Chief Executive's Speech
Hospital Authority Convention 2017 16-17 May 2017

Digital Future: Reinventing the Healthcare Journey

Minister Wang, Dr Ko, Professor Leong, distinguished guests, colleagues, ladies and gentlemen – good morning.

I am delighted to welcome you to the 2017 Hospital Authority Convention.

This flagship event is now well established in its role as a leading forum for healthcare professionals from Hong Kong and overseas to learn more about the latest advancements in medical research and clinical practice, exchange ideas and build new connections that may result in fruitful future collaborations.

The core objectives have remained unchanged over the years. But the rapid development of technology since HA's establishment has seen a significant shift in how information and insights arising from the Convention can be shared. The instantaneous coverage made possible by mobile devices, social media platforms, live feeds and blogs has removed the limitations once created by geography and time.

The significance of technology for HA stretches far beyond today's event. Indeed, it now has a major role in virtually every aspect of our services as Hong Kong's public healthcare provider.

In a city of 7.3 million people, last year we handled 1.7 million inpatient and day-inpatient discharges and deaths, 2.3 million accident and emergency attendances, 7.5 million specialist outpatient attendances and 6.4 million primary care cases.

To put this into more concrete terms, our staff of about 75,000 people serve about 3.3 million patients a year. On a typical day, we attend to over 90,000 people – an average of 63 patients a minute.

Every day, our Clinical Management System (CMS) handles 11 million transactions. In a single second, there are 20 transactions input on our CMS workstations across the entire HA. This has not even included millions of transactions in procurement, human resources, financial and other supporting functions. Our IT systems are huge. Since its launch in 1990s, we have accumulated 280 terabytes of health data containing various patient records including clinical notes, drug records, laboratory reports, and radiological results and images. You may be curious about how big are 280 terabytes? Well, if we print out one single terabyte of data on paper, we might probably need 85 million pieces of paper and that need to cut down 10,000 trees! Luckily, in our next generation of CMS, we aim to go further less paper, if not totally paperless.

These impressive statistics have only been made possible by HA's willingness to embrace technology-based solutions in striving to deliver quality healthcare services as the needs of our community continue to increase.

Driving digital change in the right direction

Echoing the Government's commitment to developing Hong Kong into a 'smart city', HA is exploring ways to further embrace innovation and technology to meet future healthcare challenges.

With Hong Kong's aging population, the rising incidence of chronic and complex medical conditions and higher patient expectations placing growing pressure on finite public healthcare resources, technology has the potential to provide faster and more convenient access to an array of medical information and services. IT solutions make it easier to detect irregularities at an early stage, reduce errors and enhance safety. Technology can improve efficiency and reduce pressure on services by supporting systems that minimise the duplication of clinical work, streamline pre- and post-consultation procedures, and aid in predictive planning for resource allocation. IT is also unlocking powerful new potential for the development and use of preventive and self-managed models of healthcare.

But effecting this shift and embedding technology more deeply into the provision of medical services is not without significant challenges. Even where technological capability exists, our goal is still patient-centred care that is driven by human need and personal choice.

We must address concerns over data privacy, information accuracy and security, as well as continuity. We must ensure that a more technological approach does

not create higher barriers to healthcare access for demographic groups such as the elderly and underprivileged who may be most in need of our services.

Clinicians should receive appropriate training and be confident that technological change will improve their ability to better care for patients.

The emergence of Big Data is creating exciting new possibilities for analysing huge amounts of empirical and unstructured data to support medical research, test hypotheses and search for health-related patterns, trends and correlations on a macro scale. Data-driven care goes even beyond traditional boundary of healthcare. Analysis of administrative, logistics and patient traffic data will improve healthcare planning by contributing to more informed decision-making.

To make effective use of these complex datasets, we must be confident that the information they contain is high quality, reliable and unambiguous. We should adopt internationally recognized data and terminology standards, and collaborate with both internal and external parties to realise health benefits of data sharing.

HA's IT evolution

From the administrative databases, patient records and clinical management systems that underpin HA's operations; to the computer peripherals and gadgets including barcoding systems, unique patient identifiers and a wide range of health monitoring devices that facilitate greater efficiency and accuracy in service delivery; and the leading edge medical equipment being used by our clinical frontlines – the impact of technology is evident at every stage of the patient journey.

Accounting for just 2% of HA's operating expenses and 1% of its workforce, compared with 4% and 3% respectively for our international peers, our IT team has played an important role in helping us become one of the best respected and most efficient public healthcare providers in the world.

We have a long track record as early adopters and innovators of technical solutions that have enhanced our ability to improve care, predict outcomes and respond proactively to patients' needs.

