

CASE STUDIES ● INTERVIEWS ● STRATEGIES

INSIGHTS

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**DIGITAL EXCELLENCE IN
HEALTHCARE: APAC CASE STUDIES
VOLUME 1**

INSIGHTS

DIGITAL EXCELLENCE IN HEALTHCARE: APAC CASE STUDIES VOLUME 1

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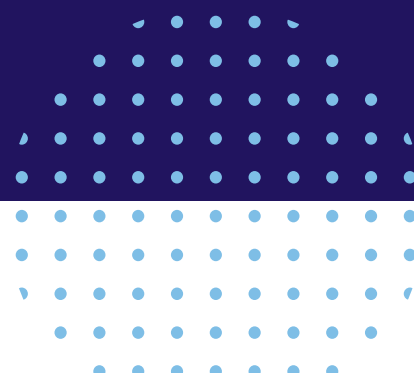
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Recognising Digital Excellence in Healthcare



SIMON LIN

Vice President & Executive
Director, APAC
HIMSS

It's been around two years since COVID-19 brought about the rapid acceleration of digital transformation in healthcare. Healthcare organisations have seen the value of digital technologies during a highly contagious pandemic and how they can also help to create resilient health ecosystems.

Digital transformation is by no means a walk in the park. Challenges that existed before the pandemic, and continue to exist to this day, are barriers to this transformation despite best efforts. Data misrepresentation and missing information lead to poor data quality, hindering interoperability. Lack of a strong cybersecurity posture can lead to disruptions in care and harm to patients. Resistance from both staff and patients makes it difficult to implement digital programmes. These are just some of the more common ones.

Despite these challenges, many healthcare organisations in APAC have pressed on and harnessed digital technologies to improve clinical outcomes, financial viability or operational efficiencies. In our newly launched *Digital Excellence in Healthcare: APAC Case Studies* series, we aim to showcase these commendable efforts.

One area of focus for this series is how healthcare organisations in the region have leveraged HIMSS's evidence-based models and frameworks in their transformation journeys. Among these organisations is Queensland Health, who in 2016 developed a 10-year strategic vision for system-wide digital solutions, services, and digital innovation. In 2021, this massive health system worked with HIMSS to measure the progress made toward their vision and for a [comprehensive assessment](#) of its digital maturity using the Digital Health Indicator (DHI). The work that Queensland Health is doing is exciting and impressive – and they will be one to watch over the next few years.

Another healthcare provider who leveraged the DHI is Korea University (KU) Anam Hospital, making them the first hospital in the country who has done so. KU Anam Hospital had implemented a cloud-based hospital information system (HIS) in March 2021 and was looking

to assess the system's quality. There had been concerns about changing to a cloud-based system as there were no previous examples of an entire HIS being placed in the cloud, and the hospital wanted to ensure that they had made the right decision. Read the results [here](#).

Other HIMSS assessment tools that healthcare organisations have been using are our Maturity Models. Karuna Trust, which aims to make its Tavarekere Urban Primary Health Center a model health centre, underwent the HIMSS Outpatient Electronic Medical Record Adoption Model (O-EMRAM) assessment to ensure its ongoing digitisation efforts are in line with modern advancements in healthcare. See how they fared [here](#).

In this series, we also aim to showcase projects of how healthcare providers have been addressing their challenges through digital technologies. With no bigger challenge than a pandemic right now, find out how Baby Memorial Hospital in India [redesigned its systems](#) to effectively manage COVID-19 and how the National University Health System in Singapore [saved over 5000 bed days](#) with a COVID-19 virtual ward.

I hope you find this first volume of *Digital Excellence in Healthcare: APAC Case Studies* inspiring and helpful. Healthcare providers in the region are making remarkable strides in digital transformation, and it is our aim to recognise that. I look forward to reading about more of your wonderful work in subsequent instalments.

A handwritten signature in black ink, appearing to read 'Srinivas', is positioned on the left side of the page.

Queensland Health: Achieving digital maturity across one of Australia's largest states



Credit: Queensland Health

WHO THEY ARE

Queensland Health is the public health service in Queensland, Australia, which includes 16 local Hospital and Health Services (HHSs) managing a total of 119 public hospitals. Queensland Health employs more than 97,000 staff and has an annual operating budget of approximately \$22 billion. The state has a population of more than five million people over a geographical area that is 2.5 times the size of Texas, USA.

In 2016, Queensland Health devised a digital health strategic vision and set out a 10-year plan for digital transformation to:

- Build consistent and sustainable capability (Horizon 1);
- Integrate, optimise, grow and expand digital health and digital workforce, and capabilities (Horizon 2) and;
- Scale transformation across the health system (Horizon 3).

The state's ambitious programme of digital transformation began with a significant financial investment underpinned by the rollout of clinical and administrative systems that utilise a single EMR for each patient across the state. Currently, 15 hospitals are digital hospitals with the single instance Cerner integrated EMR (ieMR). The ieMR facilitates the patient journey across various healthcare sites, and includes an EMR, computerised provider order entry, ePrescribing and clinical decision support systems.

Queensland Health is a participant of the Digital Health CRC, which is funded under the Commonwealth's Cooperative Research Centres (CRC) Program.



THE OBJECTIVE

In 2021, Queensland Health was exploring options to measure the progress made toward their vision.



DAMIAN GREEN

Deputy Director-General,
eHealth Queensland and
Chief Information Officer,
Queensland Health

“Queensland Health, The University of Queensland and Queensland University of Technology partnered with HIMSS who used their novel methodology to measure digital maturity in Queensland. The programme was co-funded by the Digital Health CRC and assessed digital maturity across all HHSs in Queensland.”

HIMSS undertook an accelerated programme, as part of a Digital Health CRC project, that included a comprehensive assessment of Queensland Health’s digital maturity using HIMSS’s Digital Health Indicator (DHI), customised research, and a gap analysis to design the future roadmap for digital transformation.



ABOUT THE DHI

The DHI measures progress toward a digital health ecosystem. An ideal digital ecosystem connects clinicians and provider teams with people at point of care, enabling them to manage their health and wellness using digital tools in a secure and private environment.

Operational and care delivery processes are outcomes-driven and informed by data and real-world evidence to achieve exceptional quality, safety and performance that is sustainable.

Based on the principles and evidence of the HIMSS Digital Health Framework, the DHI measures four dimensions that are proven to help organisations advance digital health transformation: Interoperability, Person-Enabled Health, Predictive Analytics, Governance and Workforce. Scores in each dimension combine for a possible total of 400.



FINDINGS

The project saw each of the 16 HHSs undergoing a DHI assessment. Following these assessments, HIMSS provided each HHS with a list of their strengths (i.e., assets), along with a gap analysis (i.e., barriers) in the four DHI dimensions. They also received an individual DHI score. For this report, the findings have been consolidated and listed at the state-wide level below.

