

eHealth in Singapore

Yung-Ming Tan

Principal Informatics Specialist

Clinical Informatics Group



Singapore's approach to improving health & meeting future challenges is to make **3 shifts** in our health system



Beyond Healthcare
to **Health**

To help and support Singaporeans
to lead healthier lives



Beyond Hospital to
Community

To enable Singaporeans to
receive appropriate care in the
community and closer to home

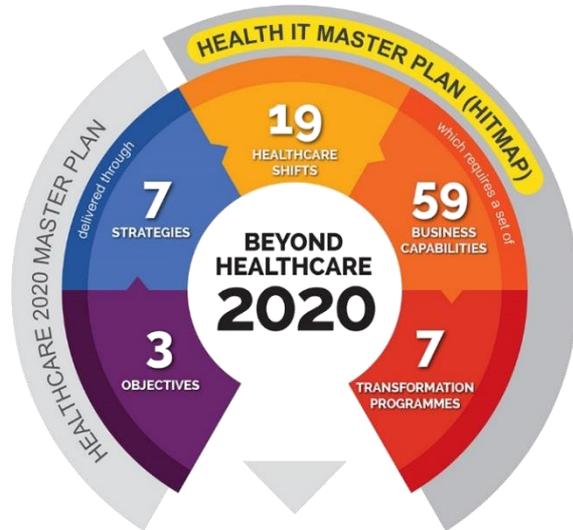


Beyond Quality to
Value

To give every Singaporean best
value, while keeping our system
sustainable

To guide HealthTech investments...

The **Health IT Master Plan (HITMAP)** articulates the required business shifts, business capabilities, IT capabilities and 7 transformational programmes to help realise Better Health, Better Care, Better Life, supporting **Ministry of Health's 3 shifts**...



A refresh of HITMAP is underway to incorporate emerging requirements and new care models

HITMAP: 7 Transformation Programmes



Population Profiling

Develop common data analytic capabilities to link data across our healthcare and other non-healthcare data sources, to provide actionable insights into our population.



Population Enablement

Develop a common platform for providers to deliver relevant information and services to empower patients/caregivers/consumers, collect new information as well as enable interaction.



Prevention & Continuity of Care

Develop a set of common capabilities to allow Regional Health Systems (RHS) to execute primary, secondary and tertiary prevention programmes and integrate various providers' IT systems in different settings to provide continuity of care to patients.



Provider Care & Operations Excellence

Enable the primary and intermediate & long-term care sectors with basic IT for them to connect with public health institutions (PHIs) to share information about patients; rationalise our PHIs' IT systems towards our target architecture to optimise our IT effectiveness.



Healthcare Financial Excellence

Ensure patient healthcare affordability and improve visibility in costs and outcomes to be more cost effective in our sector.



Policy & Public Health Workbench

Identify common information needs and develop common capabilities to collect and analyse data to support policy formulation and public health management.



IT Foundation & Resiliency

Develop common foundational IT capabilities to improve scalability and resiliency.



Illustrative projects undertaken by IHiS in support of the 3 shifts



Beyond Healthcare to **HEALTH**

National Screening System

Health screening, profiling and management for population. Shifts care from treatment to prevention

TeleHealth

Vital signs monitoring, video consult and TeleRehab for patients and professionals. Enables self-care and better accessibility to care

National Diabetes Database (NDD)

Enables better understanding of diabetes problems, and uncovers insights for the War against Diabetes



Beyond Hospital to **COMMUNITY**

National Electronic Health Records (NEHR)

'One Patient, One Health Record'. Enables continuity of care throughout the healthcare system in Singapore. This improves patient safety, efficiency and affordability of care.

Multiple Readmission Predictive Model

Predict who are at higher risk of re-admission and allowing proactive interventions

Nursing Home IT Enablement Programme (NHELP) & Community Hospital Common System (CHCS)

Clinical integration between nursing homes and community hospitals with the public healthcare systems. Enables better quality and efficiency of care, as well as clinical integration with the public healthcare system. Increased staff's productivity and allowing more time to be spent on direct patient care.



