

INSIGHTS

HIMSS PUBLICATION

2021

CONNECTING THE
DOTS FOR BETTER
HEALTH OUTCOMES:
AN APAC VIRTUAL
GOVERNMENT
ROUNDTABLE

PAGE **32**

**STATE OF CONNECTED HEALTH
IN APAC: 2021**

INSIGHTS

STATE OF CONNECTED HEALTH IN APAC: 2021

| | |
|-----------------|---|
| WELCOME MESSAGE | 3 |
|-----------------|---|

SURVEY FINDINGS

| | |
|---|----|
| A GUIDE TO THE APAC CONSUMER-ENABLED AND CONNECTED HEALTH TREND BAROMETER | 4 |
| KEY FINDINGS | 7 |
| SAMPLE DISTRIBUTION | 8 |
| RESULTS | 10 |

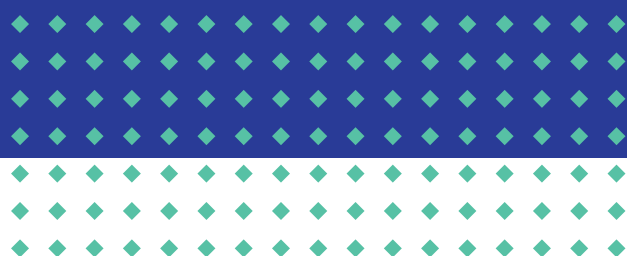
DISCUSSIONS

| | |
|---|----|
| CONNECTING THE DOTS FOR BETTER HEALTH OUTCOMES: AN APAC VIRTUAL GOVERNMENT ROUNDTABLE | 32 |
| BUILDING AN IDEAL CONNECTED HEALTH SYSTEM | 38 |

CASE STUDY

| | |
|---|----|
| FOSTERING PERSON-ENABLED HEALTH: A DHI CASE STUDY | 41 |
|---|----|

| | |
|-----------------------------|----|
| DIGITAL HEALTH INDICATOR | 45 |
| HIMSS MATURITY MODELS | 46 |
| SAVE THE DATE: HIMSS21 APAC | 47 |
| ABOUT HIMSS | 48 |



Will Connected Health live on after the pandemic?



Simon Lin
Vice President,
APAC
HIMSS

In July this year, COVID-19 cases began to proliferate in New South Wales in Australia. Health authorities responded by introducing subsidised telephone consult services for patients living in COVID-19 hotspot areas. The move was crucial in ensuring patient safety and access in a lockdown.

During the same month, COVID-19 cases hit record highs in Indonesia. In a bid to ease the pressure on hospitals, the government arranged for free telemedicine services to support COVID-19 patients with mild symptoms.

Similarly in India, healthcare facilities were pushed to the limit when the country faced an overwhelming second wave of infections earlier this year. Several public-private initiatives were launched to combat this wave, such as the state of Haryana and Deloitte teaming up to launch Sanjeevani Pariyojana (i.e., The Life Project) which provided virtual home care services to patients with mild to moderate symptoms of the disease.

These are just a few examples, but the picture is clear. In a highly contagious pandemic where it's crucial to limit physical interaction while reducing the burden on an already strained healthcare workforce, the value of virtual care cannot be overstated.

A number of countries in the region only introduced guidelines for Connected Health services as stopgap measures to ride out COVID-19, with future plans still unclear. And with vaccination programmes being rolled out and the world already moving into a "new normal", one question remains.

Is Connected Health here to stay?

In a region like APAC, the answer is tricky. A highly fragmented healthcare market in the region means that the challenges for digital adoption vary from country to country, between different sectors within the healthcare industry, and among different stakeholders in healthcare. Reimbursement models and the digital maturity of the entire system are also evolving at different speeds in different countries.

Even so, we hope this report brings us closer to the answer. Our first-ever survey on [Consumed-enabled and Connected Health](#) in APAC delivered some interesting results. Despite many APAC countries introducing policies regarding Connected Health services as a temporary response to COVID-19, e-health professionals from the region were still mostly positive about its future. This sentiment was tempered by various challenges they highlighted in the survey – such as perceived lack of funding and promotion by their governments – and for Connected Health to advance further in the region, these challenges will likely have to be addressed first.

On that note, we also heard from stakeholders from governmental organisations during a [virtual roundtable](#) session held in July. This discussion saw participation from seven APAC countries and offers top-level perspectives on hurdles to Connected Health, and how they can potentially be overcome. To quote moderator Rob Havasy, Senior Director of Connected Health at HIMSS, gatherings like these provide opportunities to "figure out a good way for us all to reach that state where our virtual care systems are effective and efficient, and enjoyed by the people we serve".

Indeed, there are lessons we can all learn from each other. Around the world, various health systems have made strides in this area. In this report, read how the [Danish health system is implementing Connected Health](#), based on a presentation by Claus Pedersen, director of the Sentinel Unit at Sundhed.dk in Denmark during the HIMSS APAC Health CIO Summit. Additionally, the Hospital Authority of Hong Kong provides a case study on how they are [fostering person-enabled health](#) in the country.

I hope that you will enjoy reading this report. Countries in APAC have taken the first steps to realise the potential of virtual care, and the future of Connected Health in the region looks mostly positive. But until they address some of their most pressing challenges, there's still a ways to go.

A Guide to the APAC Consumer-enabled and Connected Health Trendbarometer



This survey provides the latest insights into the adoption and maturity of consumer-enabled and connected health in the APAC region. It focuses on the drivers of and barriers to connected health, and covers a comprehensive range of influences – regulatory, cultural, financial and technical. Before you dive in, we recommend reading this guide. This will aid in your reading and understanding of the [results section](#).

What are consumer-enabled and connected health technologies?

For the purposes of the survey, consumer-enabled and connected health technologies have been defined as those intended to bridge the gap between citizens/consumers and health resources, with the goal of increasing personal engagement and connectivity to achieve health and wellness.

These emerging digital models promise to improve the health of citizens/consumers and the way care and prevention is delivered via internet-based strategies and resources, the use of remote monitoring devices, telehealth, and wearable technologies.

Where are the findings from?

We conducted a structured quantitative online survey between April and June 2021, corresponding with the third wave of the virus and the early stages of vaccination programmes. Respondents also had the opportunity to provide qualitative observations. Many of them did, and these have been referenced in the results.

Who participated in the survey?

We targeted e-health professionals from multiple APAC countries, with a particular focus on:



IT staff, administrative staff and clinicians from health facilities



Professionals from health-IT related technology and consulting companies



Professionals from other e-Health related sectors

The 159 respondents largely came from four groups:



Health Facilities (e.g., hospitals, outpatient practices, patient care centres, etc.)



Technology vendors



Consulting companies



Health authorities

A further small number of diverse respondents represented organisations as such academic institutions, research organisations and pharmaceutical companies. As it will not be possible to provide meaningful analysis due to the sheer variety of organisations in this group, they have not been included in the report when we look at results by organisation.

How was the analysis done?

We broke the APAC region down into four sub-regions: Southeast Asia, East Asia, Oceania, and South Asia. A list of the countries in each region can be found in the sample distribution [here](#). Observations on these sub-regions made up the bulk of the analysis.

When we looked at these sub-regions, our analysis centred on the countries where most of the respondents came from. In Southeast Asia for example, as there were too few respondents from Vietnam (i.e., only one) to provide any meaningful analysis, we instead focused on the countries where many of the respondents came from – such as Singapore, Malaysia and the Philippines.

Where there were interesting findings to highlight, we also provided analysis according to organisation type (refer to “Who participated in the survey” section above).

As respondents had the option to skip questions, the total number of respondents for each question will slightly differ as well.

Who are the people being quoted in the results section?

To get additional opinions on some of the findings, we sought input from experts around the region. Insights they shared can be found alongside our analysis. These experts are:



Professor Low Cheng Ooi

*Special Advisor, Chief Medical Informatics Officer (CMIO), Ministry of Health (MOH)
Chief Technology Officer, Sheares Healthcare Group
Singapore*



Professor Tomohiro Kuroda

*CIO/Director, Div. Medical IT & Admin. Plan., University Hospital
Graduate School of Medicine
Graduate School of Informatics
Kyoto University Hospital
Japan*



Veneeth Purushotaman

*Group CIO,
Aster DM Healthcare
India*



Gareth Mahon

*CEO, The CareSide
Australia*



Dr Dhesi Baha Raja

*Chief Medical Innovation Officer,
Ainqa Group
Malaysia*



Professor Rajendra Pratap Gupta

*Founder, Health Parliament
Author, Digital Health: Truly Transformational
India*

Key Findings

01

Overall, the future of consumer-enabled and connected health in APAC looks assured. Respondents were mostly positive about the readiness of their organisations, most of whom at least have plans to implement these digital technologies even if they are not currently enabling them. Crucially, a majority of respondents expected the wider digital health environment in their countries to improve; business expectations are particularly optimistic for the next 12 months.

However, in some regions, cultural and policy-based obstacles must be overcome in order to enable a viable connected health ecosystem. Governments, in particular, will need to show leadership on regulation and infrastructure and start meaningful conversations with citizens and more sceptical healthcare professionals about the benefits of these technologies to wellbeing and workflows, respectively.

02

Respondents from Southeast Asia were the most positive about their countries' healthcare organisations' readiness to work with consumer-enabled and connected health technologies. With higher levels of digital maturity, they had models in place that adapted swiftly to the challenges of the COVID-19 pandemic – and the benefits were well understood. Guidelines and telemedicine regulations were already in place.

The same did not apply to those countries where the pandemic triggered an accelerated digital transformation without the foundations of experience and cultural shift in attitudes. Respondents from these countries were typically more cautious in assessing the preparedness of their organisations for connected health.

03

Funding and costs was by far the top challenge for consumer-enabled and connected health across the entire APAC region. A clear lack of financing and reimbursement models in most countries means that the incentive to invest in the introduction of these technologies is somewhat limited.

Generally, there is also much work to be done on developing the digital literacy of healthcare staff and consumers, addressing the challenges of inadequate digital infrastructure, and influencing the cultural acceptance of these sorts of tools among patients and clinical staff.

04

Enabling virtual care access was quickly established as a priority during the early stages of the pandemic, playing a central role in keeping staff and patients safe by limiting exposure, and helping to reduce virus transmission. So it is not surprising that this was the most widely deployed consumer-enabled and connected health measure by APAC countries, identified by 41% of healthcare organisation respondents.

For those countries that are still in the earlier stages of digital transformation, it is possible that this will translate into a long-term shift in cultural and societal attitudes to consumer-enabled healthcare. However, the extent and speed at which this happens will depend on the scale of government commitment and the development of enabling frameworks.

Sample Distribution

By Organisation and Role

Technology vendor (n=50):

- Chief Executive Officer (CEO) (27%)
- Sales/Marketing Professional (20%)
- IT Staff (8%)
- Software Developer (8%)
- Chief Information Officer (CIO) (8%)
- Organisational and Corporate Governance (6%)
- Other positions (23%)

Consulting company (n=21):

- Chief Executive Officer (CEO) (43%)
- IT Staff (19%)
- Organisational and Corporate Governance (10%)
- Other positions (28%)

Health authority (n=8):

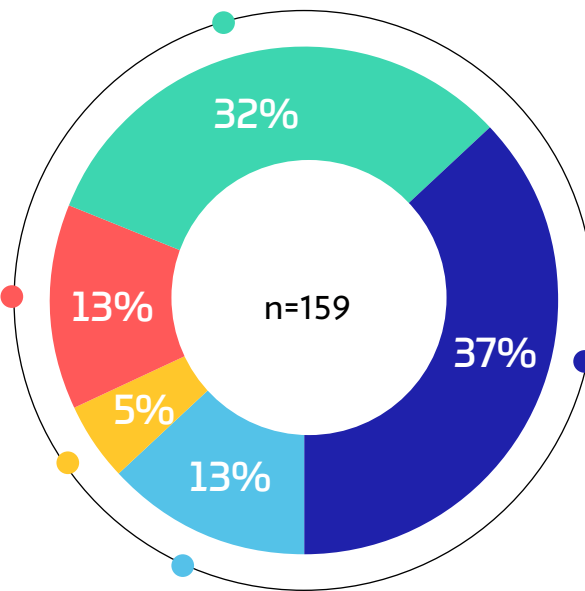
- Organisational and Corporate Governance (38%)
- Chief Executive Officer (CEO) (25%)
- IT Staff (13%)
- Other positions (24%)

Others (n=21):

- Researcher/Scientist (38%)
- Chief Executive Officer (CEO) (14%)
- IT Staff (5%)
- Organisational and Corporate Governance (5%)
- Other positions (38%)

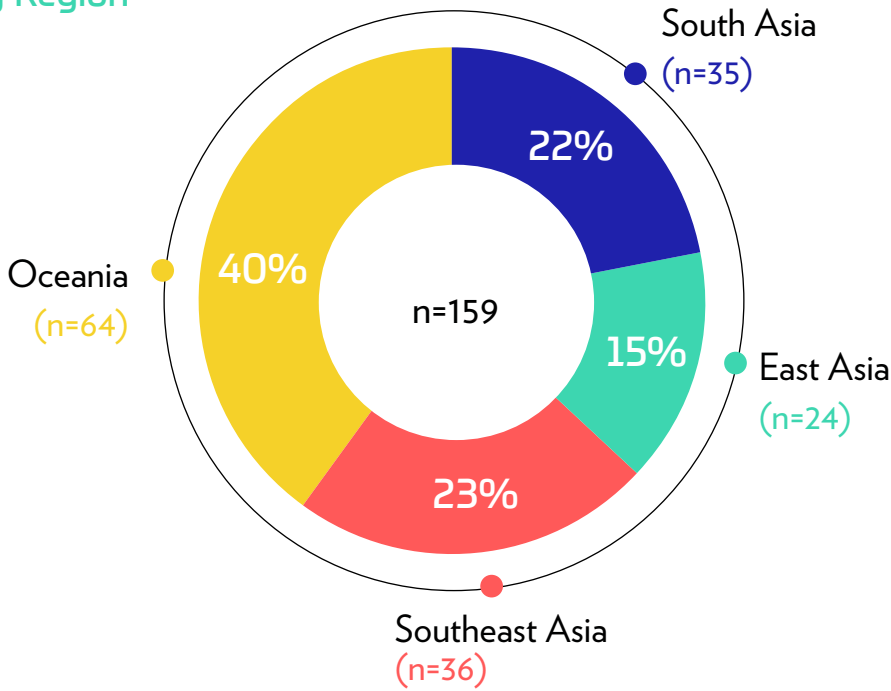
Health facility (n=59):

- Medical Profession (Physician) (24%)
- Medical Profession (Nurse, Pharmacist...) (17%)
- Chief Information Officer (CIO) (17%)
- IT Staff (12%)
- Chief Medical Officer (CMO) (5%)
- Chief Executive Officer (CEO) (5%)
- Organisational and Corporate Governance (3%)
- Quality Management Staff (3%)
- Clerk (2%)
- Researcher/Scientist (2%)
- Other positions (10%)



Sample Distribution

By Region



| | N |
|----------------|------------|
| Australia | 48 |
| India | 25 |
| New Zealand | 16 |
| Japan | 12 |
| Singapore | 10 |
| Philippines | 9 |
| Malaysia | 9 |
| Others* | 30 |
| Total** | 159 |

■ Oceania: Australia, New Zealand

■ South Asia: India, Pakistan, Bangladesh, Jordan, Nepal, Lebanon

■ Southeast Asia: Singapore, Philippines, Malaysia, Thailand, Indonesia, Vietnam

■ East Asia: Japan, Taiwan, South Korea, Hong Kong

* Includes Taiwan, Thailand, Pakistan, South Korea, Hong Kong, Indonesia, Bangladesh, Jordan, Nepal, Lebanon, and Vietnam. There were less than five participants from each of these countries.