Assets

INTEROPERABILITY

A single patient view is enabled through ieMR, Viewer and the Commonwealth Government's My Health Record. All patient medical records and personal information are integrated at a single point, providing a good basis for data communication.

Data sharing occurs across the state (mainly through Viewer) and HHSs across the continuum of care. For example, patient data from an emergency department is available in the ward in a common format and sent to the GP post-discharge. Medication, laboratory and imaging data is integrated in a single system, allowing access to complete patient records.

A strategy to increase connectivity between systems, devices and the EMR is in place, together with successful device integration with hospital systems and good connection between core systems and infrastructure.

There is active and effective use of telehealth/virtual care services and remote monitoring, with telehealth the most often used.

Industry/eHealth interoperability standards are used, and greater engagement from stakeholders will improve interoperability and expand connectivity to non-HHS sites and external providers.

PERSON-ENABLED HEALTH

Telehealth is widely used across all care settings, including rural and remote communities, specialist services and children development services, enabling fast, cost-effective and convenient care. In-home care uses home monitoring and virtual home tools. COVID-19 increased virtual care/telehealth options for consumers. A virtual care market assessment is planned.

Patient-centred care delivery is enabled by the active effort of the HHSs to increase patient literacy, engagement, needs, choice and convenience.

Data sharing and connectivity, including between services and communities, is improving.

Communication with clinicians can occur through Viewer and secure messaging, while the patient portal and My Health Record provides patients with access to clinical information.

ieMR provides benefits in terms of real-time risk management, an alert system and data management.

Population health insights are used for programme and strategy development and exchanged with PHNs.

Patient digital literacy and expectations from HHS about digital health capability is increasing, with consumers more involved in digital health discourse.

Security infrastructure is in place to ensure patient privacy and data is protected.

PREDICTIVE ANALYTICS

There is strong use of dashboards that provide real-time data to care teams in order to inform care and patient flow. They are used in predictive capacity (clinical), and in operational and governance capacity (performance reporting). For clinical use, they assist with medications, care planning, diabetes, geriatric falls, chronic diseases and clinical incident reporting. BI and Power BI are used. A data warehouse exists, with rich data regularly collected at HHS level.

Queensland has a standard operations plan, with a digital health strategy planned.

To build a predictive analytics and data-oriented workforce, the recruitment of more analytics/informatics focused data teams is occurring, plus the creation of more digital health focused roles.

Improvements in the quality of data is being achieved through common formats, increased data reliability and the collection of good non-clinical data.

ieMR provides real-time data alerts for clinicians and informs care delivery. It is effective in the management of high-risk medications. A tailored in-house system combines data across all HHSs.

PREMS/PROMS are planned for performance reporting to HHS executives. Electronic and manual data is used for clinical incident reporting, with Riskman used for incident reporting.

GOVERNANCE AND WORKFORCE

Queensland Health maintains strong governance around data privacy and security. Safety and quality outcomes are tracked and reported, together with some transparency executive level performance reporting.

A digital health/data strategy will be implemented, with strategic focuses including workflow improvement, a roadmap and the delivery of initiatives in phases.

Reporting and audit processes are in place, with a high level of reporting and accountability, and a strong audit process.

A strong clinical governance and compliance focus allows for good engagement with staff for clinical incidences and reporting.

Operational plans implemented include an ICT governance framework, Standard Operations Plan, ITIL process, 1 tier ICT governance committee and data custodians plan. Future aims include increasing transparency of HHS performance, improvements in service planning, and an increase in AI capability.

Clinicians and users accept ieMR – and some embrace it – with improvements being made over time. With greater digital literacy, staff are quick to adopt tools when they align with workflows. Staff are being supported to use the increased digitisation of HHSs, with more engagement seen in younger staff. Increased education and training is being conducted to improve capabilities and enthusiasm for digital health tools. There is also an effort to create more digital health centric roles and teams, plus data teams with both clinical and technology expertise. The Queensland Health leadership and HHSs are engaged in increasing the digital health competence of staff and improving digital health infrastructure.

As such, the digital health services offered are being expanded to include greater use of IoT tools, virtual care and eReferrals.

The workforce is also focused on providing personalised patient care.

Barriers

INTEROPERABILITY

- Lack of data integration between systems and ieMR.
- Incomplete implementation (e.g., missing modules, no HHS-wide coverage of digital health, etc.)

PERSON-ENABLED HEALTH

- Community-tailored strategies are needed, with priority placed on Indigenous communities.
- More patient-centred digital health strategies are needed (e.g., identify and address population needs through strategy/policy).

PREDICTIVE ANALYTICS

- Quality of data collected need to be improved (more “clean” data is needed).
- There are some shortcomings with dashboards, such as manual input of data being required and none that are outcomes focused.
- AI/ML are not leveraged to process local rich data.
- No digital health/data/informatics team – though as outlined earlier, Queensland Health is working to build this.

GOVERNANCE AND WORKFORCE

- ieMR is highly centralised, which reduces the ability of users to innovate in HHSs. It also requires resources for implementation and the value is not always clear.
- System design should incorporate clinician workflow to be valuable.
- Policies and strategies do not reflect HHS-level needs.
- Lack of accountability for achieving outcomes specified in strategies and policies.
- More transparent, public reporting of the performance of HHS operations is needed.

BARRIERS FOR TWO OR MORE DIMENSIONS

- Disconnected systems and devices which interrupt workflow and increase time for staff to complete tasks.
- Difficulties in data sharing and communication between clinicians, HHS and external providers.
- Lack of digitisation and reliance on manual data collection and extraction.
- Patient interaction with clinician and HHS (especially outside HHS) is not digitally enabled.
- Lack of a digital health/data strategy.
- Funding and resource constraints.
- Underutilisation of virtual care services; especially remote monitoring tools and in home telehealth.
- Population health analytics is not conducted.
- Patient reported outcomes are underutilised.
- Incomplete data collected (e.g., missing full patient journey).

Summary of dimensional data by geographical region

During the assessment, HIMSS also provided a breakdown of Queensland Health's dimensional data by geographical region. These regions were metro, regional, and rural. Overall, it was found that regional and metro regions perform similarly, and rural consistently lower.

- Interoperability: Metro performs the strongest, followed by regional and rural respectively.
- Person-Enabled Health: Similar performance by metro and regional; rural performs the lowest.
- Predictive Analytics: Weakest dimension for all regions, regional HHS performs the strongest.
- Governance and Workforce: Regional and metro regions perform similarly and are more advanced than rural.

DHI Score

Queensland Health scored 143/400 for the DHI. This score is contextualised by this massive health system still being in the early stages of its digital maturity journey. At the time the assessment report was provided¹, Queensland Health's score put it above the Oceania average of 135/400, and below the average scores for health systems in Asia-Pacific and North America at 153/400 and 246/400 respectively.

During the assessment, it was found that several barriers highlighted above were in the midst of being addressed; it is expected that Queensland Health's digital maturity level will grow as it addresses these barriers.

