V  K  G  Z  F  M  M  D  N  P  M  K  A
Q  B  W  L  G  V  U  A  O  E  O  V  A  Z  Q
```

**Student B**

```
T  U  E  M  I  D  I  D  T  V  Z  A  L  R  Y
E  T  M  B  G  N  R  B  Q  V  H  X  H  T  B
B  X  F  G  A  A  E  D  L  E  H  D  N  A  H
O  I  L  C  I  A  S  W  M  K  N  U  T  O  D
R  B  Z  N  Y  G  E  H  G  U  L  I  Z  K  N
P  P  A  X  A  T  H  E  B  U  Q  R  X  J  A
N  G  P  Y  C  M  T  G  S  T  X  J  F  E  E
E  D  K  G  C  H  U  Z  L  N  M  U  B  A  H
Q  E  V  K  U  U  J  T  L  E  X  B  R  Y  K
E  S  Y  H  R  C  M  F  N  Z  U  G  W  R  D
H  R  P  Q  A  F  U  W  H  E  C  T  J  T  D
V  Z  Q  L  T  J  C  F  E  U  M  E  K  W  K
T  S  W  S  E  U  U  L  C  X  Y  O  M  I  G
F  F  T  H  H  N  N  F  B  W  B  G  D  H  X
J  W  X  S  I  L  I  J  S  E  O  U  Q  H  Z
```

| Student B clues | Student A clues |
|---|---|
| 1. Correct in all details; exact (accurate)<br>2. A fold of peritoneum connecting the stomach with other abdominal organs (omentum)<br>3. Designed to be held in the hand (handheld)<br>4. The action or process of draining something (drainage)<br>5. A blunt-ended surgical instrument used for exploring a wound or part of the body (probe) | 1. A person's arms and legs (limb)<br>2. An examination of tissue removed from a living body to investigate a disease (biopsy)<br>3. Distribute or disperse (something) over a certain area (spread)<br>4. A sugar of the hexose class which occurs as a component of many natural polysaccharides (mannose)<br>5. Consistently good in quality or performance; able to be trusted (reliable) |

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**Handout #3.1.1**

**Student A**

```
C X I Q O Y R C B L A B R G C
W T U E O D E Y S P O I B N S
D Y U A B S L W W J Q X M N M
H B X Y I E I D T Q L D I M O
N P I Q R F A M I D J D L V B
B S U R B G B L X M A B O Z F
K A J X Z P L D A M D E Q N C
E C Y P N Z E N S H U D R Q Q
Q C L O D G N B H E O H R P H
W P E R F O K S L T I K E L S
Y P P P S R F Q W U K U M Y H
M R T E B Y J R H D E G Q C P
J M K L X D Z M S C C N T R O
P J V K G Z F M M D N P M K A
Q B W L G V U A O E O V A Z Q
```

**Student B**

```
T U E M I D I D T V Z A L R Y
E T M B G N R B Q V H X H T B
B X F G A A E D L E H D N A H
O I L C I A S W M K N U T O D
R B Z N Y G E H G U L I Z K N
P P A X A T H E B U Q R X J A
N G P Y C M T G S T X J F E E
E D K G C H U Z L N M U B A H
Q E V K U U J T L E X B R Y K
E S Y H R C M F N Z U G W R D
H R P Q A F U W H E C T J T D
V Z Q L T J C F E U M E K W K
T S W S E U U L C X Y O M I G
F F T H H N N F B W B G D H X
J W X S I L I J S E O U Q H Z
```

| Student B clues | Student A clues |
|---|---|
| 6. Correct in all details; exact (accurate) <br> 7. A fold of peritoneum connecting the stomach with other abdominal organs (omentum) <br> 8. Designed to be held in the hand (handheld) <br> 9. The action or process of draining something (drainage) <br> 10. A blunt-ended surgical instrument used for exploring a wound or part of the body (probe) | 6. A person's arms and legs (limb) <br> 7. An examination of tissue removed from a living body to investigate a disease (biopsy) <br> 8. Distribute or disperse (something) over a certain area (spread) <br> 9. A sugar of the hexose class which occurs as a component of many natural polysaccharides (mannose) <br> 10. Consistently good in quality or performance; able to be trusted (reliable) |

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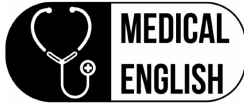
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**Handout #3.2.1**

**Prefixes and Suffixes**

**Instructions**: For each question, choose the option with the closest meaning to the underlined word. There is only one correct answer for each question.

1. Choose the option with the closest meaning to the word "asymptomatic" as in the following sentences:

> **"Fortunately, my hypercalcemia was <u>asymptomatic,</u> so I did not feel any pain. However, I am lucky that my doctor asked me to take a blood test, because I had no idea that I had a problem."**

a. very symptomatic

b. not symptomatic

c. only somewhat symptomatic

2. Choose the option with the closest meaning to the word "hemorrhage" as in the following sentence:

**"Pituitary apoplexy is caused by a sudden <u>hemorrhage</u> into the pituitary gland."**

a. insufficient flow of blood

b. normal flow of blood

c. excessive flow of blood

3. Choose the option with the closest meaning to the word "hypercalcemia" as in the following sentences:

> **"My doctor said that I need to have more tests. He is not sure of the cause of my <u>hypercalcemia</u>. For now, I am at the hospital because I have to lower my calcium levels."**

a. high levels of calcium in the liver

b. high levels of calcium in the blood

c. low levels of calcium in the body

4. Choose the option with the closest meaning to the word "hypothyroidism" as in the following sentences:

> **"I have recently gained a lot of weight. My doctor just told me that I have <u>hypothyroidism</u>, so my thyroid produces less hormones than normal."**

a. a normally functioning thyroid

b. a thyroid that is too active

c. a thyroid that is not active enough

5. Choose the option with the closest meaning to the word "vasculitis" as in the following sentences:

> **"My arm really hurts me. It is swollen because I have an infection in my blood vessels. The doctor just diagnosed me with <u>vasculitis</u>."**

a. pain in a blood vessel

b. bleeding of a blood vessel

c. inflammation of a blood vessel

6. Choose the option with the closest meaning to the word "overproduction" as in the following sentences:

> **"The doctor said I have an <u>overproduction</u> of parathyroid hormone. Apparently, the condition is called hyperparathyroidism."**
>
> a. too much production
>
> b. the perfect amount of production
>
> c. not enough production

7. Choose the option with the closest meaning to the word "adenoma" as in the following sentences.

> **"Hypopituitarism can be caused by pituitary <u>adenomas</u>, which are a type of benign tumors."**
>
> a. tumors that are cancerous
>
> b. tumors formed in the glands
>
> c. tumors formed in the abdomen

8. Choose the option with the closest meaning to the word "lymphocytes" as in the following sentence:

> **"In some immune disorders, sensitized T <u>lymphocytes</u> are the cause of tissue injury."**
>
> a. parasites in the lymphatic system
>
> b. bacteria in the lymphatic system
>
> c. cells in the lymphatic system

## ANSWER KEY

1. b

2. c

3. b

4. c

5. c

6. a

7. b

8. c

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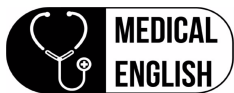
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**Handout #3.2.2**

**Create a Conversation**

**Instructions**: Use a minimum of 4 of the prefixes and/or suffixes given below to invent new words. Then, use those 4 new words to create a conversation with your partner(s). You can invent new or funny words as shown in examples 1 and 4 below.

| | | | |
|---|---|---|---|
| vasculo- | -rrhage | -oma | -emia |
| hyper- | over- | hypo- | -itis |
| | -cyte or cyto- | | a- |

**Example words and sentences:**

1. <u>Hyper-</u> + tired = **hypertired** = I'm hypertired right now. I need to take a nap.
2. <u>Hyper-</u> + glucose + <u>-emia</u> = **hyperglycemia** = I ate too many cupcakes, and now I have hyperglycemia.
3. <u>Over-</u> + excited = **overexcited** = I just won a million dollars! I need to calm down because I'm overexcited, and I don't want to faint.
4. <u>A-</u> + normal = **anormal** = You are so weird, Carol. You're anormal!

**Example conversation:**

Student 1: Dude, I'm **hypertired** right now. I need to take a nap.

Student 2: Why are you so tired?

Student 1: I ate too many cupcakes, and now I have **hyperglycemia**. I think my body is trying to digest all the sugar I just ate.

Student 2: Man, that sucks. I feel pretty great right now actually.

Student 1: Oh, really? Why is that?

Student 2: Well, I bought a lottery ticket last week and I just won a million dollars! I need to calm down because I'm **overexcited**, and I don't want to faint.

Student 1: Wow, that's great! But, who faints after winning the lottery? You are so weird, Carol. You're **anormal**.

Student 2: Whatever, you're just jealous. I'm going to go buy a private yet. Bye!

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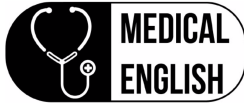
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**Handout #3.3.1**

**Instructions**: Match each word to the correct definition.

1.   Vessel                a. serves as a basis or cause of secondary symptoms

2.   Teeming             b. a natural process of increasing in size or maturity

3.   Disease             c. causing or likely to cause damage

4.   Underlying          d. information that you discover

5.   Acute               e. a tube in the body that carries liquids, such as blood

6.   Growth              f. reduced

7.   Weakened            g. of abrupt beginning, or of short duration

8.   Harmful             h. less strong

9.   Itch                i. an abnormal condition that damages the body

10.  Stand out           j. to combine, or to connect to something

11.  Decreased           k. a sensation on the skin that causes a desire to scratch

12.  Findings            l. the beginning of something

13.  Malaise             m. a general feeling of discomfort or illness

14.  Bind                n. to be full of

15.  Onset               o. be easy to see or notice because of being different

ANSWER KEY

Instructions: Match each word to the correct definition.

1. e: a tube in the body that carries liquids, such as blood

2. n: to be full of

3. i: an abnormal condition that damages the body

4. a: serves as a basis or cause of secondary symptoms

5. g: of abrupt beginning, or of short duration

6. b: a natural process of increasing in size or maturity

7. h: less strong

8. c: causing or likely to cause damage

9. k: a sensation on the skin that causes a desire to scratch

10. o: be easy to see or notice because of being different

11. f: reduced

12. d: information that you discover

13. m: a general feeling of discomfort or illness

14. j: to combine, or to connect to something

15. l: the beginning of something

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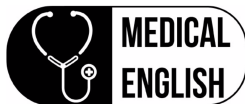
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**Handout #3.3.2**

**Vocabulary Practice**

**Instructions**: Fill in the blanks with the correct vocabulary words. Each word is

only used once.

| | | |
|---|---|---|
| vessel | growth | decreased |
| teeming | weakened | findings |
| diseases | harmful | malaise |
| underlying | itching | binding |
| acute | stands out | onset |

1. In a dramatic presentation, apoplexy causes the sudden _____ of

   excruciating headache.

2. One symptom is bone pain secondary to fractures of bones _____ by

   osteoporosis.

3. Hypopituitarism may appear slowly due to gradual enlargement of the tumor or

   abruptly because of _____ intratumoral hemorrhage.

4. Humans live in an environment _____ with substances capable of eliciting

   immune responses.

5. Immediate hypersensitivity is triggered by the _____ of an antigen to IgE antibody on the surface of mast cells.

6. It is suspected that the _____ cause is a failure of normal regulation.

7. The clinical manifestations include symptoms such as fever and _____.

8. *Vasculitis* is a general term for _____ wall inflammation.

9. Children can develop _____ failure (pituitary dwarfism) due to growth hormone deficiency.

10. Immune responses against self, or autologous, antigens, result in autoimmune _____.

11. Among other causes of hypercalcemia, malignancy _____ as the most frequent cause in adults.

12. An immune response against an exogenous antigen may cause _____ of the skin.

13. Hypopituitarism refers to the _____ secretion of pituitary hormones.

14. Hypersensitivity implies an excessive or _____ reaction to antigen.

15. Besides the _____ referable to specific tissues involved, the clinical manifestations include other symptoms.

<u>ANSWER KEY</u>

**Instructions**: Fill in the blanks with the correct vocabulary words. Each word is only used once.

1. In a dramatic presentation, apoplexy causes the sudden <u>onset</u> of excruciating headache.

2. One symptom is bone pain secondary to fractures of bones <u>weakened</u> by osteoporosis.

3. Hypopituitarism may appear slowly due to gradual enlargement of the tumor or abruptly because of <u>acute</u> intratumoral hemorrhage.

4. Humans live in an environment <u>teeming</u> with substances capable of eliciting immune responses.

5. Immediate hypersensitivity is triggered by the <u>binding</u> of an antigen to IgE antibody on the surface of mast cells.

6. It is suspected that the <u>underlying</u> cause is a failure of normal regulation.

7. The clinical manifestations include symptoms such as fever and <u>malaise</u>.

8. *Vasculitis* is a general term for <u>vessel</u> wall inflammation.

9. Children can develop <u>growth</u> failure (pituitary dwarfism) due to growth hormone deficiency.

10. Immune responses against self, or autologous, antigens, result in autoimmune <u>diseases.</u>

11. Among other causes of hypercalcemia, malignancy <u>stands out</u> as the most frequent cause in adults.

12. An immune response against an exogenous antigen may cause <u>itching</u> of the skin.

13. Hypopituitarism refers to the <u>decreased</u> secretion of pituitary hormones.

14. Hypersensitivity implies an excessive or <u>harmful</u> reaction to antigen.

15. Besides the <u>findings</u> referable to specific tissues involved, the clinical manifestations include other symptoms.

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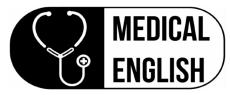
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**Handout #3.4.1**

**Instructions**: Please complete the chart based on the main subjects of today's

class: hyperparathyroidism, hypopituitarism, hypersensitivity, and/or vasculitis.

**K W L W Chart**

| What you **Know** | What you **Want** to know (before reading) | What you **Learned** | What you still **Want** to know (after reading) |
|---|---|---|---|
| | | | |

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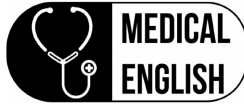
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**Handout #3.4.2**

## Hypopituitarism

*Hypopituitarism* **refers to decreased secretion of pituitary hormones, which can result from diseases of the hypothalamus or of the pituitary.** Hypofunction of the anterior pituitary occurs when approximately 75% of the parenchyma is lost or absent. This may be congenital or the result of a variety of acquired abnormalities that are intrinsic to the pituitary. Hypopituitarism accompanied by evidence of posterior pituitary dysfunction in the form of diabetes insipidus (see later) is almost always of hypothalamic origin.

Most cases of hypopituitarism arise from destructive processes directly involving the anterior pituitary. The causes include the following:

- *Tumors and other mass lesions:* Pituitary adenomas, other benign tumors arising within the sella, primary and metastatic malignancies, and cysts can cause hypopituitarism. Any mass lesion in the sella can cause damage by exerting pressure on adjacent pituitary cells.
- *Traumatic brain injury and subarachnoid hemorrhage* are among the most common causes of pituitary hypofunction.
- *Pituitary surgery or radiation:* Surgical excision of a pituitary adenoma may inadvertently extend to the nonadenomatous pituitary. Radiation of the pituitary, used to prevent regrowth of residual tumor after surgery, can damage the nonadenomatous pituitary.
- *Pituitary apoplexy:* As mentioned earlier, this is caused by a sudden hemorrhage into the pituitary gland, often occurring into a pituitary adenoma. In its most dramatic presentation, apoplexy causes the sudden onset of

excruciating headache, diplopia due to pressure on the oculomotor nerves, and hypopituitarism. In severe cases, it can cause cardiovascular collapse, loss of consciousness, and even sudden death. The combination of mass effects from the hemorrhage and the acute hypopituitarism makes pituitary apoplexy a true neurosurgical emergency.

- *Ischemic necrosis of the pituitary and Sheehan syndrome:* Sheehan syndrome, also known as postpartum necrosis of the anterior pituitary, is the most common form of clinically significant ischemic necrosis of the anterior pituitary. During pregnancy the anterior pituitary enlarges to almost twice its normal size. This physiologic expansion of the gland is not accompanied by an increase in blood supply from the low-pressure venous system; hence, there is relative hypoxia. Any further reduction in blood supply caused by obstetric hemorrhage or shock may precipitate infarction of the anterior lobe. Because the posterior pituitary receives its blood directly from arterial branches, it is much less susceptible to ischemic injury and is therefore usually not affected. Pituitary necrosis may also be encountered in other conditions, such as disseminated intravascular coagulation and (more rarely) sickle cell anemia, elevated intracranial pressure, traumatic injury, and shock of any origin. Whatever the pathogenesis, the ischemic area is resorbed and replaced by a nubbin of fibrous tissue attached to the wall of an empty sella.
- *Rathke cleft cyst:* These cysts, lined by ciliated cuboidal epithelium with occasional goblet cells and anterior pituitary cells, can accumulate proteinaceous fluid and expand, compromising the normal gland.
- *Empty sella syndrome:* Any condition or treatment that destroys part or all of the pituitary gland, such as ablation of the pituitary by surgery or radiation, can result in an *empty sella* and the *empty sella syndrome*. There are two types: (1) In a *primary* empty sella, a defect in the diaphragma sella allows the arachnoid mater and cerebrospinal fluid to herniate into the sella, expanding the sella and compressing the pituitary. Classically, this occurs in obese women with a history of multiple pregnancies. Affected individuals often present with visual field defects and occasionally with endocrine anomalies, such as *hyperprolactinemia*, due to interruption of inhibitory hypothalamic inputs. Sometimes the loss of functioning parenchyma is sufficient to produce hypopituitarism. (2) In *secondary* empty sella, a mass, such as a pituitary adenoma, enlarges the sella and is then either surgically removed or undergoes infarction, leading to loss of pituitary function.
- *Hypothalamic lesions:* As mentioned earlier, hypothalamic lesions can also affect the pituitary by interfering with the delivery of pituitary hormone-releasing factors. In contrast to diseases that involve the pituitary directly, hypothalamic abnormalities can also diminish the secretion of ADH, resulting in diabetes insipidus (discussed later). Hypothalamic lesions that cause hypopituitarism include *tumors*, which may be benign (e.g., craniopharyngioma) or malignant; most of the latter are metastases from tumors such as breast and lung carcinoma. Hypothalamic insufficiency can also appear following irradiation of brain or nasopharyngeal tumors.

- *Inflammatory disorders and infections*, such as sarcoidosis or tuberculous meningitis, can involve the hypothalamus and cause deficiencies of anterior pituitary hormones and diabetes insipidus.
- *Genetic defects:* Congenital deficiency of transcription factors required for normal pituitary function is a rare cause of hypopituitarism. For example, mutation of the pituitary-specific gene *PIT-1* results in combined pituitary hormone deficiency, characterized by deficiencies of GH, prolactin, and TSH.

The clinical manifestations of anterior pituitary hypofunction vary depending on the specific hormones that are lacking.

- Children can develop growth failure (*pituitary dwarfism*) due to growth hormone deficiency.
- Gonadotropin (LH and FSH) deficiency leads to amenorrhea and infertility in women and decreased libido, impotence, and loss of pubic and axillary hair in men.
- TSH and ACTH deficiencies result in symptoms of hypothyroidism and hypoadrenalism, respectively, and are discussed later in the chapter.
- Prolactin deficiency results in failure of postpartum lactation.
- The anterior pituitary is also a rich source of MSH, synthesized from the same precursor molecule that produces ACTH; therefore, one of the manifestations of hypopituitarism includes pallor due to a loss of stimulatory effects of MSH on melanocytes.

The brief outline of basic immunology presented here provides a foundation for considering the diseases of the immune system. We first discuss the immune reactions that cause injury, called *hypersensitivity* reactions, and then disorders caused by the failure of tolerance to self antigens, called *autoimmune disorders*, and the rejection of transplants. This is followed by diseases caused by a defective immune system, called *immunodeficiency diseases*. We close with a consideration of *amyloidosis*, a disorder that is often associated with immune and inflammatory diseases.

## Hypersensitivity: Immunologically Mediated Tissue Injury

Injurious immune reactions, called *hypersensitivity*, are the basis of the pathology associated with immunologic diseases. This term arose from the idea that individuals who have been previously exposed to an antigen manifest detectable reactions to that antigen and are therefore said to be *sensitized*. Hypersensitivity implies an excessive or harmful reaction to antigen. There are several important general features of hypersensitivity disorders.

- **Hypersensitivity reactions can be elicited by exogenous environmental antigens (microbial and nonmicrobial) or endogenous self antigens.** Humans live in an environment teeming with substances capable of eliciting immune responses. Exogenous antigens include those in dust, pollens, foods, drugs, microbes, and various chemicals. The immune responses against such exogenous antigens may take a variety of forms, ranging from annoying but trivial discomforts, such as itching of the skin, to potentially fatal diseases, such as bronchial asthma and anaphylaxis. Some of the most common reactions to environmental antigens cause the group of diseases known as *allergy*. Immune responses against self, or autologous, antigens result in *autoimmune diseases*.

- **Hypersensitivity usually results from an imbalance between the effector mechanisms of immune responses and the control mechanisms that serve to normally limit such responses.** In fact, in many hypersensitivity diseases, it is suspected that the underlying cause is a failure of normal regulation. We will return to this concept when we consider autoimmunity.

- **The development of hypersensitivity diseases (both allergic and autoimmune) is often associated with the inheritance of particular susceptibility genes.** HLA genes and many non-HLA genes have been implicated in different diseases; specific examples will be described in the context of the diseases.

- **The mechanisms of tissue injury in hypersensitivity reactions are the same as the effector mechanisms of defense against infectious pathogens.** The problem in hypersensitivity is that these reactions are poorly controlled, excessive, or misdirected (e.g., against normally harmless environmental and self antigens).

### Classification of Hypersensitivity Diseases

Hypersensitivity diseases can be classified on the basis of the immunologic mechanism that mediates the disease (Table 6-1). This classification is of value in distinguishing the manner in which the immune response causes tissue injury and disease, and the accompanying pathologic and clinical manifestations. However, it is now increasingly recognized that multiple mechanisms may be operative in any one hypersensitivity disease. The main types of hypersensitivity reactions are the following:

- In immediate hypersensitivity (type I hypersensitivity), the injury is caused by $T_H2$ cells, IgE antibodies, and mast cells and other leukocytes. Mast cells release mediators that act on vessels and smooth muscle and proinflammatory cytokines that recruit inflammatory cells.

- In antibody-mediated disorders (type II hypersensitivity), secreted IgG and IgM antibodies injure cells by promoting their phagocytosis or lysis and injure tissues by inducing inflammation. Antibodies may also

**Table 6-1** Mechanisms of Hypersensitivity Reactions

| Type | Immune Mechanisms | Histopathologic Lesions | Prototypical Disorders |
|---|---|---|---|
| Immediate (type I) hypersensitivity | Production of IgE antibody → immediate release of vasoactive amines and other mediators from mast cells; later recruitment of inflammatory cells | Vascular dilation, edema, smooth muscle contraction, mucus production, tissue injury, inflammation | Anaphylaxis; allergies; bronchial asthma (atopic forms) |
| Antibody-mediated (type II) hypersensitivity | Production of IgG, IgM → binds to antigen on target cell or tissue → phagocytosis or lysis of target cell by activated complement or Fc receptors; recruitment of leukocytes | Phagocytosis and lysis of cells; inflammation; in some diseases, functional derangements without cell or tissue injury | Autoimmune hemolytic anemia; Goodpasture syndrome |
| Immune complex–mediated (type III) hypersensitivity | Deposition of antigen-antibody complexes → complement activation → recruitment of leukocytes by complement products and Fc receptors → release of enzymes and other toxic molecules | Inflammation, necrotizing vasculitis (fibrinoid necrosis) | Systemic lupus erythematosus; some forms of glomerulonephritis; serum sickness; Arthus reaction |
| Cell-mediated (type IV) hypersensitivity | Activated T lymphocytes → (1) release of cytokines, inflammation and macrophage activation; (2) T cell–mediated cytotoxicity | Perivascular cellular infiltrates; edema; granuloma formation; cell destruction | Contact dermatitis; multiple sclerosis; type 1 diabetes; tuberculosis |

Ig, Immunoglobulin.

interfere with cellular functions and cause disease without tissue injury.

- **In immune complex–mediated disorders (type III hypersensitivity), IgG and IgM antibodies bind antigens usually in the circulation, and the antigen-antibody complexes deposit in tissues and induce inflammation.** The leukocytes that are recruited (neutrophils and monocytes) produce tissue damage by release of lysosomal enzymes and generation of toxic free radicals.

- **In cell-mediated immune disorders (type IV hypersensitivity), sensitized T lymphocytes ($T_H1$ and $T_H17$ cells and CTLs) are the cause of the tissue injury.** $T_H2$ cells induce lesions that are part of immediate hypersensitivity reactions and are not considered a form of type IV hypersensitivity.

## Immediate (Type I) Hypersensitivity

**Immediate, or type I, hypersensitivity is a rapid immunologic reaction occurring in a previously sensitized individual that is triggered by the binding of an antigen to IgE antibody on the surface of mast cells.** These reactions are often called *allergy,* and the antigens that elicit them are *allergens.* Immediate hypersensitivity may occur as a systemic disorder or as a local reaction. The systemic reaction most often follows injection of an antigen into a sensitized individual (e.g., by a bee sting), but can also follow antigen ingestion (e.g., peanut allergens). Sometimes, within minutes the patient goes into a state of shock, which may be fatal. Local reactions are diverse and vary depending on the portal of entry of the allergen. They may take the form of localized cutaneous rash or blisters (skin allergy, hives), nasal and conjunctival discharge (allergic rhinitis and conjunctivitis), hay fever, bronchial asthma, or allergic gastroenteritis (food allergy).

Many local type I hypersensitivity reactions have two well-defined phases (Fig. 6-13). The *immediate reaction* is characterized by vasodilation, vascular leakage, and depending on the location, smooth muscle spasm or glandular secretions. These changes usually become evident within minutes after exposure to an allergen and tend to
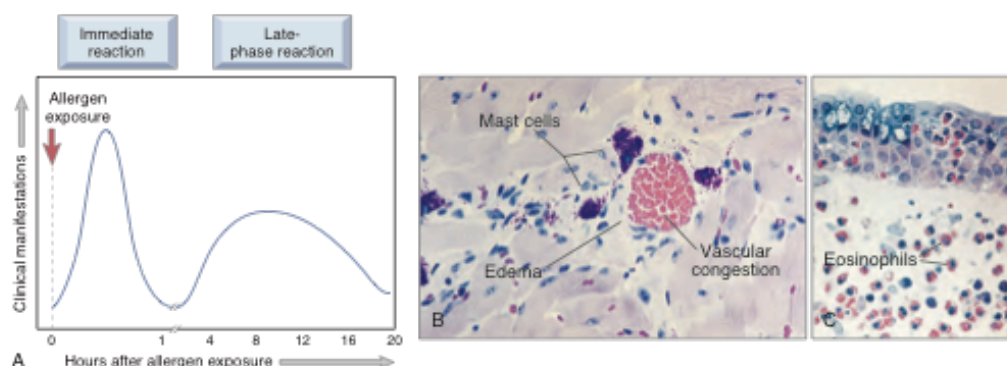


**Figure 6-13** Phases of immediate hypersensitivity reactions. **A,** Kinetics of the immediate and late-phase reactions. The immediate vascular and smooth muscle reaction to allergen develops within minutes after challenge (allergen exposure in a previously sensitized individual), and the late-phase reaction develops 2 to 24 hours later. The immediate reaction **(B)** is characterized by vasodilation, congestion, and edema, and the late-phase reaction **(C)** is characterized by an inflammatory infiltrate rich in eosinophils, neutrophils, and T cells. (Courtesy Dr. Daniel Friend, Department of Pathology, Brigham and Women's Hospital, Boston, Mass.)

subside in a few hours. In many instances (e.g., allergic rhinitis and bronchial asthma), a second, *late-phase reaction* sets in 2 to 24 hours later without additional exposure to antigen and may last for several days. This late-phase reaction is characterized by infiltration of tissues with eosinophils, neutrophils, basophils, monocytes, and CD4+ T cells, as well as tissue destruction, typically in the form of mucosal epithelial cell damage.

**Most immediate hypersensitivity disorders are caused by excessive T$_H$2 responses and these cells play a central role by stimulating IgE production and promoting inflammation.** These T$_H$2-mediated disorders show a characteristic sequence of events (Fig. 6-14), described next.

### Activation of T$_H$2 Cells and Production of IgE Antibody

The first step in the generation of T$_H$2 cells is the presentation of the antigen to naive CD4+ helper T cells, probably by dendritic cells that capture the antigen from its site of entry. For reasons that are still not understood, only some environmental antigens elicit strong T$_H$2 responses and thus serve as allergens. In response to antigen and other stimuli, including cytokines such as IL-4 produced at the local site, the T cells differentiate into T$_H$2 cells. The newly minted T$_H$2 cells produce a number of cytokines upon subsequent encounter with the antigen; as mentioned earlier, the signature cytokines of this subset are IL-4, IL-5, and IL-13. IL-4 acts on B cells to stimulate class switching to IgE and promotes the development of additional T$_H$2 cells. IL-5 is involved in the development and activation of eosinophils, which are important effectors of type I hypersensitivity (discussed later). IL-13 enhances IgE production and acts on epithelial cells to stimulate mucus secretion. In addition, T$_H$2 cells (as well as mast cells and epithelial cells) produce chemokines that attract more T$_H$2 cells, as well as other leukocytes, to the reaction site.

### Sensitization and Activation of Mast Cells

Because mast cells are central to the development of immediate hypersensitivity, we first review some of their salient characteristics. *Mast cells* are bone marrow–derived cells that are widely distributed in the tissues. They are abundant near blood vessels and nerves and in subepithelial tissues, which explains why local immediate hypersensitivity reactions often occur at these sites. Mast cells have cytoplasmic membrane-bound granules that contain a variety of biologically active mediators, described later. The granules also contain acidic proteoglycans that bind basic dyes such as toluidine blue. (*Mast* in German refers to fattening of animals, and the name of these cells came from the erroneous belief that their granules fed the tissue where the cells were located.) As is detailed next, mast cells (and their circulating counterpart, basophils) are activated by the cross-linking of high-affinity IgE Fc receptors; in addition, mast cells may also be triggered by several other stimuli, such as complement components C5a and C3a (called *anaphylatoxins* because they elicit reactions that mimic anaphylaxis), both of which act by binding to receptors on the mast cell membrane. Other mast cell secretagogues include some chemokines (e.g., IL-8), drugs such as codeine and morphine, adenosine, melittin (present in bee venom), and physical stimuli (e.g., heat, cold, sunlight). Basophils are similar to mast cells in many respects, including the presence of cell surface IgE Fc receptors as well as
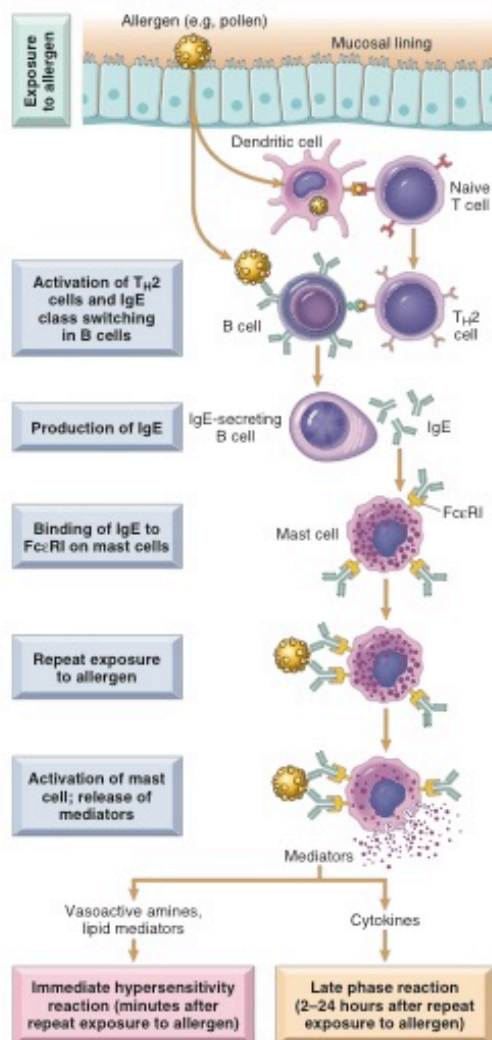


**Figure 6-14** Sequence of events in immediate (type I) hypersensitivity. Immediate hypersensitivity reactions are initiated by the introduction of an allergen, which stimulates T$_H$2 responses and IgE production in genetically susceptible individuals. IgE binds to Fc receptors (FcεRI) on mast cells, and subsequent exposure to the allergen activates the mast cells to secrete the mediators that are responsible for the pathologic manifestations of immediate hypersensitivity. See text for abbreviations.

cytoplasmic granules. In contrast to mast cells, however, basophils are not normally present in tissues but rather circulate in the blood in extremely small numbers. Similar to other granulocytes, basophils can be recruited to inflammatory sites.
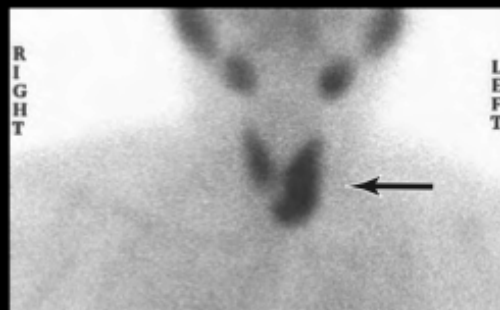
**Figure 24-24** Parathyroid scintigraphic imaging. Technetium-99 sestamibi radionuclide scan that localizes an area of increased uptake corresponding to the left inferior parathyroid gland (arrow), which contained a parathyroid adenoma. Preoperative scintigraphy is used to distinguish parathyroid adenoma from parathyroid hyperplasia, which differs from the usual gross findings of an enlarged gland.

## Hyperparathyroidism

Hyperparathyroidism is caused by elevated parathyroid hormone and is classified into primary, secondary, and least commonly, tertiary types.

- *Primary hyperparathyroidism*: an autonomous overproduction of parathyroid hormone (PTH), usually resulting from an adenoma or hyperplasia of parathyroid tissue
- *Secondary hyperparathyroidism*: compensatory hypersecretion of PTH in response to prolonged hypocalcemia, most commonly from chronic renal failure
- *Tertiary hyperparathyroidism*: persistent hypersecretion of PTH even after the cause of prolonged hypocalcemia is corrected, for example after renal transplant

### Primary Hyperparathyroidism

**Primary hyperparathyroidism is one of the most common endocrine disorders, and it is an important cause of hypercalcemia.** The frequency of the various parathyroid lesions underlying the hyperfunction is as follows:

- Adenoma, 85% to 95%
- Primary hyperplasia (diffuse or nodular), 5% to 10%
- Parathyroid carcinoma, ~1%

Primary hyperparathyroidism is usually a disease of adults and is more common in women than in men by a ratio of nearly 4:1. The annual incidence is now estimated to be about 25 cases per 100,000 in the United States and Europe; as many as 80% of patients with this condition are identified in the outpatient setting, when hypercalcemia is discovered incidentally on a serum electrolyte panel. Most cases occur in the 50s or later in life.

The most common cause of primary hyperparathyroidism is a solitary parathyroid adenoma arising sporadically (Fig. 24-24). Most, if not all, sporadic parathyroid adenomas are monoclonal, consistent with their being neoplasms. As with nodules in goitrous thyroids, sporadic parathyroid "hyperplasia" is also monoclonal in many instances, particularly when associated with a persistent stimulus for parathyroid growth (refractory secondary or tertiary parathyroidism, see later), suggesting that these lesions lie in the gray zone between reactive hyperplasia and neoplasia. There are two molecular defects that have an established role in the development of sporadic adenomas.

- *Cyclin D1 gene inversions leading to overexpression of cyclin D1*, a major regulator of the cell cycle. A pericentromeric inversion on chromosome 11 results in relocation of the *cyclin D1* gene (normally on 11q), so that it is positioned adjacent to the 5' flanking region of the *PTH* gene (on 11p). As a consequence of these changes, a regulatory element from the *PTH* gene 5' flanking sequence directs overexpression of cyclin D1 protein, causing the cells to proliferate. Between 10% and 20% of adenomas have this clonal rearrangement. In addition, cyclin D1 is overexpressed in approximately 40% of parathyroid adenomas, suggesting that mechanisms other than *cyclin D1* gene inversion can lead to its overexpression.
- *MEN1 mutations.* Approximately 20% to 30% of sporadic parathyroid tumors have mutations in both copies of the *MEN1* gene, a tumor suppressor gene on chromosome 11q13. Germline mutations of *MEN1* are also found in patients with familial parathyroid adenomas (see later). The spectrum of *MEN1* mutations in sporadic tumors is virtually identical to that in familial parathyroid adenomas.

Familial syndromes are a distant second to sporadic adenomas as causes of primary hyperparathyroidism. The genetic syndromes associated with *familial parathyroid adenomas* include Multiple Endocrine Neoplasia, types 1 and 2, caused by germline mutations of *MEN1* and *RET*, respectively (both are discussed in further detail later), and familial hypocalciuric hypercalcemia, a rare autosomal-dominant disorder caused by loss-of-function mutations in
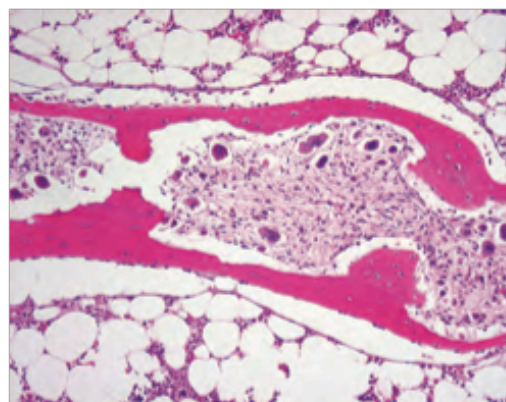
**Figure 24-26** Hyperparathyroidism with osteoclasts boring into the center of the trabeculum (dissecting osteitis). (Photomicrograph reproduced from Horvai A: Bone and Soft Tissue Pathology: A Volume in the High Yield Pathology Series, Elsevier, Philadelphia, 2012.)

the parathyroid calcium-sensing receptor gene (CASR), which results in decreased sensitivity to extracellular calcium.

*Clinical Course.* Primary hyperparathyroidism may be (1) asymptomatic and identified on routine blood chemistry profile, or (2) associated with the classic clinical manifestations of primary hyperparathyroidism.

*Asymptomatic Hyperparathyroidism.* Because serum calcium levels are routinely assessed, most patients with primary hyperparathyroidism are diagnosed incidentally, on the basis of clinically silent hypercalcemia. In fact, primary hyperparathyroidism is the most common cause of *asymptomatic* hypercalcemia. Hence, many of the classic manifestations, particularly those referable to bone and renal disease, are now seen infrequently in clinical practice. Among other causes of hypercalcemia (Table 24-5), *malignancy* stands out as the most frequent cause of *symptomatic* hypercalcemia in adults, and must be excluded by appropriate clinical and laboratory investigations. As discussed in Chapter 7, hypercalcemia can occur both with solid tumors, such as lung, breast, head and neck, and renal cancers, and with hematologic malignancies, notably

multiple myeloma. The most common mechanism (in ~80% of cases) through which osteolytic tumors induce hypercalcemia is by secretion of PTH-related peptide (PTHrP), whose functions are similar to PTH in inducing osteoclastic bone resorption and hypercalcemia; the remaining 20% induce hypercalcemia through metastases to the bone and subsequent cytokine-induced bone resorption. In individuals with primary hyperparathyroidism, serum PTH levels are inappropriately elevated for the level of serum calcium, whereas PTH levels are low to undetectable in hypercalcemia caused by of nonparathyroid diseases (Table 24-5). Radioimmunoassays specific for PTH and PTHrP are available and can be useful in distinguishing primary hyperparathyroidism and malignancy-associated hypercalcemia. Other laboratory alterations referable to PTH excess include hypophosphatemia and increased urinary excretion of both calcium and phosphate. Secondary renal disease may lead to phosphate retention with normalization of serum phosphate levels.

*Symptomatic Primary Hyperparathyroidism.* The signs and symptoms of hyperparathyroidism reflect the combined effects of increased PTH secretion and hypercalcemia. Primary hyperparathyroidism is associated with "painful bones, renal stones, abdominal groans, and psychic moans." The constellation of symptoms includes:

- *Bone disease* and bone pain secondary to fractures of bones weakened by osteoporosis or osteitis fibrosa cystica.
- *Nephrolithiasis* (renal stones) in 20% of newly diagnosed patients, with attendant pain and obstructive uropathy. Chronic renal insufficiency and abnormalities in renal function lead to polyuria and secondary polydipsia.
- Gastrointestinal disturbances, including constipation, nausea, peptic ulcers, pancreatitis, and gallstones.
- Central nervous system alterations, including depression, lethargy, and eventually seizures.
- Neuromuscular abnormalities, including weakness and fatigue.
- Cardiac manifestations, including aortic or mitral valve calcifications (or both).

The abnormalities most directly related to hyperparathyroidism are nephrolithiasis and bone disease, whereas those attributable to hypercalcemia include fatigue, weakness, pancreatitis, metastatic calcifications, and constipation.

**Table 24-5** Causes of Hypercalcemia

| Raised [PTH] | Decreased [PTH] |
|---|---|
| Hyperparathyroidism | Hypercalcemia of malignancy[a] |
|    Primary (adenoma > hyperplasia)[a] | Vitamin D toxicity |
|    Secondary[b] | Immobilization |
|    Tertiary[b] | Thiazide diuretics |
| Familial hypocalciuric hypercalcemia | Granulomatous disease (sarcoidosis) |

[PTH], Parathyroid hormone concentration.
[a]Primary hyperparathyroidism is the most common cause of hypercalcemia overall. Malignancy is the most common cause of symptomatic hypercalcemia. Primary hyperparathyroidism and malignancy account for nearly 90% of cases of hypercalcemia.
[b]Secondary and tertiary hyperparathyroidism are most commonly associated with progressive renal failure.

## Vasculitis

*Vasculitis* is a general term for vessel wall inflammation. The clinical features of the various vasculitides are protean and largely depend on the vascular bed affected (e.g., CNS vs. heart vs. small bowel). Besides the findings referable to the specific tissues involved, the clinical manifestations typically include constitutional signs and symptoms such as fever, myalgias, arthralgias, and malaise.

Vessels of any type in virtually any organ can be affected, but most vasculitides affect small vessels ranging in size from arterioles to capillaries to venules. There are exceptions, however, and, several of the vasculitides tend to affect only vessels of a particular size or location. Thus, there are entities that primarily affect the aorta and medium-sized arteries, while others principally affect only smaller arterioles. Some 20 primary forms of vasculitis are recognized, and classification schemes attempt (with variable success) to group them according to vessel diameter, role of immune complexes, presence of specific autoantibodies, granuloma formation, organ specificity, and even population demographics (Table 11-3 and Fig. 11-23). As we will see, there is considerable clinical and pathologic overlap among these entities.

The two common pathogenic mechanisms of vasculitis are immune-mediated inflammation and direct invasion of vascular walls by infectious pathogens. *Infections can also indirectly induce a noninfectious vasculitis,* for example, by generating immune complexes or triggering a cross-reactive immune response. In any given patient, it is critical to distinguish between infectious and immunologic mechanisms, because immunosuppressive therapy is appropriate for immune-mediated vasculitis but could very well be counter-productive for infectious vasculitides. Physical and chemical injury, such as from irradiation, mechanical trauma, and toxins, can also cause vasculitis.

Table 11-3  Primary Forms of Vasculitis

| | Giant Cell Arteritis | Granulomatosis with Polyangiitis | Churg-Strauss Syndrome | Polyarteritis Nodosa | Leukocytoclastic Vasculitis | Buerger Disease | Behçet Disease |
|---|---|---|---|---|---|---|---|
| **Sites of Involvement** | | | | | | | |
| Aorta | + | − | − | − | − | − | − |
| Medium-sized arteries | + | + | + | + | − | + | + |
| Small-sized arteries | − | + | + | + | + | + | + |
| Capillaries | − | − | − | − | + | − | + |
| Veins | − | − | − | − | + | + | + |
| **Inflammatory Cells Present** | | | | | | | |
| Lymphocytes | + | + | + | ± | ± | ± | ± |
| Macrophages | + | + | + | ± | ± | ± | ± |
| Neutrophils | Rare | + | + | ± | ± | ± | Required |
| Eosinophils | Very rare | ± | Required | ± | ± | ± | ± |
| **Other Features** | | | | | | | |
| Granulomas | ± * | Required * | ± | − | − | − | − |
| Giant cells | Often; not required | ± | − | − | − | − | − |
| Thrombosis | ± | ± | ± | ± | ± | Required | ± |
| Serum ANCA positivity | − | + | + | ± | − | − | − |
| Clinical history | >40 y years old, ± polymyalgia rheumatica | Any | Asthma, atopy | Any | Any | Young male smoker | Orogenital ulcers |

*The granulomas of giant cell arteritis are found within the vessel wall as part of the inflammation comprising the vasculitis, but need not be present to render the diagnosis. The granulomas of granulomatosis with polyangiitis are larger, spanning between vessels, and associated with areas of tissue necrosis.
From Seidman MA, Mitchell RN: Surgical pathology of small-and medium-sized vessels. In Current Concepts in Cardiovascular Pathology, Philadelphia, Saunders, 2012.

