

White Paper

Digital Technology in Public Healthcare: Elevating Healthcare Delivery in SEA

DEVARAJ SUBRAMANIAM, Associate Principal, Consulting Services

HITESH KOTHARI, Solution Sales Director, Provider Technologies

CHRISTOPHER TAY, Associate Consultant, Consulting Services



Table of contents

Introduction	1
Where it has been done successfully	1
Key learnings for SEA	5
Way forward	6
About IQVIA Asia Pacific	6
About the authors	7

Introduction

When COVID-19 struck and heavily disrupted access to medical care, digital health technologies saw an unprecedented uptake in Southeast Asia (SEA). Governments were quick to adapt existing medical regulations and policies to allow for teleconsultation and created their own national apps to manage the pandemic, allowing contact tracing, self-quarantine, and COVID-19 vaccination appointments. Naturally, some governments are now seriously contemplating a 'one person, one record system'.

In theory, a 'one person, one record' system would provide many long-term advantages, such as better continuity of care through an "omnichannel" patient experience, increased healthcare efficiency through better demand triaging and planned capability-building across the ecosystem, and thereby, improvements in clinical outcomes and potentially even better control over increasing healthcare expenditure.

The Association of Southeast Asian Nations (ASEAN) countries, however, face challenges such as a lack of infrastructure, strained national budgets, and a patchwork of legacy systems. For instance, one country reported that less than 20% of its hospitals had properly adapted electronic medical records, with hospitals at varying levels of infrastructure, human resources, and financial strength.

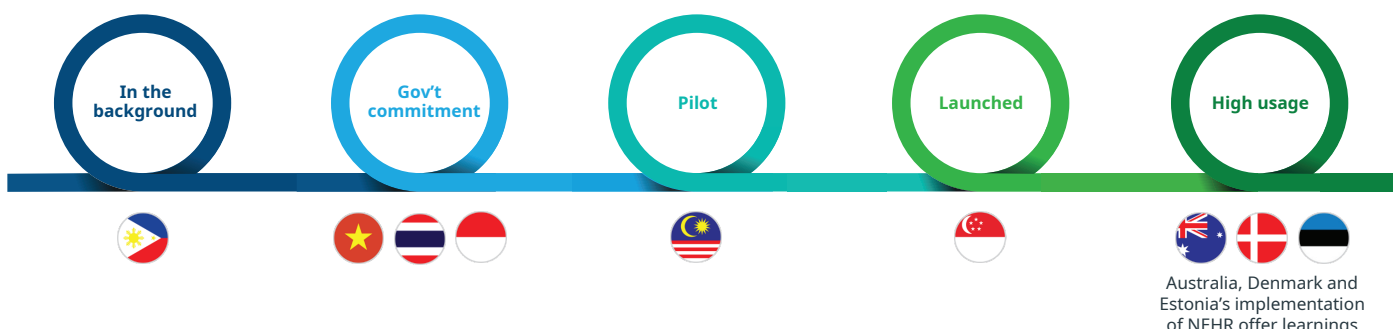
Nonetheless, some countries have started digitising medical records at the national level. Singapore, Malaysia, and Indonesia have made efforts towards a national electronic medical records system, albeit in varying stages of implementation. However, the seamless utilisation of medical data across various platforms remains elusive among these countries.¹

Where it has been done successfully

ASEAN countries can look to other nations to aid their digitisation journey. Australia, Denmark, Estonia, Finland, France, Iceland, Singapore, and Sweden already provide citizens access to their health data. In particular, the three nations of Denmark, Estonia, and Australia can guide ASEAN countries.

Arguably, the gold standard is **Estonia's nationwide Health Information System (EHIS)**. It should come as little surprise, given how forward-looking the citizens of Estonia are in the arena of digitalisation. Since its inception in 2008, EHIS has integrated cradle-to-grave data of every resident collated from various healthcare providers and databases, ensuring seamless continuity of care, and reducing medical errors. Estonians can access their medical data and prescriptions online in a secure, trusted manner. In addition, it aims to make time-critical medical information accessible to physicians and decrease the level of bureaucracy in the daily routine of physician records. Every month, more than a million queries are made by patients and healthcare professionals alike, with 800,000 different healthcare documents accessed. Since 2015, 99% of the health data created in Estonia has been fully digitised.

