



**For information
on 21.9.2023**

HAB-P341

Hospital Authority

Cluster Presentation Programme – Kowloon West Cluster Improving Patient Experience through Digital Transformation

Advice Sought

Members are invited to note the digital transformation of caring processes in **Kowloon West Cluster (KWC)** for improving patient experience, including the establishment of a seamless digital platform for enhancing in-patient and out-patient services, as well as facilitating community outreach nursing services; and the process of unveiling digital transformation to staff and engaging them on board with new technology for cultivating a new working culture.

Background

2. In line with the strategic direction of the **Hospital Authority (HA)** in providing smart care, developing smart hospitals and nurturing smart workforce as stipulated in the HA Strategic Plan for 2022-2027, the **Head Office Information Technology and Health Informatics Division (HOIT&HID)** developed a number of systems and products, and in collaboration with the **KWC Information Technology Department (KWC ITD)**, to co-deliver smart care in the KWC hospitals, such as telehealth platform which demonstrated its importance during the COVID-19 epidemic.

3. In the past few years, KWC has made significant progress towards digital transformation. As a pioneer, the Cluster implemented over 30 technology solutions, including new-generation networks, cloud platforms and digital workplaces to build functionally smart hospitals that leveraged the latest digital tools and technologies. These solutions facilitated visual communication between healthcare professionals, patients and their relatives under restricted environment and conditions; supported autonomous robot operation and enabled mobile application development and implementation.

The Road to Digital Transformation in KWC

Governance Structure

4. A proper governance structure has been set up in KWC to steer the planning and development of digital transformation. Chaired by the Cluster Chief Executive, the **KWC Smart Hospital Management Committee (SHMC)** was formed and comprised of chairpersons of local hospital **Information Technology (IT)** committees, cluster general managers, cluster coordinators of allied health and pharmacy, representatives from HOIT&HID, Cluster Quality & Safety Department and Cluster ITD. KWC SHMC plays a key role in steering the direction of smart hospital development and prioritising resources based on potential impact of different smart initiatives toward patient experience and outcomes. The KWC SHMC provides regular progress report to both the Head Office Smart Hospital Steering Group and the Kowloon West Management Committee.

5. Led by the KWC SHMC, the KWC Digital Transformation Executive Group and the KWC Telehealth Task Force were established, which consisted of Hospital Chief Executives and hospital representatives from frontline healthcare professionals, to formulate strategies and drive various digital transformation initiatives. The KWC Digital Transformation Office was also set up to serve as an executive arm to implement the relevant initiatives. A chart showing the above governance structure is provided at the **Annex**.

Staff Engagement and Development of Digital Capability

6. As digital transformation would unavoidably change our daily work practices in clinical settings, staff's readiness in accepting, managing and embracing change would therefore be one of our key challenges. It is crucial to engage staff of different levels, from heads of departments and supervisors to frontline colleagues, at the early stage when developing various technology solutions. On this, a number of work group discussions, formal or informal meetings, forums and promotion activities were held to solicit their views and get their support throughout the process to ensure their buy-in and participation.

7. To equip staff with the necessary skills and knowledge for providing smart care and ensure that they could apply such skills in the daily operation with the assistance of digital tools, KWC has been nurturing an IT culture for years and engaging staff in the digitalisation of day-to-day work and workflow automation. Through leading and participating in reengineering of the current work practices and regular training and experience sharing, staff are familiarised not only with the healthcare processes but also IT systems and devices. A team of **Digital Transformation Leaders (DTLs)** comprising frontline supervisors was formed to propose and lead digital transformation projects in a more human-centred approach to reengineer the smart caring processes within in-patient wards, community nursing services and out-patient clinics which are detailed in the ensuing paragraphs.

Digital Transformation for Smart Care

8. Many of the IT initiatives proposed by DTLs were developed and implemented. The development of an innovative solution namely **Smart Communication for Stroke Team (SCST)** by KWC ITD in 2023 is one of the examples. This solution helps transform the communication of acute stroke cases among the stroke team from phone calls / free style human conversation into proper documentation and treatment options. The HA Chatbot is used as a platform to guide the communication on patient conditions, stroke assessment details and treatment decision in a structured and predefined format. The handling of **Tissue Plasminogen Activator (TPA)**¹ cases is a typical example of SCST. Once the on-call nurse inputs the case number, the patient's demographic data will be retrieved and displayed on the Chatbot. The nurse will also be guided to input stroke assessment step by step, including onset time, pre-morbid status, cortical sign, etc. with information to be sent to the specified neurologist for review and decision making. The neurologist will then receive a notification from the HA Chatbot and could make the treatment recommendation by clicking the option button on the Chatbot. The Chatbot will automatically generate an email for informing the stroke team for action, such as obtaining patient consent on the treatment recommendation and establishing a treatment plan by the duty doctor.