## Noninfectious Vasculitis

**The major cause of noninfectious vasculitis is a local or systemic immune response.** Immunologic injury in noninfectious vasculitis may be caused by:

- Immune complex deposition
- Antineutrophil cytoplasmic antibodies
- Antiendothelial cell antibodies
- Autoreactive T cells

### Immune Complex-Associated Vasculitis

This form of vasculitis can be seen in systemic immunologic disorders such as systemic lupus erythematosus (Chapter 6) that are associated with autoantibody
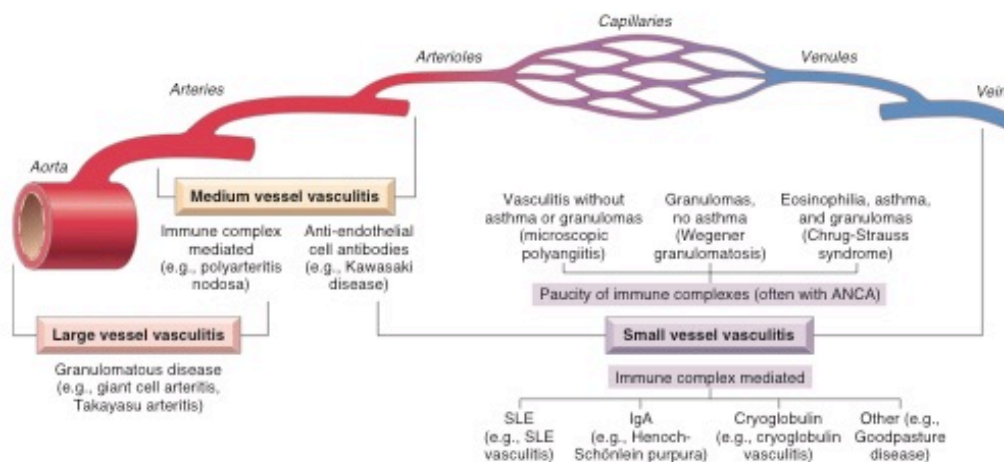


Figure 11-23 Vascular sites typically involved with the more common forms of vasculitis, as well as their presumptive etiologies. Note that there is a substantial overlap in distributions. ANCA, Antineutrophil cytoplasmic antibody; SLE, systemic lupus erythematosus.

production and formation of immune complexes that deposit in vessels. The vascular lesions resemble those found in experimental immune complex–mediated disorders, such as the Arthus phenomenon and serum sickness, and in many cases contain readily identifiable antibody and complement. Often, however, this type of vasculitis presents a number of diagnostic challenges. Only rarely is the specific antigen responsible for immune complex formation identified. Also, in most cases it is not clear whether the pathogenic antigen-antibody complexes are deposited from the circulation or form in situ. Indeed, the sensitivity and specificity of circulating immune complex assays in such diseases are extremely low. In many suspected cases, even the antigen-antibody deposits are scarce. In such instances, the immune complexes may have been degraded by the time of biopsy; alternatively, other mechanisms may underlie such "pauci-immune" vasculitides.

Immune complex deposition is also implicated in the following vasculitides:

- *Drug hypersensitivity vasculitis.* In some cases (e.g., penicillin), drugs act as haptens by binding to serum proteins or vessel wall constituents; other agents are themselves foreign proteins (e.g., streptokinase). Regardless, antibodies directed against the drug-modified proteins or foreign molecules result in immune complex formation. The clinical manifestations can be mild and self-limiting, or severe and even fatal; skin lesions are most common. It is always important to consider drug hypersensitivity as a cause of vasculitis since discontinuation of the offending agent usually leads to resolution.
- *Vasculitis secondary to infections.* Antibodies to microbial constituents can form immune complexes that circulate and deposit in vascular lesions. In up to 30% of patients with polyarteritis nodosa (see later), the vasculitis is attributable to immune complexes composed of hepatitis B surface antigens (HBsAg) and anti-HBsAg antibody.

### Antineutrophil Cytoplasmic Antibodies

Many patients with vasculitis have circulating antibodies that react with neutrophil cytoplasmic antigens, so-called *antineutrophil cytoplasmic antibodies (ANCAs)*. ANCAs are a heterogeneous group of autoantibodies directed against constituents (mainly enzymes) of neutrophil primary granules, monocyte lysosomes, and endothelial cells. ANCAs are very useful diagnostic markers; their titers generally mirror clinical severity, and a rise in titers after periods of quiescence is predictive of disease recurrence. Although a number of ANCAs have been described, two are most important. These were previously grouped according to the intracellular distribution of the target antigens (cytoplasmic [c-ANCA] or perinuclear [p-ANCA]), but are now classified according to their antigen specificity:

- *Anti-proteinase-3 (PR3-ANCA, previously c-ANCA).* PR3 is a neutrophil azurophilic granule constituent that shares homology with numerous microbial peptides, raising the possibility that the generation of PR3-ANCAs is triggered by certain infections. PR3-ANCAs are associated with polyangiitis (see later).

- *Anti-myeloperoxidase (MPO-ANCA, previously p-ANCA).* MPO is a lysosomal granule constituent involved in oxygen free radical generation (Chapter 3). MPO-ANCAs are induced by several therapeutic agents, particularly propylthiouracil. MPO-ANCAs are associated with microscopic polyangiitis and Churg-Strauss syndrome (see later).

The close association between ANCA titers and disease activity suggests a pathogenic role for these antibodies. Of note, ANCAs can directly activate neutrophils, stimulating the release of reactive oxygen species and proteolytic enzymes; in vascular beds, such activation also leads to destructive interactions between inflammatory cells and endothelial cells. While the antigenic targets of ANCA are primarily intracellular (and therefore not usually accessible to circulating antibodies), it is now clear that ANCA antigens (especially PR3) are either constitutively expressed at low levels on the plasma membrane or are translocated to the cell surface in activated and apoptotic leukocytes.

A plausible mechanism for ANCA vasculitis is the following:

- Drugs or cross-reactive microbial antigens induce ANCA formation; alternatively, leukocyte surface expression or release of PR3 and MPO (in the setting of infections) incites ANCA development in a susceptible host.
- Subsequent infection, endotoxin exposure, or inflammatory stimulus elicits cytokines such as TNF that upregulate the surface expression of PR3 and MPO on neutrophils and other cell types.
- ANCAs react with these cytokine-activated cells, causing either direct injury (e.g., to endothelial cells) or further activation (e.g., of neutrophils).
- ANCA-activated neutrophils cause tissue injury by releasing granule contents and reactive oxygen species.

Since ANCA autoantibodies are directed against cellular constituents and do not form circulating immune complexes, the vascular lesions do not typically contain demonstrable antibody and complement. Thus, ANCA-associated vasculitides are often described as "pauci-immune." Interestingly, ANCA directed against proteins other than PR3 and MPO are often seen in patients with nonvasculitic inflammatory disorders, such as inflammatory bowel disease, sclerosing cholangitis, and rheumatoid arthritis.

### Antiendothelial Cell Antibodies

Antibodies to endothelial cells, perhaps induced by defects in immune regulation, may predispose to certain vasculitides, for example, Kawasaki disease (see later).

The following discussion presents several of the best characterized and generally recognized vasculitides; there is substantial overlap among the different entities. Moreover, it should be kept in mind that some patients with vasculitis do not have a classic constellation of findings that allows them to be neatly pigeon-holed into one specific diagnosis.

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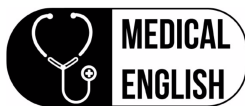
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**Handout #3.4.3**

**Instructions**: Before you read, write the name of the condition you will read about. Then, as you read the text, take notes about your condition for every category in the information section. Be ready to present your findings to the class.

ANSWER KEY

| Information | Name of the condition: |
|---|---|
| Summary of what the condition is: | |
| Possible cause(s): | |
| Area(s) that can be affected: | |
| Two more facts that you learned about the condition: | |

| Information | Conditions | | | |
|---|---|---|---|---|
| | Hypopituitarism | Hypersensitivity | Hyperparathyroidism | Vasculitis |
| Summary of what the condition is: | -Decreased secretion of pituitary hormones | -Injurious immune reactions<br>-The basis of the pathology associated with immunologic diseases<br>-A repeated, excessive or harmful reaction to antigen | -An autonomous overproduction of parathyroid hormone (PTH)<br>-Endocrine disorder<br>-Cause of hypercalcemia | -Vessel wall inflammation |
| Possible cause(s): | -Diseases of the hypothalamus or of the pituitary<br>-Tumors and other mass lesions<br>-Traumatic brain injury and subarachnoid hemorrhage<br>-Pituitary surgery or radiation<br>-Pituitary apoplexy<br>-All of the others on p. 1081 | -Contact with exogenous environmental antigens (microbial and nonmicrobial) or endogenous self antigens<br>-An imbalance between the effector mechanisms of immune responses and the control mechanisms that serve to normally limit such responses<br>-The inheritance of particular susceptibility genes | -Elevated parathyroid hormone<br>-Primary Hyperparathyroidism usually results from an adenoma or hyperplasia of parathyroid tissue arising sporadically | -Immune-mediated inflammation<br>-Direct invasion of vascular walls by infectious pathogens<br>-Physical and chemical injury (irradiation)<br>-Mechanical trauma<br>-Toxins |
| Area(s) that can be affected: | -Anterior pituitary | -Skin (rash)<br>-Lungs (asthma)<br>-Cells<br>-Tissue | -Bones<br>-Abdomen<br>-Heart<br>-Brain<br>-Stomach | -Vessels of any type in virtually any organ, but most vasculitides will affect small vessels ranging in size from arterioles to capillaries to venules |

| Two more facts that you learned about the condition: | Answers will vary. | Answers will vary. | Answers will vary. | Answers will vary. |

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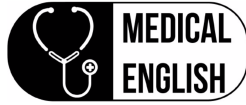
MEDICAL ENGLISH

Barahona, Lewis & Quesada

Date: September 9, 2019
Lesson Plan #4
Student Teacher: Isela Barahona
Assistant: Simone Lewis
Unit #1
Title of Unit: "Up to Date with Medical Research: Reading in Medical English"

**Unit Goal**: By the end of this unit, students will be able to successfully demonstrate comprehension of medical texts (the extract of a research article and a section of a textbook) by identifying key vocabulary words and medical prefixes and suffixes, summarizing, relaying and discussing information, and/or recognizing areas affected by specific conditions.

**General Objective**: By the end of the lesson, students will be able to assess their knowledge on the unit's material by completing different review activities in order to prepare for the unit evaluation.

**Specific Objectives**: The students will be able to:

1.  Explain the definitions or symptoms of different words or illnesses by rolling the die to get a word from a chart in order to review vocabulary words from previous lessons.
2.  Carry out an in-class presentation by planning a conversation using vocabulary words from previous games in order to demonstrate knowledge of the definitions and usage of those words.
3.  Determine the main idea of a blog post comment by reading it and writing their idea proposals in a piece of paper in order to judge which the closest proposal is.
4.  Complete the unit evaluation by completing a multiple-choice written test in order to demonstrate knowledge of the previous lessons' material

Abbreviations used:  T = teacher   A = assistant   Ss = students  UL= useful language  L = listening        S = speaking        R = reading        W = writing

| Objectives | Procedures | Macro-skills | Language (vocabulary, useful language, grammatical or phonetic features) | Strategies | Time |
|---|---|---|---|---|---|
| 1 | **Warm-up:** | S | **Vocabulary**: | Schema | 10 |

| | | | | | |
|---|---|---|---|---|---|
| | 1. Students work in pairs or small groups. They are given a chart (Handout 4.1.1) and a die. The chart has numbers from one to six in the upper part and on the side, and contains vocabulary words and diseases studied previously. Students take turns rolling the die twice (to identify which number column and which number line) and get one of the words depending on the numbers. They have to define the word and then give an example or a symptom.<br><br>**Materials**:<br>Handout #4.1.1<br>Dice | L | Vasculitis, Weakened, -emia, Limbs, Increase, Diabetes, Over-, Spread, Diagnosis, -cyte, Hypo-, Biopsy, Itch, An- / A-, Hypopituitarism, Blood vessels, Underlying, -oma, Teeming, Bind, Malaise, Hypersensitivity, Disease, Decrease, Hypoxemia, -rrhagia, Reliable, Drainage, Vasculo-, Probe, -itis, Growth, Hyper-, Accurate, Pregnancy, Onset<br><br>**UL**: The definition of "spread" is…<br>I think one of the symptoms of vasculitis is…<br>I don't remember what "bind" means.<br>What is the definition of "increase"?<br>"Hyper-" means…, for example "hyperactive." | activation, recalling information | minutes<br><br>5:00-5:10pm |
| 2 | **Pre-task 1**:<br>1. Ss work in groups of three. They are given a lapboard, a whiteboard marker and an eraser. In the projected presentation, they are shown a definition and some scrambled letters that form the word that is being defined. They have to identify the word and write it on the lapboard. The first group to put up the lapboard with the correct answer gets one point. At the end, the group with the most points wins.<br><br>2. Using their cellphones, students log into Kahoot.it and play a game in which they have to identify the meaning and examples of the suffixes and prefixes from the previous class. | R<br>L<br>S<br>W | **Vocabulary**:<br>Reliable, drainage, blood vessel, diagnosis, spread, accurate, teeming, underlying, growth, onset -emia, over-, -cyte, hypo-, hyper-, an/a-, -itis, -oma, -rrhagia, vasculo-<br><br>**UL**:<br>    - Which do you think is the word?<br>    - How do you say… in English?<br>    - How do you spell…?<br>    - What words can we use?<br>    - What can we say after this? | Identifying words and definitions | 45 minutes<br><br>5:10-5:55pm |

| | | | | | |
|---|---|---|---|---|---|
| | 3. Ss work in pairs or groups of three to complete an activity in which they must create 4 new words using those affixes to create a dialogue/conversation about any subject they would like. They can use the example handout from the previous class as a guide (Handout #3.2.2). The T models the instructions and guide before the Ss begin. Then, after they have finished or once time is almost up for this pre-task, the T will have each pair or group present their conversation for the class, from their seats.<br><br>**Materials**:<br>Lapboards, markers, erasers<br>PowerPoint slides<br>Kahoot! Link (https://create.kahoot.it/share/medical-prefixes-and-suffixes/a730bae6-9ab5-4e95-93ba-304e35055ce5)<br>Handout #3.2.2 (from previous class) | | | | |
| 3 | **Pre-task 2**:<br>1. Three posters are taped around the class with words written on them. Each S is given a marker to visit all of the posters, reads the words, and puts a symbol on each depending on their knowledge: a check sign if they know the word, a question mark if they have seen the word but they don't know it, or an 'X' if they have no idea what the word means.<br><br>2. T and A work with Ss to go over the words that have only question marks or Xs. If a question has a check mark, then that S is asked to define the word. | R<br>L<br>S<br>W | **Vocabulary**:<br>Lifestyle, quit, issues, resources, bariatric surgery, require, develop, improve, threat, unsafe, feeding, focus, lack, disposal, target, aware, encourage<br><br>**UL**:<br>- What does… mean?<br>- How do you pronounce…?<br>- What do you think the main idea is?<br>- I agree // I disagree<br>- I think so // I don't think so | Identifying main ideas<br><br>Negotiating meaning | 45 minutes<br><br>5:55-6:40pm |

| | | | | - Let's write... | | |
|---|---|---|---|---|---|---|
| | 3. In groups of three, Ss are given an envelope that contains a comment from the course blog (which was their homework) and some pieces of paper. They have to read the comment and use one of the pieces of paper to write the main idea of it. When they are ready, they put all papers back in the envelope and pass it to another group.<br><br>4. Once all of the groups have commented on each of the blog comments, groups are assigned one of the envelopes. They have to read their classmates' main idea proposals and discuss why they are correct or not. Towards the end of the activity, students are given the correct main idea to check.<br><br>**Note**: Comments might contain grammatical or spelling mistakes as they were written by students and the due date to submit them was the previous day. Students will be sent feedback on their project via email during this week.<br><br>**Materials**:<br>Newsprint paper<br>Markers<br>Envelopes<br>Handout #4.2.1 (Students' comments)<br>Handout #4.2.2 (Main ideas of Ss comments) | | | | | |
| 4 | **Main task**: Ss take the written evaluation for Unit 1.<br><br>**Materials**:<br>Unit 1 Quiz (Handout #4.3.1) | R | **Vocabulary**:<br>Remainder, concern, rise, confer, childbearing, offspring, confounded, convincing, improved, outcome, | Using context clues | 50 minutes<br><br>6:40-7:30pm |

| | | burden, avert, tool, enable, tailored | Getting meaning from context | |
|---|---|---|---|---|
| | | Hypoglycemia, hyperbilirubinemia, lymphocyte, cholecystitis, anaerobic, hypovolemia, myeloma, menorrhagia, overproduction, vasculotoxic | | |
| | | Hypoxemia, onset, diagnosis, spread, accurate, weakened, itch, bind, malaise, hyperparathyroidism | Eliciting main ideas | |
| | | **UL**: | | |
| | | 'Read/complete the following text/sentences/… | | |
| | |    -   using the words from the box' | | |
| | | 'Use an X to mark the option that… | | |
| | |    -   completes the sentences or answers the questions correctly | | |
| | |    -   is closest in meaning to the underlined word' | | |
| | **Post-task:** <br>**1.** This task cannot be completed today since the quizzes were administered. Feedback will be given to students the following week by returning the quizzes and providing them with oral feedback. | | | |

**Homework**: None.

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**Handout #4.1.1**

|   | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| **1** | Vasculitis | Weakened | -emia | Limbs | Increase | Diabetes |
| **2** | Over- | Spread | Diagnosis | -cyte | Hypo- | Biopsy |
| **3** | Itch | An- / A- | Hypopituitarism | Blood vessels | Underlying | -oma |
| **4** | Teeming | Bind | Malaise | Hypersensitivity | Disease | Decrease |
| **5** | Hypoxemia | -rrhagia | Reliable | Drainage | Vasculo- | Probe |
| **6** | -itis | Growth | Hyper- | Accurate | Pregnancy | Onset |

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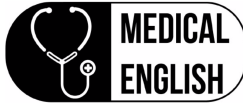
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**Handout #4.2.1**

| COMMENT 1 | COMMENT 2 |
|---|---|
| Question 1: The most important health problems that are affecting the world are High blood pressure, tobacco use, high blood glucose, physical inactivity, and overweight and obesity.<br><br>What those problems have in common is that they can be seen as modifiable factors, which is a good new. The first step for changing people's mind is to try make them conscious that the way they live can affect in a huge magnitude their lifes.<br><br>Then is important to tell them that changes in the lifestyle must be done in a permanent way, changes include a better diet, quit smoking and exercise regularly. In this step motivation plays an important role, so a good strategy could be stablish support groups, so they can see they are not alone in the process also it would let them participate by helping other partners with similar issues.<br><br>As a last but significant resource they could be informed that medical help exists, for example, nicotine substitution therapy, bariatric surgery, medicines for high blood pressure and impaired glucose metabolism, so they can use this last resource as well.<br><br>The most important goal is to achieve the outcome: Control the risks factors to reduce morbidity and morbility, using the strategy or help that each person requires in an individual way. | 4. The last sentence says "Understanding the role of these risk factors is important for developing clear and effective strategies for improving global health." Do you think this is true? Why?<br><br>I think the sentence "Understanding the role of these risk factors is important for developing clear and effective strategies for improving global health" is true because you can't solve a problem that you don't understand.<br><br>It has been found that risk factors decrease the life quality and increase the mortality of people. To identify a risk factor requires the analyses of the people and their disease which helps to find a causal relationship. Once you actually understand the physiopathology of that causal relationship you will develop effective strategies that increase life expectancy of the patients. These strategies can be pharmacological (pills that decrease blood sugar and pressure level) or nonpharmacological (exercise, healthy food, stop smoking).<br><br>All of these risk factors (blood pressure, tobacco use, high blood glucose, physical inactivity and obesity) affect most countries around the world, that's why the global health will improve if we apply the best strategies against health threats. |

**COMMENT 3**

Which are the top 4 risks for those problems? Which of those do you think is the most serious in Costa Rica?

The 4 top risks are: underweight, unsafe sex, alcohol use and unsafe water, sanitation and hygiene.

I think all of those risks are presented in Costa Rica, underweight is a big problem in the population with low income who are not able to have a correct nutrition. Unsafe sex is also common in Costa Rica, since we don't have a good sexual education in schools and homes. Alcohol use is a big issue in Costa Rica, the number of people consumming alcohol is increasing every day.

But I think, that the most serious in our country is the last one (unsafe water, sanitation and hygiene), we all know that there is a group that is more exposed to this, people who live in rural zones have more difficulties to have access to clean water and hygiene.

**COMMENT 4**

3. What happens if we reduce the exposure to those risks? Do you have any ideas on how to reduce these risks?

These risks are the cause of many problems in the health of the people around the world, and the diseases associated with these are responsible of the death of millions of humans in the last decades. The reduction in the exposure to the risk factors that are mentioned in the text could improves the quality of life, and not only that, also it can increase life expectancy approximately 5 years.

There actions to decrease the risks, for example, in some communities of the world, the government should provide clean water, implement more politics of hygienic conditions and invest more money in those projects. In the education centers, the programs can include more physical activity and sell food more healthy, with less sugar and salt. In addition to this, the health centers can public more information about the bad effects of consume tobacco and alcohol, they could send experts to places more exposed to risk and offer educational talks.

Nowadays, the social media has an important role in the daily life, so the health centers can use these to public more campaigns with information of healthy options of foods, physical activities and methods for a safe sex life. Also, they have to inform the consequences of a unhealthy lifestyle because there population that really don't know the relation of these with diseases. But, the best action that the people can do is take care for themselves, change their feeding habits, search for help if they have problems with alcohol or tobacco, do exercise and have good practices in their sex life.

**COMMENT 5**

4. The last sentence says "Understanding the role of these risk factors is important for developing clear and effective strategies for improving global health." Do you think this is true? Why?

I think that's true due if you understand how an illness can be developed you can modify the environment and patient's habits to prevent the emergence of risks that can contribute to illness.

As the text said, more of these risks appear in poor countries. If their governments start focusing on the importance of strategies for improving health many of these illnesses will disappear, but the problem isn't the that but the lack of money to develop good health strategies.

**COMMENT 6**

Question #2: Which are the top 4 risks for those problems? Which of those do you think is the most serious in Costa Rica?

The 4 top risks are: unsafe sex, underweight, unsafe water, sanitation and hygiene and the use of alcohol.

While I think that the usage of alcohol can have dangerous consequences for a person and those around them, especially when abuse. As well that we, as a country leave a lot to wish in regards of sexual education, is the other 2 which I feel are more serious, especially unsafe water, sanitation and hygiene.

Underweight is dangerous, be it for the lack of food as a whole or the consumption of non nutritional meals such as a junk food. This can cause serious development problems during the growing period, as well health issues further in life. But is unsafe water, sanitation and hygiene which I believe that is the most serious in Costa Rica as a whole. This because not only the human needs water to survive, but the ingestion of contaminated water can carry help problems that can end in death in the form of intoxication and poisoning by metal's and other substances, bacteria's, and viruses. The unhygienic disposal of residues can attract animals that carry diseases which in turn can sick the population.

| COMMENT 7 | COMMENT 8 |
|---|---|
| "Understanding the role of these risk factors is important for developing clear and effective strategies for improving global health." Well this is the origin of epidemiology and biostatistics. The knowledge is the most important way to change the world. If you can understand the how the people view the world you can fight in the correct way. It's so beautiful say eat healthy, have physical activity regularly, etc but if you ignore the own reality of each person you don't change the risk factors. The empathy is very important in a good medical-pacient relationship, understand the necessity and the limitations individually. A big problem in the medicine is the generalization. You can think Why the people eat fast food? Well maybe a majority know is less healthy but it's cheaper and fast than make a green salad and meat dinner. So if you know well the target the correct way is easier. | 4. The last sentence says "Understanding the role of these risk factors is important for developing clear and effective strategies for improving global health." Do you think this is true? Why?<br><br>It is definively true, because developing strategies to counter these risk factors will definitely improve the numbers that were shown before. It has been demonstrated multiple times that eliminating this risk factors from people's lives, increases the posibilities of having a healthy and longer life. Therefore, this epidemiologic studies will help society to identify possible risk factors, so governments can develop health strategies to counter this risk factors and improving health quality. |
| **COMMENT 9** | **COMMENT 10** |
| Currently in Costa Rica we have all the aforementioned risks, however I consider that the most present in our country is the consumption of alcohol. This not only has detrimental effects on health, but it is also a very important factor, since the population that consumes alcohol from an early age increases every day, because its consumption is greatly encouraged.<br><br>Creating the idea that the best way to have fun with friends and live adolescence and youth to the fullest is to consume alcohol. And this can be seen in the constant advertising of companies dedicated to the production of alcohol, where their ads are full of images of young people where their fun is to consume alcohol in excess. | 4. The last sentence says "Understanding the role of these risk factors is important for developing clear and effective strategies for improving global health." Do you think this is true? Why?<br><br>I think that this is a good way for start. its amazing how the people are not conscious about the danger that they are exposing their self to this risks and how they could live in really better conditions if they avoid these risks as possible.<br>So create a space of conscious of your healthy or unhealthy and shows how in many occasions it's your choice. |

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**Handout #4.2.2**

| | |
|---|---|
| **COMMENT 1**<br>The main idea is that there are several health problems that are affecting many people worldwide and there are many things we can do to prevent them, such as inform people about them and offer them medical solutions to deal with them. | **COMMENT 2**<br>The main idea is that it is important to have people study and identify the risks in the patients so that they can be offered different alternatives to recover, such as medicine or physical activity |
| **COMMENT 3**<br>The main idea is that all of the risk factors are present in our country; however, the presence of unsafe water is the one that affects more people since they live and rural areas and don't have access to clean water. | **COMMENT 4**<br>The main idea is that there are many things the government and health institutions can do to provide a better and longer life to people, such as inform and educate people; but at the end, it is in people's hand to take care of themselves. |
| **COMMENT 5**<br>The main idea is that it is important to identify the reasons why illnesses happen, but even more important to provide solutions, like invest in programs to give better health care in poor countries. | **COMMENT 6**<br>The main idea is that, while all of the factors are present in our country, the use of unsafe water is the biggest since water is a primary human need and consuming it can carry many different consequences. |
| **COMMENT 7**<br>The main idea is that, in order to prevent illnesses, the health care system has to be more specific as to which are the needs of the people and, by doing this, more patients will be helped. | **COMMENT 8**<br>The main idea is that by identifying the different risks, more of them can be eliminated, therefore giving more quality of life to people. |
| **COMMENT 9**<br>The main idea is that one of the biggest risk factors in Costa Rica is the consumption of alcohol in young people and that a change in the culture could help reduce that habit, and therefore prevent illnesses. | **COMMENT 10**<br>The main idea is that by understanding the risks of illnesses, people can be more aware and start taking care of themselves. |

**Handout #4.3.1**

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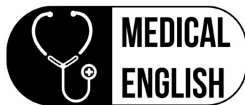
**MEDICAL ENGLISH**

English for Medical Students
Isela Barahona, Simone Lewis, Edwin Quesada

**Unit 1 Quiz**

Name: _____
Date: _____

Time allotted: 50 minutes
Total points: 35 points
Points obtained: _____
Grade: _____

**Part 1**. **Instructions**. Read the following text about diabetes. Use an X to mark the option that completes the sentences or answers the questions correctly. (10 points total; 1 point per question)

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**DIABETES IN PREGNANCY**

The prevalence of diabetes in pregnancy has been increasing in the U.S. The majority is gestational diabetes mellitus (GDM) with the remainder primarily preexisting type 1 diabetes and type 2 diabetes. The rise in GDM and type 2 diabetes in parallel with obesity both in the U.S. and worldwide is of particular concern. Both type 1 diabetes and type 2 diabetes in pregnancy confer significantly greater maternal and fetal risk than GDM, with some differences according to type of diabetes as outlined below. In general, specific risks of uncontrolled diabetes in pregnancy include spontaneous abortion, fetal anomalies, preeclampsia, fetal demise, macrosomia, neonatal hypoglycemia, and neonatal hyperbilirubinemia, among others. In addition, diabetes in pregnancy may increase the risk of obesity and type 2 diabetes in offspring later in life.

All women of childbearing age with diabetes should be counseled about the importance of tight glycemic control prior to conception. Observational studies show an increased risk of diabetic embryopathy, especially anencephaly, microcephaly, congenital heart disease, and caudal regression, directly proportional to elevations in A1C during the first 10 weeks of pregnancy. Although observational studies are confounded by the association between elevated periconceptional A1C and other poor self-care behaviors, the quantity and consistency of data are convincing and support the recommendation to optimize glycemic control prior to conception, with A1C ,6.5% (48 mmol/mol) associated with the lowest risk of congenital anomalies. There are opportunities to educate all women and adolescents of reproductive age with diabetes about the risks of unplanned pregnancies and improved maternal and fetal outcomes with pregnancy planning. Effective preconception counseling could avert substantial health and associated cost burdens in offspring. Family planning should be discussed, and effective contraception should be prescribed and used until a woman is prepared and ready to become pregnant. To minimize the occurrence of complications, beginning at the onset of puberty or at diagnosis, all women with diabetes of childbearing potential should receive education about 1) the risks of malformations associated with unplanned pregnancies and poor metabolic control and 2) the use of effective contraception at all times when preventing a pregnancy. Preconception

counseling using developmentally appropriate educational tools enables adolescent girls to make well-informed decision. Preconception counseling resources tailored for adolescents are available at no cost through the American Diabetes Association (ADA).

**Glossary**
- Remainder: A part of something that is left when the rest is completed
- Concern: A cause of anxiety or worry
- Rise: Increase
- Confer: Present
- Childbearing: The process of giving birth to children
- Offspring: A person's child or children
- Confounded: Confused, wrong
- Convincing: Capable of making someone believe something is true or real
- Improved: Made better
- Outcome: Result
- Burden: A responsibility that causes hardship or anxiety
- Avert: Prevent
- Tool: An instrument or device
- Enable: Make possible
- Tailored: Adapted for a particular purpose

1. Which is the most typical type of diabetes during pregnancy in the USA?
   a) Type 1 diabetes
   b) Type 2 diabetes
   c) GDM

2. Which are some of the risks if diabetes is not controlled during the pregnancy?
   a) Low levels of glucose in the blood and death of the baby
   b) Low blood pressure and obesity in the mother
   c) Preeclampsia and high levels of glucose in the blood

3. Which of the three types of diabetes is/are more dangerous during pregnancy?
   a) Type 1 and GDM
   b) Type 1 and type 2
   c) Only GDM

4. According to the text, who should be counseled about glycemic control?
- a) Women who suffer from obesity
- b) Pregnant women who will soon give birth
- c) <mark>Women who could get pregnant</mark>

5. What could effective preconception counseling do? It could _____.
- a) Eliminate diabetes
- b) Avert health issues in the mother
- c) <mark>Prevent health problems in the baby</mark>

6. When should women receive information about these problems?
- a) At the beginning of childhood
- b) <mark>When they are diagnosed</mark>
- c) When they end puberty

7. According to the text, what is one thing women with diabetes should be informed about?
- a) <mark>The risk of babies having malformations</mark>
- b) The percentages obtained in the A1C tests
- c) The process of pregnancy

8. What can happen if there is counseling about getting pregnant when the woman has diabetes?
- a) Women won't get pregnant
- b) There won't be a risk of malformations in the baby
- c) <mark>Teenage girls can be better informed</mark>

9. You have to pay to get the materials with information about this topic in the ADA. This information is _____.
- a) True
- b) <mark>False</mark>
- c) Not found in the text

10. What is the main idea of the text?
- a) All women will get diabetes during their pregnancy so it is important to inform them about contraception.
- b) Women with diabetes cannot be pregnant because it will definitely end with premature death of the baby.
- c) <mark>All women with diabetes should be informed about the possible effects of this condition on their pregnancy.</mark>

**Part 2**. **Instructions**. Read the following sentences. Use an X to mark the option that is closest in meaning to the underlined word. (10 points total; 1 point per question)

1.  Most drug addicts have been found to have hypoglycemia, which can be treated by going on a special diet.
    a)  Excessive level of sugar in the blood
    b)  Low level of sugar in the blood
    c)  Normal level of sugar in the blood

2.  Hyperbilirubinemia is one of the many risks of suffering from diabetes during pregnancy. Other dangers include preeclampsia, fetal demise, and macrosomia.
    a)  High percentage of bilirubin in a baby's blood
    b)  Low percentage of bilirubin in a baby's blood
    c)  A normal amount of bilirubin in a baby's blood

3. In some cases, no treatment is required for DiGeorge syndrome because T lymphocyte production improves on its own.
    a)  A type of cell
    b)  An abnormal growth
    c)  A body fluid

4. If cholecystitis occurs, the symptoms include fever and increased pain that won't go away.
    a)  Infection of the gallbladder
    b)  Inflammation of the gallbladder
    c)  Reduction of the gallbladder

5. It is found that if the inoculation be made deep down in a solid medium, growth of an anaerobic organism will take place, especially if the medium contains some reducing agent such as glucose.
    a)  With a lot of oxygen
    b)  With a good amount of oxygen
    c)  Without oxygen

6. Sudden release of a crushed extremity may result in reperfusion syndrome, which consists of acute hypovolemia and metabolic abnormalities.
    a)  Deficient levels of fluid in the blood
    b)  Deficient levels of fluid in the brain
    c)  Deficient levels of fluid in the limbs

7. These facts may suggest that patients with multiple <u>myeloma</u> are more vulnerable to developing megaloblastic anemia than others.
   a) Different coloration in the blood
   b) <mark>Cancer in the blood</mark>
   c) More oxygen in the blood

8. Endometrial ablation is a procedure that offers an effective surgical treatment option for women with <u>menorrhagia</u> who want to avoid hysterectomy.
   a) <mark>Heavy menstrual bleeding</mark>
   b) Growth of a group of cells
   c) Excess of oxygen in the blood

9. This may occur if the mother takes the hormone progesterone to prevent a miscarriage, but more often it is caused by an <u>overproduction</u> of certain hormones.
   a) Producing less than necessary
   b) <mark>Producing more than necessary</mark>
   c) Producing exactly what is necessary

10. <u>Vasculotoxic</u> snake bites are well known to cause local complications like necrosis and cellulitis and systemic complications such as coagulopathy, acute renal failure (ARF), and hemolysis.
   a) Destructive to snakes
   b) Destructive to kidneys
   c) <mark>Destructive to blood vessels</mark>

**Part 3**. **Instructions**. Complete the following sentences using the words from the box. Every word is used only one time. (10 points total; 1 point per question)

| | |
|---|---|
| Hypoxemia | Weakened |
| Onset | Itch |
| Diagnosis | Bind |
| Spread | Malaise |
| Accurate | Hyperparathyroidism |

1. At the time of her _____, doctors told her she only had five months to live, but Sussana beat the odds and continued to live beyond their expectations by eleven years. (<mark>diagnosis</mark>)
2. A reduced concentration of oxygen in the blood, also known as _____, is common to all near-drownings. (<mark>hypoxemia</mark>)
3. _____ refers to an overall feeling of discomfort and lack of well-being. On the other hand, fatigue is extreme tiredness and lack of energy or motivation for everyday activities, which makes them different. (<mark>malaise</mark>)

4. Doctors and researchers agree that _____ information about symptoms is necessary. They need to know the exact way a patient is feeling so that they can help. (accurate)

5. After the accident, the mother tried to find someone who could _____ her child's arm while they got to the hospital. (bind)

6. When Camila presented _____ symptoms, they rushed her to the nearest hospital in order to have doctors look at her at the beginning of her illness. (onset)

7. With the alarming _____ of measles, the United States health authorities have started a countrywide campaign to stop or slow down the infection. (spread)

8. _____ is a condition in which one or more of the parathyroid glands become overactive and secrete too much PTH. This causes the levels of calcium in the blood to rise. (Hyperparathyroidism)

9. Symptoms of ear infection include pain, especially when there is pressure on the ear; _____; swelling and redness, and pus drainage. (itch)

10. As he got older, Robert's bones _____ to a point in which he couldn't walk without the help of a cane. (weakened)

**Part 4**. **Instructions**. Read the following passages, and identify the main idea by using an X to select the correct option. (5 points total; 1 point per question)

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Cerebral venous sinus thrombosis (CVST) is an uncommon and potentially life-threatening neurological emergency. The annual incidence is estimated at 2-7 cases/million population. The sudden occlusion with a clot into a venous sinus causes an acute increase of the intracranial pressure rising to intracranial hypertension. Due to the rupture of cortical veins both parenchymal brain hemorrhage and subarachnoidal hemorrhage can be present in the initial unenhanced brain CT scan. Its diagnosis can be a challenge. High clinical suspicion is mandatory for an early diagnostic. Nowadays, with the use of CT and CTV its diagnosis is less difficult. Most of the patients recover without any neurological impairment. In CVST the rapid initiation of anticoagulant treatment is mandatory in order to reopen the occluded venous sinus. Neither the parenchymal brain hemorrhage nor the subarachnoidal hemorrhage contraindicated the anticoagulation.

**Revista Médica de la Universidad de Costa Rica. Volumen 12, número 2, artículo 1. 2018**

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1. Which is the main idea of the passage?
a) CVST is a rare disease that happens only 2-7 times in one million, and that can be easily diagnosed with the help of CT scans.
b) The incidence of the CVST is very low, but it can be extremely dangerous.
c) Even though CVST is unusual and difficult to diagnose, technology and quick treatment helps patients recuperate.

As in other regions, the incidence of atopic dermatitis in Latin America has been increasing in recent years. Although there are several clinical guidelines, many of their recommendations cannot be universal since they depend on the characteristics of each region. Thus, we decided to create a consensus guideline on atopic dermatitis applicable in Latin America and other tropical regions, taking into account socio-economic, geographical, cultural and health care system characteristics. The Latin American Society of Allergy Asthma and Immunology (SLAAI) conducted a systematic search for articles related to the pathophysiology, diagnosis

and treatment of dermatitis using various electronic resources such as Google, Pubmed, EMBASE (Ovid) and Cochrane data base. We have also looked for all published articles in Latin America on the subject using LILACS (Latin American and Caribbean Literature on Health Sciences) database. Each section was reviewed by at least two members of the committee, and the final version was subsequently approved by all of them, using the Delphi methodology for consensus building. Afterward, the final document was shared for external evaluation with physicians, specialists (allergists, dermatologists and pediatricians), patients and academic institutions such as universities and scientific societies related to the topic. All recommendations made by these groups were taken into account for the final drafting of the document. There are few original studies conducted in Latin America about dermatitis; however, we were able to create a practical guideline for Latin America taking into account the particularities of the region. Moreover, the integral management was highlighted including many of the recommendations from different participants in the health care of this disease (patients, families, primary care physicians and specialists).

**Revista Alergia México 2014;61:178-211.**

2. Which is the main idea of the passage?

a) Many people reviewed the guide created to analyze the state of dermatitis in Latin America, including doctors, patients and university specialists.

b) A set of guidelines on dermatitis was created based on each of the different regions in Latin America because there was a need to take into account their different characteristics.

c) The organization in charge of creating the guidelines consulted electronic resources such as Google, Pubmed, EMBASE and Cochrane.

Glucose and other carbohydrates are transported into cells using members of a family of integral membrane glucose transporter (GLUT) molecules. To date 14 members of this family, also called the solute carrier 2A proteins have been identified which are divided on the basis of transport characteristics and sequence similarities into several families (Classes 1 to 3). The expression of these different receptor subtypes varies between different species, tissues  and cellular sub-types and each has differential sensitivities to stimuli such as insulin. The liver is a contributor to metabolic carbohydrate homeostasis and is a major site for synthesis, storage and redistribution of carbohydrates. Situations in which the balance of glucose homeostasis is upset such as diabetes or the metabolic syndrome can lead to metabolic disturbances that drive chronic organ damage and failure, confirming the importance of  understanding the molecular regulation of hepatic glucose homeostasis. There is considerable literature describing the expression and function of receptors that regulate glucose uptake and release by hepatocytes, the most important cells in glucose regulation and glycogen storage. However there is less appreciation of the roles of GLUTs expressed by non parenchymal cell types within the liver, all of which require carbohydrate to function. A better understanding of the detailed cellular distribution of GLUTs in human liver tissue may shed light on mechanisms underlying disease pathogenesis.

3. Which is the main idea of the passage?
a) Members of the family of GLUT molecules are classified according to how they react to different stimuli
b) By knowing how the process of GLUT molecules transporting carbohydrates works and in which ways it affects the body, we can know more about related diseases.
c) Not much importance is given to the role of GLUT molecules in the organism, most of the literature focuses on the receptors of glucose.

The most common symptoms of asthma are shortness of breath, wheezing, chest tightness, and cough. You may have days when you have every symptom and other days you may have no symptoms. When you do have asthma symptoms, you may feel like you are breathing through a straw. You may also hear wheezing (a whistling or squeaking sound) as air tries to move through your narrowed airways. You may also cough, most often at night or early in the morning. Chest pain, chest pressure, or a feeling of tightness in your chest can be other symptoms of asthma. An "asthma attack" describes very severe symptoms. During an asthma attack, you may breathe so fast that you may have a hard time talking. Coughing, wheezing, and chest tightness can cause you to feel anxious or scared. This may make you feel even more short of breath. Although rare, low oxygen levels in your blood may cause your fingertips and lips to turn blue or gray. If you think that you are having a severe asthma attack, you should immediately seek emergency care.

4. Which is the main idea of the passage?
a) Shortness of breath, wheezing, chest tightness and cough are some of the symptoms of asthma, which can all be more extreme when there is an asthma attack.
b) When there is an asthma attack, people breathe so fast that they cannot speak. Sometimes their fingertips and lips become blue.
c) It is important to know the symptoms of asthma so that people can refer to a doctor as soon as possible.

By 2050, the world will be home to 10 billion people, and two in five of these people will be aged 60 or over, including 434 million over 80 years old. This combination of population growth and demographic changes will seriously accelerate the challenges we face for the delivery of health and healthcare, with global healthcare spend projected to reach 13% of Gross Domestic Product (GDP) in Organisation for Economic Co-operation and Development (OECD) countries by 2050. Over the past century, tremendous strides have been made across various facets of health and healthcare. From the promotion of antiseptic surgery and use of antibiotics in the early 1900s to genome editing in the 2000s, new science and innovations have driven substantial improvement in care delivery and outcomes. However, the rapid population and societal transformations of the next few decades will require the deployment of better tools and technologies that will enable us to lead longer, healthier and more productive lives while controlling non-sustainable cost and achieving better access to care for populations across the world.

5. Which is the main idea of the passage?
a) There has been a lot of improvement in the healthcare area since 1900. One of the latest innovations is the genome editing.
b) The world population is growing very quickly, and many of those people are elderly.
c) Given the large amount of people in the world, new technology is needed to supply healthcare to everybody.

University of Costa Rica
Master's Program in TEFL

**MEDICAL ENGLISH**

Barahona, Lewis & Quesada

Date: September 16, 2019
Lesson Plan #5
Student Teacher: Edwin Quesada
Assistants: Simone Lewis and Isela Barahona
Unit #2
Title of Unit: "Put on your stethoscope: Listening in Medical English"

**Unit Goal**: By the end of this unit, students will be able to successfully demonstrate comprehension of key medical vocabulary from an academic medical video by outlining the videos and/or reporting the information in them to their classmates.

**General Objective**: By the end of the lesson, students will be able to successfully demonstrate comprehension of the steps of a medical process (as will be described on a video) by correctly completing sentences with the most relevant information from a video.

**Specific Objectives**: The students will be able to:
1. Identify the source of a series of sounds played on the computer by selecting the corresponding options in an online game.
2. Discover the words to complete a crossword puzzle by using the clues given in their definitions.
3. Demonstrate recognition of medical terms in a song by completing its lyrics as they listen.
4. Use new vocabulary in context by selecting the appropriate words to complete sentences based on their definitions.
5. Identify the name of elements involved in CABG surgery by matching the words, phrases or sentences they hear with the corresponding illustrations.