** The number of responses in questions can vary slightly as respondents have the option to skip questions.



Readiness to work with connected health

Survey question: How ready are healthcare organisations in your country to work with consumer-enabled and connected health technologies?

The responses to this question establish a pattern that resonates throughout the whole survey: on the whole, every region feels at least ready to join the digital transformation marathon.

However, healthcare professionals and organisations in Southeast Asia are generally the most positive when it comes to all aspects of digitalisation, driven by pre-COVID-19 levels of investment and innovation. The region’s digital response to the pandemic was a continuation – albeit accelerated – of a trend already well underway in most countries.

Elsewhere, the digital response to COVID-19 has often been more reactive, requiring foundations and frameworks to be built at speed. As we’ll see in later questions, there appears to be a correlation between sentiment in those countries where connected health concepts are relatively advanced and those that

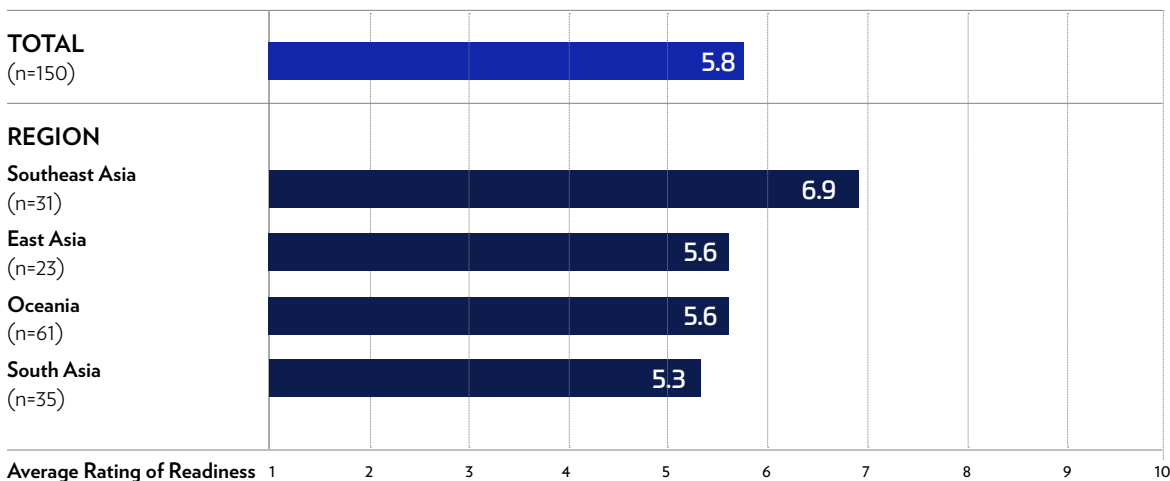
are more confident about government support and investment, as well as consumer acceptance of digital technologies.

In countries that reported lower levels of readiness, the results were underlined by qualitative responses that referenced challenges beyond funding. The lack of digitalisation in hospitals, high entry barriers for consumer-led health technology, and low digital knowledge at every level of technology infrastructure were typical issues cited by respondents.

Southeast Asia has a mean rating of 6.9 for this question (see Figure A) – well ahead of East Asia and Oceania (both 5.6) and South Asia (5.3).

A brief look at two countries in the region – Singapore and Thailand – reveals some factors that may contribute to this confidence, including a generally high level of digital literacy and mobile adoption, and established guidelines for the development and adoption of consumer-enabled and connected health technologies. Their digital transformation journeys began long before the pandemic.

Figure A
RESULTS BY REGION



Scale from 1 – “Not ready at all” to 10 – “Ready and proactively engaging”

Singapore's leadership on these fronts, in particular, is encapsulated by its ranking in the [2021 Asia Pacific Personalised Health Index](#), in which it leads the region for personalised healthcare based on the strength of its digital infrastructure.



Annals of the Academy of Medicine, Singapore Vol 19 No. 5, Sept 1990 – Computers in Medicine traced [Singapore's] history of early computerisation in medicine beginning with the MOH taking the lead to build national systems to link the government hospitals and collect allergy information nationally. The newly corporatised public healthcare sector started digitising their medical records, labs and radiology in the mid-90s and has moved up the HIMSS EMRAM to levels 6 and 7 in recent years. In 2011, the public healthcare systems started contributing patient summary records to the National Electronic Health Records system, beginning Singapore's journey toward a connected healthcare ecosystem. This system was built by MOH Holdings under the MOH.

Other programmes soon followed to help digitise the other healthcare sectors (e.g., community hospitals, nursing homes, primary healthcare, etc.). To encourage ownership over their own health, the HealthHub application was developed to provide citizens with access to relevant health information of their dependents and themselves. Recently, the connected medical records ecosystem allowed Singapore to respond rapidly with timely sharing of vital healthcare information during the COVID-19 crisis.



Prof Low

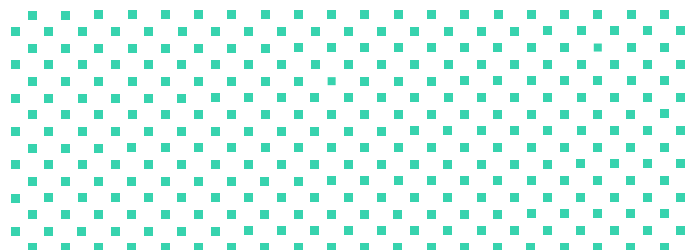
Special Advisor, CMIO Office, MOH
Singapore

Among the middle and lower-income countries in the region, Thailand also stands out for the way in which it has faced the rising challenges of an ageing population and the growing prevalence of chronic illnesses among its citizens. A shift towards telehealth and the benefits of improved and more accessible healthcare had already started when COVID-19 arrived.

For example, the 2019 HIMSS-led Thailand National Digital Healthcare Workforce Development Initiative is now more than half-way through a three-year plan to address the demand of patients for digital healthcare services by improving the digital competency of the national healthcare workforce through IT certification.

Siriraj Hospital, Thailand's largest tertiary and quaternary care institution, also epitomises the way in which the country's digital transformation efforts have helped it to meet the demands of the pandemic.

Siriraj Connect, introduced in 2019, is a personalised app which gives patients control of the many touchpoints on their care journey, from medical appointment management to monitoring blood collection and pharmacy queues, and making online payments. Crucially during the pandemic, the app has reduced the number and length of vulnerable patient visits at the hospital. Other features include remote patient monitoring and post-discharge video consultations about medication.



Government promotion and funding of connected health

Survey question:
To what extent are consumer-enabled and connected health technologies promoted and funded in your country by governmental health organisations?

Southeast Asia

With a mean rating of 6.3 (see Figure B), Southeast Asia respondents are the most positive about the extent to which consumer-enabled and connected health technologies are promoted by the governments in their countries.

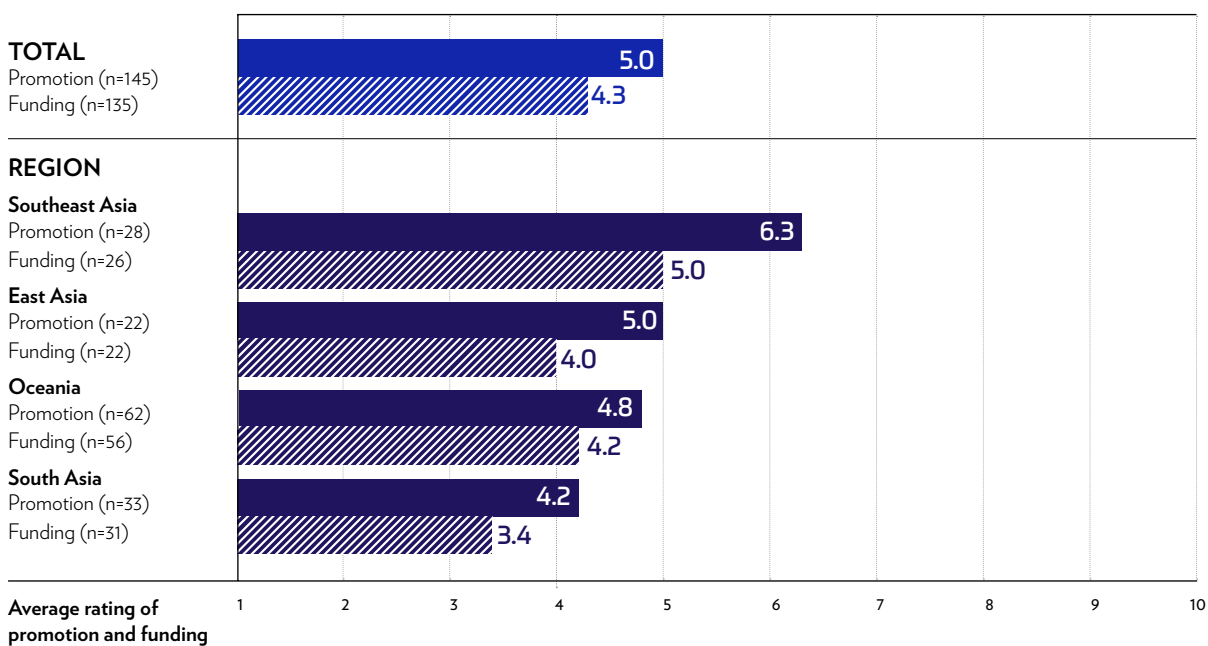
One of the reasons for this is probably the relative digital maturity of many Southeast Asian countries, which is typically accompanied by a deeper level of promotion and investment having already delivered a foundation of more advanced infrastructure and innovative solutions.

As we will see later, however, funding and costs remain a significant challenge across the entire APAC region. Even in Southeast Asia, sentiment around government funding is notably low (5.0).

For the most part, there is a direct correlation between higher levels of positivity and those countries whose governments already had blueprints and guidelines in place that enabled them to use digital transformation to meet the challenges of COVID-19 quickly and effectively. Where transformation was more reactive, our respondents have tended to give their governments a considerably lower score.

Malaysia is one of the countries who had guidelines in place pre-COVID-19. The country has been in the vanguard of digital transformation since it created a telemedicine blueprint in 1997, with the goal of improving healthcare and outcomes using emerging technologies to transform delivery.

Figure B
 GOVERNMENT FUNDING & PROMOTION BY REGION



Promotion scale from 1 – “Not promoted” to 10 – “Pro-actively promoted”
 Funding scale from 1 – “Not funded at all” to 10 – “Strong financial support”

Almost a quarter-century later, the ongoing success of this strategy continued with the country's early digital response to the COVID-19 pandemic, the first of its kind in the region: in February 2020, the health ministry joined video consultation start-up DoctorOnCall to provide a virtual platform providing advice and addressing public concerns about the new virus.



In the government's latest blueprint, Malaysia is looking into the Digital health Economy. Hence, we see many private players taking an active role in this ecosystem.

Under the Malaysian Digital Economy, organisations like the Malaysian Global Innovation & Creativity Centre and Malaysian Technology Development Corporation are looking into the healthtech space today, making Malaysia a springboard for digital health initiatives.



Dr Dhesi

Chief Medical Innovation Officer,
Ainqa Group
Malaysia

In Singapore, there is a similar pattern of government-driven innovation and the application of technology to public services, evidenced by the foundation of the Smart Nation and Digital Government Group (2017) and the Digital Government Blueprint (2018) – both supporting the acceleration of digital transformation.

Here too, the promotion of consumer-enabled and connected health was well established before the pandemic. The MOH and private sector have been united in driving the acceptance and adoption of telemedicine since 2011. The success of a regulatory sandbox for telemedicine and mobile medicine delivery models ahead of the 2022 Healthcare Services Act also enabled the creation of a voluntary list of public and private telemedicine providers, all of whom have agreed a level of compliance in advance of licensing legislation.



The development and adoption of national healthcare systems in Singapore have been spearheaded at the national level, with the intention to promote interconnectivity throughout the entire healthcare ecosystem. Much effort has been invested by the government to explain the use of these systems to facilitate the delivery of patient care, as well as the privacy and confidentiality controls which have been put in place to protect patient data. Other patient facing health tech applications like HealthHub, or health promotion tech initiatives such as Healthy365 and LumiHealth have also tapped upon the health ecosystem backbone and have been greatly promoted, with monetary and rewards offered to incentivise the public to adopt healthy living habits through the use of such technologies.



Prof Low

Special Advisor, CMIO Office, MOH
Singapore

Not all countries in Southeast Asia are ahead in connected health, however. In some countries, such as the Philippines and Indonesia, the pandemic has supercharged an acceleration in connected health that had hitherto been slow and hampered by uncertain government regulation.

When COVID-19 hit the Philippines, the Department of Health established a telemedicine sandbox and, with the National Privacy Commission, issued two policies enabling telemedicine providers to offer free medical consultations for Metro Manila patients during the crisis. While the sandbox did afford an opportunity to incorporate the experiences of implementation in the strengthening of regulation, more work still needs to be done on this front.

East Asia

Unlike Southeast Asia, respondents in East Asia are consistently less positive about government promotion (5.0) and funding (4.0). Regulatory issues and low technology adoption are just two of the issues which might be responsible for limiting optimism.

In South Korea, for example, remote patient care is still not permitted although regulations were temporarily relaxed during the pandemic, when the Ministry of Health and Welfare allowed doctors to provide telephone consultations to avoid infection risks.

The low positivity levels of Japanese respondents is perhaps more surprising, given their country's status as the world's third-largest medical device market and its advanced healthcare system. Here, the medical industry remains conservative – remote treatment was largely prohibited until 2015 – and the development of connected health technologies correspondingly slow.

