AI in healthcare – Views of a clinician trained in the BC era

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It is an undeniable fact that use of artificial intelligence (AI) is slowly becoming an integral part of the healthcare system. Powerful AI techniques are unlocking clinically relevant information, hidden in massive amounts of data. Like other disruptive technologies, the potential for impact should not be underestimated The A in AI should really mean augmenting, amplifying, accelerating, assisting, and analyzing in an ambient milieu. AI is an example of pole vaulting, not just leap frogging. AI is the use of computer systems to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, and decision-making. Tomorrow's 5P (predictive, personalized, precision , participatory, and preventive) medicine when fully functional will have AI as a major component. As 80 percent of the 41 Zetabytes (410 trillion GB) of digital information currently available is unstructured, AI will be required to detect patterns and trends, which our grey matter at present is unable to decipher. However as a neurosurgeon trained in the 20th century (BC era), I am concerned that in our enthusiasm to be future ready and always ahead of the curve, we may inadvertently turn a Nelson's eye and not look at the other side. After all good and evil are two sides of the same coin. Many of the questions raised below no doubt will be answered in the ensuing years. We are now in a stage of transition. All transitions offer great opportunities. However, we should never ever forget that it is NI (natural, native, intelligence) which led to the birth of AI. In a world where algorithms make diagnoses, wearables track vital signs, and robots are remotely controlled, to perform surgical procedures, will clinicians of yesteryear eventually become an endangered species?

The AI enthusiast will argue that specialists will no longer need to spend time and effort to extract information from clinical findings, reports, and images. They will only need to use and manage the information extracted by AI. Thus clinicians can now focus on the patient, instead of getting drowned in voluminous data. An AI system no doubt can assist clinicians by providing up-to-date medical information from journals, textbooks, and clinical practices to better individual patient care. AI system extracts useful information from a much larger identical patient population. This helps in making real-time inferences. However, when AI recommends CAR T cell therapy (for example) does it take into account the fact that the specific patient is not covered by insurance for 40 lakh rupees. Nothing is more devastating to a family than to be advised a treatment for which they can in no way raise the funds. Using my old fashioned NI, I would have used my discretion and not even discussed this management option with even the ideal candidate, who cannot raise the funds. In the seventies, we were taught to understand what the patient wants, what the family wants, what is doable, and give adequate and correct weightage to each influencing factor.

Lars Leksell, inventor of the *gamma knife* – then the world's most sophisticated technology in healthcare – had remarked "A fool with a tool, is still a fool." When one has a hammer, everything round you looks like a nail and if it is an expensive hammer more so! Technology is a means to an end, not an end by itself. AI is an enabler. I am concerned that the next generation of doctors who start their schooling in an AI milieu may not be taught that every clinician needs to get into the mind of the beneficiary. Will empathizing and sympathizing with the patient and the family be part of the SoP prescribed by the algorithm? In the real world, all are equal but some are more equal than others. Until universal health coverage becomes a reality, one's socio-economic status plays a part in implementing a management plan. The Supreme Court of India has ruled that a doctor can use his/her judgment and decide if the rarest of the rare possible complications need to be brought to the patient's notice.

The strict enforcement of ethics in use of AI should not be forgotten. This includes constant human oversight, technical robustness, real-time continuous retraining using unbiased data, safety, privacy, data governance, transparency, diversity, non-discrimination, societal and environmental well-being, and accountability. If machine learning (ML)-based algorithms are to be accountable and trustworthy, medical ethics and humane values have to be factored in. Trust is the key word for both doctors and patients. AI systems are becoming more autonomous, resulting in a greater degree of direct-to-patient advice, bypassing human intervention. Autopilots on planes have improved airline safety without compromising training of pilots. Similarly, it should be made very clear from the very beginning that AI is at best a co-pilot. From a legal perspective, the decision to use or rely on AI will itself be a human medical judgment, like any other judgment. AI systems need to be culture sensitive and develop *moral* and *ethical* behavior patterns aligned with human interests. They need to be constantly revaluated with fresh additional training data sets. Numerous instances of bias in using training data to develop AI algorithms have been reported. The writing is on the wall. Proactive measures need to be taken to ensure that increasing use of AI does not lead to depersonalization and dehumanization. A smart empathetic clinician using AI will become smarter. A mediocre clinician using AI will not necessarily become smarter. There will be no change in healthcare outcomes when a below-average clinician uses AI. In the coming decade, the millenniums-old Hippocratic Oath may have to be replaced with a Robocratic Oath. After all to *err is ChatGPT, to forgive is human!* ■