COMMENTARY

SWISS-SINGAPORE COLLABORATION BRINGS HEALTHCARE CLOSER TO PATIENTS

WITH CHANGING GLOBAL DEMOGRAPHICS, HEALTHCARE SYSTEMS AROUND THE WORLD MAY BE IN DIRE NEED OF AN OVERHAUL, SAYS PROFESSOR NICOLE WENDEROTH FROM THE SINGAPORE-ETH CENTRE'S FUTURE HEALTH TECHNOLOGIES PROGRAMME.

The COVID-19 pandemic has put the spotlight on healthcare systems in every corner of the world. While most may have served their respective populations well in better times, the global health crisis is continuing to strain even the most advanced and efficient systems as it unfolds. But even before the most serious health event in recent history, changing global demographics have already begun to pose challenges to existing systems.

The rapidly ageing population has become a global phenomenon that is sometimes known as the 'Silver Tsunami'. By 2050, the proportion of the population aged 60 years and above is estimated at 34 per cent in Switzerland and 40 per cent in Singapore. The associated increase in chronic diseases could exacerbate the shortage of affordable healthcare services and inevitably lead to increasing costs. This means that existing healthcare models may no longer be viable in the coming decades.

To meet the challenges of the future, we need more sustainable modes of healthcare service delivery to ease the load of hospitals and other medical facilities. In short, we need to move the delivery of healthcare services out of the hospitals, towards the patients and the community.

Towards a Patient-Centric Healthcare Model

Globally, Singapore is among the first to initiate future-oriented initiatives in support of a patient-centric healthcare transformation. This is encapsulated in its vision of "beyond hospital to community, beyond quality to value, and beyond healthcare to health".

With its high technical readiness, innovativeness, and proactive strategy, Singapore is well-positioned to transform its healthcare system. This is an effort that is supported by its Ministry of Health Office for Healthcare Transformation as well as various national

Professor Nicole Wenderoth, Programme Director of Future Health Technologies at the Singapore-ETH Centre, wants to leverage digital technologies to tackle prevalent health challenges in Singapore, such as dabetes and obesity.

initiatives and programmes. The recently launched Future Health Technologies (FHT) programme under the Singapore-ETH Centre will be contributing to this transformation effort, with support from the National Research Foundation's Campus for Research Excellence and Technological Enterprise (CREATE).

Mobile digital technologies developed at ETH Zurich offer many possibilities in supporting both healthcare providers and patients in the continuum of care, ranging from prevention to management and rehabilitation.

What if mobile robots could facilitate rehabilitation

after a stroke at home? What if an interactive chatbot, which could help us reduce the risk of diabetes or depression, could be carried in our pocket? What if you could predict the risk of one falling and suffering a fracture?

The FHT programme will leverage such digital technologies to tackle prevalent health challenges in Singapore, including diabetes, obesity, depression, stroke, and fractures. Based on the research outcomes, customised preventive and curative measures will be defined and implemented. In addition, health technology assessments will be routinely performed to estimate and monitor the overall value and costs of such interventions.

The Challenge of a Data-Rich Healthcare System

In the future, effective and efficient healthcare delivery will increasingly depend on the collection and analysis of huge amounts of data, made possible with sensors and other mobile devices. As such, the future of healthcare, much like the future of smart cities and smart factories, will be driven by data.

This brings us to a question: how can we gain public trust and acceptance of these technologies? At the core of this question is the topic of health data governance.

The FHT team will define a 'trustworthy data governance' concept that is applicable to the legal and regulatory framework in Singapore. It covers areas such as privacy protection, data ownership, and accountability. At the same time, the concept allows researchers to analyse health data and build more accurate models to forecast patients' health, predict patients' response to treatment, and to better estimate overall value and cost.