"MULTIPLE G. S.WS TO THE CHEST. B.P. 90 OVER 60. PULSE IN THE 120S. PUSH 1 OF EPI!"
A preliminary study on the representation of spoken medical English in *Grey's Anatomy*

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Abstract – This paper explores the representation of spoken medical English in *Grey's Anatomy* (Rhymes 2005-still running), a very popular American TV series set in a hospital environment. Given the shortage of authentic materials portraying spoken medical interactions, medical dramas, which are becoming increasingly accurate, globally acclaimed, represent a useful source to study oral communications in this professional domain. The analysis is based on a sample of episodes in which four main recurrent types of medical-related situations were isolated featuring both expert-to-expert and expert-nonexpert conversations: i) the arrival at ER, ii) the discussion of the clinical case between physicians, iii) the discussion of the clinical case between doctor and patient and iv) the medical procedure. The qualitative assessment of the medical sequences pertaining to the four situational contexts, of which doctor-doctor interactions came out as the most represented ones, revealed some recurrent linguistic usages and attached pragmatic functions. Such results constitute an interesting basis for studies on the authenticity of the representation of oral medical discourse in televisual products.

Keywords: televisual language; specialised TV series, English for specific purposes, spoken medical English.

1. Introduction

The present research attempts to identify and describe some distinguishing linguistic traits of oral communication in medical contexts in one of the most successful contemporary American TV medical dramas, i.e. *Grey's Anatomy* (Rhymes 2005-still running). Given the lack of authentic materials showcasing spoken medical interactions, such an analysis could provide a useful insight for instructors in the field of medical English, who could exploit these materials in their language classrooms. Therefore, this pilot study could be seen as an initial step, within a wider research framework, aimed at evaluating the authenticity of the representation of specialised discourse in TV medical dramas.

The ongoing global acclaim of American TV series, as indicated by the rise of TV networks such as HBO, AMC, Showtime, and online distributors such as Netflix and Amazon Prime, whose catalogues are mainly composed of series, has made these TV products particularly appealing not only for researchers interested in the TV-mediated representation of language (Richardson 2010, Piazza *et al*. 2011, Bednarek 2018 *inter alia*), but also for applied linguists interested in the study of how audiovisual materials could be exploited in language classrooms in particular (Bruti 2015; Bonsignori 2018; Canepari 2018). As Mittmann (2006, p. 575) states "the language used in TV series and films can […] become an influential model for learners". In other words, these audiovisual products contain strands of language occurring in conversational contexts that can work as models to be imitated by foreign language students.

The dialogues represented in TV series are a peculiar type of scripted speech, similar to that of films (see Bednarek 2010 and 2018 for the linguistic differences and similarities between these two fictional audiovisual genres), which is written with the principal aim of being as close as possible to the native speakers' oral production, i.e. featuring a natural and idiomatic use of language (unless the narrative requires the portrayal of a non-native speaker). This intrinsic attempt to mimic authentic spontaneous speech is one of the features that makes some TV series an extremely valuable source for language learners as well as for educators who wish to use them in their language modules (Kaiser 2011; Bonsignori 2018), because, as Kaiser (2011, p. 233) claims, despite their fictional character they are "authentic source material (that is, created for native speakers and not learners of the language)". This similarity with spontaneous face-to-face conversation has been empirically demonstrated especially for film dialogues (Forchini 2012), and for TV series (Quaglio 2009; Bednarek 2018).

Nonetheless, as Bednarek (2018, p. 13) states, "from an applied linguistic perspective it is vital to know the input that learners are exposed to". This warning clearly stresses the pivotal importance of acquiring an exhaustive knowledge of the linguistic nature of TV series before using them in language classrooms. In the light of that, the analysis proposed in this paper is an essential starting point that needs to be addressed before resorting to sequences from medical TV dramas in the preparation of teaching materials and learning units.

1.1. TV series and specialised TV series

A format peculiarity that distinguishes TV series from films is that the episodes of a series are in some way connected one to another and, therefore, the audience generally need to have seen the previous episodes in order to follow the general storyline. It is especially thanks to this feature that serial television

is considered so very engaging. Moreover, scriptwriters of TV series have more space to depict compelling characters: this is probably another reason that contributes to the creation of strong viewer involvement.

Television series may span across different genres, for example sitcoms, action series, police series, science fiction series, detective series, fantasy series, prison series, mystery dramas, soap dramas, etc. According to Bednarek (2010, p. 13), a more general division could be drawn between "drama" and "comedy" oriented TV series, which sometimes turn into a mixture of both called "dramedy".

Within this vast panorama of series, among the most acclaimed ones are those rooted in reality, staging events that take place within workplace environments and professional communities. A characteristic that sets aside these TV shows from family dramas or sitcoms, apart from the representation of specific professional practices and procedures, is embodied in the conversational contexts they depict. In effect, when considering language use only, scriptwriters of specialised TV series face a double challenge in reaching an effective illusion of reality: not only do they have to faithfully represent oral language features ("written-to-be-spoken-as-if-not"; Gregory, Carroll 1978, p. 42), but also the specialised discourses at stake in the professional environment staged by the show (see Shevell, Thomas, Fuks 2014; McGann 2015).