In addition, low-cost, high-quality care provision under Japan's universal health insurance system has kept the lid on any sense of urgency associated with monitoring public health and preventing disease. The pandemic triggered possible signs of a sea-change in attitudes when the government temporarily allowed telehealth consultations for new patients to stem the spread of infection. It is now considering making the measure permanent.



Japan's public healthcare system is fully matured. Due to the system, the cost of being sick (cost for cure) is so cheap in this country; people can easily access healthcare services through clinics and hospitals which are mostly private bodies, and get proper care at low costs due to a fully-supporting public healthcare insurance system. Under this condition, nobody will care and pay to keep themselves healthy, naturally. This system is truly important to keep the Japanese economy running well by making people work 24/7 without fear for their health conditions.

Service providers expect connected health services to be included into the health insurance system. The Ministry of International Trade and Industry tried to motivate private companies to promote healthcare under the name of “KENKOU-KEIEI (healthy company movement)”, but it seems that it is not fully working well. I think the government should include a part of connected health services, such as continuous care for chronic diseases or long-lasting rehabilitation into the health insurance system and let healthcare organisations provide additional connected health services as consumer-paid services.

As most Japanese healthcare organisations especially clinics are private bodies, they will promote them for their own profit. At the moment, 'mixed-care' such as this is strictly prohibited by the health insurance system; I believe the regulations should be amended to boost the economy.



Prof Kuroda

CIO/Director, Kyoto University Hospital
Japan

The lack of regulatory frameworks for the use of new technology in healthcare also continues to depress sentiment around connected health in Taiwan and Hong Kong, where healthcare service providers themselves also appear less open to innovation in patient care.

Oceania

Across Oceania, sentiment is similarly below average in terms of government promotion (4.8) and funding (4.2). As we will see later, [funding and costs](#) is frequently cited by respondents in relation to the challenges they face.

Despite being viewed as a leader in digital health in many aspects, there was a notable lack of activity in telehealth in Australia before COVID-19. Funding models offered little incentive for doctors and practitioners to use telehealth applications and as recently as 2019, the federal budget was criticised for missing healthcare innovation opportunities – particularly those enabled by digital transformation. Progressive healthcare actors called for broader reimbursements for telehealth and digital health, including video consultations.

The pandemic prompted modest signs of change, with the government providing short-term funding for telehealth services to limit virus transmission. The original intention was that this would end in June 2021, although the policy was eventually extended until the end of the year. But the prospects for concrete long-term telehealth planning remain unclear.

The picture in New Zealand is slightly more positive, although funding models still do not incentivise or reward telehealth: implementation actually incurs various peripheral costs, including hardware and licensing. However, the MOH is funding various digital enablement work streams to increase the use telehealth and teleworking, and promote digital inclusion.

This initiative is overseen by the Digital Enablement Oversight Group, which has already published a gap analysis of its Digital Enablement programme to discover why the pace of digital transformation achieved during the pandemic has not been sustained and how funding could be better targeted. The analysis suggests that primary, community and rural health providers have struggled to continue the momentum because of “the difficulty in sustaining any significant change in an inherently unsustainable business model”.

South Asia

Government promotion (4.2) and funding (3.4) received the lowest ratings by some distance among South Asian countries. [With more than 70% of respondents in the region coming from India](#), this is the main focus of our analysis for the region throughout the report.

Pre-COVID-19, the adoption of telemedicine in India was all but stifled by opaque legislation and regional judicial orders that impeded progress. Public confidence in telehealth was severely damaged when a court case in Maharashtra, one of the country’s largest states, upheld criminal negligence charges over a telephone consultation that preceded a patient’s death.

Without clear policy or legislation, India’s lack of digital health infrastructure was brought abruptly into focus by the pandemic. The guidelines implemented in March 2020 were essentially a kneejerk response to the virus and leave a lack of clarity in two essential areas of digital

transformation: privacy, patient data use, security and storage; and limited internet access and inadequate telecom infrastructure.

Both require higher levels of government promotion and funding if telemedicine is to become viable and equitable across the country. The inclusion of telemedicine on medical education curricula as well as training for doctors and practitioners would also help to change attitudes to telehealth from within the sector itself.



The government of India has taken proactive steps for promoting innovations in healthcare. The National Healthcare Innovations Portal is a laudable initiative to promote and disseminate innovations in healthcare including technology. The other initiative is ‘Start-up India’. Start-ups in healthcare are recognised by a friendly process and get a host of benefits including preferential treatment for government tenders for procurement besides a host of benefits on tax exemptions and highly subsidised registration rates for their intellectual property. Also, the National Health Authority is open to innovation from the private sector. So, the government has been taking proactive steps to encourage private sector participation.

What more can be done? As a policy, the government can set goals for connected health technologies in primary care and secondary care and let the private service providers work jointly with the local health authorities (health being a state subject) to develop and integrate solutions. [Other potential solutions include] setting up a Federated Health Information Exchange, mandating the use of Digital Health Records, moving primary care interventions in digital mode and setting a target for the next three years to move at least 25 per cent of the primary care consults to hybrid mode, and mandating insurance companies to reimburse OPD expenses for digital consultations.



Prof Rajendra
Founder, Health Parliament
India

Current state of consumer-enabled and connected health

Survey question: Does your organisation support and enable the use of consumer-enabled and connected health technologies?

The bigger picture is very positive when it comes to supporting and enabling the use of consumer-enabled and connected health technologies across the entire APAC region.

As the responses to previous questions have anticipated, Southeast Asia is leading the digital transformation charge, with 72% of respondents already supporting the use of these technologies and a further 20% planning to do so in the foreseeable future (see Figure C).

However, even in less digitally mature regions, where the sentiment around government support and funding was comparatively downbeat, the trend is generally upwards.

It is possible that East Asia will eventually overtake Oceania, where a relatively high percentage (13%) of respondents said there are no plans for support and enablement.



Integrating consumer technology into back office services is very challenging. Stand alone solutions may offer consumers some benefits, but the integration into a businesses' processes and existing systems is very time consuming and costly.



Gareth Mahon
CEO, The CareSide
Australia

Figure C

CURRENT SUPPORT OF CONSUMER-ENABLED AND CONNECTED HEALTH BY REGION



This trajectory was also suggested by the slight shift in some government and health organisation attitudes to connected health identified [in the previous section](#). In Japan, for example, the easing of remote care restrictions during the first wave of the pandemic meant that doctors were allowed to conduct first-time visits and treat more illnesses remotely.



In 2022, we will upgrade our hospital information system (HIS), patient-bedside service terminal, and patient management system for outpatient ward. Through these upgrades, we will increase connectivity between cloud services and our HIS for better patient engagement.

COVID-19 changed the game. As visiting clinics became unsafe, people started to avoid them. Due to that, clinics started accepting telehealth or a connected health approach which they refused for decades due to fear for losing their market controlled by medical doctors' association (Japan Medical Association). Since connected care services have become available, the general public may request to keep them because it increases accessibility of healthcare services. COVID-19 pushed Japanese healthcare services over the 'Rubicon'; it may go further without any specific push from the government. What the government and related stakeholders need to do to keep it going is not block the change under the pressure of old stakeholders, and regulate new service providers so that they do not go beyond the 'border' where connected health may cause some dangers for patients. Because, in Japanese culture, one scandal is enough to halt the whole nation.

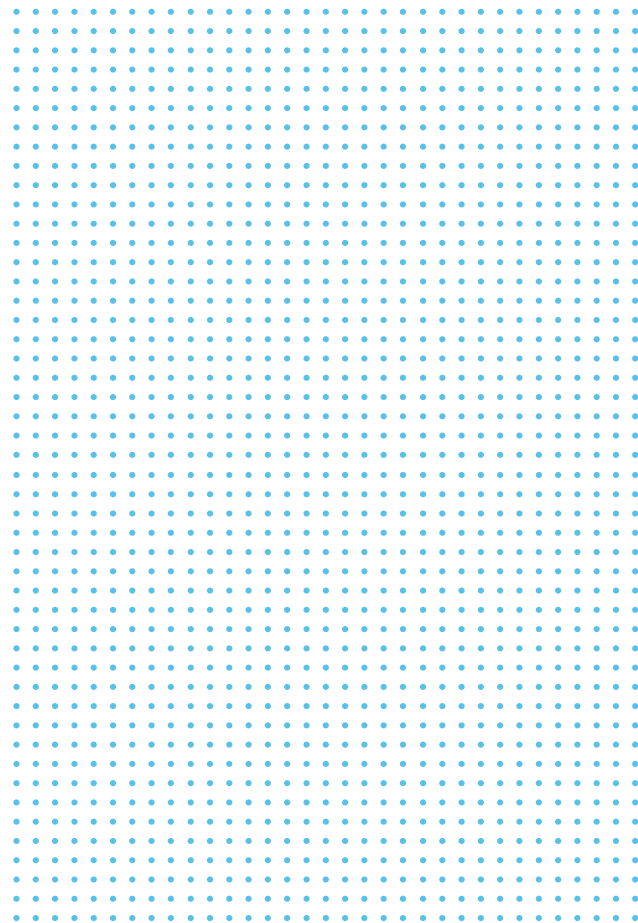


Prof Kuroda

CIO/Director, Kyoto University Hospital
Japan

Despite strong safety and privacy-based opposition from lobby groups including the Japan Medical Association, the conversation around a more permanent role for telehealth has been given new impetus by COVID-19.

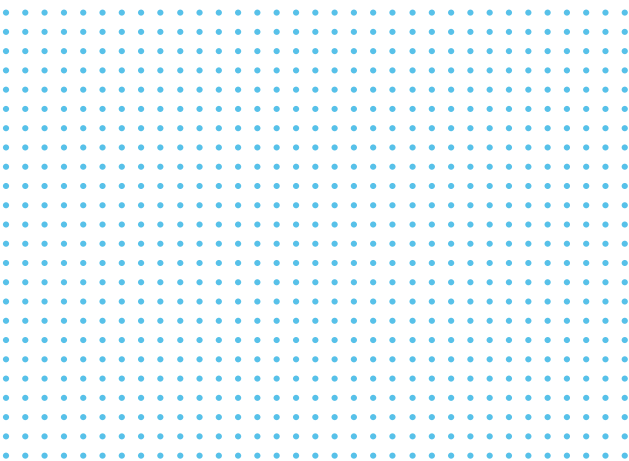
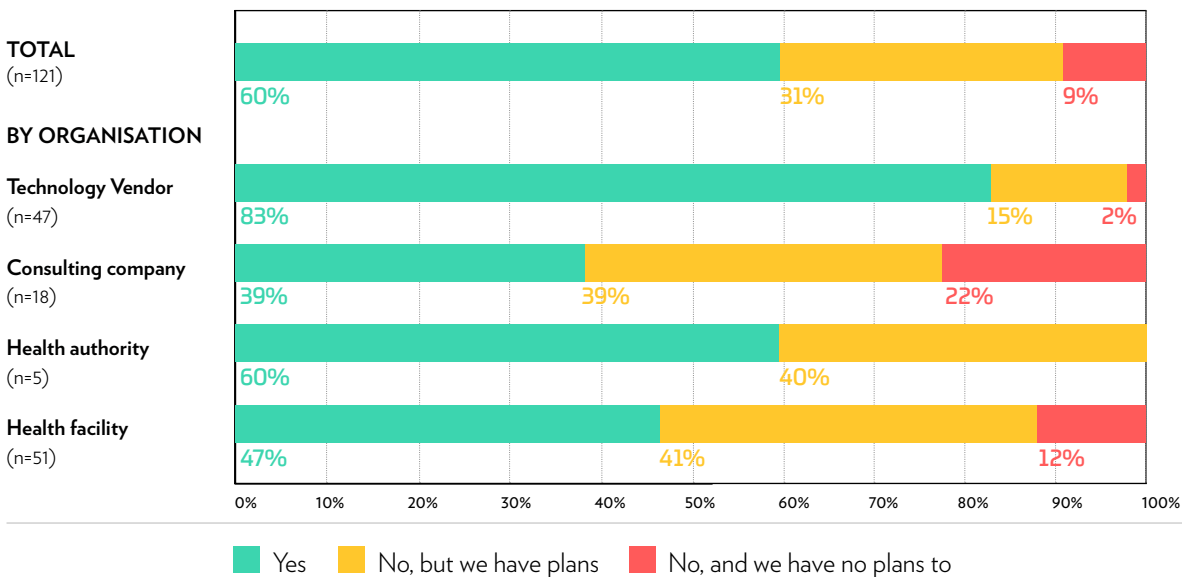
The experience of previously sceptical doctors and patients during the pandemic will almost certainly help to influence a more positive perspective that will become increasingly necessary; in common with most of the world, Japan must find new ways to address the now familiar twin challenges of a soaring demand for healthcare from an ageing population, and a shortage of doctors – particularly in rural areas.



At first glance, South Asia springs a surprise when it comes to the support and enablement of connected health. Despite returning the lowest rating for readiness, government support and funding, a high number of respondents (69%) from the region say they already have connected health technologies in place.

This anomaly could be explained by the more positive sentiment among vendors (see Figure D) who have the technologies to offer but are waiting for the market to fully emerge via improved digital infrastructure and digital literacy – particularly within health facilities. As we will see later, these are among the **region’s most significant challenges**, and healthcare organisations will struggle to adopt telehealth on a meaningful scale until they are addressed and resolved.

Figure D
CURRENT SUPPORT OF CONSUMER-ENABLED AND CONNECTED HEALTH BY ORGANISATION





We at Aster went live with a cloud-based patient engagement platform, OneAster, to bring together all the digital services offered in India across our hospitals into a single window (platform). A single portal and a single mobile app for all offerings ensure that the patient has a seamless experience as they move between the OneAster platform and the walk-in consults at the hospitals and clinics. We further included home care and lab services to this platform and also started virtual consults during the Pandemic.

We are on a large digital transformation journey and we hope to have over 20% of our revenue on the digital platform across the India and Middle East regions we operate in. We have carved out a 'Digital Vertical' and have a CEO heading this to ensure we drive this as a business in itself.

It is the patient and the consumer who is driving this need to move to a digital platform as more and more patients prefer to use their mobile phones and tablets for their daily or frequent healthcare needs. We will be going live with the Aster Health platform (previously OneAster) in the UAE region by September and then the India region by the end of this year. While we bring together the various digital services online, we will also ensure that patient engagement is seamless between "brick" and "online" while ensuring they have the best patient experience across both the channels.

The bouquet of offerings would include booking appointments, virtual consults, ability to link family members, ordering medicines once the consult is completed, viewing health records including lab and radiology reports, and so on.