Beyond Quality to **VALUE**

Outpatient Pharmacy Automation System (OPAS)

Automated prescription filling system. Reduced wait times at outpatient pharmacies by up to **50% or 11mins**. Reduced near-miss errors by at least **27.4%**

Medical Device Integration (MDI)

Automation of collection and transmission of patient vital signs from patient monitoring devices to the Electronic Medical Records (EMR) system. It has helped to saved nurses **>2,030 hours a day**, giving them more time to spend on direct patient care activities



We design, implement and support a range of large scale/ cross-institution solutions

<p>HEALTH ANALYTICS </p> <ul style="list-style-type: none"> • BRAIN • eHINTS • EDW 	<p>MOBILE APPS </p> <ul style="list-style-type: none"> • HealthHub • Diabetes Pal • Anxiety • MyEyeGym 	<p>AMBULATORY CARE DELIVERY </p> <ul style="list-style-type: none"> • Smart CMS • CHAS / CDMP Portal • GP Connect 	<p>ACUTE CARE DELIVERY </p> <ul style="list-style-type: none"> • Electronic Medical Record Systems • Patient Mgt & Patient Accounting 	<p>COMMUNITY CARE </p> <ul style="list-style-type: none"> • CHCS / NHELP • Integrated Referral Mgt System • Care & Case Mgt • ILTC Portal 	<p>VIRTUAL REALITY </p> <ul style="list-style-type: none"> • 3D VR Rehab
<p>DASH-BOARDS </p> <ul style="list-style-type: none"> • 13 Andon Board • C-IVOC • Enterprise Mgmt • Dashboard System 	<p>TELE-HEALTH </p> <ul style="list-style-type: none"> • Tele-Consult • Tele-Monitoring • Tele-Rehab 	<p>MEDICAL IMAGING </p> <ul style="list-style-type: none"> • Rad Info System • Picture Archiving and Comms System • Vendor Neutral Archive 	<p>MONITORING </p> <ul style="list-style-type: none"> • SmartSense System • Medical Devices • Middleware Integration 	<p>IN-PATIENT </p> <ul style="list-style-type: none"> • eMeal Ordering Sys. • Bed Mgt Sys. • iCOM • Patient Comm 	<p>RFID </p> <ul style="list-style-type: none"> • RAPIDE • Patient RFID Tag • Tele-Geriatrics
<p>HEALTH FINANCING </p> <ul style="list-style-type: none"> • 1 Queue 1 Bill • One Medifund Assessment System 	<p>CARE CONTINUITY </p> <ul style="list-style-type: none"> • NEHR • Consumer Generated Data Repository • Care & Case Mgt 	<p>LABORATORY </p> <ul style="list-style-type: none"> • End-to-end Lab Automation • Digital Pathology Sys 	<p>PHARMACY </p> <ul style="list-style-type: none"> • Closed Loop MM • Multi-dose MM • IPAS • OPAS 	<p>OPERATING THEATRE </p> <ul style="list-style-type: none"> • Operating Theatre Management System (OTMS) 	
<p> TRIALS / UNDER DEVELOPMENT</p> <ul style="list-style-type: none"> • Health Market Place • Bots & Robots • C3 Systems • Precision Medicine • Smart Wards 					

and more...

Current Large Scale Projects in the works...



CDTP

CYBER DEFENCE TRANSFORMATION PROGRAMME



National Harmonised
Integrated Pharmacy
Solution



Billing
Transformation

And more...



We cannot accomplish all these alone

We partner the whole of enterprise and industry for

research, innovation & value creation

to help solve healthcare challenges, and guide partners from POCs / POVs to scale



...more

End of Presentation

—— Thank you ——



Connect with Us on  IHIS.SG  IHIS