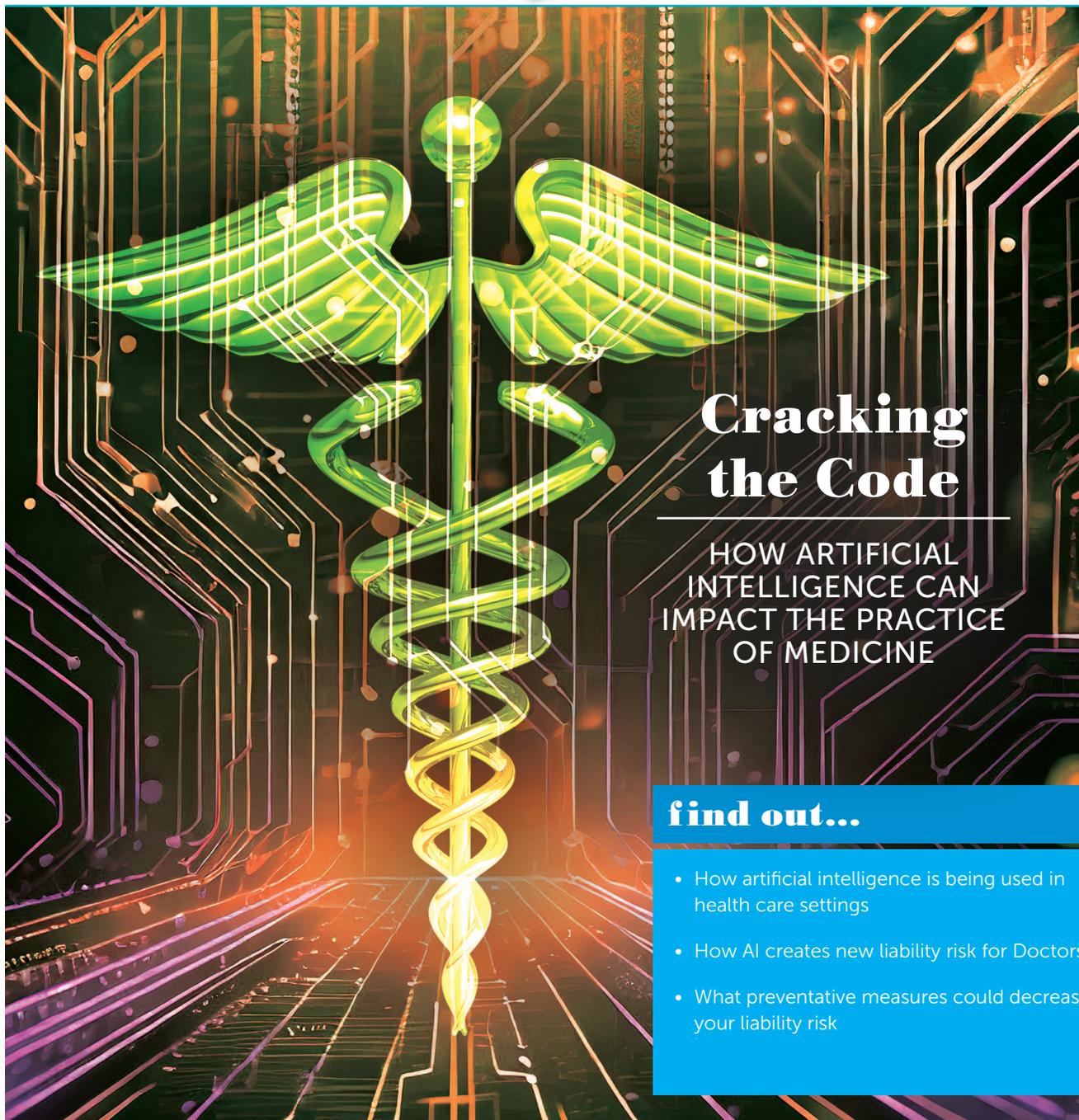


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DOCTORS

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Cracking the Code

HOW ARTIFICIAL
INTELLIGENCE CAN
IMPACT THE PRACTICE
OF MEDICINE

find out...

