

## Artificial Intelligence :Dawn of New Era in Medicine

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Artificial intelligence refers to simulation of human intelligence in machines that are programmed to think like human and mimic their actions. In other words it is an extension of medical statistics to identify, quantify and interpret relationships among different variables.

It is rapidly evolving technology, deep learning algorithm can deal with data provided by wearable smartphones, digital telemetry and other monitoring sensors in different specialties of medicine. <sup>[1]</sup>

In the era of widespread and ubiquitous availability of large clinical data which has its complexities, there is an early need for innovative computer based approach which integrates into clinical setting in managing patient care. Adoption of AI is common aerospace, aviation industry, and information technology where it had grown at rapid pace. However, in medical sciences, it is yet to takeoff, there by helping to supervise, follow up, medication adherence and incentivise health care lifestyle in community.

AI using machine learning, deep learning, language processing, cognitive competency, computer vision and robotics to improve the diagnosis and treatment of patient in personalized manner.

Some uses already exists in clinical practice like in cardiology, Echocardiographic ultrasound uses AI algorithm, automatically calculate the ejection fraction, calcium score in cardiac CT, color codes are given to the calcium by the vessel segments to give reports in seconds and AI evolved MRI can speed up the scan time greatly. <sup>[2]</sup>

Wearable and portable EKG technologies (Apple watch 4, Kardia) which are ambulatory, more likely to identify Atrial fibrillation than routine care. Continuous glucose monitoring system (Guardian) enables patients with diabetes to view real-time interstitial glucose reading which prevents hypoglycaemia and better control.

Intelligence seizure detection devices, wearable devices (Embrace) with electrodermal capture sensors can detect seizure activity. AI use is well validated in medical imaging in promising way and also in cancer diseases were

computational diagnosis of histopathology slides will help in making tissue diagnosis.

It helps in precise and accurate data enabled decision-making, facilitates different procedures (like robotics in surgeries), supervise outcomes for repetitive and time-consuming diagnostics and therapeutics, with such a large data base will reduce inter and intra observer variability.

The big set of challenges, remains are high cost, quality training, technological complexities, legal liability issues and more importantly data collection, data privacy and security remains a big hurdle, above all the great risk of impersonal and lack of human touch leading to dehumanisation of technology. Advisory councils, steering committees and strict jurisdiction, needs to be designed for ethical line of AI.

Curtis Langlotz put it succinctly while answering the question whether AI will replace radiologist, the right answer is he states -“radiologist who use AI will replace radiologist who don't”. The nugget of wisdom appears to all specialists. <sup>[3]</sup>

The implementation of artificial intelligence in clinical practice is entering a promising era, it is rapidly evolving and will be a big asset to the modern precision medicine, genomics and tele technology.

It should be welcomed by all stakeholders to characterize disease states in great detail, better patient selection and translate to supervise the patient care with improved outcomes.

Finally, important to remember that prospective validation of clinical and patient care algorithm need to be transparent, adequate governmental and regulatory oversight should be in place. AI will form the core digital healthcare technology in years to come.

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