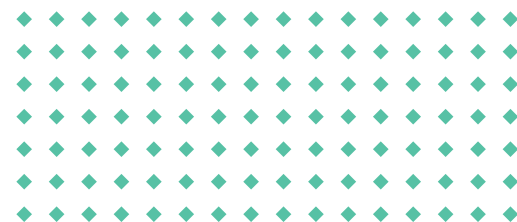
Veneeth Purushotaman
Group CIO,
Aster DM Healthcare
India



Clinicians are quick to adopt newer tools and technologies as long as there is clinical evidence to prove better clinical outcomes and enhanced ROI. One of the biggest challenges is the lack of clinical evidence. Also, the technology development is mostly led by technologists and not by clinicians, so when it comes to acceptance (adoption), the technologies don't pass the test. Start-ups are doing good stuff in this area but they don't have the wherewithal to address the issue of awareness due to competing priorities. There needs to be more collaboration between the industry and the academia to move this forward. Also, in my view, more than the government, the insurance sector has to fast track the adoption of digital health for reimbursement. Post-COVID, the awareness of digital health has increased but we need to keep the momentum. For my book *Digital Health: Truly Transformational* I did a study among 127 nations, and one of the findings is, that almost 1/5th of clinicians will go back to the old ways of face-to-face practice. We need to get all stakeholders together to continue the momentum created by COVID-19 to ensure that clinical practices remain digital even post-COVID.



Prof Rajendra
Founder, Health Parliament
India



Consumer-enabled and connected health technologies and processes

Survey question:

HEALTHCARE FACILITIES:
What measures has your organisation in place to support consumer-enabled and connected health activities?

TECHNOLOGY VENDORS:
What kind of products has your organisation in place to support consumer-enabled and connected health activities?

CONSULTING COMPANIES:
What kind of consulting services has your organisation in place to support consumer-enabled and connected health activities?

The explosion in remote patient/doctor consultations in order to keep individuals safe and minimise the risk of infection was one of the most immediate consequences of the COVID-19 pandemic, as globally and across the APAC region countries galvanised their responses to the crisis.

In many cases the speed at which virtual care access was implemented cut this aspect of digital transformation to weeks rather than more typically long-term timescales. So it is not surprising that 41% of organisations overall (see Figure E) now say they have platforms and tools in place.

If we break the responses down by type of organisation, a similar percentage of healthcare organisations also report that they have implemented virtual measures so that patients at least have the option to access care in this way. The number is higher (48%) for technology vendors but as we observed in the previous section, this is possibly because they already have tools and applications ready to go as adoption rates and the market grow.

There is also the regional variation that we have come to expect when it comes to existing consumer-enabled and connected health activities, with South Asia (58%), Southeast Asia (45%) and Oceania (39%) leading the way by some distance, and East Asia languishing at 5% (see Figure F).

The percentage of organisations that have other measures in place tends to fall away, however. For example, enabling the self-management of patients' wellness, and the adoption of person-enabled health apps, devices and workflows are both happening for 36% of respondents; again, technology vendors (61%) are by far the dominant early adopters of these kinds of products, waiting for the market to catch up.

Across the region as a whole, the results reflect some of the issues around patient and clinician readiness to embrace the wider benefits of telehealth that we have identified in previous sections. Measures to support and build digital literacy (25%), the ability to submit self-reported outcomes data (24%) and crucially, the adoption of digital tools (20%) still appear to be lagging behind.

While this does not sound very positive for the future of connected health throughout APAC countries, it is important to consider that it is relatively early in the day. Some of them are only embarking on their digital transformation journey on the back of their pandemic experience. If their governments develop more supportive strategies around digital frameworks and data privacy legislation, we can expect to see adoption accelerate in the future.

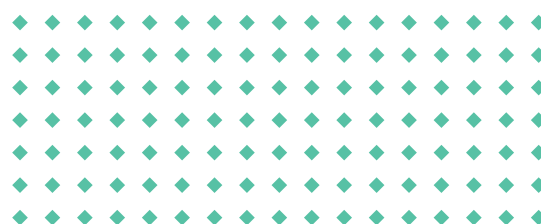


Figure E
MEASURES TO SUPPORT CONNECTED HEALTH ACTIVITIES BY ORGANISATION

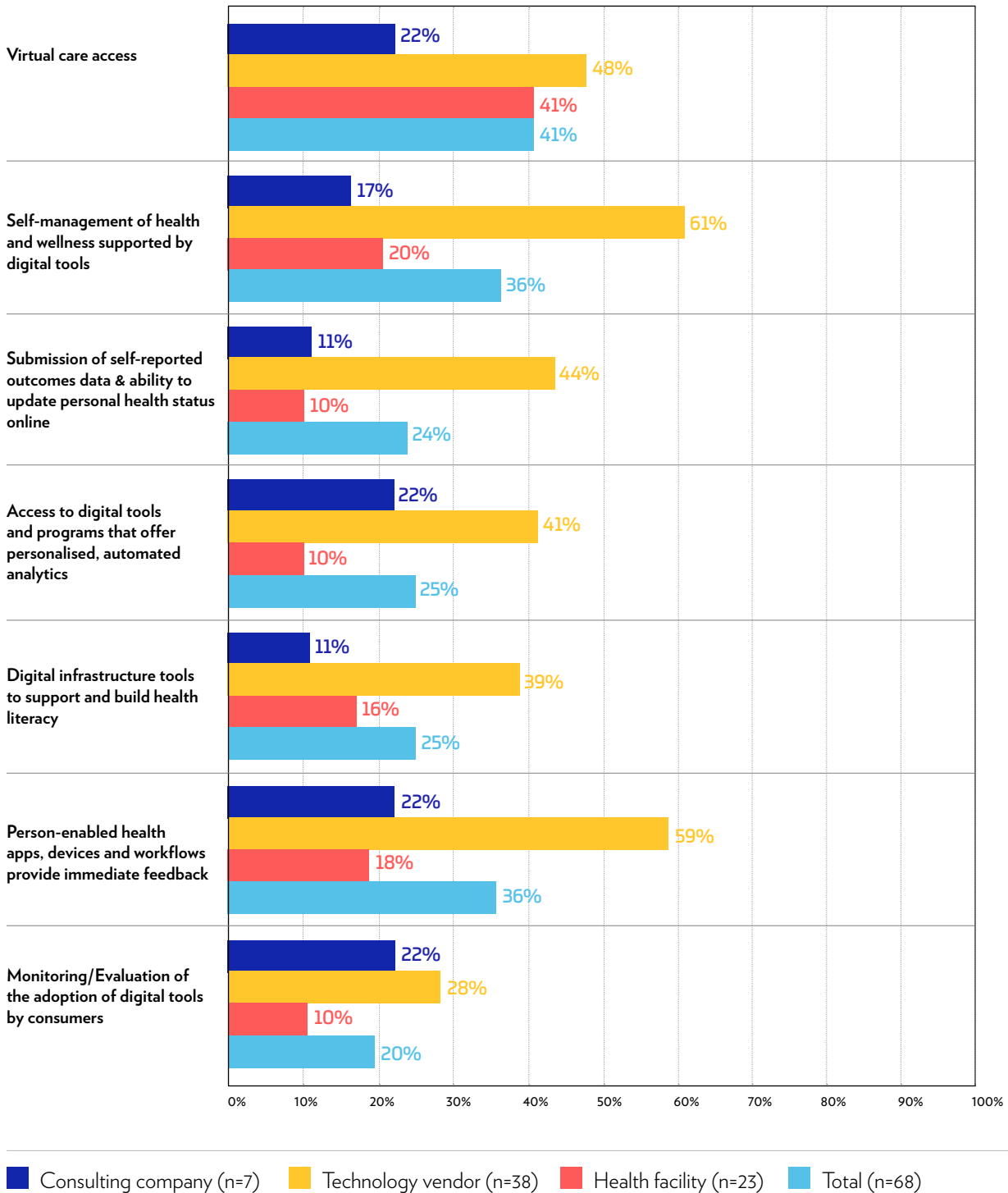
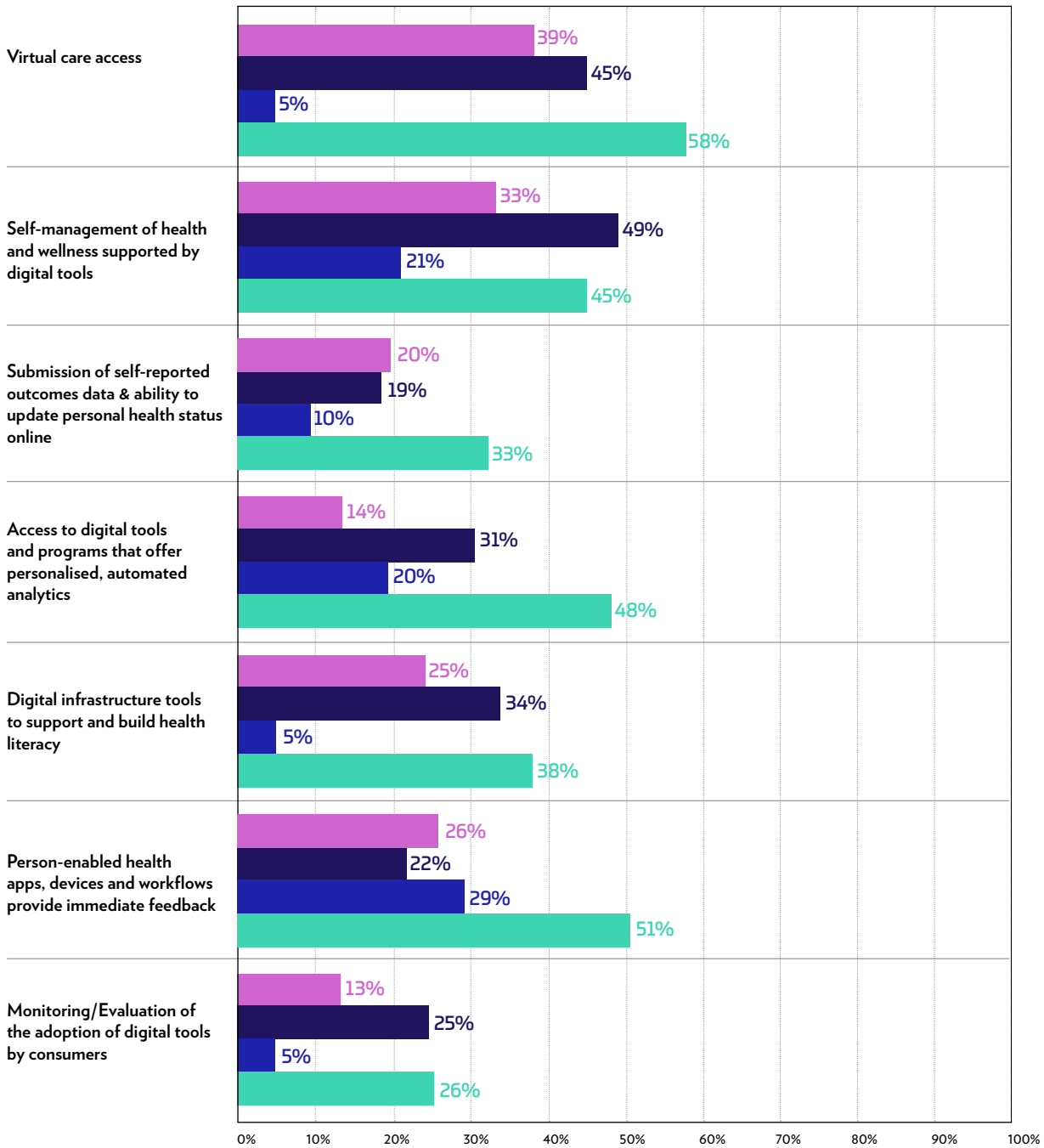


Figure F
MEASURES TO SUPPORT CONNECTED HEALTH ACTIVITIES BY REGION



■ Oceania (n=46)
 ■ Southeast Asia (n=26)
 ■ East Asia (n=18)
 ■ South Asia (n=31)

Training of clinical staff

Survey question: Are clinical staff (clinicians, nurses, allied health professionals) in your organisation trained in the use of consumer-enabled health apps, devices and workflows?

The development of digital skills for clinical staff is widely recognised as central to realising the benefits of telehealth – and to any long-term digital transformation strategy.

As doctors and care providers play a greater role in encouraging the adoption of consumer-enabled apps and devices, and become more willing to use such tools in their own workflows, the value of the data acquired will help to drive innovation and improvement throughout the patient journey.

While the response to this question is generally positive (see Figure G), as in previous sections we can see that there is a higher mean rating (6.6) among Southeast Asian healthcare facilities than their counterparts in other regions. This probably further reflects the region’s generally more advanced digital maturity.

In any case, there is still much work for governments, health authorities and organisations throughout the region to do in ensuring that professionals have the appropriate skills to take full advantage of and contribute to the effective digitalisation of health services.

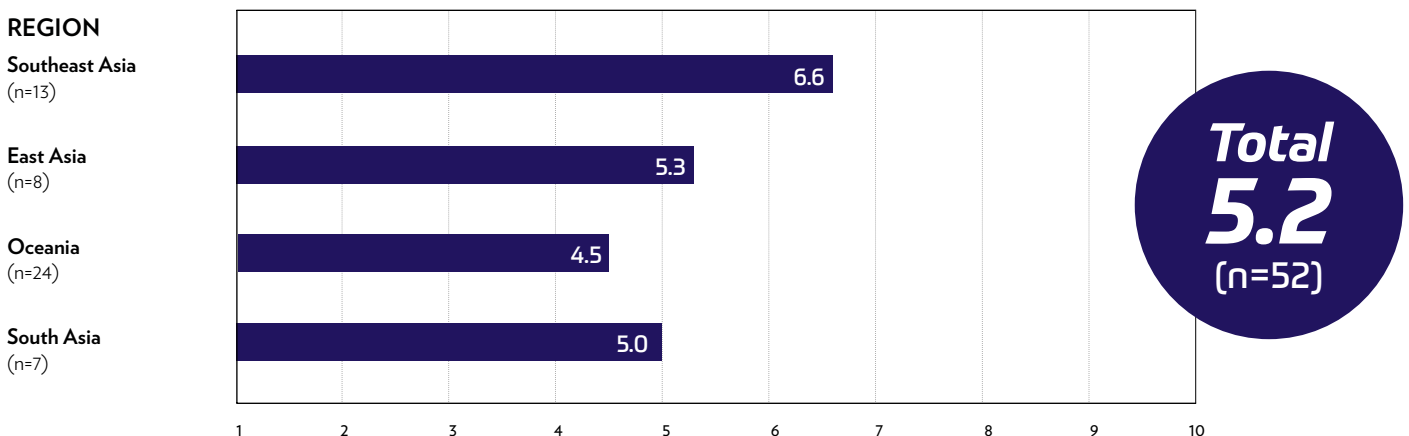
The World Health Organisation’s recent report, [Global strategy on digital health 2020-2025](#), makes a number of observations that underline why APAC countries, like those in every other region, should be investing in skills development.