Denmark has impressed with its implementation of **sundhed.dk**, the national e-health portal. With a common ambition that straddles the political divide, Denmark did not reinvent the wheel; it built on existing data resources, infrastructure, and technology. Today, nine out of ten citizens follow their public health data online, and 80% of healthcare communication



¹ <https://fulcrum.sg/aseanfocus/advancing-the-digital-health-ecosystem-in-southeast-asia/>

is exchanged electronically. Users can not only find their updated medical history, but they can also book appointments with their GP, renew prescription drugs, and survey the shortest hospital waiting lists online.

Closer to ASEAN and with a more sizeable population, **Australia's My Health Record** system is gaining

traction. Launched in 2012, My Health Record enables healthcare providers to access crucial medical information about patients, including allergies, medications, test results, and medical histories. More than 90% of public hospitals and 50% of private hospitals actively use the system.

CASE STUDY	ESTONIA
Name of platform	Estonian nationwide Health Information System (EHIS)
Launch year	2008
Aims of platform	<ul style="list-style-type: none"> • Improve healthcare quality by enabling better access and use of relevant health data • Enhance health reporting and cost calculation
Functionalities	<ul style="list-style-type: none"> • Cradle-to-grave medical records (contains birth summary, outpatient summaries, and diagnostic test results) • Information on all prescribed and purchased medications • Ability to communicate permissions and requests, e.g., permitting blood transfusions or becoming an organ donor
Approach	<ul style="list-style-type: none"> • The foundation for EHIS was established in 2005, when the Ministry of Social Affairs launched a concept for the e-health system • Concept postulated four main projects, i.e., electronic health records, digital images, digital registration, and digital prescription • Soon after, the official body for the development of EHIS, called the e-Health Foundation, was established. The e-Health Foundation was responsible for the development, financing, and management of the system. • It is also the central agent in charge of the standardisation and development of digital medical documents • EHIS is not a big, centralised database but a federated system of mutually independent yet integrated healthcare-related software services
Challenges	<ul style="list-style-type: none"> • HCPs needed to change the way they fill in medical files, i.e. towards a more uniform language • Semantic interoperability of medical data is hard to achieve • Data quality and secondary usage of data are still challenging to this day • General acceptance of hospital personnel sharing medical data on the patient portal with patients is problematic
Outcomes	<ul style="list-style-type: none"> • Every month, more than a million queries per month are made by patients and healthcare professionals alike, with 800,000 different healthcare documents accessed • Since 2015, 99% of the health data created in Estonia has been fully digitised
Takeaways	<ul style="list-style-type: none"> • Society believed in information technology and started using information technology in all domains, including healthcare • Medical data are not what people are looking for – they are interested in services • Much attention must be paid to the security and electronic authentication of users • User interface development must not be underestimated

CASE STUDY	DENMARK
Name of platform	sundhed.dk
Launch year	2003
Aims of platform	<ul style="list-style-type: none"> • Offer a shared platform for communication and coordination across a relatively decentralised healthcare system • Gives healthcare providers easy access to clinical information about their patients' medical history
Functionalities	<ul style="list-style-type: none"> • Users can find accurate, updated information on their medical history and past medications from hospitals and GPs • Users can also book appointments with their GPs, renew prescription drugs, and survey the shortest waiting lists
Approach	<ul style="list-style-type: none"> • A broad political governing body, consisting of the Ministry of Health (MOH) county councils, and hospital associations, was established to support the establishment of the e-health portal. • It is centred around key stakeholders in the healthcare sector: MOH, National Board of Health, patient insurance associations, and local governments. • The overall approach was to: (1) collate and assemble existing data resources, (2) repurpose and enhance current data sources in the health sector, and (3) engage multiple stakeholders to obtain its current position. <p>The head of administration at sundhed.dk explained: <i>"We have 'buttoned on' services and applications over time [...]. We had no ambition of developing something new... rather, we wanted to enable access and gather what already existed [...]. So, basically what we do is to develop a user interface that covers all existing solutions and then make data available from there."</i></p>
Challenges	<ul style="list-style-type: none"> • Collecting and publishing quality-assured health information: "More and more quality requirements are being posed from our side [sundhed.dk]. At some point, the amount of editorial content on sundhed.dk was simply overwhelming and then we started talking about quality." (head of administration, sundhed.dk). • No common strategy for healthcare in Denmark: "It gets really complicated when you have so many strategies in play – the Digitization Strategy and the Healthcare Digitization Strategy at a national level, the Healthcare IT Strategy at a regional level, and then the municipalities have their own strategy." • Getting consensus: "What is their [sundhed.dk] strength is also their weakness." The broad alliance of partners, which gave the e-health portal legitimacy, also made it inflexible, in the sense that many considerations were required for every decision. The engagement of multiple stakeholders did not come automatically but had to be enabled actively by the staff at sundhed.dk.
Outcomes	<ul style="list-style-type: none"> • Use of smartphones when communicating with GPs at ~40% • Nine out of ten follow their public health data online • 80% of all healthcare communications in the primary healthcare sector exchanged electronically • Administrative work of 50 minutes a day saved for doctors • 1.6 euros worth of benefits for every euro spent
Takeaways	<ul style="list-style-type: none"> • Broad representation and engagement of key stakeholders needed: The broad alliance gave legitimacy to the portal at an early stage, and then, of course, it was important that they managed to engage the most influential partners, e.g., MOH, local governments. • Common ambition, regardless of political differences: The involved parties have gathered around the common ambition of having one access point to healthcare services and made it a political showcase of unity. • Don't reinvent the wheel: Assess and build on existing data resources, infrastructure, and technology