6. Recognize the words, phrases or sentences in a video to complete a chart with the missing information.
7. Distinguish the pronunciation of minimal pairs by listening to and repeating the words modeled by the teacher orally.

Abbreviations used:  T = teacher   A = assistant   Ss = students   UL= useful language   L = listening        S = speaking        R = reading        W = writing

| Objectives | Procedures | Macro-Skills | Language (Vocabulary, expressions, useful language, grammatical or phonetic features) | Strategies | Time |
|---|---|---|---|---|---|
| **Did you know that…?** | | | | | |

| | Before students enter the class, the ST(s) will write on the upper left corner of the board: "Did you know that…" followed by "the acronym CABG in medicine is actually pronounced like 'cabbage'?" | | | | |
|---|---|---|---|---|---|
| 1 | **Warm-up:**<br>1. T gives Ss instructions on how to access an online game on the online game platform Kahoot.<br>2. Using their phones Ss will play an online game on the Kahoot platform.<br><br>3. If there are any technology-related issues, the sounds will be played from the computer directly and the options will be read out loud by the T and one A, meanwhile the other A will keep a record of the options selected by the Ss.<br><br>**Materials:**<br>Handout #5.1.1 (Kahoot! questions in case technology fails)<br>Handout #5.1.2 (In case technology fails) | L<br>R | **Vocabulary**:<br>**RL**: foosball, flush, a lock, blender, vacuum, faucet, string, stirring, windshield wipers, donkey, scratch, crunchy<br><br>**UL**:<br> - Go to kahoot.com<br> - You need to click the Enter game PIN! button/link<br> - Where is the button/link?<br> - It's at the top of the page. | Associating sounds with possible sources | 10 minutes<br><br>5:00-5:10pm |
| 2 | **Pre-task 1:**<br>1. T presents key vocabulary that is part of the definitions in Handout #5.2.1.<br><br>**2. Game rules**: Ss will be allowed to use any resources available to find the answers (solution) in less than 5 minutes. The winners will be the first three to get to the As or T with the crossword puzzle correctly completed. There will be prizes for the winners; all who complete it will get a price but winners (the first three) will be given the chance to choose a prize first.<br><br>3. T and As distribute Handout #5.2.1.<br><br>4. Using the definitions given at the bottom of | R<br>W<br>S<br>L | **Vocabulary**:<br>**RL**: graduate (n. and v.), pincers, blade, hold open, wound, within, tissue vs. tissues<br>A quack, med school, malpractice, intern, forceps, kidneys, scalpel, retractors, A.M.A., intravenous, transplant<br><br>**UL**: No useful language needed for interaction since the activity will be completed individually. | Guessing words based on definitions | 20 minutes<br><br>5:10-5:30pm |

| | | | | | |
|---|---|---|---|---|---|
| | Handout #5.2.1, Ss will guess the words and complete the crossword puzzle.<br><br>5. Once all Ss have finished, the answers will be read by the Ss and shown on the display.<br><br>**Materials:**<br>Handout #5.2.1 | | | | |
| 3 | **Pre-task 2:**<br>1. T and As distribute Handout #5.3.1.<br><br>2. T introduces new vocabulary using the slideshow and asks Ss if there is any other new word or phrase or one that is hard to pronounce.<br><br>3. T plays the song once so that Ss watch the video and get familiar with the song<br><br>4. Using Handout #5.3.1, Ss will complete the song lyrics by filling in the blanks as the T plays the song for the second time.<br><br>**Note**: The song will be played twice, the first time for the Ss to watch the video and become familiar with the song, and the second time for Ss to complete the lyrics.<br>-Once the song has been played twice, Ss will compare their answers to those of a classmate.<br>-S reviews the pronunciation and/or meaning of specific words as suggested by Ss.<br><br>**Materials:**<br>Handout #5.3.1<br>Projector<br>Song video available at | L<br>W | **Vocabulary**:<br>**RL**: make it through, last in a class, barely pass, my line, suit, gauze, waiver<br><br><br>**UL**:<br>  - What did you write in number <u>1</u>?<br>  - I wrote (this word) ... | Identifyin g the missing words | 20 minutes<br><br>5:30-5:50pm |

| | | | | | |
|---|---|---|---|---|---|
| | https://www.youtube.com/watch?v=notKtAgfwDA] | | | | |
| 4 | **Pre-task 3:**<br>1.Using Handout #5.4.1, the T will ask Ss to read the words and their definitions out loud.<br><br>2. Using Handout #5.4.1, Ss will use the vocabulary words to complete the sentences that follow.<br><br>3. T asks Ss to read the completed sentences out loud<br><br>**Materials**:<br>Handout #5.4.1 | R<br>S<br>W<br>L | **Vocabulary**:<br>**RL**: Coronary Artery Bypass Graft (CABG), intravenous, breathing, throat, catheter, bladder, urine, incision, breastbone (sternum), rib cage, throughout, pump, lung, sew,<br><br>**UL**:<br> - How do you pronounce this word/ <u>s-e-w</u>?<br> - What does this word / <u>throughout</u> mean? | Listening for details<br><br>Detecting signposts | 20 minutes<br><br>5:50-6:10pm |
| 5 | **Pre task 4:**<br>1. T and As distribute Handout #5.5.1.<br><br>2. Using Handout #5.5.1, Ss talk to a classmate about what they think each illustration represents.<br><br>3. Ss will listen to a series of twelve words and must match the word they hear to the corresponding photo.<br><br>**Materials:**<br>Handout #5.5.1 | L<br>S<br>W<br>R | **Vocabulary**:<br>**RL**: saphenous vein, subclavian artery, divert, pacemaker, heart-lung machine, suture, beneath, off-pump, minimally invasive, instead, steady, intensive care unit (ICU), pacing wires, heart rate, oxygen<br><br> **UL**:<br> - I think the first picture is a <u>pacemaker.</u><br> - I think it shows the <u>subclavian artery.</u> | Predicting content | 20 minutes<br><br>6:10-6:30pm |
| 6 | **Main task:**<br>1. Ss will listen to the first 15 seconds of the main task video twice in order to predict what it is about. Once they finish, they will be asked to share their ideas with the rest of the class.<br><br>2. Using Handout #5.6.1, Ss will complete the sentences with the missing information from the | L<br>S<br>W<br>R | **Vocabulary**:<br>**RL**: Coronary Artery Bypass Graft (CABG), intravenous, breathing, throat, catheter, bladder, urine, incision, breastbone (sternum), rib cage, throughout, pump, lung, sew, saphenous vein, subclavian artery, divert, pacemaker, heart-lung machine, | Predicting content<br><br>Using hints<br><br>Listening for details | 40 minutes<br><br>6:30-7:10pm |

| | | | | | |
|---|---|---|---|---|---|
| | video. They will listen to the video three times.<br><br>3. Using the completed Handout #5.6.1, Ss will prepare two questions for their classmates to answer orally. Once they are ready, the teacher will lead the question/answer activity randomly.<br><br>**Materials:**<br>Video *Coronary Artery Bypass Graft (CABG)*<br>Available at<br>http://www.healthjourneysupport.com→Cardiology→Heart Attack→Treatment Options→Coronary Artery Bypass Graft (CABG)<br>Handout #5.6.1 | | suture, beneath, off-pump, minimally invasive, instead, steady, intensive care unit (ICU), pacing wires, heart rate, oxygen<br><br>Concepts: word, phrase, sentence<br><br>**UL**:<br>  - I think the video will explain the process of / the steps of / details about...<u>heart surgery</u>? | | |
| 7 | **Post task: (Pronunciation)**<br>1**.** The T will show Ss write minimal pairs from the main task on the board and have them pronounce the words out loud. | L<br>R | **Vocabulary**:<br>**RL**:<br>Artery, heart vs. hurt, through vs. true, throw, threw, close (adj.) vs. close (v.), breath vs. breathe<br><br>**UL**:<br>  - How do you pronounce this <u>word</u>? | Pronounc ing words | 10 minutes<br><br>7:10-7:20pm |

**Homework**: None.

# MEDICAL ENGLISH
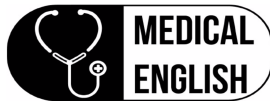
Lewis, Barahona & Quesada

**Handout #5.1.1**
**(Kahoot Questions)**

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1 - Question
**What sport is being played?**

Guess ► Sound    20 sec

🔺 Bowling ✓

🔷 Basketball ✗

🟠 Baseball ✗

🟩 Foosball (table soccer) ✗

2 - Question
**What makes the sound?**

Guess ► Sound    20 sec

🔺 Water filling container ✗

🔷 A river ✗

🟠 A washer being drained ✗

🟩 Toilet flushing ✓

3 - Question
**What animal makes that sound?**

Guess ► Sound    20 sec

🔺 A coyote ✗

🔷 A cat ✗

🟠 An owl ✓

🟩 A pigeon ✗

**4 - Question**
**What object makes that sound?**

Guess ▶ Sound
20 sec

| ▲ | A photo camera | ✗ |
| ◆ | A pen | ✓ |
| ● | Scissors | ✗ |
| ■ | A lock | ✗ |

**5 - Question**
**What makes that sound?**

Guess ▶ Sound
20 sec

| ▲ | Plate breaking | ✓ |
| ◆ | Coins falling on metal | ✗ |
| ● | Spoons falling | ✗ |
| ■ | Tools in a box | ✗ |

**6 - Question**
**What makes that sound?**

Guess ▶ Sound
20 sec

| ▲ | A blender | ✗ |
| ◆ | A truck engine | ✗ |
| ● | A hair drier | ✗ |
| ■ | A vacuum cleaner | ✓ |

**7 - Question**
**What makes that sound?**

Guess ▶ Sound
20 sec

🔺 A faucet ✔

🔷 Rain ✗

🟠 Cooking ✗

🟩 Waterfall ✗

**8 - Question**
**What makes the sound?**

Guess ▶ Sound
20 sec

🔺 A guitar string ✗

🔷 A clock ✔

🟠 A stirring spoon ✗

🟩 Windshield wipers ✗

**9 - Question**
**What animal(s) make(s) the sound?**

Guess ▶ Sound
20 sec

🔺 Pigs ✗

🔷 Frogs ✗

🟠 Ducks ✔

🟩 A donkey ✗

10 - Question
**What action makes the sound?**

Guess ▶ Sound

20 sec

| ▲ | Cutting paper | ✓ |
| ◆ | Masticating crunchy food | ✗ |
| ● | Scratching a surface | ✗ |
| ■ | Inflating a bike tire | ✗ |

**MEDICAL ENGLISH**

Lewis, Barahona & Quesada

## Handout #5.1.2

This handout is exclusively for teacher use, and only in the case that technology fails and the Kahoot! Questions must be asked without the use of the Internet. This handout is to keep track of the students' scores.

**Instructions:** Tick the students who get the corresponding answers correct. Cross out the ones who got it incorrect.
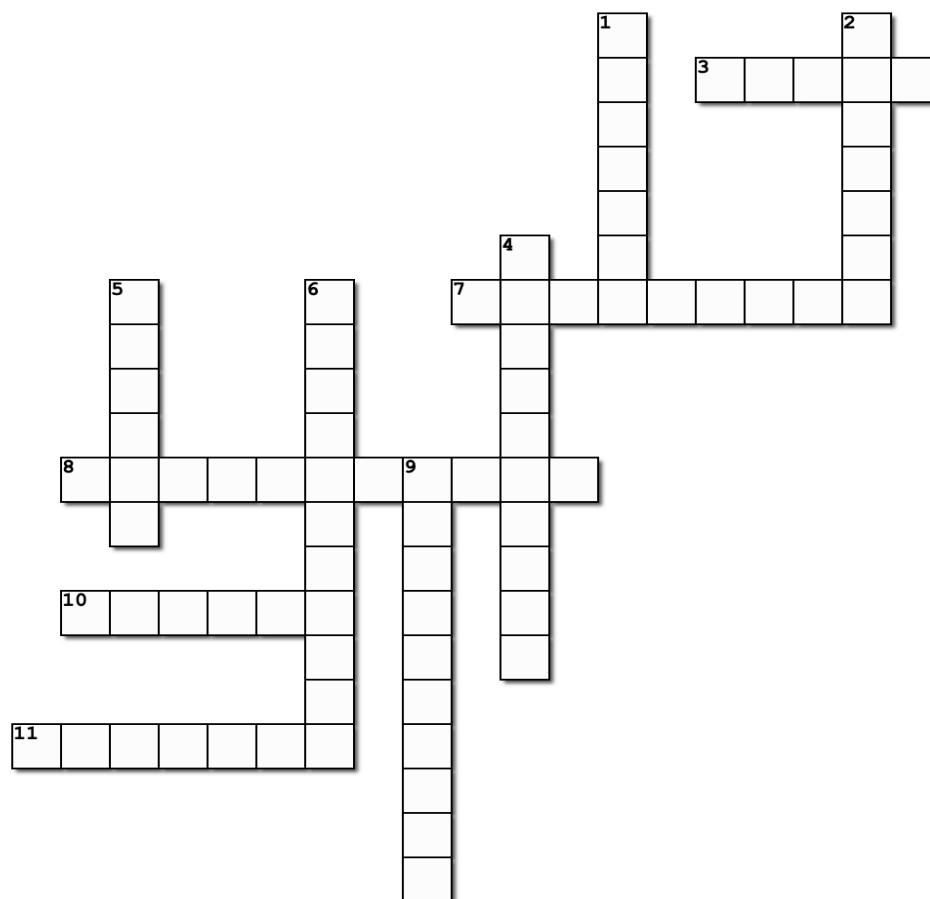
| Name | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|------|---|---|---|---|---|---|---|---|---|----|
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| | | | | | | | | | | |
| | | | | | | | | | | |
| ANSWERS | Bowling | Toilet | Owl | Pen | Plate | Vacuum | Faucet | Clock | Ducks | Paper |

**MEDICAL ENGLISH**

Lewis, Barahona & Quesada

**Handout #5.2.1**

**Instructions:** Use the definitions below to guess the words to complete the crossword puzzle.

**Across**

3. a person who dishonestly claims to have special knowledge and skill in some field, typically medicine
7. short for educational institution that teaches medicine
8. improper, illegal, or negligent professional activity or treatment, especially by a medical practitioner, lawyer, or public official
10. a recent medical graduate receiving supervised training in a hospital and acting as an assistant physician or surgeon
11. a large instrument with broad pincers, used to encircle a baby's head and assist in birth

**Down**

1. a pair of organs in the abdominal cavity of mammals, birds, and reptiles that excretes urine
2. a knife with a small, sharp, sometimes detachable blade, as used by a surgeon.
4. a surgical instrument for holding open the edges of a wound
5. acronym for American Medical Association
6. existing or taking place within, or administered into, a vein or veins (acronym I.V.)
9. remove (living tissue or an organ) and implant it in another part of the body or in another body

ANSWER KEY

**Across**
3. quack
7. med school
8. malpractice
10. intern
11. forceps

**Down**
1. kidneys
2. scalpel
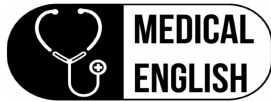4. retractors
5. A.M.A.
6. intravenous
9. transplant

MEDICAL ENGLISH

Lewis, Barahona & Quesada

**Handout #5.3.1**

**Instructions**: Listen to the song and complete the lyrics.

Like a Surgeon
"Weird Al" Yankovic

I finally made it through (1) _____
Somehow I made it through
I'm just an (2) _____
I still make a mistake or two
I was last in my class
Barely passed at the institute
Now I'm trying to avoid, yah I'm trying to avoid
A (3) _____ suit
Hey, like a surgeon
Cuttin' for the very first time
Like a surgeon
(4) _____ are my line
Better give me all your gauze nurse
This patient's fading fast
Complications have set in
Don't know how long he'll last
Let me see, that (5) _____
Here we go time to operate
I'll pull his insides out, pull his insides out
And see what he ate
Like a surgeon, hey
Cuttin' for the very first time

Like a surgeon
Here's a waiver for you to sign
Woe, woe, woe
It's a fact I'm a (6) _____
The disgrace of the (7) _____
'Cause my patients die, yah my patients die
Before they can pay
Like a surgeon, hey
Cuttin' for the very first time
Like a surgeon
Got your (8) _____ on my mind
Like a surgeon, ooh like a surgeon
When I reach inside
With my (9) _____, and my
(10) _____, and (11) _____
Oh oh, oh oh, woe, oh
Ooh baby, yeah
I can hear your (12) _____
For the very last time

**MEDICAL ENGLISH**

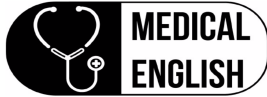Lewis, Barahona & Quesada

**Handout #5.3.1 (ANSWER KEY)**

Complete the following sentences by using the information from the video.

Like a Surgeon
"Weird Al" Yankovic

I finally made it through (1) med school
Somehow I made it through
I'm just an (2) intern
I still make a mistake or two
I was last in my class
Barely passed at the institute
Now I'm trying to avoid, yah I'm trying to avoid
A (3) malpractice suit
Hey, like a surgeon
Cuttin' for the very first time
Like a surgeon
(4) Organ transplants are my line
Better give me all your gauze nurse
This patient's fading fast
Complications have set in
Don't know how long he'll last
Let me see, that (5) I.V.
Here we go time to operate
I'll pull his insides out, pull his insides out
And see what he ate
Like a surgeon, hey
Cuttin' for the very first time
Like a surgeon
Here's a waiver for you to sign
Woe, woe, woe
It's a fact I'm a (6) quack

The disgrace of the (7) A.M.A.
'Cause my patients die, yah my patients die
Before they can pay
Like a surgeon, hey
Cuttin' for the very first time
Like a surgeon
Got your (8) kidneys on my mind
Like a surgeon, ooh like a surgeon
When I reach inside
With my (9) scalpel, and my (10) forceps, and (11) re-tractors
Oh oh, oh oh, woe, oh
Ooh baby, yeah
I can hear your (12) heartbeat
For the very last time

**MEDICAL ENGLISH**

Lewis, Barahona & Quesada

**Handout #5.4.1**

**Instructions:** Use the words and definitions below to complete each sentence with the best option.

**Bladder**: a membranous sac in humans and other animals, in which urine is collected for excretion.

**Breastbone (sternum)**: a thin, flat bone running down the center of the chest and connecting the ribs.

**Breathing**: related to the process of taking air into and expelling it from the lungs

**Catheter**: a flexible tube inserted through a narrow opening into a body cavity, particularly the bladder, for removing fluid.

**Coronary Artery Bypass Graft (CABG)**: a procedure to improve poor blood flow to the heart.

**Incision**: a surgical cut made in skin or flesh

**Intravenous**: existing or taking place within, or administered into, a vein or veins

**Lung**: either of the two organs in the chest with which people and some animals breathe

**Pump**: a mechanical device using suction or pressure to raise or move liquids, compress gases, or force air into objects

**Rib cage**: the bony frame formed by the ribs around the chest.

**Sew**: join, fasten, or repair (something) by making stitches with a needle and thread

**Throat**: the passage which leads from the back of the mouth of a person or animal.

**Throughout**: from beginning to end of (an event or period of time)

**Urine**: a watery, typically yellowish fluid stored in the bladder and discharged through the urethra.

1. According to the American Heart Association, _____ surgeries are among the most commonly performed major operations.

2. Several potential complications may arise from peripheral _____ therapy.

3. The _____ tube is placed in the person's mouth or in an opening through the neck into the windpipe (trachea).

4. In vertebrate anatomy, the _____ is the front part of the neck, positioned in front of the vertebra.

5. A person may need a urinary _____ if they have an injury to the urethra.

6. When empty, the _____ is about the size and shape of a pear.

7. Your kidneys make _____ by filtering wastes and extra water from your blood.

8. After surgery, you will need to take care of the _____ as it heals.

9. An innovative method is being used to repair the _____ after it is intentionally broken to provide access to the heart during open-heart surgery

10. The _____ protects the organs in the thoracic cavity

11. Rose had generally been very fit _____ her life

12. The left ventricle is the strongest because it has to _____ blood out to the entire body.

13. Some _____ diseases can lead to respiratory failure.

14. His finger was cut off when he caught it in a machine, but the surgeon was able to _____ it back on.

**MEDICAL ENGLISH**
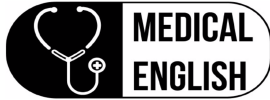
Lewis, Barahona & Quesada

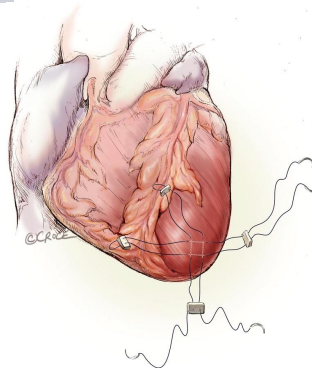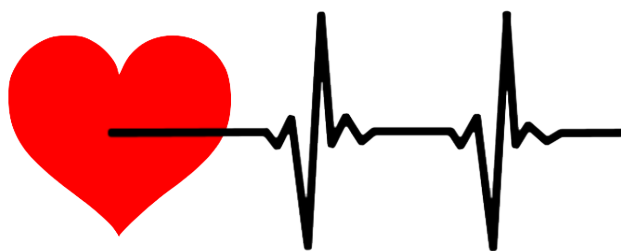## Handout #5.4.1 (ANSWER KEY)

1. According to the American Heart Association, <u>coronary artery bypass graft (CABG)</u> surgeries are among the most commonly performed major operations.

2. Several potential complications may arise from peripheral <u>intravenous</u> therapy.

3. The <u>breathing</u> tube is placed in the person's mouth or in an opening through the neck into the windpipe (trachea).

4. In vertebrate anatomy, the <u>throat</u> is the front part of the neck, positioned in front of the vertebra.

5. A person may need a urinary <u>catheter</u> if they have an injury to the urethra.

6. When empty, the <u>bladder</u> is about the size and shape of a pear.

7. Your kidneys make <u>urine</u> by filtering wastes and extra water from your blood.

8. After surgery, you will need to take care of the <u>incision</u> as it heals.

9. An innovative method is being used to repair the <u>breastbone</u> after it is intentionally broken to provide access to the heart during open-heart surgery

10. The <u>rib cage</u> protects the organs in the thoracic cavity

11. Rose had generally been very fit <u>throughout</u> her life

12. The left ventricle is the strongest because it has to <u>pump</u> blood out to the entire body.

13. Some <u>lung</u> diseases can lead to respiratory failure.

14. His finger was cut off when he caught it in a machine, but the surgeon was able to <u>sew</u> it back on.

**MEDICAL ENGLISH**
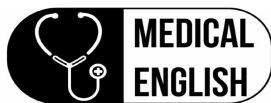
Lewis, Barahona & Quesada

**Handout #5.5.1**

**Instructions:** With a partner, look at the pictures below and think of the word that they may represent. Then, the teacher will say a list of words and you must match the word with the corresponding picture.

SMALL CUT
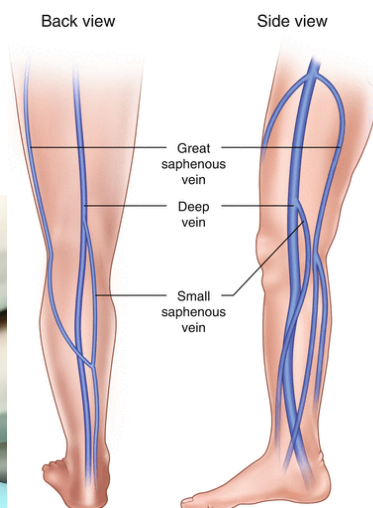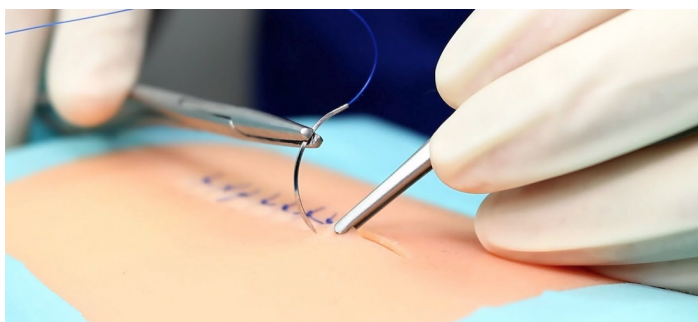
**Heart Bypass(CABG):**

With **"SMALL CUT"** technique in DESUN, Heart Surgery is possible leaving only a small cut mark below your chest.

BIG BENEFIT











Back view    Side view

Great saphenous vein

Deep vein

Small saphenous vein

MEDICAL
ENGLISH
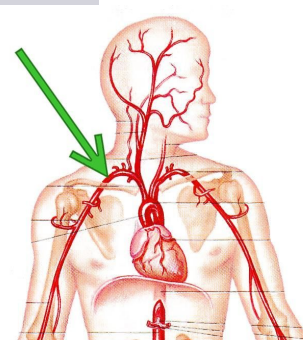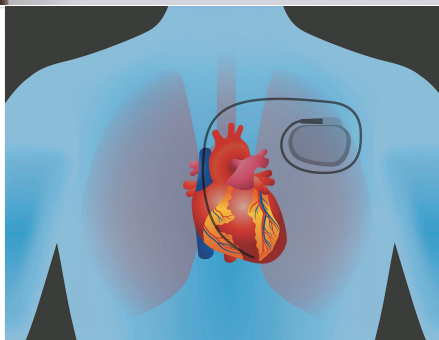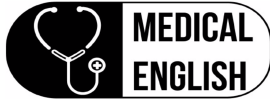
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**Handout #5.5.1**

ANSWER KEY
(In order of appearance of the pictures)

1. Oxygen
2. Heart rate
3. Intensive Care Unit (ICU)
4. Heart-lung machine
5. Pacing wires
6. Minimally invasive
7. Divert
8. Pacemaker
9. Subclavian artery
10. Off-pump
11. Suture
12. Saphenous vein

**MEDICAL ENGLISH**

Lewis, Barahona & Quesada

## Handout #5.6.1

**Instructions:** As you watch the video, complete the following sentences by using the information from the video.

**CABG:**

1. Purpose [phrase] _____.

**Prior to the surgery:**

2. Purpose of medication [phrase] _____.

3. A [device] (a)_____ will be placed in [body part]
(b)_____ for respiratory purposes.

4. A [device] (a)_____ will be placed in [organ]
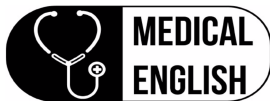(b)_____ for draining purposes.

5. Surgery duration [time range] _____.

**During conventional bypass surgery:**

6. First procedure made by surgeon (a)_____ in the [body
tissue] (b)_____.

7. Then she/he cuts the [body tissue] _____.

8. Heart-lung machine allows surgeon to [short sentence]
_____.

9. The blood vessels used for the grafts are either (a)
_____ or (b) _____.

10. If blood vessel 1 is used, the upper end stays connected to [body part]
(a)_____, and the lower end is connected to [body part]
(b)_____.

11. If blood vessel 2 is used, one end is connected to [body part]
(a)_____ and the other end to [body part]
(b)_____.

12. Once grafts have been secured, a [device] _____ will
be attached to the heart temporarily.

13. After suturing a [device/phrase] _____ will be placed
through the skin.

**Alternative CABG procedures:**
14. (a) [phrase] _____ and (b) [phrase]
_____.

15. Procedure A is also known as [phrase] (a)_____
because [short sentence] (b)_____ and [short
sentence] (c)_____.

16. Procedure B is performed by using [phrase] (a)_____.
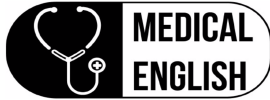It sometimes requires [phrase] (b)_____.

**After the surgery:**
17. [Items] _____ may be used to temporarily control your
heart rate.

18. Chest tube purpose [phrase] (a)_____ from [body part]
(b)_____.

19. Breathing tube will later be replaced by [device name]
_____.
20. Other devices will remain in place during [time range]
_____.

MEDICAL ENGLISH

Lewis, Barahona & Quesada

**Handout #5.6.1 (ANSWER KEY)**

**Instructions:** As you watch, complete the following sentences by using the information from the video.

**CABG:**
1. Purpose [phrase] <u>to improve circulation to the heart muscle (in people with severe coronary artery disease).</u>

**Prior to the surgery:**
2. Purpose of medication [phrase] <u>to help you relax.</u>

3. A [device] (a)<u> breathing tube</u> will be placed in [body part] (b) <u>throat</u> for respiratory purposes.

4. A [device] (a)<u> catheter</u> will be placed in [organ] (b) <u>bladder</u> for draining purposes.

5. Surgery duration [time range] <u>three to six hours.</u>

**During conventional bypass surgery:**
6. First procedure made by surgeon (a)<u> surgeon making an incision</u> in the [body tissue] (b) <u>skin (over the breastbone or sternum)</u>.

7. Then she/he cuts the [body tissue] <u>breastbone or sternum.</u>

8. Heart-lung machine allows surgeon to [short sentence] <u>stop the heart and/or sew the grafts into place.</u>

9. The blood vessels used for the grafts are either (a) <u>the internal thoracic artery in the chest</u> or (b) <u>the saphenous vein in a leg.</u>

10. If blood vessel 1 is used, the upper end stays connected to [body part] (a)<u> the subclavian artery</u>, and the lower end is connected to [body part] (b) <u>your coronary artery</u>.

11. If blood vessel 2 is used, one end is connected to [body part] (a) the aorta and the other end to [body part] (b) the narrowed artery.

12. Once grafts have been secured, a [device] pacemaker will be attached to the heart temporarily.

13. After suturing a [device/phrase] a temporary drainage tube will be placed through the skin.

**Alternative CABG procedures:**

14. (a) [phrase] off-pump and (b) [phrase] minimally invasive bypass surgery.

15. Procedure A is also known as [phrase] (a) beating heart bypass crafting because [short sentence] (b) the heart isn't stopped and [short sentence] (c) a heart-lung machine isn't used.

16. Procedure B is performed by using [phrase] (a) specially designed instruments. It sometimes requires [phrase] (b) a heart-lung machine.
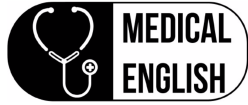
**After the surgery:**

17. [Items] Pacing wires may be used to temporarily control your heart rate.

18. Chest tube purpose [phrase] (a) to drain excess blood and air from [body part] (b) the chest cavity.

19. Breathing tube will later be replaced by [device name] an oxygen mask.

20. Other devices will remain in place during [time range] three to four days.

University of Costa Rica
Master's Program in TEFL

MEDICAL ENGLISH

Barahona, Lewis & Quesada

Date: September 23, 2019
Lesson Plan #6
Student Teacher: Simone Lewis
Assistants: Isela Barahona and Edwin Quesada
Unit #2
Title of Unit: "Put on your stethoscope: Listening in Medical English"

**Unit Goal**: By the end of this unit, students will be able to successfully demonstrate comprehension of key medical vocabulary from an academic medical video by outlining the videos and/or reporting the information in them to their classmates.

**General Objective**: By the end of this lesson, students will be able to demonstrate comprehension of an academic, medical video by reporting specific aspects mentioned in it.

**Specific Objectives**: The students will be able to:
1. Recall information from the previous class' main task by asking and answering questions amongst each other.
2. Recall pre-existing knowledge about the female reproductive system and endometrial cancer by brainstorming general information about them.
3. Demonstrate comprehension of previously unknown words by sharing them with a classmate.
4. Demonstrate comprehension of a video segment by answering questions and sharing the answers with their classmates.
5. Demonstrate comprehension of a condensed academic, medical video by drawing visuals and explaining a specific section to their classmates.
6. Recall information from the main task by formulating six questions to ask their peers in a game.

Abbreviations used:  T = teacher   A = assistant   Ss = students   UL= useful language      L = listening        S = speaking        R = reading        W = writing

| Objectives | Procedures | Macro-skills | Language (vocabulary, useful language, grammatical or phonetic features) | Strategies | Time |
|---|---|---|---|---|---|
| 1 | **Warm-up:**<br>1. T asks Ss to take out their homework (the questions to ask | L<br>S | **Vocabulary**:<br>**RL**: Coronary Artery Bypass Graft (CABG), intravenous, breathing, | Asking and answering questions | 10 minutes<br><br>5:00-5:10pm |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | each other based on the main task from previous class). (If the Ss didn't do their homework, the T gives them 2-3 minutes to write some questions based on their notes.)<br><br>2. The Ss get up and ask one classmate one question, then ask a different student their second question.<br><br>3. If time, after the questions are done, the T asks the Ss as a class one thing that they found interesting about the subject of the main task from the previous class (see RL).<br><br>**Materials**:<br>PowerPoint slide (for directions and UL) | | throat, catheter, bladder, urine, incision, breastbone (sternum), rib cage, throughout, pump, lung, sew, saphenous vein, subclavian artery, divert, pacemaker, heart-lung machine, suture, beneath, off-pump, minimally invasive, instead, steady, intensive care unit (ICU), pacing wires, heart rate, oxygen<br><br>**UL**:<br>  - I don't know.<br>  - I need to check my notes.<br>  - I have no idea. Please tell me. | Recalling main ideas | |
| 2 | | **Pre-task 1 (Schema Activation)**:<br>1. The T writes "Female Reproductive System" on the board, and asks Ss for any information that they know about the topic. Then, the T also writes "Endometrial Cancer" on the board and asks Ss what they know about it.<br><br>**Materials**:<br>Markers for the board | L<br>S | **Vocabulary**:<br>**RL**: (may vary) uterus, ovaries, fallopian tubes, hysterectomy, endometrial cancer, endometrium, malignant, benign<br><br>**UL**:<br>  - How do you say ____ in English? | Activating schema<br><br>Brainstorming | 5-10 minutes<br><br>5:10-5:20pm |

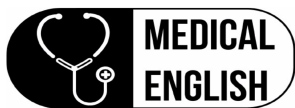| 3 | **Pre-task 2 (Vocabulary)**: <br> 2. The T separates the Ss into two groups. One group gets the first seven words, and the other group gets the remaining seven. The Ss look up the meanings of their words and decide how they will present them to the other team (working as a group). During this time, the T and/or As will walk around the room making sure that Ss are finding the correct definitions. <br><br> 3. Then, the Ss form pairs with one student from each group and they present the words to their classmates, but they cannot say the name of the word, only the definition or description. Their partner guesses the vocabulary word in Spanish or in English, then takes notes on the new words. <br><br> 4. The activity continues until most Ss have guessed all 7 words. <br><br> 5. Then, the T asks random Ss or volunteers for their definitions of the words. <br><br> 6. Next, the T tells the Ss to make 3 sentences using 3 new vocabulary words. They do this in pairs or groups of three. Then, the T asks for one volunteer to read at least one sentence from each group. For the | S <br> L <br> R | **Vocabulary**: <br> **RL**: hollow, layers, grooves, secrete, cramping, enlargement, thick, dilation and curettage procedure (D&C), removal, taper down, spread, arise, undergo, hyperplasia <br><br> **UL**: <br> - This word means… <br> - This word is similar to _____ in Spanish. <br> - I don't know. Which word is it? <br> - What should we write with this word? <br> - I know. We can say, "..." | Finding out the meaning of words <br><br> Using context clues <br> Guessing information <br><br> Using vocabulary | 30-40 minutes <br><br> 5:20-5:50pm |

| | | | | | |
|---|---|---|---|---|---|
| | more beginner groups, the T encourages them to participate, but says they can pass if they feel uncomfortable.<br><br>**Materials**:<br>Handout #6.1.1<br>PowerPoint slides (for directions and UL) | | | | |
| 4 | **Pre-task 3 (Parts of the Female Internal Reproductive System in English)**:<br>1. The T introduces the video that will be used for the main listening activity (main task), gives Ss Handout 6.2.1, and says they will listen to the part of the video about the parts of the female reproductive system that will be mentioned in the video. The T tells Ss to look over the questions, so they know what to listen for, and then asks if there are any questions. The T instructs Ss to just listen the first time, then to listen and find the information on the handout the second time.<br><br>2. The T plays the audio twice, then asks if the Ss need/want to listen a third time.<br><br>3. The T tells the Ss to get into pairs to check their answers, and assigns each pair the question(s) they will be responsible for telling their classmates (if 10 Ss, each pair gets 2 questions). | L<br>S | **Vocabulary**:<br>**RL**: endometrium, myometrium, perimetrium, connective tissue, lining, grooves, secrete, abnormal, stroma, fundus, uterine isthmus, vagina, rectum, uterus, urinary bladder, cervix, fallopian tubes<br><br>**UL**:<br>- What did you get for number 1?<br>- I put "b."<br>- "I didn't get that one." | Listening for details<br><br>Exchanging information | 10-15 minutes<br><br>5:50-6:00pm |

| | | | | | |
|---|---|---|---|---|---|
| | 4. The pairs check their answers.<br><br>5. The T checks the answers as a class by having Ss say their answers to the class and making sure they are correct.<br><br>**Materials**:<br>Handout #6.2.1 (Parts A, B, and C) | | | | |
| 5 | **Main task**:<br>1. The T plays a condensed version of an Osmosis video about endometrial cancer. The Ss watch three times, so as to fill out the information on the corresponding handout.<br><br>2. After the video has been played enough times, the T checks the answers. Ss will read the sentences to practice pronunciation (for pages 4 and 5). For page 6, the T will read the sentences and have Ss yell out the answer so as not to take up too much time going over answers. Any pronunciation challenges are addressed.<br><br>3. The T puts the Ss into 4 groups (if 10 Ss, two groups of two and two groups of three) and gives each group a specific part of the video to work with (Type 1, Type 2 and Stages 1 and 2, Stages 3 and 4 and | L<br>S | **Vocabulary**:<br>**RL**: below, top, behind, in front of, within, beyond, hollow, layers, grooves, secrete, cramping, enlargement, thick, dilation and curettage procedure (D&C), removal, taper down, spread, arise, undergo, hyperplasia<br><br>**UL**:<br>- How can we present this section?<br>- Maybe we can draw this part, and then write this part. What do you think?<br>- What does this word mean?<br>- Which part do you want to present? | Listening for details<br><br>Sharing information<br><br>Recalling main ideas<br><br>Reporting information | 50-60 minutes<br><br>6:00-7:00pm |

| | | Symptoms, Diagnosis and Treatment). Each group is given a piece of newspaper print, and they must use it to draw visuals to help them explain their section to their classmates. Each group practices their presentation, and then presents to the class.<br><br>**Materials**:<br>Handout #6.2.1 (Parts D, E, and F)<br>Newspaper print<br>Markers | | | | |
|---|---|---|---|---|---|---|
| 6 | **Post-task:**<br>1. The T separates the Ss into two groups. Each team gets one half of the video script. The Ss are given 15 minutes to come up with six difficult questions for the other team to answer.<br><br>2. Once both teams have their questions, the T will ask each team to make a name and explain how a team wins the game (each correct answer to a question in less than one minute gets a team one point; if the team takes longer than one minute but gets the right answer, they can get half of a point).<br><br>3. Both groups ask their six questions, and then a winner is determined.<br><br>4. The T tells the Ss the homework, | L<br>S<br>R | **Vocabulary**:<br>**RL**: (same as main task) below, top, behind, in front of, within, beyond, hollow, layers, grooves, secrete, cramping, enlargement, thick, dilation and curettage procedure (D&C), removal, taper down, spread, arise, undergo, hyperplasia<br><br>**UL**:<br>- We could ask them about _____.<br>- I don't think that is hard enough. Let's make it harder.<br>- I know the perfect question! | Recalling main ideas<br><br>Asking and answering questions | 30 minutes<br><br>7:00-7:30pm |

| | and asks if there are any questions.<br><br>**Materials**:<br>Handout #6.3.1<br>Markers for the board<br>Candy | | | | |
|---|---|---|---|---|---|

**Homework**: (1) Work on blog posts; they're due Saturday, October 5th by noon. (2) Download a QR code reading app for next week's class if you don't already have one. (3) If time runs out, then the post task can be included as a homework assignment.

**MEDICAL ENGLISH**

Lewis, Barahona, & Quesada

## Handout #6.1.1 (Version A)

**Instructions**: Use your phone to look up the translations and meanings of the following words. You will need to explain these 7 words to a classmate in English. All of these words will be in the *Osmosis* video we will watch later.

1. Hollow                    **Translation**: _____

_____
_____

2. Layers                    **Translation**: _____

_____
_____

3. Grooves                   **Translation**: _____

_____
_____

4. Secrete                   **Translation**: _____

_____
_____

5. Cramping                  **Translation**: _____

_____
_____

6. Enlargement               **Translation**: _____

_____
_____

7. Thick                     **Translation**: _____

_____
_____

**MEDICAL ENGLISH**

Lewis, Barahona, & Quesada

**Handout #6.1.1**

**Instructions**: Use this paper to take notes about your partner's words. Write the word, the definition that your classmate gives you, and the translation in Spanish.

1. _____ **Translation**:_____
_____
_____

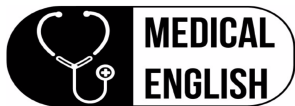2. _____ **Translation**:_____
_____
_____

3. _____ **Translation**:_____
_____
_____

4. _____ **Translation**:_____
_____
_____

5. _____ **Translation**:_____
_____
_____

6. _____ **Translation**:_____
_____
_____

7. _____ **Translation**:_____
_____
_____

**MEDICAL ENGLISH**

Lewis, Barahona, & Quesada

**Handout #6.1.1 (Version B)**

**Instructions**: Use your phone to look up the translations and meanings of the following words. You will need to explain these 7 words to a classmate in English. All of these words will be in the *Osmosis* video we will watch later.

1. Dilation and curettage procedure (D&C)   **Translation**: _____
_____
_____

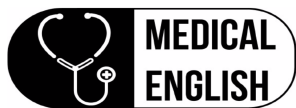2. Removal                                 **Translation**: _____
_____
_____

3. Taper (down)                            **Translation**: _____
_____
_____

4. Spread                                  **Translation**: _____
_____
_____
_____

5. Arise                                   **Translation**: _____
_____
_____

6. Undergo                                 **Translation**: _____
_____
_____

7. Hyperplasia                             **Translation**: _____
_____
_____

**MEDICAL ENGLISH**

Lewis, Barahona, & Quesada

## Handout #6.1.1

**Instructions**: Use this paper to take notes about your partner's words. Write the word, the definition that your classmate gives you, and the translation in Spanish.

1. _____ **Translation**:_____
_____
_____

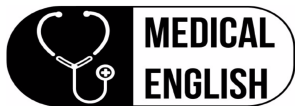2. _____ **Translation**:_____
_____
_____

3. _____ **Translation**:_____
_____
_____

4. _____ **Translation**:_____
_____
_____

5. _____ **Translation**:_____
_____
_____

6. _____ **Translation**:_____
_____
_____

7. _____ **Translation**:_____
_____
_____

MEDICAL ENGLISH
Lewis, Barahona, & Quesada

**Handout #6.1.1 ANSWER KEY (Version A)**

**Instructions**: Use your phone to look up the translations and meanings of the following words. You will need to explain these 7 words to a classmate in English. All of these words will be in the *Osmosis* video we will watch later.

1. Hollow                                    **Translation**: vacío
having a space or cavity inside; not solid; empty (*a hollow sphere);* having a depression or concavity (*a hollow surface);* sunken, as the cheeks or eyes.

2. Layers                                    **Translation**: capas, niveles
a sheet, quantity, or thickness of material, typically one of several, covering a surface or body; coating; covering; skin; thickness

3. Grooves                                  **Translation**: hendiduras
a long, narrow space, cut, depression, or indentation naturally on the surface of an organism or an anatomical part

4. Secrete                                   **Translation**: segregar, secretar
to synthesize and release a substance; to discharge, generate, or release by secretion; secretion (in a cell or gland) is the act or process of separating, elaborating, and releasing a substance that fulfills some function within the organism

5. Cramping                                **Translation**: calambre (muscle), retorcijón (stomach)
a sudden, involuntary, spasmodic contraction of a muscle or group of muscles; a piercing pain in the abdomen; an intermittent, painful contraction of muscles of a wall containing involuntary muscle

6. Enlargement                            **Translation**: agrandamiento
increase in size; expansion; amplification

7. Thick                                       **Translation**: grueso (piece of material), espeso (density of a
                                                              liquid)
having relatively great extent from one surface or side to the opposite; not thin

MEDICAL
ENGLISH
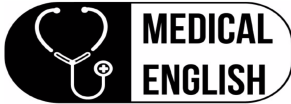
Lewis, Barahona, & Quesada

**Handout #6.1.1  ANSWER KEY (Version B)**

**Instructions**: Use your phone to look up the translations and meanings of the following words. You will need to explain these 7 words to a classmate in English. All of these words will be in the *Osmosis* video we will watch later.

1. Dilation and curettage procedure (D&C) **Translation**: dilatación y legrado/curetaje (D y C)
a surgical procedure involving the dilation of the cervix and curettage of the uterus, performed after a miscarriage or for the removal of cysts or tumors

2. Removal                                **Translation**: remoción
the action of moving or taking something away from a place

3. Taper (down)                           **Translation**: reducer, ahusarse
diminish or reduce in thickness toward one end; a gradual narrowing

4. Spread                                 **Translation**: esparcir
to expand over a large area; to cover, reach, or have an effect on a wider or increasing area; the development or growth of something so that it covers a larger area

5. Arise                                  **Translation**: surgir
(of a problem, opportunity, or situation) to emerge or become apparent; to begin to occur or to exist

6. Undergo                                **Translation**: someterse a…
to experience something that is unpleasant or something that involves a change; to endure; to go through; to be subjected to

7. Hyperplasia                            **Translation**: hiperplasia
the enlargement of an organ or tissue caused by an increase in the reproduction rate of its cells, often as an initial stage in the development of cancer; (of endometrial hyperplasia) an abnormal overgrowth of the endometrium (the layer of cells that lines the uterus)
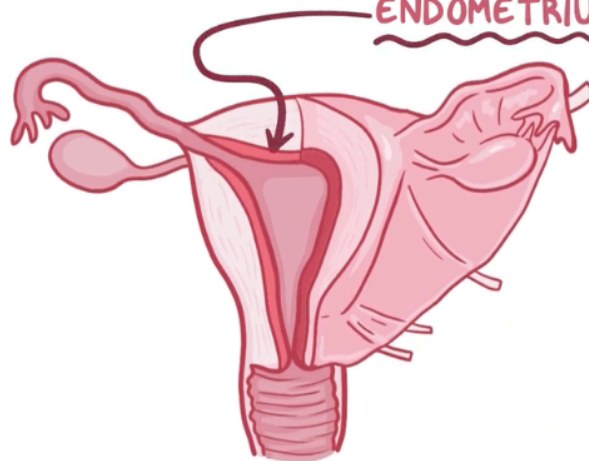
**MEDICAL ENGLISH**
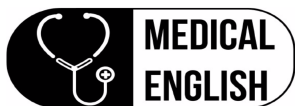
Lewis, Barahona, & Quesada

**Handout #6.2.1**

**Part A:**
**Instructions**: As you listen, circle the names of the body parts as mentioned in the video. Use the diagram below as a guide.

**ENDOMETRIAL CANCER** → MALIGNANT (CANCER) CELLS ARISE in the GLANDS of the ENDOMETRIUM

1. Endometrial Carcinoma, or Endometrial Cancer, is when malignant cells arise in the glands of the endometrium. The endometrium is the:
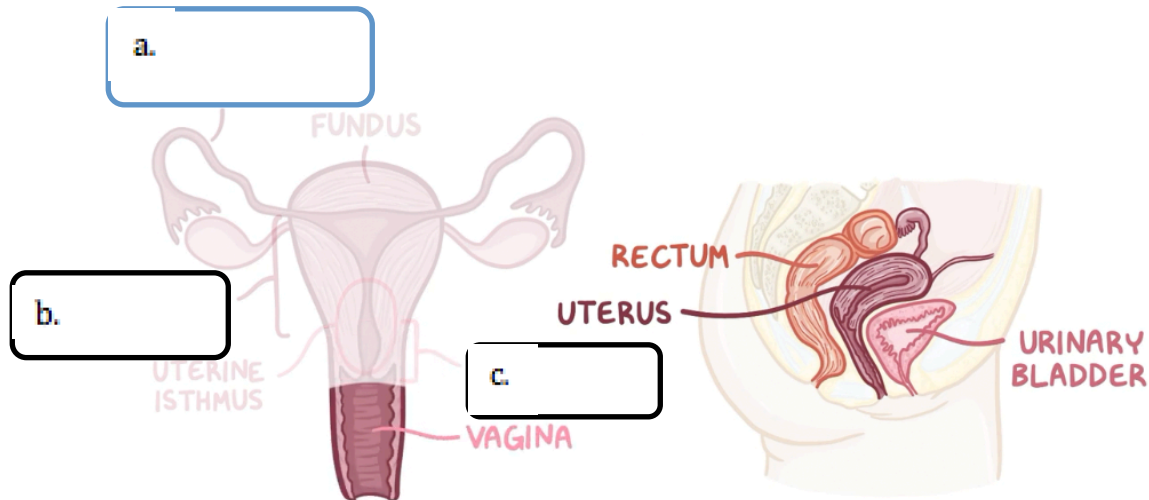   a) uterus
   b) the lining of the uterus
   c) the lining of the cervix

2. The uterus is a hollow organ that sits behind the _____ and in front of the _____.
   a) urinary bladder, stomach
   b) urethra, rectum
   c) urinary bladder, rectum

**Part B:**
**Instructions**: As you listen, circle the names of the body parts as mentioned in the video. Use the diagram below as a guide.