- How artificial intelligence is being used in health care settings
- How AI creates new liability risk for Doctors
- What preventative measures could decrease your liability risk

A LETTER FROM THE CHAIR OF THE BOARD

Dear Colleague:

The use of technology in medicine is nothing new. As a Physician, the technology you use is an essential tool in the overall treatment process. However, as technology evolves, so do the challenges that come with it. Artificial intelligence is no different and is beginning to make inroads into all areas of practice. In this issue of *Doctors RX*, we will discuss how artificial intelligence is being used by Physicians, how it will potentially impact medical care, and how you can protect yourself if you have already incorporated it or are considering it in your practice.



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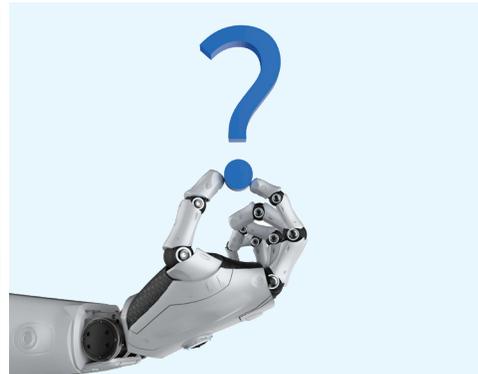


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DOCTORS RX

Michael Doll, Editor,
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Dr. George S. Malouf, Jr., M.D., Chair of the Board
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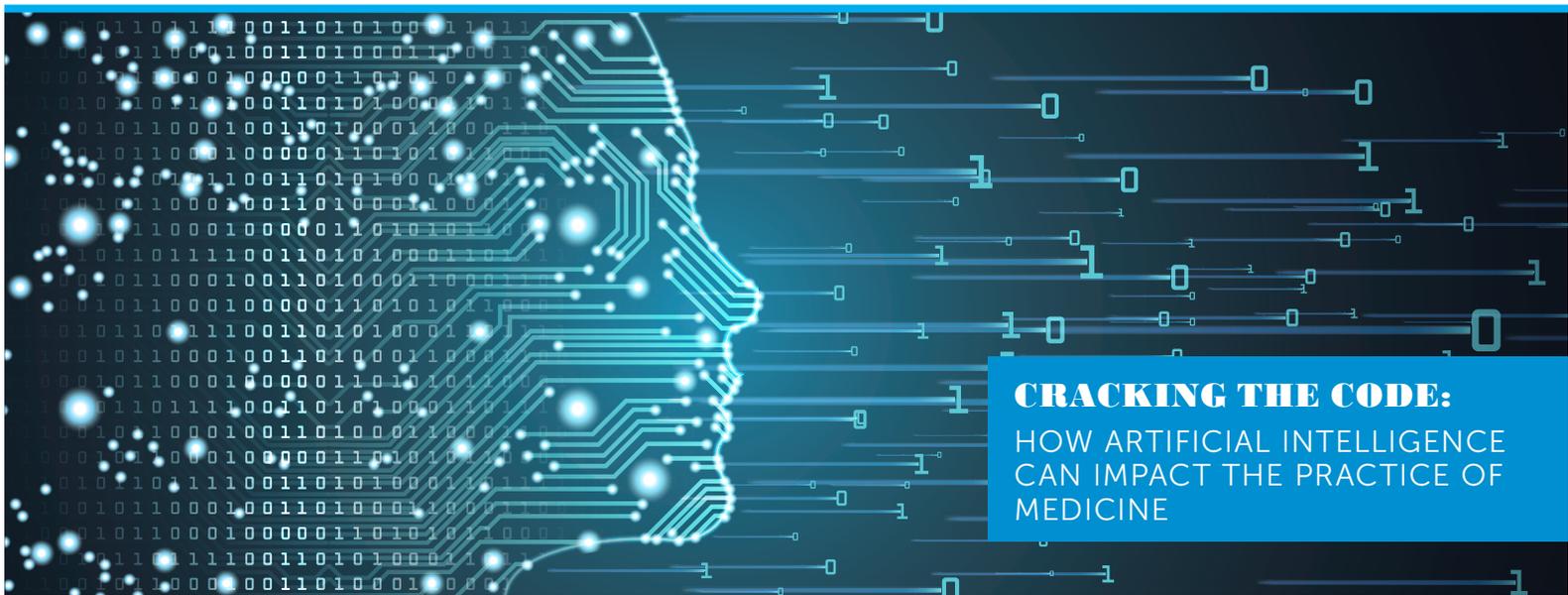
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CRACKING THE CODE: HOW ARTIFICIAL INTELLIGENCE CAN IMPACT THE PRACTICE OF MEDICINE