“Digital transformation technologies have proven potential to enhance health outcomes by among other things creating more evidence-based knowledge, skills and competence for professionals to support healthcare,” said the report.

“Governance for digital health aims to strengthen the capabilities and skills needed for countries to promote, innovate and scope up digital health techniques.”

It will be interesting to monitor how much progress is made on the skills front in future reports for the region.

Figure G
TRAINING OF CLINICAL STAFF BY REGION
(Question only posed to health facilities)



Challenges for healthcare organisations

Survey question: What are the biggest challenges for healthcare organisations in your country regarding consumer-enabled and connected health technologies?

In many respects, the responses to this question are a distillation of the trends that have been established by previous sections of our report.

Reservations about governmental approaches to connected health across the entire region, a lack of blueprints and slow regulatory responses to the fundamental need for data sharing probably contribute to the leading challenge as identified by 48% of respondents: funding and costs (Figure H).

Without tangible models, healthcare organisations have limited incentives to invest in the introduction of connected health. It is likely that once this situation is addressed by stakeholders at the top of the chain, it will

start to drive a positive impact in other key connected health challenges that emerge from the results: digital literacy of staff and consumers (33%); acceptance & awareness by staff and consumers (culture) (31%); and readiness of current digital infrastructure (31%).

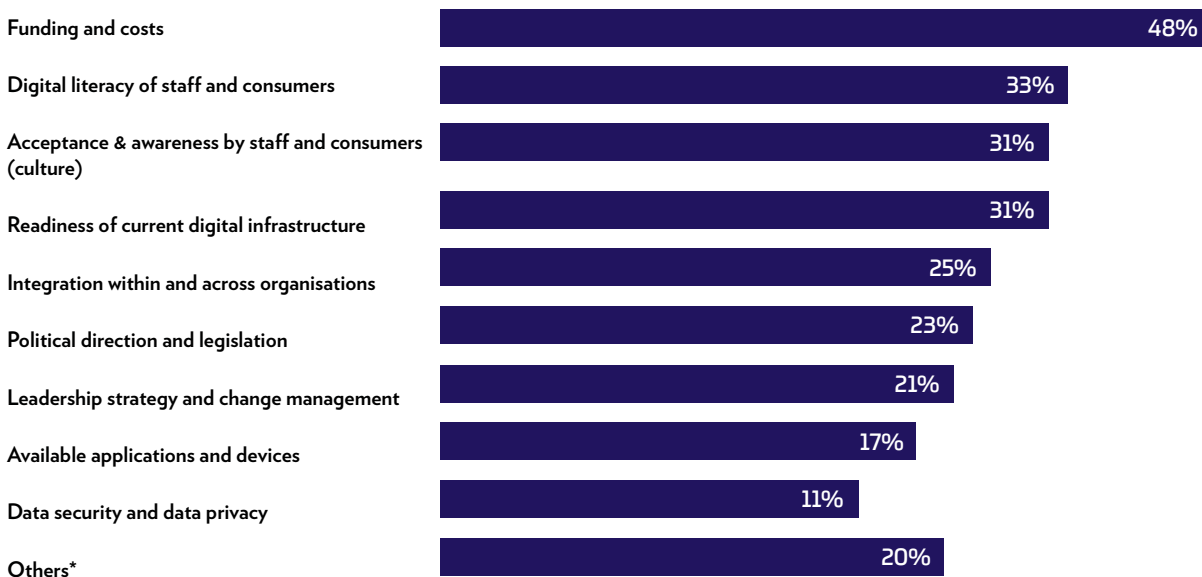
It is interesting also to note how qualitative comments offered by respondents reflect some of these cultural aspects. Two observations from consulting companies provide typical supporting insights – and identify the task that lies ahead for health organisations.

“Digital health acceptance is about people’s belief that it can help them,” says one. “When patients believe that their healthcare professionals use the technology to improve their health status, it is more likely to get attached to [by] consumers and of course as patients.”

“Changes in digital capability of the community will outstrip the understanding of the health systems,” suggests another.

Figure H
CHALLENGES OVERALL

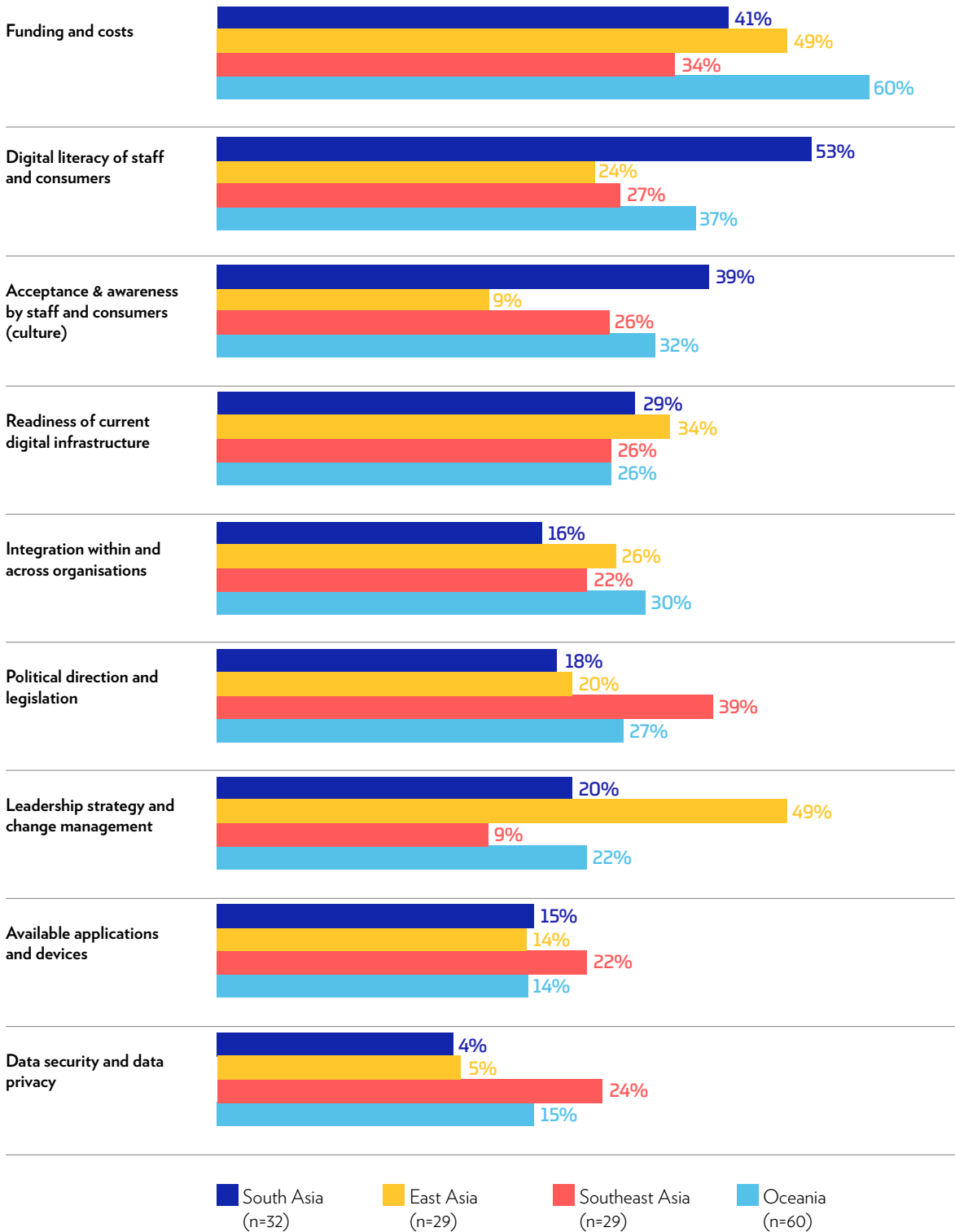
Total (n=142)



*Some responses here included “lack of ecosystem build-up from big payers”, “outdated mindset of legacy vendors”, “dependability and sustainability”, etc.

With large countries sometimes lacking digital infrastructure, particularly in rural areas, it is not surprising to see it consistently appearing as a challenge in all regions (see Figure I): Oceania (26%), Southeast Asia (26%), East Asia (34%), South Asia (29%).

Figure I
CHALLENGES FOR HEALTHCARE ORGANISATIONS BY REGION



Southeast Asia

If we look at the challenges by region (see Figure 1), the sentiment becomes more nuanced. Again, this reinforces the trends identified in previous sections, although there is one notable anomaly: the top challenge for Southeast Asia is political direction and legislation (39%), which is at odds with the mostly positive sentiment we saw in the region for government promotion and funding.

This is likely explained by the situation in countries such as the Philippines and Indonesia where, as already observed, telehealth guidelines were drawn up in response to the pandemic, and are not yet sufficiently fully-fledged for growth.



In Singapore’s journey to achieve interoperability through digitisation, standardisation of codes, have been challenging. For example, some standards like ICD were easier to implement when it affected funding and reimbursement. Others like SNOMED, LOINC and Singapore Drug Dictionary took a longer time to implement. Systems needed to be upgraded to incorporate the new standards and much change management was needed. In recent years, cybersecurity concerns have shifted focus from speedy and convenient to use systems to more secure and potentially slower systems.



Prof Low
Special Advisor, CMIO Office, MOH
Singapore



There should be a regulatory reform when it comes to digital health and the Malaysian Digital Economy is taking an active role in creating an ecosystem between the public and private sector in order to facilitate this initiative. Once regulatory issues are addressed, I believe funding will not be a headwind anymore.



Dr Dhesi
Chief Medical Innovation Officer,
Ainqa Group
Malaysia

East Asia

Leadership strategy and change management tied with funding and costs at the top of East Asia’s league table of challenges, both with 49%.

Despite its high-tech image, Japan remains a surprisingly analogue society, struggling to lose its dependence on signatures or hanko stamps on paper for authorisation or to embrace digital payment. The use of hard cash is still widespread.

Until May 2020, health centres were still using fax machines to send handwritten COVID-19 case reports to the health ministry. This reporting soon moved online but the situation exemplified change management issues around the acceptance of digitalisation. This might now begin to change with the government’s new stance, as we suggested earlier.



Our basic strategy of healthcare service is not suitable for connected health anymore. In order to change the game, we need leadership to change the healthcare system and convince all stakeholders.



Prof Kuroda
CIO/Director, Kyoto University Hospital
Japan

Japan also provides some clues as to why readiness of current infrastructure emerged as East Asia’s third biggest challenge. The country is rich in fibre-optic cables and enjoys generally high transmission speeds. But wireless coverage – the future of connectivity – is uneven, inefficient and expensive.

Japan has higher mobile phone bills than many other countries. And while online shopping is easy, when it comes to dealing with the government, Japanese bureaucracy remains stubbornly analogue. If the country wants to keep its advanced status in the digital age, it will need to address both these essential aspects of a truly connected society – particularly when it comes to embracing telehealth.

Oceania

Oceania respondents (60%), more so than respondents from other regions, rated funding and costs as the greatest challenge for consumer-enabled and connected health. By some distance, this is followed by digital literacy of staff and consumers (37%), and acceptance of staff and consumers (32%).

Again, the qualitative responses hint at the cultural shifts – both societal and within healthcare organisations – that will need to take place in order to address this: “clinician/staff training and trust”, “lack of understanding”, “consumer technology literacy”, “training consumers to use technology”, and “clinical mindset that in-person care is best practice” were among those cited.

The challenge might be largely generational, with older healthcare employees and those consumers who could benefit the most from connected health – the elderly and those with chronic conditions – being the least trained and IT-literate. Government-led, focused education and awareness campaigns would be one potential solution.



There is no funding allocation for health providers to improve their systems. So funding is a challenge. There are also no training allowances for staff. Margins are wafer thin, so companies are not investing in training. Digital infrastructure is old and does not support integration. This means manual processes dominate, which drives up back office costs and makes organisations inefficient.



Gareth Mahon
CEO, The CareSide
Australia

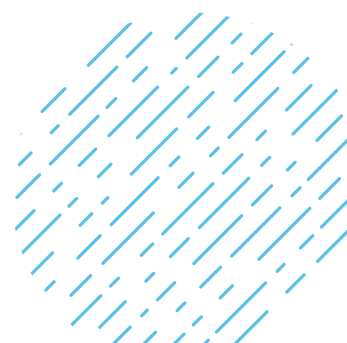
South Asia

The digital literacy of staff and consumers was actually identified as the biggest challenge by South Asia (53%), ahead of funding and costs (41%). With acceptance and awareness of staff and consumers in third place (39%), the societal adoption of connected health technologies and applications is also a dominant factor in the region – something that was harshly exposed by COVID-19.

In India, digital literacy and accessibility of digital records is a particular concern in rural regions. The country has around 749 million internet subscribers in a population of about 1.3 billion people, according to the government’s telecoms regulator. However, a 2019 survey by [Nielson](#) suggested that only 36 percent of the population had access. Despite the availability of low-cost mobile plans and increasing connectivity, large parts of the country are still offline.

With the pandemic still stretching the healthcare workforce to its limit, rapid digital skills training is not going to happen quickly. But as with Oceania, a government-led, sustained awareness campaign for consumers and a proactive education programme for healthcare professionals may help to meet the challenge.

As with other countries, India needs to develop its digital infrastructure to enable connected health technologies in an increasingly wireless, virtual world.





India is a country spread across 3.2 million sq km with a population of 1.4 bn with a ~72% in rural areas and 27% in urban cities. Therefore any comparisons we do with the rest of the world may not be a practical one as the challenges we face in India are different from the rest of the world. The ratio of public and government hospitals to private hospitals are also skewed with 67% of the healthcare infrastructure being privately managed.

The Indian government has in the last Union Budget (2021) announced an increase in health infrastructure to the tune of 2.3x or 137% YoY; the total health sector allocation for FY22 is at 30.7 billion USD (224k Crores). There is also another 8.8 billion USD over six years to strengthen the existing Nation Health Mission programme and several more investments around improving the primary, secondary and tertiary care health systems and institutions across the country.