a.

FUNDUS

RECTUM

UTERUS

b.

UTERINE
ISTHMUS

c.

URINARY
BLADDER

VAGINA

1. The top of the uterus, above the openings of the _____, is called the fundus. This is represented in the diagram by the letter "a."
    a) cervix
    b) fallopian tubes
    c) uterine body

2. The region below the openings is called the _____. This is represented in the diagram by the letter "b."
    a) cervix
    b) fallopian tube
    c) uterine body

3. The uterus tapers down into the uterine isthmus, and finally, the _____, which protrudes into the vagina. This is represented in the diagram by the letter "c."
    a) cervix
    b) fallopian tube
    c) uterine body

**Part C:**
**Instructions**: As you listen, use the words in the *Word Bank* to fill in the blanks. Each word is used only once.

| | | |
|---|---|---|
| connective | abnormal | grooves |
| three | myometrium | endometrium |
| two | secrete | perimetrium |

1. The wall of the uterus has _____ layers.

2. Name the layers of the walls of the uterus:

_____.

3. Stroma is _____ tissue.

4. There are many (a)_____ in the stroma, which is lined by the epithelium, and these are the uterine glands, which (b)_____ a glycogen rich fluid that's essential for the developing embryo during early pregnancy.

5. Endometrial carcinoma involves the (a)_____ growth of the epithelial cells that make up endometrial glands, and there are (b)_____ main types.

**Part D:**

**Instructions**: As you listen, use the words in the *Word Bank* to fill in the blanks. Each word is used only once.

> **Word Bank**
>
> atrophy       endometrial       Type 1       estrogen
>
> African       obesity       levels       risk
>
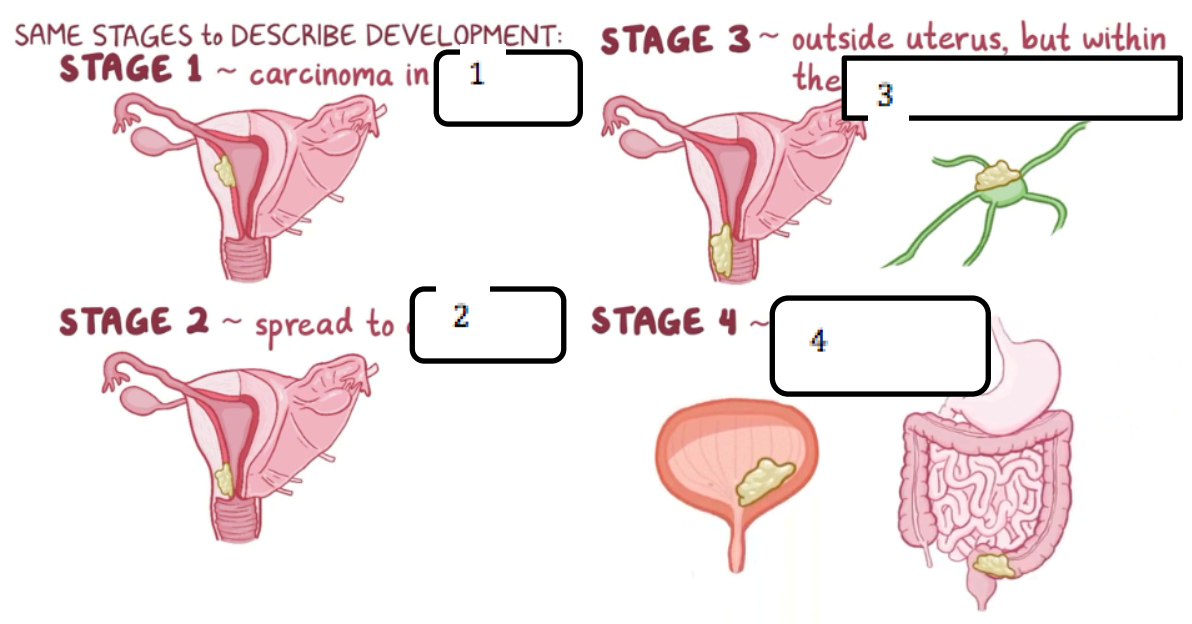> body       growth       rare       breastfeeding

1. The most common type of Endometrial Carcinoma is _____.

2. Type 1 Endometrial Carcinoma usually involves several genetic mutations in _____ cells, including:
   - PTEN (a tumor suppressor gene)
   - PIK3CA (an oncogene)
   - ARID1A (a gene regulating chromatin structure)

3. These mutations increase signaling in the PI3K/AKT pathway, which promotes _____ and replication of endometrial cells.

4. Having high (a)_____ of estrogen will cause the endometrium to undergo hyperplasia, leading to increased (b)_____ of developing Type 1 Endometrial Carcinoma.

5. Excessive estrogen can come from (a)_____, taking tamoxifen, and postmenopausal (b)_____ therapy.

6. There are actually factors that protect against Endometrial Carcinoma. Taking hormonal contraceptives, being older at the time you give birth, and

_____.

7. Type 2 Endometrial Carcinoma is more _____, and it has a number of subtypes.

8. Type 2 Endometrial Carcinoma typically affects women who have endometrial (a)_____ and who have a lower (b)_____ weight.

9. Type 2 Endometrial Carcinoma is more common in women of _____ descent.

**Part E:**

**Instructions**: As you listen, complete the stages of Endometrial Cancer with the words in the *Word Bank*. Each word is used only once. Use the diagram below as a guide.

**Word Bank**

lesser ("true") pelvis          uterus          cervix          beyond the pelvis

SAME STAGES to DESCRIBE DEVELOPMENT:
**STAGE 1** ~ carcinoma in [1]

**STAGE 2** ~ spread to [2]

**STAGE 3** ~ outside uterus, but within the [3]

**STAGE 4** ~ [4]

1. In Stage 1, the carcinoma is only in the _____.

2. In Stage 2, it's spread to the _____.

3. In Stage 3, it's spread outside the uterus, but is still within the

_____.

4. In Stage 4, it's spread _____.

**Part F:**

**Symptoms:**

**Instructions:** Decide whether each sentence is true (T) or false (F) based on the video, and then circle your answer.

1. The main symptom of Endometrial Carcinoma is normal vaginal bleeding.     T     F

2.  Tumor(s) may cause enlargement of the uterus.                            T     F

3. Enlargement of the uterus can cause abdominal pain and cramping.          T     F
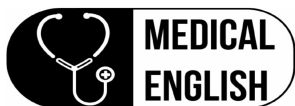

**Diagnosis:**

**Instructions**: Circle the correct word to complete the sentences based on the video.

1. Diagnosing Endometrial Carcinoma usually involves doing a transvaginal ultrasound to determine if the endometrium is abnormally **( thin / thick ).**

2. If the endometrium is more than **( 4mm / 3mm )** thick, then a biopsy or a dilation and curettage procedure is used to remove some endometrial cells and confirm the diagnosis.


**Treatment:**

**Instructions**: Circle the correct word to complete the sentences based on the video.

1. Surgery is the treatment of choice for all types and stages of Endometrial Carcinoma. This typically means the **( approval / removal )** of the uterus, both ovaries, and both fallopian tubes. This procedure is also called a hysterectomy with bilateral salpingo-oophorectomy.

2. When the cancer is more advanced or is likely to **( spread / increase ),** radiation therapy, and/or chemotherapy, is also done after surgery.
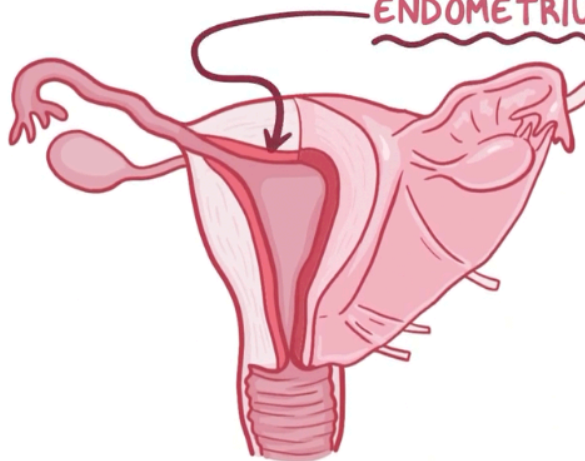
**MEDICAL ENGLISH**

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**Handout #6.2.1 ANSWER KEY**

**Part A:**
**Instructions**: As you listen, circle the names of the body parts as mentioned in the video. Use the diagram below as a guide.



1. Endometrial Carcinoma, or Endometrial Cancer, is when malignant cells arise in the glands of the endometrium. The endometrium is the:
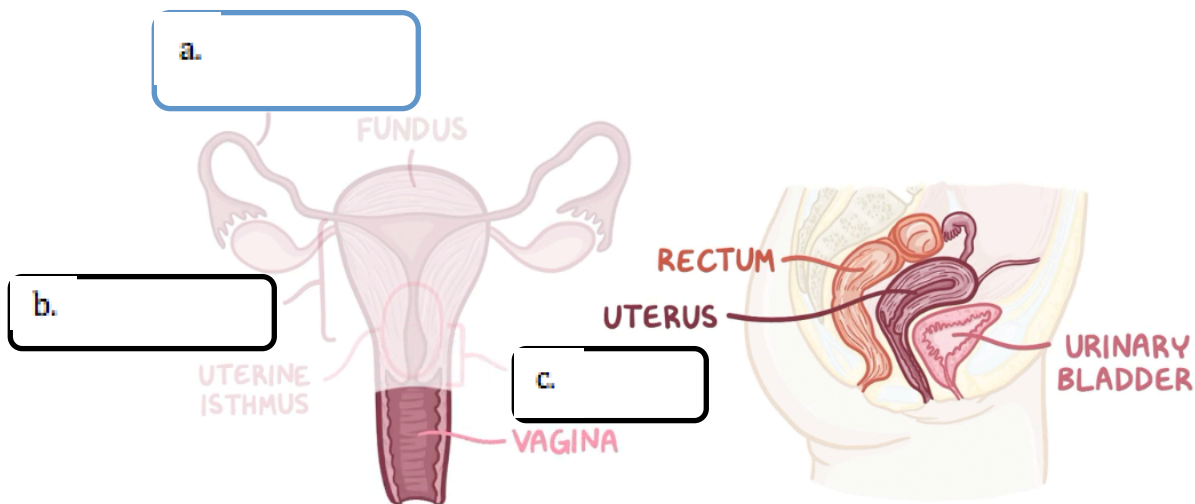    d)  uterus
    e)  the lining of the uterus
    f)  the lining of the cervix

2. The uterus is a hollow organ that sits behind the _____ and in front of the _____.
    d)  urinary bladder, stomach
    e)  urethra, rectum
    f)  urinary bladder, rectum

**Part B:**
**Instructions**: As you listen, circle the names of the body parts as mentioned in the video. Use the diagram below as a guide.



1. The top of the uterus, above the openings of the _____, is called the fundus. This is represented in the diagram by the letter "a."
  d) cervix
  e) fallopian tubes
  f) uterine body

2. The region below the openings is called the _____. This is represented in the diagram by the letter "b."
  d) cervix
  e) fallopian tube
  f) uterine body

3. The uterus tapers down into the uterine isthmus, and finally, the _____, which protrudes into the vagina. This is represented in the diagram by the letter "c."
  d) cervix
  e) fallopian tube
  f) uterine body

**Part C:**
**Instructions**: As you listen, use the words in the *Word Bank* to fill in the blanks. Each word is used only once.

| | | |
|---|---|---|
| connective | abnormal | grooves |
| three | myometrium | endometrium |
| two | secrete | perimetrium |

1. The wall of the uterus has <u>three</u> layers.

2. Name the layers of the walls of the uterus: <u>perimetrium, myometrium, endometrium</u>

3. Stroma is <u>connective</u> tissue.

4. There are many (a)<u>grooves</u> in the stroma, which is lined by the epithelium, and these are the uterine glands, which (b)<u>secrete</u> a glycogen rich fluid that's essential for the developing embryo during early pregnancy.

5. Endometrial carcinoma involves the (a)<u>abnormal</u> growth of the epithelial cells that make up endometrial glands, and there are (b)<u>two</u> main types.

**Part D:**
**Instructions**: As you listen, use the words in the *Word Bank* to fill in the blanks. Each word is used only once.

```
                           Word Bank

  atrophy        endometrial        Type 1        estrogen

  African        obesity            levels        risk

  body           growth             rare          breastfeeding
```

1. The most common type of Endometrial Carcinoma is <u>Type 1.</u>

2. Type 1 Endometrial Carcinoma usually involves several genetic mutations in <u>endometrial</u> cells, including:
   • PTEN (a tumor suppressor gene)
   • PIK3CA (an oncogene)
   • ARID1A (a gene regulating chromatin structure)

3. These mutations increase signaling in the PI3K/AKT pathway, which promotes <u>growth</u> and replication of endometrial cells.

4. Having high (a)<u>levels</u> of estrogen will cause the endometrium to undergo hyperplasia, leading to increased (b)<u>risk</u> of developing Type 1 Endometrial Carcinoma.

5. Excessive estrogen can come from (a)<u>obesity</u>, taking tamoxifen, and postmenopausal (b)<u>estrogen</u> therapy.

6.  There are actually factors that protect against Endometrial Carcinoma.  Taking hormonal contraceptives, being older at the time you give birth, and <u>breastfeeding.</u>

7. Type 2 Endometrial Carcinoma is more <u>rare</u>, and it has a number of subtypes.

8. Type 2 Endometrial Carcinoma typically affects women who have endometrial (a)<u>atrophy</u> and who have a lower (b)<u>body</u> weight.

9. Type 2 Endometrial Carcinoma is more common in women of <u>African</u> descent.

**Part E:**

**Instructions**: As you listen, complete the stages of Endometrial Cancer with the words in the *Word Bank*. Each word is used only once. Use the diagram below as a guide.

**Word Bank**

lesser ("true") pelvis     uterus     cervix     beyond the pelvis



SAME STAGES to DESCRIBE DEVELOPMENT:
**STAGE 1** ~ carcinoma in [1]

**STAGE 2** ~ spread to [2]

**STAGE 3** ~ outside uterus, but within the [3]
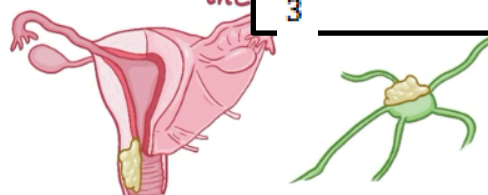
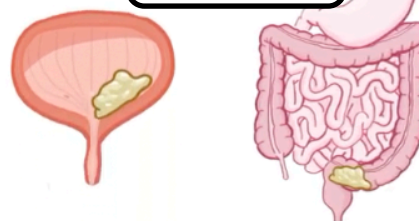**STAGE 4** ~ [4]

1. In Stage 1, the carcinoma is only in the <u>uterus.</u>

2. In Stage 2, it's spread to the <u>cervix.</u>

3. In Stage 3, it's spread outside the uterus, but is still within the <u>lesser ("true") pelvis.</u>

4. In Stage 4, it's spread <u>beyond the pelvis.</u>

**Part F:**

**Symptoms:**

**Instructions:** Decide whether each sentence is true (T) or false (F) based on the video, and then circle your answer.

1. The main symptom of Endometrial Carcinoma is normal vaginal bleeding.　　T　　**F**

2.  Tumor(s) may cause enlargement of the uterus.　　**T**　　F

3. Enlargement of the uterus can cause abdominal pain and cramping.　　**T**　　F
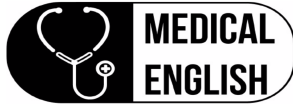

**Diagnosis:**

**Instructions**: Circle the correct word to complete the sentences based on the video.

1. Diagnosing Endometrial Carcinoma usually involves doing a transvaginal ultrasound to determine if the endometrium is abnormally **( thin / thick ).**

2. If the endometrium is more than **( 4mm / 3mm )** thick, then a biopsy or a dilation and curettage procedure is used to remove some endometrial cells and confirm the diagnosis.


**Treatment:**

**Instructions**: Circle the correct word to complete the sentences based on the video.

1. Surgery is the treatment of choice for all types and stages of Endometrial Carcinoma. This typically means the **( approval / removal )** of the uterus, both ovaries, and both fallopian tubes. This procedure is also called a hysterectomy with bilateral salpingo-oophorectomy.

2. When the cancer is more advanced or is likely to **( spread / increase ),** radiation therapy, and/or chemotherapy, is also done after surgery.

**Handout #6.3.1 (Version A)**

**Instructions:** Read through this half of the video script with your group and make 6 difficult questions for the other team to answer.

Endometrial Carcinoma, or Endometrial Cancer, is when malignant, or cancer, cells arise in the glands of the endometrium, the lining of the uterus. The uterus is a hollow organ that sits behind the urinary bladder, and in front of the rectum. The top of the uterus, above the openings of the fallopian tubes, is called the fundus. The region below the openings is called the uterine body. The uterus tapers down into the uterine isthmus, and finally the cervix, which protrudes into the vagina.

The wall of the uterus has three layers: the perimetrium, the myometrium, and the endometrium. The endometrium is, itself, made up of a single layer of simple columnar epithelium, which has ciliated and secretory cells that sit on top of connective tissue, or stroma. There are many grooves in the stroma, which is lined by the epithelium, and these are the uterine glands, which secrete a glycogen-rich fluid that's essential for the developing embryo during early pregnancy. Endometrial carcinoma involves the abnormal growth of the epithelial cells that make up endometrial glands, and there are two main types.

The most common type is Type 1 Endometrial Carcinoma, which is also called Endometrioid Carcinoma because the tumors grow in a way that looks like normal endometrial glands. It usually involves several genetic mutations in endometrial cells including: PTEN (a tumor suppressor gene), PIK3CA (an oncogene), and ARID1A (a gene regulating chromatin structure). All of these mutations increase signaling in the PI3K/AKT

pathway, which promotes growth and replication of endometrial cells. More signaling in the

PI3K/AKT pathway also enhances the expression of genes, which are linked to estrogen

receptors. So, having high

levels of estrogen will cause the endometrium to undergo hyperplasia, leading to

increased risk of developing Type 1 Endometrial Carcinoma.

Now, excessive estrogen can come from: obesity (because fat cells convert

adrenal precursors into sex hormones), taking tamoxifen (a breast cancer medication that

blocks estrogen receptors in the breasts, but stimulates them in the uterus), and

postmenopausal estrogen therapy (given without a progestin to balance it out).

Other risk factors related to high estrogen levels are: having never been pregnant,

chronic anovulation (when the ovaries don't release an egg during a menstrual cycle), and

having many menstrual cycles. Age is also a factor, since Endometrial Carcinoma tends to

develop in women who have already gone through menopause, usually around 55 to 65

years of age.
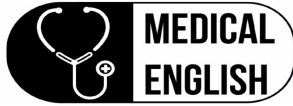
**Handout #6.3.1 (Version B)**

**Instructions:** Read through this half of the video script with your group and make 6 difficult questions for the other team to answer.

The good news is that there are actually factors that protect against Type 1 Endometrial Carcinoma. Taking hormonal contraceptives, being older at the time you give birth, and breastfeeding all reduce the risk of developing this type of cancer.

Now, Type 2 Endometrial Carcinoma is more rare. It has a number of subtypes. Type 2 Carcinomas don't appear to be linked with estrogen levels. These cancers typically affect women who have endometrial atrophy and who have a lower body weight. They also tend to develop later in life than Type 1, and are more common in women of African descent.

Even though there are two distinct types of Endometrial Carcinomas, we use the same stages to describe their development. In stage 1, the carcinoma is only in the uterus. In stage 2, it's spread to the cervix. In stage 3, it's spread outside the uterus, but is still within the lesser, or "true," pelvis. This could mean it affects structures like the vagina and pelvic lymph nodes. In stage 4, it's spread beyond the pelvis.

The main symptom of Endometrial Carcinoma is abnormal vaginal bleeding, usually without pain. If it's more advanced, there might be enlargement of the uterus if the tumor, or tumors are large enough, and this can cause abdominal pain and cramping.

Diagnosing Endometrial Carcinoma usually involves doing a transvaginal ultrasound to determine if the endometrium is abnormally thick. If it's more than 4mm

thick, then a biopsy or a dilation and curettage procedure is used to remove some endometrial cells and confirm the diagnosis.

Surgery is the treatment of choice for all types and stages of Endometrial Carcinoma. This typically means the removal of the uterus, both ovaries, and both fallopian tubes, also called a hysterectomy with bilateral salpingo-oopherectomy, combined with the removal of pelvic and para-aortic lymph nodes. In some cases, where the cancer is more advanced or is likely to spread, for example a Type 1 carcinoma that's stage 2 and above and all type 2 carcinomas, radiation therapy and/or chemotherapy is also done after surgery.

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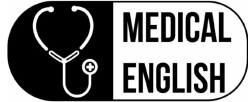
MEDICAL
ENGLISH

Barahona, Lewis & Quesada

Date: September 30, 2019
Lesson Plan #7
Student Teacher: Isela Barahona
Assistants: Simone Lewis and Edwin Quesada
Unit #2
Title of unit: "Put on your stethoscope: Listening in Medical English"

**Unit Goal**: By the end of this unit, students will be able to successfully demonstrate comprehension of key medical vocabulary from an academic medical video by outlining the videos and/or reporting the information in them to their classmates.

**General Objective**: By the end of the lesson, students will be able to develop a set of procedures they would follow in diagnosing a patient with a strange illness by correctly using conditional sentences in order to predict the ending of a medical Netflix series.

**Specific Objectives**: The students will be able to:
1. Recall different words from the previous class by identifying several pictures shown on the board in order to assess their ability to retrieve information.
2. Demonstrate knowledge of the meaning of different vocabulary words by matching the words with the pictures in order to complete several sentences from the video of the main task.
3. Determine the correct spelling of vocabulary words by listening to the order of the letter from a QR code in order to match them with their correct definition.
4. Predict the diagnosis and outcome of a patient with a strange illness by watching segments of a video in order to use learned vocabulary as well as conditional sentences.
5. Compose conditional sentences by adding their own endings to different prompts in order to consolidate the knowledge of this grammatical structure

Abbreviations used:  T = teacher   A = assistant   Ss = students   UL= useful language     L = listening        S = speaking        R = reading        W = writing

| Objectives | Procedures | Macro-skills | Language (vocabulary, useful language, grammatical or phonetic features) | Strategies | Time |
|---|---|---|---|---|---|
| 1 | **Warm-up:**<br>1. Pairs are made and given a small plastic ball. Different pictures from the vocabulary studied the previous class are projected, one by one. The group that knows the name of the image has to get the ball into a basket placed in the front of the class. The first group to do so gets the chance to answer. If the answer is correct, they get a point. If not, another group has the chance to answer.<br><br>**Materials**:<br>*Google Slides* Presentation<br>Plastic balls<br>Basket | S | **Vocabulary**:<br>hollow, cramping, taper down, hyperplasia, uterus<br><br>**UL**: How do you say (this word) in English?<br>How do you pronounce ___?<br>Do you remember that word?<br>I remember the word! / I don't remember the word<br>Let me try / It's my turn | Recalling vocabulary | 10 minutes<br><br>5-5:10pm |
| 2 | **Pre-task 1**:<br>1. Ss work in pairs, they are given Handout #7.1.1, which has ten pictures. They have to look around the classroom for the names of the pictures (slips with names are hidden) and write them under the correct image. Answers are checked by projecting the pictures on the board and having different Ss volunteer the word. Pronunciation is checked as well.<br><br>2. In the same pairs, Ss are given Handout #7.1.2, which has incomplete sentences from the video of the main task. Ss have to stand up and walk around the classroom | R<br>L<br>S<br>W | **Vocabulary**:<br>Seizure, MRI, EEG, wobbly, improvement, shrink, skull, brainwaves, atrophy, pacemaker, powerless<br><br>**UL**:<br>- I think ____ is for this picture.<br>- What did you write for this picture?<br>- I think code <u>1</u> is for this sentence.<br>- What is the word? How do you spell that?<br>- For the <u>first</u> sentence, I have this word: ___ | Recognizing illustrations<br><br>Matching words with illustrations<br><br>Listening for details<br><br>Exchanging information | 30 minutes<br><br>5:10-5:40pm |

| | | | | | |
|---|---|---|---|---|---|
| | | scanning different QR codes (Handout #7.1.3). First, they have to listen to the sentence it contains and identify which code refers to which sentence and match them by writing the number on the handout. Then, they have to listen to the sentence again and identify the word to complete it.<br><br>3. Once everybody is ready, new groups are made with people from different groups. Ss compare their answers. Finally, each group shares one answer aloud for everybody to check. Pronunciation is checked by the T.<br><br>4. Ss are shown some questions with the conditional structure using the vocabulary from the previous activities in order to review the words and present them with the target grammatical structure.<br><br>**Materials**:<br>Handout #7.1.1<br>Handout #7.1.2<br>Handout #7.1.3<br>Slips with vocabulary words | | - What word do you have for the <u>next</u> sentence? | | |
| 3 | | **Pre-task 2**:<br>1. Different stations are set up around the class, each with a QR code (Handout #7.2.1) and slips of paper with letters (Handout #7.2.2). Ss work in pairs visiting the different stations and listening to the QR codes, which contain the spelling of a word. They put the letters in the correct order as they listen and then copy the word | R<br>L<br>S<br>W | **Vocabulary**:<br>Rasmussen's, spinal tap, Lyme disease, transcranial, Bartonella, available, urge, worse, impair, hemispherectomy, stroke<br><br>**UL**:<br>- Can you play it again?<br>- What is the <u>first/second/next/last</u> | Identifying main ideas<br><br>Negotiating meaning | 30 minutes<br><br>5:40-6:10pm |

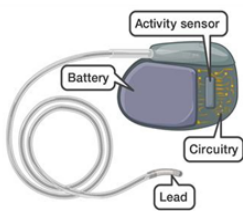| | | onto Handout #7.2.3. Once they are ready with the word, they mix up the letter slips for the following group.<br>2. Once they have all the words, they match them with the correct definition (also on Handout #7.2.3).<br>3. Answers and pronunciation are checked as a whole group.<br><br>**Materials**:<br>Handout #7.2.1<br>Handout #7.2.2<br>Handout #7.2.3 (Includes Answer Key) | | letter?<br>- Which code are we missing?<br>- We are missing code number…<br>- Which is the definition for ___?<br>- I think ___ is the definition of ____ | | |
|---|---|---|---|---|---|---|
| 4 | **Main task**:<br>1. Ss watch the first segment of episode 2 "Second Opinions" of the Netflix series *Diagnosis* (timestamps: 2:00-11:32). They will complete a checklist with the symptoms that the patient presents (Handout #7.3.1). It is checked orally with Ss volunteering the answers.<br><br>2. Ss are told about crowdsourcing. They are given a sticky note (with a conditional sentence stem) and they brainstorm about what they would do if they were referred that patient.<br><br>3. Ss watch the next segment of the episode (timestamps: 20:23-24:26) and identify if any of their ideas were in the video.<br><br>4. Ss are given a copy of Handout #7.3.2 with some predictions about the ending of the video. They work in pairs choosing the | L<br>W<br>S<br>R | **Vocabulary**:<br>Seizure, MRI, EEG, wobbly, improvement, shrink, skull, brainwaves, atrophy, pacemaker, powerless, rasmussen's, spinal tap, Lyme disease, transcranial, Bartonella, available, urge, worse, impair, hemispherectomy, stroke, crowdsourcing<br><br>**UL**:<br>- I think this is a <u>symptom</u><br>- Did you put a check on ____?<br>- How do you spell _____?<br>- How do you say ___ in English?<br>- Is this okay/correct?<br>- I think this <u>was / wasn't</u> in the video<br>- Did they mention ____?<br>- I think this <u>will/won't</u> happen. | Using context clues<br><br>Getting meaning from context<br><br>Eliciting main ideas | 60 minutes<br><br>6:10-7:10pm |

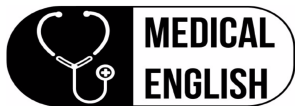| | | | | | | |
|---|---|---|---|---|---|---|
| | options they think will happen.<br><br>5. Ss watch the final segment of the episode (timestamps: 29:24-35:12) and check their guesses.<br><br>**Materials**:<br>Episode 2, "Second Opinions," of the Netflix series *Diagnosis*<br>Handout #7.3.1 (Includes Answer Key)<br>Handout #7.3.2 (Includes Answer Key)<br>Sticky notes<br>Newsprint | | - What do you think? | | |
| 5 | **Post-task:**<br>1. Each S gets a copy of Handout #7.4.1 with different incomplete conditional sentences. They work individually to complete them with their own ideas.<br><br>2. When they are ready, Ss make small groups (three or four Ss per group) and share their ideas. T and As walk around and spend some time with each group in order to listen to their responses and provide feedback and corrections.<br><br>**Materials**:<br>Handout #7.4.1 | W<br>R<br>L<br>S | **UL**:<br>- How do you spell _____?<br>- How do you say ___ in English? | Using context clues<br><br>Completing ideas<br><br>Sharing information | 20 minutes<br><br>7:10-7:30pm |

**Homework**: None.

MEDICAL ENGLISH
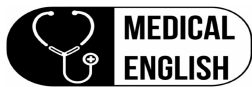
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**Handout #7.1.1**



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|  |  |  |  |
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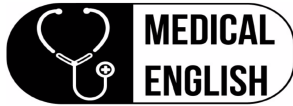|  |  |  |
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**MEDICAL ENGLISH**

Lewis, Barahona, & Quesada

**Handout #7.1.2**

**Instructions:** Scan the QR codes and listen to the sentences. Write the number of the code that corresponds to the sentence and complete them with the missing word (from the previous activity).

a. **[Code ___]** She never had another visible seizure the whole time that we were in the hospital, but they had hooked her up to an _____ and said that she was constantly having subclinical seizures the whole time and they didn't want to send us home until she was 24 hours seizure-free.

b. **[Code ___]** And I don't see any of the telltale signs of this thing called Rasmussen's, which are usually _____ or shrinkage of that side of the brain.

c. **[Code ___]** Sadie's sister: Let's go! / Sara: Sadie, if you feel _____ just stand still, okay?

d. **[Code ___]** If you have a better option, if you have a device that acts like a _____. Scientist made one of this for the brain and tested for ten years before saying that it's okay to use.

e. **[Code ___]** Here, there's this little tray that fits in the _____ and the battery goes in there, and this battery and computer is so smart that it can read your _____.

f. **[Code ___]** I called 911. The doctors were able to recognize that she was having a _____.

g. **[Code ___]** Sadie had several _____ that showed that she didn't have a brain tumor and that she hadn't had a stroke. And she had a spinal tap that showed no sign of infection, nor any antibodies that would suggest an autoimmune disease.

h. **[Code ___]** Best case scenario is that there's dramatic _____ in the seizures over the next three weeks.

i. **[Code ___]** During these seizures, she is awake and aware, but totally _____ to stop them.

j. **[Code ___]** But if this diagnosis of Rasmussen's is correct and if she doesn't have the operation, then her brain will gradually deteriorate and _____. Most children who don't have the surgery become paralyzed on one side of their body within a few years.

**MEDICAL ENGLISH**

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**Handout #7.1.2 ANSWER KEY**

**Instructions:** Scan the QR codes and listen to the sentences. Write the number of the code that corresponds to the sentence and complete them with the missing word (from the previous activity).

a. **[Code 3]** She never had another visible seizure the whole time that we were in the hospital, but they had hooked her up to an ==EEG== and said that she was constantly having subclinical seizures the whole time and they didn't want to send us home until she was 24 hours seizure-free.

b. **[Code 8]** And I don't see any of the telltale signs of this thing called Rasmussen's, which are usually ==atrophy== or shrinkage of that side of the brain.

c. **[Code 1]** Sadie's sister: Let's go! / Sara: Sadie, if you feel ==wobbly== just stand still, okay?

d. **[Code 9]** If you have a better option, if you have a device that acts like a ==pacemaker==. Scientist made one of this for the brain and tested for ten years before saying that it's okay to use.

e. **[Code 10]** Here, there's this little tray that fits in the ==skull== and the battery goes in there, and this battery and computer is so smart that it can read your ==brainwaves==.

f. **[Code 2]** I called 911. The doctors were able to recognize that she was having a ==seizure==.

g. **[Code 5]** Sadie had several ==MRIs== that showed that she didn't have a brain tumor and that she hadn't had a stroke. And she had a spinal tap that showed no sign of infection, nor any antibodies that would suggest an autoimmune disease.

h. **[Code 7]** Best case scenario is that there's dramatic ==improvement== in the seizures over the next three weeks.

i. **[Code 4]** During these seizures, she is awake and aware, but totally ==powerless== to stop them.

j. **[Code 6]** But if this diagnosis of Rasmussen's is correct and if she doesn't have the operation, then her brain will gradually deteriorate and ==shrink==. Most children who don't have the surgery become paralyzed on one side of their body within a few years.

**MEDICAL ENGLISH**

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**Handout #7.1.3**

| | | |
|---|---|---|
|  |  |  |
| **Code #1** | **Code #2** | **Code #3** |
|  |  |  |
| **Code #4** | **Code #5** | **Code #6** |
|  |  |  |
| **Code #7** | **Code #8** | **Code #9** |
|  | | |
| **Code #10** | | |

**MEDICAL ENGLISH**

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**Handout #7.2.1**

| | | |
|---|---|---|
| Word 1 | Word 2 | Word 3 |
| Word 4 | Word 5 | Word 6 |
| Word 7 | Word 8 | Word 9 |
| Word 10 | Word 11 | |

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**Handout #7.2.2**

| | | | |
|---|---|---|---|
| S | T | R | O |
| K | E | S | P |
| I | N | A | L |
| T | A | P | R |
| A | S | M | U |

S S E N
S H E M
I S P H
E R O T
O M Y A

VAIL
ABLE
BART
ONEL
LALY
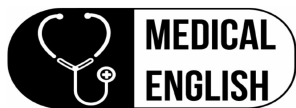
| M | E | D | I |
|---|---|---|---|
| S | E | A | S |
| E | T | R | A |
| N | S | C | R |
| A | N | I | A |

| L | U | R | G |
|---|---|---|---|
| E | W | O | R |
| S | E | I | M |
| P | A | I | R |

**MEDICAL ENGLISH**

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**Handout #7.2.3**

**Instructions**: Scan the codes and listen to the spelling. Use the slips of paper to put the letters in the correct order. Then, copy the words in the chart below.

| Number | Word | Number | Word |
|--------|------|--------|------|
| 1 | | 7 | |
| 2 | | 8 | |
| 3 | | 9 | |
| 4 | | 10 | |
| 5 | | 11 | |
| 6 | | | |

**Instructions**: Match the words from the chart with the correct definition. Write the numbers in the brackets.

[  ] To try persistently to persuade (someone) to do something

[  ] A very rare, chronic inflammatory neurological disease that usually affects only one hemisphere (half) of the brain

[  ] Of poorer quality or lower standard; more sick

[  ] A sudden attack or loss of consciousness caused by an interruption in the flow of blood to the brain, especially through thrombosis

[  ] Passing or performed through the skull

[  ] To be able to be used or obtained; at someone's disposal (accessible)

[  ] A removal of fluid from the spine in the lower back through a hollow needle, usually done for diagnostic purposes.

[  ] To weaken or damage something (especially a human faculty or function)

[  ] An operation that disconnects the cortex (or outer layer) of one half of the brain from the other without removing it

[  ]  An infectious disease produced by bacteria of the genus with the same name

[  ] An infectious disease caused by the Borrelia bacterium which is spread by ticks. The most common sign is an expanding area of redness on the skin that appears at the site of the tick bite about a week after it occurred.

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**Handout #7.2.3 ANSWER KEY**

**Instructions**: Scan the codes and listen to the spelling. Use the slips of paper to put the letters in the correct order. Then, copy the words in the chart below.

| Number | Word | Number | Word |
|--------|------|--------|------|
| 1 | Stroke | 7 | Lyme disease |
| 2 | Spinal Tap | 8 | Transcranial |
| 3 | Rasmussen's | 9 | Urge |
| 4 | Hemispherectomy | 10 | Worse |
| 5 | Available | 11 | Impair |
| 6 | Bartonella | | |

**Instructions**: Match the words from the chart with the correct definition. Write the numbers in the brackets.

[ 9 ] To try persistently to persuade (someone) to do something

[ 3 ] A very rare, chronic inflammatory neurological disease that usually affects only one hemisphere (half) of the brain

[ 10 ] Of poorer quality or lower standard; more sick

[ 1 ] A sudden attack or loss of consciousness caused by an interruption in the flow of blood to the brain, especially through thrombosis

[ 8 ] Passing or performed through the skull

[ 5 ] To be able to be used or obtained; at someone's disposal (accessible)

[ 2 ] A removal of fluid from the spine in the lower back through a hollow needle, usually done for diagnostic purposes.

[ 11 ] To weaken or damage something (especially a human faculty or function)

[ 4 ] An operation that disconnects the cortex (or outer layer) of one half of the brain from the other without removing it

[ 6 ]  An infectious disease produced by bacteria of the genus with the same name

[ 7 ] An infectious disease caused by the Borrelia bacterium which is spread by ticks. The most common sign is an expanding area of redness on the skin that appears at the site of the tick bite about a week after it occurred.

**MEDICAL ENGLISH**
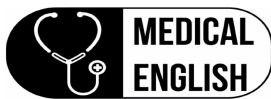
Lewis, Barahona, & Quesada

**Handout #7.3.1**

**Instructions**: Watch the first segment of the episode about Sadie and put a check mark next to all the symptoms mentioned.

| | |
|---|---|
| [  ] Headaches | [  ] Loss of speech |
| [  ] Seizures | [  ] Staring spells |
| [  ] Asthma | [  ] Inflammation of the brain |
| [  ] Difficulty to speak | [  ] Confusion |
| [  ] Loss of motor skills | [  ] Memory loss |
| [  ] Fever | [  ] Paralysis of a part of the body |
| [  ] Gain weight | [  ] Itchiness |

**Instructions**: Watch the first segment of the episode about Sadie and put a check mark next to all the symptoms mentioned.

| | |
|---|---|
| [  ] Headaches | [  ] Loss of speech |
| [  ] Seizures | [  ] Staring spells |
| [  ] Asthma | [  ] Inflammation of the brain |
| [  ] Difficulty to speak | [  ] Confusion |
| [  ] Loss of motor skills | [  ] Memory loss |
| [  ] Fever | [  ] Paralysis of a part of the body |
| [  ] Gain weight | [  ] Itchiness |

**Instructions**. Watch the first segment of the episode about Sadie and put a check mark next to all the symptoms mentioned.

| | |
|---|---|
| [  ] Headaches | [  ] Loss of speech |
| [  ] Seizures | [  ] Staring spells |
| [  ] Asthma | [  ] Inflammation of the brain |
| [  ] Difficulty to speak | [  ] Confusion |
| [  ] Loss of motor skills | [  ] Memory loss |
| [  ] Fever | [  ] Paralysis of a part of the body |
| [  ] Gain weight | [  ] Itchiness |

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**Handout #7.3.1 ANSWER KEY**

**Instructions**: Watch the first segment of the episode about Sadie and put a check mark next to all the symptoms mentioned.

[   ] Headaches                        [   ] Loss of speech
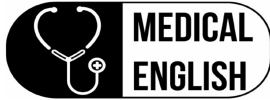
[   ] Seizures                            [   ] Staring spells

[   ] Asthma                             [   ] Inflammation of the brain

[   ] Difficulty to speak            [   ] Confusion

[   ] Loss of motor skills           [   ] Memory loss

[   ] Fever                                [   ] Paralysis of a part of the body

[   ] Gain weight                      [   ] Itchiness

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# Handout #7.3.2

**Instructions**: Watch the last segment of the episode about Sadie and put a check mark next to the things you predict will happen to her.

[   ] Sadie has Rasmussen's encephalitis.
[   ] Sadie has Lyme disease.
[   ] Sadie has a different disease that wasn't mentioned in the video.
[   ] Sadie doesn't get a clear diagnosis.
[   ] Sadie's parents decide to do the hemispherectomy.
[   ] Sadie's parents decide to get her an antibiotics treatment.
[   ] Sadie's parents decide to get her a Neuropace device.
[   ] Sadie's parents decide to do nothing about their daughter's situation.
[   ] Sadie's symptoms get worse.
[   ] Sadie's symptoms decrease a little bit.
[   ] Sadie gets completely cured.
[   ] Other:

_____

_____

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## Handout #7.3.2 ANSWER KEY

[   ] Sadie has Rasmussen's encephalitis.

[   ] Sadie has Lyme disease.

[   ] Sadie has a different disease that wasn't mentioned in the video.

[   ] Sadie doesn't get a clear diagnosis.

[   ] Sadie's parents decide to do the hemispherectomy.

[   ] Sadie's parents decide to get her an antibiotics treatment.

[   ] Sadie's parents decide to get her a Neuropace device.

[   ] Sadie's parents decide to do nothing about their daughter's situation.

[   ] Sadie's symptoms get worse.

[   ] Sadie's symptoms decrease a little bit.

[   ] Sadie gets completely cured.

[   ] Other: _____

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**Handout #7.4.1**

**Instructions**: Look at the prompts and complete them with your own ideas. Follow the second conditional structure and example.

> Condition clause **+** Result clause
> If I were a neurologist, I would work in Sadie's case.
> [If + past tense sentence] **+** [sentence with "would"]

**Example**: *If Sadie were my patient, I would ask for more blood tests.*

1. If Sadie were my patient, _____.
2. If I were the surgeon implanting the pacemaker,

   _____.
3. If I were Sadie's mother/father,

   _____.
4. If I had a patient like that in Costa Rica,

   _____.
5. If I didn't know what the diagnosis of one of my patients was,

   _____.
6. If I met Sadie's doctors, _____.
7. If I had to perform a hemispherectomy,

   _____.
**8.** If I gave a treatment to a patient and it didn't work,

   _____.

**Instructions**: Look at the prompts and complete them with your own ideas. Follow the second conditional structure and example.

> Condition clause **+** Result clause
> If I were a neurologist, I would work in Sadie's case.
> [If + past tense sentence] **+** [sentence with "would"]

**Example**: *If Sadie were my patient, I would ask for more blood tests.*

1. If Sadie were my patient, _____.
2. If I were the surgeon implanting the pacemaker,

   _____.
3. If I were Sadie's mother/father,

   _____.
4. If I had a patient like that in Costa Rica,

   _____.
5. If I didn't know what the diagnosis of one of my patients was,

   _____.
6. If I met Sadie's doctors, _____.
7. If I had to perform a hemispherectomy,

   _____.
8. If I gave a treatment to a patient and it didn't work,

   _____.

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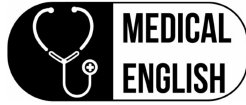
MEDICAL
ENGLISH

Barahona, Lewis & Quesada

Date: October 7, 2019
Lesson Plan #8
Student Teacher: Edwin Quesada
Assistants: Simone Lewis and Isela Barahona
Unit #2
Title of unit: "Put on your stethoscope: Listening in Medical English"

**Unit Goal**: By the end of this unit, students will be able to successfully demonstrate comprehension of key medical vocabulary from an academic medical video by outlining the videos and/or reporting the information in them to their classmates.

**General Objective:** By the end of the lesson, students will be able to successfully demonstrate comprehension of relevant and specific information from videos by recognizing specific language to complete sentences and answer questions.

**Specific Objectives**: The students will be able to:
1. Use prior knowledge to provide answers to questions about diseases and medical procedures and body parts.
2. Recognize new vocabulary by saying the correct words when acted out by their classmates in a charade.
3. Show understanding of the pronunciation of -ed ending words by completing a chart, filling in the blanks and reading verbs past tense aloud.
4. Determine the context in which specific language is used by completing sentences using the vocabulary provided.
5. Recall information by coming up with appropriate words to fit a category in a game.
6. Show understanding of relevant and specific information from three video clips by selecting the best idea to complete a list of sentences, filling in the blanks to complete an outline, and writing the answer to a list of questions.

