AI: The Future of Family Medicine

Mohammed Asif

Correspondence:
Dr Mohammed Asif (MD, MRCGP)
Family Medicine Consultant,
United Kingdom
Email: dr.asifm@live.com

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Abstract

This article examines the impact of AI on family medicine covering access, disease, prevention, diagnostics, medication, management and administration. It underscores the potential benefits and challenges associated with AI Adoption in healthcare.

Keywords:
AI, family medicine, access, prevention, diagnostics, medication, administration

Introduction

Artificial intelligence appears set to be the most transformative technology of this decade. It promises to change our professional lives forever by revolutionizing the care that we deliver as family medicine doctors. Future initiatives in improving patient outcomes will be incorporating AI beginning from the point of the appearance of a symptom (or the prevention of) to the outcomes of treatment. It will affect all facets of medicine but more so family medicine as patients attain access to more personalised information on their health and thus, assume more control. It also potentially impacts the nature and dynamics of our patient interactions to make it both palatable and in line with the digital generation. Let's look at how AI and family medicine may work together in the years to come and some careful considerations around it.

- **Access**

Difficulties in access to a family physician is a common theme especially in the west. Whilst overwhelmingly patients still value the face-to-face interaction with family doctors, this may in part be due to the limitations of remote consulting or online tools. As AI develops and future generations of digital natives embrace it, chatbots catering for language preferences and availability on demand provide the opportunity for tailored patient education, reminders, and clinician escalation where appropriate. This will improve communication, safety, and engagement with such devices (1). Individuals with chronic conditions and those in remote or underserved areas would also be beneficiaries (2). The effects of such systems would depend on the diligent measures of the team implementing them and could impact confidence if they do not have the necessary fallback options and safeguards in the event of failure.

- **Disease prevention**

Data is the new gold and AI will speed up the analytics of medical data. The insights attained from analysis of historical data, lifestyle factors, genetic traits and co-morbidities mean that strategies implemented for disease prevention from predictive analysis will be based on a greater breadth and depth of data than before. This could allow us to develop strategies evaluating factors to a scale which may have been difficult to previously. With wearable devices gathering individual data becoming more mainstream, the future may see the linking of such data to applications held by family physicians. This could aid in developing more tailored care and management plans to improve health outcomes (3). It could also help shape targeted public health initiatives according to local data. Of course, such initiatives depend on data quality and the ability to vet this is extremely important to minimise the impact of poor-quality data.

- **Diagnostics**

The race is on in the MedTech corporate world to create tools that replace "Dr Google". Whilst these are bound to attract controversy as they develop more accuracy and precision, there is little doubt of the attraction they offer to patients and even clinicians as they become more advanced. They could replace the rigid flowchart and triage structures used by some medical systems when screening, potentially helping streamline patient flow more efficiently by reducing waiting times, repetitive clerking and freeing up triage staff. Additionally, AI is showing very promising results in interpreting radiological imaging potentially transforming the roles of the radiologists of the future. This would mean faster test results and interventions accordingly to improve patient outcomes (4). The accountability of potentially missed signs will have to be considered and may limit the adoption of diagnostic and interpreting tools.

- **Medication management**

Identifying potential drug interactions and even speeding up the development of new drugs, the use and prescribing of medications by family doctors will change. The exact outcomes here would be difficult to predict as this may help us tackle polypharmacy in some incidents, and possibly increase it in others as more medications make it to market. AI will though increase our understanding of the impact of medications through analysis of vast amounts of medical and pharmacological data. The development of newer and improved medications with AI assisted safeguarding of monitoring of such medications could benefit health outcomes in the future (5). Medico-legal regulation, particularly around AI and ethical considerations will be necessary as corporations look to profit.

- **Administration**

Both on a clinical and non-clinical level, AI has the potential to maximise efficiency. Natural language processing (NLP) can extract and organise key information from medical records making doctors more time efficient when analysing medical records and during consultations (6). The innovative Cura Assist for example, captures and transcribes medical consultations, then uses AI to generate medical notes and letters (7). The ability to gauge succinct and relevant information would also produce correspondence of higher quality and allow patient records to be populated and coded in a tidier manner. The efficiency extends to administrative tasks for medical professionals such as the filing of letters and results becoming semi-automated. AI may also replace some non-clinical staff as it demonstrates its competence in tasks such as appointment scheduling, billing, and medication requests. Each individual organisation would tailor their AI assisted administrative tasks to ensure that existing staff are able to transition in the safest and most seamless way.

Conclusion

As AI advances, the hope is that the standards of our practice do too. The reach of AI will go beyond practitioners, and it is likely that patients will be equally impacted with the use of AI driven diagnostic tools. Existing models no doubt err on the side of caution and whether future tools use more analytic reasoning (think 'iterative diagnosis') and propose diagnostics or action plans based on probability

remains to be seen. We must reassess how we manage patient expectations and maintain relationships in a transforming era for the doctor-patient interaction. Then there is the issue of addressing burnout amongst family medicine doctors. Whilst AI may improve quality of care, will it improve the quality of working lives of clinicians? We have seen how the advent of the internet ramped up demand to access family doctors when the narrative concentrated on how a wealth of information available to patients would potentially free up doctors time. However, the paradox was realised and whilst the future is certainly different, it is also uncertain.

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