¹ The Queensland Health assessment report was provided in September 2021.

Impact of ieMR on DHI

CURRENT CONTEXT

- ieMR is used by nine out of 16 HHSs.

BENEFITS

- Total DHI Score and dimensional scores are consistently higher in sites with ieMR.
- Single patient view and centralised patient history are used across multiple sites.
- ieMR data is used for real-time decision making at point of care, providing clinicians with data-driven alerts.

CONCERNS

- Data integration between systems and ieMR is not strong, interrupting workflow.
- High centralisation limits the workforce's ability to innovate and make changes once installed.
- Requires resources to implement and maintain.
- AI and ML are underutilised for ieMR data.



ANDREW PEARCE

Vice President, Analytics
& Global Advisory Lead,
HIMSS

“The assessment provides a consistent and global best practice measure of the digital health capacity for each HHS in Queensland. It has clearly shown those sites with the ieMR are more advanced and rural and remote sites are the least advanced with regards to digital health capacity.

This will assist Queensland Health in prioritising ieMR and digital health investment in the future across the state, and in so doing, drive a digital health eco-system that is connected, secure, outcomes-driven and sustainable. Through periodic re-measurement, they will also be able to track progress over time as a result of the investments made.”

“We found that a number of rural HHSs pre-pandemic were already leveraging digital tools including telehealth as a necessity to provide the care required given the geography – the pandemic accelerated use in rural and across the state. As such, even without the ieMR, some rural HHSs had digital capacity scores similar to their metro and regional counterparts,” Pearce added.

“One of the key components of the project with Queensland Health, is the research collaboration with the University of Queensland and the development of a methodology and measures for outcomes that is linked to digital maturity. Now that the baseline maturity assessment is complete, the outcome measurements across the HHSs is now being collated. We look forward to seeing the results of these outcome measurements in the coming months, and thus getting clear evidence of the link between digital maturity and outcomes.”

NEXT STEPS

The health system believes that the cultural change away from manual workflow and processes is integral to the success of digital transformation. Its COVID-19 response has shown that digitisation across all levels of the organisation is critical to ensure it remains dynamic and agile in its health service delivery. They are keen to capitalise on this cultural change and ensure digital transformation and strategy remains at the forefront of the system’s transformation agenda.

Queensland Health also plans to continue promoting the use of virtual care services.



**PROFESSOR
KEITH MCNEIL**

A/ Deputy Director-General
and Chief Medical Officer,
Prevention Division and Chief
Clinical Information Officer,
Queensland Health

“The rapidly evolving COVID-19 response saw an exponential increase in demand for virtual and telehealth services. Queensland Health responded quickly by offering patients with COVID-19 a range of virtual care options – from remote patient monitoring to virtual ward services. The use of AI to quickly stratify COVID-19-positive patients meant those identified as low risk and only experiencing mild symptoms could safely be cared for in their homes, and the system reserved capacity for those experiencing more severe symptoms and/or were identified as moderate/high risk.”

“The acceptance of these options from consumers, clinicians and system administrators means that Queensland Health will continue to promote the use of virtual care services. These service options not only increase the efficiency of the health system to cope with ever increasing demand, they also ensure consumers have the option to receive care safely and effectively in their homes, and be with family and carers whenever possible,” Prof McNeil added.

The assessment also shone a spotlight on the opportunity to update and modernise data strategy and infrastructure.

Damian Green shared: “Fundamental to system transformation, a cohesive and holistic data strategy will enable business areas across the system to have timely access to high quality data, supporting the system to maximise the utilisation, access and value of data generated across business areas; effectively integrate across the system, achieving horizontal collaboration through establishing a single source of truth; co-produce knowledge and insights with key research and industry partners to drive health service and system improvements; establish the underpinnings of precision medicine to effectively reduce low value-based care, waste and harm; and genuinely engage consumers in how their healthcare is being delivered.”

Relevant information is being aligned with the updated state-wide digital health strategic plan.

The health system believes that a longitudinal digital patient journey is critical to achieving precision medicine, which is the only way to effectively reduce low value-based care, waste and harm. Using COVID-19 as an opportunity, Queensland Health has established a cohort of patients who have tested positive with COVID-19 and consented for their primary healthcare data to be collected and integrated with their electronic health record. This work will provide the framework to establish patient journeys of other key areas, such as orthopaedic care.

WHAT THEY HAVE TO SAY



**ASSOCIATE PROFESSOR
CLAIR SULLIVAN**

Head, Digital Health Research
Network, The University of
Queensland

“A key strength of the DHI is the ability for benchmarking. Firstly, internal benchmarking helps facilitate longitudinal trends in digital maturation to track progress made against the digital health strategies implemented. Internal benchmarking is anticipated to be particularly beneficial for executives at the HHS level as the results can demonstrate the value in digital health investments made locally within the HHS. Second, the global reach of the DHI through HIMSS enables benchmarking against peer organisations nationally, internationally or across private and public sector.”

Prof Sullivan continued: “The maturity report was customisable through a co-design process with key stakeholders to define recommendations going forward. HIMSS conducted a workshop with key stakeholders in the HHS to present the findings from the maturity assessment and co-design recommendations categorised under each maturity dimension which was then circulated via email and confirmed. The concise and digestible report was considered a useful communication tool and the

granularity of detail in the report was commended. Indicator statements were specific enough to generate targeted recommendations for improvement, helping to inform a roadmap which could be adopted by the HHS.”