Abbreviations used:  T = teacher   A = assistant   Ss = students   UL= useful language      L = listening        S = speaking        R = reading        W = writing

| Objectives | Procedures | Macro Skills | Language (Vocabulary, expressions, useful language, grammatical or phonetic features) | Strategies | Time |
|---|---|---|---|---|---|
| 1 | **Warm-up:**<br>1. Ss work in pairs or groups of three to comment on the following questions, which will be projected for the class in the form of a *Google* | R<br>W<br>S | **Vocabulary**:<br>**RL**: medication, surgery, painkillers, removal, tumor, heart failure. | Activating schema | 10 minutes<br><br>5:00- |

| | | | | |
|---|---|---|---|---|
| | *Slides* presentation:<br><br>What would you do if a patient is diagnosed with…<br>    a.  heart failure?<br>    b.  cervical cancer?<br>    c.  a brain tumor?<br><br>**Materials**:<br>Projector<br>*Google Slides* presentation | | **UL**:<br>  - I would prescribe him/her with medication (what type?)<br>  - He/she would have to undergo surgery... | | 5:10pm |
| 2 | **Pre-task 1:**<br>1. Using Handout #8.1.1 (Pre-task Matching), Ss will match the illustrations shown by the T in a *Google Slides* presentation to the corresponding descriptions in their handout.<br><br>2. When they are done, they will randomly be asked by the T to report their answers. If a S gives a wrong answer, the rest of the Ss will be asked to give the right answer.<br><br>3. The T will use the slide show again to present the vocabulary and give feedback to Ss about the pronunciation, meaning, and use of the words.<br><br>4. Ss are split into two teams and given instructions to play a game of *Charades*. In this game, they will have to act out words (the same words as in Handout #8.1.1) without making any sounds, for their other team members to guess. The team will have a maximum of 30 seconds to guess the meaning of the word or they will lose their chance to get a point. Strips of paper with | L<br>S<br>R | **Vocabulary**:<br>**RL**:<br>Pump (n. v.)<br>Blood vessel<br>A buildup of blood<br>Spread<br>Stitches<br>Upper part of the vagina<br>Lower end of the uterus<br>Beam<br>Tap, tapping<br>Wave<br>Stare<br>Freeze up, froze up<br>In the blink of an eye, to able to pinpoint something, Shake all over<br><br>**UL**:<br>  - I think that's…<br>  - Is it…? | Inferring meaning<br><br>Detecting signposts | 30 minutes<br><br>5:10-5:40pm |

| | | | | | |
|---|---|---|---|---|---|
| | the words for the Ss to act out (Handout #8.1.2) will be given randomly right before the Ss have to act them out. If a team guesses the word, they will get a point. Ss are not allowed to look at their handouts.<br><br>**Materials:**<br>Handout #8.1.1 (Pre-task Matching)<br>Handout #8.1.2 (Words on strips of paper) | | | | |
| 3 | **Pre-task 2:**<br>1. Using Handout #8.2.1, the T will go over a diagram to help Ss understand how the pronunciation of -ed endings works in a simple way, illustrating it with examples from a slide show.<br><br>2. Then, using the same Handout #8.2.1, Ss will determine the pronunciation of the -ed ending in a list of words given.<br><br>3. The T will then check the exercise with the Ss by randomly selecting them to pronounce each word.<br><br>4. Afterwards, the T will play an extract from a video for the Ss to complete with the missing words they hear. All words contain -ed endings.<br><br>5. After that, Ss will arrange a sequence of events in chronological order and get the teacher's feedback on it.<br><br>6. Finally, the Ss will take turns reading the sentences out loud in the right order, but | L<br>S<br>R | **Vocabulary**:<br>**RL**:<br>Filling vs feeling, Worse vs worst, Grow vs. growth, Show up vs. showed up<br><br>Thickened<br>Looked him over<br>Enlarged<br>We discussed it<br>We ended up going to<br>Inflicted<br>Checked him in<br>Weakened<br><br>**UL**:<br>  - How do you pronounce this <u>word</u>?<br>  - I think it's pronounced /?/<br>  - What do you think occurred../What happened... <u>first, second, third</u>?<br>  - After that, and then? | Listening for details<br><br>Detecting signposts | 30 minutes<br><br>5:40-6:10pm |

| | | | | | |
|---|---|---|---|---|---|
| | changing the verbs in present tense to the simple past.<br><br>**Materials:**<br>Handout #8.2.1<br>*Google Slides* presentation | | | | |
| 4 | **Pre task 3:**<br>1. Using Handout #8.3.1, Ss will get into pairs to complete a list of sentences using the vocabulary and definitions provided.<br><br>2. Ss check their solutions as the T provides them with the answers.<br><br><br>**Materials**:<br>Handout #8.3.1 | R<br>W<br>S<br>L | **Vocabulary**:<br>**RL**:<br>Candidate, freeze, pumping, (be) fed up, deliver, out of nowhere, make up for, quit, lightly, up-front, spells, pattern, hand out<br><br>**UL**:<br>- I think this word (e.g. quit) goes in sentence number... | Detecting signposts<br><br>Inferring meaning | 15 minutes<br><br>6:10-6:25pm |
| 5 | **Pre task 4:**<br>1. Using Handout #8.4.1, Ss complete a chart divided into categories using the words provided. The students will do this as the T presents that vocabulary using a *Google Slides* presentation.<br><br>2. Then, Ss will play a game called *Last Man Standing*. In this game, they will make a circle and throw the ball to each another, saying the terms learned during the previous pre-tasks corresponding to the following categories: compound adjective, medical procedure, and health condition. If the S who gets the ball fails to provide a word in the given category, he/she will have to get out of the circle and the game will continue. | | **Vocabulary**:<br>**RL**:<br>Out of breath, left-sided, right-sided, breakthrough seizures, brachytherapy, cone-shaped, approach, trachelectomy, oxygen-rich blood, hysterectomy, white matter, exenteration, cortical dysplasia, follow up, stiff, staring spells<br><br>**UL:** Not necessary for this pre-task. | Classifying words | 20 minutes<br><br>6:25-6:45pm |

| | Materials:<br>Handout #8.4.1<br>*Google Slides* presentation | | | | |
|---|---|---|---|---|---|
| 6 | **Main task:**<br>**Listening examination**<br>1. Ss will take the quiz for this unit. It contains three parts based on three different videos. In the first part, Ss will solve a multiple-choice set of items. In the second part, they have to complete sentences with the words they hear. Finally, in the third part, Ss will answer questions based on the corresponding video.<br>Each video will be played three times.<br><br>**Materials:**<br>Handout #8.5.1 (Unit 2 Quiz) | L<br>R<br>W | **Vocabulary**:<br>**RL**:<br>All of the vocabulary used during the previous tasks. | Listening for details<br><br>Listening for the gist | 45 minutes<br><br>6:45-7:30pm |
| | **Post-task:**<br>There won't be any post task due the fact that the main task is an assessment. | | | | |

**Homework**: None.

**MEDICAL ENGLISH**

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**Handout #8.1.1**

**A. Instructions:** When the teacher shows the pictures, write the corresponding numbers next to the words that are illustrated.

_____ Pump (n. v.)                      _____ Tap, tapping
_____ Blood vessel                      _____ Wave
_____ A buildup of blood                _____ Stare
_____ Spread                            _____ Freeze up, froze up
_____ Stitches                          _____ In the blink of an eye
_____ Upper part of the vagina          _____ To able to pinpoint something
_____ Lower end of the uterus           _____ Shake all over
_____ Beam

**MEDICAL ENGLISH**

Lewis, Barahona, & Quesada

**Handout #8.1.1 (ANSWERS)**

**A. Instructions:** When the teacher shows the pictures, write the corresponding numbers next to the words that are illustrated.

\_\_\_\_1\_\_\_ Pump (n. v.)
\_\_\_\_10\_\_\_ Blood vessel
\_\_\_\_8\_\_\_ A buildup of blood
\_\_\_\_5\_\_\_ Spread
\_\_\_\_12\_\_\_ Stitches
\_\_\_\_4\_\_\_ Upper part of the vagina
\_\_\_\_6\_\_\_ Lower end of the uterus
\_\_\_\_2\_\_\_ Beam
\_\_\_11\_\_\_\_ Tap, tapping
\_\_\_\_9\_\_\_ Wave
\_\_\_\_7\_\_\_ Stare
\_\_\_14\_\_\_\_ Freeze up, froze up
\_\_\_13\_\_\_\_ In the blink of an eye
\_\_\_15\_\_\_\_ To able to pinpoint something
\_\_\_\_3\_\_\_ Shake all over
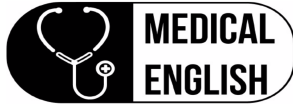
MEDICAL ENGLISH
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**Handout #8.1.2**

PRE-TASK 1

| Pump (n. v.) | Tap, tapping |
|---|---|
| Blood vessel | Wave |
| A buildup of blood | Stare |
| Spread | Freeze up, froze up |
| Stitches | In the blink of an eye |
| Upper part of the vagina | To able to pinpoint something |
| Lower end of the uterus | Shake all over |
| Beam | |

**MEDICAL ENGLISH**
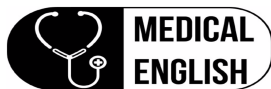
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**Handout #8.2.1**

**Focus on Pronunciation**

Sometimes, it is easy to confuse certain words with each other.
For example: filling vs feeling, worse vs worst, grow vs. growth, show up vs. showed up

**A. Instructions**: Practice the following rules for the pronunciation of -ed endings. Then, categorize the pronunciation of the -ed endings of the words in the table. You will hear these words throughout the main task.

# If word ends in

*Weak (voiceless) sounds (throat is relaxed)*

**p k f θ s ∫ ʧ**        **-ed =**   **t**

*Strong (voiced) sounds (throat is tense)*

**b g v ð z ʒ ʤ m n ŋ l r**
**OR vowel**        **-ed =**   **d**

**t d**        **-ed =**   **ɪd**

|  | t | d | ɪd |
|---|---|---|---|
| Thickened |  |  |  |
| Looked him over |  |  |  |
| Enlarged |  |  |  |
| We discussed it |  |  |  |
| We ended up going to |  |  |  |
| Inflicted |  |  |  |
| Checked him in |  |  |  |
| Weakened |  |  |  |

**B. Instructions**: Listen to an extract from the video that you will watch as part of the main task. Fill in the blanks with the words that you hear in the video.

*Indian accent*

"They _____ to come to a place which had a tremendous amount of experience so that not only the tumor could be _____ and the seizures _____ but the amount of secondary damage _____ on the child's brain could be _____."

"You know once the neurologist tells them that the patient has a seizure disorder, their eyes turn to us…"

**C. Instructions**: The following is a sequence of events from one of the videos you will watch during the main task. With a classmate, discuss the order you think is correct and number the sentences from 1 (first) to 11 (last).

_____ Parents <u>want</u> a second opinion
_____ The child <u>responds</u> to medication and seizures occur less frequently
_____ Seizures <u>occur</u> more frequently again
_____ The first doctors <u>prescribe</u> medication to the child instead
_____ The first doctors <u>diagnose</u> the child with a tumor
_____ The doctors at the second hospital <u>operate</u> the child
_____ The doctors at the second hospital <u>consider</u> the child a candidate for surgery
_____ Child <u>experiences</u> his first seizure
_____ The first doctors <u>test</u> the child
_____ The first doctors <u>believe</u> the tumor can't be operated
_____ The child <u>recovers</u> from the operation

**D. Instructions**: Take turns reading the sentences in the right order with your partner. Then, change the underlined verbs to the simple past tense with the -ed ending, and practice the sentences again.

**MEDICAL ENGLISH**
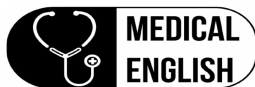
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## Handout #8.2.1 (ANSWER KEY)

|  | t | d | ɪd |
|---|---|---|---|
| Thickened |  | x |  |
| Looked him over | x |  |  |
| Enlarged |  | x |  |
| We discussed it | x |  |  |
| We ended up going to |  |  | x |
| Inflicted |  |  | x |
| Checked him in | x |  |  |
| Weakened |  | x |  |

*Indian accent*

"They <u>wanted</u> to come to a place which had a tremendous amount of experience so that not only the tumor could be <u>removed</u> and the seizures <u>controlled</u> but the amount of secondary damage <u>inflicted</u> on the child's brain could be <u>minimized.</u>"

| 8 | Parents <u>want</u> a second opinion. |
|---|---|
| 6 | The child <u>responds</u> to medication and seizures occur less frequently. |
| 7 | Seizures <u>occur</u> more frequently again. |
| 5 | The first doctors <u>prescribe</u> medication to the child instead. |
| 3 | The first doctors <u>diagnose</u> the child with a tumor. |
| 10 | The doctors at the second hospital <u>operate</u> the child. |
| 9 | The doctors at the second hospital <u>consider</u> the child a candidate for surgery. |
| 1 | Child <u>experiences</u> his first seizure. |
| 2 | The first doctors <u>test</u> the child. |
| 4 | The first doctors <u>believe</u> the tumor can't be operated. |
| 11 | The child <u>recovers</u> from the operation. |

1. Child experiences his first seizure.
2. The first doctors test the child.
3. The first doctors diagnose the child with a tumor.
4. The first doctors believe the tumor can't be operated.
5. The first doctors prescribe medication to the child instead.
6. The child responds to medication and seizures occur less frequently.
7. Seizures occur more frequently again.
8. Parents want a second opinion.
9. The doctors at the second hospital consider the child a candidate for surgery.
10. The doctors at the second hospital operate the child.

11. The child recovers from the operation.

MEDICAL ENGLISH
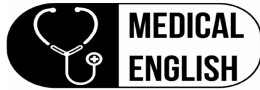
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**Handout #8.3.1**

**Instructions:** Use the following **bolded** words to complete the sentences below.

**candidate**: a prospect
**freeze**: not move
**pumping**: able to push liquid or air
**(be) fed up**: having received too much of something
**deliver**: to give
**out of nowhere**: unexpectedly

**make up for**: compensate
**quit**: stop doing something
**lightly**: not seriously
**upfront**: honest, franc
**spells**: short periods of time
**pattern**: a particular shape or way
**hand out**: to delegate, to give (something) to someone else

1. The _____ sections of the heart, called ventricles, may be weak or damaged.

2. The left ventricle does not _____ oxygen-rich blood to your body.

3. To _____ this your nervous system releases substances called stress hormones.

4. "He was playing with a ball, just kind of like tapping it on the floor, just sitting there, and he just _____…"

5. It was just shocking to me that they took that so _____ because as a parent I was terrified of what.

6. It is devastating to get that information _____.

7. There were staring _____ (short periods) he would just be playing and then all of a sudden he would just _____.

8. I was just _____.

9. Mathew's seizure _____ was very atypical.

10. The team reviewed everything and felt that Mathew was a _____ for surgery.

11. It's really easy for me to _____ my child.

12. It's important for doctors to be _____ with the family, so that they know that the decision they are making is the right thing to do.

**MEDICAL ENGLISH**
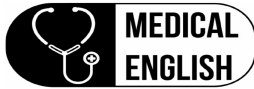
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**Handout #8.3.1 (ANSWER KEY)**

**Instructions:** Use the following **bolded** words to complete the sentences below.

**candidate**: a prospect
**freeze**: not move
**pumping**: able to push liquid or air
(be) **fed up**: having received too much of something
**deliver**: to give
**out of nowhere**: unexpectedly

**make up for**: compensate
**quit**: stop doing something
**lightly**: not seriously
**upfront**: honest, franc
**spells**: short periods of time
**pattern**: a particular shape or way
**hand out**: to delegate, to give (something) to someone else

1. The pumping sections of the heart, called ventricles, may be weak or damaged.

2. The left ventricle does not deliver oxygen-rich blood to your body.

3. To make up for this your nervous system releases substances called stress hormones.

4. "He was playing with a ball, just kind of like tapping it on the floor, just sitting there, and he just quit…"

5. It was just shocking to me that they took that so lightly because as a parent I was terrified of what.

6. It is devastating to get that information out of nowhere.

7. There were staring spells (short periods) he would just be playing and then all of a sudden he would just freeze.

8. I was just fed up.

9. Mathew's seizure pattern was very atypical.

10. The team reviewed everything and felt that Mathew was a candidate for surgery.

11. It's really easy for me to hand out my child.

12. It's important for doctors to be upfront with the family, so that they know that the decision they are making is the right thing to do.

**MEDICAL ENGLISH**
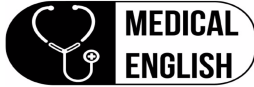
Lewis, Barahona, & Quesada

**Handout #8.4.1**

**Instructions**: Copy the following words into the corresponding cells of the table below based on the teacher's presentation. Then, follow your teacher's instructions to play *Last Man Standing*.

Out of breath
Left-sided
Right-sided
Breakthrough seizures
Brachytherapy
Cone-shaped
Approach
Trachelectomy

Oxygen-rich blood
Hysterectomy
White matter
Exenteration
Cortical dysplasia
Follow up
Stiff
Staring spells

| Compound adjectives | Medical procedures | Health conditions |
|---|---|---|
|  |  |  |

**MEDICAL ENGLISH**

Lewis, Barahona, & Quesada

**Handout #8.4.1 (ANSWER KEY)**

**Instructions**: Copy the following words into the corresponding cells of the table below based on the teacher's presentation. Then, follow your teacher's instructions to play *Last Man Standing*.

Out of breath
Left-sided
Right-sided
Breakthrough seizures
Brachytherapy
Cone-shaped
Approach
Trachelectomy

Oxygen-rich blood
Hysterectomy
White matter
Exenteration
Cortical displasia
Follow up
Stiff
Staring spells

| (Compound) adjectives | Medical procedures | Health conditions |
|---|---|---|
| Left-sided | Trachelectomy | Breakthrough seizures |
| Right-sided | Hysterectomy | Out of breath |
| Oxygen-rich blood | Exenteration | Stiff |
| Cone-shaped | Brachytherapy | White matter |
| | Follow up | Staring spells |
| | Approach | Cortical dysplasia |

**Handout #8.5.1**

Universidad de Costa Rica
Master's Program in TEFL

**Unit 2 Quiz**
Time allotted: 45 minutes
Total points: 44 points
Points obtained: _____
Grade: _____
Name: _____
Date: _____

MEDICAL ENGLISH

English for Medical Students
Isela Barahona, Simone Lewis, Edwin Quesada

**Part 1**.
**Instructions**: Watch and listen to the video *Understanding Heart Failure*. Circle the letter of the option that completes the sentences correctly. You will watch the video three times. (7 points total; 1 point per question)

1. When a patient suffers from heart failure
      a. the heartbeat is not fast enough
      b. the blood is not rich in oxygen
      c. the heart cannot pump enough blood

2. Stiff and thickened ventricles
      a. pump little blood
      b. pump much more blood
      c. prevent heart failure

3. Left-sided heart failure
      a. delivers oxygen-rich blood
      b. makes the patient feel tired
      c. causes bad breath

4. High blood pressure near your lungs
      a. affects the left ventricle
      b. forces fluid out of your lungs
      c. causes breathing problems

5. Right-sided heart failure causes
      a. too much blood to the lungs
      b. a buildup of blood in your body tissues
      c. edema

6. Stress hormones
   a. make the heart beat faster
   b. strengthen your ventricles
   c. reduce heart failure


7. A secondary cause of heart failure is
   a. coronary artery disease
   b. heart valve problems
   c. artifacts

**Part 2**.
**Instructions**: Watch and listen to the video *Treatments for Cervical Cancer*. Complete the outline of the video with the missing information you hear. You will watch the video three times (11 points total; 1 point per blank)

<table>
<tr><td colspan="4" align="center"><b>Treatment options for cancer (</b>Surgery, Radiation therapy, Chemotherapy)</td></tr>
<tr><td colspan="4">Type of treatment depends on…<br>• Size of tumor<br>• Whether it is <b>A.</b>_____<br>• Whether there are plans to have children</td></tr>
<tr><td colspan="4" align="center"><b>Surgical options</b></td></tr>
<tr><td>Early stage 1A</td><td><i>1. Conization</i><br>to remove<br><b>B.</b>_____ piece of cervix<br>LEEP→ uses wire to remove tissue</td><td><i>3. Total</i><br><b>E.</b>_____ →<br>removing uterus and cervix</td><td rowspan="3">May remove<br><b>F.</b>_____,<br>ovaries or lymph nodes</td></tr>
<tr><td>Later stage 1A</td><td rowspan="2"><i>2. Radical</i><br><b>C.</b>_____ → to preserve uterus<br>Removes cervix and upper part of vagina + places<br><b>D.</b>_____ lower end of uterus ← artificial internal opening of cervix</td><td rowspan="2"><i>4. Radical hysterectomy</i> (removes cervix, tissue around cervix, uterus and part of the vagina)</td></tr>
<tr><td>Stage 1B</td></tr>
<tr><td>If cancer recurs</td><td colspan="3">Pelvic <b>G.</b>_____ + removing pelvic lymph nodes, bladder, vagina, rectum, and colon</td></tr>
<tr><td></td><td colspan="3" align="center"><b>Radiation therapy</b> (Uses high energy rays to kill cancer cells in the treated area only)</td></tr>
<tr><td></td><td colspan="2">External <b>H.</b>_____ radiation therapy → is directed from a machine outside your body</td><td><b>I.</b>_____ → internal radiation therapy from a device placed inside the body</td></tr>
<tr><td></td><td colspan="3"><b>Chemotherapy</b> (Uses drugs to stop the <b>J.</b>_____ of the cancer cells)</td></tr>
<tr><td></td><td colspan="2">By killing them</td><td>By <b>K.</b>_____ cell division</td></tr>
</table>

**Part 3**.
**Instructions**: Watch and listen to the video *Pediatric Brain Surgery - Matthew's Epilepsy Success Story* and answer the following questions about it. **You can answer in English or in Spanish**. You will watch the video three times. (26 points total)

1. What was Mathew doing when his father first saw him having a seizure? (2 points)

2. What was Mathew's mother doing during Mathew's first seizure? (2 points)

3. Who seemed more affected by Mathew's health problem, his father or mother? How can you tell? (2 points)

4. What's the medical term (phrase) for Mathew's health problem? (2 points)

5. How would the seizures affect Mathew in the future, according to his dad? Illustrate with one example, at least. (2 points)

6. Did Mathew respond to his medication? (1 point)

7. Did the doctors know what his problem was when they were administering medication? (1 point)

8. What hospital did Mathew's parents go to in order to get a second opinion? Why were they so satisfied with their service? (2 points)

9. What's the approach doctors follow at the hospital regarding epilepsy? What two actions do they take? (2 points)

10. What's the most salient/apparent characteristic of Mathew's seizures? / Describe Mathew's seizures. / In what way were Mathew's seizures atypical?  (2 points)

11. What did the doctors team inform Mathew's parents after all the testing was done and all results were reviewed?  (2 points)

12. Why is important for the surgeons to be upfront with the family? (2 points)

13. How did Mathew respond to the surgery?  (1 point)

14. What was Mathew's health condition after one year follow up? (1 point)

15. What medical process was done after the second year follow up? What was the result? (2 points)

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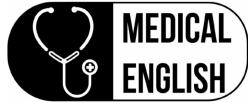


Barahona, Lewis & Quesada

Date: October 14, 2019
Lesson Plan #9
Student Teacher: Simone Lewis
Assistant: Edwin Quesada
Unit #3
Title of Unit: Patient Talk: "Speaking in Medical English"

**Unit Goal**: By the end of this unit, students will be able to effectively communicate orally with a patient about his/her medical record, diagnosis, medication, and/or discharge summary by identifying correct vocabulary, grammatical structures, and bedside manners used in videos or scripts and reproducing them during role-plays.

**General Objective**: By the end of this lesson, students will be able to correctly use the vocabulary and grammatical structures needed to complete a medical record orally by conducting a role-play between a doctor and a patient.

**Specific Objectives**: The students will be able to:

1. Recall pre-existing knowledge about the information doctors must usually ask patients for during a hospital meeting by brainstorming general information about it.
2. Demonstrate comprehension of previously unknown words by sharing them with classmates and listening to them in order to complete a handout with all of the vocabulary words, their definitions, and their translations.
3. Demonstrate comprehension of the usage of modals to form polite questions by creating polite doctor-to-patient questions and sharing them with their classmates.
4. Reproduce the vocabulary and grammatical structures studied throughout the class by creating a role-play between a doctor and patient in which the doctor asks the patient questions in order to fill out his/her medical record.
5. Analyze their classmates' use of the vocabulary and grammatical structures studied throughout the class by completing and discussing peer evaluation forms with their classmates.

Abbreviations used:  T = teacher   A = assistant   Ss = students  UL= useful language     L = listening      S = speaking      R = reading      W = writing

| Objectives | Procedures | Macro-skills | Language (vocabulary, useful language, grammatical or phonetic features) | Strategies | Time |
|---|---|---|---|---|---|
| 1 | **Warm-up:**<br>1. T asks the Ss if they have already had to do rounds at a hospital. For those that say yes, the T asks if they have encountered any patients that couldn't speak Spanish and what happened in those situations.T also asks what Ss think they may need to say to a patient who doesn't speak Spanish and what kind of vocabulary they may need.<br><br>2. Ss discuss their answers with 1 or 2 of their classmates, then the T asks for their answers as a class.<br><br>**Materials**:<br>PowerPoint slide (for questions and UL) | L<br>S | **Vocabulary**:<br>**RL**: (may vary) rounds, medical record, allergies, symptoms, medical history, medications, personal information<br><br>**UL**:<br>- How do you say _____ in English? | Activating schema<br><br>Brainstorming | 10 minutes<br><br>5:00-5:10pm |
| 2 | **Pre-task 1 (Vocabulary)**:<br>1. T goes over the pronunciation of all the words using PowerPoint slides and repetition.<br><br>2. T gives each student a card with a word, picture, translation, definition, and example sentence (Handout #9.1.1). Some Ss will have more than one card, depending on the number of Ss | L<br>S | **Vocabulary**:<br>**RL**: high blood pressure, heart disease, pregnant, suffer from, fainting, prolonged bleeding, aspirin, penicillin, medical treatment, currently, AIDS, immunological disorders, abnormal reaction, kidney disease, nosebleed, sore throat | Getting the meaning of words<br><br>Exchanging information | 40 minutes<br><br>5:10-5:50pm |

| | | | | |
|---|---|---|---|---|
| | present in class.<br><br>3. T assigns each student a group by counting students off (1,2,3,1,2,3,..). The Ss get into their groups (first, all the 1's will be in one group, all the 2's, etc.) and have 1-2 minutes to plan how they will teach their word to their group, then they teach their group members using their cards. As their group members teach them, they will record the new words on Handout #9.1.2. Once all of the groups have finished their words, they will make new groups so that, now, each group has a 1, a 2, and a 3.<br><br>4. Each S teaches his/her word, then once all groups have accomplished this again, they create their final groups by meeting with the Ss that they have not spoken to yet.<br><br>5. T checks that the Ss have all the correct answers by asking them to read their notes.<br><br>**Materials**:<br>Handout #9.1.1<br>Handout #9.1.2<br>Powerpoint slides (for words, instructions, and UL) | | **UL**:<br>- Can you repeat that?<br>- Can I see the picture for that word?<br>- What does "consistently" mean? | | |

| 3 | **Pre-task 2 (Can/Could/Would you tell me why you came to the hospital today?)**: <br> 1. T hands out Handout #9.2.1 and tells a student to read the instructions. Then, the T tells Ss to look through the handout so that they know which words to listen for. <br><br> 2. T plays the video twice, and then Ss check their answers with a partner. <br> 3. T asks comprehension questions (What is "I'd" short for?) (Why did the woman go to the hospital?) <br><br> 4. T has volunteers or teacher-selected Ss read the example sentences and the instructions. Then, students work in pairs with someone who is not sitting next to them. <br><br> 5. T has Ss read their questions to another set of partners. Then, each pair chooses two of their best questions and presents them to the class. T makes corrections if necessary. <br><br> 6. T selects a S to read the instructions for Handout #9.2.2, then explains that only one student of the pair will get the handout. Then, T asks if Ss | S <br> L | **Vocabulary**: <br> **RL**: <br> - Can you tell me how you hurt your back? <br> - Could you tell me where the pain is? <br> - Would you like to tell me why you came to the hospital today? <br><br> **UL**: <br> - What could we ask our patient? <br> - How could we ask for our patient's symptoms? <br> - Give me an adjective. <br> - Give me a different adjective. <br> - Tell me the name of a body part. <br> - You already said that one. | Listening for details <br><br> Sharing information | 35 minutes <br><br> 5:50-6:25pm |

| | | | | | |
|---|---|---|---|---|---|
| | understand the instructions and has a S explain them back to the T. Ss work in the same pairs as the last step of this pre-task.<br><br>7. The T walks around to listen to and help Ss as they work on the activity.<br><br>8. To connect the activity to the grammar for the Ss, the T asks the Ss to identify the questions in the mad-lib, and then the modals used to form those questions.<br><br>9. Then, each pair presents their mad-lib dialogue from their seats.<br><br>10. T asks if Ss have any questions about using modals to form polite questions.<br><br>**Materials**:<br>Handout #9.2.1<br>Handout #9.2.2<br>PowerPoint slides (for instructions and UL) | | | | |
| 4 | **Main task**:<br>1. T gives Ss Handouts #9.3.2, #9.3.3, and #9.3.4. T has Ss look over the medical record (Handout #9.3.2), then makes sure they know all the necessary terms in English. | L<br>S | **Vocabulary**:<br>**RL**: high blood pressure, heart disease, pregnant, medical record, suffer from, fainting, prolonged bleeding, aspirin, penicillin, medical treatment, currently, AIDS, kidney disease, immunological | Reading out loud<br><br>Reading for clarification<br><br>Role playing | 50 minutes<br><br>6:25-7:15pm |

| | | | |
|---|---|---|---|
| 2. Then, T has two volunteers or selected students read the example role-play on Handout #9.3.3.<br><br>3. T asks for questions about the example.<br><br>4. T gives Ss their role cards (Handout #9.3.1) and has another S read the instructions on Handout #9.3.4.<br><br>5. T asks a S to repeat the instructions to the class.<br><br>6. T tells Ss to find their pairs based on the role-cards they got and read their roles.<br><br>7. T asks for any questions about the instructions.<br><br>8. Ss create their role-plays and write them on Handout #9.3.4.<br><br>9. When all of the Ss have finished, the T asks if they are ready to present. Before presenting, the T gives Ss Handout #9.3.5 (peer evaluation) and assigns one or two peer evaluators to each S, depending on how many Ss are present that day. T asks a S to read the instructions and criteria. T asks for any questions. | | disorders, nosebleed, sore throat, have you (ever) had…?, can/could/would you…?<br><br>**UL (given on Handout 9.4.3 as an example role-play)**:<br>- Could you tell me why you came to the hospital today?<br>- Can you tell me how you hurt your back?<br>- Do you have any other symptoms?<br>- I need to ask you some questions before I start with any testing. Is that okay?<br>- Are you currently under medical treatment with another doctor?<br>- Are you currently taking any medication?<br>- Have you ever suffered from high blood pressure, diabetes, arthritis, heart disease, kidney disease, or immunological disorders, such as HIV or AIDS?<br>- Have you noticed a change in your general health over the last few months? | Evaluating peers | |

| | | | | | |
|---|---|---|---|---|---|
| | 10. Each pair presents their role-play either from their seats or from desks placed at the front of the classroom in the order of their role-play card numbers.<br><br>**Materials**:<br>Handout #9.3.1<br>Handout #9.3.2<br>Handout #9.3.3<br>Handout #9.3.4<br>Handout #9.3.5<br>PowerPoint slides (for instructions and UL) | | - Do you have any other medical condition that I have not mentioned?<br>- Are you allergic to aspirin, penicillin, anesthesia, or any other medicine?<br>- Are you currently pregnant?<br>- Do you suffer from fainting or prolonged bleeding?<br>- Thank you for giving me that information. I can't be sure what's causing your symptoms without doing some tests first. I would like to do some tests/scans. Then, when I have your results, I'll be back to discuss them. Is there anything else you'd like to ask me before I schedule your scans?<br>- If you think of something later, just ask the nurse to call me. | | |
| 5 | **Post-task:**<br>1. T tells Ss to take their completed | L<br>S | **Vocabulary**:<br>**RL**: high blood pressure, heart | Recalling vocabulary and | 5-10 minutes |

| | peer evaluations (Handout #9.3.5) to the S that they had to observe during the main task. Since both Ss had to observe each other, they will discuss the best parts of each other's role-play performances. Then, they will discuss the parts of the performance that could use improvement. Then, they will give their partner their completed evaluation.<br><br>**Materials**:<br>Handout #9.3.5<br>PowerPoint slide (for instructions and UL) | | disease, pregnant, medical record, suffer from, fainting, prolonged bleeding, aspirin, penicillin, medical treatment, currently, AIDS, kidney disease, immunological disorders, nosebleed, sore throat, can/could/would you…?<br><br>**UL**:<br>- I think your role-play was good, but I wrote some words that you could practice more.<br>- I like that you sounded very confident, but I think you could improve your grammar. I noticed these mistakes: _____. | grammatical structures<br><br>Giving feedback<br><br>Exchanging information | 7:15-7:25pm |

**Homework**: None. (We will try to have enough time to administer a research instrument after the post-task, but if we don't have time, we will give it to the students as homework.)

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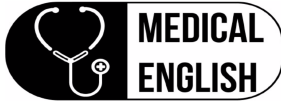
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# Handout #9.1.1

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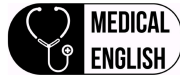
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**Handout #9.1.1**

1. **High blood pressure**
(**Translation**: Presión alta)

**Definition**: A condition in which your blood pressure, the force of your blood pushing against the walls of your blood vessels, is consistently too high.
**Sentence**: I have high blood pressure.



2. **Heart disease** (Also: Cardiovascular disease)
(**Translation**: Enfermedades del corazón)



**Definition**: Any disorder that affects the heart or blood vessels. These disorders can lead to heart attack, chest pain, or stroke.

**Sentence**: I have never had heart disease.

3. **Pregnant** (**Translation**: Embarazada)

**Definition**: Having a baby or babies developing in the uterus.

**Sentence**: I am pregnant.



4. **Suffer from** (**Translation**: Padecer de)

**Definition**: To experience something that is painful.

**Sentence**: (1) I suffer from arthritis. (2) The man in the photo suffers from migraines.
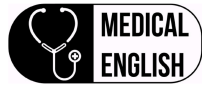
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5. **Faint/Fainting**
(**Translation**: Desmayarse/Desmayos)

**Definition**: To lose consciousness for a short time because not enough oxygen gets to the brain.
**Sentence**: I have <u>fainted</u> twice in the last week.



6. **Prolonged (menstrual) bleeding**
(**Translation**: Sangrados prolongados)

**Definition**: Bleeding, or menstrual bleeding, that continues for a long time, or for a longer time than usual.

**Sentence**: I have had <u>prolonged bleeding</u> for the last month.



7. **Aspirin** (**Translation**: Aspirina)

**Definition**: A medicine used to help reduce pain, fever, and inflammation.

**Sentence**: I am allergic to <u>aspirin</u>.



8. **Penicillin** (**Translation**: Penicilina)



**Definition**: A drug that kills bacteria and is used to treat infections.

**Sentence**: I am allergic to <u>penicillin</u>.
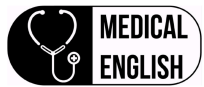
MEDICAL ENGLISH
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9. **Medical record** (**Translation**: Historia Clínica)

**Definition**: A written document that contains a patient's medical information (including their medical history, any medical treatments they have received, test results, diagnoses, medications that they have taken, and personal information).

**Sentence**: I would like to ask you some questions to complete your medical record.



10. **Kidney disease** (**Translation**: Trastornos renales)

**Definition**: A condition in which they kidneys are damaged and cannot function the way they should.

**Sentence**: I have chronic kidney disease.



11. **Medical treatment**
(Translation: tratamiento médico)

**Definition**: The care of a patient by a medical doctor to combat diseases and/or disorders.

**Sentence**: Right now, I am under medical treatment for a urinary tract infection.

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12. **Currently** (**Translation**: Actualmente)

**Definition**: At the present time; now.

**Sentence**: I <u>currently</u> take high blood pressure medication.



13. **Immunological disorders (HIV/AIDS)** [**Translation**: Enfermedades inmunológicas (VIH/SIDA)]

**Definition**: Diseases or conditions caused by a dysfunction of the immune system. They include allergy, asthma, autoimmune diseases, inflammatory syndromes, and immunological deficiency syndromes.

**Sentence**:  Yes, I do have an <u>immunological disorder</u>. I have <u>HIV</u>.



14. **Nosebleed** (**Translation**: Sangrado de nariz)

**Definition**: An attack of bleeding from the nose.

**Sentence**: I have had a <u>nosebleed</u> every day for the last four days.
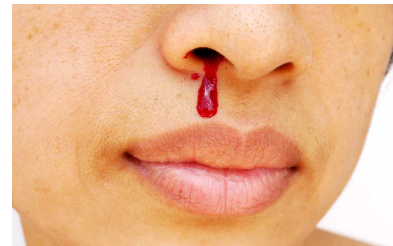


15. **Sore throat** (**Translation**: Dolor de garganta)

**Definition**: A condition marked by pain in the throat, usually caused by inflammation because of a cold or virus.

**Sentence**: I have a <u>sore throat</u>.

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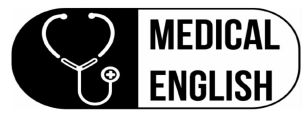
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**Handout #9.1.2**

**Instructions**: As you listen to your classmates, use the space below to write the words, definitions, translations, and/or examples of the other vocabulary words.

1. Word: _____  Translation: _____
_____
_____

2. Word: _____  Translation: _____
_____
_____

3. Word: _____  Translation: _____
_____
_____

4. Word: _____  Translation: _____
_____
_____

5. Word: _____  Translation: _____
_____
_____

6. Word: _____  Translation: _____
_____
_____

7. Word: _____  Translation: _____
_____
_____

8. Word: _____  Translation: _____
_____
_____

9. Word: _____  Translation: _____

_____

_____


10. Word: _____Translation: _____

_____

_____


11. Word: _____Translation: _____

_____

_____


12. Word: _____Translation: _____

_____

_____


13. Word: _____Translation: _____

_____

_____


14. Word: _____Translation: _____

_____

_____


15. Word: _____Translation: _____

_____

_____

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**Handout #9.2.1**

**Instructions:** As you listen to the video, write the correct option from the list in the blanks below.

**Doctor**: Hello Mrs. Hartley, my name's Dr. Peterson. I'm one of the doctors on this ward. I wondered if I (1)_____ do your patient interview now.

**Patient**: Um, yeah, sure, I've been waiting a while now for someone to see me.

**Doctor**: So, I'm going to ask you some questions about your recent health. (2)_____ you like to tell me why you came into (the) hospital today? I'll take a few notes while you're talking, if that's okay with you.

| Options: |
| :--- |
| a. I'd |
| b. could |
| c. you'd |
| d. Would |

**Patient**: Oh, yes, that's okay. I don't know what the problem is really. I'm just so tired- like all the time. One of my friends said maybe I'm anemic. I became vegetarian a couple of months ago, and I'm not sure if it's good for me or not. I was going to go to the GP (General Physician) and have a blood test, but then I started feeling awful so I came into (the) hospital. I've lost a bit of weight too. I just don't feel like eating much at all.

**Doctor**: Right. Thanks for giving me that information. I can't be sure what is causing your symptoms without doing some tests first. What (3)_____ **[I would]** like to do is send off a blood sample. When I have your blood test results back, I'll have another chat with you. Is that okay?

**Patient**: I suppose so.

**Doctor**: Is there anything else (4)_____ **[you would]** like to ask me before I take the blood sample?

**Patient**: I don't know.

**Doctor**: That's okay. If you think of something later, just ask the nurse to call me.

**Patient**: Thanks.

## Polite Questions in English

**You can use one of these three modals to ask a polite question in English:**

**1. Can** → <u>Can</u> **you** *tell* me how you hurt your back?

**2. Could** → <u>Could</u> **you** *tell* me where the pain is?

**3. Would** → <u>Would</u> **you** *like to tell* me why you came into the hospital today?

> **Notice!**
>
> **Can** is less formal than **could** and **would**.

**Formula:** <u>Modal</u> + **you** + *tell/like to tell* + me + how/where/why

**Instructions:** You are doctors at a hospital. Your patient has just arrived. With a partner, write three questions that you could ask your patient to determine their reason for going to the hospital, their symptoms, and how their symptoms first started. Write one question for each modal (can, could, would).

1. _____?

2. _____?

3. _____?

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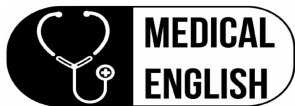
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**Handout #9.2.2**

**Instructions**: Ask your partner to choose a word from each category given in parenthesis. Write the word on the line, and continue asking your partner for words until all the blanks have been filled. Then, read your story with your partner. Choose random words to make the story funny.

For example: (1) My _____ (a body part) hurts. → My <u>butt</u> hurts.

(2) Hello, _____ (a famous person). → Hello, <u>Maikol Yordan</u>.

**Mad-lib**

Doctor: Hello, _____ (a famous person). I'm Dr. _____ (a last name), and I will be your doctor today. _____ (a modal) you tell me why you came to the hospital today?

**Patient**: Well, I came in today because I have felt some pain in my _____ (a body part). _____ (a different modal) you look at it for me?

**Doctor**: I can look at it for you, but first, I will need to get a _____ (a medical tool).

**Patient**: Okay, that sounds _____ (a different adjective). My _____ (a different body part) also hurts… I am _____ (emotion) about it. I don't know what could have caused the pain. My mom said it could be _____ (a condition, disease, or disorder). What do you think?

**Doctor**: I can't be sure what's causing your symptoms without taking a _____ (blood test or CT scan) first. When I have your results, I'll be back to discuss them.

**Patient**: Thanks.

**MEDICAL ENGLISH**
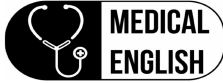
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**Handout #9.3.1**

**Doctor 1**: Your patient's name is Arianna Grand. You must use polite questions (using *Can*, *Could*, or *Would*) to ask her about:
- The reason she has come to the hospital
- Her symptoms
- Any other illnesses, diseases, disorders, or conditions she may have
- Any other questions to fill out her medical record form

You must put **Sí** or **No** for every question on the medical record form.

**Patient 1**: Your name is Arianna Grand. You currently have a lot of pain in your left knee. One week ago, you twisted it and it made a loud pop. You went to the hospital to determine what the problem is.

**Other important information to tell your doctor:**
- You are allergic to penicillin.
- You had surgery on your left knee last year for a knee problem.
- You have high blood pressure.
- You currently take medicine to control your high blood pressure.

**Doctor 2**: Your patient's name is Joe Joenus. You must use polite questions (using *Can*, *Could*, or *Would*) to ask him about:
- The reason he has come to the hospital
- His symptoms
- Any other illnesses, diseases, disorders, or conditions he may have
- Any other questions to fill out his medical record form

You must put **Sí** or **No** for every question on the medical record form.

**Patient 2**: Your name is Joe Joenus. You currently have a painful headache, dizzy spells when you stand up, and a fever of 34° Celsius. You have fainted twice in the last week. You went to the hospital to determine what the problem is.

**Other important information to tell your doctor:**
- You have had allergic reactions to anesthesia in the past.
- You have arthritis and chronic kidney disease.
- You have noticed a general decrease in your health over the last few months.

**Doctor 3**: Your patient's name is Kimberly Kardashyin. You must use polite questions (using *Can*, *Could*, or *Would*) to ask her about:
- The reason she has come to the hospital
- Her symptoms
- Any other illnesses, diseases, disorders, or conditions she may have
- Any other questions to fill out her medical record form

You must put **Sí** or **No** for every question on the medical record form.

**Patient 3**: Your name is Kimberly Kardashyin. You currently have a lot of pain in your stomach and you have diarrhea every day. You went camping in Mexico last week and drank water from a lake. Over the last week, you have noticed a decline in your general health. You went to the hospital to determine what the problem is.

**Other important information to tell your doctor:**
- You are currently pregnant.
- You have diabetes.
- You are allergic to aspirin, penicillin, and anesthesia.
- You have had various plastic surgeries in your life.

**Doctor 4**: Your patient's name is Jonathan Dep. You must use polite questions (using *Can*, *Could*, or *Would*) to ask him about:
- The reason he has come to the hospital
- His symptoms
- Any other illnesses, diseases, disorders, or conditions he may have
- Any other questions to fill out his medical record form

You must put **Sí** or **No** for every question on the medical record form.

**Patient 4**: Your name is Jonathan Dep. You currently have a rash all over your body, a fever of 33° Celsius, and a sore throat. You went to the hospital to determine what the problem is.

**Other important information to tell your doctor:**
- You are allergic to peanuts.
- You have arthritis.
- You have HIV, for which you take medication on a daily basis.

**Doctor 5**: Your patient's name is Brittany Speers. You must use polite questions (using *Can*, *Could*, or *Would*) to ask her about:
- The reason she has come to the hospital
- Her symptoms
- Any other illnesses, diseases, disorders, or conditions she may have
- Any other questions to fill out her medical record form

You must put **Sí** or **No** for every question on the medical record form.

**Patient 5**: Your name is Brittany Speers. You currently have pain every time you pee. You think you have a urinary tract infection.

**Other important information to tell your doctor:**
- You are allergic to aspirin.
- You are pregnant.
- You have high blood pressure.
- You currently take high blood pressure medication.

**Doctor 6**: Your patient's name is Leidy Gauga. You must use polite questions (using *Can*, *Could*, or *Would*) to ask her about:
- The reason she has come to the hospital
- Her symptoms
- Any other illnesses, diseases, disorders, or conditions she may have
- Any other questions to fill out her medical record form

You must put **Sí** or **No** for every question on the medical record form.

**Patient 6**: Your name is Leidy Gauga. You have fainted every day for the past four days. You have also had a nosebleed every day for the last four days. You currently have a headache and a stomachache.

**Other important information to tell your doctor:**
- You have diabetes.
- You are receiving medical treatment with your primary doctor for anemia.
- You take allergy medication every day because you are allergic to your cats, but love them too much to give them away.

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**Handout #9.3.2**

## HISTORIA CLÍNICA

**NOMBRE:** ........................................................................................................................

Conteste las siguientes preguntas con un SÍ o No, sin dejar en blanco ninguno de los espacios correspondientes. Este cuestionario es hecho con el fin de su protección y la información suministrada en él será utilizada con carácter confidencial, para fines clínicas.

