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Using AI for Diagnosis and Treatment Plan

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Using AI (Artificial Intelligence) and Web Based Tools for Diagnostic Purposes and Treatment Plans
University of North Dakota
School of Medicine and Health Sciences

Due:

40 Points

Overall Medical Learning Objectives:

- PCL-CSK002- Demonstrate the ability to apply knowledge of basic sciences to clinical manifestations and presentations in a patient case.
- PWU-CSK001 - Observe and evaluate the clinical reasoning skills exhibited by the physician.
- PWU-CSK002 - Apply basic science concepts to patient diagnoses and treatment.

Assignment Objectives:

- Generate a diagnosis and care plan using 3 web-based tools and a provided case study.
- Demonstrate problem solving and clinical reasoning skills when considering information from web-based tools for a case study versus your own professional opinion.
- Adopt critical thinking and clinical reasoning when using web-based tools, and consider the impact of self-diagnosis on patients and medical providers.

Assignment Description:

The diagnosis of medical conditions and the determination of a treatment plan are key goals for physicians. There is a blend between gathering history and information from a patient to physician. However, some patients have the tendency to self-diagnose with the information they receive; they focus on information that they know, is prevalent, or uses tools such as the internet. A commonly used tool is [Web MD](#) Symptom Checker enters social determinants of health and their symptoms, and the website provides a list of possible probable outcomes. However, there is a new tool in town that many patients and physicians are utilizing with the innovation of generative AI tools such as [ChatGPT](#) and [Bard](#) to use as the new “symptom checker”. Patients will enter their information and symptoms to determine possible health concerns, with a variety of results. These solutions can help patients be an active part of their treatment and health journey and could potentially help with the speed and accuracy of diagnosis for physicians. However, these tools raise a myriad of concerns, ranging from privacy in terms of HIPAA, accuracy, and ownership of information.

For this assignment, you will be comparing and contrasting three commonly used self-diagnostic tools on the internet: WebMD, ChatGPT, and Bard, to look at outcomes and consider the implications. For each tool, enter the information from the case study to determine a diagnosis and treatment plan.

Case Study:

History of Present Illness: A 33-year-old white female presents after admission to the general medical/surgical hospital ward with a chief complaint of shortness of breath on exertion. She reports that she was seen for similar symptoms previously at her primary care physician’s office six months ago. At that time, she was diagnosed with acute bronchitis and treated with bronchodilators, empiric antibiotics, and a short course oral steroid taper. This management did not improve her symptoms, and she has gradually worsened over the past six months. She reports a 20-pound (9 kg) intentional weight loss over the past year. She denies camping, spelunking, or hunting activities. She denies having any

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sick contacts. A brief review of systems is negative for fever, night sweats, palpitations, chest pain, nausea, vomiting, diarrhea, constipation, abdominal pain, neural sensation changes, muscular changes, and increased bruising or bleeding. She admits a cough, shortness of breath, and shortness of breath on exertion.

Social History: Her tobacco use is 33 pack-years; however, she quit smoking shortly prior to the onset of symptoms, six months ago. She denies alcohol and illicit drug use. She is in a married, monogamous relationship and has three children, aged 15 months to 5 years. She is employed at a cookie bakery. She has two pet doves. She traveled to Mexico for a one-week vacation one year ago.

Allergies: No known medicine, food, or environmental allergies.

Past Medical History: Hypertension

Past Surgical History: Cholecystectomy

Medications: Lisinopril 10 mg by mouth every day

Physical Exam:

Vitals: Temperature, 97.8 F; heart rate 88; respiratory rate, 22; blood pressure 130/86; body mass index, 28

General: She is well appearing but anxious, a pleasant female lying on a hospital stretcher. She is conversing freely, with respiratory distress causing her to stop mid-sentence.