DR LEE WOODS

Centre for Health Services
Research, The University of
Queensland

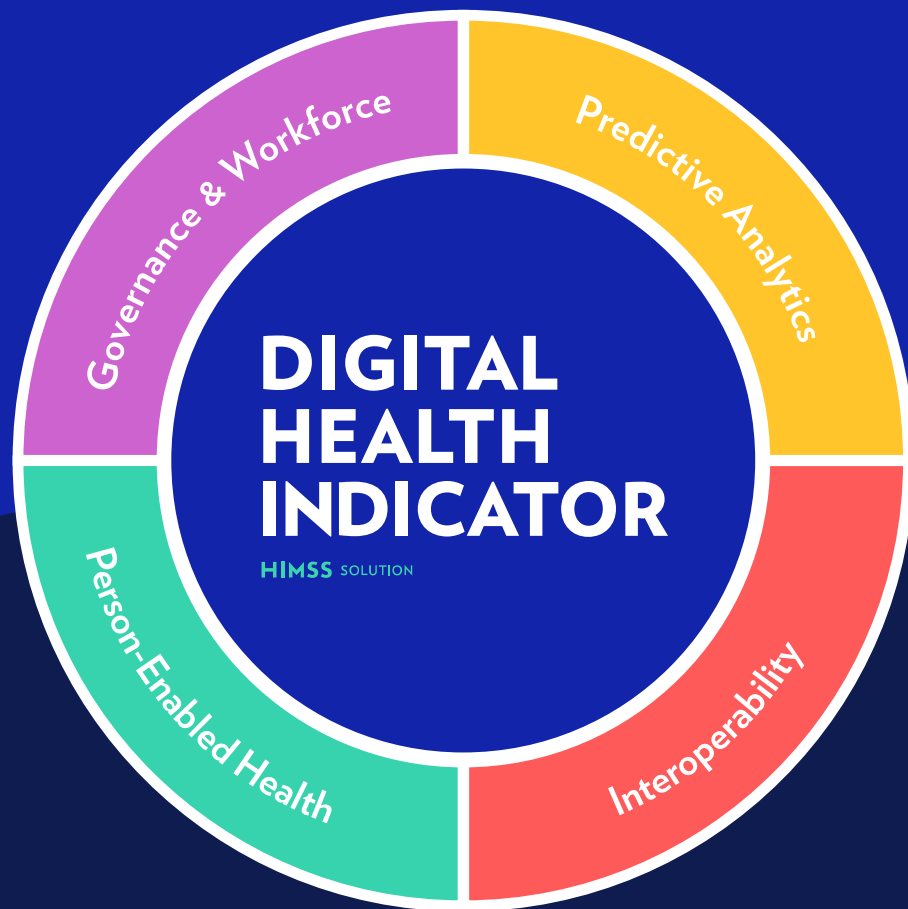
“The DHI is a maturity self-assessment using both qualitative and quantitative methods. The mixed methods approach HIMSS undertook was beneficial for producing a context-specific and actionable maturity report.

In addition to the DHI survey, up to ten interviews with various stakeholders in the HHS assisted in providing further context of successes and failures in the digital transformation at the sites. Stakeholders interviewed were clinicians, executives, informatics team members, administrative staff and consumer advocates.”

“Positively, diversity of staff roles interviewed was a notable strength and provided an overview of the current digital maturity state. Themes elicited informed meaningful, context-specific recommendations to inform the roadmap to improve digital maturity,” Dr Woods added.



HIMSSSM



***Is your health system
prepared to increase capacity
to keep people well?***

Be in the know

Baby Memorial Hospital: Redesigning systems to meet the challenge of COVID-19



Credit: Baby Memorial Hospital

WHO THEY ARE

The vision “affordable, accessible and quality healthcare for all” – a dream by Chairman and Managing Director Dr K G Alexander – was made a reality with the commencement of Baby Memorial Hospital (BMH) in 1987. The hospital, based in Kerala, is a tribute to his late father K C Varghese (known as “Baby”) and started with only 52 beds. BMH has since grown to house over 600 beds, more than 40 medical and surgical departments, an exceptional paramedical support system, 16 operation theatres, 11 fully equipped ultramodern ICUs, and a 24 hours accident and trauma care unit. The hospital team includes 300 doctors and over 2000 nursing, paramedical and administrative staff.

THE PROBLEM

COVID-19 brought with it many challenges, and even though BMH had in place various systems and protocols to ensure that these challenges were addressed, coordinating these efforts would be no easy feat.

The huge amount of data that needed to be captured proved to be challenging when utilising paper-based forms and registers. Patient education to increase awareness about COVID-19, tracking of COVID-19 patients within the hospital, and management of patients in the COVID-19 wards and intensive care units were also among BMH’s concerns. To address these, the IT team along with the clinical leadership at BMH set forth to develop a technology-enabled platform for effective management of COVID-19.



PROPOSAL



SAJI MATHEW

Chief Operating Officer,
BMH

“The systems devised in the pre-COVID era had to be redesigned and re-engineered to address the challenges posed by COVID-19. Ensuring the safety of healthcare workers and patients was of prime importance. Improving operational efficiency to handle manpower shortages and streamlining the capture and dissemination of data were other focus areas.”

In the initial days of the pandemic, BMH created a chatbot to help people assess their risk for COVID-19. Available in both Malayalam and English, it was based on guidelines published by the World Health Organization and India’s Ministry of Health and Family Welfare. By answering a series of simple questions about their symptoms, travel and contact history, a COVID-19 risk score was calculated. The bot provided users with instructions on how to proceed if they had a high risk of disease.

To tackle the challenge of performing COVID-19 risk assessments on hospital visitors, the hospital created a chatbot based self-declaration platform. The link was sent to patients with their appointment reminders on the day prior to consultation. Posters with QR-codes were displayed outside hospital entry points, prompting visitors to complete their self-declaration. Low-risk individuals were provided with a QR-code enabled digital entry pass. High-risk individuals were requested to report to the emergency department for evaluation. The system also had the capability to automatically identify visitors from COVID-19 hotspots based on the location provided.

“We created a pre-registration chatbot for patients to submit their information before reaching the hospital. Online appointment with integrated payment ensured a touchless experience. Smartphone based geo-tagged self check-in functionality helped bypass the queue. Partnering with BestDoc helped us in streamlining the end-to-end outpatient workflow including appointment booking, online payments, self check-in and queue management,” Mathew explained.

A platform was created to view the COVID-19 patient list, track their daily progress and review test results. This allowed the infection control team to easily generate reports for submission to the government. They could also conduct a risk assessment of staff exposed to COVID-19 patients.

An integrated video consultation platform enabled consultants to communicate with patients without being physically present.

**DR BIJOY JOHNSON**

Consultant in Healthcare
Data Analytics, BMH

“For management of critically ill COVID-19 patients in the ICU, computer vision technology was utilised to capture the patient vital parameters from images of cardiac monitors as a low-cost alternative to fully connected ICU monitors. Critical values were highlighted in the monitoring app for consultants. Voice recognition was used to capture relevant parameters from text dictated by consultants.

The COVID-19 discharge summary application could automatically generate a major portion of the discharge summary based on pre-existing data. We also created a system to track our employee vaccination drive.”

“With our COVID-19 home care application, requests are geo-coded based on the address submitted and visualised on a map. The estimated travel distance and duration is calculated based on current traffic conditions. The patient can track the real-time status of the request and make online payments. We also utilised conversational AI in WhatsApp chatbots for COVID-19 home care. This ensures constant monitoring of home care patients, with the option to escalate to the clinical team whenever required,” Dr Johnson continued.



MEETING THE CHALLENGE

The hospital embarked on the project in March 2020, with the earliest modules being operationalised in a few weeks’ time. New modules were added and pre-existing ones have been improved continuously over the past two years.

“We wanted to ensure the best possible care for our patients. We also wanted to improve our operational efficiency to handle the surge in patients. Developing an application which was aligned to the unique needs of our organisation was one of our key focus areas,” Mathew shared.

With adoption by end users being one of the most common challenges faced during implementation of new IT systems, the hospital ensured that staff received training and the applications catered to their requirements. Feedback was collected frequently from end-users to guide application development.



RESULTS

BMH reports that through the use of the self-declaration system, 250,000 visitors have been screened. By optimising its home care service delivery, the hospital has also seen additional revenue.