1. Razón por la visita y síntomas:

_____

_____

2. Esta bajo tratamiento médico    SÍ    NO    Cual? _____

3. Esta tomando algún medicamento SI    NO    Cual? _____

4. Ha padecido usted de:

| | | | | | |
|---|---|---|---|---|---|
| Diabetes | SÍ | NO | Artritis | SÍ | NO |
| Presión Alta | SÍ | NO | Enfermedades del Corazón | SÍ | NO |
| Trastornos Renales | SÍ | NO | | | |

Enfermedades inmunológicas: _____    SIDA/VIH SÍ    NO

   Otras enfermedades: _____

5. Le han operado alguna vez? _____

6. Ha observado alguna alteración en su salud general en los últimos meses:

_____

7. Padece o ha  padecido de alguna enfermedad o trastorno que no se haya mencionado anteriormente:

_____

8. Es usted alérgico a:

   Aspirina:    SÍ    NO        Penicilina:    SI    NO

   Otros: _____

9. Ha tenido alguna vez reacciones anormales a la anestesia?    SÍ    NO

10. Presenta sangrados prolongados?    SÍ    NO

11. Padece de desmayos?    SÍ    NO

12. Está embarazada?    SÍ    NO

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**Handout #9.3.3**

**Instructions**: Read this role-play and use it as a model to make your own role-play.

## Example Role-Play

**Doctor**: Hello Melissa. I'm Dr. Carver. I'll be your doctor today.

**Patient**: Hi, Doctor.

**Doctor**: Could you tell me why you came to the hospital today?

**Patient**: I have a lot of pain in my back.

**Doctor**: Oh, no. Can you tell me how you hurt your back?

**Patient**: One week ago, I slipped on some water and fell on my back. It has been hurting me since then. I came to the hospital to see what the problem is.

**Doctor**: Do you have any other symptoms?

**Patient**: No.

**Doctor**: Okay, now I need to ask you some questions before I start with any testing. Is that okay?

**Patient**: Yes.

**Doctor**: Are you currently under medical treatment with another doctor?

**Patient**: No.

**Doctor**: Are you currently taking any medication?

**Patient**: Yes, I always take my high blood pressure medication.

**Doctor**: So, you have high blood pressure?

**Patient**: Yes.

**Doctor**: Okay. Do you suffer from diabetes, arthritis, heart disease, kidney disease, or immunological disorders, such as HIV or AIDS?

**Patient**: No.

**Doctor**: Have you ever had surgery?

**Patient**: Yes, I had surgery on my back last year after a car crash.

**Doctor**: Okay. Have you noticed a change in your general health over the last few months?

**Patient**: Not really.

**Doctor**: Do you have any other medical condition that I have not mentioned?

**Patient**: Not that I know of.

**Doctor**: Are you allergic to aspirin, penicillin, anesthesia, or any other medication?

**Patient**: Yes, I am allergic to penicillin.

**Doctor**: All right. Are you currently pregnant?

**Patient**: Yes.

**Doctor**: And do you suffer from fainting or prolonged bleeding?

**Patient**: No.

**Doctor**: Okay. Thank you for giving me that information. I can't be sure what's causing your pain without doing some tests first. I would like to do some scans. Then, when I have your results, I'll be back to discuss them. Is there anything else you'd like to ask me before I schedule your scans?

**Patient**: No.

**Doctor**: Okay. If you think of something later, just ask the nurse to call me.

**Patient**: Thank you.

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**Handout #9.3.4**

**Instructions**: Work with a partner. Use the vocabulary and grammar we learned today to create a role-play between a doctor and a patient. You must ask your patient for all of the information to answer the questions on the medical record (Handout #9.3.2). Use the **Example Role-Play** (Handout #9.3.3) as a guide. Write notes of your conversation on this handout, because you will present your role-play before the end of class.

_____

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**MEDICAL ENGLISH**
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**Handout #9.3.5**

**Peer Evaluation**

**Instructions**: As you listen to your classmate's role-play, use an "X" to mark your opinion about his/her performance in grammar, pronunciation, vocabulary, and completion of the medical record. You can also write comments for you classmate about his/her performance.

|  | **Opinion about Performance** | | | |
|---|---|---|---|---|
| **Criteria** | **Strongly Agree** | **Agree** | **Disagree** | **Strongly Disagree** |
| **Grammar** <br> The student made a question with a modal (can, could, or would). | | | | |
| **Vocabulary** <br> The student used the vocabulary studied in class correctly throughout the role-play. | | | | |
| **Completion of the Medical Record** <br> The student got all of the patient's information needed to complete the medical record form. | | | | |

| **Comments:** |
|---|
| |

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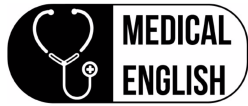
MEDICAL ENGLISH

Barahona, Lewis & Quesada

Date: October 28, 2019
Lesson Plan #10
Student Teacher: Edwin Quesada
Assistant: Isela Barahona
Unit #3
Title of Unit: "Patient Talk: Speaking in Medical English"

**Unit Goal**: By the end of this unit, students will be able to effectively communicate orally with a patient about his/her medical record, diagnosis, medication, and/or discharge summary by identifying correct vocabulary, grammatical structures, and bedside manners used in videos or scripts and reproducing them during role-plays.

**General Objective**: By the end of the lesson, students will be able to properly break bad news to a patient based on his diagnosis by role-playing the situation as seen in a medical video.

**Specific Objectives**: The students will be able to:
1.  Predict the topic of the lesson by orally passing a spoken message to their classmates.
2.  Correctly identify the vocabulary related to giving bad news by asking and answering questions to complete a handout.
3.  Demonstrate comprehension of Buckman's six-step protocol for breaking bad news to patients by explaining it orally to their classmates.
4.  Identify correct and incorrect ways of breaking bad news to a patient by using a checklist to assess two versions of a doctor-patient role-play video.
5.  Properly use correct bedside manner to tell bad news by role-playing a situation in which a doctor must tell parents about their son's brain tumor diagnosis as seen in a video.
6.  Analyze their classmates' use of the vocabulary and grammatical structures studied throughout the class by completing and discussing peer evaluation forms with their classmates.

Abbreviations used:  T = teacher   A = assistant   Ss = students   UL= useful language      L = listening        S = speaking        R = reading        W = writing

| Objectives | Procedures | Macro-skills | Language (vocabulary, useful language, grammatical or phonetic features) | Strategies | Time |
|---|---|---|---|---|---|
| 1 | **Warm-up:**<br>*1. Before giving instructions for the warmup, T tells students that after playing the game, they will be better prepared to guess what today's lesson will be about.*<br><br>2. The T has Ss say the UL sentences out loud and asks them to use them during the activity if necessary.<br><br>3. Students will play the "Telephone" game. One student reads a short piece of information given by the teacher (provided under Vocabulary for this warm-up) and then quietly whispers it to one of his/her classmates. This continues until all of the students have heard the sentence. **Note**: Before the first student whispers the sentence to his/her classmate, the T verifies that the student can pronounce it correctly.<br><br>4. Once the last student has heard the message, he/she says the sentence that he/she understood out loud.<br><br>5. T corrects the Ss if the last student does not have the same sentence by the end of the activity.<br><br>6. After the game, T asks Ss what they think the class will be about. | L<br>S | **Vocabulary**:<br>"In the 1960s, only 10% of physicians believed it appropriate to tell a patient about a fatal cancer diagnosis."<br><br>**UL**:<br>- Could you repeat that, please?<br>- I heard, "_____."<br>- I didn't understand. | Listening for details<br><br>Recalling ideas<br>Sharing information | 10 minutes<br><br>5-5:10pm |

| | | | | | |
|---|---|---|---|---|---|
| | | 7. T collects the homework from the previous class (self assessment for research purposes). **Materials:** None | | | |
| 2 | | **Pre-task 1 (Vocabulary)**: <br> 1. *T tells Ss that it is important for doctors to be able to tell patients bad news in the right way because if they do it incorrectly, they may negatively affect the patient emotionally.* <br><br> 2. T projects a Powerpoint slide that shows 5 questions (with each question corresponding to a specific color). The questions will get the Ss to discuss their opinions about the topic before officially beginning the pre-task. <br><br> 3. **"Ask, ask, switch."** Each student is given a small cube of a different color (there will be five colors). Each color represents a question that will be projected on the board. Ss stand up and get in pairs. They have to ask their partner the question that corresponds to the color they have. Then, their partner asks them the question that corresponds to the color they have. Finally, they switch cubes and talk to a different classmate. <br> 4. The T stops the Ss once time is up, and then asks about the kind of language | R <br> L <br> S | **Vocabulary**: <br> - What is "bad news"? <br> - Do patients want to know the truth about their diagnosis? <br> - What if the family doesn't want me to tell the patient the truth? <br> - Is it ever justified to withhold the truth? <br> - Who should tell "bad news"? <br><br> **RL**: <br> I can see that (you are shocked, this is not what you expected) <br> Would you (like me to explain the results? / prefer to have a family member with you?) <br> I'm sorry (to tell you this / this is not what you expected) <br><br> **UL**: <br> - What did you put first / second / next / last? <br> - What do you think? <br> - I (don't) think this is correct. | Exchanging information | 30 minutes <br><br> 5:10-5:40pm |

| | | | | | |
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| | used to break bad news to patients or their families in Spanish. Then, T asks if the Ss have ever heard the language used to do this in English. This is used as a transition into the next part of the task, in which the Ss will unscramble sentences that can be used to break bad news to patients.<br><br>5. Each S gets a handout with several scrambled sentences (**Note**: the words within the sentences are scrambled). The Ss work in pairs to unscramble the sentences and put them in the correct order. Once they are ready, they work with a different partner and compare their answers (Ss will classify these expressions in an activity later on).<br><br>6. T briefly has Ss call out the sentences to check that they are all in the correct order.<br><br>**Materials**:<br>Handout #10.1.1 | | | | |
| 3 | **Pre-task 2 (Steps to Tell Patients Bad News)**:<br>1. T introduces this pre-task by telling Ss that there is a correct protocol to follow in order to break bad news to patients and their families using correct bedside manner.<br><br>2. **"True or False?"** Ss are told that a famous doctor created a protocol to tell bad news to patients. They will play a | R<br>S<br>L | **Vocabulary**:<br>Information related to the following steps, as seen on Handout #10.2.1:<br>1. Getting started.<br>2. Finding out how much the patient knows.<br>3. Finding out how much the patient wants to know.<br>4. Sharing the information: diagnosis, treatment, prognosis, | Identifying main ideas<br><br>Sharing information | 20 minutes<br><br>5:40-6:00pm |

| | | | | | |
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| | game to guess if some information is true or false about this protocol (as a way of predicting what they will read). In teams, students read a statement shown on the PowerPoint and will have 10 seconds to decide if it is true or false by writing their answers on a lapboard. Every correct answer is one point for the team. The winning team gets a piece of candy.<br><br>3. In pairs, Ss will read (from Handout #10.2.1) one of the six steps for breaking bad news by Robert Buckman, and will present it orally to their classmates.<br><br>4. Working in pairs, the Ss then take out Handout #10.1.1 again to discuss and classify the expressions from Pre-task 1 into these six steps.<br><br>5. The T briefly goes over the correct answers by nominating Ss to give their answers.<br><br>**Materials**:<br>Handout #10.1.1 (from Pre-task 1)<br>Handout #10.2.1 | | and support or coping<br>5. Responding to the patient's feelings.<br>6. Planning and follow-through.<br><br>**RL:**<br>Breaking bad news to a patient<br><br>**UL**:<br>- We will present step number 1.<br>- This step is about _____.<br>- I think this expression goes with step number 1.<br>- No way! That one's step number 5. | | |
| 4 | **Pre-task 3 (Correct vs. Incorrect Protocol)**:<br>1. *The T tells the Ss that there is not a single way to break bad news, and that the appropriate way depends on the situation. The T also mentions that while the following video depicts a situation that the Ss may have to replicate in real life, individual situations will vary* | R<br>L<br>S | **Vocabulary:**<br>**RL**:<br>(If Ss don't understand, the following terms may need to be explained: neurosurgeon, pediatricians, MRI scan, nausea and vomiting,<br>what's been going on with…?, throwing up, benign, steroids to get the swelling | Listening for details<br><br>Assessing speaking | 30 minutes<br><br>6:00-6:30pm |

| | | | | | |
|---|---|---|---|---|---|
| | | *depending on the condition, prognosis, and people receiving the news.*<br><br>2. The T introduces the video by saying that it is an example of one way to break bad news to a patient's family. The T goes over the instructions of the handout with the Ss before playing the video.<br><br>3. Ss will watch and listen to two different versions of a video. They will be given a checklist (Handout #10.3.1) to identify which features of Buckman's six-step protocol for giving bad news are used by the doctor in each video.<br><br>4. They will compare their choices with a classmate, and then the T will ask Ss to read the descriptors out loud as the rest of the class says "yes" or "no" according to each video.<br><br>**Materials**:<br>Handout #10.3.1 | | down,<br>he's going to be okay)<br><br>**UL:**<br>  - I (don't) think the doctor used this step.<br>  - Why (not)?<br>  - Because… | |
| 5 | | **Main task:**<br>1. In pairs, Ss will be assigned to prepare a role-play in which they will break the news of a bad diagnosis to a patient or to his/her family member.<br><br>2. Using Handout #10.4.1 (and Handout #10.4.2 as a guide), Ss will take turns playing the roles of doctor and patient by using the 'read and look up technique' as one group member provides feedback | L<br>S<br>R | **Vocabulary**:<br>Much of the UL that the Ss could use for this task is included in the video script of the proper example of how to break bad news to a patient (Handout #10.4.2), so it will not be re-written in this section.<br><br>**RL**: I can see that (you are shocked, this is not what you expected), Would | Role-playing<br><br>Delivering information<br><br>Implementing the 'read and look up technique' | 45 minutes<br><br>6:30-7:15pm |

| | | following Buckman's six-step protocol for giving bad news. They will rehearse this in preparation for an oral presentation. **Note**: The Ss are allowed to make annotations on the handouts as long as they don't read them directly during their rehearsals and presentations.<br><br>3. Pairs will be given 15-20 minutes to prepare and rehearse their dialogues. Once that time has passed, there will be three periods of 5-10 minutes for each student to play a different role each time (the evaluator, the doctor, and the patient, depending on the number of students who attend that day). The role of the doctor will be evaluated by a student playing the role of evaluator using Handout #10.4.3.<br><br>**Materials**<br>Handout #10.4.1<br>Handout #10.4.2<br>Handout #10.4.3 | | you (like me to explain the results? / prefer to have a family member with you?), I'm sorry (to tell you this / this is not what you expected), neurosurgeon, pediatricians, MRI scan, nausea and vomiting,<br>what's been going on with…?, throwing up, benign, steroids to get the swelling down,<br>he's going to be okay<br><br>**UL**:<br>- What should we say next?<br>- How can I say _____ in English?<br>- Can you repeat that, please? | | |
| 6 | | **Post-task:**<br>1. The Ss will find the S that they had to observe and evaluate as part of the peer evaluation in the main task. They will discuss the elements of their partner's performance that were done well, and those which could use improvement. They will also share any other comments that have with their partner and then, they will give their partner the completed peer evaluation form. | S<br>L | **Vocabulary:**<br>**RL**:<br>Breaking bad news to a patient<br><br>**UL**:<br>- I evaluated your role-play.<br>- I think you <u>followed the protocol</u> correctly, but you could work on <u>your pronunciation</u>.<br>- What was the most difficult part | Sharing information | 15 minutes<br><br>7:15-7:30pm |

| | 2. If there is enough time after the exchanging of the peer evaluation forms, the T will tell the Ss to briefly discuss the following two questions with a classmate:<br>   a. The most difficult part of the main task and the reason for its difficulty<br>   b. The most important thing they learned from the main task<br><br>3. If there is time after the above-mentioned discussion, the T will ask the Ss to share their responses with the class.<br>**Materials**:<br>Handout #10.4.3 (from the main task) | | of today's role-play? Why?<br>- What's the most important thing you learned from today's lesson? | | |

**Homework**: Work on blog posts, which are due Saturday, November 2nd, by noon.

**MEDICAL ENGLISH**
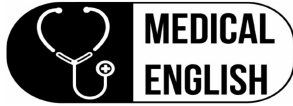
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**Handout #10.1.1**

**Instructions**: Unscramble the sentences and write them in the correct order.

1. way. / how you / I can / that / understand / felt

_____ [_____]

2. to have / this. / I'm sorry / you / to tell

_____ [_____]

3. also hoping / result. / I was / a better / for

_____ [_____]

4. family member / Would you / or friend / prefer / here? / to have a

_____ [_____]

5. now? / here today. / like me to / the result / explain it / I have / Would you / to you

_____ [_____]

6. we took / the results / we hoped. / As you know / unfortunately / were not as / a biopsy, / and

_____ [_____]

7. this is not / that you / I can see / I'm so / that / the news / expected, / sorry.

_____ [_____]

8. but the results / I'm sorry / show / cancer. / from the investigations / to tell / you have / you this,

_____ [_____]

9. not going / we had hoped. / Things are / in the direction

_____ [_____]

10. you've been / are you / I see / what / quiet, / thinking?

_____ [_____]

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**Handout #10.1.1**

**ANSWER KEY**

Instructions: Unscramble the sentences and write them in the correct order.

1. I understand how you felt that way.

_____ [_____]

2. I'm sorry to have to tell you this.

_____ [_____]

3. I was also hoping for a better result.

_____ [_____]

4. Would you prefer to have a family member or friend here?

_____ [_____]

5. I have the result here today. Would you like me to explain it to you now?

_____ [_____]

6. As you know we took a biopsy/did a scan, and unfortunately the results were not as we hoped.

_____ [_____]

7. I can see that this is not the news that you expected, I'm so sorry.

_____ [_____]

8. I'm afraid/sorry to tell you this, but the results from the investigations show you have cancer.

_____ [_____]

9. Things are not going in the direction we had hoped.

_____ [_____]

10. 'I see you've been quiet—what are you thinking?'

_____ [_____]

**MEDICAL ENGLISH**
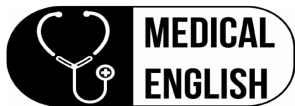
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**Handout #10.2.1 (Page 1, Version A)**

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**1. What is "bad news"?**

What the doctor feels is "bad news" may not match what the patient feels is "bad news" and vice versa. Sometimes doctors may think, for example, that telling a patient he had a "ministroke" is bad news, but the patient may feel relieved to know it was not MS (multiple sclerosis), for instance.

Doctors often tell patients that they have chronic diseases (hypertension, diabetes, high cholesterol, etc.).; those illnesses are so commonplace in the medical field that the doctor may forget that these represent "bad news" to some patients. As an example, the diagnosis of diabetes may be devastating to a patient who witnessed a relative with amputations or on dialysis due to its complications.

---

**2. Do patients want to know the truth about their diagnosis?**

---

**3. What if the family doesn't want me to tell the patient the truth?**

---

**4. Is it ever justified to withhold the truth?**

---

**5. Who should tell "bad news"?**

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**Handout #10.2.1 (Page 1, Version B)**

---

**1. What is "bad news"?**

---

**2. Do patients want to know the truth about their diagnosis?**

Recent studies have proven that most patients do want to know the truth about their health conditions. In fact, 90% of patients surveyed would want to know about a diagnosis of Alzheimer's disease or cancer. In the 1960s, only 10% of doctors believed it appropriate to tell a patient about a fatal cancer diagnosis. However, 20 years later, 97% of doctors felt the disclosure would be appropriate.

Today, most doctors believe that telling patients the truth fosters trust and demonstrates respect. The patient should be told all relevant information regarding the illness, expected outcomes, treatment options, risks and benefits of treatment.

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**3. What if the family doesn't want me to tell the patient the truth?**

---

**4. Is it ever justified to withhold the truth?**

---

**5. Who should tell "bad news"?**

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## Handout #10.2.1 (Page 1, Version C)

**1. What is "bad news"?**

**2. Do patients want to know the truth about their diagnosis?**
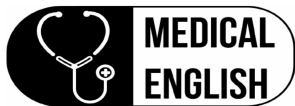
**3. What if the family doesn't want me to tell the patient the truth?**
Sometimes, families will ask that the doctors withhold the diagnosis from the patient. Most often, the justification for this is admirable—the family wants to liberate the patient from a painful or difficult experience.
However, those fears are usually unfounded. In rare situations, the family may reveal that telling the truth will cause the patient extreme distress, or may cause predictable harm to the patient. In those situations it may be appropriate to withhold the information. Most often, telling the truth in a thoughtful and empathetic manner will be more appropriate than withholding.

**4. Is it ever justified to withhold the truth?**

**5. Who should tell "bad news"?**

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**Handout #10.2.1 (Page 1, Version D)**

| |
|---|
| **1. What is "bad news"?** |
| **2. Do patients want to know the truth about their diagnosis?** |
| **3. What if the family doesn't want me to tell the patient the truth?** |
| **4. Is it ever justified to withhold the truth?**<br>There are two instances where withholding the truth may be justified. In the case where disclosure is likely to cause real and predictable harm, it may be appropriate not to disclose. In addition, if the competent patient asks not to be told the results or the truth, it may be appropriate to respect this desire. It is important to treat this instance like an informed consent. The patient should be notified regarding the consequences of this action, and if those consequences are accepted, the patient may not be told. |
| **5. Who should tell "bad news"?** |

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**Handout #10.2.1 (Page 1, Version E)**

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**1. What is "bad news"?**




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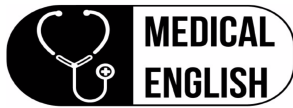**2. Do patients want to know the truth about their diagnosis?**




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**3. What if the family doesn't want me to tell the patient the truth?**




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**4. Is it ever justified to withhold the truth?**




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**5. Who should tell "bad news"?**
Sometimes there isn't a right answer to this question. At times, the primary caregiver may be the best person to deliver bad news. However, often, it's the specialist or another caregiver that finds him/herself in a position to give the news to the patient. In any case, the care team should do its best to work together and deliver care as effectively as possible.

**Handout #10.2.1 (Page 2)**

**Vocabulary**:

1. Relieved:          feeling free from anxiety or distress
2. MS:               multiple sclerosis
3. Commonplace:     a usual or ordinary thing
4. Witnessed:        to have seen or experienced an event
5. Surveyed:         having investigated the opinions of (a group of people) by asking
6. Fatal /ˈfeɪtəl/:    them questions
7. Disclosure:       causing death
8. Foster:           the action of making new or secret information known
9. Trust:            contribute to
10. Outcomes:        confidence
11. Withhold:        a consequence
12. Instances:       keep secret
13. Likely to:       particular cases
14. Ministroke:      that will probably happen
                    another term for transient ischemic attack (a brief episode of
                    neurological dysfunction resulting from an interruption in the blood
                    supply to the brain or the eye, sometimes as a precursor of a
                    stroke)

**Useful Language**:
You can use the following question to ask your classmates if they have the answer to your questions:

***Do you have the answer to question number 1:*** *What is "bad news"?*

**MEDICAL ENGLISH**
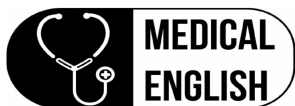
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## Handout #10.2.1 (ANSWER KEY)

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**1. What is "bad news"?**

What the doctor feels is "bad news" may not match what the patient feels is "bad news" and vice versa. Sometimes doctors may think, for example, that telling a patient he had a "ministroke" is bad news, but the patient may feel relieved to know it was not MS (multiple sclerosis), for instance.

Doctors often tell patients that they have chronic diseases (hypertension, diabetes, high cholesterol, etc.).; those illnesses are so commonplace in the medical field that the doctor may forget that these represent "bad news" to some patients. As an example, the diagnosis of diabetes may be devastating to a patient who witnessed a relative with amputations or on dialysis due to its complications.

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**2. Do patients want to know the truth about their diagnosis?**

Recent studies have proven that most patients do want to know the truth about their health conditions. In fact, 90% of patients surveyed would want to know about a diagnosis of Alzheimer's disease or cancer. In the 1960s, only 10% of doctors believed it appropriate to tell a patient about a fatal cancer diagnosis. However, 20 years later, 97% of doctors felt the disclosure would be appropriate.

Today, most doctors believe that telling patients the truth fosters trust and demonstrates respect. The patient should be told all relevant information regarding the illness, expected outcomes, treatment options, risks and benefits of treatment.

---

**3. What if the family doesn't want me to tell the patient the truth?**

Sometimes, families will ask that the doctor withhold the diagnosis from the patient. Most often, the justification for this is admirable—the family wants to liberate the patient from a painful or difficult experience.

However, those fears are usually unfounded. In rare situations, the family may reveal that telling the truth will cause the patient extreme distress, or may cause predictable harm to the patient. In those situations it may be appropriate to withhold the information. Most often, telling the truth in a thoughtful and empathetic manner will be more appropriate than withholding.

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**4. Is it ever justified to withhold the truth?**

There are two instances where withholding the truth may be justified. In the case where disclosure is likely to cause real and predictable harm, it may be appropriate not to disclose. In addition, if the competent patient asks not to be told the results or the truth, it may be appropriate to respect this desire. It is important to treat this instance like an informed consent. The patient should be notified regarding the consequences of this action, and if those consequences are accepted, the patient may not be told.

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**5. Who should tell "bad news"?**

Sometimes there isn't a right answer to this question. At times, the primary caregiver may be the best person to deliver bad news. However, often, it's the specialist or another caregiver that finds him/herself in a position to give the news to the patient. In any case, the care team should do its best to work together and deliver care as effectively as possible.

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**Handout #10.3.1**

**Instructions**: Watch two versions of a video of a doctor-patient conversation and answer each question by circling the correct answer ("Yes" or "No").

|  | First version | Second version |
|---|---|---|
| 1. Are both the doctor and the patient comfortably seated? | Yes     No | Yes     No |
| 2. Does the doctor give bad news abruptly, without preparing the patient? | Yes     No | Yes     No |
| 3. Does the doctor ask an open-ended question to let the patient express feelings and provide more information? | Yes     No | Yes     No |
| 4. Does the doctor repeat back what he heard? | Yes     No | Yes     No |
| 5. After preparing the patient emotionally, does the doctor give the news directly? | Yes     No | Yes     No |
| 6. Does the doctor give the family time to absorb the news? | Yes     No | Yes     No |
| 7. Does the doctor show concern for patients? | Yes     No | Yes     No |
| 8. Does the doctor request permission to proceed? | Yes     No | Yes     No |
| 9. Does the doctor use simple language? | Yes     No | Yes     No |
| 10. Does the doctor offer support? | Yes     No | Yes     No |

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**Handout #10.3.1 (ANSWER KEY)**

|  | First video |  | Second video |  |
|---|---|---|---|---|
| 1. Are both doctor and patient comfortably seated? | Yes | **No** | **Yes** | No |
| 2. Does the doctor give bad news abruptly, without preparing the patient? | **Yes** | No | Yes | **No** |
| 3. Does the doctor ask an open-ended question to let the patient express feelings and provide more information? | Yes | **No** | **Yes** | No |
| 4. Does the doctor repeat back what he heard? | Yes | **No** | **Yes** | No |
| 5. After preparing the patient emotionally, does the doctor give the news directly? | Yes | **No** | **Yes** | No |
| 6. Does the doctor give the family time to absorb the news? | Yes | **No** | **Yes** | No |
| 7. Does the doctor show concern for patients? | Yes | **No** | **Yes** | No |
| 8. Does the doctor request permission to proceed? | Yes | **No** | **Yes** | No |
| 9. Does the doctor use simple language? | **Yes** | No | **Yes** | No |
| 10. Does the doctor offer support? | Yes | **No** | **Yes** | No |

**MEDICAL ENGLISH**

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**Handout #10.4.1**

**Instructions:** Work with a partner. You will role-play a conversation between a doctor and a patient, in which the doctor breaks bad news to the patient. First, you will be the doctor and your partner will be the patient. Then you will switch roles, so you will be the patient and your partner will be the doctor. Have a conversation similar to the one you saw in the video. Use the model sequence below as a guide. You can also use the video script (Handout #10.4.2) as a reference, but you don't have to say exactly what the doctor said in the video. Your conversation can be shorter and simpler.

### 1. Getting started

| The doctor: | The patient: |
|---|---|
| ● introduces himself/herself<br>● sits (and makes sure the patient is seated too)<br>● asks the patient how (s)he is feeling (using open-ended questions) | ● says that (s)he's been waiting for _#_ hours<br>● tells the doctor about any other difficult condition(s) he/she experienced while waiting for the doctor |

### 2. Finding out how much the patient knows

| The doctor: | The patient: |
|---|---|
| ● asks the patient about his/her illness and symptoms<br>● repeats the patient's feelings and symptoms | ● describes his/her symptoms<br>● asks if he/she will be ok |

### 3. Prepares the patient for bad news (uses simple language)

| The doctor: | The patient: |
|---|---|
| ● refers to the patient's symptoms and the MRI results<br>● gives bad news directly<br>● gives the patient time to accept the news | ● says that (s)he thought that his/her condition was not that serious<br>● expresses his/her feelings about the diagnosis (for example, that he/she feels worried, scared, or surprised) |

### 4. Responding to the patient's feelings

| The doctor: | The patient: |
|---|---|
| ● explains that sometimes symptoms of one illness are similar to the symptoms of other illnesses | ● listens to the doctor<br>● says that he/she understands what the doctor is saying |

**5. Asking for permission to continue giving further information**

| The doctor: | The patient: |
|---|---|
| ● refers the patient to treatment (surgery)<br>● asks the patient if he/she has any questions | ● asks questions about the date and time of the surgery, its duration, and post-surgery care |

**6. Responds to feelings**

| The doctor: | The patient: |
|---|---|
| ● answers the patient's questions and refers to the support that the patient can get (to help with his/her anxiety)<br>● says goodbye | ● thanks the doctor and says goodbye |

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**Handout #10.4.2 (Video Script)**

**Instructions:** Use this script below as a guide as you write notes for your role-play. You do not need to use the same exact sentences as the doctor in the video. You can make a shorter and simpler version of this conversation.

**Dr. Anderson:** Hi, Mr. and Mrs. Jones. I'm Dr. Anderson, the neurosurgeon. It's nice to meet you. [SITS DOWN] Um, can you tell me a little bit about what's been going on with Jimmy? [ASKS AN OPEN-ENDED QUESTION]

**Mr. Johnson**: Well…
**Mrs. Johnson:** He was sick last week- just all this week having… throwing up and … headaches and just really intensely sick and just not kicking it, yeah.
**Mr. Johnson:** So, we know there's a flu going around, so we just wanted to make sure it wasn't anything more serious.
**Mrs. Johnson:** Yeah, he's worried about his immune system.
**Mr. Johnson:** And then they wanted to give him an MRI here, so…
**Mrs. Johnson:** Yeah, just, they said to rule things out, but…
**Mr. Johnson:** He's been gone for four hours... I've been waiting, so…

[REPEATS BACK WHAT HE HEARD]
**Dr. Anderson:** So, he's been sick for about a week, and throwing up and headaches, and I know you've been waiting a long time, and [APOLOGIZES FOR THE WAIT] I'm sorry about that. They did have to sedate him a little bit to get him to hold still for the MRI scan.
**Mrs. Johnson:** Is he scared? Is he okay?
**Dr. Anderson:** He's okay. I just saw him, and I was… he was basically like waking up from a long nap so he's moving around, and he looks fine, and he was opening his eyes but he's still not, kind of, back to his normal self yet. The nurses are watching him really closely and everything's fine with him…[OFFERS REASSURANCE]
[PROVIDES A WARNING] I looked at the MRI scan and I'm afraid I have some bad news for you… It looks like he's got a brain tumor. [GIVES NEWS DIRECTLY]

[GIVES THE FAMILY TIME TO ABSORB THE NEWS]

**Mr. Johnson:** Are you sure?
**Dr. Anderson:** Yeah, I checked very carefully the scan and him, and it fits with the symptoms he's having and he's got a small brain tumor back here in his cerebellum on the right side.
**Mr. Johnson:** We just thought he had the…you know, we just thought it was… I mean we've… we thought it was kind of silly... We came in today…
**Dr. Anderson:** Sometimes these present that way. People- the little kids are sick and the nausea and vomiting, but it turns out it's actually pressure on the back of the brain that's causing them to have the headaches and that kind of thing [SPEAKS IN PLAIN LANGUAGE]

**Mrs. Johnson:** This is really a shock. I just…

**Mr. Johnson:** I didn't even know why they wanted to give him an MRI, we're...

**Dr. Anderson:** I know this must be really hard news to hear... [NAMES EMOTIONS]

**Mrs. Johnson:** Is he going to be okay?

**Dr. Anderson:** He's going to be okay. We're going to be with you every step of the way. Um, [ASKS FOR PERMISSION BEFORE EXPLAINING] do you mind if I tell you a little bit about what the plan's going to be- what the next step is? So, we can keep taking good care of him…?

**Mrs. Johnson:** Yeah.

**Dr. Anderson:** So, I can tell you one thing. In looking at the MRI scan, sometimes these- [EXPLAINS AND REASSURES IN CLEAR LANGUAGE] you can tell whether they're more slow-growing benign tumors or more fast-growing aggressive tumors. And the good news is it's the more small-growing benign type tumor. It looks like [it]. We won't know for sure until we take it out but we're going to have to do surgery to get it out and try to cure him from this brain tumor.

**Mrs. Johnson:** So it's just a benign one or do you think it's…?

**Dr. Anderson:** We hope so. We'll know once we look at it under the microscope, but looking at the MRI scan, that would be the more likely scenario.

**Mrs. Johnson:** But it looks like you're not…  it's not just that you're going to ru..uh…I mean it's… it's probably benign and so...

**Dr. Anderson:** Well, where it's located it looks like that, yes. So, so we've looked at the schedule and we want to admit him to the hospital tonight, and we'll keep him here over tomorrow and give him some steroids to get the swelling down, so he'll feel better. And, then on Tuesday morning we'll do the surgery. And the surgery will last about three hours.

**Mrs. Johnson:** Can we see him? Is he…?

**Dr. Anderson:** Yeah, he's going to be right up, the nurses were just about ready to- you know they were getting him all ready in the bed, and he was like I said waking up from, like, a long nap and he's going to be up here in about five minutes and, um, I know that's a lot to take in but, what questions do you have? [Elicits questions with an open ended question]

**Mrs. Johnson:** I am just so floored right now. I just… Do you have…?

**Mr. Johnson:** How long do you think he's going to be in the hospital after the surgery, if things go okay?

**Dr. Anderson:** If things go well, he should be able to go home by next weekend. So, tonight's Sunday night, so if surgery Tuesday, he should be able to go home by, you know, Friday, Saturday…

**Mrs. Johnson:** He's going to be okay... we've just... he's going to be okay?
[OFFERS SUPPORT AND REASSURANCE]

**Dr. Anderson:** We're going to be with him every step of the way with you guys and if you want to, I'll come back in a little bit and we can talk. You know, once you've had a chance to kind of process a little bit of this stuff. We can talk and, with him, and tell him he's going to have to have, you know, a little surgery on Tuesday.

**Mr. Johnson:** Yeah, that would- I think that would be helpful, yeah.

**Mrs. Johnson:** Yeah.

**Mr. Johnson:** I am not sure what I would say...

**Dr. Anderson**: Your job is just to be mom and dad. We'll be the neurosurgeons, okay? We'll take good care of him, alright? Alright, take care.

**MEDICAL ENGLISH**

Lewis, Barahona, & Quesada

**Handout #10.4.3**

**Instructions**: Use an "X" to mark your opinion about your classmate's performance as a doctor, who is breaking bad news to a patient or to a patient's family. Choose one of the four options (No, Not enough, Mostly, or Absolutely) to describe your opinion about how well your classmate was about to demonstrate the elements of good bedside manner listed below. You can write any extra comments in the "**Comments**" section below.

| Elements of Good Bedside Manner | Extent of Completion | | | |
|---|---|---|---|---|
| | No | Not enough | Mostly | Absolutely |
| 1. Are both the doctor and patient comfortably seated? | | | | |
| 2. Does the doctor ask an open-ended question to let the patient express feelings and provide more information? | | | | |
| 3. Does the doctor repeat back what (s)he heard? | | | | |
| 4. After preparing the patient emotionally, does the doctor give the news directly? | | | | |
| 5. Does the doctor give the family time to absorb the news? | | | | |
| 6. Does the doctor show concern for the patient and/or the patient's family? | | | | |
| 7. Does the doctor request permission to give the patient or patient's family more information? | | | | |
| 8. Does the doctor use simple language? | | | | |
| 9. Does the doctor offer support? | | | | |
| 10. Was it easy for you to understand everything the doctor said? | | | | |

Comments:_____
_____
_____
_____

University of Costa Rica
Master's Program in TEFL

**MEDICAL ENGLISH**

Barahona, Lewis & Quesada

Date: November 4, 2019
Lesson Plan #11
Student Teacher: Edwin Quesada
Assistants: Simone Lewis and Isela Barahona
Unit #3
Title of Unit: "Patient Talk: Speaking in Medical English"

**Unit Goal**: By the end of this unit, students will be able to effectively communicate orally with a patient about his/her medical record, diagnosis, medication, and/or discharge summary by identifying correct vocabulary, grammatical structures, and bedside manners used in videos or scripts and reproducing them during role-plays.

**General Objective**: By the end of the lesson, students will be able to successfully prescribe the correct medication to a patient by using the language and performing the actions depicted in a video.

**Specific Objectives**: The students will be able to:
1. Exchange information with their classmates by asking them riddles related to the medical field.
2. Communicate with a patient effectively by asking appropriate interview questions based on their classmates' ideas and following grammar rules.
3. Demonstrate understanding of order of steps a doctor should follow to interview a patient by memorizing, relaying and arranging sentences.
4. Successfully engage in an interview by playing the roles of doctor and patient using the 'read and look up' technique.
5. Identify the expressions used by a speaker in a video that relate to the steps to be followed in a doctor-patient interview by writing them down as the video is played.
6. Properly follow the recommended interviewing steps and questions by role-playing a situation in which a doctor needs to elicit information from a patient as seen in a video.
7. Constructively indicate their classmates their strengths and weaknesses by discussing to the evaluation administered.

Abbreviations used:  T = teacher   A = assistant   Ss = students   UL= useful language      L = listening       S = speaking        R = reading         W = writing

| Objectives | Procedures | Macro Skills | Language (Vocabulary, expressions, useful language, grammatical or phonetic features) | Strategies | Time |
|---|---|---|---|---|---|
| | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 1 | **Warm-up:**<br>1. Ss are given a strip of paper with a riddle on it. They either have to find the answer by themselves or stand up and walk around to ask their classmates. If they find a sensible answer, they write it on the back of the strip of paper and sit down and wait for their classmates' riddles. After a few minutes, the T will share the answer to each riddle using the slide show.<br><br>2. T collects the Unit 2 research questions, which had previously been assigned as homework.<br><br>**Materials:**<br>Handout #11.1.1 | R<br>W<br>L<br>S | **Vocabulary**:<br>**RL**: (See Handout #11.1.1)<br>The language for the warmup is not provided here because Ss just have to read their written riddles out loud.<br><br>**UL**:<br>- I don't know.<br>- I have no idea.<br>- I think it could be…<br>- Maybe…<br>- What about…? | Asking and answering questions<br><br>Inferring meaning | 10 minutes<br><br>5:00-5:10pm |
| 2 | **Pre-task 1:**<br>1. *T tells Ss that during consultations, doctors may need to ask patients different types of questions in order to get to know the health problem the patient is having, and to be better able to prescribe the right medication or suggest the course to follow.*<br><br>2. T displays a slide on the screen about how to ask and recognize different types of questions.<br><br>3. T gives Ss Handout #11.2.1 with that information, as well. | R<br>W<br>S<br>L | **Vocabulary**:<br>**RL**:<br>- Question words: what, when, where, how, why, who, which, how many, how much, how long<br>- Auxiliary verbs: am, is, are, was, were, will__ be, have, has, had, will __have, can, may, could, should, would, will, do, does, did, will__ + verb.<br><br>**UL**:<br>- What are some typical questions doctors have to ask patients?<br>- For example, we should ask ...<br>- It's very important to know if ... | Asking and answering questions<br><br>Predicting information<br><br>Listening for details | 20 minutes<br><br>5:10-5:30pm |

| | | | | | |
|---|---|---|---|---|---|
| | 4. T goes over the handout and slides, and briefly explains how to ask questions correctly (as a way to check the students' comprehension). As the T explains each type of question, he elicits oral examples from the Ss.<br><br>5. Then, in pairs, Ss are asked to write five typical questions doctors would need to ask their patients during a consultation.<br><br>6. Once they are done, they find a different partner and ask their new partner the questions they created. They also answer their classmates' questions orally.<br><br>**Materials:**<br>Handout #11.2.1 | | | | |
| 3 | **Pre-task 2:**<br>1. **Memory game.** Ss are put into two groups to play a memory game. Each group is arranged separately in a line. When the T signals it, the first S in each line will run to the auditorium stage to quickly read and memorize one of eight sentences printed on paper strips. Then, that S runs back to his/her group to report the sentence orally to the new S in first position in the group, who will write it down in Handout #11.3.1, and the S who memorized the sentence stands | R<br>W<br>L<br>S | **Vocabulary**:<br>**RL**:<br>1) Introducing yourself to the patient<br>2) Allowing the patient to introduce the problem<br>3) Summarizing the patient's issues again to show understanding<br>4) Guiding the interview by asking specific open questions<br>5) Asking fewer simple 'yes' / 'no' questions<br>6) Not immediately dismissing patient's opinion of the problem<br>7) Offering advice in simple language a | Recalling ideas<br><br>Listening for details<br><br>Reporting information<br><br>Organizing information | 20 minutes<br><br>5:30-5:50pm |

| | | | | | |
|---|---|---|---|---|---|
| | in the last position in the corresponding group line. After the other S has written the sentence, he/she repeats the action taken by the previous student, making sure to skip the sentences that have already been written. If so, he/she will have to go back to look for a different sentence.<br><br>**2.** When all eight sentences have been jotted down, the entire group collaborates to arrange them in logical order. The group that finishes first and has arranged it correctly will get a candy prize.<br><br>3. The T says the sentences and their correct order for the other groups to ensure that they have understood.<br><br>**Materials:**<br>Handout #11.3.1 (one per group to jot down the sentences) | | layman could understand<br>8) Making indirect suggestions instead of giving directions or instructions e.g. about changing lifestyle.<br><br>**UL**:<br>  - Could you repeat that, please?<br>  - Could you say that more slowly, please?<br>  - That sentence is already here.<br>  - Go back for another sentence.<br>  - Change the sentence. | | |
| 4 | **Pre-task 3:**<br>1. Given Handout #11.4.1, Ss will stand up and walk around the class asking their classmates questions as part of a 'Find someone who activity'.<br><br>2. When they are done, T goes over the handout to find out the names of the Ss who answered 'yes' to their classmates' questions. | R<br>W<br>S | **Vocabulary**:<br>**RL**:<br>Have you been having problems falling asleep?<br>Do you exercise regularly?<br>Do you drink liquor?<br>Do you smoke?<br>Do you feel tired during the day?<br>Have you been taking pills recently?<br>Have you had a situation recently that made you change your lifestyle? | Organizing information<br><br>Role playing<br><br>Reading out loud | 20 minutes<br><br>5:50-6:10pm |

| | | | | | |
|---|---|---|---|---|---|
| | **Materials:**<br>Handout #11.4.1 | | Has your body sent you a sign that you need to change your lifestyle?<br>Do you do something else beyond work or study?<br><br>**UL**:<br>- What does this word mean?<br>- I think that means [Spanish translation]. | | |
| 5 | **Pre-task 4:**<br>1. Ss watch the video twice to find out how the steps are followed using the handout completed in pre-task 2. They write down the expressions from the video that are related to the steps on Handout #11.5.1.<br><br>2. Ss compare and discuss their findings with a classmate.<br><br>3. The T briefly goes over the correct answers.<br><br><br>**Materials:**<br>Handout #11.5.1<br>Video *OET Speaking sample - Medicine - Insomnia* (Available at https://www.youtube.com/watch?v=Kf2eMWsgFc8&t=112s) | L<br>S<br>W | **Vocabulary**:<br>**RL**: wondering, so I figure, I'm off a partner, firm, to handle, freedom of mind, to deal with, manage, phases, instead of.<br><br>**UL**:<br>- I think she said that…<br>- I (dis)agree.<br>- I (don't) think so.<br>- What did she say about this step? | Listening for details<br><br>Exchanging information | 20 minutes<br>6:10-6:30pm |
| 6 | **Main task:**<br>1. In groups of three, Ss play the role of the doctor (who prescribes medication), the patient (who goes to | R<br>L<br>S | **Vocabulary**:<br>**RL**: Good morning/afternoon, my name is ___. How can I help you?<br>Alright, you say that … | Role-playing<br><br>Asking for | 45 minutes<br><br>6:30-7:15pm |

| | | | | | |
|---|---|---|---|---|---|
| | the doctor for medication), and the evaluator. They will alternate their roles.<br><br>2. First, Ss are arranged into groups of three and given number cards to identify them more easily. Finally, they are assigned to take turns role-playing the situation in the video using role-play cards in Handout #11.6.1.<br><br>3. If a group finishes ahead of time, they are assigned to role-play an impromptu situation (about prescribing), for further practice.<br><br>**Materials:**<br>Handout #11.6.1<br>Handout #11.6.2 (peer evaluation form) | | What have you done/eaten/drunk recently?<br>How much have/do you __?<br>Do you drink/smoke?<br>Are you taking any medication?<br>What happens is that when you… (verb + noun) ...the body…(verb)...because...<br>How about changing your lifestyle? How about exercising?<br><br>**UL:**<br>- How do you say [word in Spanish] in English?<br>- Is it correct to say [expression]? | information<br><br>Listening for details | |
| 7 | **Post-task:**<br>1. Ss will find the classmate that they had to evaluate during the main task and share their feedback.<br><br>2. T gives feedback on any language mistakes observed.<br><br>**Materials:**<br>Handout #11.6.2 (from the main task) | L<br>S | **Vocabulary**:<br>**RL**: N/A<br><br>**UL**:<br>- Some strengths I noticed about your role as a doctor were: 1…, 2…, 3…<br>- Some aspects that I think could be improved in your role as a doctor are: 1…, 2…, 3... | Giving feedback | 15 minutes<br><br>7:15-7:30pm |

**Homework**: (1) Finish your blog posts by Wednesday. (2) We will send you the instructions for this week's homework during the week. (3) Study for your last quiz, which will be next Monday!