CASE STUDY	AUSTRALIA
Name of platform	My Health Record
Launch year	2012
Aims of platform	<ul style="list-style-type: none"> To have a secure digital record for every resident, collecting important medical information in one place, e.g. treatment history, test results, and use of medications To facilitate more effective coordination of care and give registered practitioners access to the same health information, thereby reducing errors in prescription and treatment.
Functionalities	<ul style="list-style-type: none"> Citizens have access to summary information about their medical history, medications, test results, and allergies. Includes information from healthcare providers, e.g. health summaries, hospital discharge summaries, pathology and diagnostic imaging reports, medications, and referral letters. Includes information from repository operators, e.g. public health insurers, organ donor registers, and immunisation registers.
Approach	<ul style="list-style-type: none"> The MyHR system and its infrastructure were developed using a combination of ‘bottom up’ lead implementation projects and ‘top down’ national initiatives. The Department of Health established the My Health Record system in 2012 and administers the My Health Records Act 2012 on behalf of the Minister for Health. The Australian Digital Health Agency manages the system. MyHR integrates Web-based personal health records with a clinical electronic health record system and allows shared access to summary data for both consumers and healthcare providers based on shared responsibilities.
Challenges	<ul style="list-style-type: none"> Low consumer uptake of My Health Record: Five years post-launch, only one in five had registered for a record. Concerns about health data privacy HCPs and patients found it hard to use, unreliable, and not useful for medical diagnosis and treatment.
Outcomes	<ul style="list-style-type: none"> Today, more than 23.3 million Australians (~90% of the population) have a My Health Record. More than 90% of public hospitals and 50% of private hospitals actively use the system.
Takeaways	<ul style="list-style-type: none"> Align incentives of providers to encourage usage, e.g., Australia provided incentive payments of up to AUD12,500 per quarter to support digitalisation efforts of GPs who use My Health Record. Develop an approach to privacy and security that satisfies the demands of clinicians and patients, and then implement it consistently. Devote plenty of resources to local implementation and training to ensure clinician adoption and user education.

Key learnings for SEA

In the SEA region, the pursuit of a 'one person, one record' system represents a significant stride towards enhancing healthcare delivery, patient care, and overall healthcare management. As countries in the region increasingly recognise the potential benefits of centralised health records, it is imperative to acknowledge and address several critical issues to ensure the success and sustainability of such initiatives.

Firstly, robust data security measures are essential. Notably, the 2017 WannaCry ransomware attack on the UK's National Health Service (NHS), which resulted in reported losses of £92 million, underscored the necessity of strong encryption techniques and access controls to safeguard patient confidentiality. Similar incidents, such as the 2018 breach of Singapore's health records affecting 1.5 million patients, further highlight the critical importance of robust cybersecurity measures. Policymakers should also consider the ethical risks of discrimination or stigmatisation due to patient data falling into the wrong hands, as exemplified by the controversies surrounding data breaches in various healthcare systems worldwide.