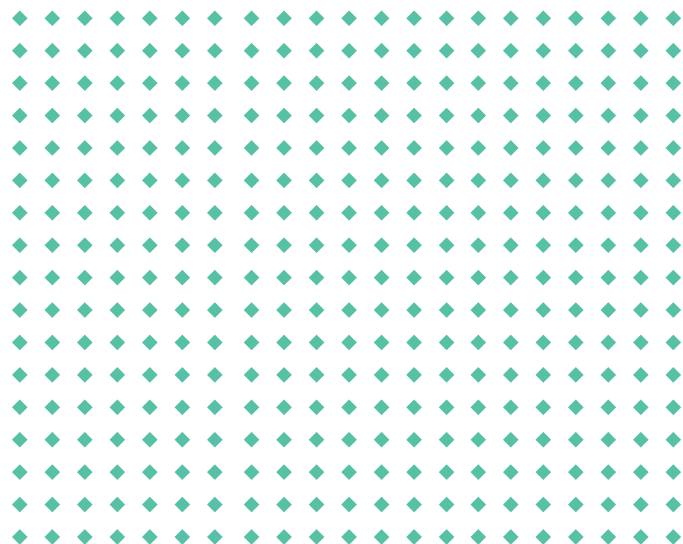
I believe the private players including the corporates will have to continue investing and supporting the government and participating in the various PPP initiatives as healthcare of citizens cannot be a government-only priority in a large country like India.

With a large Gen Z population of about 470 million and the world's second largest mobile internet population estimated to be 500 million by 2023 (as per Statista) we believe it is important for healthcare systems to be digitally ready to offer their services on a digital platform. This opportunity has given rise to over 5000 health-tech start-ups in India and two of them have grown to become unicorns.

India will be one of the largest markets and manufacturer of medical devices as the consumption increases and the pandemic has shown how India could be the supplier of COVID-19 vaccines to the world. There is definitely a challenge around skilled resources but our educational institutions are capable of delivering the goods and I therefore continue to be bullish about the growth of healthcare and technology in India despite all the challenges.



Veneeth Purushotaman
Group CIO,
Aster DM Healthcare
India



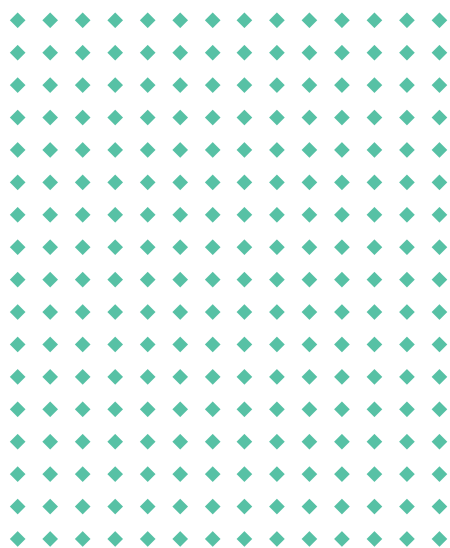
Business expectations

Survey question:
From a general perspective: How will the environment for e-health innovation and investment in your country develop over the next 12 months?

Business expectations across the entire region look very positive, with the vast majority of respondents anticipating that the digital health environment will either hold steady or improve in the coming 12 months. With the exception of East Asia, the latter category is strongest in all APAC regions.

Expectations are a little more conservative in East Asia where caution is probably being influenced, for example, by the relatively slow adoption of connected technology in Japan’s public services. Only a small percentage of respondents (6%) in both Oceania and South Asia expect the picture to actually worsen.

This landscape of broad optimism suggests that a combination of digital maturity in some countries and the rapid adoption of at least some telehealth technologies in response to COVID-19 is helping to steer the whole region into a strong period of potential growth for consumer-enabled and connected health.



AINQA is developing the International Pandemic Preparedness Center (IPPC). The emergence of infectious diseases as a global health concern has necessitated a rethinking of traditional disease prevention and control approaches. The traditional public health approach to infectious disease prevention and control has become increasingly ineffective in a world of thinning borders, expanding urbanisation and evolving climate. The COVID-19 pandemic has further highlighted the gaps that exist within the current public health approach. Public health action which is central to an effective response to COVID-19, has been plagued by issues of poor data collection practices, siloed and manual data systems and analytics that are dated and disjointed, leading to reduction in timeliness and effectiveness. These weaknesses create a domino effect that lead to the failure of targeted public health action, resulting in increasing reliance on cruder methods such as lockdowns that have multiple negative effects of their own. As such, there is growing demand to recalibrate public health as we know it, in ensuring communities and economies remain resilient to the threat of current and future pandemics.

The IPPC is a bespoke solution that targets many of the limitations of present-day disease prevention and control systems – such as delayed responses and the lack of preparedness. It does this by taking a precision public health approach leveraging heavily on big data and artificial intelligence. Utilising these technologies, IPPC, has and continues to develop a unified disease prevention and control system that integrates data and utilises it for predictive and prescriptive analytics. These can be deployed rapidly for COVID-19 and be used in easing data management and increasing the timeliness and accuracy of disease control insight.



Dr Dhesi
 Chief Medical Innovation Officer,
 Ainqa Group
 Malaysia



In Australia, the government is upgrading the myagedcare portal. The National Disability Insurance Agency is also allowing providers to integrate into its back office portal. This is a very good initiative as it will drive admin costs down for the National Disability Insurance Scheme dramatically.



Gareth Mahon
CEO, The CareSide
Australia

In South Asia, which has seemed to be more lukewarm in its connected health sentiment than any other region throughout the report, expectations of improvement in the business environment are higher (77%) than anywhere else. Perhaps the launch of India's National Digital Health Mission (NHDM) in August 2020 is having a positive impact on healthcare sector confidence.

This holistic, voluntary healthcare programme aims to reduce the gap between health ecosystem stakeholders and citizens by bringing them together and connecting them in an integrated digital health infrastructure.

The NDHM comprises five key components: Health ID, Patient Health Record, Electronic Medical Record, Digi Doctor Platform and Health Facility Registry. At a later stage, it will also include e-pharmacy and telemedicine services, regulatory guidelines for which are being framed.

This could pave the way for greater telehealth adoption in India, bringing with it proper regulation and making it part of policy deliberation. It might also address many of the challenges holding digital evolution back, which are identified throughout this report: improved accessibility to specialised medical consultation services, a shortage of healthcare professionals, and the burden on tertiary-care hospitals in remote areas.

As ever, however, it will require more investment in telemedicine, particularly from the private sector, enabled by clear policy and legislation.



Already, we have been seeing investments growing at a frenetic pace. This trend is likely to continue. Also, with COVID-19, healthcare is switching to asset-light models of care and this means, that the technology will integrate across the continuum of care. I can clearly foresee more M&A of digital health companies in this sector and also, with COVID-19 still lurking around, investors see a massive opportunity to ramp up newer care models through funding. So, digital health will be the 'investors' favourite'. We are likely to see more unicorns in health and consumer care than any other sector in the next five years.



Prof Rajendra
Founder, Health Parliament
India

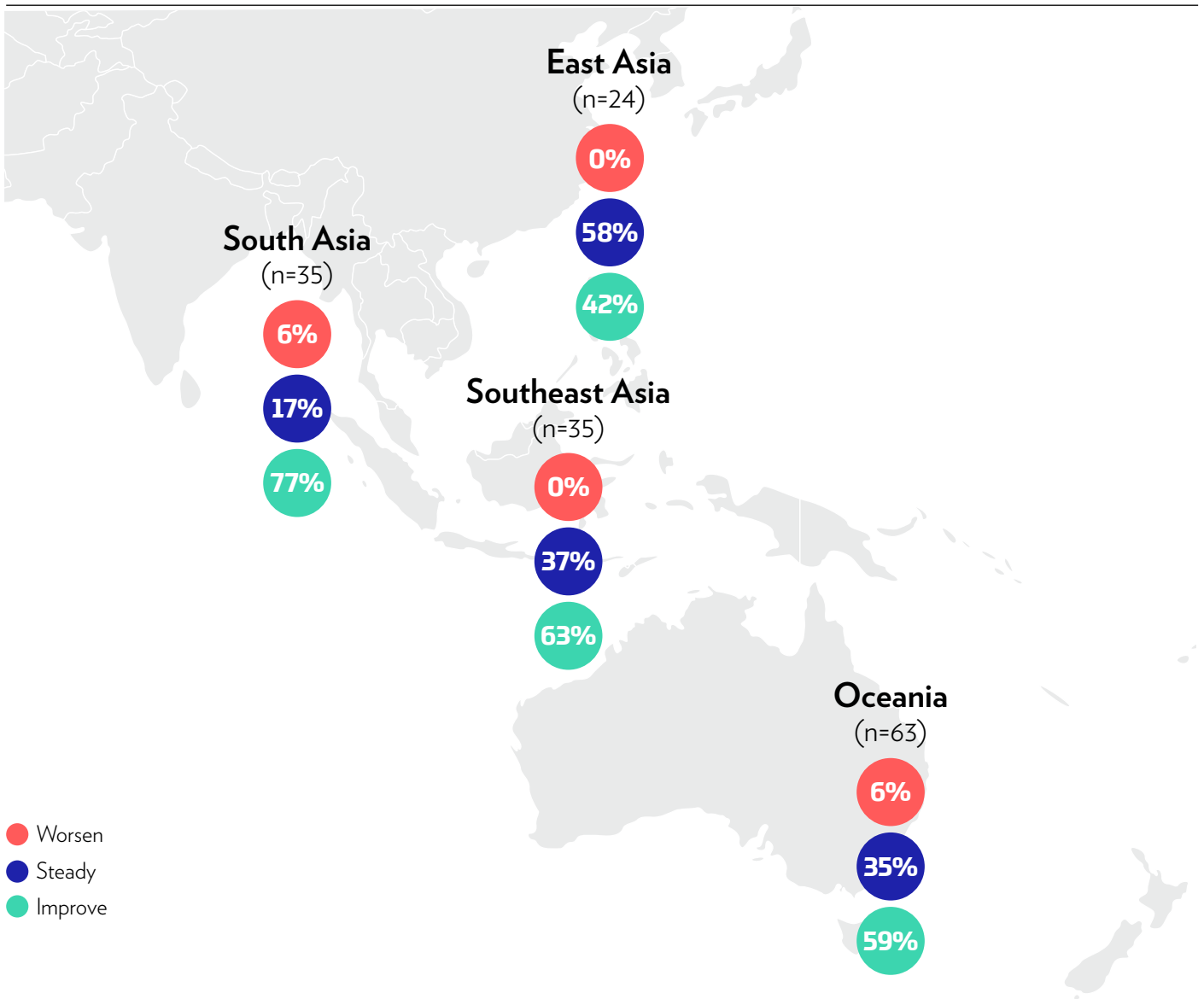


The COVID-19 crisis has demonstrated the importance of connected healthcare systems; accelerated the use of telehealth; and spurred new technology and health innovations. More investments are now focused on smarter intelligent systems and working in the new normal post-pandemic era.



Prof Low
Special Advisor, CMIO Office,
MOH Singapore

Figure J
ENVIRONMENT EVOLUTION OVER 12 MONTHS



Connecting the dots for better health outcomes: An APAC Virtual Government Roundtable



The benefits of using connected health for better health outcomes seems clear, but its adoption continues to be limited. Government stakeholders from APAC gathered on 22 July 2021 for a virtual roundtable session to discuss how to overcome hurdles related to connected health.

Fourteen participants from seven countries – Australia, Hong Kong, Indonesia, Japan, Malaysia, Philippines and Thailand – took part in the discussion. As the roundtable was held under the [Chatham House Rule](#), the identities of these participants will be kept confidential in this report.

Moderators



Rob Havasy

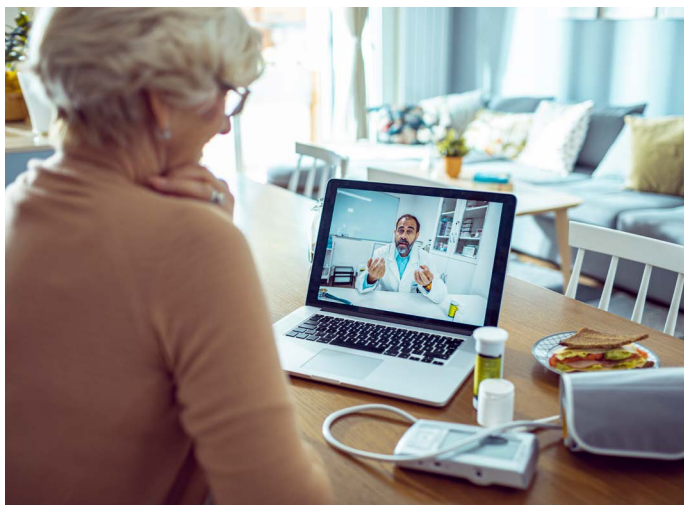
Senior Director of Connected Health, HIMSS
Managing Director, Personal Connected Health Alliance



David Gray

Director, Government Relations & Connected Health Policy, HIMSS

Connected Health in the United States



To lay the groundwork for the discussion, the moderators first shared about the state of connected health in the United States (US).

“In 2019, telehealth accounted for less than 1% of all US healthcare visits. By April 2020, it accounted for approximately 15% of all visits. But by October 2020, it was back down to 6%,” Havasy said.

He added that if we were to look at the numbers today, they would have continued to trend back downwards. “Telehealth was only enabled because of changes to rules and laws, and as soon as people could go back to previous behaviours, they did,” he said.

Havasy mentioned that to understand telehealth in the US, there is a need to first understand how the country pays for healthcare. There are four main types of payment: employer-sponsored insurance; individual health insurance (private plans); Medicare (public health insurance for people over 65); and Medicaid (public health insurance for people with lower income).

Before the COVID-19 outbreak, US laws restricted telehealth to only a few uses. For instance, Medicare only paid for telehealth services if there had been a face to face encounter the past six months, and it was only available to people living in rural areas. This also affected whether doctors would offer telemedicine as a service – since Medicare would not pay for telehealth services in most instances, they didn’t offer the service.

Gray shared that to combat COVID-19, many of the earlier restrictions were removed. Some of these relaxations include providers being able to furnish telehealth services to both new and established patients, geographic restrictions being waived, the list of eligible providers expanded to include most allied care health professionals, and removal of restrictions on the ways telehealth could be delivered. However, all these changes are temporary, and the removal of restrictions will cease to have effect by the end of the year.

“We are no closer to a comprehensive, permanent pathway toward telehealth than before COVID-19. Many of the longstanding obstacles that prevented permanent expansion still exist and are a part of the everyday dialogue around telehealth,” he shared.

He listed some of the outstanding issues that need to be addressed: concerns of fraud and abuse; overutilisation which can lead to the Medicare programme going bankrupt; lack of comprehensive research on telehealth utilisation in the Medicare population; lingering questions around payment rates for telehealth services; privacy and data security concerns; patient education and health and technology literacy; and existing health disparities not addressed by increased telehealth access.

“

“COVID-19 has provided us with a great opportunity to think how telehealth can transform our healthcare ecosystem, but we still have a long way to go,” Gray added.