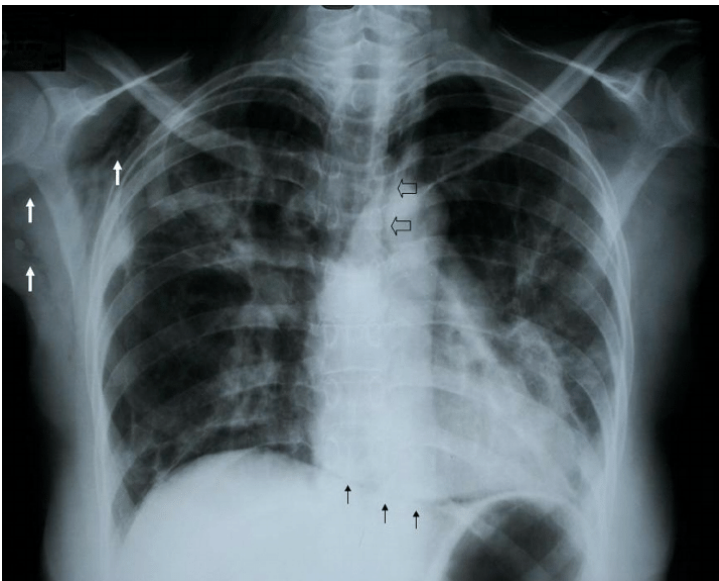
Respiratory: She has diffuse rales and mild wheezing; tachypneic.

Cardiovascular: She has a regular rate and rhythm with no murmurs, rubs, or gallops.

Gastrointestinal: Bowel sounds X4. No bruits or pulsatile mass.

Laboratory Studies: Initial work-up from the emergency department revealed pancytopenia with a platelet count of 74,000 per mm³; hemoglobin, 8.3 g per and mild transaminase elevation, AST 90 and ALT 112. Blood cultures were drawn and are currently negative for bacterial growth or gram staining.

Chest X-ray Impression: Mild interstitial pneumonitis



Additional Readings and Resources:

Read the following scholarly articles about use the information to inform your answers regarding the use of web based and AI tools for diagnosis:

- Miller, Kevin N. "With Medical Websites, a Cough Is No Longer Just a Cough." *The New York Times*, 29 August 2016, <https://www.nytimes.com/roomfordebate/2016/08/29/are-medical-websites-like-webmd-healthful/with-medical-websites-a-cough-is-no-longer-just-a-cough> . Accessed 23 May 2023.
- Huh, J., et al. "Lessons Learned for Online Health Community Moderator Roles: A Mixed-Methods Study of Moderators Resigning From WebMD Communities." *Journal of Medical Internet Research*, vol. 19, no. 9, 2016, p. e247, <https://www.jmir.org/2016/9/e247>. Accessed 23 May 2023.
- Poon, Aaron I.F., and Joseph J.Y. Sung. "Opening the Black Box of Medicine." *Journal of Gastroenterology and Hepatology*, vol. 36, no. 3, 2020, pp. 0815-9319. <https://doi.org/10.1111/jgh.15384> . Accessed 23 May 2023.

Use additional scholarly articles found through textbooks, journals , and resources at the [SMHS Medical Library](#) (ex. Google Scholar, Clinical Key, DynaMed, and PubMed). All citations should be in [APA format](#) and should be scholarly and peer reviewed. The provided readings can be cited as scholarly sources, but at least three additional sources should be located.



Name:

Using AI and Web Based Diagnostic Tools Assignment

Directions: Complete the case study as provided and provide your responses in this document. All responses should be thorough, well crafted, and free from spelling and grammar errors. Citations should be provided in APA format. When completed, upload this document into LEO.

1. Web MD Symptom Checker Results: (cut and paste, or insert a screen shot)

2. Chat GPT Results: (cut and paste, or insert screen shot)

3. Bard Results: (cut and paste, or insert screen shot)

4. What were the most common results after using these tools? Were they similar? How did they differ?

5. Was the diagnosis of the same that you would have selected as a physician? Why or why not? Explain.

6. Identify three alternative diagnoses that might apply to this case study and describe why they may be viable options.

7. Do you think that using these tools is beneficial or detrimental to a patient's health? Explain and provide at least 2 scholarly examples.