Consider the following scenarios:

Scenario #1

You are a Radiologist reviewing studies. One patient's study comes across your desk for cancer screening. In your practice, you use an Artificial Intelligence (AI) model that can alert you to potential pre-cancerous areas on this type of study. For this patient, the AI model identifies several nodules as having an elevated chance of developing into cancer. You disagree, and advise that the patient return in a year for follow-up screenings. One year later, the patient is found to have a cancerous mass in the area the AI model had flagged. Later you receive a claim demand letter alleging negligence for failure to diagnose cancer.

Scenario #2

You are a Primary Care Physician who is seeing a longtime patient for his annual physical. You have the option to run the patient's demographic information and other metadata through your AI model to receive recommendations for various cancer screenings. You choose not to use the AI model to determine whether the patient should have his prostate-specific antigen (PSA) tested. Unfortunately, the patient is later diagnosed with prostate cancer. Shortly thereafter, you receive a lawsuit alleging negligence for failure to diagnose. The lawsuit states that, had you run the patient's data through the AI model, it would have recommended a PSA test, leading to additional testing that, ultimately, would have identified cancer.

As the Radiologist or Primary Care Physician in the above scenarios, you ask yourself: *What could I have done differently? As the Radiologist, should I have informed the patient that the AI model recommended a different treatment path? As the Primary Care Provider, should I have used the AI model? If so, would the results have influenced my decision regarding PSA testing? How does AI affect my liability moving forward?*

WHAT IS ARTIFICIAL INTELLIGENCE?

Artificial intelligence (AI) is an emerging technology that could have a positive impact on the practice of medicine in ways that we are just starting to understand. For members of the medical community, understanding AI—its applications, potential risks, and inherent limitations—is essential for both patient safety and to mitigate liability.

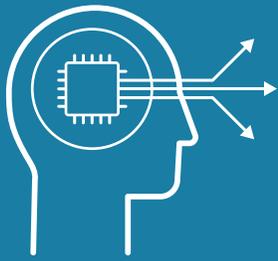
At its core, AI is a branch of computer science that creates machines capable of mimicking human intelligence. AI is unlike traditional software that follows a predefined set of instructions. Instead, AI identifies patterns in vast datasets to make decisions. It then uses machine learning (ML) to improve its decision-making abilities over time.¹

The key is that AI can only *mimic* human intelligence. It is not a substitute for your years of training and experience, nor can it replicate the benefits of an in-person, physical



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Editor's Note
A graphic designer used AI to generate the background of this issue's cover image. Once generated, various design techniques were employed to seamlessly integrate a caduceus into the composition.