Matamala and Lozano (2009) rightfully maintain that specialised languages in fictional television are not primarily meant to communicate specialised professional information, as happens in real contexts, but are used to characterise the dramatic scene where the protagonists interact, contributing to a more realistic portrayal. Hence, professional dialogues help to simulate authenticity in order to reach the viewers efficiently, convincing them of the verisimilitude of what is airing.

Despite being a very popular genre, well received by the public and acclaimed by the critics, linguistic studies devoted to specialised TV series are still very few. Suffice it to say that in the 23-page Bednarek and Zago's (2019) bibliography of linguistic research on fictional television only a couple of case studies focus on specialised TV series (e.g. Sorlin 2015, 2016, 2018 on political TV series).

The present research concentrates in particular on medical dramas, as there is a shortage of authentic materials exemplifying spoken medical English in hospital environments (Bonsignori 2019). Specialised TV series staging this professional domain could profitably be put to good use to fill this gap. Medical dramas have been a staple of primetime television in English speaking countries since the birth of the craft. The earliest TV medical dramas, such as Dr Kildare (1961-1966) and Ben Casey (1961-1966) struggled to balance reality with drama, featuring doctors as heroes who hardly ever failed. Consequently, medical accuracy was of little importance compared to drama.

A turning point for the genre was represented by the series *ER* (1994-2009), whose overall tone was more light-hearted and humorous, with doctors portrayed with human weaknesses, fears and also occasional failures (Vandekieft 2004). In the words of Chiaro (2008, p. 276), nowadays medical dramas reflect the trend of "mixing-genres" so as to meet the requirements of the audience. Dramatic and romantic moments are stitched together with a faithful representation of the professional environments, and a consistent number of humorous sequences. The TV series under analysis in this paper, i.e. *Grey's Anatomy*, is a typical example of this hybrid juxtaposition of styles and discourses, being rather gritty and displaying doctors committed to their profession, but who have their personal problems and demons to face.

Thus, the present paper qualitatively assesses some recurrent characteristics of specialised medical English in a popular TV drama revolving around hospital interactions. More specifically, it investigates the usage of some linguistic features of spoken medical interaction in four communicative events identified as defining of medical-centred conversations in the medical drama under analysis (see Section 3.1. in this paper). These sequences are i) the arrival of the patient at the emergency room, ii) the discussion of the clinical case with the patient, iii) the discussion of the clinical case between peers, and iv) the medical procedure in the operating room. Such a descriptive and exploratory analysis should constitute an earlier stage within a deeper investigation into the reliability and authenticity of specialised dialogues in the TV series under analysis.

2. Dataset and approach

Given the preliminary nature of this study, which entails a thorough manual check of the data, working on the complete TV series, to date counting 16 seasons and 338 episodes, would have been beyond the present scope. That is why a random selection of ten episodes was taken as a representative sample. All the *Grey's Anatomy* episodes collected come from the 10th season of the show (2013/2014). The TV series episodes were orthographically transcribed (see Bonsignori 2009 for the rationale used for transcriptions) and organised in tables, which were then stored together with their corresponding audio/video files. Table 1 offers an overview of the materials included in this study.

Grey's Anatomy (2005- still running)		
Episode	Running time	Word tokens
10x01 Seal Our Fate	44 min.	11,284
10x02 I Want You With Me	43 min.	6,159
10x03 Everybody's Crying Mercy	43 min.	6,616
10x04 Puttin' on the Ritz	43 min.	6,249
10x05 I Bet It Stung	42 min.	7,101
10x06 Map of You	43 min.	6,550
10x07 Thriller	43 min.	6,947
10x08 Two Against One	43 min.	6,585
10x09 Sorry Seems to be the Hardest Word	43 min.	6,986
10x10 Somebody That I Used to Know	43 min.	6,462

Table 1
Dataset overview – *Grey's Anatomy*.

Grey's Anatomy (Rhimes, ABC, 2005–still running) is a contemporary American medical drama. The show, which debuted in 2005, is currently in its fifteenth season and airs on Thursday nights on the ABC network in the United States, and is one of its highest-grossing TV shows of all time, and also the longest running prime-time US medical drama. The series features an ensemble cast of doctors (both residents, interns, and attendings) working at Seattle's Grey Sloan Memorial hospital and especially focuses on members of a surgical residency programme. In particular, the show follows the career and the personal life of Meredith Grey, who is also the narrating voice performing voice-over moments that frame the episodes at the beginning and/or at the end. In general, physicians (or, more precisely, surgeons) in this TV drama have to cope both with the daily issues of the medical profession, and with the challenges of personal relationships complicated by the problems related to a stressful working environment. Each episode generally features different patient encounters with the hospital staff, which typically are interspersed throughout the fifty minutes of airtime.

Once the dataset was arranged, the analysis started off qualitatively: the transcripts of *Grey's Anatomy* were carefully read and evaluated by also watching their corresponding videos, with the aim of singling out the types of conversational medical situations represented. After classifying these medical-related encounters into four principal types: i) the arrival at the ER, ii) the discussion of the clinical case with the patient, iii) the discussion of the clinical case between peers, and iv) the medical procedure, an attentive categorisation and analysis of the most recurrent spoken English traits (Biber *et al*. 1999) as well as the specialised characteristics of oral medical discourse (Gotti, Salager-Meyer 2006; Ferguson 2013; Salager-Meyer 2014) defining each of these situations was carried out. Therefore, linguistic features such as specialised vocabulary, speech acts, and register variation traits were investigated and described.