Secondly, robust interoperability, necessitating standardised formats and protocols to facilitate seamless data exchange, will be crucial. Singapore's National Electronic Health Record encountered similar challenges at launch, particularly regarding the integration of data from multiple organisations. Similarly, the UK's efforts with the implementation of the NHS Digital Exchange platform faced hurdles due to interoperability issues between various healthcare systems and institutions. An interoperability framework and implementation plan will play a key role in ensuring efficient and sustainable data aggregation and usability across diverse healthcare landscapes.

Thirdly, delivering an exceptional end-user experience, encompassing both healthcare personnel and patients, must remain at the forefront. One of the most frequently reported barriers to 'one person, one

record' implementation is the resistance to uptake by end-users, particularly healthcare personnel. For instance, in Australia, the My Health Record system faced challenges due to concerns over data privacy and usability, highlighting the importance of addressing end-user apprehensions. Similarly, in the United States, initiatives such as the implementation of Electronic Health Records (EHRs) encountered resistance from healthcare providers due to workflow disruptions and usability issues. Proactive involvement of healthcare personnel and patients through pilot programmes and user testing can help mitigate resistance to adoption and ensure that the system meets the diverse needs of its users. Financial support, to help healthcare personnel defray the costs of adopting national EHRs (as seen in Australia and Singapore), can also incentivise usage.

Lastly, a robust infrastructure, encompassing both physical and digital components, is imperative to support the successful implementation and sustained operation of a 'one person, one record' system. Adequate investment in digital infrastructure, including hardware, network connectivity, and software systems, is essential to ensure reliable access to centralised health records across diverse geographical regions. Countries such as Malaysia and Thailand faced challenges in establishing nationwide health information exchange due to gaps in digital infrastructure, highlighting the critical need for comprehensive upgrades. Moreover, prioritising cybersecurity infrastructure is crucial to safeguarding sensitive patient information from cyber threats. By fostering an ecosystem of interoperable digital tools, platforms, and robust cybersecurity measures, policymakers can streamline data exchange processes, enhance usability, and ensure the confidentiality and integrity of healthcare data, thereby laying the foundation for a resilient healthcare ecosystem capable of delivering improved patient care outcomes.

Way forward

In conclusion, the pursuit of a 'one person, one record' system in SEA region represents a monumental leap forward in healthcare delivery, patient care, and overall healthcare management. As highlighted throughout this white paper, the region faces significant challenges, ranging from data security concerns to infrastructure limitations and interoperability issues. However, by addressing these challenges head on and drawing upon the valuable insights from successful implementation in countries such as Estonia, Denmark, and Australia, ASEAN nations can chart a course towards a more integrated and efficient healthcare ecosystem.

The examples provided underscore the transformative potential of centralised health records in enhancing patient outcomes, improving healthcare efficiency, and controlling escalating healthcare expenditures. The experiences of Estonia, Denmark, and Australia offer valuable insights into the strategies and approaches

that can drive successful implementation and adoption of such systems. From Estonia's forward-thinking approach to digitalisation to Denmark's collaborative efforts leveraging existing resources and Australia's ongoing endeavours to align incentives and address privacy concerns, there are tangible learnings that ASEAN countries can apply to their own contexts.

As SEA region advances in its digitisation journey, it is crucial for policymakers, healthcare providers, and stakeholders to collaborate closely, prioritising robust data security measures, interoperability standards, user experience, and infrastructure development. By embracing these principles and leveraging the collective wisdom gleaned from global best practices, ASEAN nations can overcome challenges and unlock the full potential of 'one person, one record' systems to deliver accessible, efficient, and high-quality healthcare for all. Through concerted efforts and strategic investments, the region can pave the way towards a healthier and more resilient future for its citizens.

About IQVIA Asia Pacific

IQVIA (NYSE:IQV) is a leading global provider of advanced analytics, technology solutions and clinical research services to the life sciences industry. IQVIA creates intelligent connections to deliver powerful insights with speed and agility — enabling customers to accelerate the clinical development and commercialization of innovative medical treatments that improve healthcare outcomes for patients. With approximately 86,000 employees, IQVIA conducts operations in more than 100 countries.