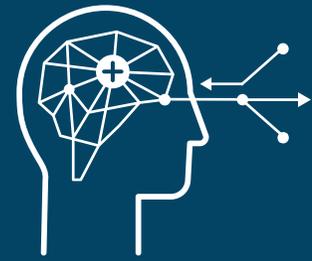
ARTIFICIAL INTELLIGENCE

ENGINEERING OF MACHINES THAT MIMIC COGNITIVE FUNCTIONS



MACHINE LEARNING

ABILITY TO PERFORM TASKS WITHOUT EXPLICIT INSTRUCTIONS AND RELYING ON PATTERNS



DEEP LEARNING

MACHINE LEARNING BASED ON ARTIFICIAL NEURAL NETWORKS



Consider

AI can help organize, interpret, and even predict future medical events based on historical data from a patient's EHR.

examination of a patient. AI is simply another tool that may help you reach treatment and diagnosis decisions. Most importantly, AI is not meant to replace you as the treating Physician.

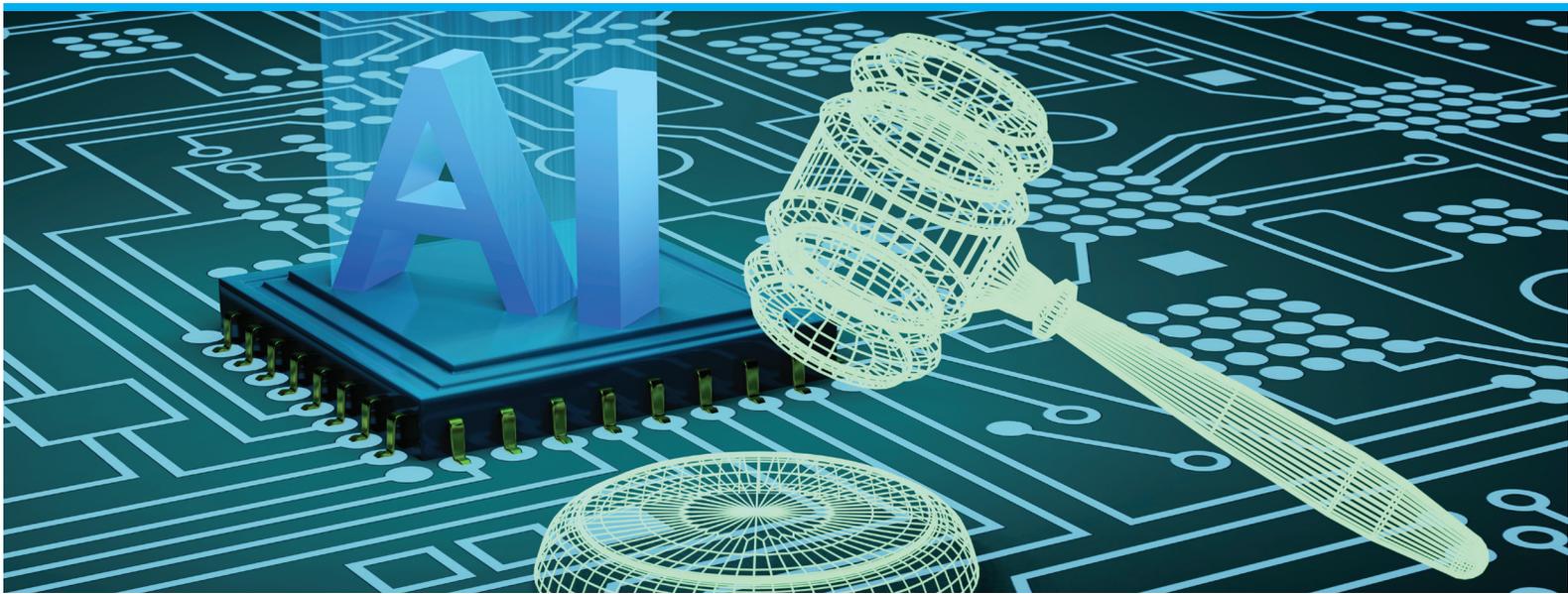
HOW IS AI BEING INCORPORATED INTO MEDICINE?

