

DIGITAL HEALTH RECORDS IN MALAYSIA

THE JOURNEY AND THE WAY FORWARD





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Digital Health Records in Malaysia – The Journey and the Way Forward Kuala Lumpur, Malaysia: Khazanah Research Institute

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Published May 2024. Published by Khazanah Research Institute at Level 17, Mercu UEM, Jalan Stesen Sentral 5, Kuala Lumpur Sentral 50470 Kuala Lumpur, Malaysia.

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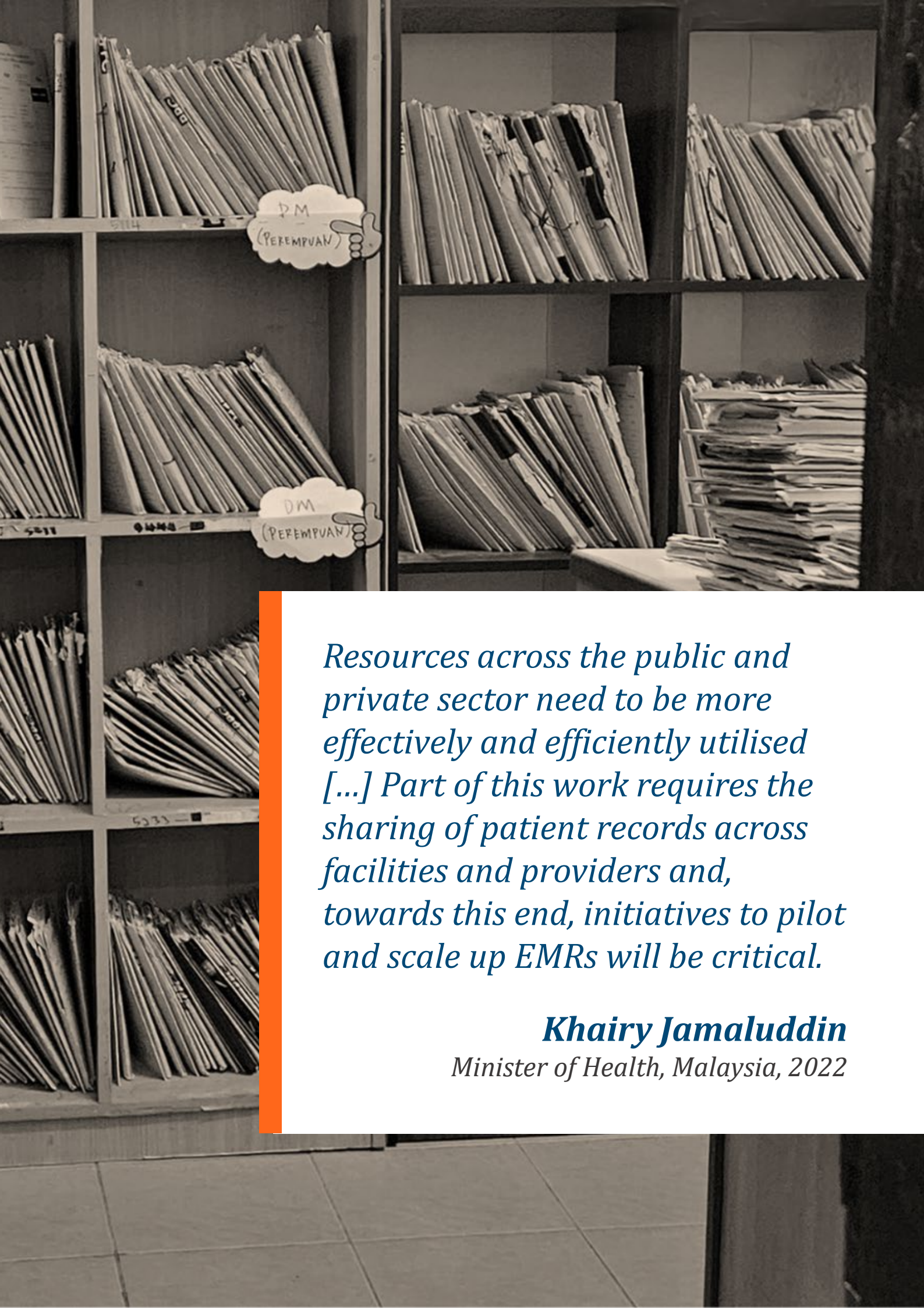
Cover photo by Rachel Gong.

The illustrations in the report have been designed using resources from Freepik and Unsplash.

This overview provides a summary of several previous KRI publications on digital health records. The publications and authors are listed as follows:

1. "Digitalised Health Records: Does Malaysia Need It?" by Ilyana Mukhriz (2023)
2. "Challenges Arising From Digitalising Health Records" by Dr Jun-E Tan and Ilyana Mukhriz (2023)
3. "Moving on to Digitalising Patient Health Records" by Ilyana Mukhriz (KRI) and Dr Rachel Gong (2023)
4. "Putting Patients First: Principles for Electronic Health Records in Malaysia" by Ilyana Mukhriz and Dr Rachel Gong (2023)
5. "Case Studies of Hospital Digitalisation: Lessons for Electronic Health Records in Malaysia" by Ilyana Mukhriz, Dr Rachel Gong and Lim Su Lin (2023)

The authors are grateful for the assistance of Loke Pak Yen, Keelea Shaye Linsuau Soh and Melanie Ng as well as for valuable comments from Dr Jun-E Tan and Azfar Hanif Azizi. Refer to the publications for the complete list of references of the figures and facts used.



Resources across the public and private sector need to be more effectively and efficiently utilised [...] Part of this work requires the sharing of patient records across facilities and providers and, towards this end, initiatives to pilot and scale up EMRs will be critical.

Khairy Jamaluddin

Minister of Health, Malaysia, 2022

EXECUTIVE SUMMARY

Malaysia's public healthcare system serves more than 70% of the country's population. A nationwide digital health records system across facilities will be necessary to ensure Malaysia is able to continue providing efficient and effective healthcare. However, as with other public services, adoption of digital technologies brings both promise and pitfalls.

