How Artificial Intelligence Can Accelerate Universal Health Coverage

By Guest Writer on December 15, 2018 | Comments Off

Artificial intelligence (AI) is increasingly being used to advance healthcare in high-income countries. AI here refers to the use of computer systems sophisticated enough to perform tasks that until recently could only be performed by humans, for example, extracting conclusions from visual, clinical, natural language, operational and other complex data.

- Is artificial intelligence applicable in low-resource settings?

- Can it accelerate universal health coverage in developing countries?

These questions were debated by attendees at the recent Technology Salon in Johannesburg, South Africa that asked "Can Artificial Intelligence Accelerate Universal Health Coverage in Developing Countries?" Participants included representatives from the private and public health and technology sectors, including:

- Bernard Katz, Broadreach Healthcare

- Roseanne Harris, Discovery Health

- Pierre Dane, Vital Wave

How Can Healthcare AI Be Applied in Developing Countries?

A number of opportunities were explored for the use of AI. In developing countries, where health systems are understaffed and overburdened, AI can increase efficiency and quality at multiple levels:

- Support to healthcare professionals. AI can assist health providers in diagnosing patients and advising medication prescription, e.g. TB or cancer diagnosis from x-ray images.

- Support to health programme managers. AI can analyse patient risk factors to facilitate more targeted prevention interventions and treatment services, e.g. predicting the risk of treatment default by HIV patients

- Support for health system strengthening. AI can provide a more nuanced understanding of health system performance and can optimise the distribution of resources, e.g. evaluating the intrinsic and extrinsic factors most associated with under-performing clinics.

Overall, AI should be used to shift healthcare decision-making from reactive to proactive, although its function should remain supportive. These important decisions have critical implications that require human input and validation, especially as we continue to refine our analytic models.

What Are Challenges and Opportunities in Our Data?

There are many sources of data across the health system that can be used to develop predictive models, from clinical records that need natural language processing to operational finance data. The quality and completeness of this data impacts the strength and accuracy of our models. Data collection should not add to the clinicians' net workload.

The public health sector has large volumes of data, but not always of the quality required. Data in the private sector is often more robust and is being used to develop a number of predictive models. We need to consider the opportunities for using these models more widely, and how best to adjust input data to represent patients who cannot access private healthcare.

Data governance and management is a challenge. There are tensions between the public and private sectors and distrust at multiple levels of the health system, which means that sharing of data and technology is siloed. National standards and guidance are needed to develop interoperable systems and databases.

What Ethical Implications Should We Consider?

Developing countries continue to face high economic inequality. Many argue that AI is currently not benefiting those most in need, but rather serving those who are able to afford private healthcare. But there are ways to adjust models for different care settings to ensure wider access.

Data models that are built by humans often have inherent biases that can translate into issues of inequity. We need to consider who we collect data from and how that data is used in improving the quality of and access to healthcare for all. Privacy of patients' details is critical so data should be anonymised before AI models are trained, and consent should be obtained for the use of their data in AI applications.

Technology should not create complications for providers nor should it take away from face-to-face care between the provider and the patient. The liability of decisions will need to be addressed.

While there are a number of concerns and challenges to consider, AI is a reality with enormous potential to impact the quality of and access to healthcare in developing country settings. We need to better harness learnings from the private sector in the public sector and foster collaboration between developers, government and clinicians.

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