With regional headquarters in Singapore and offices in 15 countries, IQVIA Asia Pacific provides technology enabled services and solutions to meet the growing and rapidly changing needs of clients, both local and multinational, operating in Asia Pacific. IQVIA is committed to advancing healthcare by offering evidence-based insights and deep domain expertise in thought leadership, with the aim of improving understanding and accelerating innovation within the healthcare ecosystem. To learn more, visit www.iqvia.com/locations/asia-pacific.

About the authors



DEVARAJ SUBRAMANIAM

Associate Principal,
Consulting Services

Devaraj is Associate Principal in the APAC Consulting Team, based

in Kuala Lumpur, Malaysia. He leads engagements across the Asia-Pacific region, covering operations transformation, growth strategy, and commercial excellence for clients in the healthcare and life-sciences sectors. Devaraj has over 14 years of experience in management consulting and P&L roles, and has delivered projects across Asia-Pacific, the Middle East, and the US. Prior to IQVIA, Devaraj worked at McKinsey & Company and Schlumberger. Devaraj holds a Bachelor of Mechanical Engineering from the University of Malaya (Malaysia).



CHRISTOPHER TAY

Associate Consultant,
Consulting Services

Christopher is Associate Consultant in the APAC Consulting

Team, based in Singapore. He has over five years of consulting and advisory experience across Asia-Pacific countries. His experience includes commercial strategy and public health engagements. Prior to IQVIA, Chris worked at PwC. Chris holds a master's in mathematics from University College London.

Note: The authors would also like to thank Smriti Saraf for her contributions to this whitepaper.

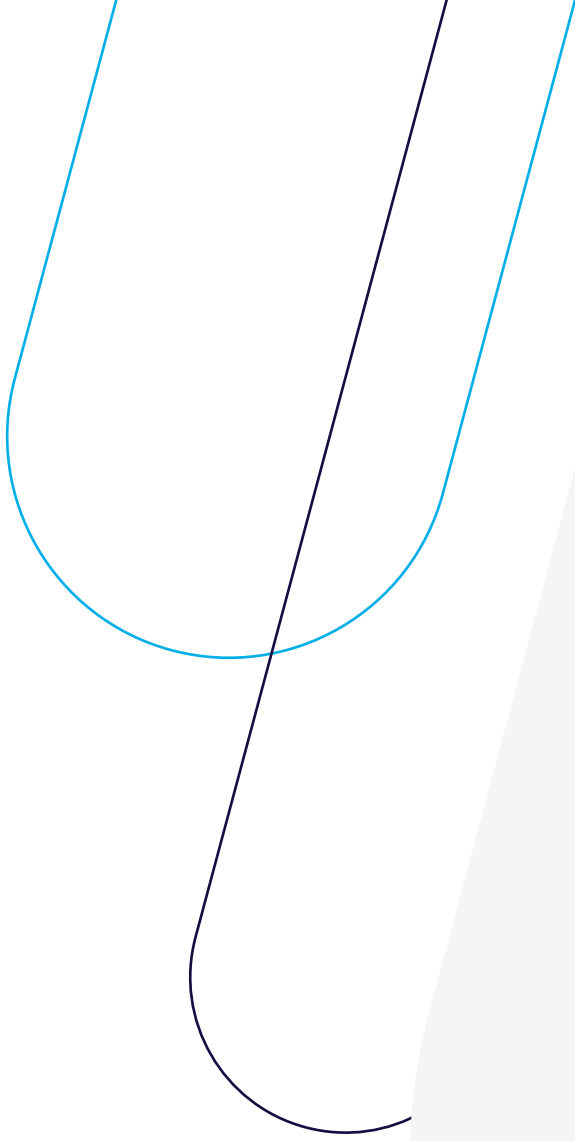


HITESH KOTHARI

Solution Sales Director,
Provider Technologies

Hitesh is Director of the Provider Technologies Team, based in Kuala

Lumpur, Malaysia. He has more than 20 years of global scientific and commercial leadership experience in healthcare solutions and is the co-founder of Incarnus. Prior to its acquisition by IQVIA, Incarnus was a global provider of next-generation, cloud-enabled solutions for all levels of healthcare providers — from primary health practices to large-scale hospital networks.



CONTACT US
iqvia.com