Longstanding efforts to set up a national system have faced their share of challenges, but the intersection of the Covid-19 pandemic and widespread digital transformation presents the right time to renew these efforts. A pilot project of the National Electronic Medical Record Initiative (NEI) has set a goal of equipping all public healthcare facilities in Negeri Sembilan with a system that would allow sharing of patient records across the healthcare landscape. This would be followed by the integration of all public facilities nationwide.

This research advocates for the establishment of a national digital health records system that promotes patient inclusion and empowerment, ensures protection of sensitive health data and allows for the collection of comprehensive health data throughout the lifetime of the patient.

Its recommendations are aligned with the government's commitment under the 12th Malaysia Plan and Health White Paper to leverage technology to improve the healthcare sector, and more specifically, address the issue of fragmented health information systems.

Four key policy recommendations are as follows:



Policy Recommendation 1

Update digital health-specific legislations since current provisions may not be comprehensive enough regarding how entities can collect, use and disclose health information.



Policy Recommendation 2

Increase investment in foundational healthcare digitalisation which includes total life cycle costs of the system and existing infrastructure readiness.



Policy Recommendation 3

Promote public awareness on the importance of patient access to health data in order to support a healthcare system reform that shifts away from medical paternalism to patient autonomy.



Policy Recommendation 4

Facilitate public-private healthcare systems integration by enforcing consistent data standards in addition to reviewing and updating such standards regularly to match global practices.

These recommendations are not limited to the current rollout of the NEI. The principles underlying them are important and system-agnostic, applicable across the digital healthcare landscape.

This consolidated summary will provide an overview of the content covered in our previous publications.



- **Section 1** provides some conceptual underpinnings of the **different types of digital health records available**, as well as other types of hospital digitalisation. We then offer considerations of **potential benefits and risks** of digitalising health records.
- **Section 2** looks at **Malaysia's journey in hospital digitalisation**, tracing its beginnings from the 1980s to the present time. We provide **three case studies of digitalisation in public hospitals**, including the Total Hospital Information System, Sistem Pengurusan Pesakit and i-Pesakit. From these case studies, we uncover challenges faced in Malaysia's past efforts to digitalise healthcare facilities.
- **Section 3** discusses **critical design aspects in building electronic health records (EHR) in the context of Malaysia**, and examines **EHR implementation in four country case studies**, including Australia, China, Singapore and the United States.
- **Section 4** brings together **policy considerations** that we have provided across different papers and articles and condenses them into a concise list of recommendations.



SECTION 1: UNPACKING DIGITAL HEALTH RECORDS



Defining Digital Health Records

Digitalisation of health records has been gaining momentum worldwide through various approaches, resulting in different types of health records.

The terms electronic medical records (EMR), electronic health records (EHR) and personal health records (PHR) are commonly used, sometimes interchangeably despite there being significant differences between them.

Malaysia has historically referred to its efforts of digitalising patient records using the term EMR. However, EMR may be a misnomer since the system's description of *"ensuring seamless flow of information among healthcare facilities"* points towards it being more of an EHR venture.

Electronic Medical Record (EMR)

A **digital version of a clinician's chart**, meant to be used within a single practice and **limited to use within a single facility**.

Only follows a patient's journey as long as they continue to **receive care from the same healthcare provider**.

Electronic Health Record (EHR)

A **digital record of patient health that is cross-institutional**, able to be **shared between multiple healthcare providers and facilities**.

Follows a patient **throughout their entire journey** across the healthcare landscape, providing a **complete overview of patient medical history regardless of treatment location**.

Patient Health Record (PHR)

A **digital collection of patient medical history** that **resides with, is maintained and is managed by the patient** themselves.

Can include data **sourced from healthcare provider** through transmission via EHRs as well as **self-generated data**.

Summary of differences between terms commonly used in digitalisation of health records

Term	EMR	EHR	PHR
Contributors	Healthcare provider	Healthcare provider	Healthcare provider and patient
Shared across facilities	X	✓	✓
Access by patient	X	Varies	✓
Follows patient over lifetime	X	✓	✓

Widely used term in Malaysia but may be inaccurate

Correct term for the facility-based plans outlined by the government

E.g. MySejahtera application and MOH's online patient portal





Other Malaysian Digitalisation Initiatives Over The Years

Since the late 1990s, the Malaysian government has demonstrated its intent to digitalise the country's healthcare sector, although efforts have waxed and waned.

This has led to several system names and terms being used when referring to healthcare digitalisation in the country. Brief descriptions of some prominent examples are given below:

Hospital Information System (HIS)

- Introduced in the 1990s as an **"integrated electronic system that collects, stores, retrieves and displays overall patients' data and information... which are used in several departments within hospitals"**
- Typically refers to the IT applications used to manage overall hospital operations with several levels of HIS depending on complexity and comprehensiveness of modules
- Includes an EMR component

Teleprimary Care Oral Health Clinical Information System (TPC-OHCIS)

- Introduced in 2017 as a combination of existing digital systems in public health and dental clinics
- Branded as a **cloud-based system that allows any provider implementing the system to access patient records via a centralised database**
- Considered an EHR system

Malaysia Health Information Exchange (MyHix)

- Launched in 2008 as a homegrown platform designed to **electronically transmit patient information between government hospitals and clinics**
- Integrates facilities that already have HIS/ TPC-OHCIS
- Low take-up rate and has been replaced by a new Health Information Exchange (HIE) platform
- Considered an EHR system

Malaysia Health Data Warehouse (MyHDW)

- Developed in 2017 by MIMOS Berhad under MOH
- An **information gathering and reporting system** for patient visits that would **only provide statistics on the flow of patients in the country's healthcare facilities**
- A centralised database but not considered a patient record system