Havasy then shared insights from a HIMSS survey conducted earlier in the year in the US. One trend that emerged was that the preference for telehealth varied inversely with age.

“The older someone is, the less they want to use telehealth, the less they *did* use telehealth and the less they are willing to pay,” he said.

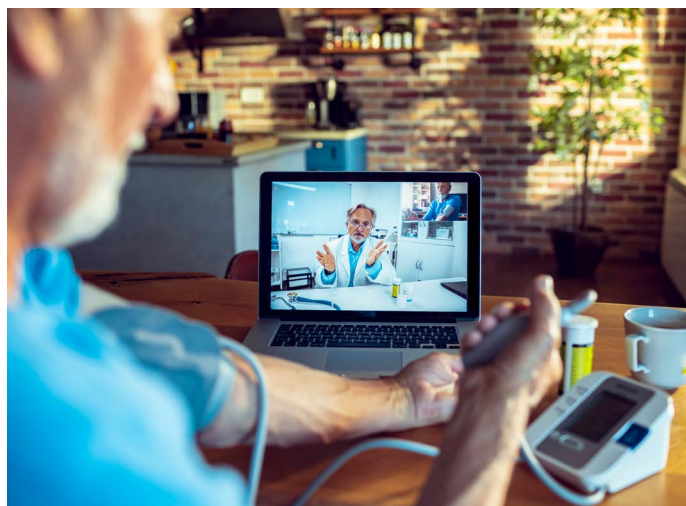
Additional findings included 47% of respondents being comfortable with sharing their health metrics via wearables or connected health devices with a provider, with the information they were most willing to share being their weight.

“But for more medically-oriented things like calories or oxygen saturation – less than 10% of people across all age groups said they were willing to share that data with a doctor after the pandemic,” he added.

Havasy also mentioned that according to the survey, behavioural health and psychiatry was the “clear winner of the telehealth game”. While other specialties have begun ramping down their telehealth activities, behavioural and psychiatric services have continued to do most of their visits via telehealth.

“In the US, people who seek behavioural and psychiatric help mostly pay out of pocket. This may be due to insurance tending to reimburse psychiatric services very poorly, or people being too embarrassed to let their insurance companies know they are having psychiatric issues. Such services are also unencumbered by Medicare rules; most of these providers are independent practices who take cash payments for services,” he explained.

Is telehealth here to stay?



A representative from Australia shared that telehealth in the country definitely gained more activity due to COVID-19, especially with regard to acceptance among the clinical community. For follow-up appointments, if people need to travel six or eight hours, telehealth is the obvious choice.



“The Australian federal government moved quite quickly at the beginning and introduced billing for telehealth – both video and telephone consults. That has remained in play, and I believe it is looking to remain in place even after the pandemic,” they shared.

A Malaysian participant agreed that telehealth is here to stay but there are still a lot of regulatory, safety, and legal aspects to be addressed. They went on to explain that the country used to have an act specific to telehealth, but it was not enforced. Regulations around virtual care are already in place for many medical professions but those have to be reviewed now in the new normal.

“We have also seen a huge increase in the use of telehealth services during COVID-19 – and high usage specifically for psychiatry services, as well as consultations for STDS, which may be due to fear or shame,” they added.

They suggested that beyond telehealth services offered by healthcare organisations, the conversation should also be on the provision of online health services by independent contractors.

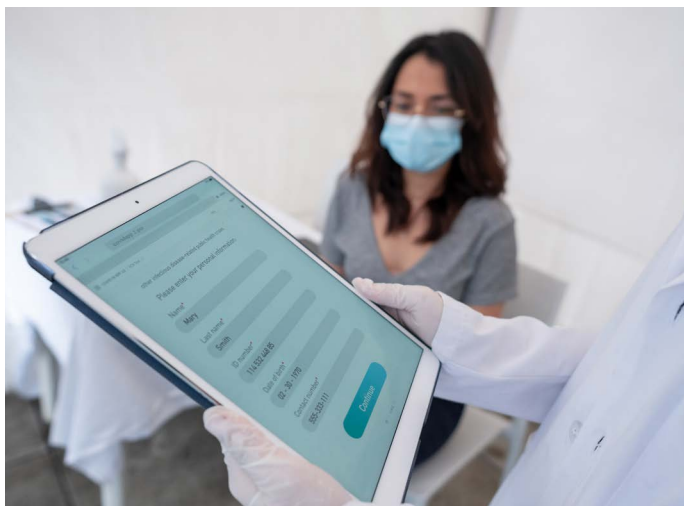
Havasy mentioned that in the US, a majority of telemedicine services are provided by hospitals and healthcare providers, though there is a growing segment of private companies attempting to provide services outside of the traditional payment system.

“We usually refer to them as direct-to-consumer telehealth companies that are forming their own physician networks; physicians are basically working a second job as a telehealth provider,” he said.

Gray added that each state in the US has its own licensure requirements and there isn’t easy reciprocity between states. “Direct-to-consumer telehealth companies, if they want to participate in the Medicare or Medicaid programmes – which they do not right now – need to get through the process of getting their doctors licensed in every single state so that they can see patients wherever they are located,” he said.

An Australian participant mentioned that some of these third-party providers have started to offer their services in the country. “My Emergency Doctor is an example. The doctors work in the public system during the day, and in the off hours they work for a private organisation. But there’s some mistrust of third-party organisations – and some of this stems from the money side of things,” they added.

Ensuring continuity of care



On the subject of continuous health data, an Australian representative mentioned that they are working to introduce a new integrated EMR in their health district, ensuring that they are bringing in primary care, NGOs and as many care providers that they can find who contribute to patient care.

Havasy mentioned that the US went through a large-scale government programme to put EHRs into every doctor’s office in the country. “Everybody therefore expects that continuous stream of data from patients will end up in EHRs. We do not have a single national health record; we have thousands of individual records in thousands of individual doctor’s offices,” he said.

“Most hospitals are saying that they don’t want that data,” he added. “It needs to go somewhere – but no one knows where. So we leave it in the hands of Apple and Google and Microsoft and some of our big tech companies.”

An Australian representative mentioned that it comes down to legislation, and whether there’s a central repository. They added that Australia has My Health

Record, which ostensibly is a record of every interaction with every health provider. “It’s not as reliable as it perhaps could be. If you look at it from a data custodian perspective, it probably does need to live close to the treating physician or facility but aggregate that to a state or national level,” they added.

Havasy shared about his experience with a hospital system that he built a system for. All of the clinicians wanted access to the data, but nobody wanted it just filling out page after page in flow sheets in their EHRs. “So if a patient presented with a problem or if they were trying to figure something out, they wanted to quickly say ‘show me the data this patient has available, and I’ll take what’s important for a decision and put it into the record,’” he added.

Challenges for telehealth



Participants shared about their experiences with telehealth, and the roadblocks they encountered along the way. An Indonesian representative got the ball rolling by mentioning that the country has just issued telehealth regulations to support telehealth services during the pandemic. They shared that there are concerns about security, privacy, interoperability, human resources, and infrastructure at the hospitals; these concerns would have to be addressed to ensure telehealth’s sustainability.

“We have adopted some privacy and security standards from ISO,” they said. “However, these standards are not mandatory by the government, so this is becoming an issue. If health technology providers who provide telehealth services do not comply with security standards, patient data can be compromised.”

They added that Indonesia has regulations in place for EMRs, and these regulations can support telehealth services in Indonesia. “Unfortunately, the EMR regulations are not accompanied by proper technical guidance until today; this has been happening for years. We also we don’t have standards and best practices to implement telemedicine,” they said.

A Japanese participant spoke about the country’s journey with telehealth, starting with the issuance of the telehealth fee schedule for 2018 by the health ministry. Doctors had to see patients for first-time visits before telemedicine services could be offered for follow-ups. Basic telehealth services such as evaluations and drug tests were paid by public insurance but add-ons (e.g., management of chronic conditions) were not paid for.

Following the COVID-19 outbreak, the government issued a new policy in March 2020, with first visits also covered by telemedicine. They shared that the digital sector is pushing for the expansion of telemedicine in Japan, which includes raising the price of such services. However, the government is still conservative about its stance on telemedicine, having concerns about fraud and abuse; privacy and security; and quality and safety.

A representative from the Philippines also shared about the country’s challenges. They explained that pre-COVID-19, one of the biggest telecom companies in the country – Globe – partnered with a Mexican company and started an online consultation service called ConsultaMD. This service offered 24/7 consultation services from doctors. However, the Philippines Medical Association did not consider these services to be consultations, but rather, health advice. As such, insurers would not pay for them.

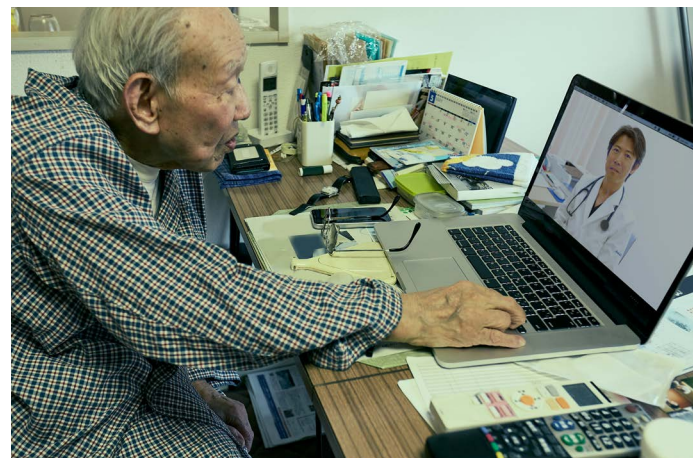
“Then came COVID-19, which pushed the country to change its views on telemedicine. The government started Teleconsulta, which is an online medical consultation service for COVID-19 patients. Hospitals began offering teleconsultations,” they said.

They added that telemedicine will likely have a bigger role in the Philippines in the next few years, though the country would need to ramp up its broadband and infrastructure in order to realise this. “Our internet connection is really not as great as other countries. The ‘hardware’ or ‘highway’ needs to be improved,” they explained.

Gray mentioned that broadband and infrastructure issues have been around in the US for a long time, and is an opportunity for a very divided congress to come together.

“Over the last year, we’ve had kids at home, and working parents at home on ten different devices at the same time. The broadband issue has really come to a focus, on top of everyone using telehealth to see a provider,” he said.

Making telehealth work



A Filipino participant shared that some of the telehealth models that are working in the country are telepathology, teleradiology, tele-dermatology and teleproctoring. With teleproctoring, GPs in rural or remote areas can get access to specialists in a university hospital through teleconsultations. They added that this has become very helpful for younger doctors to feel more confident while practising in such areas. There was initial interest by the university professors and specialists in the hospital but after a while, as more calls came, they started to avoid them. This was also compounded by the fact that these consultants were not paid for their services.

“

“It was on a voluntary basis, something nationalistic to help your colleagues. But it should be something like teleradiology wherein you’ll be paid for your time. A lot of the specialists say they are too busy and cannot sustain so many GPs under their call. I do hope our private health insurance will start to reimburse this. The money is really what will drive telehealth,” they said.



They added that the obstacle to implement a telehealth system in the Philippines has always been the big cost of enterprise in the implementation.

“When hospital directors get to see the cost of how much it is to have a full EMR or digital system, they will ask be asking how they can recover that cost. So that’s the biggest stumbling block – the government needs to step in, subsidise it probably or drive it somehow in making sure that certain costs are paid for, maybe even by third-party payers like the telecom companies who can share the platform and provide some kind of service,” they said.

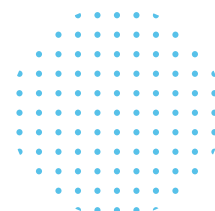
Havasay mentioned that US just went through a huge trillion-dollar rollout of EHRs. “The one lesson that we learned is if you want doctors to embrace the technology, you have to make it fit into their workflow. When you first introduce an EHR, if you don’t mould the health record into their existing workflows, you tend to get just ‘electronic pieces of paper’ rather than whole new ways of practicing medicine,” he explained.

He brought the discussion to a close by saying that we cannot put the “telehealth genie” back into the bottle. However, in the case of the US, the government will first need to come to a consensus that there is enough data supporting it, and that there is an understanding of where it works well and where it doesn’t work.

“

“I remain hopeful that at least one bit of good that came from the pandemic was that it introduced everybody to the power of virtual care,” Havasay said.

“We can’t go back to the way things were, so therefore I’m sure that by working together through gatherings like this, we may just figure out a good way for us all to reach that state where our virtual care systems are effective and efficient, and enjoyed by the people we serve.”



Building an ideal connected health system



Top left-right: Claus Pedersen, Director, Sentinel Unit, sundhed.dk, Denmark; Kevin Chan, Senior Manager, Presales, ASEAN, Citrix Singapore; Franco Poldi, Presales Team Leader, Southern Region, Citrix Australia

Bottom left-right: Dr Anne Snowdon, Director of Clinical Research, HIMSS Analytics, Canada; Charles Alessi, Chief Clinical Officer, HIMSS, United Kingdom (Moderator)

Credit: Courtesy of the speakers

During the Connected Health session at the HIMSS APAC Health CIO Summit on 29 July 2021, Dr Anne Snowdon, director of Clinical Research at HIMSS Analytics Canada, provided an overview of the current state of connected health globally. Claus Pedersen, director of the Sentinel Unit at Sundhed.dk in Denmark, shared how the Danish health system is implementing connected health.

The session also offered insights from Kevin Chan, senior manager for ASEAN Presales at Citrix Singapore; and Franco Poldi, Presales team leader for Southern Region at Citrix Australia on what could be an ideal connected health system.

Many individuals across the globe are using health tools and apps to self-manage their own health and wellness. Yet, health systems have not embraced them as much, according to Dr Snowdon. In her view, health systems today are not connected enough to be more engaged and supportive to the populations they are serving.

As COVID-19 has put limits on care systems, Dr Snowdon said there is an urgent need to work “more aggressively” toward adopting care delivery models that support and enable self-management of health and wellness with the connectivity of providers.

Moreover, the system still has “much work to do” in connecting meaningfully with patients, as well as bringing together health teams, despite the rapid shift to virtual care delivery during the pandemic.

Dr Snowdon also noted that the pandemic has put a spotlight on the global connectivity of health systems, which was “profoundly missing”. She mentioned there is an opportunity and a critical urgency to set up connections from systems to systems to enable public health to connect to hospitals, primary care communities and all other places where care is delivered. This, in turn, will render support to “a more effective, proactive and risk-reduction type of strategy in the future”.

Connected health in Denmark



Pedersen shared that it is important to give patients the tools they need to communicate with the healthcare system in an “efficient way”.