“The COVID-19 risk assessment chatbot has been used by more than 15,000 users across the country,” Mathew said. “Additionally, there has been a 70% reduction in time for COVID-19 discharge summary generation.”



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reduction in average call-handling time

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WATCH THE VIDEOS

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Karuna Trust's Tavarekere Urban Primary Health Center: Harnessing health technologies to serve India's underprivileged



Credit: Tavarekere UPHC

WHO THEY ARE

Established in 1986 to respond to the prevalence of leprosy in the southwest state of Karnataka, Karuna Trust has developed a reputation for turning poorly equipped and low-performing primary health centres (PHCs) into facilities offering affordable, high-quality care serving the less privileged.

The Trust now manages 71 PHCs in six Indian states, serving a population of 1.5 million people – some of whom live in remote and inaccessible places, including insurgency areas with poor roads and little telephone or electrical connectivity.

Karuna Trust's Tavarekere Urban Primary Health Center (UPHC) conducts numerous government programmes, including routine immunisations for children and monthly specialised “camps”, such as those for the diagnosis of treatable eye diseases.

The facility consists of a medical officer, three staff nurses, a pharmacist, a laboratory technician, six junior health workers, five auxiliary nurse midwives (ANMs) and 11 accredited social health activists (ASHAs). ANMs are village-level female health workers who conduct screening for noncommunicable diseases (NCDs) and educate patients to seek necessary treatment. ASHAs are last mile health workers identified from within the community to act as an interface between the public health systems and the community. A dental service started by Karuna Trust also improves the oral health of the population.

On an average day, the general medicine outpatient and dental service presentations number about 30-40 and 15-20 respectively. Due to the pandemic, these numbers have reduced, with the centre focusing on pandemic control measures such as COVID-19 vaccinations and testing.

The digital system implemented at Tavarekere UPHC in January 2019 allows staff to use clinical decision support in COVID-19 triage, symptom tracking and care pathways, and provides drug-allergy checks, dose range alerts and duplicate therapy alerts. A messaging system is used for clinical consults, internal communications and patient reminders. It also enables follow-up reminders for proactive care management.

The system was implemented in partnership with Cerner India as part of the EMR provider's CSR initiative. Through this initiative, Cerner aims to help digitise PHCs to enable better management of patients and to improve health outcomes of the population.



THE OBJECTIVE

Karuna Trust aims to make Tavarekere UPHC a model health centre and the HIMSS Outpatient Electronic Medical Record Adoption Model (O-EMRAM) validation process was an opportunity to improve standards at the hospital as well as its ongoing digitisation efforts in line with modern advancements in healthcare.



ABOUT THE O-EMRAM

The O-EMRAM is used to assess EMR implementation for the outpatient services of hospitals and health systems, guiding the data-driven advancement of care outside the walls of the acute care setting.

Every health system is different, as are their goals, and the O-EMRAM is used as a model to improve the use of resources, manage population health (especially for at-risk populations), improve medication administration, and use real-time data to lead the health system toward improved outcomes.

In the soon future, HIMSS's newest maturity model – the Community Care Outcomes Maturity Model (C-COMM) – will be replacing the O-EMRAM. The C-COMM moves beyond traditional outpatient clinics and is designed to address a more comprehensive array of community-based patient care agencies and organisations including: primary care, community clinics, skilled nursing facilities, complex (specialty) care, chronic disease management, behavioural health, mental health, dialysis centres, long-term care, rehabilitative care, residential care settings, and more. The C-COMM supports advances in digital maturity across non-acute/ambulatory healthcare settings and was designed for the advancement of care that falls outside the walls of the hospital/acute care setting.



FINDINGS

Tavarekere UPHC is the first healthcare provider in India to achieve the O-EMRAM Stage 6 validation. This milestone achievement is recognition for the incredible efforts of the UPHC's clinical team working alongside colleagues from Cerner. The level of digital maturity was particularly impressive given the context within which the health centre operates, including a low-income patient population with poor accessibility to digital devices.

Tavarekere UPHC and the Cerner team were specifically commended in the following areas:

- All doctors, nurses and allied health professionals were able to demonstrate how care is documented in the Cerner Millennium IS. The system appeared intuitive and easy to use.
- There were good examples of device integration during the collection of vital signs. The instruments for measuring blood pressure, temperature, heart rate and oxygen saturation were all directly interfaced with the EMR.
- Health maintenance alerts were set to remind nurses that immunisation and vaccination updates have been given or are overdue.
- The majority of blood tests and imaging examinations were recorded in the EMR.



ANDREW PEARCE

Vice President, Analytics
& Global Advisory Lead,
HIMSS

“The partnership the UPHC has with Cerner to build digital maturity is commendable with the ease of use, device integration and alerts capabilities highlights. In the future, we look forward to seeing increased capabilities in the use of structured data, alerting for electronic prescribing and the rollout of a patient portal.”

HIMSS made a number of recommendations, two of which required immediate attention.

First, Tavarekere UPHC was required to increase the amount of structured data being collected within the clinical record. Structured data is highly organised and formatted so that it is easily searchable in relational databases. Unstructured data has no predefined format or organisation, making it much more difficult to collect, process, and analyse. Clinical information should be collected in a structured form or drop-down box containing preformatted responses that can lead to clinical decision support opportunities, alerts and warnings – these responses are easy to analyse in the future and provide valuable insights into clinical patterns and trends.

Secondly, Tavarekere UPHC was required to review the alerts and warnings associated with electronic prescribing, specifically drug interactions, allergy interactions, food interactions, dose range checks, duplicate drug alerts and cumulative dose alerts.

Other recommendations were for the UPHC to develop:

- Plans for a patient portal that can be used to directly communicate with certain cohorts of patients identified in clinical registries.
- Clinical order sets; groups of clinicians should meet on a regular basis to continue devising order sets to support their area of clinical interest. Order sets must be associated with audit tools to measure compliance as well as a regular review date to check for continued relevance and accuracy. As a start, order sets must be associated with the top five most common clinic presentations.
- Patient registries to improve personalised communication and targeting of patients with specific disease types. Registries should contain a number of sub-divisions to improve research and public health planning.



NEXT STEPS

Tavarekere UPHC is working with the Cerner team to increase the amount of structured data being collected within the clinical record and incorporate additional alerts.

With regard to reviewing the alerts and warnings associated with electronic prescribing, Tavarekere UPHC mentioned that while a few of these interactions are a part of its regular practice, a few of these have not been encountered due to the “limitations of the primary care set-up”. The UPHC will be working with Cerner to see how they can demonstrate these alerts.

Tavarekere UPHC has an active community screening programme for NCDs that helps in the management of cases, treatments and follow-up. The UPHC will be working towards harnessing this information in developing patient registries to improve personalised communication and targeting of patients with specific disease types.