One Patient, One Record, Across Their Lifetime

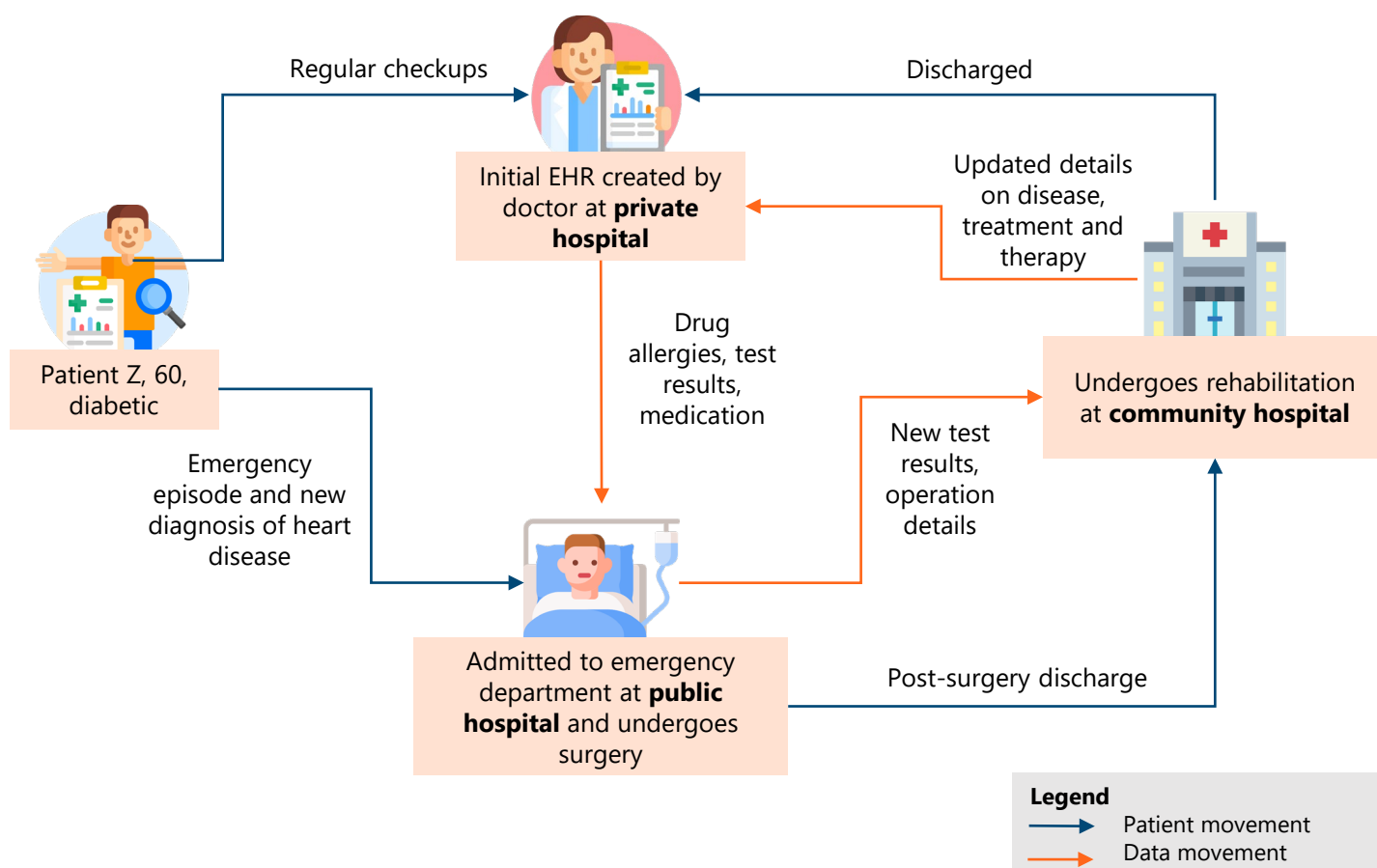
A key hallmark of an EHR system is that information is automatically uploaded into a centralised database.

With an EHR system in place, **all of Patient Z's health information** such as his primary diagnosis, allergies, test results, treatment plan or current medication would be **digitally recorded and updated** with each check-up.

The seamless sharing of patient health information will provide a **comprehensive and longitudinal record of a patient's medical history**.

If Patient Z experiences a health episode that requires emergency admittance into a public hospital, doctors in the emergency department at the new facility he is brought to are able to access his information from all his regular checkups.

Example of patient data movement throughout the patient's journey with EHR implementation



Over the next four to five years, our collective journey will lead to the establishment of an integrated Malaysian healthcare ecosystem. Through the implementation of electronic medical records (EMR) [...] we anticipate nationwide connectivity.

Dr Dzulkefly Ahmad
Minister of Health, Malaysia, 2024



Potential Benefits of Digitalising Health Records



EHRs enable **continuity of care** for individuals

Having an EHR system in place allows patients to receive continuous, uninterrupted care regardless of which facility they receive care from.

- EHRs are a potential solution for effective **at-home disease management** that will allow gradual shifting of care burden away from the healthcare sector.
- There is an opportunity for EHRs to act as a **foundation for future systems** such as online portals, mobile applications of SMS-based reminder systems (e.g. a study in 2012 found that 46.6% of Malaysian patients with hypertension had poor medicinal adherence with many missing doses due to forgetfulness).
- In the face of a health crisis, patients would have the **option of attending online consultations or receive in-person care appointments at alternative facilities** since their information is available to anyone providing care.



EHRs improve **preventive healthcare** for the population

EHRs could act as a comprehensive patient registry that allows for efficient targeting of populations eligible for healthcare screening.

- According to the National Health and Morbidity Survey (NHMS) 2019, **Malaysia faces a worryingly low uptake of screening programmes**. This results in cancers being detected at later stages and incurring substantial costs (Malaysia failed to meet at least 50% screening coverage for three main cancer types highlighted by NHMS 2019).
- In Denmark and the UK, **a comprehensive registry enabled screening processes to be automated**, resulting in a decreased incidence of cancers such as cervical cancer.
- In China's Minhang district, availability of health records at point of care allowed **delivery of targeted health education courses, enlistment of at-risk groups for interventions and execution of opportunistic screening**.



Challenges and Risks of Digitalising Health Records

1 Security and Privacy Risks

Stringent data governance needs to accompany an EHR system to safeguard the population against violations. Dangers include **capture and restriction of access** to data and hospital systems or **threats of criminals releasing data** to the public domain unless their demands are met.

