A New Ethical Strategy for Managing the Benefits of AI in Healthcare

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Introduction

It is hyped to deliver high quality cost-effective healthcare. You see it run the virtual assistants in your smartphones, drive the driverless cars in your streets, and predict your preferences based on your search behaviour in online shopping websites. Artificial Intelligence (AI) is a disrupter; it is getting better, smarter and faster.

If you are a healthcare, you already see AI machines scan through millions of Electronic Health Records (EHRs) with breathtaking speed, accuracy, and precision that outmatches human capabilities. It is called the stethoscope of the 21st century (Besko, 2017). If left unchecked, smarter AI machines might even usurpe your cherished position in the healthcare industry.

If you are a patient, it means that you can imagine a future in which the socially significant place of doctor-patient relationship is thinned out by robotic nursing assistants and robotic physicians. If you are a data scientist, it means that you are a part of a community of technologists moving society away from the current person-centred approach of healthcare to an AI-driven one. If you are a public health policy maker, it means that you might be helping engineer a healthcare system run by mindless algorithms.

AI is poised to permeate every facet of our lives. The question is: are you bracing yourself for the moral dilemmas super-intelligent AI will pose in the healthcare industry? The integration of AI into healthcare is raising urgent ethical questions which existing medical principles are unable to provide meaningful guidance. This white paper examines the opportunities and moral challenges of the applications of AI in healthcare. It identifies the inadequacies of current principles of medical ethics and provides and an ethical framework for educating and retraining stakeholders in the healthcare industry for making decisions that align with human values and purposes.

What is Artificial Intelligence?

AI is an area of computer science that fabricate intelligent machines that simulate human behavior. AI applications can be classified into two broad models:

- **Predefined models** designed for achieving predetermined objectives
- **Autonomous models** that accomplish goals by using Machine Learning (ML) techniques to train systems to automatically learn and improve their capabilities by experience without human intervention
Benefits and Opportunities of AI in Healthcare

Al is introducing exponential change in the healthcare industry. Medical breakthroughs in AI are making AI devices:

- Take up administrative tasks, such as taking notes and scanning through millions of EHRs
- Work as virtual nursing assistants by monitoring patients
- Schedule doctor’s appointments
- Improve diagnostic accuracy in medical imaging such as in radiology, pathology, etc.
- Introduce individualized interventions by predicting and identifying the types of patients that are most likely to benefit from an intervention

In so doing, it frees up time for healthcare workers to spend more time with patients. Moreover, the applications of AI in healthcare is projected to cut costs, improve quality and expand access to healthcare. In a study conducted to determine the final opportunities that will accrue from the applications of AI in healthcare, Accenture forecasts that “key clinical health AI applications can potentially create $150 billion in annual savings for the United States healthcare economy by 2026,” (Accenture, 2017, p. 1).

The benefits of AI in healthcare are indisputably alluring. However, it comes with challenges, many of which are yet to be imagined.
Challenges and Ethical Quandaries of AI in Healthcare

Prominent amongst the concerns about the incorporation of AI in medicine is the preservation and enhancement of physician-patient relationship. The irruption of AI in healthcare threatens to impoverish the invaluable ingredient of human-to-human encounter in healthcare provision. Here are some of the concerns:

*The erosion of the therapeutic relationship between doctors and patients*

Can AI provide the kind of care you receive from human care? When the integration of AI smothered the place of the doctor in the consultation room, we might be on the threshold of moving away from the “kind of care that involves treating the patient as a whole person with a life story, and not as the locus of a technical problem,” (Taylor, 1991, p. 6).

When you go to see your doctor, you do not go as an entity with a technical problem in search of a technical solution. The dynamic and reciprocal quality of the encounter between you and your doctor in the consultation room cannot be provided by an AI machine.

Your doctor is expected to have “the capacity to love, to have empathy, to care and express caring, to be generous, to be brave in advocating for others, to do no harm, and to work for the greater good and advocate for justice,” (Israni & Verghese, 2019, p. 29).

AI-powered robotic doctors cannot be inwardly motivated to empathize, sympathize, and identify with you. They have no emotions – they only crunch numbers and sort out data. A study undertaken to gauge patient acceptance of the use of information technology (artificial intelligence and machine learning) found that patients abandon using such products if they are incompatible with their needs and values (Or & Karsh, 2009, p. 556).

The Hippocratic Oath captures this sentiment: “I will remember that there is art to medicine as well as science, and warmth, sympathy, and understanding may outweigh the surgeon’s knife or the chemist’s drug,” (Medicinenet, 2018).
The receding significance of the doctor in the decision-making process

Since AI is an instrument, it should be employed for tasks in which it would produce the best outcome consistent with ethical principles of medicine. What is one to do with algorithm-generated recommendation? If we outsource decision making to AI, would we not be turn healthcare into an algorithmic-driven practice? Algorithmic-driven healthcare is one in which decision making is primarily determined by algorithms. In this state of affairs, human agents will merely play supplementary roles to super-intelligent machines. IBM’s prototype – Watson – is predicted to do this, (Lupton, 2018, p. 3).