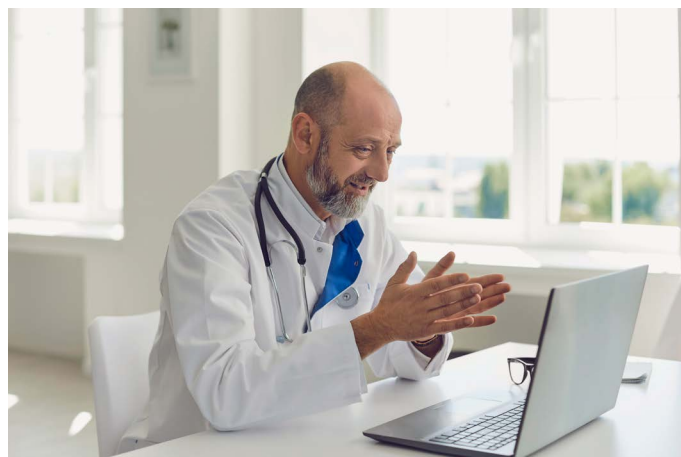
In Denmark, citizens can access healthcare through a nationwide portal called Sundhed.dk, which is both app and web-based. Hospitals have also developed their own apps where patients can chat with their doctors and follow up on their appointments.

Technology has also enabled community nurses in the country to digitally connect with GPs and specialists. This enhanced their capacity to take care of the elderly, leading to a 10% cut in admissions of acute cases, which is a major cost for the healthcare system.

Pedersen pointed out that it was only during the pandemic that video conferencing took off widely in healthcare, despite having its infrastructure built a decade back.

Presently, Denmark is increasing its use and uptake of emerging technologies, including AI and data, robotic technology, IoT and precision medicine. It is focusing particularly on AI and robotics to cut back on clinician workload. Recently, a robot prototype was tested to scan hands and finish a diagnostic session without a doctor’s involvement.

Ideal connected health system



According to Chan, an “ideal” connected health system:

- ▶ Has the ability to allow clinicians to “work anywhere and anytime on any device”;
- ▶ Provides access to online services while deterring cyber attacks and protect patient information;
- ▶ Contains critical apps that connect back to a data centre; and
- ▶ Securely and optimally delivers data back to a primary data centre.

At the core of this ideal system is ensuring a “seamless experience” for clinicians so they can provide the “best experience” for patients. “What’s really important here is being able to give clinicians one place to log in or access all of those critical applications and needs without having to worry about performance, without having to worry about different types of passwords and yet it is still secure,” he said.

Setting up connected health



Chan cited common mistakes or oversights that providers are making when adopting connected health, such as:

- ▶ Becoming overly complex or adopting technologies that add complexity;
- ▶ Failing to engage clinicians in the digital transformation; and
- ▶ Introducing policies that hinder the digital transition

According to Poldi, providers looking to set up their own connected health programmes need to have a “succinct vision for connected health”. He explained that following must be prioritised:

- ▶ **Security:** This must be top of mind. In systems integration, providers must map out all integration points and security controls.
- ▶ **AI and machine learning:** These can be leveraged to draw out “meaningful insights” from data, as well as improve levels of care, analyse clinical data and reduce the time for making an informed decision.
- ▶ **End-user experience:** To have an “agile and empowered workforce”, there must be reliable access to applications that are also secure and easy to use. Providers must also offer different channels for patients to access care services such as apps and web portals.



“Technology really shouldn’t be a barrier to providing or obtaining care; it should be an enabler,” Poldi concluded.

Fostering Person-Enabled Health: A DHI Case Study







Credit: Hospital Authority

The Hospital Authority (HA) is a statutory body established in 1990 to manage Hong Kong's public hospital services. HA has been investing in digital health for over 25 years, with the Clinical Management System (CMS) at the core of these efforts as a “one system for all services”. In 2018, the Smart Hospital Vision was developed, and the subsequent Blueprint is in the process of being rolled out which will transform the delivery of care across Hong Kong.

In order to identify key initiatives for digital action in the short-term and to help prioritise its future investment activities, HA engaged HIMSS to conduct an assessment using the [Digital Health Indicator \(DHI\)](#) and [HIMSS Maturity Models](#).

The DHI is designed to assess the strengths and key assets of digital health demonstrated by health systems, and identify areas less well developed that could be strengthened to advance digital health.

Based on the principles and evidence described in the [HIMSS Digital Health Framework](#), DHI measures the four dimensions of digital health:

-  Person-Enabled Health
-  Predictive Analytics
-  Governance and Workforce
-  Interoperability

In keeping with the theme of “Connected Health” for this report, we will only be looking at the dimension of Person-Enabled Health under the DHI for this project. This will encompass findings by HIMSS following its assessment, recommendations for HA from HIMSS, and the steps HA will be taking to meet its goals.

Under the DHI, Person-Enabled Health looks at meeting and delivering on the individual's needs, values, and personalised health goals. It recognises the value and importance of connectivity between people

and their care teams, creating a partnership based on individual needs and choice. It leverages digital options (such as online tools, handheld devices for care anywhere approaches, or apps that enable on demand health and wellness care) to support self-management of personal health and wellness goals, shaped by the unique life circumstances, preferences, health needs and choices of the individual.

Person-Enabled Health measures at HA before DHI Assessment



CMS which enables:

- ▶ Automated concurrent checks of medications against patient history
- ▶ Remote monitoring of cardiac implants
- ▶ Real-time tracking of patient locations in areas with risks of missing patients
- ▶ Cross-hospital bed booking
- ▶ Self-service vital signs monitoring stations



HA Go, an initiative which provides digital tools available for all members of the public to:

- ▶ Manage their clinic appointments, attendance, and queues, if any
- ▶ Make payment
- ▶ Check their records
- ▶ Manage their conditions (e.g., pregnancy, diabetes, joint replacement, etc.)
- ▶ Upload their records or measurements
- ▶ Use HA's free WiFi
- ▶ Provide tele-information
- ▶ Access telecare



Smart Hospital Blueprint, which provides an architecture to enable projects such as:

- ▶ A command centre to monitor and identifying deteriorating patients
- ▶ Smart pharmacy
- ▶ Robots/apps to help patients or visitors accessing services
- ▶ Self-service kiosks which allow patients to manage their own care events (e.g., blood taking)
- ▶ Pilot implementation of clinical AI

Assessment Findings

HA was found to have considerable strength in the dimension of Person-Enabled Health. Patients were able to access virtual care supported by digitally enabled tools, and health literacy was supported with access to digital tools to support learning.

Opportunities for improvement were in the areas of providing patients with more direct access to their care records, personalised alerts and health literacy information, and enabling secure messaging directly with clinicians or care teams.

In addition, it was observed that the use of digitised clinical documentation via CMS at the ward level was a work in progress with vitals manually being recorded at the time of the assessment. HA mentioned this would be resolved with the rollout of the eVitals product in the future.

The organisation also had positive engagement with clinicians and citizens. However, it was noted that the rollout of technological capability was not as fast as it was wanted in some areas (e.g., digitised vitals in wards, remote monitoring at home beyond those in place now for cardiac patients for pacemakers and intra cardiac defibrillators, etc.).

HA has resolved to meet the many uses of virtual care (e.g., aged care home visits, allied health/therapy, reduced wait times in hospitals, etc.). In addition, there is an initiative underway to look at more personalised communication for patients leveraging the smart patient website and HA Go.

In the area of patient engagement, the organisation was found to have made some strides with the adoption of digital tools (e.g., apps, wearables, etc.) that are connected to the EMR/PHR for monitoring progress. There is still some way to go on the journey to achieve dynamic patient engagement in managing health, through the tracking of health goals and enabling reporting of outcomes.

Recommendations by HIMSS

With the goal of enabling dynamic patient engagement, HIMSS recommended a “Four Cs” approach for HA:



Choice

- ▶ Personalised digital tools, technologies and platforms (e.g., wearables) support consumer self-management of their health and wellness, along with meaningful access to care providers when and where needed using secure messaging/communication.
- ▶ There is a standardised, evidence-based evaluation process to examine utilisation and effectiveness of digital tools and technologies (e.g., wearables, devices, applications). This takes into consideration efficacy, ease of use for patients, and rates of utilisation.



Collaborate

- ▶ All inpatients are able to respond to a variety of self-reported outcomes during their stay through digitally enabled solutions (e.g., tablets, apps, multi-button devices, etc.).
- ▶ Patients receive alerts, reminders and notifications linked to care pathways/care plans to support their decisions to advance progress toward health goals.
- ▶ Secure and private data flows to consumers (e.g., via digital apps, online portal, secure messaging, etc.) to inform progress toward health goals; offer detailed care pathway/plans; and apprise them of products used in care (e.g., implants, drugs, etc.). These help inform decisions to manage their health and wellness.
- ▶ Inpatient care processes and products used in care are digitally managed and recorded, allowing them to be linked to individual outcomes toward patient health and wellness goals.



Coordinate

- ▶ Prior to patient discharge, personalised structured and documented care plans are reviewed with the patient and/or associated ongoing care facilitators (e.g., family members, guardians, or discharged-to care providers, etc.). These plans define personal health goals identified by individual patients in coordination with their care team, informed by their needs, values, and unique life circumstances taking into consideration social determinants of health.
- ▶ Adverse event reporting is automated. This is linked to individual patients who report adverse outcomes with potential risk of adverse outcomes tracked, supporting rapid intervention to improve quality and safety outcomes in all care settings.



Convenience

- ▶ Digitally enabled tools support and build consumer health literacy. Consumers are provided with the resources, knowledge, and necessary tools to be confident in self-management of their health and wellness.
- ▶ Patients can use digital tools/technologies to connect with provider teams, (e.g., with a “point person”/ primary provider/navigator) according to protocol or guidelines. This enables them to seek guidance about their health, report outcomes, and obtain information about care processes during inpatient admissions and during transitions to outpatient care.

Looking to the future

Following the recommendations provided by HIMSS, HA shared insights into some of the plans they have in store, which are aligned to the organisation's key Person-Enabled Health measures outlined earlier:



CMS to enable:

- ▶ Sharing and exchange of more information with HA Go to empower patients (e.g., lab results where appropriate)
- ▶ Development of more protocol-driven care products based on patients' conditions
- ▶ AI-driven and data-driven care



HA Go to enable:

- ▶ Patients to manage their care plan
- ▶ Patients to see more of their clinical records (e.g., more lab and investigation results)
- ▶ Teleconsultations/tele-training on top of existing telecare initiatives
- ▶ Home care
- ▶ Self-measurement records
- ▶ Drug delivery service



Smart Hospital to enable:

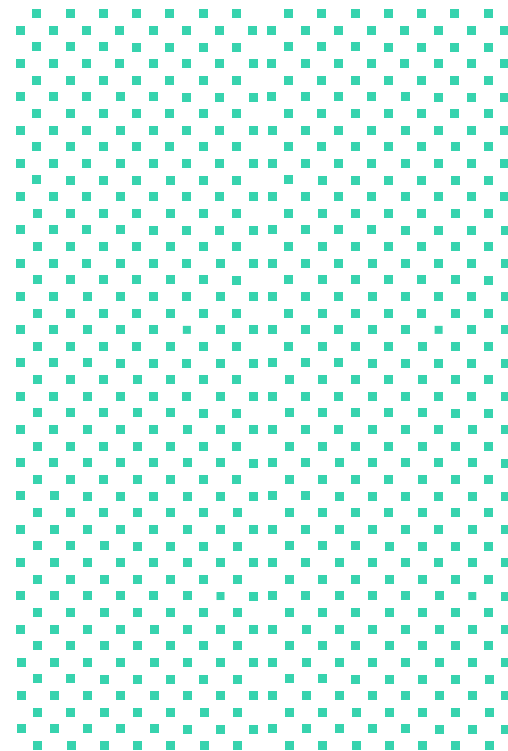
- ▶ Robot and AI assistance based on knowledge of individuals' histories
- ▶ Wearables
- ▶ Internet of Things
- ▶ Widespread deployment of AI for both clinical and operational predications

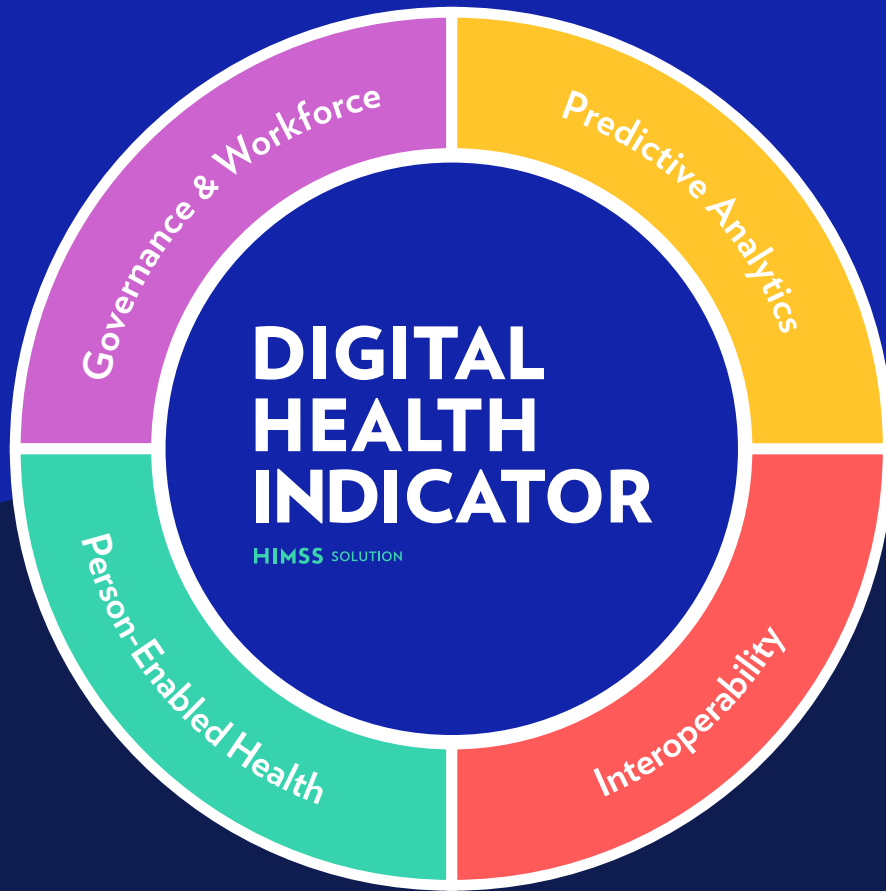


Patient-centered care is one of the five pillars of CMS, and HA Go is a key component of the Smart Hospital which is part of the HA's long-term sustainability strategy.

Dr N T Cheung

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