Besides ransomware, there is also the risk of commercial exploitation with gray areas pertaining to the use of personal health data.

Sharing of health records raises concerns of targeting of vulnerable populations even when private companies are utilising anonymised databases.



2 System design and implementation issues

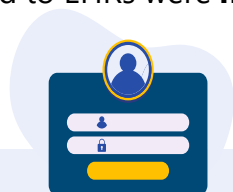
The existence of EHRs does not automatically lead to better and safer outcomes for patients.

A 2019 study interviewing 31 medical doctors in three Malaysian government hospital uncovered some themes on unsafe use of HIS.

However, in the US, a study conducted in 2018 showed that patient safety issues connected to EHRs were **minimal**.

Locally, factors contributing to higher error rates that affected patient safety include lack of skillset to utilise the system and system quality in terms of usability and reliability.

Another US-based study from 2015 showed that facilities implementing EHRs had significantly **higher rates of having workflows, policies and practices that promoted patient safety**.



3 Inequalities in access and literacy

Covid-19 has expedited the digital transition, but this has not happened at an equal pace across the population.

Populations may be comfortable using the internet for certain purposes but not others.

For example, in Kedah, a high percentage of users seek health information online while a low percentage of users make appointments online.

Importantly, the **quality of digital infrastructure** within different states in Malaysia differs and there is **significant variation** in proportions of individuals **using the internet to seek health information and make medical appointments online** by state.





The background image shows a clinical workstation. In the center is a Mindray VS-900 monitor displaying a waveform. To its right is a laptop with a web application for patient registration, showing fields for patient name, date of birth, and address. In the foreground, there is a patient form with the number 1009 and text in Malay. The text 'SECTION 2: MALAYSIA'S JOURNEY IN HOSPITAL DIGITALISATION' is overlaid in white on a dark blue background.

SECTION 2: MALAYSIA'S JOURNEY IN HOSPITAL DIGITALISATION



How It Began in Malaysia

Digitalisation of the healthcare system in Malaysia **began with a focus on administrative purposes** such as billing but this was expanded under the Telemedicine Blueprint in 1997.

Systems rolled out between 1985 and 1996 focused on administrative functions (e.g. billing) whereas work processes (e.g. patient discharge summaries and laboratory orders) were still paper-based.

- Under the Fifth Malaysia Plan (1985–1990), computerisation was introduced in order to create a more efficient billing system at selected government hospitals.
- Under the Sixth Malaysia Plan (1991–1995), computerisation was expanded to include health management information systems for non-medical programmes such as patient administration.

In 1997, the pace of digital adoption picked up with the launch of the Multimedia Super Corridor (MSC) project and the Telehealth Flagship project.

The Telemedicine Blueprint was also established to provide a foundation for comprehensive transformation of healthcare services via the planning and implementation of IT initiatives.

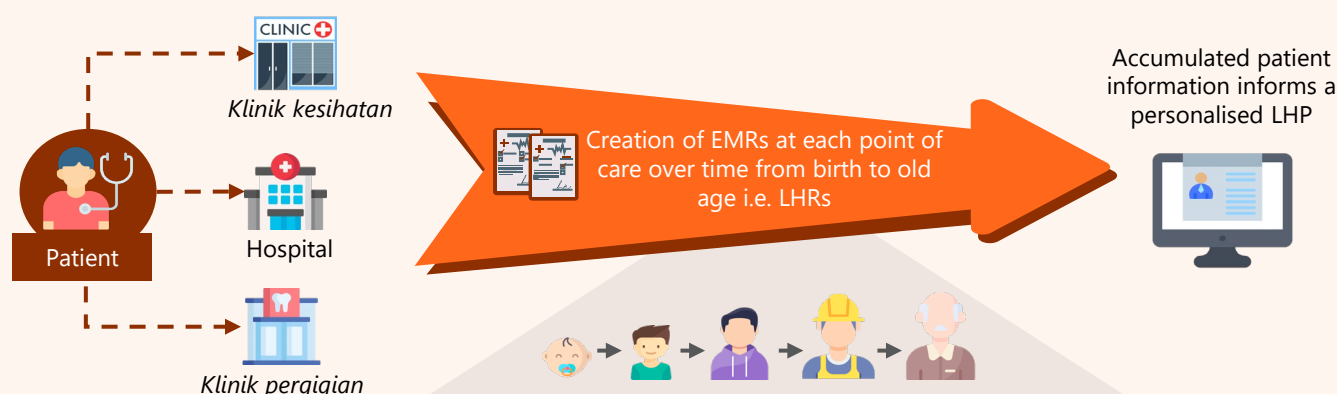
Under the Telemedicine Blueprint, four main projects were proposed:

1. Customised/Personal Health Information and Education
2. Continuing Medical Information (CME)
3. Teleconsultation
4. **Lifetime Health Plan (LHP)**

Aimed to establish a set of **“network-based lifelong personal health management tools”** that could facilitate the recording of detailed patient information. This would collectively contribute to building longitudinal health records for patients, i.e. a Lifetime Health Record (LHR).

The Idea of a Lifetime Health Plan

Illustration of the EMR-LHR-LHP interaction



A patient receiving care at any healthcare facility (e.g. klinik kesihatan, klinik pergigian or hospital) would have the information recorded in an EMR.

More information would be created as EMRs for a single patient over time from birth to old age. This lifelong record of patient health has been termed an LHR by the government.

