# **ETHICAL IMPLICATIONS OF USING AI IN HEALTHCARE**

**Warm-up discussion questions:**

What do you know about AI?

How do you feel about AI making medical decisions?

Should machines have the same responsibility as humans in healthcare?

**Read the summaries of the articles below and answer the questions that follow.**

**1. "Public Perceptions of AI in Healthcare" (Adapted from BMC Medical Ethics)**

This article explores how the general public perceives the increasing integration of AI into healthcare systems. It highlights several key issues that influence public opinion, particularly skepticism, a lack of understanding, and ethical concerns. Many people are uncertain about how AI operates in a medical setting, often fearing that it may lead to reduced human involvement in patient care, or worse, errors in diagnosis or treatment due to AI’s limitations.

One of the primary concerns is that AI could dehumanize healthcare, potentially reducing the empathy and compassion patients expect from human doctors. With AI algorithms making decisions, patients worry that healthcare might become more mechanical, focused solely on efficiency rather than individualized care.

Another major concern is the potential for bias in AI systems. AI relies on massive datasets to function effectively, but if these datasets contain biased or incomplete information, the AI could produce skewed or unfair results. For example, if an AI system is trained primarily on data from wealthier, urban patients, it might underperform or make inaccurate diagnoses when used in poorer, rural areas. This could exacerbate health inequalities, particularly for minority or marginalized populations.

Moreover, there is a significant gap in public understanding about the role of regulation in AI development. AI systems often operate in a "black box" manner, meaning that even experts may struggle to understand how an AI reached a specific decision. This lack of transparency leads to fears about who is ultimately responsible for mistakes—human or machine? The article calls for greater regulation and transparency to build public trust and ensure that AI systems are developed ethically.

Key Points:

The public is concerned about losing the human element in healthcare.

Potential biases in AI systems could worsen health disparities.

A call for stricter regulation and clearer understanding of AI decision-making.

These concerns highlight the need for better education about AI in healthcare, as well as stronger regulations to ensure its ethical use.

1. **Why does the public fear AI's increasing role in healthcare, according to the article?**
2. **How might bias in AI systems worsen healthcare inequalities?**
3. **What are the public's concerns about the transparency of AI decision-making?**
4. **What suggestions does the article offer for improving public trust in AI?**

**Vocabulary Exercise 1**

Match the following words from the article with their correct definitions. Then, use each word in a sentence that relates to the topic of AI in healthcare.

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| --- | --- |
| 1. **Skepticism** 2. **Transparency** 3. **Empathy** 4. **Inequality** 5. **Bias** 6. **Algorithm** 7. **Regulation** 8. **Trust** 9. **Dehumanize** 10. **Disparity** | a) A system of rules or guidelines used to control or govern something. b) The feeling or belief that something is not true or will not happen. c) An unfair preference or prejudice against a person or group. d) A lack of equality or fairness. e) To make something less human or personal. f) Honest and open communication, especially in decision-making processes. g) Unequal outcomes or gaps between different groups. h) The ability to understand and share the feelings of others. i) A set of step-by-step instructions used for calculations or problem-solving, often by computers. j) The belief or confidence that someone or something is reliable. |

**2. "Ethical Concerns Grow as AI Takes on a Greater Role in Healthcare" (Adapted from American College of Surgeons)**

This article digs deeper into the specific ethical challenges that arise when AI is used in healthcare, particularly in high-stake environments like surgery or diagnosis. It organizes these challenges into four main categories: accountability, bias, confidentiality, and decision-making.

1. **Accountability**: A significant challenge in using AI in healthcare is determining who is responsible when something goes wrong. For example, if a surgeon uses AI to assist in a procedure and the AI malfunctions, leading to harm, who is to blame? Is it the surgeon for using the AI, the hospital for implementing it, or the software developers who designed it? This problem is especially complicated in situations where AI systems become more autonomous and make decisions without direct human oversight. The article compares this issue to the ethical concerns raised by "autonomous weapons" in warfare, where the responsibility for actions taken by machines is a topic of debate.

2. **Bias**: AI systems can inadvertently reflect the biases of the data used to train them. In healthcare, this means that if the training data are biased—perhaps underrepresenting certain racial or socioeconomic groups—the AI may provide unequal treatment. This could lead to certain populations receiving less effective care. For instance, an AI system trained primarily on data from white, male patients may not perform as well when diagnosing diseases in women or people of color. The ethical principle of justice requires that healthcare systems provide equal treatment for all patients, but biased AI could undermine this.

3. **Confidentiality**: AI requires vast amounts of data to function effectively, often including highly sensitive patient information. While laws like the Health Insurance Portability and Accountability Act (HIPAA) in the U.S. and the Data Protection Act in the UK aim to protect patient privacy, AI presents new challenges. For example, some AI systems collect data not only about patients but also about healthcare workers and institutions. This raises questions about who owns this data and how it can be used. The concern is that in the wrong hands, this data could be exploited or used unethically.