8. Do you think that these tools are beneficial or detrimental for physicians to utilize? Explain and provide at least 2 scholarly examples.

9. Do you think that web based diagnostic tools will be used in the future? Why or why not? Explain and provide at least 2 scholarly examples.

10. What questions or concerns do you have about using web based diagnostic tools as a physician? Would you utilize them as a tool in your practice in the future?



Using AI and Web Based Diagnostic Tools Assignment Rubric				
	Excellent (4)	Good (3)	Satisfactory (2)	Needs Improvement (1)
1. Answer demonstrated that student used Web MD Symptom Checker to determine a diagnosis and treatment plan.	<i>All required elements were present, demonstrating that the student interacted with the tool.</i>			<i>Required element was not present that demonstrated the student utilized the tool.</i>
2. Answer demonstrated that student used Chat GPT to determine a diagnosis and treatment plan.	<i>All required elements were present, demonstrating that the student interacted with the tool.</i>			<i>Required element was not present that demonstrated the student utilized the tool.</i>
3. Answer demonstrated that student used Bard to determine diagnosis and treatment plan.	<i>All required elements were present demonstrating that the student interacted with the tool.</i>			<i>Required element was not present that demonstrated the student utilized the tool.</i>
4. Student compared similar and differing results from the three sources and looked for commonalities.	<i>Student identified responses from each source and identified similarly and differences.</i>	<i>Student did not identify one or more diagnoses, and/or commonalties.</i>	<i>Student did not identify two or more diagnoses, and/or commonalties.</i>	<i>Student did not clearly identify the three diagnoses from the sources, and/or similarities or differences.</i>

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5. The student stated their diagnosis and used data and resources to substantiate their perspective.	<i>Student clearly stated their diagnosis and substantiated their perspective with evidence.</i>	<i>Student stated their diagnosis and substantiated their perspective with evidence, missing one key more element.</i>	<i>Student stated their diagnosis and substantiated their perspective with evidence missing two or more key elements.</i>	<i>Student did not state their diagnosis and substantiate their perspective with evidence.</i>
6. The student identified three alternative diagnoses and their viability.	<i>Student identified three alternative diagnoses and identified their rational and viability.</i>	<i>Student identified two alternative diagnoses and identified their rational and viability.</i>	<i>Student identified one alternative diagnosis and identified the rational and viability.</i>	<i>Student did not identify alternative diagnoses and/or identify their rational and viability.</i>
7. Student identified whether they believe that the use of these tools is beneficial or harmful for patients and created a well-crafted argument with at least 2 scholarly citations.	<i>The student identified their perspective and created a meaningful response with 2 scholarly citations.</i>	<i>The student identified their perspective and created a meaningful response with 1 scholarly citation.</i>	<i>The student identified their perspective and created a meaningful response with no scholarly citations.</i>	<i>The student didn't identify their perspective and/or include scholarly citations.</i>
8. Student identified whether they believe that the use of these tools is beneficial or harmful for physicians and created a well-crafted argument with at least 2 scholarly citations.	<i>The student identified their perspective and created a meaningful response with 2 scholarly citations</i>	<i>The student identified their perspective and created a meaningful response with 1 scholarly citation.</i>	<i>The student identified their perspective but did not create a meaningful response and/or with no scholarly citations.</i>	<i>The student didn't identify their perspective and/or include scholarly citations.</i>