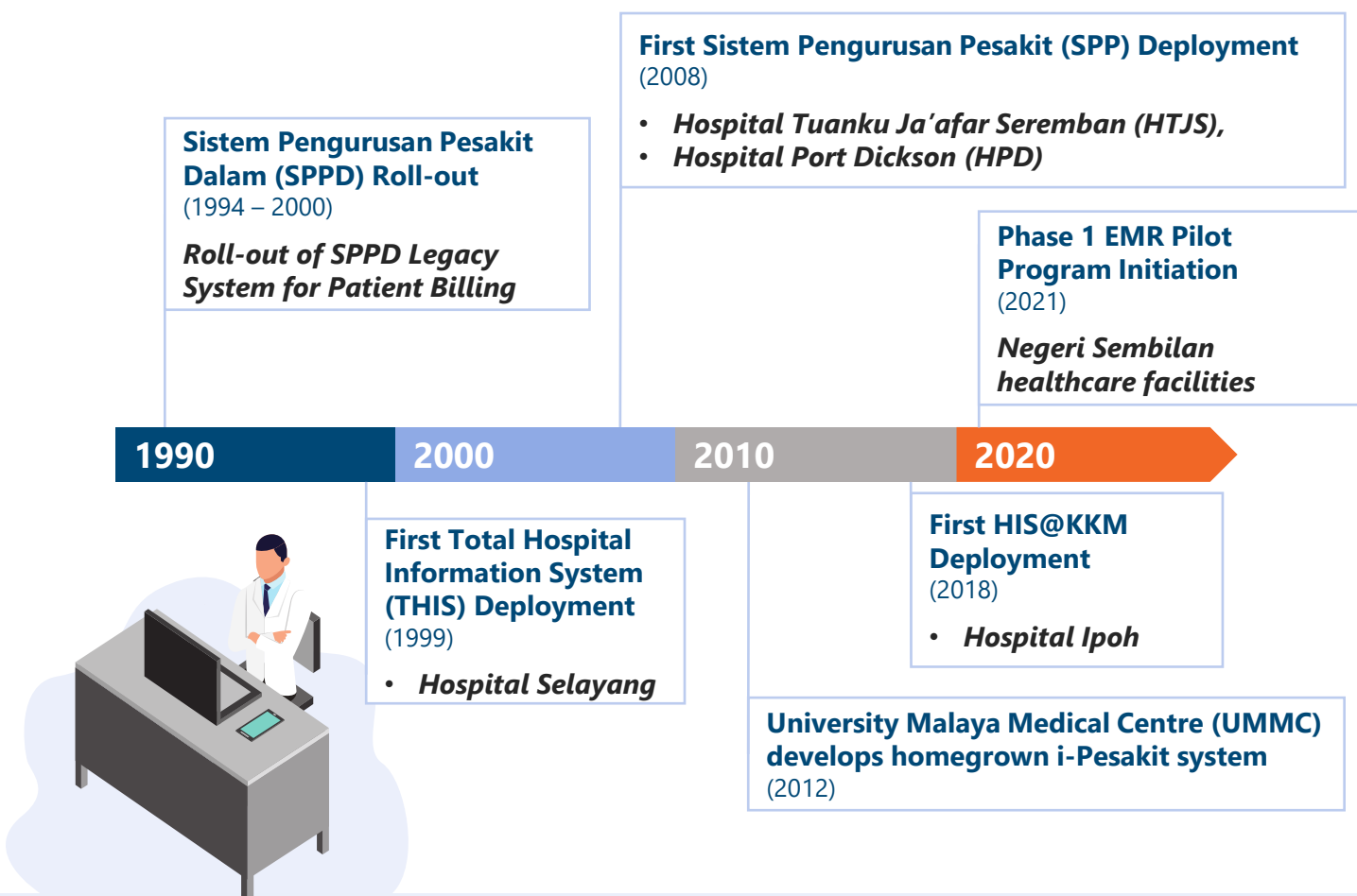
These LHRs would then be used to feed into a larger LHP that would be able to provide personalised support for people to take charge of their health in both wellness and illness.



Key Public Hospital Digital System Deployments

Multiple digital systems with a health record component have been deployed in public hospitals in Malaysia over the years with different approaches being taken by the government.

Malaysia's Key Public Hospital Digital System Deployments, 1994–2021



Our research explores three case studies of digitalisation in public hospitals using a combination of literature review and key informant interviews.

The first system is a **Total Hospital Information System (THIS)**. MOH procured ready-made components of THIS from vendors.

The second system is **Sistem Pengurusan Pesakit (SPP)** or Patient Management System. MOH appointed external developers to build SPP according to MOH specifications.

The third system is the homegrown **i-Pesakit** system used in a teaching hospital under the Ministry of Higher Education (MOHE) where the hospital developed and implemented its own in-house system.

All three digital systems include an EMR component but are not technically EHR systems since they do not allow sharing of patient information with other facilities.

Some later systems are upgrades of earlier versions (e.g. HIS@KKM is an upgrade of SPP) while others differ in terms of level of complexity (e.g. THIS has more features than i-Pesakit).



Latest Developments in Malaysia's EHR Efforts

MOH has evolved its approach over the years to realise its long-standing vision, from institution-based systems to adapting to the local mobile-first digital landscape in Malaysia.

This evolution brings us ever closer to the implementation of an EHR system that allows seamless sharing of patient records across the healthcare landscape.



Much of the developments in hospital digitalisation have been through institution-based systems

- HIS and TPC-OHCIS require public healthcare facilities, many of which are considered legacy facilities, to upgrade their infrastructure.
- These upgrades extend beyond installed equipment, and include structural suitability for digital systems, such as plug point availability and signal quality within the facility itself.

Malaysia has departed from this approach and has instead adapted to the local mobile-first digital landscape

- MOH introduced systems that **do not require a lot of storage space or high processing power**.
- Turning to **cloud storage and accessing patient data through a browser** instead of requiring software installation on multiple machines is intended to ease EHR implementation in legacy facilities.



As at 2023, MOH is continuing with the NEI that was planned since 2019. This will involve the rollout of a Health Information Exchange (HIE) platform that would enable sharing of patient health records between facilities.

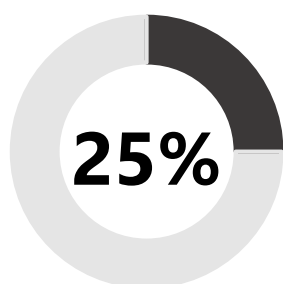
The platform would be used in conjunction with patient, healthcare practitioner and healthcare provider facing portals. Facilities would utilise HIE through web browsers although later plans involve integrating HIE with HIS@KKM and TPC-OHCIS.