Overreliance on AI can give too much power to AI. In the wake of the compelling deliverances of AI, “Clinicians may turn to machine learning for diagnosis and advice about treatments – not simply as a support tool. If that happens, machine-learning tools will become important actors in the therapeutic relationship and will need to be bound by the core ethical principles, such as beneficence and respect for patients, that have guided clinicians,” (Char, Shah, & Magnus, 2018, p. 982).

The Canadian Agency for Drugs and Technology in Health (CADTH) supports this claim, noting that “as machine learning systems evolve, clinicians may become ever-reliant on their use and may lose the ability to make informed opinion in their absence,” (CADTH, 2018, p. 12). It is unsettling to envision this scenario since AI machines (especially autonomous models) are like “black boxes,” their operations are opaque, inscrutable, and impenetrable. The mere contemplation of this scenario raises important concerns:

Who will be liable when medical errors occur: the doctor? The robot-surgeon? The programmer? The manufacturer? All of them? Since AI are already outpacing and outsmarting humans, should a doctor be liable for implementing the mistaken recommendation of an AI machine? Can AI machines learn ethical skills to make nuanced decisions about urgent moral matters about health? Is it morally acceptable to ascribe moral agency to AI? If so, should AI machines be subjected to the same standard of moral responsibility applied to agents?

The Manipulation of AI Machines for Ulterior Motives

Besides the clinical use of AI in solving clinical problems, there remains the problem of using AI machines for immoral purposes. Paula Boddington observes that “machine learning might even be used to nudge treatment towards hitting targets or achieving profits for vested interests, rather than what’s best for patients. The data might drive the medicine, rather than the other way round,” (Boddington, Moral Technology, 2019).

Other concerns include:

- Inherent biases of programmers and biases inherent in the data provided
- Data privacy
- Limited evidence corroborating the effectiveness of the use of AI
- Inadequate human oversight

There are lingering doubts about the ability of AI algorithms to provide reliable assistance if the information fed to them derive from broad categorizations, biased samples, etc. For instance, the result of a study designed to test the “impartiality” of algorithms programmed to assist judges during sentencing by predicting likely repeat offenders, discovered that the
algorithms tend to be biased against blacks (Angwin, Larson, Mattu, & Kirchner, n.d.). Healthcare workers rely on ethical principles to determine the right course of action to face the ethical challenges internal to healthcare.

Existing Ethical Principles of Healthcare

Currently, five ethical principles standardly serve as guides for making ethical decisions: autonomy, beneficence, non-maleficence, justice, and confidentiality.

1. **The Principles of Autonomy**: It is the principle of self-determination. It holds that patients have the right of control over their body. The principle of informed consent derives from it.
2. **The Principle of Beneficence**: this principle requires that healthcare providers do good for the patient. It entails that health are providers work in the best interests of the patient.
3. **The Principle of Non-maleficence**: in simple terms, this principle means: *do no harm*. It entails refraining from doing harm to the patient. It is the negative expression of the principle of beneficence.
4. **The Principle of Justice**: this is the principle of just and equitable distribution of the goods of healthcare. It requires fairness in the distribution of the benefits and burdens of scarce medical resources.
5. **The Principle of Confidentiality**: this is a privacy and trust-based principle. It derives from the principle of autonomy. Confidentiality forbids healthcare providers from disclosing a patient’s health information without the patient’s permission.

The Inadequacy of Current Medical Ethical Principles

While the existing principles remain relevant to healthcare ethics, they have become inadequate and are consequently incapable of providing reliable guidance, given the fact that AI-driven interventions have transformed the moral landscape of the healthcare industry. 21st century healthcare ethics needs a new paradigm, one that meets the challenges occasioned by AI. This new paradigm will reorient the way we do medical ethics and reenergize the vocabulary of our moral language.

To be sure, this paradigm is not an infallible roadmap for the healthcare industry. Like all ethical paradigms, it is an inexact science. But it can animate, illuminate, and elevate our moral outlook to enable us identify and combat the nascent challenges of AI. What then are these principles?
The Solution: Healthcare Ethical Principles for the 21st Century

The new principles are: the principle of human primacy, the principle of empathy, the principle of objectivity, and the principle of robotic management.

1. **The Principle of Human Primacy**

The primacy of human beings entails that the interests and well-being of human beings overrides other considerations in medical practice. According to this principle, the desire to cut down costs or boost profits are secondary to human interests and well-being. It is the pillar upon which other medical ethical principles stand. Ideas of human dignity, human rights, and human inviolability derive from it. The primacy of human beings aims to continually remind us that AI machines are instruments intended to meet human purposes. What does this mean for the integration of AI in healthcare?