Currently, AI researchers are applying machine learning to teach computers certain aspects of medicine—and even to help Physicians make diagnoses without explicitly programming a computer to do so. In January, 2023, Harvard Medical School announced the success of Sybil, an AI model developed from a study conducted by Harvard and Massachusetts Institute of Technology (MIT) at the Massachusetts General Hospital. By analyzing over 6,000 low-dose computed tomography (CT) scans, Sybil accurately predicted the risk of lung cancer for individuals, with and without a significant smoking history, at a rate ranging from 86% to 94%.²

Physicians in many specialties, not just Radiology, are using AI to assist them in diagnosis and treatment. For example, AI systems like IBM's Watson can sift through vast amounts of data, from research papers to medical records, to recommend treatment strategies tailored to individual patients. Diagnosis decision support tools like Watson can help Physicians decide whether to order pre-cancer screenings early. However, these systems can make recommendations based

only on up-to-date medical research and literature;³ they cannot visualize and examine the patient, nor can they communicate directly with the patient to identify the patient's needs and concerns. Another way AI can assist health care providers is by leveraging the electronic health record (EHR) to help organize, interpret, and even predict future medical events based on a patient's historical data. Using what is known as predictive analytics, AI can identify subtle correlations among symptoms, medical histories, and outcomes, potentially leading to early diagnoses. AI can also suggest tailored treatment options based on patients' data to further personalize their patient care. In Radiology, for example, AI can direct Physicians to review concerning findings on an image. Based on their training, experience, and common sense, the Physicians must then determine whether the findings are clinically significant.⁴





Given the speed at which AI currently is being developed, it appears all medical specialties will be affected by AI in the near future. So, what does this mean for you and your practice, and what are some of the potential liability risks of using AI?

HOW WILL AI AFFECT THE MEDICOLEGAL LANDSCAPE?

Although AI has its benefits, it certainly is not without potential liability risks. Whether you already have incorporated AI into your practice or are considering doing so, you should understand how AI might affect you in litigation.

Medical malpractice occurs when a health care provider deviates from a recognized “standard of care” and causes injury to a patient. Standard of care is not a medical term, but rather a legal term. The standard of care is the degree of care that a reasonably prudent health care provider would exercise under the same or similar circumstances. As AI systems become more prevalent in health care, the standard of care may evolve to incorporate its use. A question to consider is whether it is negligent if a Doctor *does not use* an available and proven AI tool to support patient care. Conversely, is it negligent if a Doctor places *too much reliance* on an AI recommendation that turns out to be incorrect? The short answer to both questions is that we don’t yet know – the law governing medical negligence has not evolved to keep pace with our changing use of AI technology.

The line between product liability (a faulty or defective product) and medical malpractice could blur with the adoption of AI. When the use of an AI tool causes a negative outcome, is the product or the user at fault? Or perhaps both? It remains to be seen how plaintiffs’ lawyers will account for AI in medical malpractice lawsuits. Because the law sets different standards for a negligently made or designed product than it does for the negligent delivery of medical care, the legal system will need to develop rules for addressing AI-related negligence claims.

Since future AI systems will access and analyze patient information across entire EHR systems, the protection of patient data is another legal area that needs to be considered. Suppose a hacker infiltrates an AI system, locks patient information, and holds it ransom. The breach could result in a delay in treatment that is catastrophic for the patient. Or suppose bad actors “poison” the data that an AI system relies on by inputting false patient information into the EHR. The result might be unreliable or even dangerous recommendations from an AI model. With any software you use, including AI, be sure to implement reliable software protection, such as data encryption, to help ensure the information you enter remains confidential.

WHAT ARE THE LIMITATIONS OF AI?

AI output is only as good as the data used to train the model. Biased or unrepresentative



Note

As AI systems become more prevalent in health care, the standard of care may evolve to incorporate their use.



AI HALLUCINATION refers to misinterpretation or false creation by neural networks, especially in image recognition or generation tasks.