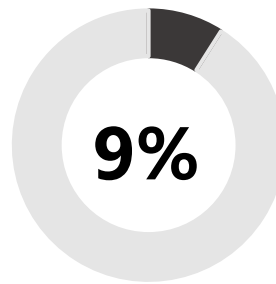
Key Findings from The Malaysian EHR Experience

Our research shows that although Malaysia has made significant efforts to digitalise its public healthcare system in the last three decades, **recurring barriers have hampered the establishment of a nationwide system.**

As at 2020, it was reported that:










of 146 **public hospitals** are digitalised



of 1,090 **public clinics** are digitalised

Challenges faced in Malaysia's past efforts to digitalise healthcare facilities include:

-  Deciding to **build or buy systems** and the associated maintenance and upgrade **costs**
-  **Outdated "legacy" infrastructure** that require upgrades to become digital facilities
-  Issues with **system design** impacting efficiency of hospital work processes
-  Reluctance of **end-users** to use the system and adapt to new workflows
-  Need for effective **change management** to encourage system adoption
-  Variations in system architecture, coding and formats resulting in issues of **data integration**
-  Lack of **laws and regulations** that explicitly address health data and patient rights

We are fully committed to embracing the digital age and transforming all our clinics into modern, efficient and patient-centred facilities [...] The main challenges are infrastructure readiness and hardware procurement. These need a sufficient amount of budget.

Dr Zaliha Mustafa
Minister of Health, Malaysia, 2023



SECTION 3: PRINCIPLES AND BEST PRACTICES



Cross Country Comparison of EHR Implementation

Case studies of **Australia, China, Singapore and USA** show how population size, healthcare provision models and role of the federal government affect EHR implementation.




Australia (My Health Records)

- **Centralised**, government-owned **national EHR system**
- Estimated cost of implementation: **USD1.4 billion** over 10 years




China (Electronic Health Record)

- **Decentralised system** with individual healthcare providers adopting systems from different vendors
- Estimated development cost: **USD19 billion**



Singapore (National Electronic Health Records)

- **Centralised**, government-owned **national EHR system**
- Estimated cost of implementation: **USD265 million** over 10 years



USA (Electronic Health Record)

- **Centralised**, government-owned **national EHR system**
- Estimated cost of implementation: **USD265 million** over 10 years

Patients **have access** to health data

Patient registration is **automatic**

Patients can choose to **delete their health data**

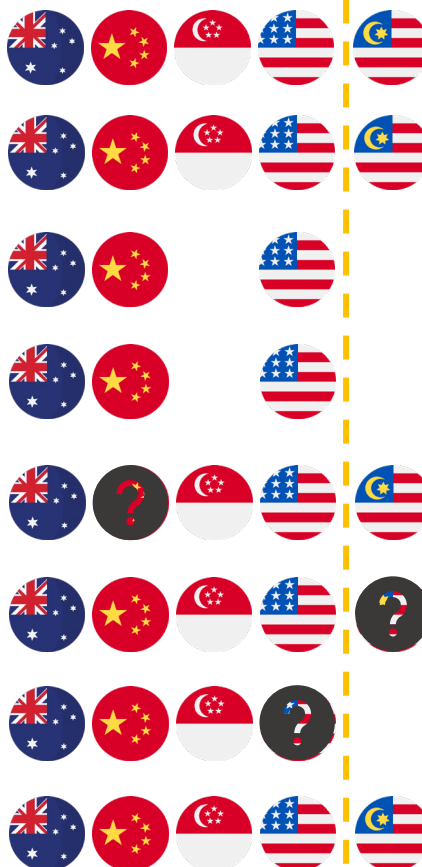
Laws explicitly **governing health data** exist