9. The launching of SCST facilitated a clear and swift communication among stroke team members and provided accurate information for prompt decision on urgent TPA treatment, all with formal documentation and benefiting patient care. Since July 2023, 154 cases were handled via the SCST platform of which 62 of them were recommended for urgent treatment. The SCST has also successfully reduced the number of phone calls and shortened communication time by 30%, while standardising the communication and documentation of TPA cases at KWC hospitals.

10. Other digital solutions implemented in KWC recently are summarised in the following paragraphs.

In-Patient Wards

11. In the past few years, the in-patient wards at KWC underwent a major transformation with the adoption of a wide range of digital solutions developed by HOIT&HID and co-delivered in KWC, including (a) Smart Panel for displaying patient allergy, special needs and alerts; (b) e-Vital for measuring patient vital signs and performing auto-charting; (c) Digital Ward Place for central management of caring activities; (d) Patient Clinical Handover System for facilitating patient care handover between shifts; (e) e-Whiteboard for displaying ward activities; (f) e-Consent for obtaining patient consent digitally and (g) Smart Robot for Tele-visit of patient in hospital or under isolation.

12. With the streamlined workflow via digital platform, we have raised the efficiency and efficacy for documentation and communication while minimising the need for paper records. As a result, the paper consumption in KWC is reduced by around 578 000 sheets per year and 125 man-hours are saved per day. Most importantly, following the implementation of the digital solutions as mentioned in paragraphs 8 and 11, patient vital

¹ TPA is a drug used to break up a blood clot and restore blood flow to the brain.

signs could be measured and charted accurately and automatically, and medical staff could timely access patient data on a need basis. These solutions could not only help ensuring that patients are continuously monitored, but also facilitating the prompt detection of and response to changes in patient conditions by clinical staff. In addition, the Digital Ward Place and Patient Clinical Handover System has helped ensure an efficient and effective patient information handover during change of shift.

Community Nursing Service

13. The **Community Nursing Service (CNS)** has been playing a crucial role in providing wound care support to patients and caregivers of all ages in community settings. KWC ITD has developed a mobile **application (app)** – “e-Wound” for enhancing the quality and effectiveness of ongoing monitoring and management of wound care services by digitalising paper-based processes and introducing a wound type-based assessment process to guide nursing practices, standardise wound data for analysis, and generate individualised wound reports for information sharing across teams and facilitating patient empowerment. The app facilitates KWC CNS nurses to capture wound photos and document progress during home visit. Since the launch of this mobile app in 2021, community nurses have assessed and recorded a total of 16 221 wounds for 7 217 community-dwelling patients. Evaluation results showed a significant improvement in daily workflow efficiency, with a 39% reduction in the time for documentation by nurses and a 50% reduction in care coordination with caregivers and other healthcare professionals in each episode of wound care. Patients and caregivers experience was also enhanced as they are now able to view clinical photos and graphs illustrating changes in their wound size and tissue status in their wound reports. Apart from the “e-Wound” app, CNS implemented other digital solutions to promote patient-centric care. A notable example is the implementation of telehealth, which has improved patients’ access to healthcare and enabled them to take an active role in managing their health, thus enhancing their overall care experience.