The centre mentioned that the population that they cater to – a low-income group with limited accessibility to devices – is a primary deterrent for a dedicated patient portal application. However, they have not ruled out the possibility, and will definitely look to develop a patient portal given the opportunity in the future.

 **WHAT THEY HAVE TO SAY****SWATHI**Program Manager,
Tavarekere UPHC

“The HIMSS Maturity Model assessment can be considered one of the key tools for assessing the level of digital implementation in an organisation, specifically in the health sector. It gives an overall view of exactly how the patients’ workflow is carried over and documented. Moreover, it helps in understanding the quality of work through improved technological services.”

“It was a great experience working with HIMSS for the Maturity Model Assessment. We got to learn how an organisation is digitally efficient and the importance of digital monitoring. It also helped the staff in knowing where they lag and the improvements that are to be done in the future. Indeed, it is beneficial with regard to accounting for the quality of work of the organisation.”

**DR KOMAL S NAIK**Dentist, Tavarekere
UPHC

“It is a great achievement and a proud moment for us to be part of it. We were thrilled when we got to know that we cleared the assessment. The digital system improves the care provided to the patient and also makes it easy for the doctor to treat patients as all data is stored in a systematic manner. It minimises error and also having a digitised platform is always better and adds value to the quality of the care.”



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National University Health System: Saving over 5000 bed days with a virtual ward



Credit: National University Health System

WHO THEY ARE

The National University Health System (NUHS) in Singapore aims to transform how illness is prevented and managed by discovering causes of disease, development of more effective treatments through collaborative multidisciplinary research and clinical trials, and creation of better technologies and care delivery systems in partnership with others who share the same values and vision.

As a Regional Health System, NUHS works closely with health and social care partners across the country to develop and implement programmes that contribute to a healthy and engaged population in the Western part of Singapore.

THE PROBLEM

Singapore experienced a surge in COVID-19 cases between September and December last year, resulting in an increase in hospital bed occupancy nationwide. Many patients also expressed their preference to stay at home but due to their age, comorbidities or vaccination status, needed to be hospitalised or placed in an institution.



PROPOSAL

“The NUHS@Home programme, which was at the time taking care of non-COVID-19 patients at home, saw an opportunity to provide such care for COVID-19 patients at home,” said Dr Stephanie Ko, Clinical Lead for NUHS@Home and NUHS COVID-19 Virtual Ward, and Consultant, Division of Advanced Internal Medicine, Department of Medicine, National University Hospital (NUH).

“This also served to increase hospital bed capacity by extending the hospital ward to the home by way of a ‘virtual ward’.”



DR STEPHANIE KO

Clinical Lead for NUHS@
Home and NUHS
COVID-19 Virtual Ward,
NUH

“The aim is to allow patients, who want to be at home and can be at home, to be at home. The team brings the care that would be provided in hospital directly to patients’ bedrooms. As such, patients are able to receive the treatment they need within the comfort of their own homes, and reduce the risk of exposure to hospital-acquired infections.”

“Teleconsultation is done over audio or video calls to patients and/or their family members by our care team. We speak with them to address their concerns and also perform a virtual clinical examination, which may include a sit-to-stand test. This involves patients measuring their oxygen levels, doing one minute of exercise by moving from a sitting to standing position repeatedly, and measuring their oxygen level again. If this drops significantly, we may be more worried about COVID-19 affecting patient’s lungs,” explained Dr Ko.

Patients’ vital signs are also monitored to spot early signs of deterioration. Those who own mobile devices and are able to use online forms are registered onto a vital sign chatbot which was co-developed with healthtech firm BotMD. The chatbot reminds patients to key in their vital signs three times a day.

Patients who do not own mobile devices or are unable to use online forms are equipped with Biofourmis’ Biovitals Hospital@Home solution; a suite of connected health devices.

“Thermometer, blood pressure meters and oximeters are connected by Bluetooth to a tablet, which transmits readings to our dashboard without patients having to key them in. The tablet is also used as a tele-consultation device with a simple interface,” Dr Ko said.

“Both dashboards by BotMD and Biofourmis feature the ability to send push alerts to our care team if any of the vital signs exceed pre-set thresholds, so that the care team can take action and follow up on patients.”

“Apart from [being able to recover] in the comfort of their home, treatment is similar to a COVID-19 treatment facility or hospital – our doctors and nurses do ward rounds on them daily or every other day through teleconsultation and ensure patients measure their vital signs routinely and monitor them,” added Yeo Ai Wah, Senior Nurse Clinician, Advanced Practice Nurse, CareHub, Regional Health System Office, NUHS.

The care team can visit patients at their homes if necessary to take blood tests, change wound dressing, send medication, or perform other nursing procedures. They can also administer intravenous medication to lower the chances of high-risk COVID-19 patients developing severe pneumonia.



YEO AI WAH
Senior Nurse Clinician,
NUHS

“The NUHS COVID-19 Virtual Ward team has supported patients in end-of-life care based on requests from patients or their family members. This allowed patients to spend time with their family during their final days.”



MEETING THE CHALLENGE

It took around two weeks for the virtual ward to be set up, from the time it was decided that NUHS@Home would be expanded to care for COVID-19 patients.

“Compared to non-COVID-19 patients, we wanted to minimise physical contact as much as possible, while still providing safe care for patients. We also had to ensure that our processes were quickly scalable to accommodate the surge of patients. Many of our processes had to be modified to adapt to this approach, including the adoption of the vital signs chatbot to capitalise on patients’ own devices, and expanding our existing partnership with our home care service provider, Speedoc,” shared Dr Ko.

“Protocols for monitoring, patient and family education to manage COVID-19 at home with the use of tele-monitors, case escalation and infection control measures were established to minimise the need for physical contact with patients. In addition to work processes, we had to address patient and family concerns to ensure they could cope at home,” added Yeo.

 **RESULTS**

Since the virtual ward was set up in September 2021, the health system has saved more than 5000 bed days. Over 800 patients have been cared for to date*.

Other benefits have been reaped, with patient empowerment being one of them. “[They are] taught how to monitor their own vital signs, as well as what is normal and abnormal, which also increases their health literacy beyond the virtual ward period,” Dr Ko said.

“The use of both teleconsultation and push notifications for abnormal vitals means that clinicians can monitor a large number of patients simultaneously without having to continually observe a dashboard. This helps doctors take care of similar or larger number of patients in their homes as they would in the hospital wards.”

**Numbers updated as at mid-February 2022.*



“Our clinicians can now intervene early if a patient’s health is showing signs of deterioration.”

Melinda Parcell - Executive Director Community and Rural Services, West Moreton Health

Customer

West Moreton Health,
Queensland, Australia

Challenge

- Projected regional population growth of 113% between 2016 and 2036¹
- Increased prevalence of multiple chronic conditions^{2,3}
- 46% of deaths are considered to be premature³

Results

- 28% decrease in potentially preventable hospitalizations in chronically ill patients⁴
- 53% decrease in hospital emergency department visits for these patients⁵
- Improvement in self-reported confidence and mental health

Reducing hospital readmissions with remote patient care management

Faced with a rapidly growing population in a relatively disadvantaged part of Queensland, Australia, West Moreton Health is pioneering the use of remote patient care management to help chronically ill patients achieve better health and stay out of hospital.