Lingue e Linguaggi

2.1. Spoken medical English

Even though English medical discourse has been mainly studied in its written form, for example in medical posters (Maci 2016) or research articles (Nwogu 1997) research on oral medical discourse is also getting more and more attention among linguists working in the field (Gotti 2015; Gotti, Salager-Meyer 2006; Merlini 2009; Ferguson 2013), who recognise the key importance of correct oral communication in the health services. Generally speaking, analysts of oral medical discourse make use of the analytical tools of linguistics to study the connection between language, health issues and, most importantly, the contexts of use. In this regard, some data that are frequently employed for the analysis of spoken medical discourse are interactions between doctors and patients, interviews with physicians, or people's retrospective accounts of their illness (Robinson 2016; Franceschi 2018).

From a linguistic perspective, medical discourse can be considered a particular type of professional, i.e. specialised, discourse as it is generated in working environments to exchange information and communicate within a community of practice (Eckert, Wenger 2005; Gotti 2015). According to Linell (1998, p. 143), professional discourse is divided into three major kinds: i) "intraprofessional discourse" (i.e. communication among specialists of the same profession); ii) "interprofessional discourse" (i.e. communication between specialists from different fields); iii) "professional-lay discourse" (i.e. communication between specialists and laypeople). Linell's (1998) classification can profitably be applied to medical discourse as well. For instance, an encounter between a physician and a patient is an example of professional-lay discourse. As the following analysis shows, all these situations are represented in medical dramas, and in particular in *Grey's Anatomy*, making this show decidedly suitable for improving the knowledge of different kinds of spoken English medical interactions.

Looking at oral medical English in more detail, researchers generally agree that it is a very complex register as it is particularly dense from a lexico-grammatical point of view (Maglie 2009). However distinguishing linguistic features can be identified also at the semantic, pragmatic, and discourse levels. Some key grammatical and syntactic characteristics are the high use of reporting verbs, e.g. 'The patient reported severe side-effects', the use of verbs in the imperative form e.g. 'get me the labs' to give directions, and the use of modal verbs expressing obligations (e.g. 'must', 'ought to') or possibility (e.g. 'may', 'might'). Concerning the lexis, the use of a sectorial medical terminology whose origin chiefly comes from Greek and Latin (e.g. 'nervus', 'carcinoma', 'atrium', etc.) is particularly distinctive and pervasive (McMorrow 1998), as such words are precise, semantically monoreferential, and, thus, internationally comprehensible (Nagy 2010). This set of words that

makes up the core of medical interactions is essentially constituted by proper medical terminology and sub-medical terms, the choice depending on the audience and on the context. Indeed, in many cases, the proper specialised medical term has a sub-medical and less specialised variant e.g. 'myopia/shortsightedness' or 'hemorrhage/bleeding'. Another lexical feature denoting medical English is the presence of noun strings plus different collocating adjectives (less often verbs and adverbs) forming a concept through a single speaker's choice (i.e. compounds such as pace-maker, or collocations such as 'impaired knee injury'). As Berghammer (2006, p. 42) states "the fast growth of scientific knowledge in the past half century has generated many new terms, particularly multiterm words, such as 'chronic obstructive pulmonary disease'".

A further great bulk of medical terms that is worth mentioning is constituted by abbreviations, both in the way of clipped forms (e.g. 'polio' for 'poliomyelitis') and initialisms (e.g. "MRI" standing for 'Magnetic Resonance Imaging' or acronyms (e.g. "CAT" standing for 'Computerised Axial/Computer-Assisted Tomography') (Mattiello 2012).

Moving on to some pervasive discourse phenomena, studies focusing on doctor-patient interactions in particular have highlighted the recurrent presence of personal stance expressions, hedges and mitigating devices, as well as exact descriptions, standardised methods of reporting, and hypothesising (McMorrow 1998). Especially in these expert-nonexpert conversations, a strong tendency towards popularisation has been highlighted, meaning that medical jargon is explained through a series of rhetorical devices (e.g. similes, paraphrasis, etc.) in order to make specialised discourses more accessible to lay people (Laudisio 2015).

Therefore, the analysis of this complex and multilayered register that follows is useful both in identifying the abovementioned linguistic features characterizing medical communications and in raising awareness of their pragmatic functions which vary according to the basis of the communicative contexts.

3. The analysis

3.1. Different types of medical situations

Given that the present research addresses the representation of medical English in dramatised hospital encounters in *Grey's Anatomy*, the analysis began by individuating and defining what kinds of medical related conversations are exemplified in the dataset taken as a sample of the TV show. Hence, the transcripts were carefully read while watching the corresponding video with the aim of describing the interactional context in which the topic of

conversation was medicine. The pie chart in the figure below (1) summarises the outcomes of this preliminary exploration[1].
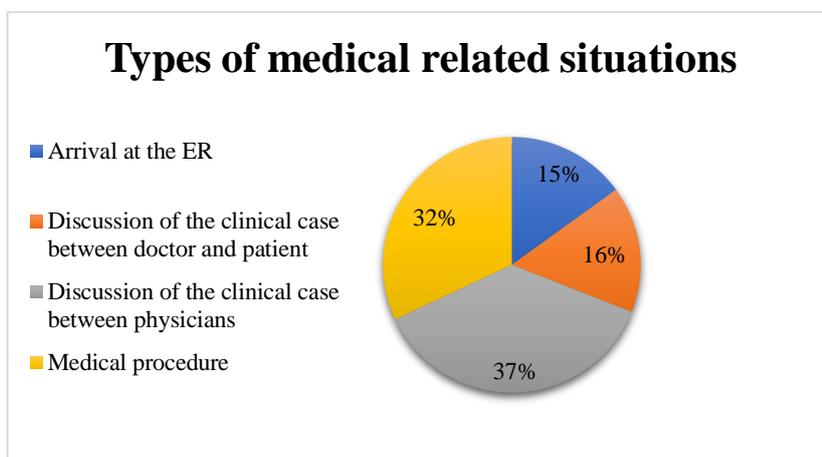

