

ENTER THE DRAGON: AN AGE OF CHANGE

What will the Year of the Dragon bring for us in healthcare innovation? Find out some of the hottest areas in healthcare that will see new developments or strengthening enhancements.

By Tjut Rostina, CHI



The Dragon made its majestic entrance this Chinese Lunar New Year to much pomp and celebrations!

Often seen as a symbol of good fortune and greatness, the Dragon's personality traits such as strength, intelligence, innovative mindset and ambition, are qualities that when embodied by innovators, would power up the latest developments in healthcare forward.

While we work on refining existing innovative technologies, engines are being fired up to bring new impactful solutions to the forefront of healthcare.

What will the Year of the Dragon bring for us in healthcare innovation? What are some areas in healthcare that will see new developments or strengthening enhancements?

Artificial Intelligence

Artificial Intelligence continues to reign high with the technology applied in healthcare, enabling healthcare professionals to deliver more personable care to the patients.

With AI, we are now able to organise and analyse data with more accuracy, predict needs based on individual's behaviour, and enable care to be designed more uniquely for individuals.

One of the hottest buzzwords in the AI realm is Generative AI. In a July 2023 McKinsey report, Generative AI is expected to unlock a piece of the unrealised US\$1 trillion of improvement potential present in the industry, by compiling years of data and presenting it in a matter of seconds to a clinician. This would further modernise the infrastructure of healthcare systems.

The technology relies on deep-learning algorithms, and has the ability to create new content in the form of text, audio, code and more. It enables the analysis of unstructured data sets like recordings, notes and images.

"Big data and AI's synergy takes individualised care forward through data collection for continuous monitoring of biomarkers, behavioural nudges leveraging on generative AI, and analytics of multimodal datasets ranging from simple demographic to complex genomic datasets for risk stratification and more accurate disease prediction," shares Associate Professor Tan Cher Heng, Executive Director of CHI.

He adds on that applying AI would enable providers and payers to better allocate their limited resources to achieve maximal gains in the healthcare system.

At the care provision level, it could lead to better triaging of cases. An example he cited was the implementation of an AI model at Tan Tock Seng Hospital that prioritised patients with abnormal x-rays, flagging them up for review by the radiologists and the emergency care team. This helped the hospital to expedite treatment for more critical patients at a time when Covid-19 spiked, and a surge in demand for hospital care.

On the frontier of innovative development at CHI, projects are already underway:

- Identify primary eye care conditions using a smartphone application developed using an artificial intelligence model with deep learning system.
- Establish a comprehensive callosity severity categorisation scale, and develop an image recognition model to accurately classify and predict pre-ulcerative signs from patients with history of diabetic foot ulceration from foot callus images.
- Develop a predictive model that can predict the trajectory of vascular wounds using imaging and patient characteristics. The machine will compute the possible healing trajectory and outcome of the wound at the set time-point.

Sustainability

Ensuring sustainability has been a continuous concern globally, leading to pledges in reducing carbon footprint, recycling waste, and activating the global community to incorporate a sustainable lifestyle that promotes reduced waste and emissions from vehicles.

While the healthcare sector's mission is to protect and promote better health, it is ironically a major contributor to the climate crisis.

Healthcare has a climate footprint equivalent to 4.4 percent of global net emissions, comparable to the annual greenhouse gas emissions from 514 coal-fired power plants.

A report released by Health Care Without Harm and independent design firm Arup in April 2021 found that Singapore's healthcare sector is one of the top carbon emitters in the world.

In Singapore, dryer and warmer months include the higher incidence of dengue cases, heat waves and transboundary haze. This leads to a rise in hospital admissions and adds further strain to the hospital capacity.

CHI's commitment in cultivating sustainability in healthcare would strengthen even further this year with:

- Healthcare professionals engaged in meaningful conversations on "Sustainability in Healthcare" at CHI INNOVATE 2024, scheduled for 4-5 July 2024.
- The use of "Design Communications and Behaviour Change", where CHI and its collaborator have embarked on efforts to reduce the carbon footprint of inhalers. A substantial number of inhalers prescribed to asthma patients are Metered Dose Inhalers (MDIs). The propellants of MDIs emit a high carbon footprints as compared to Dry Power Inhalers (DPIs).
- Development of an app and website that matches patients with the available equipment required for their care. The well maintained equipment which would be donated, would have otherwise been disposed of by its previous owner.



Population Health

With an increase in frailty, chronic diseases and an ageing population, the national Healthier SG initiative by the Ministry of Health, launched in mid-2023, was focused on Preventive Health.

Singaporeans were encouraged to take proactive steps to manage their health, prevent the onset of chronic diseases, and lead healthier lifestyles.

This year, the cogs will continue to spin in encouraging the community to change their habits for better health. To do this, it was important for health and social care to work closely, complementing each other's area of expertise to activate the community towards this shared goal.

The definition that "Health is Social" was central to the conversations held by the CHI Leadership Council when they convened in July 2023.

The week of intense and invigorating conversations focused on the transformation required for a happier, healthier SG.

There was much new knowledge, insights and wisdom gleaned from this series of discussions, conversations and meetings. These insights have culminated into a report that is made available to all on our website:

[CHI Leadership Council Conversations on Health- Social Leadership, Change & Transformation](#)



In line with the national initiative, CHI launched the CHI Health and Social Change Academy (HSC Academy) in mid-2023, with the aim to enable social and health care agencies to develop critical skills for building and sustaining Communities of Care (CoC).

"The Academy's curriculum is designed around the premise that building healthier, happier communities requires a collective commitment and effort," said Associate Professor Wong Hon Tym, Clinical Director, CHI.

He further adds: "Hence, it aims to nurture the environment for various stakeholders to come together to understand one another's roles in the community, learn the new skills and concepts and take collective action to design care that will keep our people and future generations healthier and happier."

Since the Academy's launch, close to 80 health and social care professionals have signed up to upskill themselves in the modules "Population Health for Leaders", and "Getting Started on Preventive Health".

The Academy continues to grow from strength to strength in equipping professionals to drive a healthier population, with modules conducted throughout the year. This year, the Academy will embark on new modules for professionals, both clinical and non-clinical, to further equip themselves in enhancing care for the community:

- **Population Health in Action** – Understand how to incorporate population health thinking and apply population health tools in your new programme.
- **Getting Started on Social Prescribing** – Learn tools to perform social prescribing and link work, as well as the know-how to develop preventive health programmes.
- **Leading as a Collective** – Learn to build a shared vision, engage in trusting one-to-one relationships, team up with diverse partners, and network to access resources.
- **Movement for Health & Social Impact** – Learn how to design and lead large-scale change.

Find out more about the modules [here](#), and how you can contribute to a healthier community.

All Fired Up

These are just three “hot” areas the Year of the Dragon will weave through, with intelligence, innovation and ambition.

At the heart of the continuous developments is the hope that our community will have good health and wealth. May this Year of the Dragon bring positive changes and impact for all of us!