Beginning with the rolling out of four operational systems covering patients, staff, finance and assets, and followed by the introduction of clinical departmental systems, including Pharmacy Management System, Laboratory Information System, Radiology Information System, as well as the launch of

our first centralised Clinical Management System (CMS) in the 1990s for the entire HA, our early IT initiatives have enhanced the efficiency of our administrative activities and improved the infrastructure supporting frontline diagnostics and treatment.

Building on the existing framework, increasing emphasis was placed on the standardisation to facilitate the sharing of information across the HA network, as well as to mine our growing pool of data resources. We aim to develop management and clinical performance indicators that could help us track our performance.

As pressure on our services has increased and social expectations over the provision of healthcare have changed over the years, our IT strategy has evolved. From its early process-focused beginnings, through the development of practitioner-oriented clinical support services, we have now adopted a more service-and-value-led approach that is forward looking and patient centred.

Our web-based CMS III and initiatives such as the Inpatient Medication Order Entry System and Filmless Operating Theatres focus on the end-user experience. With the development of intuitive digital tools and interfaces, streamlined workflow processes have been designed to make the delivery of quality healthcare easier for colleagues. More recently, we have developed a number of mobile applications that encourage more direct interaction and links with our patients and the public in general. Moving forward, continuing developments in mobile and digital architecture will enable us to deepen our community engagement and further open up access to and the transparency of our services.

But to continue to provide quality medical services over the long term, we must look beyond how IT can enhance the efficiency and effectiveness of traditional healthcare models. We must explore taking technology as a catalyst for new ideas and models for healthcare delivery and collaboration among different healthcare providers in different sectors.

In imagining the future of sustainable quality healthcare, successful IT solutions must incorporate the perspectives of and achieve buy-in from patients, practitioners, managers, collaborating partners and the general public.

IT must be used to align healthcare delivery with the preferences and priorities of all participants in the process. It must be built on the principles of standardisation, sharing and security, and uphold the existing strengths of our service while also achieving improved health outcomes.

Technology: A healthcare services game changer?

From the access to information and enhanced transparency made possible by the Internet to the convenience and connectivity offered by digital devices, technologies are providing us with greater control and choice in many aspects of our lives. Entertainment, banking and travel services – there are numerous examples of what were previously in-person service needs that are now being met online.

The intersection of social media platforms and mobile devices is resulting in the creation of borderless communities of peers and common interest groups that provide individuals with information, advice and support. Gamification apps are incentivising the development of positive personal behaviours such as increased productivity and regular exercise. With Hong Kong's mobile subscriber penetration rate having reached nearly 230%, mobile devices present exciting possibilities as a platform for delivering online consultations, providing tailor-made medical advice and support forums, and encouraging patient compliance with treatment regimes.

The increased affordability and ubiquity of 'the Internet of Things' in healthcare, including 'wearable' technology such as heart rate monitors, fitness bracelets and blood glucose testing machines, are creating populations that are increasingly well informed and conscious about their health status. With the appropriate supporting infrastructure and sufficient confidence over device and data reliability, this could be leveraged to reduce the need for in-person clinical appointments and consultations, and support remote health monitoring. In aggregate, such devices also represent a huge pool of valuable data for medical researches and monitoring of health trends on a large scale.

We can tap into existing know-how and explore how applications and intelligence that are being used in other industries could be adapted for the healthcare sector. For instance, the shift towards common standards and terminology for the creation of cross-institutional databases and management systems that is increasingly evident in other industries could help us take a big step forward in the sharing and use of health-related and medical data.

Even with these few examples, the case for further harnessing the power of technology to reinvent the provision of healthcare is clear. The challenge comes in how to unite these two spheres, not just in technical terms, but in determining where best to deploy finite resources, how IT professionals and medical practitioners can work together effectively and efficiently, and, most importantly, ensuring end-users – be they patients, clinicians or managers – are better served.

Technology as enabler, not guide

As technology becomes ‘smarter’, we must also be smart in using it to achieve our key objectives: empowering individuals to play a larger role in managing their health, well-being and treatment; giving clinicians more in-person time on complex cases; and providing hospital managers, medical researchers and healthcare planners with reliable information and data.

Just 10 years ago, it would have been difficult for many of us to predict the immersive and interactive environments that can now be experienced through something as simple as a mobile phone app. As IT moves forward with virtual reality and into other, as yet, unimagined digital spaces, technology will be a key enabler in opening up how we manage our lives, interact with individuals and organisations, and access information and assistance.

As pressures rise on our services, we must use IT as a catalyst for innovation and the engineering of solutions that reinvent healthcare systems and how we deliver medical assistance.

But we must always keep people at the centre of our decisions. IT specialists must act and be treated not as outsiders, but as an integral part of the healthcare team. Human engagement and interaction – between healthcare professionals and patients, and also among colleagues from all our departments and teams – has been central to HA’s success. A unity in purpose and communicating effectively across our various disciplines of expertise will facilitate the development of our services and result in continuously improving standards of patient-centred care.