Figure 1
Types of medical related situations in *Grey's Anatomy*

Overall, we could observe that four principal medical contexts are represented in the dialogues. The most represented situation is the moment of the discussion of the clinical case between peers i.e. expert physicians (37%). Then, in 32% of cases, medical discussions occur between surgeons (i.e. experts) during the medical procedure both in the operating room or, sometimes, in the emergency room. The third most represented type of sequence consists of expert-nonexpert exchanges which occur in the form of doctor-patient discussions about the patient's clinical situation itself (16%). To quite a similar extent (15%) medical-centred dialogues take place on arrival at the emergency room. In this case, the interaction can be both between experts (i.e. paramedic to doctor or doctor to doctor), and between experts and nonexperts (i.e. doctor to patient or doctor to patient's relatives). The next paragraphs discuss in detail the linguistic features defining each of these situations.

3.1.1. The discussion of the clinical case between physicians

The first situation under investigation is when physicians talk to each other to discuss how to handle and treat the clinical cases they are working on. Generally speaking, in those expert-to-expert communications there is an exchange of information and advice on how patients should be treated, until some kind of decision is reached. In the table below (2), some typical linguistic acts recurring in these situations (first column), together with their

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[1] The percentages given in the pie chart (Figure 1) were calculated on the total amount of medical related situations, therefore discussion of personal matters between physicians were left out of these counts.

corresponding linguistic features (second column), and the attached pragmatic functions (third column) are reviewed.

Linguistic act	Linguistic feature	Pragmatic function
Explanation/ description	- complete (long) sentences - ellipses - specialised terms/collocations	- describe a medical procedure or state, express one's opinion justifying it
Abbreviation	- initialisms and acronyms, - clipped forms, - syntax fragmentation	- effective communication within shared knowledge (doctor-doctor) - brevity due to lack of time
Aggravation	- vocatives - modal verbs - imperatives - colloquialisms	- argue and convince on how to treat the patient
Question	- standard and non-standard questions	- ask for advice, consultation
Informality	- sarcastic comments, jokes, hyperboles	- lighten the atmosphere, engage and entertain the audience

Table 2
Breakdown of the most distinguishing features defining expert-to-expert discussions of the clinical cases.

The two following dialogue transcriptions (Examples 1 and 2) exemplify these dynamics in action.

Example 1

Grey's Anatomy S10-E04: IN THE HOSPITAL - Dr Jo Wilson (a resident) is talking to Dr Alex Karev (an attending), about a patient		
1	Dr Jo Wilson	Taryn's labs show a slightly elevated white count, some of her electrolytes are off, her pulse is weak, and she is reporting abdominal pain. Should we keep her here overnight? It's just that her dad wants to know if he should change his flight
2	Dr Alex Karev	Yeah, labs show his 8-year-old daughter has a potentially surgical abdomen and she needs a CT, she's in pain. Her father must change his flight
3	Dr Jo Wilson	Dude, what is your problem? I know you think he's an ass, but he's not. He's not your dad
4	Dr Alex Karev	Don't even…
5	Dr Jo Wilson	What? Pretend that you're not angry and hurt and about to explode? I've been doing that. It's not working. Tell me what I can do to make this better
6	Dr Alex Karev	Just get a CT, now!

Example 2

Grey's Anatomy S10-E02: IN THE HOSPITAL - Dr Stephanie Edwards (a resident) is updating Dr Owen Hunt (an attending) about a clinical case they are handling together		
1	Dr Stephanie Edwards	Dr Hunt, Lydia's desatting, BP's dropping, decreased breath sounds on the left, rigid abdomen
2	Dr Owen Hunt	What?
3	Dr Stephanie Edwards	Sharpie lady. I throw in a chest tube?
4	Dr Owen Hunt	Dr Yang is gonna take over that case
5	Dr Stephanie Edwards	Why? I can handle a chest tube

One of the pivotal features of peer-to-peer discussions of clinical cases is their being highly dense (especially from a lexical point of view) and informative. From a discourse point of view, this translates either into the use of descriptive long and complete sentences, or of more elliptical, but very specialised, statements. The first sentence in turn 1 from example 1, in which Dr Jo Wilson, a resident, reports to Dr Karev, an attending, on the condition of a young patient, illustrates an example of a rather long and descriptive sentence: "Taryn's labs show a slightly elevated white count, some of her electrolytes are off, her pulse is weak, and she is reporting abdominal pain". Indeed, it contains 25 words, with Biber *et al.* (1999) claiming the average sentence length for spoken English ranges from 10 to 15 words. As can be observed, there are multiple coordinate clauses that are used to sketch the patient's clinical picture in front of a colleague before asking for consultation: "Should we keep her here overnight?" The resident's answer to this articulate presentation is again highly descriptive, adding an explanatory reading of the labs results: "Yeah, labs show his 8-year-old daughter has a potentially surgical abdomen and she needs a CT".