It means that innovations of AI ought not to be designed to subject humans to the dictates and logic of mindless algorithms. Tacit in this idea is the requirement that human beings maintain control over AI. Accordingly, AI use in medical practice should be consistent with human goals and values (Boddington, 2017, p. 107).

2. **The Principle of Objectivity**

Objectivity is the ability to resist the impulse to be biased, to privilege the interests of a group. This principle applies both to healthcare givers and data scientist that write design the algorithms machine learning. If you are a doctor, it requires that you discharge your duties impartially. If you are a data scientist, it requires that you cultivate the ability to subject your beliefs and prejudices to critical scrutiny to enable you feed AI machines with bias-free data.
Tacit in this is the impulse to accurately represent an idea, a study, information, etc. So, the principle of objectivity would be a helpful ethical tool to guide the determination of what data is used and how they are used.

3. The principle of Empathy

In medical practice, empathy is a key requirement for understanding what a patient is feeling. It is the capacity to place oneself in another’s position in order to understand her feelings, thoughts and concerns (Finset & Ornes, 2017, p. 65). It is the capacity to understand and be moved by another’s experience.

In an indirect reference to the importance of empathy in clinical practice, the great Canadian-born physician William Osler (1849-1919) opined that it is “much more important to know what sort of patient has a disease than what sort of a disease a patient has,” (John, 2013, p. 58). Empathy is an irreducible human quality, something that mindless AI-robotic doctors cannot have.

The significance of this principle is to make empathy ineliminable in clinical practice. Empathy enables patients trust their doctors and consequently disposes them to open up to their doctors. Jodi Halperin substantiates this point thus: “there is a growing body of evidence suggesting that empathy directly enhances therapeutic efficacy. Engaged communication has been linked to decreasing patient anxiety, and, for a variety of illnesses, decreasing anxiety has been linked to physiologic effects and improved outcomes,” (Halperin, 2003, p. 672).

When your doctor is examining you, she could think, “That could be me!” She can imagine herself as a patient with your pains, your anxieties and your fears because she is human. An AI-powered robotic doctor cannot do this.

Armed with these new principles, we will be able to pose the questions not raised against the enthusiastic assimilation of AI in healthcare. Will AI lead us to ascribe self-consciousness to super-intelligent robots? Will AI obscure the boundaries between the natural and the artificial, the animate and the inanimate, the pseudo-human and the human?

4. The Principle of AI Management

This principle aims to provide guidance for managing the interaction between human beings and super-intelligent machines. Leading thinkers in the AI industry have suggested useful principles in this regard. We have Isaac Asimonov’s *Three Laws of Robotics* (Drouin, 2018), Oren Etzioni’s *Three Rules* (Etzioni, 2017), and Marc Rotenberg’s *Law of Algorithmic Transparency* (Rotenberg, n.d.). Grouped together, the principles are as follows:

i. An AI device may not injure a human being or, through inaction, allow a human being to come to harm

ii. An AI device must obey the orders given it by human beings except where such orders would conflict with the first law

iii. An AI device must protect its own existence as long as such protection does not conflict with the first or second laws

iv. An AI system must clearly disclose that it is not human
v. An AI system cannot retain or disclose confidential information without explicit approval from the source of that information

vi. An AI device must be able to explain to the public its decision-making process

The Al-Med Ethics Training Solutions

If AI is the 21st century’s stethoscope, Al-Med Ethics aims to lead the way as the 21st century’s “ethicscope” – by providing an ethical roadmap for scrutinizing and mapping the new moral landscape. It is intended to offer an all-inclusive training program for arming stakeholders in the healthcare industry with appropriate ethical tools for meeting the challenges of this new landscape.

Al-Med Ethics training program is the fruit of over five years research on the ethical implications of AI applications in medical care. It is poised to blaze the trail for aligning the project of AI in healthcare with human goals and values.

Figure 6: Al-Med Ethics sheds light on the dark moral landscape created by AI

About Al-Med Ethics Training Solutions

For more information on the Al-Med Ethics Training Solutions, visit diversitypolis.com or email: info@diversitypolis.com
Sources of Figures

Figure 1: https://www.kontrax.bg/en/how-the-artificial-intelligence-helps-us-be-healthy-and-have-a-quality-life

Figure 2: https://honestbusinessman24.com/2019/01/artificial-intelligence-in-healthcare-market-to-reflect-significant-incremental-opportunity-during-2018-2025/

Figure 3: https://www.psychologytoday.com/us/blog/threat-management/201303/i-dont-feel-your-pain-overcoming-roadblocks-empathy

Figure 4: https://www.uts.edu.au/about/faculty-engineering-and-information-technology/events/ai-supremacy-will-australia-lead-or

Figure 5: https://earlysign.com/ai-hippocratic-oath-physician/

Figure 6: the mighty: https://themighty.com/2017/07/finding-support-healing-grief/
References