Audit trail for data access exists

Crisis management plans for data breaches exist

Cross-facility **data-sharing** exists

Standards requirement exists

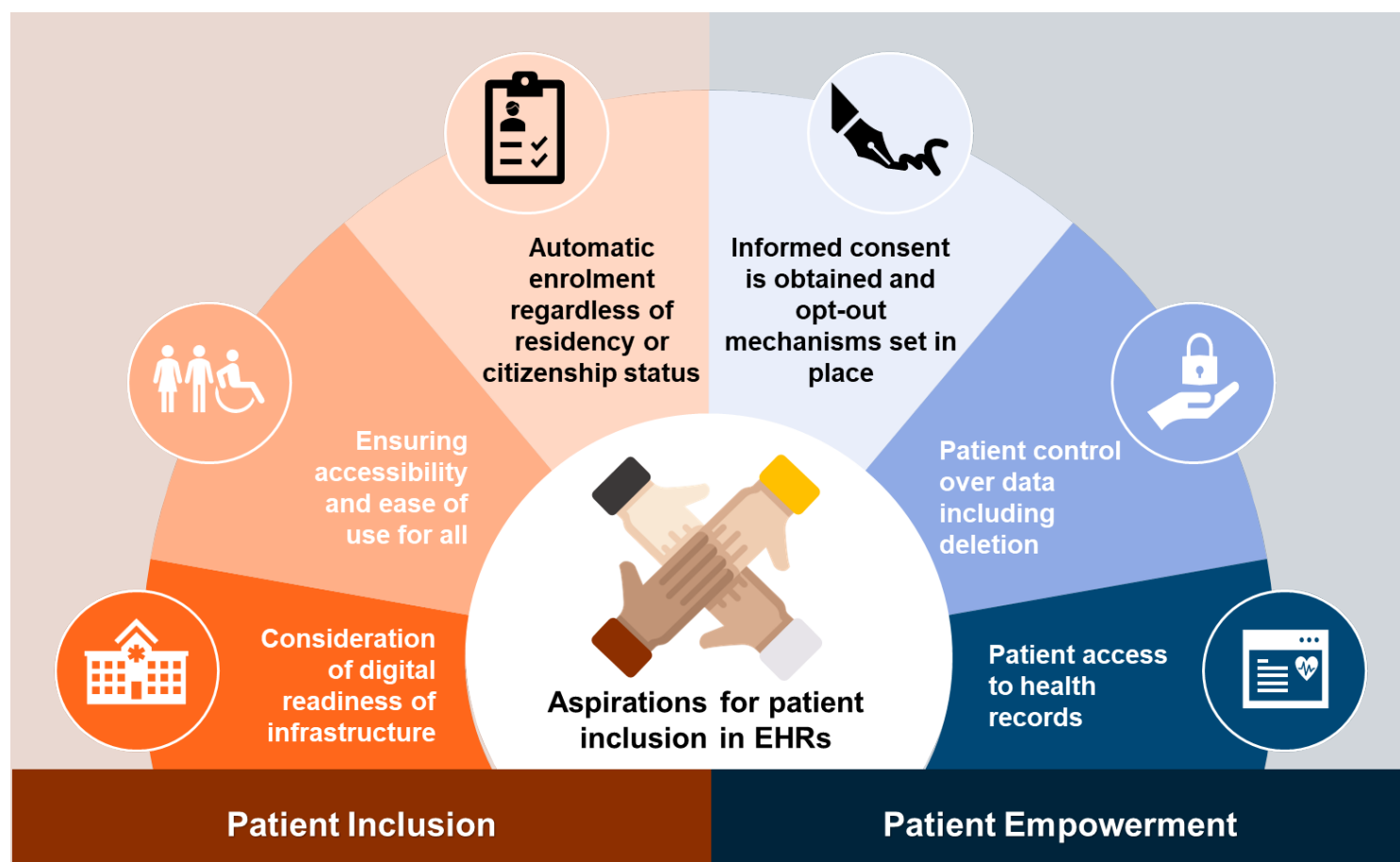


Malaysia is moving towards more patient-centric care with the ongoing National EMR Initiative. However, there is still some room for improvement to enhance inclusivity, data governance and interoperability.



Design Aspect I: Patient Inclusion and Empowerment

It is crucial that EHR systems and policies **promote inclusivity**, focusing on **benefiting the many instead of the few**, in addition to focusing on **empowering patients to use EHRs**.



There has been a worldwide focus on inclusivity e.g.

- Singapore's move to ensure its EHR system is available to all regardless of residency or citizenship status.
- China's establishment of the Basic Medical Healthcare and Promotion of Health Law providing guidelines for promoting equitable access to healthcare information technology, including EHRs.

Many countries have set requirements for systems to be standardized and patient-centric e.g.

- US Congress' 21st Century Integrated Digital Experience Act 2018 requiring all executive agencies to ensure accessibility in designing systems and websites.
- Australia's use of 17 different community languages in the communication materials relating to their EHR system.

Individuals should have the right to know and decide how their information is being used e.g.

- Australia allows patients to control access permissions for healthcare organisations and to permanently delete their record at any time.





Design Aspect II: Data Legislation, Privacy, Security & Governance

The implementation of EHRs in the case study countries have typically been accompanied by many **digital health legislations** that outline their structure, security and interoperability.



1 Data security and privacy

- **EHR systems should be integrated with security technologies** such as multi-factor authentication or data retention limits as well as time-stamped audit logs.
- **Regular training refreshers, inspections and audits** are needed to ensure that systems and users are adhering to cybersecurity protocols.

At the time of writing, Malaysia does not have a law explicitly governing health data privacy.

- Governance includes **digital rights** such as patient confidentiality, autonomy and anti-discrimination.

2 Patient access to Data

- As MOH transitions towards **cloud-based systems that support health information exchange**, questions around data storage and data access arise, data ownership not withstanding.
- In Malaysia, it appears that patients have **little control over how their medical data are subsequently managed**.

There are currently no requirements for healthcare providers or MOH to inform patients of any leakage of their personal health data.

- Patients in Malaysia have no formal mechanisms to empower them to give consent or approval to transfer data, nor power to decide how this data is used even when it is for their own benefit.





Design Aspect III: Integration & Adoption Across Facilities

The main challenges observed are **adoption, standardisation and interoperability**; with adoption often requiring seamless integration across public and private institutions.

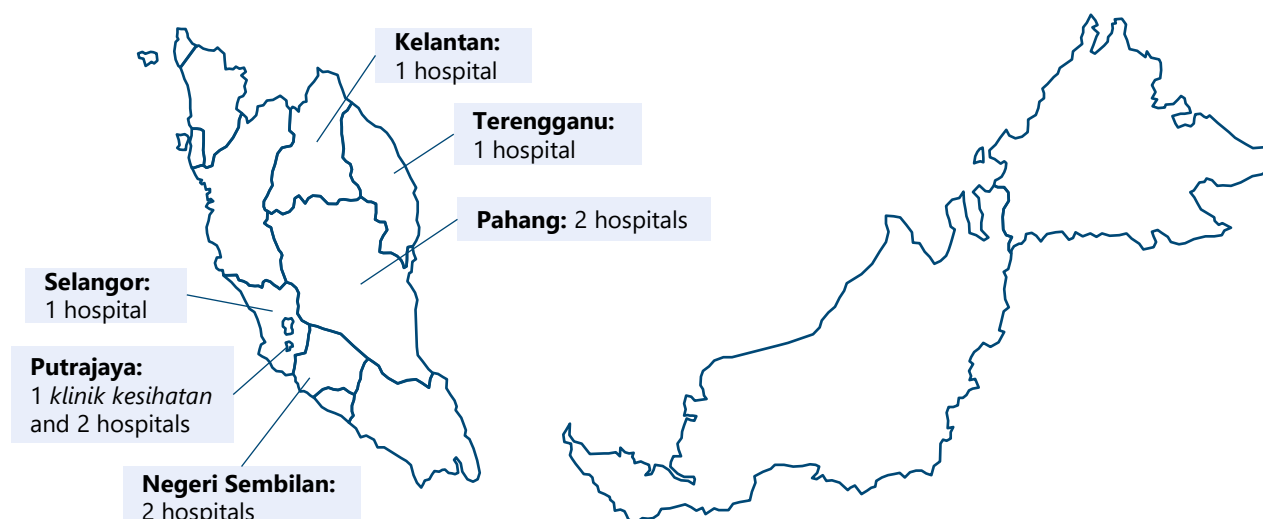
- **Malaysia has not yet embarked on incentive programmes for adoption** or involved private providers in the current health record system rollout.
- **Centralised or decentralised system?**
Although centralisation builds interoperability into the system directly, decentralisation allows more flexibility and could speed up adoption. **Thus, standardisation is crucial.**
- One approach to addressing interoperability may be to **implement cloud storage of health data and to access the data using web browsers or mobile applications.**
 - E.g. Covid-19 vaccination records can be accessed by patients regardless of type of mobile device.