As anticipated, in some cases peer-to-peer descriptions and explanations can also take the form of elliptical sentences, in which some parts are left implied. For instance, in turns 1 and 3 of example 2 Dr Stephanie Edwards seeks advice from Dr Owen Hunt as one her patients is not feeling well and needs to be treated with a certain urgency: "[her][2] BP's dropping, [she's got] decreased breath sounds on the left, rigid abdomen", "[should] I throw in a chest tube?" In her sentences Dr Edwards omits, respectively, the possessive adjective [her], the subject and the verb [she's got], and the modal verb [should] resulting in some telegraphic, but still very informative, sentences that are easily understood by the members of the medical community.

Moving on to the lexical content of these sequences, examples 1 and 2 show that they are very rich in specialised and technical terms and word combinations pertaining to medical jargon. For example, there are sectorial

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[2] The words between square brackets are those that were omitted in the dialogue.

terms coming from Greek and Latin (e.g. "electrolytes", "abdomen", and "abdominal"), technicisms (e.g. "surgical, "desatting"), and specialised adjective-noun collocations (e.g. "white count", "abdominal pain", "surgical abdomen", "rigid abdomen") or noun-noun collocations (e.g. "breath sounds", "chest tube"). A further very recurrent lexical peculiarity of real expert-to-expert medical discussions as well as of the dataset under analysis is the usage of morphological abbreviations especially in the form of initialisms (e.g. "CT" standing for 'computed tomography', and "BP" standing for 'blood pressure'), and clipped forms (e.g. "labs" coming from 'laboratory work').

As example 1 illustrates, discussions between colleagues sometimes can also be quite adversarial. In turn 2, Dr Karev uses the modal verb "must" expressing a strong obligation in response to Dr Wilson's request for a consult formulated with the modal "should". The antagonistic nature of the exchange is also confirmed by the use of the informal and sarcastic vocative Dr Wilson uses in her answer in turn 3 of example 1"dude", and by imperative forms such as "just get a CT, now!" in turn 6 of example 1. These kinds of aggressive expressions are particularly recurrent in *Grey's Anatomy* as their impoliteness contributes to the creation of register humour (Dynel 2017) and may make medical exchanges more dramatic and palatable to the audience who also seek entertainment.

3.1.2. The medical procedure

The second most represented medical situation in *Grey's Anatomy* is the moment of the actual medical procedure. These parts are the most 'spectacular' ones in the show, in which the viewers see surgeons performing surgeries and medical treatments in the operating room, and, sometimes, in the emergency room. These sequences generally represent dialogic moments as surgeries are performed by teams of physicians and nurses. Hence, they represent peer-to-peer dialogues, with the patient not normally awake, or at least not directly involved in the conversation. Table (3) showcases some linguistic phenomena that according to the dataset analysed appear to characterise these professional exchanges, and examples 3 and 4 illustrate some of these dialogues.

Linguistic act	Linguistic feature	Pragmatic function
Explanation/ description	- complete (short) sentences - ellipses - specialised terms/collocations	- informational function/teaching
Abbreviation	- initialisms and acronyms, - clipped forms, - syntax fragmentation	- effective communication within shared knowledge (doctor-doctor) - brevity due to lack of time
Directives	- imperative - requests	- instructional function
Questions	-standard and non-standard questions	- ask for patient's statistics
Informality	- vocatives - colloquialisms - small talk	- lighten the atmosphere - show involvement

Table 3
Breakdown of the most distinguishing features defining physicians' exchanges during medical procedures.

Example 3

Grey's Anatomy S10 E01: IN THE OR - Dr April Kepner (an attending) is operating on a severely injured patient with Dr Owen Hunt (an attending)		
1	Dr April Kepner	He's bleeding through the packing, and there's still stool coming out
2	Dr Owen Hunt	Damn it. We need to take it out and resect more intestines
3	Dr April Kepner	How's his I.N.R.?
4	Dr Knox	The last one was 6
5	Dr April Kepner	Okay, give him factor VII, F.F.P.s and platelets
6	Dr Owen Hunt	Faster, Kepner
7	Dr Knox	He's having arrhythmias
8	Dr Owen Hunt	Talk to me, damn! His pulse?
9	Dr April Kepner	He's in P.E.A.
10	Dr Owen Hunt	Starting compressions

Example 4

Grey's Anatomy S10 E04: IN THE OR - Dr Derek Sheperd (an attending) is performing a brain surgery with a resident, Dr Shane Ross		
1	Dr Derek Sheperd	I'm hearing changes in his rhythm 10-blade. I need you to turn up the heart monitor, please. Suction. Mannitol. Rhythm's getting very erratic, and B.P.'s rising. Damn it. Fast! All right. Reverse the paralytics. All right, let me check his gag reflexes. Oh, no, Mickey. Come on.
2	Dr Shane Ross	Dr Shepherd, there's no brain activity.

As emerges from table (3), what particularly differentiates medical procedures from discussions of clinical cases is the high use of directives with a clear instructional function. It is generally the attending in charge of the patient who gives the orders to the team of doctors and assistants he/she is working with on how to treat the patient.