Consider

A neural network is a deep learning process in which a computer is trained to perform a task by analyzing examples.⁶

data can cause an AI model to generate erroneous information. If, for example, a dataset is unrepresentative of the Physician's patient population, an AI model may ignore population-specific diseases, such as sickle cell anemia or other autosomal recessive disorders.⁵ Generally, if the information documented in the EHR is inaccurate, then the information the AI model generates based on the EHR will be inaccurate. Always educate yourself by inquiring with the AI manufacturer on the source and quality of the data used to train the AI model you use.

"Hallucination" is another noteworthy limitation of AI. AI hallucination refers to misinterpretation or false creation by neural networks, especially in image recognition or generation tasks. Just as the human brain might occasionally "see" patterns or objects that are not there—like shapes in clouds—AI systems can sometimes detect patterns inaccurately. These anomalies arise from biases in training data, overfitting, or model limitations.

Overfitting occurs when a machine learning model gives accurate predictions for training data but not for new data.⁷

Awareness of the source and quality of the data used to train the AI model, and of the inherent limitations of AI, are important considerations

when using AI to support patient care.

CONSIDERATIONS WHEN IMPLEMENTING AI

If you are or may be integrating AI into your practice, please consider the following:

Documentation

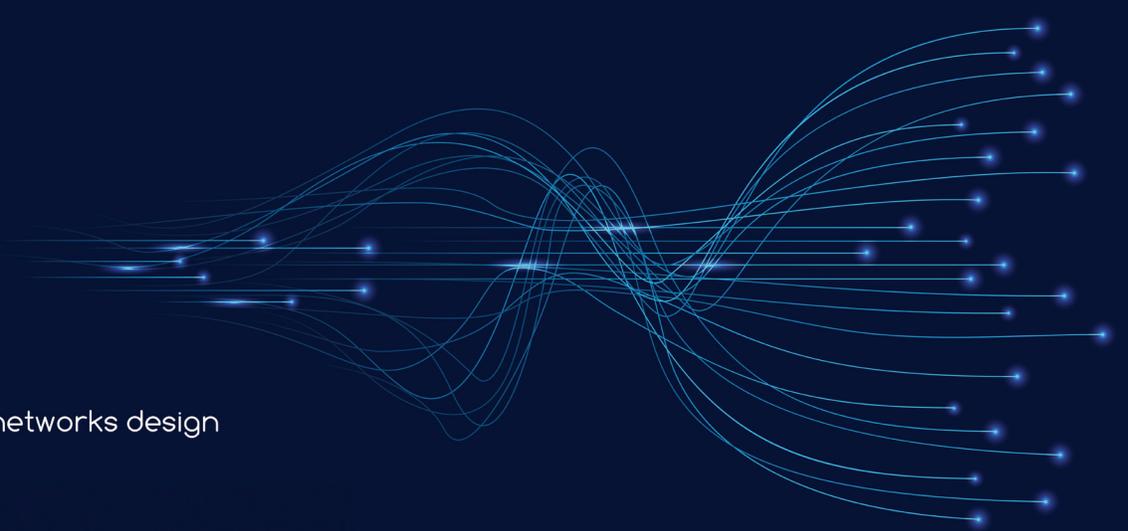
If you have used AI to treat a patient, a plaintiff's attorney in a medical malpractice case may try to use the AI recommendation against you if you do not adequately document your consideration of AI. For example, if you disagree with an AI model's recommendation, you should thoroughly document your decision making. You are an expert, with years of experience in your field. Your documentation should reflect that. Your clinical decision-making process should be apparent in the medical record so that the patient and any third party who reviews it will understand why you adopted or deviated from the AI model's recommendation. The AI model cannot testify in its defense at trial, so your record should clearly explain how you reached your treatment decision in consideration of the AI model's recommendation.

Communication

Patients need transparency when it comes to the use of AI in their treatment. Make them aware when you use AI and how you use it. Discuss your clinical decision-making with



neural networks design



your patients so that they are fully aware of the risks and benefits of moving forward with your treatment recommendations. These conversations, like the ones you have with your patients involving informed consent, should be ongoing throughout treatment and remain essential to the Physician-patient relationship.