4. **Decision-Making**: Finally, there is the question of how much control AI should have over medical decisions. While AI can process vast amounts of data and identify patterns that humans might miss, it lacks the ethical reasoning and intuition of a human doctor. There are fears that AI systems could overrule patient autonomy, making decisions without the patient’s input or even against their wishes. Additionally, the more AI is used to guide medical decisions, the less control doctors may have, which could limit their ability to apply their professional judgment.

The article concludes by discussing potential solutions to these ethical challenges. It advocates for better collaboration between healthcare professionals, AI developers, and ethicists to develop guidelines that ensure AI is used ethically in medical settings. This could include creating a code of conduct for AI in healthcare, ensuring transparency in AI decision-making, and implementing stricter regulations to hold all stakeholders accountable.

Key Points:

Accountability: Who is responsible when AI makes a mistake?

Bias: AI could perpetuate existing inequalities in healthcare.

Confidentiality: AI’s reliance on vast amounts of data raises privacy concerns.

Decision-Making: AI could override the judgment of both patients and doctors.

These ethical challenges demonstrate that while AI has enormous potential in healthcare, it must be developed and used carefully to avoid causing harm.

1. **What is the problem of accountability when AI is used in medical decisions?**
2. **In what ways can AI introduce bias into healthcare, and why is this ethically concerning?**
3. **How does AI affect patient confidentiality and what are the concerns surrounding data ownership?**
4. **What risks are associated with AI decision-making in healthcare, particularly regarding patient autonomy?**

**Vocabulary Exercise 2**

Complete the following sentences by choosing the correct word from the list. Each word is used only once.

Accountability Autonomy Confidentiality Malfunction Litigation Bias Prejudice Stakeholders Ethical Data Ownership

1. One major concern with AI is ensuring that \_\_\_\_\_\_\_\_\_\_\_\_ is maintained when sensitive patient information is involved.
2. If an AI system makes an incorrect decision during surgery, it raises questions about \_\_\_\_\_\_\_\_\_\_\_\_ and who should be responsible.
3. AI systems must be carefully designed to avoid \_\_\_\_\_\_\_\_\_\_\_\_, as this could lead to unfair treatment of patients based on race or socioeconomic status.
4. Ensuring patient \_\_\_\_\_\_\_\_\_\_\_\_ means that they should have the final say in their treatment, even when AI suggests a different course of action.
5. In some cases, AI \_\_\_\_\_\_\_\_\_\_\_\_ could lead to medical errors, which may result in lawsuits.
6. If an AI system breaks down during a medical procedure, this kind of \_\_\_\_\_\_\_\_\_\_\_\_ could have serious consequences for patient safety.
7. A growing concern among patients and medical professionals is who controls \_\_\_\_\_\_\_\_\_\_\_\_ when AI systems collect vast amounts of information.
8. Hospitals, developers, and patients are all \_\_\_\_\_\_\_\_\_\_\_\_ in the debate about how AI should be used in healthcare.
9. AI in healthcare must operate under strict \_\_\_\_\_\_\_\_\_\_\_\_ principles to ensure fairness and justice.
10. Legal action, or \_\_\_\_\_\_\_\_\_\_\_\_, may arise if AI decisions lead to harm or poor outcomes for patients.

**Grammar Exercise 1: Passive Voice**

Rewrite the following sentences in the passive voice.

1. AI systems make decisions based on data provided by healthcare providers.
2. Researchers will develop new AI regulations to address public concerns.
3. The healthcare industry uses large datasets to train AI algorithms.
4. Bias in AI systems creates unequal healthcare outcomes for marginalized groups.
5. Hospitals will implement AI to assist in patient diagnosis and treatment.

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**Grammar Exercise 2: Modal Verbs**

Complete each sentence with the correct modal verb (must, might, could, should, or would).

1. Healthcare providers \_\_\_\_\_\_\_\_\_\_\_\_ consider the ethical implications before adopting new AI systems.
2. The system \_\_\_\_\_\_\_\_\_\_\_\_ fail if it is not properly trained with diverse data.
3. AI \_\_\_\_\_\_\_\_\_\_\_\_ reduce the burden on healthcare staff by assisting with administrative tasks.
4. There \_\_\_\_\_\_\_\_\_\_\_\_ be legal consequences if an AI system causes harm to a patient.
5. To build public trust, developers \_\_\_\_\_\_\_\_\_\_\_\_ be transparent about how AI systems make decisions.

**Grammar Exercise 3: Conditionals**

Complete the sentences using the correct form of the verb in parentheses. Use **first**, **second**, or **third conditional** as needed.

1. If AI systems \_\_\_\_\_\_\_\_ (be) biased, they \_\_\_\_\_\_\_\_ (cause) unfair treatment in healthcare.
2. If the hospital \_\_\_\_\_\_\_\_ (use) AI in the past, it \_\_\_\_\_\_\_\_ (reduce) the number of medical errors.
3. Doctors \_\_\_\_\_\_\_\_ (not trust) AI systems if they \_\_\_\_\_\_\_\_ (believe) they could not explain their decisions.
4. If AI \_\_\_\_\_\_\_\_ (improve) transparency, patients \_\_\_\_\_\_\_\_ (trust) it more.
5. If hospitals \_\_\_\_\_\_\_\_ (invest) in AI, they \_\_\_\_\_\_\_\_ (be) able to provide more personalized treatment options.