In examples 3 and 4 we can appreciate that directives are generally given through succinct direct requests (i.e. "faster Kepner", "Can you get his pulse" in example 3 and "10-blade", "suction", "mannitol" and "damn it, fast" in example 4) and indirect requests (i.e. "We need to take it out and resect more intestines" in example 3 and "I need you to turn up the heart monitor, please" in example 4) or, sometimes, through imperative constructions (i.e. "give him factor VII, F.F.P.s and platelets" in example 3 and "Reverse the paralytics" in example 4). These directives are extremely specialised as they are given to people who belong to the same professional environment, in fact they are scattered with lexical items of the medical jargon (e.g. "packing", "resect intestines", "factor VII", "arrhythmias" in example 3 and "heart monitor", "suction", "paralytics" "getting erratic", "gag reflexes" in example 4) and with abbreviations especially in the form of initialisms (e.g. "INR" for 'international normalised ratio', which is a measure of blood clotting, or "PEA" for 'pulseless electrical activity', referring to 'an organised cardiac electrical activity without a palpable pulse' in example 3 and again "BP" in example 4).

Brevity and the necessity to keep the pace of conversation quite high is also reflected in syntax, especially when the situation gets critical and the need to pass along information as quickly as possible is of primary importance. Exchanges, thus, lean towards a concise style with short, and sometimes very elliptical, sentences where only the informative noun phrase is left (e.g. "10-blade" for 'pass me the 10-blade' that is a type of scalpel, or "suction" for 'I need suction' and "mannitol" for 'give him/her mannitol' in example 4). Questions exchanged between physicians as well are often non-standard and characterised by the usage of ellipses (e.g. "His pulse?" in example 3).

Notwithstanding that, complete sentences are also present during medical procedures, though they are generally shorter than those used during clinical discussions. This happens in particular when there is not a situation of emergency and the performing surgeon describes to his colleague what he is doing to the patient, or the situation he is seeing (e.g. "He's bleeding through the packing, and there's still stool coming out" in example 3 and "I'm hearing changes in his rhythm" in example 4). These kinds of descriptions and explanations of specialised contents seem to be particularly representative of specialised TV series (Laudisio 2015). In Grey's Anatomy they often work as popularising sequences that can help the audience at home to follow and get involved with the technical passages that are shown on screen.

Another very recurrent aspect defining dialogues during medical procedures in *Grey's Anatomy* is informality. Surgeons very often resort to informal markers, such as vocatives (e.g. "Oh no 'Mickey' come on" in example 4) that may help to reduce the tension, or aggravating expressions showing strong involvement (e.g. "damn!" in example 3 and "damn it!" in example 4), and colloquialisms in general employed to lighten the atmosphere. In fact, more relaxed medical procedures, sometimes, also become very dramatic sequences, where short conversations between peers are carried out and personal affairs prevail over the professional setting.

3.1.3. The discussion of the clinical case between doctor and patient

The third situation is constituted by doctor-patient discussions concerning the patient's clinical status. In these conversational moments, a doctor, or a team of doctors, directly addresses the patient, who is generally in his/her hospital room waiting for a diagnosis or to be treated. Thus, it is an expert-nonexpert interaction essential for the physician to obtain information from the patient, which will later be used for diagnosing and treating the patient, or for the patient to understand his/her condition.

The following table (4) sketches the main linguistic features defining this situation as represented in *Grey's Anatomy*. Example 5 illustrates the features described in the table.

Linguistic act	Linguistic feature	Pragmatic function
Description/explanations	- long (complete) sentences	- informational function
Mitigation	- hedges - vocatives, - politeness markers	- expression of sympathy
Popularization	- metaphors - similes - paraphrasis - colloquialisms	- make technical terms accessible to the patient
Questions	-standard and non-standard questions	- get information about patient's status - patients asking about their condition

Table 4
Breakdown of the most distinguishing features defining expert- nonexpert discussions of clinical cases.

Example 5

Grey's Anatomy S10 E05: IN THE HOSPITAL ROOM – Dr Jackson Avery (an attending) is talking to a patient and his wife about his pathology		
1	Dr Jackson Avery	That is Zenker's diverticulum. Now, these muscles here should be working together to push food down the oesophagus. But unfortunately, Dalton's are working against each other. So the wall forms a sort of sack, and that's where the food's getting caught.
2	Patient	I always feel like I have something caught in my throat. Is that normal?
3	Patient's wife	He got pneumonia once from getting food in his lungs.
4	Patient's wife	He's a mess.
5	Patient	I'm a mess.
6	Dr Jackson Avery	Well, don't worry, I'll be cutting into the lower muscle, so that'll allow the food to pass right through. And the walls will tighten up on their own.
7	Patient's wife	Anything we should worry about?
8	Dr Jackson Avery	Well, of course, with all surgeries there are some slight risks. Worst case being stroke or even death. However, these are all very minimal in this case. There is a small risk of damage to the vocal chord nerves, though.
9	Patient	What, like I won't be able to talk?
10	Dr Jackson Avery	That's the worst case.