Whenever you have conversations about the use of AI, document them in the medical record. Remember that the Open Notes law gives patients near-real-time access to their medical records⁸ and it is imperative that you document the reason for your clinical decision and whether you agree or disagree with an AI model's recommendations.

Training and Proper Use

As with any tool, the efficacy of AI in medical settings will depend on its proper use. Questions of user error arise when a Doctor misuses an AI tool or misinterprets its output. To effectively incorporate AI into your practice, you should ensure proper training for all AI users and document each training session. You may choose to involve your AI system's vendor in meetings and/or training sessions with members of your practice. As with all software, your AI system should be periodically updated, at regular manufacturer-recommended intervals.

Finally, adhere to any AI use policies you may establish. If you deviate from these policies based on the needs of an individual patient, document *why*. The same recommendation

applies if you work in a hospital setting, as some hospitals may already have implemented AI into their EHR. Know the hospital's policies, and if you deviate from those policies, document *why*.

Regulations and Liability

Regulatory bodies are still determining how to classify and regulate AI in health care. The level of scrutiny and approval required by regulators may impact the liability of AI developers and the Physicians who use AI. For example, if an AI system has received clearance from a regulatory body, its developer may argue it exercised due diligence in committing to sell a safe product. Alternatively, if the product has *not* been approved through some recognized system, questions may arise about its efficacy *and* the wisdom of using it in a health care setting. Before using an AI system, assess whether it has received clearance or has been recognized by a regulatory body and if it's appropriate for use in the clinical setting.

CONCLUSION

Artificial intelligence has the potential to help health care providers improve patient outcomes. But, like any tool, its efficacy is somewhat dependent on the user. For Physicians, this means not only understanding the mechanics and applications of AI, but also being aware of AI's limitations. Therefore, consider the following points when integrating AI into your practice:

- **You Are the Expert:** Do not over-rely



Note

Patient records should explain your treatment decision in consideration of an AI model's recommendation.



Remember

AI has the potential to help health care providers improve patient care. But, like any tool, its efficacy is somewhat dependent on the user.

on AI. Use your training and experience to treat patients and remember that an AI system can generate inaccurate information.

- **Documentation:** Whether you follow the AI model's recommendation or not, document your decision making process in the medical record.
- **Communication:** Discuss with your patient why AI was or was not used and the risks and benefits of your treatment recommendation.
- **Proper Use/Training:** You and your colleagues should know how to use AI in your practice and should receive regular training on its use. Your AI system's vendor may be able to assist with implementation and training. Also, be aware of how the data in the AI system is secured.
- **Know the AI Policies:** Whether you are employed in a private practice or in a hospital setting, you may have to adhere to AI-related policies. Be aware of these policies, and if you choose to deviate from them, document the reason in the medical record.
- **Regulations:** State and federal regulators are trying to understand AI and its use in the practice of medicine. For any AI system you use, know whether it has received clearance or approval from the appropriate regulatory authorities.

Always remember that you are the Doctor examining and treating patients, reviewing their studies, and using your years of training and experience to make sound treatment decisions. Embracing AI should not sideline your expertise. Instead, it should blend the computational strengths of technology with the empathy, intuition, and human experience that you bring to continue delivering quality patient care.

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CME TEST QUESTIONS

1. Artificial Intelligence (AI) can identify patterns in vast datasets to make decisions.
A. True B. False
2. Diagnosis decision support tools can help Doctors order tests and studies earlier in the treatment process.
A. True B. False
3. Artificial intelligence does not come with any liability risks.
A. True B. False
4. The standard of care is a term used by medical professionals to determine whether the care a Physician rendered to the patient was reasonable.
A. True B. False
5. With the advent of artificial intelligence, the line between product liability and medical malpractice will likely blur.
A. True B. False
6. Protecting patient data is not a concern with artificial intelligence.
A. True B. False
7. Biased or unrepresentative data can lead to the AI generating erroneous information.
A. True B. False
8. AI “hallucinations” are when the AI model generates false information.
A. True B. False
9. Sound communication and documentation strategies will help shield you from litigation when using AI.
A. True B. False
10. You and your colleagues do not need training on how to use AI.
A. True B. False

Instructions – to receive credit, please follow these steps:

Read the articles contained in the newsletter and then answer the test questions.

