AI in Health Care: Will It Be a Modern-day Fiend?

Abstract:

The COVID -19 has fast tracked the use of technology in health care albeit few ethical concerns of triage for advanced care.1 The pandemic will potentially accelerate the use of Artificial Intelligence (AI) in health care. This prompts the big question whether in future machines will decide who lives and who dies.2 Here we discuss the implications of interface between AI and electronic health records and its effect on physician- patient relationship. There is an urgent need to advocate for our patients and preserve the four pillars: autonomy, beneficence, non-maleficence, and equal access and establish strong ethical boundaries for AI. Are we developing a Frankenstein fiend? As the world is on the horizon of driverless cars could we be also staring at “driverless healthcare”? There is an urgent need for healthcare workers to formulate bioethics for AI in healthcare.

The COVID -19 pandemic is challenging health systems world over. Some hospitals had to triage patients for receiving their limited resources giving rise to several ethical concerns.1 What prompted us to write this report is a recent opinion on whether in the not-too-distant future computers will decide who lives and who dies.2 Who would have imagined this science-fiction scenario becoming a reality? The pandemic has helped hospitals across the world to adopt technology quickly. It is only a matter of time, Artificial Intelligence (AI) becomes an integral part of healthcare. AI is already part of our daily lives in the form of internet browsers, search engines, digital maps, online streaming portals, and online shopping and thanks to the pandemic we might be hastening its entry into healthcare. Technology companies IBM, Google and Microsoft are developing AI applications in healthcare. They include management recommendations based on complex algorithms generated from vast raw data which under supervision may help identify patterns and predict future outcomes.3

AI is being tested in pharmacology, cancer research, radiology, public health screening and robotic surgery.4 Platforms such as IBM’s ‘Watson for Oncology’, ‘Versus Arthritis’ and others are being tested in clinical settings. It is predicted that AI will significantly reduce the need for provider interpretation in fields such as histopathology and radiology.5

The fundamental question about AI is whether we are in the process of building a modern-day Frankenstein fiend. The intent seems to be valid; however, many questions remain. Can AI replace human assessment? Is patient management, based on algorithms generated by a machine sufficient? How do we teach AI about ethics, privacy, and trust, to avoid inherent bias? How do we prevent potential misuse for malicious or terrorist activities? Who is liable when AI decisions go wrong? Are machines allowed to control our behavior?

For many, the electronic health records (EHR) was literally thrust upon them which soon became a leading cause of physician burnout.6,7 So, rather than being alarmed or regretful as an afterthought, health care professionals should be proactively involved with the development of patient friendly and safe AI by formulating techno ethics and introducing safeguards.

We have a responsibility to preserve the four pillars of patient care: autonomy (right to choose), beneficence (choose the best), non-maleficence (do no harm) and providing equal access to treatment. We attempt to discuss the same here.

*Consent:* It is presumed that AI helps with patient empowerment and choice, albeit choices based on machine generated complex algorithms. Often the provider cannot explain the rationale of the decision which precludes a proper informed consent.4 Consents are usually procedure specific. However, unlimited consents for data sharing with non-health related technology companies and future use may become the norm with facial recognition tools being used in AI thus increasing breaches and compromising privacy. This unlimited AI hovering over the patient data, may lead to conundrum of ethical dilemmas. Past images from social media may be profiled using facial recognition. Some findings (e.g. an alcoholic binge) may conflict with a patient that has denied alcohol consumption. What if, at a future date, AI identifies a new medical condition for a past patient— do we report this or not? These and many other ethical issues arise from unlimited consents.

*Privacy*: Currently there is no interface between the EHR and social media. As previously discussed, using AI will automatically provide an interface with internet search engines and social media platforms which may introduce unfair bias to a patient’s chart across all hospital systems precluding a fresh start with a new provider. One cannot escape from past mistakes and is branded for life. Much like the data breaches in Equifax, patient profiles can potentially be hacked into or manipulated without the knowledge of providers.