Philips and West Moreton Health developed Mobile Enabled Care (MeCare), an innovative program that combines technology, in-home support and education to empower patients and help enable early intervention when needed.

Since the introduction of MeCare in mid-2016, West Moreton Health has seen a reduction of 28% in potentially preventable hospitalizations⁴, and patients report improved confidence and mental health.



“Early intervention often prevents the need to go to hospital, which is a real win for people and helps to save costs.”

**Melinda Parcell -
Executive Director Community
and Rural Services,
West Moreton Health**

Melinda Parcell, West Moreton Health’s Executive Director Community and Rural Services, explains: “MeCare is specifically targeting patients with complex conditions who typically have spent a lot of time in hospital. With in-home technology, they can measure and record daily health targets such as blood pressure and weight, and speak each day with a nurse without having to leave the comfort of their home.”

“Patients also have access to a wider support team including a doctor, physiotherapist, psychiatrist and pharmacist,” Ms Parcell adds. “That means clinicians can intervene early if a patient’s health is showing signs of deterioration, often circumventing the need to go to hospital – which is a real win for people.”

West Moreton Health in Queensland, Australia, delivers health services to a population of more than 280,000 people – which is expected to increase to 593,000 people by 2036. West Moreton Health delivers health services across the continuum of care: preventative and primary health care services, ambulatory services, acute care, sub-acute care, oral health and mental health and specialized services.

The West Moreton area, which includes metropolitan and small rural community settings, has a relatively high percentage of people with low socioeconomic status (45%). The population shows lower than average attendances at general practitioners and specialist consultants, yet much higher than average emergency department visits, adult hospital admissions and potentially avoidable hospitalizations.⁶ 46% of deaths are considered to be premature.³

West Moreton Health was looking for a way to help patients with chronic conditions achieve better health and wellbeing, while keeping the cost of delivery of services sustainable over the long term.

Results

The results of the first 80 patients show MeCare has strongly improved patients’ quality of life, including increased confidence and mental health, while keeping their physical health stable. The program has led to a 28% reduction in potentially preventable hospitalizations⁴, as well as a 53% reduction in potential emergency room visits for this group of patients⁵ – helping West Moreton Health to save costs where they are the highest. Eventually, MeCare aims to help decrease the overall cost of delivery of services by 30%.

“MeCare helps us to achieve multiple goals at the same time,” Ms Parcell says. “It provides safe patient care close to the home or in the patient’s home, reduces pressure on our hospital beds, reduces our cost to serve, and it builds the patient’s ability to self-care and take greater control.”

Challenge

West Moreton Health serves a population that is forecast to grow by 113% between 2016 and 2036¹, with the number of chronically ill patients also expected to increase dramatically.^{2,3}

Solution

In 2016, West Moreton Health formed a partnership with Philips to introduce MeCare, a program that uses Philips’ eCareCompanion telemonitoring platform and tailored health management plans to help chronically ill patients take control of their own health.

28%
decrease in potentially preventable hospitalizations of chronically ill patients¹

1. Calculated from the 2016 estimated resident population (ERP) for West Moreton using SA2 level reporting (<http://www.qgso.qld.gov.au/products/tables/erp-sa2-qld/index.php>) and compared with the SA2 level population projections available via <http://www.qgso.qld.gov.au/products/tables/proj-pop-medium-series-sa2-sa3-sa4-qld/index.php>
2. Source: https://www.ddwmpnh.com.au/uploads/attachments/PHN-1910049-Regional-Mental-Health-Plan_Final_Online.pdf
3. Source: <https://www.westmoreton.health.qld.gov.au/about-us>
4. Compared to a baseline average of potentially preventable hospitalizations without the MeCare program.
5. Compared to a pre-MeCare trend. Without intervention through MeCare, the emergency department visits for this group were predicted to continue to increase.
6. Source: <https://www.westmoreton.health.qld.gov.au/sites/default/files/inlinefiles/community-health-profile.pdf>



Korea University Anam Hospital: Creating a robust digital health ecosystem with a cloud-based HIS



Credit: Korea University Anam Hospital

WHO THEY ARE

Korea University (KU) Medicine, founded in 1928, is one of the leading medical providers in Korea with over 9060 staff and students and three hospitals – KU Anam, Guro, and Ansan – providing 2932 beds and serving more than 2.9 million patients.

KU Anam Hospital has introduced state-of-the-art equipment and systems such as robot surgery, linear accelerator, 3.0T MRI and PET-CT.

In 2021, the hospital implemented a cloud-based hospital information system, P-HIS, developed jointly by six leading hospitals in Korea and eight technology companies, including Samsung SDS.

P-HIS has 38 modules, such as Emergency, Outpatient, Nursing, Patient Management, and aims to unify medical terminology, provide international standardisation of clinical terminologies, simplify data post-processing and enhance security through the cloud.

The system has so far achieved a decrease of about 60% in the time needed for prescription input by checking errors in real-time to review, correct, and/or remove any associated mistakes; a 60% decrease in operational labor cost; a 40% saving in inoperational technology costs via a charge per use method; and a decrease of 60% in infrastructure build cost.



THE OBJECTIVE

KU Anam Hospital underwent a HIMSS DHI assessment to gain a comprehensive and expert measurement of its digital maturity and capabilities.

Through the project, KU Anam Hospital also aimed to identify key priorities for digital action in the short term, as well as the future investment activities required to further improve its digital health ecosystem.



ABOUT THE DHI

The DHI measures progress toward a digital health ecosystem. An ideal digital ecosystem connects clinicians and provider teams with people at point of care, enabling them to manage their health and wellness using digital tools in a secure and private environment.

Operational and care delivery processes are outcomes-driven and informed by data and real-world evidence to achieve exceptional quality, safety and performance that is sustainable.

Based on the principles and evidence of the HIMSS Digital Health Framework, the DHI measures four dimensions that are proven to help organisations advance digital health transformation: Interoperability, Person-Enabled Health, Predictive Analytics, Governance and Workforce. Scores in each dimension combine for a possible total of 400.



FINDINGS

INTEROPERABILITY

Interoperability is a strength of KU Anam Hospital's P-HIS system, which is integrated with 102 other systems, including mobile patient health records (Mobile PHR), medication management, kiosks, and myHealthway¹. Data exchanges are achieved seamlessly, with industry standard protocols used.