<p>9. Students identified their position and regarding web based diagnostic tools and created a well-crafted argument with at least 2 scholarly citations.</p>	<p><i>The student identified their perspective and created a meaningful response with two scholarly citations</i></p>	<p><i>The student identified their perspective and created a meaningful response with 1 scholarly citation.</i></p>	<p><i>The student identified their perspective but did not create a meaningful response and/or provided no scholarly citations.</i></p>	<p><i>The student didn't identify their perspective and/or include scholarly citations.</i></p>
<p>10. Student iterates concerns and questions about AI Tools as a diagnostic tool for a physician, and how they would approach them within their care.</p>	<p><i>Student identifies clear questions or concerns about AI as a diagnostic tool and their personal approach is specific.</i></p>	<p><i>Student identifies clear questions or concerns about AI as a diagnostic tool and their personal approach. Response is somewhat robust but misses one key element.</i></p>	<p><i>Student identifies some clear questions or concerns about AI as a diagnostic tool and their personal approach. Response is vague or misses two or more key elements.</i></p>	<p><i>Student does not pose clear questions or concerns about AI as a diagnostic tool or their personal approach.</i></p>
<p>Comments:</p>			<p>Score:</p>	<p>/40</p>



Case Study:

[Case Study: 33-Year-Old Female Presents with Chronic SOB and Cough - StatPearls](#)

Acutal Diagnosis: Pulmonary histoplasmosis

Example Responses from AI Tools:

Chat GPT Generated Results-

I'm not a doctor, but based on the information provided, it seems that the patient's symptoms and findings are concerning for a complex medical condition. The following is a potential diagnostic and treatment plan that a healthcare professional might consider:

Possible Diagnosis:

Given the patient's history, symptoms, and test results, there are several potential diagnoses that need to be considered, including but not limited to:

1. **Sarcoidosis:** This is an inflammatory disease that can affect multiple organs, including the lungs. It can lead to shortness of breath, cough, and weight loss. The pancytopenia and elevated liver enzymes could be related to this condition.
2. **Hypersensitivity Pneumonitis:** Exposure to certain environmental antigens (like bird droppings) can lead to an immune response in the lungs, causing symptoms like cough, shortness of breath, and rales. This might explain her symptoms given her exposure to pet doves.
3. **Connective Tissue Disorder (e.g., Lupus):** Autoimmune disorders can lead to a wide range of symptoms, including respiratory and hematologic issues.
4. **Infection (e.g., Tuberculosis):** Despite the negative initial blood cultures, certain infections might still need to be considered and further investigated.

Potential Treatment Plan:

Please consult a healthcare professional for an accurate diagnosis and treatment plan. However, here's a general outline of what the treatment plan might involve based on the possible diagnoses:



1. **Further Testing:** Additional tests are needed to narrow down the potential diagnoses. These might include:
 - High-resolution CT scan of the chest to get a more detailed view of the lung changes.
 - Pulmonary function tests to assess lung function and determine the severity of the lung involvement.
 - Rheumatologic and autoimmune panels to evaluate for connective tissue disorders.
 - Further infectious disease testing if necessary.
2. **Treatment Based on Diagnosis:**
 - **Sarcoidosis:** Treatment might involve corticosteroids to reduce inflammation and suppress the immune response.
 - **Hypersensitivity Pneumonitis:** Removing the source of exposure (in this case, the pet doves) is crucial. Corticosteroids might also be used to manage inflammation.
 - **Connective Tissue Disorder:** Treatment varies depending on the specific disorder but might involve immunosuppressive medications.
 - **Infection:** If an infectious cause is identified, appropriate antibiotics or antimicrobial treatment would be initiated.
3. **Symptomatic Management:** Regardless of the diagnosis, symptomatic relief is important. This might involve:
 - Bronchodilators to help manage wheezing and improve breathing.
 - Oxygen therapy if her oxygen levels are low.
 - Nutritional support to address the unintentional weight loss.
4. **Monitoring:** Regular follow-up appointments with healthcare professionals to monitor the patient's response to treatment, adjust medications if necessary, and manage any side effects.

Remember, the information provided here is a general overview and should not be considered a substitute for professional medical advice. It's important to consult a qualified healthcare provider for an accurate diagnosis and personalized treatment plan based on the patient's specific condition.