The linguistic features that mostly differentiate this conversational situation from the others are mitigating devices and popularising sequences. Turns by doctors tend to feature long and complete sentences, as they are not talking in a situation of emergency, instead it is a moment in which descriptive clarity and empathy are more crucial than brevity and conciseness. In example 5, turn 1 and turn 8 by Dr Jackson Avery display some descriptive sentences. In particular, in example 5 after presenting the technical name of the disease affecting the patient (i.e. "Zenker's diverticulum"), the physician describes it by resorting to a simpler and plainer register and avoids using technical terms. In particular, he refers to the muscles involved by pointing at them through spatial deixis (i.e. "here") instead of using their technical names, he uses informal phrasal verbs (i.e. "push food down the oesophagus", "working against each other") or verbs that do not prototypically pertain to a medical environment (i.e. "food's getting caught), and he uses a simile (i.e. "the wall forms a sort of sack) to picture what he is talking about. These linguistic features, generally used as paraphrasing tools, represent the doctor's attempt to make the scientific information accessible to the patient in order to make sure he/she understands his/her condition. Similar strategies can be described also in turn 6 and turn 8 by Dr Avery, in which he explains the surgical approach he intends to take and the risks connected with the procedure.

In *Grey's Anatomy* these popularised expert-nonexpert accounts of the patients' status are generally scattered with mitigating devices. In example 5 this linguistic act takes the form of adversative particles (e.g. "however" in turn 8), used by the doctor to introduce a reassuring statement after having described the patient's possible surgery risks, of hedges "But unfortunately" in turn 1, and "some slight", "Worst case", "all very minimal" and "small risk of"

in turn 8. These hedging expressions are employed by the physician to express sympathy with the patient and attenuate the force of what he/she is claiming.

The patients' turns, instead, are often questions in which they ask for further information or supplementary explanations about their clinical status. For instance, in turn 9 the patient responds to Dr Avery's explanation of one of the risks he is going to face in surgery (i.e. "damage to the vocal chord nerves" at the end of turn 8) by asking for a further level of popularisation removing any technicism: "What, like I won't be able to talk? .

3.1.4. The arrival at the ER

The last medical context under analysis is the patient's arrival at the ER. Most of the time, patients, who may be either conscious or not, arrive at the hospital by ambulance and are taken inside on a gurney by paramedics. Dialogues are prototypically between paramedics (i.e. expert-to-expert), who brief the doctors on the patient's status, and physicians who try to acquire as much information as possible on the patient to treat him/her easily and quickly. Hence, these situations are characterised by a certain level of emergency, which is inevitably reflected in language use. Table (5) lists some of the most defining linguistic traits of dialogues in this situation, which are exemplified in examples 6 and 7.

Linguistic act	Linguistic feature	Pragmatic function
Description	- short sentences - ellipses, syntax fragmentation - specialised terms/collocations	- informational function/teaching
Abbreviation	- initialisms and acronyms, - clipped forms,	- brevity due to emergency
Directives	- imperatives - requests	- instructional function
Questions	- non standard questions	- get information about patient's status - patients asking about their status

Table 5
Breakdown of the most distinguishing features
defining patient's arrival at the ER.

Example 6

Grey's Anatomy S10 E07: IN THE ER - A paramedic brings a severely injured patient. The interns (Dr Kepner, Dr Avery and Dr Hunt) and the residents (Dr Murphy, Dr Edward) are getting information and treating him			
1	Paramedic	Victor Brown, 30 years old, mauling victim. Vitals stable.
2	Dr April Kepner	Get him to trauma! What happened?
3	Paramedic	Multiple G. S.Ws to the chest. B.P. 90 over 60. Pulse in the 120s. He's on something.

Example 7

Grey's Anatomy S10 E03: IN THE ER - A paramedic brings a severely injured patient. Dr Kepner (an intern) and Dr Murphy (a resident) talk to the paramedic and to the patient and his relatives to get some information about his condition		
1	Dr Leah Murphy	What we got?
2	Paramedic	Kathleen Kane, 38, human pincushion. Woman vs. shattered baseball bat. Puncture wounds to the chest and what looks like a distal radius fracture. B.P. 85 palp, pressure 135.
3	Patient's relative	The batter was jammed with a fastball, and the bat…
4	Patient	It just exploded, you know? My jersey's really messed up.
5	Patient's relative	Don't worry about that, baby.
6	Dr April Kepner	Okay, everybody. Ready? On my count. One, two, three. I'm here. Decreased breath sounds on the right. We need X-ray stat!
7	Dr Leah Murphy	Right away!
8	Patient	I'm dizzy. It's dark. I'm dying?
9	Dr Leah Murphy	No, ma'am. Her systolic's down to 78.
10	Dr April Kepner	2 of lorazepam and 5 of Haldol!

The gravity and emergency driving these communicative events are expressed by syntactic and morphological reductions, which lead to a very elliptical and condensed exchange of medical details. This is clearly shown in examples 6 and 7, where paramedics are providing basic information about the patient they are transporting. At the beginning of the two examples, it can be noticed that paramedics use a series of elliptical sentences to provide only the most salient information about the patient (e.g. "Victor Brown, 30 years old, mauling victim. Vitals stable" in turn 1 of example 6). These paratactic presentations are extremely recurrent and seem to follow a preestablished order in the way information is transmitted to the physicians. Both in turn 1 from example 6 and in turn 2 from example 7, the paramedic says the patient's first name, his/her age, his/her type of injury, and some succinct information about his/her current condition (e.g. "vitals stable" in turn 1 of example 6, where there is a deletion of the verb). Interestingly, the description in example 7 features a series of metaphorical expressions (e.g. "human pincushion" in turn 2) which are not only used to report on the patient's condition, but also to perform another communicative function, i.e., lightening the atmosphere and amusing the audience. The same tendency towards brevity is also mirrored in the morphological abbreviations that are used to describe the patient (e.g. "vitals" standing for 'vital signs' in turn 1, "G.S.W's" standing for 'gunshot wounds' in example 6, and "BP" and "palp" standing for 'blood pressure' and 'palpitations' in turn 2 of example 7.