Clinician collaboration is achieved via an integrated and secure platform, while patient health summaries can be viewed at a glance. A patient barcode system is used and applied during medication administration, sample collections and blood transfusions to reduce prescription and other clinical-related errors. The secure infrastructure includes Medical Zone, a dedicated cloud that has ISO 27799 certification and domestic personal information protection management system (ISMS-P) certification. Virtual care services are available to connect patients to clinicians virtually, although it is noted that the law forbids telehealth usage for Korean citizens.

Industry standard protocols such as HL7 and SNOMED-CT and common codification of data in P-HIS are practiced. MyHealthway provides an open API platform integrating AI-based precision medical solutions, Doctor Answer² and wearable technologies.

¹ myHealthway provides an open API platform integrating and enabling AI-based precision medical solutions, Doctor Answer, and wearable technologies.

² A Korean AI-based diagnostic software.

PERSON-ENABLED HEALTH

Person-Enabled Health is achieved at KU Anam Hospital through the use of digital tools such as Mobile PHR, which also enables education exchange about self-administration of pain relief, blood sugar checking and more. Certain medical health applications such as inPHR IBD (for inflammatory bowel disease) and inPHR Spine are developed to cater for patients with specific needs. Telehealth is available to foreigners only due to regulation.

Proactive risk identification is provided for clinicians and individuals at the point of care in real-time through the Rapid Response System and alerts from the P-HIS dashboard. AI and wearables are used to detect abnormal signals and predict symptoms for patients with histories of arrhythmias and atrial fibrillation.

PREDICTIVE ANALYTICS

Predictive Analytics is supported at KU Anam Hospital via analytics and digital tools such as the ER Patient Severity Prediction system and Rapid Response System, and a robust data warehouse that collects patient data from various sources. Dashboards and alerts (e.g., patients with fall risk or depression) are available for proactive risk management. Patient classification is based on the at-risk score to allow dynamic and flexible nurse assignment and different care based on patient needs.

GOVERNANCE AND WORKFORCE

Governance and Workforce is the strongest category for KU Anam Hospital, with policies in place including a data governance framework, and a culture that embraces the use of data-informed decision making and data privacy. Regular reviews of strategies, initiatives and research directions occur, together with strong workforce competency, to support the adoption of digital health technologies.

A training programme has been created for new nurses that is conducted over 12 to 16 weeks to develop skills, with additional regular training on the P-HIS system. KU Anam Hospital also trains data scientists and provides education about big data at the Health and Medical Human Resources Development Center.

Strong workforce capacities are indicated in the healthy ratio in the number of nurses to number of beds in wards/ICUs. Cross-disciplinary collaboration is also used to create patient treatment plans.

Satisfaction surveys (health insurance review and Korea NCSI) are performed regularly with patients and the data is used to improve care strategies.



RECOMMENDATIONS FROM HIMSS

Following the assessment, HIMSS suggested the following recommendations to KU Anam Hospital in the four dimensions:

INTEROPERABILITY

- Achieve greater participation from elderly patients in the digital health programme through, for example, the provision of digital health education and devices.

PERSON-ENABLED HEALTH

- Track population health outcomes and social determinants of health using predictive analytics.
- Automate adverse event reporting that allows direct notification to patients of product recalls and any risks related to a product as part of earlier treatment care and to support the rapid removal of products from care settings.

PREDICTIVE ANALYTICS

- Report risk adverse events publicly to allow benchmarking of safety outcomes with other similar programmes and organisations and to ultimately help define population health strategies that strengthen population health and wellness.

GOVERNANCE AND WORKFORCE

- Refine the governance processes on how patient data is shared with external organisations and researchers to ensure an efficient and timely process.
- Improve clinicians' engagement with patient satisfaction initiatives.



DHI SCORE

KU Anam Hospital scored 308/400 for the DHI. This score puts its digital health system capacity among the top health systems globally, with health systems in Asia-Pacific and North America achieving average DHI scores of 153/400 and 229/400 respectively at the time the report was provided⁵.

The hospital's digital maturity rating reflects its impressive progress toward a digital health ecosystem. The campus has also established operational and care delivery processes that focus on outcomes and data to inform decisions and care delivery approaches, achieving exceptional quality, safety and performance.

⁵The KU Anam Hospital assessment report was provided in October 2021.



ANDREW PEARCE

Vice President, Analytics
& Global Advisory Lead,
HIMSS

“KU Anam, as part of KU Medicine, is fully devoted to improving its medical service quality by introducing state of the art equipment and systems. What is unique about the approach taken is the collaboration being undertaken by leading hospitals and technology companies in Korea to develop the P-HIS. We understand that almost 100 Alliance Hospitals in Korea are being onboarded to use the system. This will mean that the P-HIS benefits achieved to date by KU Anam such as reduced operational and infrastructure costs, improved security and improved data quality will be extended across the Korean health system, improving the health outcomes of more Koreans.”



NEXT STEPS

The P-HIS has expanded to KU Guro and Ansan hospitals and the sharing of clinical data will support greater collaboration between hospitals and researchers in order to develop improved AI models to further Person-Enabled Health, Predictive Analytics and new medicines. A clinical data warehouse (CDW) has been established, and clinicians and researchers are being informed about the protocol to follow to access the CDW. Following the AI model development is its application to patient care. KU Medicine plans to support these efforts, with a vision to improve the quality of individualised care by more direct communication between patients and clinicians through mobile devices, such as mobile PHR, which can result in greater patient-initiated care.



WHAT THEY HAVE TO SAY

The team at KU Anam was pleased to hear that its digital maturity ranks among the top health systems globally. There had been concerns about changing to a cloud-based system as there were no previous examples of an entire HIS being placed in the cloud. Many in the organisation thought the conversion was impossible, especially for a large-scale tertiary hospital. However, the system has been successfully operating in KU Anam hospital since March 2021. The DHI score has validated the team’s vision and efforts, providing greater confidence in the direction the organisation is heading towards.



DR JONG HOON PARK
CIO, KU Anam Hospital

“We were pleased to work with HIMSS during the DHI assessment period. While preparing supporting documents for the answers to the DHI questionnaire and responses to questions raised by HIMSS experts, we had a great opportunity for communicating with hospital workers with diverse backgrounds (e.g., nurses, clinicians, system experts, etc.) and we came to better understand overall hospital-related issues dealt with by individual departments.”



DR SANGHEON LEE
leader of the Biomedical
Information Center,
KU Anam Hospital

“The DHI assessment was a great opportunity to find strong and weak points of our HIS in terms of digital transformation and to evaluate the quality of our HIS compared to other hospitals over the world. We will strengthen and develop our digital capabilities through continuous evaluation to provide the best care and services to patients and medical staff. We will make improvements to the system based on the evaluation results.”

ABOUT HIMSS

WHO WE ARE

HIMSS is a global advisor and thought leader supporting the transformation of the health ecosystem through information and technology. As a mission-driven non-profit, HIMSS offers a unique depth and breadth of expertise in health innovation, public policy, workforce development, research and analytics to advise global leaders, stakeholders and influencers on best practices in health information and technology.

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