Malaysia's previous record sharing platform, MyHix, met with low uptake. As seen in the map below, MyHix was mostly implemented in a few large, public hospitals in scattered locations in Peninsular Malaysia. There was a lack of integration with primary care facilities and private providers.

Thus, patients may not have reaped the benefits of information sharing since records did not follow a typical patient's movement throughout the healthcare landscape.

Geographical distribution of healthcare facilities integrated with the MyHix platform, 2019





SECTION 4: POLICY RECOMMENDATIONS



We highlight four policy recommendations that are crucial in ensuring an inclusive and resilient system is rolled out.

Type of measure	Recommendation
Non-budgetary	Update digital health specific legislations
Budgetary	Increase investment in foundational healthcare digitalisation
Non-budgetary	Promote public awareness on the importance of patient access to health data
Non-budgetary	Facilitate public-private healthcare systems integration

Further recommendations and details are published in KRI's discussion papers.

Note: Budgetary measures refer to measures that require financial allocation, non-budgetary measures refer to measures that may not require financial allocation.



Policy recommendation I: Update Digital Health Specific Legislations

The governance of health data in Malaysia has typically been associated with the **Prevention and Control of Infectious Diseases Act 1988 (PCIDA)**, the **Medical Act 1971** and the **Personal Data Protection Act 2010 (PDPA)**. These acts do not specifically have provisions regarding the management of health data.

1. PCIDA 1988

- Only deals with **personal data** which may not always include health data
- **Irrelevant** under non-outbreak conditions
- Focuses more on **collection of public data** and not necessarily on the protection of said data

2. Medical Act 1971

- Ensures **registered medical practitioners protect confidential information** against improper disclosure
- **May not be sufficient** to govern breaches of a health records database

3. PDPA

- Only applicable to **commercial transactions**
- Does **not apply** to federal or state governments

The implementation of EHRs in the case study countries have been accompanied by digital health legislations that outline their structure, security and interoperability.

- **Australia's My Health Records Act 2012** details a top-level privacy framework on how entities can collect, use and disclose information and outlining reporting frameworks for data breaches.
- **China introduced multiple data legislations** that posit national security and technical frameworks, review procedures and defines health information as a personality right.
- **USA's Health Insurance Portability and Accountability Act of 1996 (HIPAA)** requires all healthcare entities to provide comprehensive security management protection and frameworks for EHRs.





Policy recommendation II: Increase Investment in Foundational Healthcare Digitalisation

Regardless of whether MOH wishes to build or buy its digital system, efforts to implement EHR systems nationwide will **require substantial investments**. Past challenges have included a lack of funding **to cover total life cycle costs such as system maintenance and upgrades**.

“Legacy hospitals” were not built to cater to digital needs. They lack **devices** as well as **physical infrastructure** to accommodate healthcare digitalisation.

Poor internet connectivity within public healthcare facilities is a challenge to digitalisation initiatives.

Malaysian public healthcare faces **chronic underfunding** and historically **low resource allocations** for healthcare digitalisation.

The **Twelfth Malaysia Plan** highlights maintaining healthcare services using a “repair, replace and restore” approach to improve aged healthcare facilities, particularly those that are above 50 years old.

The **Health White Paper 2023** also emphasises upgrading hospital information systems and electronic medical records to achieve optimisation of hospital care.





Policy recommendation III: Promote public awareness on the importance of patient access to health data

A more patient-centric approach can be seen in the latest developments in Malaysia's journey towards an EHR system in the public sector, e.g. MySejahtera and the National EMR Initiative. **It is important to ensure that EHR systems and policies promote inclusivity, focusing on benefiting the many instead of the few.**

Australia



Ensured that **communication materials are displayed in 17 different community languages** to promote inclusion.

China



Introduced the Basic Medical Healthcare and Promotion of Health Law to promote equitable access to health information technology.

Singapore



Ensured that the National Electronic Health Records system is made available to all **regardless of residency or citizenship status.**

USA



Introduced the 21st Century Integrated Digital Experience Act 2018 requiring all executive agencies to ensure accessibility and ease of use in system design.

Additionally, there also needs to be a **focus on empowering patients to use EHRs**. Patients need to understand the importance of accessing their health records and how this could aid in improving clinical outcomes through **self-management of chronic, non-communicable diseases**.





Policy recommendation IV: Facilitate public-private healthcare systems integration

Malaysia's dual healthcare system has led to a **mixed approach of centralisation and decentralisation** with the federal government rolling out selected systems to public healthcare facilities while **private healthcare facilities implement their own systems**.

	Malaysia	Other countries
Private sector incentive programmes	No incentive programmes for rollout of national system within private sector. Focus has been on public facilities under the allocated budget for MOH. Uptake of systems within the public sector has also been low.	Governments in the case study countries have attempted to introduce incentive programmes to encourage private adoption. However, private adoption is still fairly low, e.g. <ul style="list-style-type: none"> • Australia 29% in 2016 • Singapore 27% in 2019
Standards enforcement	Standards are provided only as recommendations.	China set up a Health Information Standardisation Professional Committee (HISPC) specifically for the task of ensuring standardisation in health information technology.
Public-private sharing	Healthcare providers that do not come under the purview of MOH are not able to participate in information sharing due to the Private Healthcare Facilities and Services Regulations 2005 .	Singapore's government provides a portal for bidirectional information flows that would also involve private healthcare providers.

Further engagements among regulators, industry and patient-rights advocates are needed to develop appropriate systems design and data regulations that will facilitate interoperable and secure information exchange across public and private facilities.



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