1. Mail or fax your completed answers for grading:
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Attention: Risk Management Services Dept.
2. One of our goals is to assess the continuing educational needs of our readers so we may enhance the educational effectiveness of the *Doctors RX*. To achieve this goal, we need your help. You must complete the CME evaluation form to receive credit.
3. Completion Deadline: March 31, 2024
4. Upon completion of the test and evaluation form, a certificate of credit will be mailed to you.

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CME EVALUATION FORM

Statement of Educational Purpose

Doctors RX is a newsletter sent twice each year to the insured Physicians of MEDICAL MUTUAL/Professionals Advocate.® Its mission and educational purpose is to identify current health care-related risk management issues and provide Physicians with educational information that will enable them to reduce their malpractice liability risk.

Readers of the newsletter should be able to obtain the following educational objectives:

- 1) Gain information on topics of particular importance to them as Physicians.
- 2) Assess the newsletter's value to them as practicing Physicians.
- 3) Assess how this information may influence their own practices.

CME Objectives for "Cracking the Code"

Educational Objectives: Upon completion of this enduring material, participants will be better able to:

- 1) Understand artificial intelligence and its application in medical practice.
- 2) Learn the limitations of artificial intelligence if used when treating patients.
- 3) Learn risk management strategies to properly use or incorporate artificial intelligence into their practice.

	Strongly Agree				Strongly Disagree
Part 1. Educational Value:	5	4	3	2	1
I learned something new that was important.	<input type="checkbox"/>				
I verified some important information.	<input type="checkbox"/>				
I plan to seek more information on this topic.	<input type="checkbox"/>				
This information is likely to have an impact on my practice.	<input type="checkbox"/>				

Part 2. Commitment to Change: What change(s) (if any) do you plan to make in your practice as a result of reading this newsletter?

Part 3. Statement of Completion: I attest to having completed the CME activity.

Signature: _____ Date: _____

Part 4. Identifying Information: Please PRINT legibly or type the following:

Name: _____ Telephone Number: _____

Address: _____



RISK MANAGEMENT NEWS CENTER



COMING SOON: NEW RISK MANAGEMENT EDUCATION PROGRAMS

Our Risk Management experts are in the process of developing timely new education programs so you can stay informed and up to date on the risks facing your practice.

Beginning in 2024, Risk Management education programs will be browsable online at mmlis.com and ProAd.com. In lieu of a paper brochure listing the new programs, you will receive information by mail in February, confirming all the details you'll need to select and register for programs online.



NEW CYBERSECURITY TOOLKIT FOR HEALTH CARE PROVIDERS

The Department of Health and Human Services (HHS) and the Cybersecurity and Infrastructure Security Agency (CISA) have jointly released a toolkit for health care providers to mitigate their cybersecurity risk. Resources in the toolkit include recommendations and best practices to fight against cybersecurity threats, a framework for improving cyber resiliency, and a security risk assessment tool. For more information, visit CISA.gov/health_care



ADVICE FROM A RISK MANAGEMENT SPECIALIST

Did you know that you can call our Risk Management Department for answers to your individual risk management questions? Risk Management experts are available (8 a.m. – 4:30 p.m. Monday-Friday) to offer guidance to help you identify and reduce your liability risk exposure. Contact us today at 410-785-0050 or toll free at 800-492-0193. (Please note that any advice we give should not be construed as legal advice.)



MEDICAL MUTUAL and Professionals Advocate offer a variety of online tools and resources that are specially designed to help Doctors identify and address preventable issues before they escalate into potentially serious legal action.

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