We must instill confidence and change mindsets by demonstrating the benefits of technological change through pilot programmes and building on people’s existing use of mobile devices and digital platforms in their everyday lives. But we must also acknowledge that what is technologically possible may not always be achievable in social terms. New structures of healthcare management must support self-determination and freedom of choice.

Digital healthcare: a participatory process

Thanks to the Government’s support for the Hospital Development Plan, several HA hospitals have initiated redevelopment, extension or new construction projects, with the primary aim of meeting future healthcare needs. These projects should incorporate IT infrastructure and network interfaces that can both facilitate the delivery of quality services today and facilitate the

implementation of new models and systems to support the evolution of patient demands and service delivery over the long term.

However, hospital design and institutional hardware are not the only enablers in the technological transformation of medical care. We must also look beyond the boundaries of our hospitals and clinics in the search for solutions that are both scalable and sustainable.

Future healthcare models must be more participatory in nature, with patients becoming active agents in managing their health rather than being passive recipients of care. Technology can empower patients to take on greater responsibility for their well-being by giving them app-based and online access to an array of information and real-time support that encourages the development of discerning consumers of healthcare services. This reduces pressure on frontline resources by reducing general enquiries and assisting with pre-screening and data collection. It also supports a shift towards preventive medicine and early intervention treatment objectives. Digital services such as electronic booking and automatic reminders can help reduce administration costs, enhance logistics and improve post-discharge treatment compliance.

Our proactive preparation for future patient needs and other healthcare challenges will require us to delve deeper into information sharing and data analytics.

Sophisticated electronic records systems and clinical databases will enable healthcare professionals to build more personalised relationships with patients, streamline consultations and minimise the duplication of tests and other clinical procedures. Centralised records platforms will facilitate better cross-disciplinary communication and coordination in the provision of end-to-end care for complex conditions. The current development of the Electronic Health Record Sharing System in Hong Kong is a significant step forward in this regard. Data analytics will enhance our ability to identify problems, assist in the assessment of specific situations and help us individualise management solutions.

At a more macro level, the wider deployment of data capture systems, as well as the availability of a broader range of structured health data and unstructured big data will support better resource planning. They will also serve as part of early warning systems for identifying service bottlenecks as well as seasonal and long-term healthcare trends.

We will use technology to improve health outcomes for our most vulnerable patient populations by providing easily accessible resources, support and training for their carers and other individuals. This also has the potential to

create broader indirect benefits by reducing pressure on our services, minimising unnecessary hospitalisations and supporting the concept of community-based care.

The human factor in technological healthcare solutions

While embracing the government's vision of building Hong Kong into a smart city, HA will strive to contribute the development for a smart, healthy and caring one. We must ensure we deploy our resources into technology that aligns with our mission to help people to live healthier and happier – now and in the future.

To ensure we achieve this, we must know what questions to ask to get to the right answers. In this endeavour, we will rely heavily on the irreplaceable human expertise, experience and empathy of HA colleagues. Along with input from patients and other key stakeholders, their insights and advice will help us achieve our IT objectives.

Over the next five years, we will further uplift our IT capabilities to transform the provision of our services with the overarching aim of enhancing healthcare experiences and outcomes for patients.

We will empower individuals to be participants rather than recipients in managing their health. Our next-generation clinical management systems will be cross-disciplinary, protocol driven and built around the principle of personalised care. We will help drive the growth of community solutions with greater digital resources for carers, as well as more collaboration among stakeholders. We will explore the use and application of big data analytics in clinical management and healthcare planning. We will continue to place strong emphasis on security and quality assurance to ensure we uphold high standards of data privacy and accuracy, and strengthen public trust in digital healthcare systems.

I encourage all of you here today to think deeper about how we can reinvent healthcare services and make use of technology-based solutions and tools to sustain the delivery of quality medical care and improved health outcomes for patients.

I am sincerely grateful to our IT colleagues, whose expertise and hard work have enabled us to make great advancements in embedding technology into our operations. I look forward to seeing their innovations further benefit our stakeholders in the future. At the same time, as I look ahead to HA's digital

future, I am mindful that while technology offers tremendous potential, it remains just an enabler. In this regard, I am proud to be working with a team of professionals who have the skills, passion and awareness to carefully harness its potential to the benefit of our community. I wish to offer heartfelt thanks to all my colleagues for their outstanding contributions to enhancing improved health in Hong Kong. I must also thank the government and Dr Ko, the Secretary for Food and Health, for making healthcare services a high priority in terms of funding and policy initiatives. With the guidance from the HA Board under the leadership of our Chairman Professor Leong, and continuing strong support of our key stakeholders, as well as the enabling power of technology, we will successfully move forward with our mission to help people live healthier and happier lives.

Thank you.