**MEDICAL ENGLISH**

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**Handout #11.1.1**

| **Riddles** | **Answers** |
|---|---|
| ① What is the difference between a hill and a pill? | A hill is hard to get up, a pill is hard to get down. |
| ② Doctor Harish and a bus driver Manish are both in love with the same woman named Priyanka. The bus driver needs to go for a long trip of 10 days. Before he left he gave Priyanka 10 apples. Why? | An apple a day keeps the doctor away! |
| ③ Two girls were born to the same mother, on the same day, at the same time, in the same month and year and yet they're not twins. How can this be? | They're in a set of triplets |
| ④ Two men are in a desert. They both have packs on. One of the guys is dead. The guy who is alive has his pack open, the guy who is dead has his pack closed. What is in the pack? | A parachute |
| ⑤ What is the difference between a bus driver and a cold? | One knows the stops, the other stops the nose. |
| ⑥ Which is faster, hot or cold? | Hot's faster. You can catch a cold. |
| ⑦ What is the healthiest kind of water? | Well water |
| ⑧ Why is an eye doctor like a teacher? | They both test the pupils. |
| ⑨ What would you call a small wound? | A short cut |
| ⑩ You are traveling on the road to Mecca when you come across a fork. Two men are standing at the fork. One will always tell a lie, and the other will always tell the truth. You don't know which is which. What question can you ask either of them to still get the correct road? | Which way would the other man tell me to go? If you are confused, let me help. Let's say the right road was the correct one. If you asked the truth guy, he would say left. If you asked the lie guy, he would say left. So you just go the opposite. |
| ⑪ How many times can you subtract 5 from 25? | Only once because after that you will subtract 5 from 20 then from 15 and so on. |

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**Handout #11.2.1**
**Types of Questions**

**Type 1: Yes/No Questions**: These questions may begin either with:
a.      A form of the verb **be** (am, is, are, was, were, will__ be)
**Formula**:      Be + subject + noun/adverb/adjective/verb (ending in –ing)
Example: Are you feeling dizzy?

Your own example: _____?
b.      A form of the verb **have** (have, has, had, will __have) (**when "have" means "haber"**)
**Formula**:      Have + subject + verb in past participle (e.g., called, been, etc.)
Example: Have you taken any medication?

Your own example: _____?
c.      Any of the following **modal auxiliaries**: can, may, could, should, would, will
**Formula**: Modal + subject + verb ( in infinitive form)
Example: Can you hear me?

Your own example: _____?
d.      Any form of the auxiliary verb **do** (do, does, did, will__ verb) if the main verb is NOT any of the above (1, 2, or 3.)
**Formula**:      Do + subject + verb (in infinitive form)
Example: Do you smoke?

Your own example: _____?

*All of these questions can be used in positive or negative form.
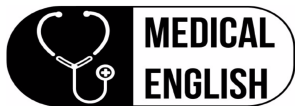
**Type 2: Information Questions**: These questions are often a combination of a question word and a yes/no question (see the examples below):

| Question word | + | yes/no question | Possible answers |
|---|---|---|---|
| Why | + | are you running? | Because I want to stay healthy / Because it's late |
| When | + | will they come? | Tomorrow / I don't know / Why do you want to know? |

### Practice

**Instructions:** With a partner, write five typical information questions doctors often need to ask their patients during a consultation. Once you are done, work with a different partner and ask him/her your questions and answer his/her questions. Use the question words below to help you.

1. _____ ?
2. _____ ?
3. _____ ?
4. _____ ?
5. _____ ?

| Question words | Meaning (in Spanish) |
|---|---|
| What? | Qué? o Cuál(es)? |
| Where? | Dónde? Adónde? |
| When? | Cuándo? |
| How? | Cómo? |
| Why? | Por qué? |
| Who? | Quién? Quiénes? |
| Which? | Cuál? Cuáles? |
| How many? | Cuántos? Cuántas? (elementos contables, pluralizables) |
| How much? | Cuánto? (elemento no contable, no pluralizable) |
| How long? | Cuánto tiempo? |

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**Handout #11.3.1**

**Group # _____**

| Sequence number | Step |
|---|---|
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

| |
|---|
| Introducing yourself to the patient |
| Guiding the interview by asking specific open questions |
| Summarizing the patient's issues again to show understanding |
| Guiding the interview by asking specific open questions |
| Asking fewer simple 'yes' / 'no' questions |
| Not immediately dismissing patient's opinion of the problem |
| Offering advice in simple language a layman could understand |
| Making indirect suggestions instead of giving directions or instructions e.g. about changing lifestyle. |

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**Handout #11.4.1**

**Instructions:** Walk around the class and ask your classmates questions about the following situations. When someone answers 'yes', write his/her name in the corresponding space.
*You have to formulate full questions, and if possible, ask for further details.

**Find someone who…**

- has been having problems falling asleep _____
- exercises regularly _____
- drinks liquor _____
- smokes _____
- feels tired during the day _____
- has been taking pills recently _____
- had a situation that happened during the last few months that made him/her change his/her lifestyle _____
- whose body has sent him/her a sign that he/she needs to change his/her lifestyle _____
- does something else beyond work or study _____

# MEDICAL ENGLISH

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**Handout #11.5.1**

**Instructions**: As you watch the video, write the ideas or expressions the doctor uses for each of the steps listed in the first column. The steps in the video might be said in a different order than the one given below.

| | |
|---|---|
| 1) Introducing yourself to the patient | |
| 2) Allowing the patient to introduce the problem | |
| 3) Summarizing the patient's issues again to show understanding | |
| 4) Guiding the interview by asking specific open questions | |
| 5) Asking fewer simple 'yes' / 'no' questions | |
| 6) Not immediately dismissing patient's opinion of the problem | |
| 7) Offering advice in simple language a layman could understand | |
| 8) Making indirect suggestions instead of giving directions or instructions e.g. about changing lifestyle. | |

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**Handout #11.5.1 ANSWER KEY**

**Instructions**: As you watch the video, write the ideas or expressions the doctor uses for each of the steps listed in the first column. The steps in the video might be said in a different order than the one given below.

| | |
|---|---|
| 1) Introducing yourself to the patient | Good afternoon, my name is Monica Schmidt, your doctor for today |
| 2) Allowing the patient to introduce the problem | ...how can I help you?<br>Patient: yes doctor, I'm here because recently I've been having problems falling asleep. And of course that means actually in the day I feel tired, so I was wondering if I could get some sleeping pills to help me sleep better. |
| 3) Summarizing the patient's issues again to show understanding | Doctor: yeah, I understand that you just want some help falling asleep |
| 4) Guiding the interview by asking specific open questions | I have to ask you some further questions; for how long have you been having these problems? |
| 5) Asking fewer simple 'yes' / 'no' questions | is there anything that has happened during these last few months<br>can I, can I ask you, do you smoke? |
| 6) Not immediately dismissing patient's opinion of the problem | Yes, yes you know nowadays people want to manage everything and control everything and be strong in every phase of the life but you know sometimes there are phases in life and your body sends you a sign… |
| 7) Offering advice in simple language a layman could understand | maybe, maybe you should change your lifestyle in some ways…<br>I like wine too, but maybe you have to be careful about that, because, well, this all affects your ability to fall sleep, to get a good night rest |
| 8) Making indirect suggestions instead of giving directions or instructions e.g. about changing lifestyle. | so you, what about, what about making some exercise during the day, doing something for yourself instead just of your job? |

**MEDICAL ENGLISH**

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**Handout #11.5.1 (ANSWER KEY if later we decided to change it to a matching)**

**Instructions**: As you watch the video, write the ideas or expressions the doctor uses for each of the steps listed in the first column. The steps in the video might be said in a different order than the one given below.

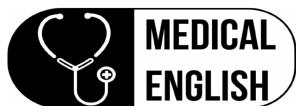| | |
|---|---|
| 1) Introducing yourself to the patient | (4) I have to ask you some further questions; for how long have you been having these problems? |
| 2) Allowing the patient to introduce the problem | (7) maybe, maybe you should change your lifestyle in some ways… <br> I like wine too, but maybe you have to be careful about that, because, well, this all affects your ability to fall sleep, to get a good night rest |
| 3) Summarizing the patient's issues again to show understanding | (8) so you, what about, what about making some exercise during the day, doing something for yourself instead just of your job? |
| 4) Guiding the interview by asking specific open questions | (3) Doctor: yeah, I understand that you just want some help falling asleep |
| 5) Asking fewer simple 'yes' / 'no' questions | (6) Yes, yes you know nowadays people want to manage everything and control everything and be strong in every phase of the life but you know sometimes there are phases in life and your body sends you a sign... |
| 6) Not immediately dismissing patient's opinion of the problem | (1) Good afternoon, my name is Monica Schmidt, your doctor for today |
| 7) Offering advice in simple language a layman could understand | (5) is there anything that has happened during these last few months <br> can I, can I ask you, do you smoke? |
| 8) Making indirect suggestions instead of giving directions or instructions e.g. about changing lifestyle. | (2) ...how can I help you? <br> Patient: yes doctor, I'm here because recently I've been having problems falling asleep. And of course that means actually in the day I feel tired, so I was wondering if I could get some sleeping pills to help me sleep better. |

**MEDICAL ENGLISH**
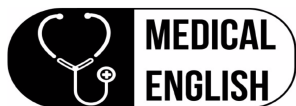
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**Handout #11.6.1**

**Instructions**: Use the instructions and the situation below to role-play a conversation between a doctor and a patient. When you are done, switch roles and practice the conversation again. When it is your turn to evaluate your classmate, use Handout #11.6.2 to give him/her feedback.

Situation: A patient visits a doctor because of his/her recent sleeping problems. The patient wants the doctor to prescribe him/her some sleeping pills. The doctor finds out that the patient is prone to substance addiction. The doctor refuses to treat the patient with sleeping pills, and suggests exercising instead. The patient understands and accepts.

| Doctor | Patient |
|---|---|
| ● Introduce yourself to the patient and<br>● ask him/her how you can help him/her | ● Tell the doctor about the sleeping problems you've been having<br>● Say how you feel about it<br>● Say how you expect the doctor to help you |
| ● Express you understand the situation<br>● Tell the patient that you need to ask him/her some questions<br>● Ask about the time he/she has been having those problems. | ● You have gone through this for several months<br>● Say your occupation and how it affects your performance<br>● Say how you think you could feel better if you could sleep better |
| ● Repeat back what the patient just said to you<br>● Say you understand but need to ask more questions<br>● Ask about any situation that could have caused it | ● Talk about pressure at work<br>● Say you are off a partner (working alone)<br>● Problems in personal life<br>● Say again you would feel better if you were taking pills |
| ● Express your understanding of the situations and subtly suggest that our bodies send signs when we need to change our lifestyles<br>● Ask the patient if he/she smokes or drinks | ● You are a non-smoker<br>● You are a regular drinker<br>● Say how often you drink<br>● Say it how good it makes you feel |
| ● Ask about how much the patient drinks | ● You drink about three or four glasses of wine every time |
| ● Tell the patient how alcohol affects his/her ability to sleep | ● You get surprised at how it affects because you thought it was the other way around. |
| ● Tell him/her to reduce alcohol consumption. | ● You agree and talk to the doc again about the need for pills |
| ● Be honest with the patient. Tell him/her you can't prescribe pills due to the tendency to develop addictions, and how taking pills would affect him/her.<br>● Suggest exercising | ● Say you can do that<br>● Thank the doctor |

| | | |
|---|---|---|
| ① 1 | ② 2 | ③ 3 |
| ④ 4 | ⑤ 5 | ⑥ 6 |
| ⑦ 7 | ⑧ 8 | ⑨ 9 |
| ⑩ 10 | ⑪ 11 | ⑫ 12 |

**MEDICAL ENGLISH**

Lewis, Barahona, & Quesada

**Handout #11.6.2**

**Instructions**: Use an "X" to mark your opinion about your classmate's performance as a doctor that is interviewing a patient in order to make decisions about prescription. Choose one of the four options (No, Not enough, Mostly, or Absolutely) to describe your opinion about how well your classmate demonstrated the elements of a good performance listed below. You can also write extra comments in the "**Comments**" section below.

| Elements of Good Patient Interviewing Approach | Extent of Completion | | | |
|---|---|---|---|---|
| | No | Not enough | Mostly | Absolutely |
| 1. Introducing yourself to the patient | | | | |
| 2. Allowing the patient to introduce the problem | | | | |
| 3. Summarizing the patient's issues again to show understanding | | | | |
| 4. Guiding the interview by asking specific open questions | | | | |
| 5. Asking fewer simple 'yes' / 'no' questions | | | | |
| 6. Not immediately dismissing patient's opinion of the problem | | | | |
| 7. Offering advice in simple language a layman could understand | | | | |
| 8. Making indirect suggestions instead of giving directions or instructions e.g. about changing lifestyle. | | | | |
| 9. Was it easy for you to understand everything the doctor said? | | | | |

Comments:_____
_____
_____
_____
_____

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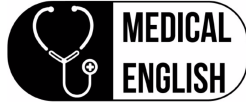

MEDICAL ENGLISH

Barahona, Lewis & Quesada

Date: November 11, 2019
Lesson Plan #12
Student Teachers: Isela Barahona, Simone Lewis, and Edwin Quesada
Assistants: Isela Barahona, Simone Lewis, and Edwin Quesada
Unit #3
Title of Unit: "Patient Talk: Speaking in Medical English"

**Unit Goal**: By the end of this unit, students will be able to effectively communicate orally with a patient about his/her medical record, diagnosis, medication, and/or discharge summary by identifying correct vocabulary, grammatical structures, and bedside manners used in videos or scripts and reproducing them during role-plays.

**General Objective:** By the end of the lesson, students will be able to successfully communicate with a patient by asking questions and giving information about a medical record, a diagnosis, and/or a prescription in a role-play.

**Specific Objectives**: The students will be able to
1. Demonstrate knowledge of vocabulary studied in class by making informed guesses about their classmates' drawings.
2. Demonstrate knowledge of vocabulary studied in class by asking their classmates questions to find out if they have certain health problems.
3. Demonstrate knowledge of the six-step protocol for breaking bad news by implementing it in a role-play between a doctor and a patient.
4. Use correct grammar to complete a medical record, break bad news, or prescribe medication by asking appropriate questions according to the situation.
5. Successfully exchange ideas about health issues by asking and answering questions and giving information in a doctor and patient role-play.

Abbreviations used:  T = teacher   A = assistant   Ss = students UL= useful language      L = listening      S = speaking      R = reading       W = writing

| Objectives | Procedures | Macro Skills | Language (Vocabulary, expressions, useful language, grammatical or phonetic features) | Strategies | Time |
|---|---|---|---|---|---|
| 1 | **Warm-up (Vocabulary Review: Pictionary):** <br>1. As the Ss arrive to class, they will work in pairs or in groups of three. With personal boards, markers, and a list of vocabulary words from Unit 3, they will play Pictionary within their groups. (**Note**: We would have preferred to do this activity as a class rather than in groups, but due to classroom difficulties, we thought it would be easier to have the Ss play the game in small groups.) The T will give each student a list of words (with terms taught throughout Unit 3; see Handout #12.1.1), which the Ss will have to draw (without speaking). As the S draws, his/her partner(s) will try to guess the vocabulary words that their classmate is trying to illustrate. <br><br>2. Once all of the words have been guessed or once the 10 minutes have passed, the game ends. <br><br>**Materials:** <br>Handout #12.1.1 (slips of paper with the vocabulary words) <br>Small white boards <br>Markers | L <br>S | **Vocabulary**: <br>**RL**: pregnant, sore throat, nosebleed, vomit/vomiting, aspirin, penicillin, taking medicine, smoke (smoking), medical record, prolonged (menstrual) bleeding <br><br><br>**UL**: <br> - Is it _____? | Drawing one's idea <br><br>Figuring out meaning | 10 minutes <br><br>5:00-5:10pm |
| 2 | **Pre-task 1 (Simone):** | R | **Vocabulary**: | Recalling | 20 |

| | | **Medical Record Vocabulary Review**<br>1. The T puts the Ss into two teams based on their seating arrangement at the time of the game (physically splitting the class into two teams). Then, the T puts two desks in the front of the class, each with a bell. The Ss will take turns coming up to the two desks (one S per team; both Ss at the same time). Using the projector, the T will project information cards similar to those given to students as a pre-task for a previous lesson (originally from Lesson Plan 9), but without the English translations and sentences. The Ss think of the words in English as fast as they can, and the first S to ring the bell gives his/her answer. If the answer is correct, his/her team gets one point. If the answer is incorrect, the other team has a chance to say the answer for one point. The game ends after all of the words have been guessed. The team with the most points at the end wins.<br><br>2. The T briefly elicits the polite question form to ask if a patient has any of the conditions mentioned during the game.<br><br>3. Next, the Ss will be given a *Find Someone Who* activity (Handout #12.2.1) and role cards (Handout #12.2.2), indicating the conditions/symptoms/etc. that they have. Then, the Ss will walk around the | S<br>L | **RL**: high blood pressure, heart disease, suffer from, fainting, medical treatment, currently, AIDS, HIV, immunological disorders, abnormal reaction, kidney disease, Can you tell me ___?, Could you tell me ___?, Would you like to tell me ___?<br><br>**UL**:<br>- Do you suffer from ___?<br>- Do you have ___?<br>- Have you ever had ___?<br>- Are you allergic to ___? | information<br><br>Listening for details | minutes<br><br>5:10-5:30pm |

| | | | | | |
|---|---|---|---|---|---|
| | class and interview each other to find the person/people who has/have each condition/symptom/etc. The Ss will interview each other until there are five minutes remaining for the pre-task, or until everyone has finished. At this point, the T will ask the Ss who had each condition to verify that they completed the activity.<br><br>**Materials:**<br>Handout #12.2.1 (Find Someone Who…)<br>Handout #12.2.2 (Role cards)<br>PowerPoint slides (for game, instructions, and UL) | | | | |
| 3 | **Pre-task 2 (Edwin):**<br>**(Breaking Bad News and Questions Review)**<br>In pairs, Ss will be assigned to practice a role-play in which they will give the results of a diagnosis to a patient.<br>　1. First, in order to make the pairs, the T will have Ss take out a strip of paper with either a question or a statement (paper strips from Handout #12.3.1). **Notice**: There will be four questions and eight answers (two answers per question). Questions will be numbered and answers will have letters. If there were any absentees (out of 12 Ss expected), the T will remove one answer strip per absentee, making sure not to remove more than one answer per question (the T will keep an answer sheet handy, so he will know | L<br>S<br>R<br>W | **Vocabulary**:<br>**RL**:<br>　- I have some bad news to tell you…<br>　- I'm very sorry to give you this news…<br>　- I know this must be very difficult for you…<br>　- Please feel free to call any time…<br>　- If you have any questions...<br><br>**UL**:<br>　- The question and the answer (don't) match.<br>　- Is this correct?<br>　- What is the first/second/third...step?<br>　- What does (word) mean? | Asking and answering questions<br><br>Completing information<br><br>Role playing | 20 minutes<br><br>5:30-5:50pm |

| | | | | | |
|---|---|---|---|---|---|
| | which answers to remove).<br><br>2. The Ss that have questions will find their partners by asking them the question they got. When they find the classmate(s) whose answers match the question, they will get together to make a group.<br><br>3. Once they are in groups, the T will distribute Handout #12.3.2a and Handout #12.3.2b (a different one for each group member).<br><br>4. Ss will solve an information gap activity by asking the other group member(s) for the missing information in their corresponding handouts.<br><br>5. When their handouts are complete, they will play the roles of doctor and patient using the 'read and look up technique' to practice the conversation on their handouts.<br><br>**Materials:**<br>Handout #12.3.1<br>Handout #12.3.2a<br>Handout #12.3.2b | | | | |
| 4 | **Pre-task 3 (Isela):**<br>**(Question Formation Review)**<br>1. **Error correction**. Each student gets a handout (Handout #12.4.1) with different questions. They work in pairs to identify which questions are | L<br>S<br>R<br>W | **Vocabulary**:<br>**RL**:<br>Question words: what, when, where, how, who, how long, how much, how many.<br>Modal auxiliaries: may, can, could, | Correcting language<br><br>Classifying information | 20 minutes<br><br>5:50-6:10pm |

| | | | |
|---|---|---|---|
| grammatically correct and which are not. For the incorrect ones, they write the correction. Once they are ready, they make new pairs by finding the person with the same sticker on their handout.<br><br>2. Using the same handout, students classify the questions by the situation in which doctors would normally use them (getting patients' information, delivering bad news or prescribing medication). The T checks this activity by asking students to volunteer to read their answers out loud for the class.<br><br>3. **Mini conversations**. Desks are arranged in pairs and in front of each other. Students are given a color cube (green is doctor and red is patient) and they sit in pairs. They have three minutes to carry out an improvised conversation using some of the questions from the previous handout. When the three minutes are up, students switch the cubes and find a new partner (with a different color cube) and repeat the activity. Three or four rounds are played, depending on time. T and As walk around listening to the conversations and providing feedback and corrections.<br><br>**Materials:**<br>Handout #12.4.1 | | would, should.<br><u>Other auxiliary verbs</u>: do, does, did, have, has, had, will have, am, is, are, was, were, will be<br><br>**UL**:<br>   - How do you say (word)?<br>   - Could you repeat that, please? | Asking questions | |

| 5 | **Main task:**<br>1. Ss are randomly called over in pairs by the teachers to take turns playing the roles of doctor and patient. For that purpose, Ss will be given three situations written on strips of paper (Handout #12.5.1). Every S will play the role of doctor/patient once using a different situation each turn (Handouts #12.5.2, #12.5.3, and #12.5.4). To be clear, the Ts will place the three scenarios upside-down so that the Ss don't know which is which. Then, the first student in the pair selects one of the three scenarios and plays the role of the doctor, while his/her partner plays the patient. Then, the second student chooses a different scenario and plays the doctor, while the first student plays the patient.<br><br>2. As Ss talk, two teachers will be in charge of evaluating their oral performance using the oral evaluation form (Handout #12.5.5). The quizzes will also be recorded electronically so that the third teacher can evaluate them later.<br><br>3. While the Ss are taking their quizzes outside of the classroom, the rest of the Ss stay inside the classroom with the remaining assistant and create and practice their role-plays for the graduation ceremony. | R<br>L<br>S | **Vocabulary**:<br>**RL**:<br>Question words: what, when, where, how, who, how long, how much, how many.<br>Modal auxiliaries: may, can, could, would, should.<br>Other auxiliary verbs: do, does, did, have, has, had, will have, am, is, are, was, were, will be<br>Main verbs: throw up, need, require, prescribe, made/caused by<br>Nouns: MRI, surgery, scan, test, blood pressure, heart disease, bleeding, origin, cause.<br>Phrases/sentences: Have you suffered from…? Are you allergic to…? MRI scanning, give an MRI, I'm afraid I have some bad news for you, do you mind if I tell you…? what questions do you have? how can I help you? Recently I've been having problems…, for how long have you been…? It's been getting worse and worse...Your body sends you a sign that...I cannot prescribe anything that...what about making some exercise…?<br><br>**UL**:<br>- How/what do you say/call it when…?<br>- Was I clear? (Did you understand me?)<br>- What I mean is that... | Asking for information<br><br>Giving information<br><br>Following steps in a sequence | 50 minutes<br><br>6:10-7:00pm |

| | | | | | |
|---|---|---|---|---|---|
| | **Materials:**<br>Handouts #12.5.1, #12.5.2, #12.5.3, #12.5.4, and #12.5.5. | | | | |
| 6 | **Post-task:**<br>1. There won't be a post task since the main task is a quiz. Instead, Ss will prepare their role-plays for the graduation ceremony during the quiz, and will present them for teacher feedback once all of the students have completed the quiz.<br>2. If time, Ss will complete the Unit 3 Goal Achievement questions (for research purposes). If not, it will be given as homework. | | | | 30 minutes<br><br>7:00-7:30pm |

**Note**: The quiz, and therefore the class, will end at 7:00 p.m. so that the Ss can rehearse and present the language activity they will perform on graduation day from 7:00 to 7:30 p.m.

**Homework**: Practice your role-plays for the graduation ceremony.

**MEDICAL ENGLISH**
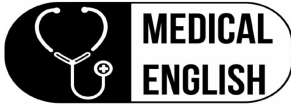
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**Handout #12.1.1**

Student A

1. Pregnant
2. Sore throat
3. Nosebleed
4. Penicillin
5. Prolonged (menstrual) bleeding

Student B

1. Aspirin
2. Vomit/Vomiting
3. Taking medicine
4. Smoke (Smoking)
5. Medical record

Student A

1. Pregnant
2. Sore throat
3. Nosebleed
4. Penicillin
5. Prolonged (menstrual) bleeding

Student B

1. Aspirin
2. Vomit/Vomiting
3. Taking medicine
4. Smoke (Smoking)
5. Medical record

Student A

1. Pregnant
2. Sore throat
3. Nosebleed
4. Penicillin
5. Prolonged (menstrual) bleeding

Student B

1. Aspirin
2. Vomit/Vomiting
3. Taking medicine
4. Smoke (Smoking)
5. Medical record

**MEDICAL ENGLISH**
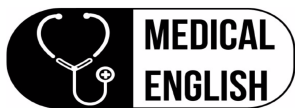
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**Handout #12.2.1**

# Find Someone Who...

**Instructions**: Walk around the classroom and interview your classmates. Try to find someone who has/suffers from each condition. When you find someone who has/suffers from each number, write their name next to the sentence.

## Find someone who...

1. suffers from nosebleeds.                                    _____

2. is allergic to aspirin.                                     _____

3. suffers from fainting.                                      _____

4. currently has a sore throat.                                _____

5. has high blood pressure.                                    _____

6. suffers from heart disease.                                 _____

7. is currently pregnant.                                      _____

8. has AIDS.                                                   _____

9. suffers from prolonged bleeding.                            _____

10. has had an abnormal reaction to penicillin.               _____

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**Handout #12.2.2**

**Student A**
You suffer from prolonged bleeding.

**Student H**
You have high blood pressure.

**Student B**
You are currently pregnant.

**Student I**
You suffer from nosebleeds.

**Student C**
You have AIDS.

**Student J**
You have had an abnormal reaction to penicillin.

**Student D**
You suffer from fainting.
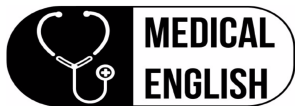
**Student K**
You had a sore throat last week, but not anymore.

**Student E**
You currently have a sore throat.

**Student L**
You are allergic to peanuts.

**Student F**
You suffer from heart disease.

**Student G**
You are allergic to aspirin.

**Student M**
You don't suffer from anything. Congratulations! You're healthy.

**MEDICAL ENGLISH**

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**Handout #12.3.1**

| |
|---|
| Question 1: Should doctors tell patients the truth about their health conditions? |
| Question 2: What are some common diseases that the physician may forget represent "bad news" to patients? |
| Question 3: In what case is it justified for physicians to withhold the truth? |
| Question 4: Who should break bad news to patients? |
| Answer A: In the case where disclosure is likely to cause real and predictable harm, it may be appropriate not to disclose. |
| Answer B: At times, the primary caregiver may be the best person to deliver bad news. |
| Answer C: Yes. In recent studies, most patients surveyed would want to know about a diagnosis of Alzheimer's disease or cancer. |
| Answer D: Two examples can be hypertension and diabetes |
| Answer E: if the competent patient asks not to be told the results or the truth, it may be appropriate to respect this desire. |
| Answer F: often, it's the specialist or another caregiver that finds him/herself in a position to give the news to the patient. |
| Answer G: Definitely. Today, most physicians believe that telling patients the truth fosters trust and demonstrates respect. |
| Answer H: One example can be high cholesterol |

Answers: 1 C & G, 2 D & H, 3 A & E, 4 B & F

**MEDICAL ENGLISH**

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**Handout #12.3.2a**

**Instructions**: Without looking at your classmate's handout, ask him/her for the missing information in your handout and complete the left column. Answer your classmate's questions, too. Then, take turns practicing the following conversation with a partner.

| | |
|---|---|
| | Patient: "Come in."<br>Doctor: "Hey, how are you?"<br>Patient: "Good. How are you?"<br>Doctor: "Good. So this is you." |
| FINDING OUT HOW MUCH THE PATIENT KNOWS (Repeats back what patient says) | Doctor: "You know last time you were here two weeks ago?"<br>Patient: "Yeah."<br>Doctor: "Well, one of the things we did was perform a colonoscopy."<br>Patient: "Yeah. It was not fun."<br>Doctor: "Yeah. And, uh-" |
| FINDING OUT HOW MUCH THE PATIENT WANTS TO KNOW (Provides a warning) | Doctor: "You know, I got the results back and reviewed them with the help of Dr. Lu."<br>Patient: "Okay."<br>Doctor: "And this is difficult for me to say because unfortunately, I have some bad news to tell you." |
| | Doctor: "They found a mass in your descending colon.<br>Patient: "Okay.<br>Doctor: "Okay. And so they did a biopsy.<br>Patient: "Okay.<br>Doctor: "And what a biopsy does, it lets us know what kind of cells there are to see if it's positive for cancer.<br>Patient: "Okay."<br><br>Doctor: "The results came back that it is an invasive adenocarcinoma. And what that means is that you do have colon cancer."<br>Patient: "Ooooh." |
| RESPONDING TO THE PATIENT'S FEELINGS (Names emotions) | Doctor: "When the cancer's this far advanced there is no cure."<br>Patient: "Oh."<br>Doctor: "I'm very sorry to give you this news. I know this must be very difficult for you. And I know it's not what you're expecting."<br>Patient: "Oh yeah. Oh, um, okay."<br>Doctor: "So sorry."<br>Patient: "No. It's a …" (sighs) |
| | Doctor: "Please feel free to call any time if you have any questions for me."<br>Patient: "Thanks." |

Adapted from https://99percentinvisible.org/episode/breaking-bad-news/transcript/

MEDICAL ENGLISH

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**Handout #12.3.2b**

**Instructions**: Without looking at your classmate's handout, ask him/her for the missing information in your handout and complete the left column. Answer your classmate's questions, too. Then, take turns practicing the following conversation with a partner.
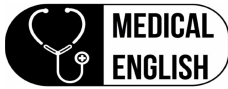
| | |
|---|---|
| GETTING STARTED (Sits down, asks open ended questions) | Patient: "Come in."<br>Doctor: "Hey, how are you?"<br>Patient: "Good. How are you?"<br>Doctor: "Good. So this is you." |
| | Doctor: "You know last time you were here two weeks ago?"<br>Patient: "Yeah."<br>Doctor: "Well, one of the things we did was perform a colonoscopy."<br>Patient: "Yeah. It was not fun."<br>Doctor: "Yeah. And, uh-" |
| | Doctor: "You know, I got the results back and reviewed them with the help of Dr. Lu."<br>Patient: "Okay."<br>Doctor: "And this is difficult for me to say because unfortunately, I have some bad news to tell you." |
| SHARING THE INFORMATION (Gives News directly, gives time for the patient to absorb the news, speaks in plain language) | Doctor: "They found a mass in your descending colon.<br>Patient: "Okay.<br>Doctor: "Okay. And so they did a biopsy.<br>Patient: "Okay.<br>Doctor: "And what a biopsy does, it lets us know what kind of cells there are to see if it's positive for cancer.<br>Patient: "Okay."<br><br>Doctor: "The results came back that it is an invasive adenocarcinoma. And what that means is that you do have colon cancer."<br>Patient: "Ooooh." |
| | Doctor: "When the cancer's this far advanced there is no cure."<br>Patient: "Oh."<br>Doctor: "I'm very sorry to give you this news. I know this must be very difficult for you. And I know it's not what you're expecting."<br>Patient: "Oh yeah. Oh, um, okay."<br>Doctor: "So sorry."<br>Patient: "No. It's a …" (sighs) |
| PLANNING AND FOLLOW THROUGH (Elicits questions with an open-ended question, offers support) | Doctor: "Please feel free to call any time if you have any questions for me."<br>Patient: "Thanks." |

Adapted from https://99percentinvisible.org/episode/breaking-bad-news/transcript/

**MEDICAL ENGLISH**

Lewis, Barahona, & Quesada

## Handout #12.3.2 (Answer Key)

**Instructions**: Without looking at your classmate's handout, ask him/her for the missing information in your handout and complete the left column. Answer your classmate's questions, too. Then, take turns practicing the following conversation with a partner.

| | |
|---|---|
| GETTING STARTED (Sits down, asks open ended questions) | Patient: "Come in."<br>Doctor: "Hey, how are you?"<br>Patient: "Good. How are you?"<br>Doctor: "Good. So this is you." |
| FINDING OUT HOW MUCH THE PATIENT KNOWS (Repeats back what patient says) | Doctor: "You know last time you were here two weeks ago?"<br>Patient: "Yeah."<br>Doctor: "Well, one of the things we did was perform a colonoscopy."<br>Patient: "Yeah. It was not fun."<br>Doctor: "Yeah. And, uh-" |
| FINDING OUT HOW MUCH THE PATIENT WANTS TO KNOW (Provides a warning) | Doctor: "You know, I got the results back and reviewed them with the help of Dr. Lu."<br>Patient: "Okay."<br>Doctor: "And this is difficult for me to say because unfortunately, I have some bad news to tell you." |
| SHARING THE INFORMATION (Gives News directly, gives time for the patient to absorb the news, speaks in plain language) | Doctor: "They found a mass in your descending colon.<br>Patient: "Okay.<br>Doctor: "Okay. And so they did a biopsy.<br>Patient: "Okay.<br>Doctor: "And what a biopsy does, it lets us know what kind of cells there are to see if it's positive for cancer.<br>Patient: "Okay."<br><br>Doctor: "The results came back that it is an invasive adenocarcinoma. And what that means is that you do have colon cancer."<br>Patient: "Ooooh." |
| RESPONDING TO THE PATIENT'S FEELINGS (Names emotions) | Doctor: "When the cancer's this far advanced there is no cure."<br>Patient: "Oh."<br>Doctor: "I'm very sorry to give you this news. I know this must be very difficult for you. And I know it's not what you're expecting."<br>Patient: "Oh yeah. Oh, um, okay."<br>Doctor: "So sorry."<br>Patient: "No. It's a …" (sighs) |
| PLANNING AND FOLLOW THROUGH (Elicits questions with an open-ended question, offers support) | Doctor: "Please feel free to call any time if you have any questions for me."<br>Patient: "Thanks." |

Adapted from https://99percentinvisible.org/episode/breaking-bad-news/transcript/

**MEDICAL ENGLISH**

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**Handout #12.4.1**

**Instructions**. 1. Read the questions and identify which are correct and which are incorrect by putting a check (✔) in the corresponding column. If the question is incorrect, write the correction in the space provided below.

| Question | Correct | Incorrect | Situation |
|---|---|---|---|
| 1. Would you like me to explain the results? | | | |
| C/ | | | |
| 2. Can you tell me where the pain is? | | | |
| C/ | | | |
| 3. When does the pain start? | | | |
| C/ | | | |
| 4. You could tell me why you came to the hospital? | | | |
| C/ | | | |
| 5. Why you don't try to exercise more? | | | |
| C/ | | | |
| 6. Are you currently under any other treatment? | | | |
| C/ | | | |
| 7. Have you ever have surgery? | | | |
| C/ | | | |
| 8. You drink alcohol? | | | |
| C/ | | | |
| 9. Would you prefer to have a family member here? | | | |
| C/ | | | |
| 10. What are you think? | | | |
| C/ | | | |

2. Identify in which situations you can use each of the questions and write it in the space provided on the right. For example: Breaking bad news, getting information for medical record, wrap-appointment, etc.

**MEDICAL ENGLISH**

Lewis, Barahona, & Quesada

## Handout #12.5.1

### Unit 3 Quiz Scenarios

| Scenario 1:<br><br>Completing a medical record | Physician/Patient Scene: The patient has not been feeling well for the past few days. Today he/she visits his/her physician's office with a very sore throat, runny nose, dry cough, fever, poor appetite, and reports feeling weak and tired. After a physical examination, the doctor informs the patient that he/she needs to ask him/her a few questions in order to update his/her medical record. |
|---|---|
| Scenario 2:<br><br>Breaking bad news | Physician/Patient Scene: following Buckman's six step protocol, the doctor will give bad news to a patient. In this case, the patient's parent has been waiting for about 4 hours for his/her child, who was given an MRI because he had been suffering from strong headaches and vomiting during the last week. Based on the symptoms and the MRI the physician discovers the child has a brain tumor. |
| Scenario 3:<br><br>Prescribing medication | Physician/Patient Scene: The patient has not been able to sleep well for the past few days. Today he/she visits his/her physician's office because he/she thinks that the problem can be solved by taking pills. However, the patient is a regular alcohol drinker. After asking a series of questions, the doctor informs the patient that he/she cannot prescribe him/her pills since he/she is prone to developing addictions, and recommends exercising instead. |

**MEDICAL ENGLISH**
Lewis, Barahona, & Quesada

**Handout #12.5.2**
**Situation 1 Student Guide Given during Quiz 3**

<u>**HISTORIA CLÍNICA**</u>

**NOMBRE:** ................................................................................................................................

Conteste las siguientes preguntas con un Sí o No, sin dejar en blanco ninguno de los espacios correspondientes. Este cuestionario es hecho con el fin de su protección y la información suministrada en él será utilizada con carácter confidencial, para fines clínicos.

1. Razón de la visita y síntomas:
_____
_____

2. ¿Está bajo tratamiento médico?        Sí ☐  No ☐ Cuál? _____

3. ¿Está tomando algún medicamento?   Sí ☐  No ☐ Cuál? _____
4. Ha padecido usted de:

    Diabetes               Sí ☐  No ☐                    Artritis                          Sí ☐   No ☐

    Presión Alta          Sí ☐  No ☐                    Enfermedades del Corazón      Sí ☐   No ☐

    Trastornos Renales   Sí ☐  No ☐

    Enfermedades inmunológicas: _____        SIDA/VIH   Sí ☐  No ☐

    Otras enfermedades: _____
5. ¿Le han operado alguna vez? _____

6. ¿Ha observado alguna alteración en su salud general en los últimos meses?
_____
7. ¿Padece o ha padecido de alguna enfermedad o trastorno que no se haya mencionado anteriormente?
_____
8. Es usted alérgico a:

    Aspirina:        Sí ☐  No ☐        Penicilina:            Sí ☐  No ☐
    Otros: _____

9. Ha tenido alguna vez reacciones anormales a la anestesia?        Sí ☐  No ☐

10. Presenta sangrados prolongados?                                 Sí ☐  No ☐

11. ¿Padece de desmayos?                                            Sí ☐  No ☐

12. ¿Está embarazada?                                               Sí ☐  No ☐

**MEDICAL ENGLISH**
Lewis, Barahona, & Quesada

## Handout #12.5.3
## Situation 2 Student Guide Given during Quiz 3

**Instructions:** Work with a partner. You will role-play a conversation between a doctor and a patient, in which the doctor breaks bad news to the patient. Follow the step sequence below as a guide.

### 1. Getting started

**The doctor:**
- introduces himself/herself
- sits (and makes sure the patient is seated too)
- asks the patient how (s)he is feeling (using open-ended questions)

### 2. Finding out how much the patient knows

**The doctor:**
- asks the patient about his/her illness and symptoms
- repeats the patient's feelings and symptoms

### 3. Prepares the patient for bad news (uses simple language)

**The doctor:**
- refers to the patient's symptoms and the MRI results
- gives bad news directly
- gives the patient time to accept the news

### 4. Responding to the patient's feelings

**The doctor:**
- explains that sometimes symptoms of one illness are similar to the symptoms of other illnesses

### 5. Asking for permission to continue giving further information

**The doctor:**
- refers the patient to treatment (surgery)
- asks the patient if he/she has any questions

### 6. Responds to feelings

**The doctor:**
- answers the patient's questions and refers to the support that the patient can get (to help with his/her anxiety)
- says goodbye

**MEDICAL ENGLISH**

Lewis, Barahona, & Quesada

**Handout #12.5.4**
**Situation 3 Student Guide Given during Quiz 3**

| Doctor |
|---|
| • Introduce yourself to the patient and<br>• ask him/her how you can help him/her |
| • Express you understand the situation<br>• Tell the patient that you need to ask him/her some questions<br>• Ask about the time he/she has been having those problems. |
| • Repeat back what the patient just said to you<br>• Say you understand but need to ask more questions<br>• Ask about any situation that could have caused it |
| • Express your understanding of the situations and subtly suggest that our bodies send signs when we need to change our lifestyles<br>• Ask the patient if he/she smokes or drinks |
| • Ask about how much the patient drinks |
| • Tell the patient how alcohol affects his/her ability to sleep |
| • Tell him/her to reduce alcohol consumption. |
| • Be honest with the patient. Tell him/her you can't prescribe pills due to the tendency to develop addictions, and how taking pills would affect him/her.<br>• Suggest exercising |

**MEDICAL ENGLISH**

Lewis, Barahona, & Quesada

**Handout #12.5.5**

**Unit 3 Quiz Rubric**

Student Name: _____
Evaluator Name: _____
Total points: 9 points
Points obtained: _____
Grade: _____

| Aspect | 3 | 2 | 1 | 0 | Comments |
|---|---|---|---|---|---|
| Grammar | Few or no grammar mistakes in the structures studied in the unit. | Some grammar mistakes in the structures studied in the unit, but they do not represent a problem in comprehension. | Grammar mistakes are a serious problem and hinder comprehension. | There was no (or not enough) production to evaluate grammar structures. | |
| Vocabulary | Few or no mistakes in the use of the vocabulary studied in the unit. | Some mistakes in the use of the vocabulary studied in the unit, but they do not represent a problem in comprehension. | Mistakes in vocabulary are a serious problem and hinder comprehension. | There was no (or not enough) production to evaluate the use of vocabulary. | |
| Fluency | Conversation was carried out fluently, without many interruptions in the flow of the interview. There were no false starts nor unnatural pauses. | Conversation was carried out with a few fluency problems (fillers, pauses, use of Spanish). There were 1-2 false starts and/or 1-2 unnatural pauses, | Conversation was performed with a lot of fluency problems (fillers, pauses, use of Spanish, slow speech). There were 3 or more false starts or unnatural pauses. | Conversation was barely transmitted because of overuse of fillers, pauses, slow speech. | |

**Appendix M**
**Preliminary Student Performance Assessment Instrument**
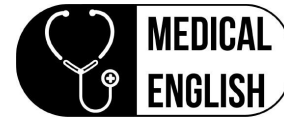
MEDICAL ENGLISH

Universidad de Costa Rica
Escuela de Lenguas Modernas
Maestría en la Enseñanza del Inglés como Lengua Extranjera
II Term 2019
Course: Medical English
Role play
Evaluators: Isela Barahona, Simone Lewis, & Edwin Quesada
Student's name: _____

Time allotted: 10 minutes
Total Points: 16 points
Points obtained: _____
Percentage: 10%
Percentage obtained: _____
Grade: _____

**Instructions**. Students work individually with one of the student teachers developing a conversation based on a situation given at the moment. The other two student teachers observe, take notes, and evaluate the student's performance. Since students will play the role of the doctor, they must lead the conversation; however, the student teachers might prompt ideas if necessary.

**Situation #1 (Student version)**
You are a general doctor working in the hospital. A young patient (20-year-old female) comes to the office with different symptoms.
Greet her into your office and ask for the following information:
-Basic personal information
-Symptoms (description and time she has had them)
-2 or 3 other questions you consider necessary in order to guess the patient's problem
Talk to your patient about this information:
-What you think the problem might/could be
-What you recommend her to do

**Situation #2 (Student version)**
You are a general doctor working in your clinic. An eldery patient (63-year-old male) comes to the office with different symptoms.
Greet him into your office and ask for the following information:
-Basic personal information
-Symptoms (description and time he has had them)
-2 or 3 other questions you consider necessary in order to guess the patient's problem
Talk to your patient about this information:
-What you think the problem might/could be
-What you recommend him to do

**Situation #3 (Student version)**

You are a general doctor working in the hospital. A mother brings her child (5-year-old boy) to the office with different symptoms.

Greet them into your office and ask for the following information:

-Basic personal information

-Symptoms (description and time the child has had them)

-2 or 3 other questions you consider necessary in order to guess the patient's problem

Talk to the mother about this information:

-What you think the problem might/could be

-What you recommend her to do

---

**Situation #1 (Student teacher version)**

20-year-old female

Symptoms and duration:

- Fatigue (a couple of days)
- Nausea, no vomiting (around a week)
- Increased urination (a couple of days)
- Moodiness (a couple of days)
- Bloating (a couple of days)
- Missed period (three weeks)

Problem: Pregnancy

Taken from: https://www.mayoclinic.org/healthy-lifestyle/getting-pregnant/in-depth/symptoms-of-pregnancy/art-20043853

---

**Situation #2 (Student teacher version)**

63-year-old male

Symptoms and duration:

- Increased thirst and frequent urination (around a month)
- Fatigue (a couple of weeks)
- Irritability (a couple of weeks)
- Extreme hunger (around a month)
- Weight loss, without dieting or doing anything out of the ordinary (around a month)

Problem: Diabetes, type 2

Taken from: https://www.mayoclinic.org/diseases-conditions/diabetes/symptoms-causes/syc-20371444

**Situation #3 (Student teacher version)**
Mother of a 5-year-old boy
Symptoms and duration:
- Ear pain, especially when trying to sleep (a day)
- Trouble sleeping (a day)
- Fussiness and crying (a day)
- Fever (a day)
- Loss of appetite (just today)
- Headache (a day)

Problem: Ear infection

Taken from: https://www.mayoclinic.org/diseases-conditions/ear-infections/symptoms-causes/syc-20351616

**Role-play Assessment Rubric**

| | Absolutely (4 points) | Reasonably (3 points) | Scarcely (2 points) | Minimally (1 point) |
|---|---|---|---|---|
| **Grammar**<br>Student uses the target grammar structures needed to complete the task (modals of possibility: could, might, may, must) with few or no mistakes. | | | | |
| **Pronunciation**<br>Student pronounces the key words needed to complete the task (common and formal names of symptoms and illnesses, for example chickenpox vs varicella) accurately with few or no mistakes, and the stress correctly uses word stress and intonation modeled in class. | | | | |
| **Vocabulary**<br>Students applies the key vocabulary needed to complete the task adequately (common and formal names of symptoms and illnesses, for example chickenpox vs varicella). | | | | |
| **Task achievement**<br>Student responds to all the prompts successfully and fluently in a way that facilitates interaction. | | | | |

| Comments: |
|---|
| |

**Appendix N**

Universidad de Costa Rica
Escuela de Lenguas Modernas
Maestría en la Enseñanza del Inglés como Lengua Extranjera
II Term 2019
Course: Medical English
Student Teachers: Isela Barahona, Simone Lewis, & Edwin Quesada
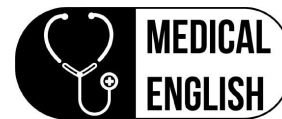
**Medical English Course Evaluation Instrument**

Please answer the following questions about the student teachers' performance as honestly and completely as possible. All responses are appreciated and will remain anonymous.