**Listening**

1. **How does the podcast suggest balancing technological efficiency and human empathy in healthcare when AI is involved?**  
   *(reflect on the challenges of integrating AI without losing the human touch.)*
2. **What ethical dilemmas are highlighted in the podcast regarding the use of AI in diagnosing diseases?**  
   *(Focus on the potential for AI to outperform human doctors in diagnostics but at the cost of reducing patient autonomy or understanding.)*
3. **The podcast discusses the transparency of AI systems in decision-making. Why is transparency important in healthcare, and what are the possible consequences of lacking it?**  
   *( explore how "black box" AI systems might affect patient trust and decision-making.)*
4. **What role do privacy and data ownership play in the ethical challenges discussed in the podcast? Do you agree with the podcast’s viewpoint on how patient data should be handled?**  
   *(This question opens a debate on the protection of sensitive patient data and AI’s need for large datasets.)*
5. **The podcast mentions the issue of AI accountability in healthcare errors. Who do you think should be held accountable when an AI system makes a medical error— the developers, the healthcare provider, or someone else?**

**Multiple Choice Questions:**

1. **What is one of the main concerns about using AI in healthcare, as discussed in the podcast?**  
   a) AI systems will replace all doctors in the future  
   b) AI systems lack empathy in patient care  
   c) AI systems are too expensive for hospitals to implement  
   d) AI systems are not accurate enough to be trusted
2. **According to the podcast, why is transparency crucial in AI decision-making?**  
   a) It allows doctors to save time during procedures  
   b) It enables patients to understand how decisions are made  
   c) It makes AI systems easier to develop  
   d) It reduces the overall cost of AI systems in healthcare
3. **What ethical challenge does the podcast highlight regarding AI's use of large datasets?**  
   a) AI systems require too much power and infrastructure  
   b) AI systems may compromise patient confidentiality and data ownership  
   c) AI systems may be too slow to process large datasets in real-time  
   d) AI systems cannot function with incomplete data
4. **In the podcast, who is considered primarily responsible when an AI system makes a medical error?**  
   a) The patients themselves  
   b) The developers of the AI system  
   c) The nurses who operate the AI  
   d) The hospital janitorial staff
5. **What potential benefit of AI in healthcare is mentioned in the podcast?**  
   a) AI systems can completely eliminate the need for doctors  
   b) AI systems can process more data and make quicker decisions  
   c) AI systems can work without any need for human oversight  
   d) AI systems can reduce empathy and human interaction in patient care

**Answers:**

1. **Skepticism** – b
2. **Transparency** – f
3. **Empathy** – h
4. **Inequality** – d
5. **Bias** – c
6. **Algorithm** – i
7. **Regulation** – a
8. **Trust** – j
9. **Dehumanize** – e
10. **Disparity** – g

**Answers:**

1. Confidentiality
2. Accountability
3. Bias
4. Autonomy
5. Litigation
6. Malfunction
7. Data Ownership
8. Stakeholders
9. Ethical
10. Prejudice

**Answers:**

1. Decisions *are made* by AI systems based on data provided by healthcare providers.
2. New AI regulations *will be developed* by researchers to address public concerns.
3. Large datasets *are used* by the healthcare industry to train AI algorithms.
4. Unequal healthcare outcomes *are created* for marginalized groups by bias in AI systems.
5. AI *will be implemented* by hospitals to assist in patient diagnosis and treatment.

**Answers:**

1. Healthcare providers **should** consider the ethical implications before adopting new AI systems.
2. The system **might** fail if it is not properly trained with diverse data.
3. AI **could** reduce the burden on healthcare staff by assisting with administrative tasks.
4. There **might** be legal consequences if an AI system causes harm to a patient.
5. To build public trust, developers **must** be transparent about how AI systems make decisions.

**Answers:**

1. If AI systems **are** biased, they **will cause** unfair treatment in healthcare. (First conditional)
2. If the hospital **had used** AI in the past, it **would have reduced** the number of medical errors. (Third conditional)
3. Doctors **won't trust** AI systems if they **believe** they could not explain their decisions. (First conditional)
4. If AI **improved** transparency, patients **would trust** it more. (Second conditional)
5. If hospitals **invest** in AI, they **will be** able to provide more personalized treatment options. (First conditional)
6. **Answer:** b) AI systems lack empathy in patient care
7. **Answer:** b) It enables patients to understand how decisions are made
8. **Answer:** b) AI systems may compromise patient confidentiality and data
9. ownership
10. **Answer:** b) The developers of the AI system
11. **Answer:** b) AI systems can process more data and make quicker decisions