The other pivotal linguistic act defining these frenetic situations is the use of directives, which have an instructional function as they are used by interns or (when present) by attendings to give orders to residents, nurses, or paramedics on what should be done to treat the patient. Brevity is generally the main drive in conveying directives which therefore result in straightforward commands such as imperative constructions (e.g. "Get him to trauma!" in turn

2 of example 6) or indirect and elliptical requests (e.g. "We need X-ray stat!" in turn 6 of example 7, with the deletion of the article). In the latter case, it is interesting to notice that the hectic pace of conversation is also reinforced by the clipped form "stat", which is a very common medical abbreviation of the Latin word 'statum' for 'urgent' or 'rush', thus implying the need to act as promptly as possible. The emergency of the request is clearly understood by the resident, who answers "right away". In some cases, directives are also expressed simply by listing the medicines to be given to the patient, using noun phrases containing medical terms and quantities (e.g. "2 of lorazepam and 5 of Haldol!" in turn 10 of example 7).

Questions also have a central role during the arrival at the ER sequences, as they are used by the team of doctors who attend to the patient upon arrival to get as much information as possible about his/her status. These are normally non-standard questions testifying to the emergency situation (e.g. "What we got?" in turn 1 of example 7 with the elision of the auxiliary verb 'have'). Sometimes they are also asked by patients to doctors (e.g. "I'm dying?" in turn 8 of example 7 where the question is asked just by using intonation). Interestingly, we can notice that Dr Murphy's answer (i.e. "No, ma'am") is rather different from doctors' answers during doctor-patient discussions of clinical cases as it is very direct and informal lacking mitigating devices. This reflects, again, the slant towards morphosyntactic reduction and linguistic economy called for by the situation.

4. Concluding remarks

As anticipated in the introduction, this study represents the first stage of a larger enquiry on the authenticity of the representation of spoken medical discourse in the TV show under study.

The paper offered a qualitative linguistic analysis of some characteristics of fictional spoken medical discourse occurring in different medical contexts in a very popular American TV medical drama set in a city hospital. The research focused in particular on dialogues, i.e. on verbal language, but the initial manual reading of the transcripts, aimed at establishing which kinds of medical contexts were represented in the show, was also corroborated by a careful viewing of the corresponding audiovisual files. Four main types of medical-centred interactions were singled out in the episodes. Furthermore, it emerged that peer-to-peer discussions of clinical sequences were the most represented medical situations, followed by interactions between surgeons during medical procedures, doctor-patient discussions/diagnosis, and finally exchanges between physicians taking place immediately on the patient's arrival at the ER.

The subsequent analysis of these different spoken medical interactions considered in particular the situational context of the exchanges (e.g. the level of emergency, the participants' role, etc.) and eventually attempted to map linguistic forms with pragmatic functions.

In general, dialogues in peer-to-peer discussions of clinical cases were highly descriptive, specialised, and lexically dense. Complete and long sentences featuring nouns as the most important, because informative, parts of the turns were the most typical linguistic tools employed in this situation. In some cases, communications seemed to get heated as physicians attempt to affirm their clinical points of view on how to treat a patient. This is linguistically attained through the usage of aggravating devices and expressions of strong attitudes to affirm one's opinions.

In medical procedures the language used by surgeons was generally concise and essential, but retaining a very high degree of complexity both at the lexical and syntactic levels, with specialised and abbreviated medical terms, as well as elliptic and telegraphic directives as the most typical linguistic acts.

The third most represented medical setting, i.e. the discussion of the clinical case between doctor and patient showed a compromise between being as informative as possible while keeping the register plain and accessible on the part of physicians. Moreover, they very often accompanied their claims with linguistic expressions of tact and support that sometimes mitigate the bad news they are giving to the suffering patient. Patients were also active in the question-making part in these dialogues, as they generally want to understand as much as possible about their condition. That is why they repeatedly ask for clarifications and further explanations, very often through non-standard questions.

Finally, the arrival at the ER, being the most frenetic moment, was characterised by dialogues driven by emergency. Descriptions and explanations were, therefore, often reduced as much as possible, only leaving space for specialised terms and directive acts that get the message across efficaciously and rapidly. This is generally possible because of the shared knowledge between physicians and paramedics.

In conclusion, this preliminary study brought to the fore that *Grey's Anatomy* provides a wide repertoire of medical contexts which portray medical interactional exchanges both between medical professionals and between doctors and patients. Given the potentialities of the data that emerged throughout the analysis, especially for the teaching of specialised English in the field of medicine, a possible next step would be to ascertain the validity and the authenticity of the TV show under scrutiny. For example, some comparative quantitative and qualitative studies involving other medical TV series (e.g. *Dr. House*, which was recently used by Taibi *et al.* (2019) to

compile a large corpus of fictional medical English) as well as other TV genres such as medical documentaries, in which, as the recent volume by Maley and Tomlinson (2017) claims, the degree of authenticity is higher.

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