Bard Experiment

New chat


ent

determine a diagnosis and trea...

Bard was just updated. [See update](#)

 determine a diagnosis and treatment plan for the following information-- History of Present Illness: A 33-year-old white female presents after admission to the general medical/surgical hospital ward with a chief complaint of shortness of breath on exertion. She reports that she was seen for similar symptoms previously at her primary care physician's office six months ago. At that time, she was diagnosed with acute bronchitis and treated with bronchodilators, empiric antibiotics, and a short course oral steroid taper. This management did not improve her symptoms, and she has gradual...

View other drafts  

 I agree with your assessment. The patient's symptoms and findings are concerning for a complex medical condition. The possible diagnoses and treatment plan you outlined are all reasonable and should be considered by the healthcare professionals involved in her care.

It is important to remember that I am not a doctor and cannot provide medical advice. The information I have provided is based on my understanding of the medical literature and should not be taken as a substitute for professional medical advice.

The patient should see a doctor as soon as possible for further evaluation and treatment.

    Google it 



INFO

SYMPTOMS

QUESTIONS

CONDITIONS

DETAILS

TREATMENT

Conditions that match your symptoms

UNDERSTANDING YOUR RESULTS ⓘ

Asthma (Teen And Adult)

Moderate match



Emphysema

Moderate match



Heart Failure With Preserved Ejection Fraction

Fair match



Bronchitis

Fair match



Heart Attack (Female)

Fair match



LOAD MORE CONDITIONS

Gender **Female** Age **33** [Edit](#)

My Symptoms [Edit](#)
shortness of breath with activity



Start Over

< Previous

Continue >



Conditions that match your symptoms
UNDERSTANDING YOUR RESULTS

- Asthma (Teen And Adult)**
Moderate match
 - Emphysema**
Moderate match
 - Heart Failure With Preserved Ejection Fraction**
Fair match
 - Bronchitis**
Fair match
 - Heart Attack (Female)**
Fair match
- LOAD MORE CONDITIONS
- Previous

Asthma (Teen and Adult)

Bronchial asthma | Hyperactive airway disease | Intrinsic asthma

CONDITION DETAILS TREATMENT OPTIONS

Symptoms

Symptoms of asthma may include wheezing, chest tightness or pain, shortness of breath, and cough. Symptoms of a severe asthma attack may include blue lips, difficulty speaking, confusion, extreme difficulty breathing, sweating, and anxiety.

How Common

More than 25 million people in the U.S. have asthma.

Overview

Asthma is a lung condition that causes airways to swell and become inflamed. Asthma makes it hard to breathe. Some people may have minor symptoms, but others may have severe symptoms that interfere with daily life. Having severe asthma may put you at risk for a life-threatening asthma attack. Symptoms of an... [read more >](#)

[More About Asthma Symptoms >](#)

Do you think you have this condition?

Yes No Maybe

Risk Factors

Allergies, family history of asthma or allergies, eczema, obesity

Diagnosed By

Your doctor can diagnose asthma by taking your medical history and doing a physical exam. Other tests include lung function tests, allergy testing, and X-rays. Asthma is classified in 4 levels of severity:

- Mild intermittent -- daytime symptoms two or fewer times per week or nighttime symptoms one or two nights per week
- Mild persistent -- Symptoms more than two but less than 7 days per week
- Moderate persistent -- daytime symptoms every day or nighttime symptoms more than one night per week
- Severe persistent -- continual daytime symptoms or frequent nighttime symptoms, often every night

Treatment Options >

Did You Know?

These athletes all rose to the top of their game to win Olympic medals, despite having asthma.

- Kristi Yamaguchi, Olympic gold medalist in figure skating
- Jackie Joyner Kersey, Olympic gold medalist in track and field
- Bill Koch, Olympic silver medalist in cross country skiing
- Greg Louganis, Olympic gold medalist in diving

Fact

Asthma is the most common chronic childhood disease, affecting more than 6 million children.

Previous

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