**Section A: Goals and objectives**

1. Regarding the **goals** and **objectives** for this course, how achievable do you consider them? In the table below, write an X in the cell that best reflects your opinion.

|  | **Achievable** |
|---|---|
| Fully |  |
| Highly |  |
| Slightly |  |
| Minimally |  |

2. Regarding the achievement of the objectives set in the course syllabus for this unit, how much do you consider they have been achieved? Please tick the corresponding box.

☐ Less than 25%
☐ Between 25% and 49%
☐ Between 50% and 74%
☐ Between 75% and 90%
☐ More than 90%

3. What regarding the course goals and objectives would you suggest to change or improve? Please write your answer, if any.

<div style="border:1px solid black; height:120px;"></div>

4. So far, how much have your expectations been met about the course in general? Please tick the corresponding box.

☐ Minimally
☐ Slightly
☐ Highly
☐ Completely

**Section B: Course contents**

1. How important are the contents of this course for you as a medicine student? Please tick the corresponding box.

☐ Not at all
☐ Somewhat important
☐ Important
☐ Very important

2. Would you add a topic to this course? Please tick the corresponding box, and write details if you select 'yes'.

☐ Yes. Which one(s)? _____
☐ No

3. Would you eliminate a topic from this course? Please tick the corresponding box, and write details if you select 'yes'.

☐ Yes. Which one(s)? _____
☐ No

**Section C: Course organization**

Please tick the corresponding box to answer each question.

1. Is there a sense of connection between units?        ☐ Yes        ☐ No

2. Is there progression between units?        ☐ Yes        ☐ No

3. Are the course contents balanced?        ☐ Yes        ☐ No


4. What regarding the course organization would you suggest to change or improve? Please write your answer, if any.

|  |
|  |
|  |

**Section D: Materials and methods**

1. Regarding the **materials** and **methods** for this course, how have they served their purpose? In the table below draw an X in the cell that best reflects your perception.

| | **Fully** | **Highly** | **Slightly** | **Minimally** |
|---|---|---|---|---|
| Are the materials at your level? | | | | |
| Are the materials engaging? | | | | |
| Are materials useful? | | | | |
| Do you get enough opportunities to learn? | | | | |
| Are you comfortable with your role as a student? | | | | |
| Are you comfortable with the role of your teacher? | | | | |

2. What regarding the course materials and methods would you suggest to change or improve? Please write your answer, if any.

| |
|---|
| |

**Section E: Assessment plan**

1. How do you consider the evaluation instruments (tests, quizzes, homework, projects) in this course?

|  | Tests | Quizzes | Homework | Projects |
|---|---|---|---|---|
| Very appropriate |  |  |  |  |
| Appropriate |  |  |  |  |
| Inappropriate |  |  |  |  |
| Very inappropriate |  |  |  |  |

2. What suggestion(s), if any, would you give the teachers to change or improve the course evaluation? Please write your answer.

|  |
|---|
|  |

**Section F: Environment**

How has the physical environment influenced your learning process in this course? Please tick the corresponding box.

☐ Very negatively
☐ Slightly negatively
☐ Quite positively
☐ Very positively

Partially adapted from Formulario de Evaluación Docente SEP-UCR

**Appendix O**

Universidad de Costa Rica
Escuela de Lenguas Modernas
Maestría en la Enseñanza del Inglés como Lengua
Extranjera
II Term 2019
Course: Medical English
Student teachers: Isela Barahona, Simone Lewis, & Edwin Quesada
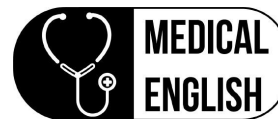
**Student Teacher Performance Evaluation Instrument**

Please answer the following questions about the student teacher's performance as honestly and completely as possible. All responses are appreciated, and will remain anonymous.

Student teacher:

_____

**A. General Opinions about the Student Teacher**

For each aspect below, how frequently did the student teacher accomplish them?

Write an X in the cell that corresponds. If you have a specific comment about one

or more of the student teachers, please use the Comments section of the table to

express it.

**The student teacher…**

| | Never | Rarely | Often | Always | Comments |
|---|---|---|---|---|---|
| 1. Communicated his/her ideas clearly | | | | | |
| 2. Showed a competent command of the topics | | | | | |
| 3. Was appropriately prepared for his/her lessons | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 4. Effectively managed his/her time during lessons | | | | | |
| 5. Showed respect for the students' ideas | | | | | |
| 6. Was willing to answer students' questions | | | | | |
| 7. Created a positive learning environment in the classroom, in which students felt comfortable | | | | | |
| 8. Designed interesting activities | | | | | |
| 9. Used activities that promoted critical thinking | | | | | |
| 10. Evaluated the activities and exams fairly | | | | | |
| 11. Evaluated the activities and exams in such a way that helped you improve your English language skills | | | | | |
| 12. Provided useful feedback on your strengths and weaknesses in the use of English | | | | | |

**B. How has your attitude towards the course been influenced by your student teacher?**

Select **one** of the following options:

☐ Because of the student teacher, my interest in the course has decreased.

☐ Because of the student teacher, my interest in the course has increased.

☐ The student teacher has not influenced my attitude towards the course at all.

**C. Opinions about the Classroom Activities**

Answer the following questions based on your opinions about the classroom activities.

1. Circle Yes or No based on your experience throughout the course.

Did you find the classroom activities

| | | Yes | No |
|---|---|---|---|
| a. | engaging? | Yes | No |
| b. | effective? | Yes | No |
| c. | useful? | Yes | No |

2. On a scale from 0 to 2, how engaged did you feel during the classroom activities throughout the course? Choose 0 if you were almost never engaged, choose 1 if you were only engaged sometimes, and choose 2 if you were almost always engaged throughout the course.

<center>0    1    2</center>

3. What are the most engaging classroom activities that the student teacher has used?

_____

_____

_____

**D. Participation**

For each aspect below, how frequently did the student teacher accomplish them? Draw an X in the cell that corresponds. If you have a specific comment, please use the Comments section of the table to express it.

| | Never | Rarely | Often | Always | Comments |
|---|---|---|---|---|---|
| 1. The student teacher encouraged me to participate in class activities. | | | | | |
| 2. I felt comfortable participating in class activities. | | | | | |
| 3. The student teacher guided me before participating in classroom activities. | | | | | |
| 4. I feel that participating in the classroom activities has helped me improve my English skills. | | | | | |
| 5. I enjoyed participating in the classroom activities. | | | | | |

**E. Instructions**

Answer the following questions based on your opinions about the instructions given throughout the course.

1. Did you find the instructions for the classroom activities clear? Yes or no? Explain.

_____

_____

_____

2. Did the student teacher demonstrate how to follow the directions before you started the classroom activities? Circle **Yes** or **No**.

               Yes                    No

   a. If you circled **Yes**, did you find that helpful?

   _____

   b. If you circled **No**, do you think that would have been helpful?

   _____

3. On a scale from 0 to 2, how satisfied were you with the instructions given by the student teacher throughout the course? Choose 0 if you were never understood the instructions, choose 1 if you usually understood the instructions, but were sometimes confused, and choose 2 if you were almost always able to understand the instructions.

               0                    1                    2

**F. Student Satisfaction**

1. On a scale from 0-2, how satisfied are you with the course? Choose 0 if you are completely unsatisfied, choose 1 if you feel somewhat satisfied with the course, but would change some aspects of it, and choose 2 if you are completely satisfied with the course.

<div align="center">0        1        2</div>

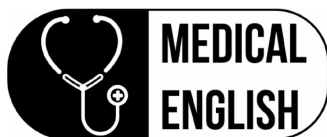   a.  Please explain why you chose that number.

_____

_____

_____

2. Were your original goals and expectations for this course met? Yes or no? Explain.

_____

_____

_____

<div align="center">Thank you!</div>

Adapted from Formulario de Evaluación Docente SEP-UCR

**Appendix P**

**Unit 1 Quiz**

Name: _____

Date: _____

Time allotted: 50 minutes
Total points: 35 points
Points obtained: _____
Grade: _____

**MEDICAL ENGLISH**

English for Medical Students
Isela Barahona, Simone Lewis, Edwin Quesada

**Part 1**. **Instructions**. Read the following text about diabetes. Use an X to mark the option that completes the sentences or answers the questions correctly. (10 points total; 1 point per question)

---

**DIABETES IN PREGNANCY**

The prevalence of diabetes in pregnancy has been increasing in the U.S. The majority is gestational diabetes mellitus (GDM) with the remainder primarily preexisting type 1 diabetes and type 2 diabetes. The rise in GDM and type 2 diabetes in parallel with obesity both in the U.S. and worldwide is of particular concern. Both type 1 diabetes and type 2 diabetes in pregnancy confer significantly greater maternal and fetal risk than GDM, with some differences according to type of diabetes as outlined below. In general, specific risks of uncontrolled diabetes in pregnancy include spontaneous abortion, fetal anomalies, preeclampsia, fetal demise, macrosomia, neonatal hypoglycemia, and neonatal hyperbilirubinemia, among others. In addition, diabetes in pregnancy may increase the risk of obesity and type 2 diabetes in offspring later in life. All women of childbearing age with diabetes should be counseled about the importance of tight glycemic control prior to conception. Observational studies show an increased risk of diabetic embryopathy, especially anencephaly, microcephaly, congenital heart disease, and caudal regression, directly proportional to elevations in A1C during the first 10 weeks of pregnancy. Although observational studies are confounded by the association between elevated periconceptional A1C and other poor self-care behaviors, the quantity and consistency of data are convincing and support the recommendation to optimize glycemic control prior to conception, with A1C ,6.5% (48 mmol/mol) associated with the lowest risk of congenital anomalies. There are opportunities to educate all women and adolescents of reproductive age with diabetes about the risks of unplanned pregnancies and improved maternal and fetal outcomes with pregnancy planning. Effective preconception counseling could avert substantial health and associated cost burdens in offspring. Family planning should be discussed, and effective contraception should be prescribed and used until a woman is prepared and ready to become pregnant. To minimize the occurrence of complications, beginning at the onset of puberty or at diagnosis, all women with diabetes of childbearing potential should receive education about 1) the risks of malformations associated with unplanned pregnancies and poor metabolic control and 2) the use of effective contraception at all times when preventing a pregnancy. Preconception counseling using developmentally appropriate educational tools enables adolescent girls to make well-informed decision.

Preconception counseling resources tailored for adolescents are available at no cost through the American Diabetes Association (ADA).

Taken from Diabetes Care Volume 41, Supplement 1, January 2018

**Glossary**
- Remainder: A part of something that is left when the rest is completed
- Concern: A cause of anxiety or worry
- Rise: Increase
- Confer: Present
- Childbearing: The process of giving birth to children
- Offspring: A person's child or children
- Confounded: Confused, wrong
- Convincing: Capable of making someone believe something is true or real
- Improved: Made better
- Outcome: Result
- Burden: A responsibility that causes hardship or anxiety
- Avert: Prevent
- Tool: An instrument or device
- Enable: Make possible
- Tailored: Adapted for a particular purpose

1. Which is the most typical type of diabetes during pregnancy in the USA?
   a. Type 1 diabetes
   b. Type 2 diabetes
   c. GDM

2. Which are some of the risks if diabetes is not controlled during the pregnancy?
   a. Low levels of glucose in the blood and death of the baby
   b. Low blood pressure and obesity in the mother
   c. Preeclampsia and high levels of glucose in the blood

3. Which of the three types of diabetes is/are more dangerous during pregnancy?
   a. Type 1 and GDM
   b. Type 1 and type 2
   c. Only GDM

4. According to the text, who should be counseled about glycemic control?
   a. Women who suffer from obesity
   b. Pregnant women who will soon give birth
   c. Women who could get pregnant

5. What could effective preconception counseling do? It could _____.
   a. Eliminate diabetes
   b. Avert health issues in the mother
   c. Prevent health problems in the baby

6. When should women receive information about these problems?
   a. At the beginning of childhood
   b. When they are diagnosed
   c. When they end puberty

7. According to the text, what is one thing women with diabetes should be informed about?
   a. The risk of babies having malformations
   b. The percentages obtained in the A1C tests
   c. The process of pregnancy

8. What can happen if there is counseling about getting pregnant when the woman has diabetes?
   a. Women won't get pregnant
   b. There won't be a risk of malformations in the baby
   c. Teenage girls can be better informed

9. You have to pay to get the materials with information about this topic in the ADA. This information is _____.
   a. True
   b. False
   c. Not found in the text

10. What is the main idea of the text?
   a. All women will get diabetes during their pregnancy so it is important to inform them about contraception.
   b. Women with diabetes cannot be pregnant because it will definitely end with premature death of the baby.
   c. All women with diabetes should be informed about the possible effects of this condition on their pregnancy.

**Part 2**. **Instructions**. Read the following sentences. Use an X to mark the option that is closest in meaning to the underlined word. (10 points total; 1 point per question)

1. Most drug addicts have been found to have hypoglycemia, which can be treated by going on a special diet.
   a. Excessive level of sugar in the blood
   b. Low level of sugar in the blood
   c. Normal level of sugar in the blood

2. Hyperbilirubinemia is one of the many risks of suffering from diabetes during pregnancy. Other dangers include preeclampsia, fetal demise, and macrosomia.
   a. High percentage of bilirubin in a baby's blood
   b. Low percentage of bilirubin in a baby's blood
   c. A normal amount of bilirubin in a baby's blood

3. In some cases, no treatment is required for DiGeorge syndrome because T <u>lymphocyte</u> production improves on its own.
   a. A type of cell
   b. An abnormal growth
   c. A body fluid

4. If <u>cholecystitis</u> occurs, the symptoms include fever and increased pain that won't go away.
   a. Infection of the gallbladder
   b. Inflammation of the gallbladder
   c. Reduction of the gallbladder

5. It is found that if the inoculation be made deep down in a solid medium, growth of an <u>anaerobic</u> organism will take place, especially if the medium contains some reducing agent such as glucose.
   a. With a lot of oxygen
   b. With a good amount of oxygen
   c. Without oxygen

6. Sudden release of a crushed extremity may result in reperfusion syndrome, which consists of acute <u>hypovolemia</u> and metabolic abnormalities.
   a. Deficient levels of fluid in the blood
   b. Deficient levels of fluid in the brain
   c. Deficient levels of fluid in the limbs

7. These facts may suggest that patients with multiple <u>myeloma</u> are more vulnerable to developing megaloblastic anemia than others.
   a. Different coloration in the blood
   b. Cancer in the blood
   c. More oxygen in the blood

8. Endometrial ablation is a procedure that offers an effective surgical treatment option for women with <u>menorrhagia</u> who want to avoid hysterectomy.
   a. Heavy menstrual bleeding
   b. Growth of a group of cells
   c. Excess of oxygen in the blood

9. This may occur if the mother takes the hormone progesterone to prevent a miscarriage, but more often it is caused by an <u>overproduction</u> of certain hormones.
   a. Producing less than necessary
   b. Producing more than necessary
   c. Producing exactly what is necessary

10. <u>Vasculotoxic</u> snake bites are well known to cause local complications like necrosis and cellulitis and systemic complications such as coagulopathy, acute renal failure (ARF), and hemolysis.
   a. Destructive to snakes
   b. Destructive to kidneys
   c. Destructive to blood vessels


**Part 3**. **Instructions**. Complete the following sentences using the words from the box. Every word is used only one time. (10 points total; 1 point per question)

| | |
|---|---|
| Hypoxemia | Weakened |
| Onset | Itch |
| Diagnosis | Bind |
| Spread | Malaise |
| Accurate | Hyperparathyroidism |


1. At the time of her _____, doctors told her she only had five months to live, but Sussana beat the odds and continued to live beyond their expectations by eleven years.
2. A reduced concentration of oxygen in the blood, also known as _____, is common to all near-drownings.
3. _____ refers to an overall feeling of discomfort and lack of well-being. On the other hand, fatigue is extreme tiredness and lack of energy or motivation for everyday activities, which makes them different.
4. Doctors and researchers agree that _____ information about symptoms is necessary. They need to know the exact way a patient is feeling so that they can help.
5. After the accident, the mother tried to find someone who could _____ her child's arm while they got to the hospital.
6. When Camila presented _____ symptoms, they rushed her to the nearest hospital in order to have doctors look at her at the beginning of her illness.
7. With the alarming _____ of measles, the United States health authorities have started a countrywide campaign to stop or slow down the infection.
8. _____ is a condition in which one or more of the parathyroid glands become overactive and secrete too much PTH. This causes the levels of calcium in the blood to rise.
9. Symptoms of ear infection include pain, especially when there is pressure on the ear; _____; swelling and redness, and pus drainage.
10. As he got older, Robert's bones _____ to a point in which he couldn't walk without the help of a cane.

**Part 4**. **Instructions**. Read the following passages, and identify the main idea by using an X to select the correct option. (5 points total; 1 point per question)

---

Cerebral venous sinus thrombosis (CVST) is an uncommon and potentially life-threatening neurological emergency. The annual incidence is estimated at 2-7 cases/million population. The sudden occlusion with a clot into a venous sinus causes an acute increase of the intracranial pressure rising to intracranial hypertension. Due to the rupture of cortical veins both parenchymal brain hemorrhage and subarachnoidal hemorrhage can be present in the initial unenhanced brain CT scan. Its diagnosis can be a challenge. High clinical suspicion is mandatory for an early diagnostic. Nowadays, with the use of CT and CTV its diagnosis is less difficult. Most of the patients recover without any neurological impairment. In CVST the rapid initiation of anticoagulant treatment is mandatory in order to reopen the occluded venous sinus. Neither the parenchymal brain hemorrhage nor the subarachnoidal hemorrhage contraindicated the anticoagulation.

**Revista Médica de la Universidad de Costa Rica. Volumen 12, número 2, artículo 1. 2018**

---

1. Which is the main idea of the passage?
   a. CVST is a rare disease that happens only 2-7 times in one million, and that can be easily diagnosed with the help of CT scans.
   b. The incidence of the CVST is very low, but it can be extremely dangerous.
   c. Even though CVST is unusual and difficult to diagnose, technology and quick treatment helps patients recuperate.

As in other regions, the incidence of atopic dermatitis in Latin America has been increasing in recent years. Although there are several clinical guidelines, many of their recommendations cannot be universal since they depend on the characteristics of each region. Thus, we decided to create a consensus guideline on atopic dermatitis applicable in Latin America and other tropical regions, taking into account socio-economic, geographical, cultural and health care system characteristics. The Latin American Society of Allergy Asthma and Immunology (SLAAI) conducted a systematic search for articles related to the pathophysiology, diagnosis
and treatment of dermatitis using various electronic resources such as Google, Pubmed, EMBASE (Ovid) and Cochrane data base. We have also looked for all published articles in Latin America on the subject using LILACS (Latin American and Caribbean Literature on Health Sciences) database. Each section was reviewed by at least two members of the
committee, and the final version was subsequently approved by all of them, using the Delphi methodology for consensus building. Afterward, the final document was shared for external evaluation with physicians, specialists (allergists, dermatologists and pediatricians), patients and academic institutions such as universities and scientific societies related to the topic. All recommendations made by these groups were taken into account for the final drafting of the document. There are few original studies conducted in Latin America about dermatitis; however, we were able to create a practical guideline for Latin America taking into account
the particularities of the region. Moreover, the integral management was highlighted including many of the recommendations from different participants in the health care of this disease (patients, families, primary care physicians and specialists).

**Revista Alergia México 2014;61:178-211.**

2. Which is the main idea of the passage?
   a. Many people reviewed the guide created to analyze the state of dermatitis in Latin America, including doctors, patients and university specialists.
   b. A set of guidelines on dermatitis was created based on each of the different regions in Latin America because there was a need to take into account their different characteristics.
   c. The organization in charge of creating the guidelines consulted electronic resources such as Google, Pubmed, EMBASE and Cochrane.

Glucose and other carbohydrates are transported into cells using members of a family of integral membrane glucose transporter (GLUT) molecules. To date 14 members of this family, also called the solute carrier 2A proteins have been identified which are divided on the basis of transport characteristics and sequence similarities into several families (Classes 1 to 3). The expression of these different receptor subtypes varies between different species, tissues and cellular sub-types and each has differential sensitivities to stimuli such as insulin. The liver is a contributor to metabolic carbohydrate homeostasis and is a major site for synthesis, storage and redistribution of carbohydrates. Situations in which the balance of glucose homeostasis is upset such as diabetes or the metabolic syndrome can lead to metabolic disturbances that drive chronic organ damage and failure, confirming the importance of understanding the molecular regulation of hepatic glucose homeostasis. There is considerable literature describing the expression and function of receptors that regulate glucose uptake and release by hepatocytes, the most important cells in glucose regulation and glycogen storage. However there is less appreciation of the roles of GLUTs expressed by non parenchymal cell types within the liver, all of which require carbohydrate to function. A better understanding of the detailed cellular distribution of GLUTs in human liver tissue may shed light on mechanisms underlying disease pathogenesis.

**World J Gastroenterol 2012 December 14; 18(46): 6771-6781**

3. Which is the main idea of the passage?
   a. Members of the family of GLUT molecules are classified according to how they react to different stimuli
   b. By knowing how the process of GLUT molecules transporting carbohydrates works and in which ways it affects the body, we can know more about related diseases.
   c. Not much importance is given to the role of GLUT molecules in the organism, most of the literature focuses on the receptors of glucose.

The most common symptoms of asthma are shortness of breath, wheezing, chest tightness, and cough. You may have days when you have every symptom and other days you may have no symptoms. When you do have asthma symptoms, you may feel like you are breathing through a straw. You may also hear wheezing (a whistling or squeaking sound) as air tries to move through your narrowed airways. You may also cough, most often at night or early in the morning. Chest pain, chest pressure, or a feeling of tightness in your chest can be other symptoms of asthma. An "asthma attack" describes very severe symptoms. During an asthma attack, you may breathe so fast that you may have a hard time talking. Coughing, wheezing, and chest tightness can cause you to feel anxious or scared. This may make you feel even more short of breath. Although rare, low oxygen levels in your blood may cause your fingertips and lips to turn blue or gray. If you think that you are having a severe asthma attack, you should immediately seek emergency care.

**Respir Crit Care Med Vol 188, P7-P8, 2013**

4. Which is the main idea of the passage?
    a. Shortness of breath, wheezing, chest tightness and cough are some of the symptoms of asthma, which can all be more extreme when there is an asthma attack.
    b. When there is an asthma attack, people breathe so fast that they cannot speak. Sometimes their fingertips and lips become blue.
    c. It is important to know the symptoms of asthma so that people can refer to a doctor as soon as possible.

By 2050, the world will be home to 10 billion people, and two in five of these people will be aged 60 or over, including 434 million over 80 years old. This combination of population growth and demographic changes will seriously accelerate the challenges we face for the delivery of health and healthcare, with global healthcare spend projected to reach 13% of Gross Domestic Product (GDP) in Organisation for Economic Co-operation and Development (OECD) countries by 2050. Over the past century, tremendous strides have been made across various facets of health and healthcare. From the promotion of antiseptic surgery and use of antibiotics in the early 1900s to genome editing in the 2000s, new science and innovations have driven substantial improvement in care delivery and outcomes. However, the rapid population and societal transformations of the next few decades will require the deployment of better tools and technologies that will enable us to lead longer, healthier and more productive lives while controlling non-sustainable cost and achieving better access to care for populations across the world.

**Report: Global Future Council on the Future of Health and Healthcare 2016-2018**

5. Which is the main idea of the passage?
    a. There has been a lot of improvement in the healthcare area since 1900. One of the latest innovations is the genome editing.
    b. The world population is growing very quickly, and many of those people are elderly.
    c. Given the large amount of people in the world, new technology is needed to supply healthcare to everybody.

**Appendix Q**

Universidad de Costa Rica
Master's Program in TEFL
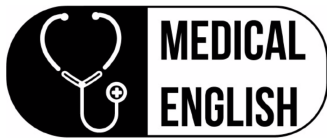
**MEDICAL ENGLISH**

English for Medical Students
Isela Barahona, Simone Lewis, Edwin Quesada

**Unit 2 Quiz**
Time allotted: 45 minutes
Total points: 44 points
Points obtained: _____
Grade: _____
Name: _____
Date: _____

**Part 1**.
**Instructions**: Watch and listen to the video *Understanding Heart Failure*. Circle the letter of the option that completes the sentences correctly. You will watch the video three times. (7 points total; 1 point per question)

1. When a patient suffers from heart failure
   a. the heartbeat is not fast enough
   b. the blood is not rich in oxygen
   c. the heart cannot pump enough blood

2. Stiff and thickened ventricles
   a. pump little blood
   b. pump much more blood
   c. prevent heart failure

3. Left-sided heart failure
   a. delivers oxygen-rich blood
   b. makes the patient feel tired
   c. causes bad breath

4. High blood pressure near your lungs
   a. affects the left ventricle
   b. forces fluid out of your lungs
   c. causes breathing problems

5. Right-sided heart failure causes
   a. too much blood to the lungs
   b. a buildup of blood in your body tissues
   c. edema

6. Stress hormones
    a. make the heart beat faster
    b. strengthen your ventricles
    c. reduce heart failure


7. A secondary cause of heart failure is
    a. coronary artery disease
    b. heart valve problems
    c. artifacts

**Part 2**.
**Instructions**: Watch and listen to the video *Treatments for Cervical Cancer*. Complete the outline of the video with the missing information you hear. You will watch the video three times (11 points total; 1 point per blank)

<table>
<tr>
<td colspan="4" align="center"><b>Treatment options for cancer (</b>Surgery, Radiation therapy, Chemotherapy<b>)</b></td>
</tr>
<tr>
<td colspan="4">Type of treatment depends on…<br>● Size of tumor<br>● Whether it is <b>A.</b>_____<br>● Whether there are plans to have children</td>
</tr>
<tr>
<td></td>
<td colspan="3" align="center"><b>Surgical options</b></td>
</tr>
<tr>
<td>Early stage 1A</td>
<td><i>1. Conization</i><br>to remove <b>B.</b>_____<br>piece of cervix<br>LEEP→ uses wire to remove tissue</td>
<td><i>3. Total</i><br><b>E.</b>_____ →<br>removing uterus and cervix</td>
<td rowspan="2">May remove<br><b>F.</b>_____,<br>ovaries or lymph nodes</td>
</tr>
<tr>
<td>Later stage 1A<br><br>Stage 1B</td>
<td><i>2. Radical C.</i>_____<br>→ to preserve uterus<br>Removes cervix and upper part of vagina + places<br><b>D.</b>_____ lower end of uterus ← artificial internal opening of cervix</td>
<td><i>4. Radical hysterectomy</i> (removes cervix, tissue around cervix, uterus and part of the vagina)</td>
</tr>
<tr>
<td>If cancer recurs</td>
<td colspan="3">Pelvic <b>G.</b>_____ + removing pelvic lymph nodes, bladder, vagina, rectum, and colon</td>
</tr>
<tr>
<td></td>
<td colspan="3"><b>Radiation therapy</b> (Uses high energy rays to kill cancer cells in the treated area only)</td>
</tr>
<tr>
<td></td>
<td colspan="2">External <b>H.</b>_____ radiation therapy → is directed from a machine outside your body</td>
<td><b>I.</b>_____ → internal radiation therapy from a device placed inside the body</td>
</tr>
<tr>
<td></td>
<td colspan="3"><b>Chemotherapy</b> (Uses drugs to stop the <b>J.</b>_____ of the cancer cells)</td>
</tr>
<tr>
<td></td>
<td colspan="2">By killing them</td>
<td>By <b>K.</b>_____ cell division</td>
</tr>
</table>

**Part 3**.
**Instructions**: Watch and listen to the video *Pediatric Brain Surgery - Matthew's Epilepsy Success Story* and answer the following questions about it. **You can answer in English or in Spanish**. You will watch the video three times. (26 points total)

1. What was Mathew doing when his father first saw him having a seizure? (2 points)

2. What was Mathew's mother doing during Mathew's first seizure? (2 points)

3. Who seemed more affected by Mathew's health problem, his father or mother? How can you tell? (2 points)

4. What's the medical term (phrase) for Mathew's health problem? (2 points)

5. How would the seizures affect Mathew in the future, according to his dad? Illustrate with one example, at least. (2 points)

6. Did Mathew respond to his medication? (1 point)

7. Did the doctors know what his problem was when they were administering medication? (1 point)

8. What hospital did Mathew's parents go to in order to get a second opinion? Why were they so satisfied with their service?  (2 points)

9. What's the approach doctors follow at the hospital regarding epilepsy? What two actions do they take? (2 points)

10. What's the most salient/apparent characteristic of Mathew's seizures? / Describe Mathew's seizures. / In what way were Mathew's seizures atypical?  (2 points)

11. What did the doctors team inform Mathew's parents after all the testing was done and all results were reviewed?  (2 points)

12. Why is important for the surgeons to be upfront with the family? (2 points)

13. How did Mathew respond to the surgery?  (1 point)

14. What was Mathew's health condition after one year follow up? (1 point)

15. What medical process was done after the second year follow up? What was the result? (2 points)

**Appendix R**

**Unit 3 Quiz Scenarios**

| | |
|---|---|
| Scenario 1:<br><br>Completing a medical record | Physician/Patient Scene: The patient has not been feeling well for the past few days. Today he/she visits his/her physician's office with a very sore throat, runny nose, dry cough, fever, poor appetite, and reports feeling weak and tired. After a physical examination, the doctor informs the patient that he/she needs to ask him/her a few questions in order to update his/her medical record. |
| Scenario 2:<br><br>Breaking bad news | Physician/Patient Scene: following Buckman's six step protocol, the doctor will give bad news to a patient. In this case, the patient's parent has been waiting for about 4 hours for his/her child, who was given an MRI because he had been suffering from strong headaches and vomiting during the last week. Based on the symptoms and the MRI the physician discovers the child has a brain tumor. |
| Scenario 3:<br><br>Prescribing medication | Physician/Patient Scene: The patient has not been able to sleep well for the past few days. Today he/she visits his/her physician's office because he/she thinks that the problem can be solved by taking pills. However, the patient is a regular alcohol drinker. After asking a series of questions, the doctor informs the patient that he/she cannot prescribe him/her pills since he/she is prone to developing addictions, and recommends exercising instead. |

**Scenario 1 Student Guide Given during Quiz 3 (Student A: Doctor)**

**Instructions:** Work with a partner. Ask the patient all of the necessary questions to complete the following medical record. You do not have to write down the patient's information.

<u>**HISTORIA CLÍNICA**</u>

**NOMBRE:** ...................................................................................................................................

Conteste las siguientes preguntas con un Sí o No, sin dejar en blanco ninguno de los espacios correspondientes. Este cuestionario es hecho con el fin de su protección y la información suministrada en él será utilizada con carácter confidencial, para fines clínicos.

1. Razón de la visita y síntomas:

_____
_____

2. ¿Está bajo tratamiento médico?      Sí ☐  No ☐ Cuál? _____

3. ¿Está tomando algún medicamento?  Sí ☐  No ☐ Cuál? _____

4. Ha padecido usted de:

| | | |
|---|---|---|
| Diabetes | Sí ☐  No ☐ | Artritis                      Sí ☐  No ☐ |
| Presión Alta | Sí ☐  No ☐ | Enfermedades del Corazón    Sí ☐  No ☐ |
| Trastornos Renales | Sí ☐  No ☐ | |

Enfermedades inmunológicas: _____     SIDA/VIH   Sí ☐  No ☐

Otras enfermedades: _____

5. ¿Le han operado alguna vez? _____

6. ¿Ha observado alguna alteración en su salud general en los últimos meses?
_____
7. ¿Padece o ha padecido de alguna enfermedad o trastorno que no se haya mencionado anteriormente?
_____
8. Es usted alérgico a:

Aspirina:        Sí ☐  No ☐         Penicilina:               Sí ☐  No ☐

Otros: _____

9. Ha tenido alguna vez reacciones anormales a la anestesia?         Sí ☐  No ☐

10. Presenta sangrados prolongados?                                 Sí ☐  No ☐

11. ¿Padece de desmayos?                                           Sí ☐  No ☐

12. ¿Está embarazada?                                             Sí ☐  No ☐

**Scenario 1 Student Guide Given during Quiz 3 (Student B: Patient)**

**Instructions:** Work with a partner. You will role-play a conversation between a doctor and a patient, in which the doctor asks the patient for his/her personal information to complete a medical record. The patient must use the information below to answer the doctor's questions and explain his/her recent health issues.

The patient has been taking antibiotics to treat a UTI (urinary tract infection) during last week.

The patient has suffered in the past from kidney disease, but he/she does not suffer from any other health problems.

The patient suffered from appendicitis and underwent surgery.

The patient has been feeling weak and tired during the past few months.

The patient reports not to be allergic to anything as far as he/she knows.

The patient shows no adverse reactions to anesthesia

The patient hasn't had bleedings of any kind

The patient has never passed out (fainted)

In case the patient is a woman, she is not pregnant.

## Scenario 2 Student Guide Given during Quiz 3 (Student A: Doctor)

**Instructions:** Work with a partner. You will role-play a conversation between a doctor and a patient, in which the doctor breaks bad news to the patient. The doctor must use the sequence below as a guide.

### 1. Getting started

**The doctor:**
- introduces himself/herself
- sits (and makes sure the patient is seated too)
- asks the patient how (s)he is feeling (using open-ended questions)

### 2. Finding out how much the patient knows

**The doctor:**
- asks the patient about his/her illness and symptoms
- repeats the patient's feelings and symptoms

### 3. Prepares the patient for bad news (uses simple language)

**The doctor:**
- refers to the patient's symptoms and the MRI results
- gives bad news directly
- gives the patient time to accept the news

### 4. Responding to the patient's feelings

**The doctor:**
- explains that sometimes symptoms of one illness are similar to the symptoms of other illnesses

### 5. Asking for permission to continue giving further information

**The doctor:**
- refers the patient to treatment (surgery)
- asks the patient if he/she has any questions

### 6. Responds to feelings

**The doctor:**
- answers the patient's questions and refers to the support that the patient can get (to help with his/her anxiety)
- says goodbye

## Scenario 2 Student Guide Given during Quiz 3 (Student B: Patient)

**Instructions:** Work with a partner. You will role-play a conversation between a doctor and a patient, in which the doctor breaks bad news to the patient. The patient must use the information below to answer the doctor's questions and explain his/her recent health issues.

**1. Getting started**

The patient:
- says that (s)he's been waiting for <u>#</u> hours
- tells the doctor about any other difficult condition(s) he/she experienced while waiting for the doctor

**2. Giving as much information as you know**

The patient:
- describes his/her symptoms
- asks if he/she will be ok

**3. Expresses thoughts/feelings after getting bad news**

The patient:
- says that (s)he thought that his/her condition was not that serious
- expresses his/her feelings about the diagnosis (for example, that he/she feels worried, scared, or surprised)

**4. Let the doctor add more information and details**

The patient:
- listens to the doctor
- says that he/she understands what the doctor is saying

**5. Asking further questions and specific details**

The patient:
- asks questions about the date and time of the surgery, its duration, and post-surgery care

**6. Finishing the conversation**

The patient:
- thanks the doctor and says goodbye

## Scenario 3 Student Guide Given during Quiz 3 (Student A: Doctor)

**Instructions:** Work with a partner. You will role-play a conversation between a doctor and a patient, in which the doctor prescribes medication to a patient. The doctor must use the sequence below as a guide.

| **Doctor** |
|---|
| <ul><li>Introduce yourself to the patient and</li><li>ask him/her how you can help him/her</li></ul> |
| <ul><li>Express you understand the situation</li><li>Tell the patient that you need to ask him/her some questions</li><li>Ask about the time he/she has been having those problems.</li></ul> |
| <ul><li>Repeat back what the patient just said to you</li><li>Say you understand but need to ask more questions</li><li>Ask about any situation that could have caused it</li></ul> |
| <ul><li>Express your understanding of the situations and subtly suggest that our bodies send signs when we need to change our lifestyles</li><li>Ask the patient if he/she smokes or drinks</li></ul> |
| <ul><li>Ask about how much the patient drinks</li></ul> |
| <ul><li>Tell the patient how alcohol affects his/her ability to sleep</li></ul> |
| <ul><li>Tell him/her to reduce alcohol consumption.</li></ul> |
| <ul><li>Be honest with the patient. Tell him/her you can't prescribe pills due to the tendency to develop addictions, and how taking pills would affect him/her.</li><li>Suggest exercising</li></ul> |

## Scenario 3 Student Guide Given during Quiz 3 (Student B: Patient)

**Instructions:** Work with a partner. You will role-play a conversation between a doctor and a patient, in which the doctor prescribes medication to a patient. The patient must use the information below to answer the doctor's questions and explain his/her recent health issues.

| **Patient** |
|---|
| <ul><li>Tell the doctor about the sleeping problems you've been having</li><li>Say how you feel about it</li><li>Say how you expect the doctor to help you</li></ul> |
| <ul><li>You have gone through this for several months</li><li>Say your occupation and how it affects your performance</li><li>Say how you think you could feel better if you could sleep better</li></ul> |
| <ul><li>Talk about pressure at work</li><li>Say you are off a partner (working alone)</li><li>Problems in personal life</li><li>Say again you would feel better if you were taking pills</li></ul> |
| <ul><li>You are a non-smoker</li><li>You are a regular drinker</li><li>Say how often you drink</li><li>Say it how good it makes you feel</li></ul> |
| <ul><li>You drink about three or four glasses of wine every time</li></ul> |
| <ul><li>You get surprised at how it affects because you thought it was the other way around.</li></ul> |
| <ul><li>You agree and talk to the doc again about the need for pills</li></ul> |
| <ul><li>Say you can do that</li><li>Thank the doctor</li></ul> |

**Appendix S**

**Scoring Rubric for Quiz 3**

MEDICAL ENGLISH
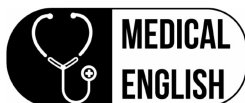
Oral Quiz Rubric
Student Name: _____
Total points: 9 points
Points obtained: _____
Grade: _____

| Aspect | 3 | 2 | 1 | 0 | Comments |
|---|---|---|---|---|---|
| Grammar | Few or no grammar mistakes in the structures studied in the unit. | Some grammar mistakes in the structures studied in the unit, but they do not represent a problem in comprehension. | Grammar mistakes are a serious problem and hinder comprehension. | There was no (or not enough) production to evaluate grammar structures. | |
| Vocabulary | Few or no mistakes in the use of the vocabulary studied in the unit. | Some mistakes in the use of the vocabulary studied in the unit, but they do not represent a problem in comprehension. | Mistakes in vocabulary are a serious problem and hinder comprehension. | There was no (or not enough) production to evaluate the use of vocabulary. | |
| Fluency | Conversation was carried out fluently, without many interruptions in the flow of the interview. There were no false starts nor unnatural pauses. | Conversation was carried out with a few fluency problems (fillers, pauses, use of Spanish). There were 1-2 false starts and/or 1-2 unnatural pauses. | Conversation was performed with a lot of fluency problems (fillers, pauses, use of Spanish, slow speech). There were 3 or more false starts or unnatural pauses. | Conversation was barely transmitted because of overuse of fillers, pauses, slow speech. | |

# Appendix T

## Unit 1 Student Self-Assessment Questionnaire

Name: _____

**Unit 1 Goal**: The students will be able to successfully demonstrate comprehension of medical texts (the extract of a research article and a section of a textbook) by identifying key vocabulary words and medical prefixes and suffixes, summarizing, relaying and discussing information, and/or recognizing areas affected by specific conditions.

**Instructions**: Read the activities and put an [X] next to the frequency that describes your ability to successfully complete the following activities. Never means that you cannot do the activity. Sometimes means that you can do it with familiar information and/or teacher assistance. Always means that you are confident that you complete the activity on your own.

| Activities | Frequency |
|---|---|
| 1.  I can understand the medical texts read in class. | [ ] Never [ ] Sometimes [ ] Always |
| 2. I can understand the main idea of the medical texts read in class. | [ ] Never [ ] Sometimes [ ] Always |
| 3. I can discuss the main idea and supporting details of a medical text with my peers. | [ ] Never [ ] Sometimes [ ] Always |
| 4. I can summarize a short medical text. | [ ] Never [ ] Sometimes [ ] Always |
| 5. I can identify the vocabulary learned in this Medical English class in the texts I read for my medical class assignments. | [ ] Never [ ] Sometimes [ ] Always |
| 6. I can identify medical prefixes and suffixes in a medical text. | [ ] Never [ ] Sometimes [ ] Always |
| 7. I can understand the 10 common medical prefixes and suffixes learned in class. | [ ] Never [ ] Sometimes [ ] Always |
| 8. I can recognize the areas in the body that would be affected by vasculitis, hypopituitarism, hypersensitivity, and/or hyperparathyroidism. | [ ] Never [ ] Sometimes [ ] Always |
| 9. I can use the vocabulary learned in class to complete sentences by using the definitions. | [ ] Never [ ] Sometimes [ ] Always |
| 10. I can use the vocabulary learned in class to discuss medical conditions with my peers. | [ ] Never [ ] Sometimes [ ] Always |

These are some aspects related to reading that I want to work on:

    1. _____

    2. _____

    3. _____

# Appendix U

## Unit 2 Student Self-Assessment Questionnaire

Name: _____

**Unit 2 Goal**: Students will be able to successfully demonstrate comprehension of key medical vocabulary from an academic medical video by outlining the videos and/or reporting the information in them to their classmates.

**Instructions**: Read the activities and put an [X] next to the frequency that describes your ability to successfully complete the following activities. "Never" means that you cannot do the activity. "Sometimes" means that you can do it with familiar information and/or teacher assistance. "Always" means that you are confident that you can complete the activity on your own.

| **Activities** | **Frequency** |
|---|---|
| I can understand the medical audios and videos used in class. | [ ] Never [ ] Sometimes [ ] Always |
| 2. I can identify the main idea of the medical audios and videos shown in class. | [ ] Never [ ] Sometimes [ ] Always |
| 3. I can pronounce words with -ed endings confidently. For example, "showed, looked, and enlarged." | [ ] Never [ ] Sometimes [ ] Always |
| 4. I can identify the vocabulary learned in this Medical English class in the audios or videos I listen to or watch for my medical class assignments. | [ ] Never [ ] Sometimes [ ] Always |
| 5. I can use the vocabulary learned in class to discuss CABG. | [ ] Never [ ] Sometimes [ ] Always |
| 6. I can use the vocabulary learned in class to discuss illnesses such as Rassmussen's and Lyme disease. | [ ] Never [ ] Sometimes [ ] Always |
| 7. I can use the vocabulary learned in class to discuss Endometrial Carcinoma. | [ ] Never [ ] Sometimes [ ] Always |
| 8. I can create questions about the audio or video used in class to quiz my classmates. | [ ] Never [ ] Sometimes [ ] Always |
| 9. I can use the vocabulary learned in class to discuss medical treatments with my peers. | [ ] Never [ ] Sometimes [ ] Always |
| 10. I can formulate sentences to express what I would do if I were in certain situations (conditionals). | [ ] Never [ ] Sometimes [ ] Always |

These are some aspects related to listening that I want to work on:
1. _____
2. _____
3. _____

# Appendix V

## Unit 3 Student Self-Assessment Questionnaire

Name: _____

**Unit 3 Goal**: By the end of this unit, students will be able to effectively communicate orally with a patient about his/her medical record, diagnosis, medication, and/or discharge summary by identifying correct vocabulary, grammatical structures, and bedside manners used in videos or scripts and reproducing them during role-plays.

**Instructions**: Read the activities and put an [X] next to the frequency that describes your ability to successfully complete the following activities. Never means that you cannot do the activity. Rarely means that you can only do it with familiar information and/or teacher assistance. Usually means that you can do it with only a little bit of teacher or dictionary assistance. Always means that you are confident that you complete the activity on your own.

| Activities | Frequency |
|---|---|
| 1. I can ask a patient for his/her current symptoms without using a dictionary. | [ ] Never [ ] Rarely [ ] Usually [ ] Always |
| 2. I can formulate grammatically correct yes/no questions. | [ ] Never [ ] Rarely [ ] Usually [ ] Always |
| 3. I can formulate grammatically correct Information questions (using WH words). | [ ] Never [ ] Rarely [ ] Usually [ ] Always |
| 4. I can ask a patient all the questions to complete a medical record form. | [ ] Never [ ] Rarely [ ] Usually [ ] Always |
| 5. I can break bad news to a patient in a polite way. | [ ] Never [ ] Rarely [ ] Usually [ ] Always |
| 6. I can prescribe a common medication to a patient without using a dictionary. | [ ] Never [ ] Rarely [ ] Usually [ ] Always |
| 7. I can suggest that a patient change his/her lifestyle to make it healthier. | [ ] Never [ ] Rarely [ ] Usually [ ] Always |
| 8. I can interview a patient in English without teacher assistance. | [ ] Never [ ] Rarely [ ] Usually [ ] Always |
| 9. I can properly respond to a patient's feelings after telling him/her some bad news. | [ ] Never [ ] Rarely [ ] Usually [ ] Always |
| 10. I can identify correct and incorrect ways of telling patients bad news in academic videos. | [ ] Never [ ] Rarely [ ] Usually [ ] Always |

These are some aspects related to speaking that I want to work on:
1. _____
2. _____
3. _____