*Human Touch*: Is AI contributing to beneficence of the patient? Can AI replace the human touch, empathy, and compassion? Does AI introduce bias, cliché, and stereotyping to patient records? Bias and racial profiling in criminal sentencing was recently described.8,9 The machine itself may not recognize bias nor its implications and it may just be reflection of the creator’s biases. In literature biases were branded as perception of “white, single guys from California.”10 Bias was also reported in the world’s first psychopath virtual patient, Norman.11

*Non-maleficence*: Doing no harm is a top priority for providers. Currently, patient records are not shared with technology companies which may change with use of AI and data breaches such as Google and patients’ x-rays may become routine.12 The stored biometric patient data may be compromised and vulnerable to snooping, cyber-attacks, and manipulation (e.g. transplant lists being altered, opioid use being altered) like recent AI manipulation by Uber and Volkswagen.8 Other broader questions include, whether records be manipulated for bio terrorism and intentional harm? Whether AI companies which are mostly for-profit companies, alter algorithms to ensure profits for health care facility and not necessarily best clinical judgement?

*Equal Access*: Health is a complex intermix of racial, geographic, ethnic, and regional considerations. Data from one region or race or ethnicities may not be applicable for others. So, is it possible to expect equal access to health care? Only time will tell.

*AI in Health Care Thus Far:*Virtual physicians are being developed to help with provider shortages and to obviate the need for the extended and complex training a physician receives.

*Deep Patient* is an AI based system mimicking human brain neural pathways, was found to outperform a health care provider’s evaluation based on EHR.13 This study concluded that it is difficult for providers to keep up with all possibilities and that AI machine is complimentary. The bigger question is are we witnessing the beginning of the end of the traditional patient-physician relationship?

*The paradox of EHR:* The introduction of EHR was thought to reduce the burden on providers and improve outcomes, however it has by far become a data entry tool to maximize insurance claims and reimbursements. Whilst 24 hours access to data has advantages, it often leads to carrying the burden of work home and spending hours on notes without additional compensation and consideration for personal time. This also cuts down time of actual patient interaction. For patients, communication via EHR is great, but often overwhelms providers as they are forced to respond in a timely manner, even while on vacation thus eventually leading to Physician burnout.6,7 These issues may also be generational with the millennials being more comfortable with technology.

*Liability:*A big question iswho is liable for an adverse outcome- the physician or the AI developer. Current Tort laws may not be applicable for AI designed health care management plans.14

*Ethics and AI?*How do we teach ethics to a machine if they are to replicate human intelligence and judgement? However, recently some progress has been made in data ethics.4,15,16 The American Medical Association’s new policy views AI as being complementary to clinical judgement and attempts to protect privacy.15

*What Needs to Be Done?*AIis here to stay, and its use in clinical care is only going to increase. It may complement physician in better patient management. However, to make AI and human interaction plausible, it is imperative for Physicians to be more involved with its development. There are lessons to be learned from the development of the EHR where the perception is that it was thrust upon the physicians and soon has become one of the main reasons for burnout. Currently, AI in healthcare is driven by technology companies and soon will be forced on all providers leading to challenges described above.

We have a responsibility to advocate for our patients and be involved with setting of AI techno-ethics and boundaries instead of the industry doing the same. We have a duty to preserve the patient-physician relationship for the next generation who are more than happy to adopt machine learning. Recently, Anderson-Ramos said “Should a surgeon rely on AI to determine where to make the first incision? If a life is lost because of AI, who or what should be accountable? We might be on a path toward a future dangerously dependent on intelligent software, a scenario that suggests cause for skepticism, if not resistance. On the other hand, we might be destined for something brighter: a courageous future teeming with brilliant, yet unimagined, innovations in art and medicine driven by compassion and aided by machines that think”.17

The tenacity with which most hospitals have adapted technology during the pandemic will only hasten the development of AI in medicine. We cannot avoid the influx of use of AI technology in all aspects of medicine. It is also not unrealistic to expect AI to decide who lives and who does not in the future! AI in healthcare will be a reality soon whether we like it or not and hence an urgency for us to be involved in development and use of this technology. Physicians have an important role to play by formulating the rule book and guidelines. Otherwise we might be faced with a fiend which cannot be controlled. We are on the horizon of driverless cars. Could we be soon seeing “driverless healthcare” too? Are we going to likely see “AI confusion” which may have caused Boing 737 crisis, in health care soon? 18

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