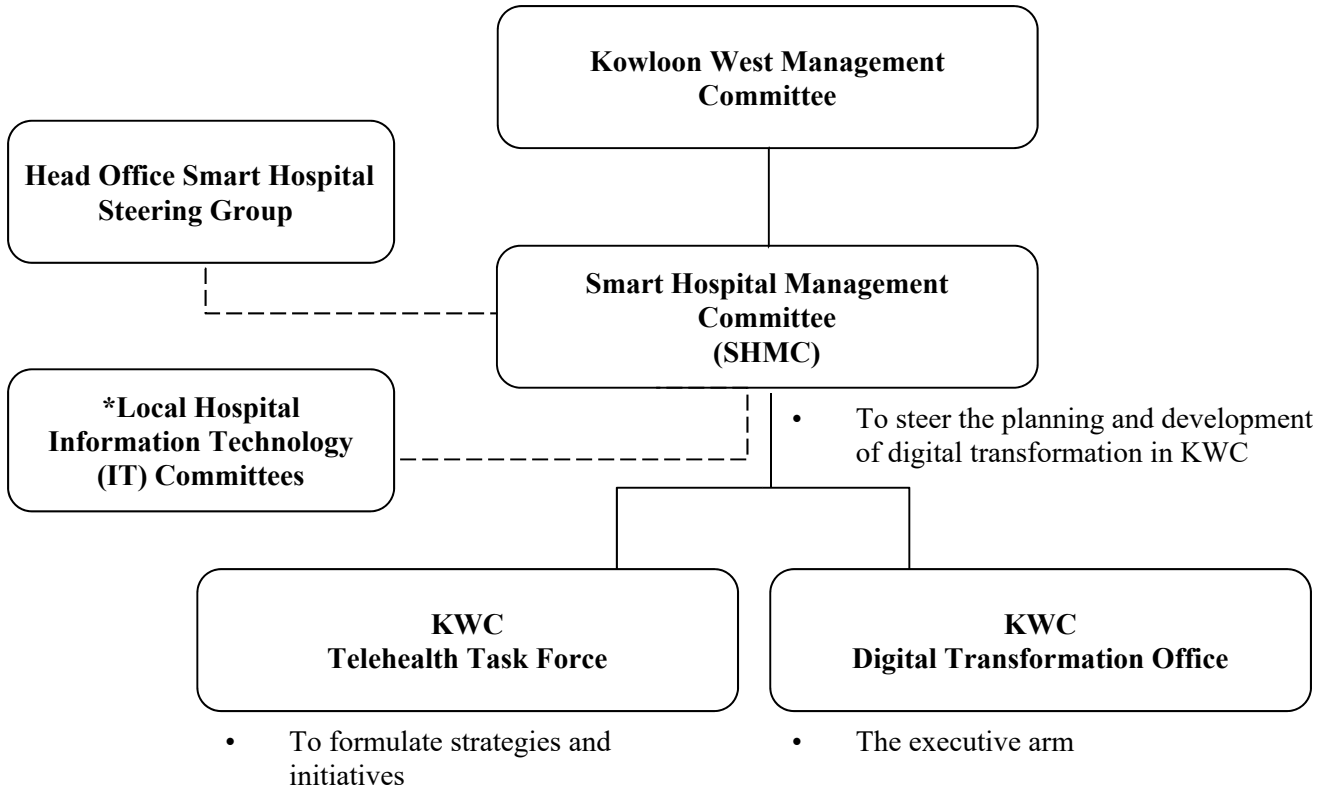
Out-Patient Clinics and the Full Adoption of HA Go in KWC

14. Telehealth was adopted in some out-patient clinics in KWC to achieve a boundless patient care delivery to the community. With the launch of the Telehealth module in the HA Go mobile app, online healthcare services become available for patients to receive consultation beyond HA settings, eliminating their needs for transportation and enhancing patient experience and convenience. KWC has fully adopted the TeleHealth module of HA Go for conducting tele-consultation, whereby patients are offered with drug delivery and electronic payment options. The service covers a range of clinics, including diabetes, inflammatory bowel disease, general follow-up of oncology, arthritis, psychiatric services, paediatric speech and language services, lactation consultation, remote monitoring for automated peritoneal dialysis patients and dietetic services. In 2022-2023, a total of 25 624 telehealth attendances were conducted via HA Go. Building on the successful experience with positive feedback from patients, Telehealth service will be extended to cover human immunodeficiency virus clinics and rehabilitation programmes in the fourth quarter of 2023. Subject to the readiness of other specialties, telehealth service was planned to be rolled out for tele-classes for psychiatric and allied health patients.

Way Forward

15. KWC is moving towards another milestone to bring deeper changes to hospital operations. Looking forward, efforts would continue to be made in developing digital capability in the workforce while enriching staff with necessary skills to drive digital transformation as an ongoing process. In parallel, KWC would explore the adoption of **Artificial Intelligence (AI)**-assisted care by collaborating with the HOIT&HID AI Lab and universities on AI and machine learning in healthcare. This would require ongoing engagement with staff and patients to ensure their feedback and insights are incorporated into the digital transformation initiatives.

Governance Structure of Digital Transformation in Kowloon West Cluster (KWC)



**Chairmen of local Hospital IT Committees as regular members of SHMC*