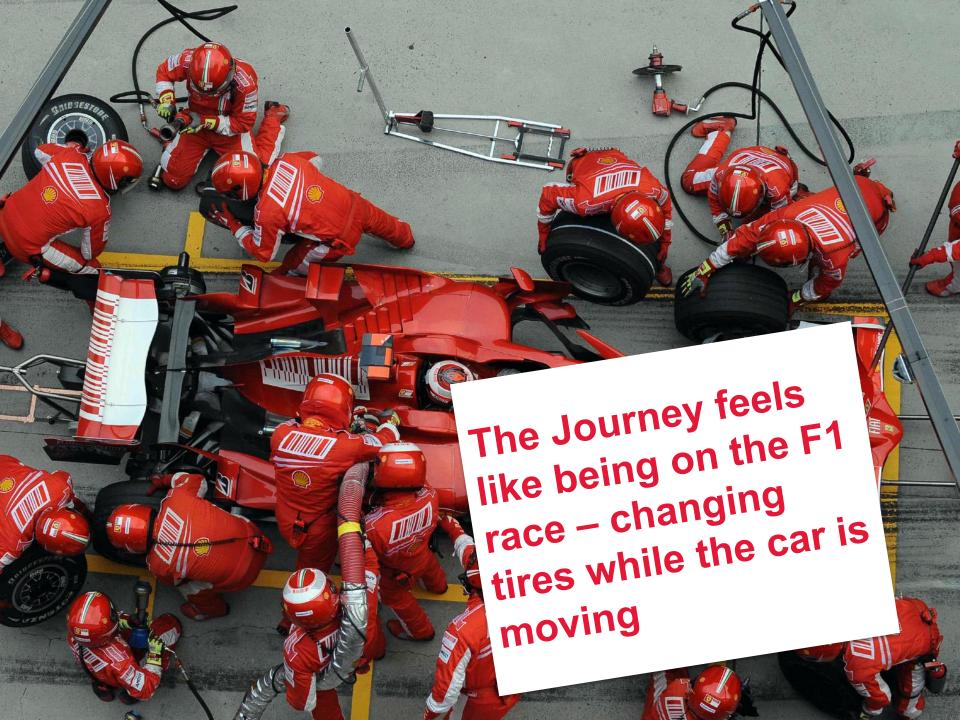
The Journey to pioneer Singapore's 1st integrated development of an acute general hospital and community hospital

Foo Hee Jug

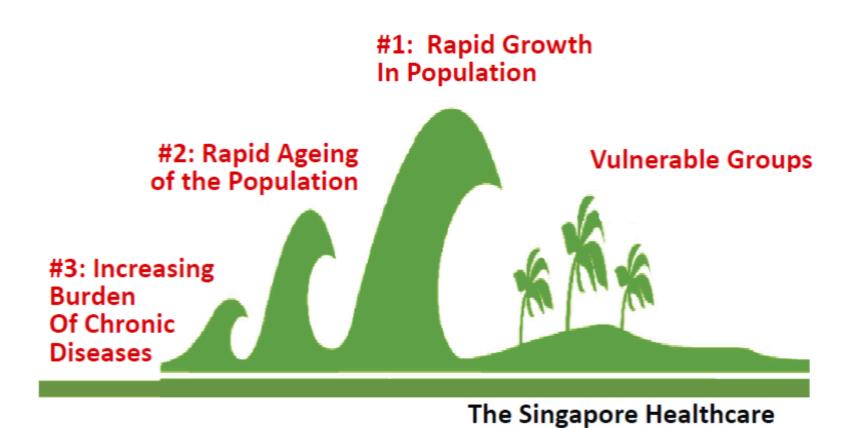
Chief Executive Officer
Jurong Health Services







Singapore's Healthcare System faces three major challenges

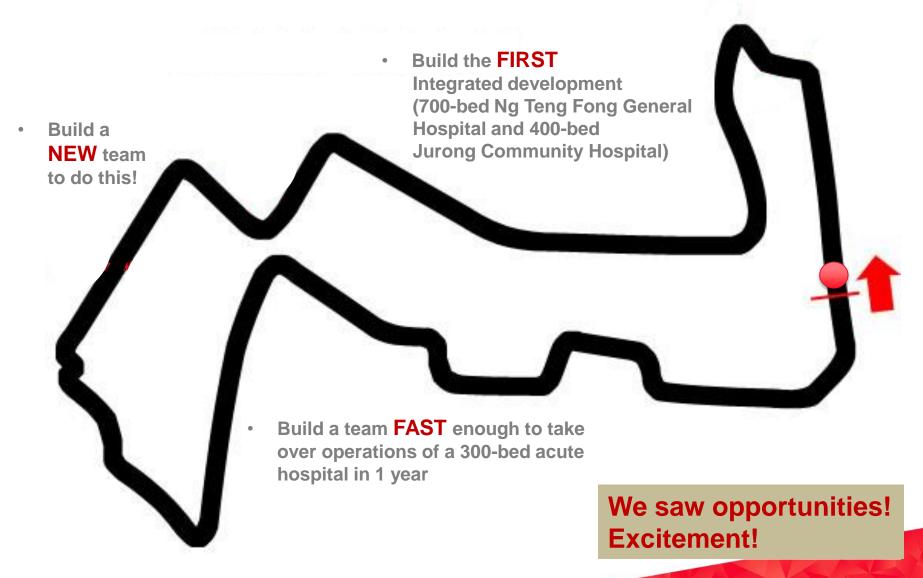


System

A Unique Beginning, Challenge and Opportunity

"Pitch your tent as high as possible, but the most important parts are outside."

- Minister Khaw Boon Wan



With rapid ageing population and growing prevalence of chronic diseases, the hospital-centric model of care is no longer sustainable

JurongHealth envisions transforming the current care delivery model over time

Current State

Care is:

- Episodic
- Hospital based
- · Illness-focused

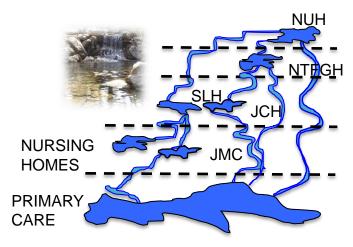
Challenges

- Increasing demand for costly inpatient services (aging population, chronic disease)
- Rise in obesity

Aspiration

 Vision of a healthy Singapore

Future State



HOME CARE, SOCIAL SUPPORT SERVICES, HOSPICES

Seamless & patient-centred care delivery across care continuum

Holistic and integrated care at home & wellness in the community

In alignment with MOH objectives

JurongHealth is the Regional Health System (RHS) looking after the population in the western sector of Singapore together with NUH as a tertiary partner

KTPH

SGH

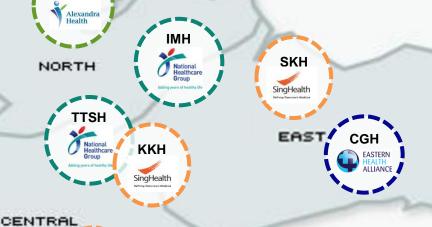
SingHealth

- Provide integrated and seamless care experience for our community requiring various healthcare services.
- Work closely with care providers in the community including GPs, polyclinics, community hospitals, nursing homes, hospices, home care providers and social support groups.



Engage non-healthcare community partners

 e.g. grassroots organisations, employers, sports and
 other interest groups to help residents stay healthy in the
 community – away from the hospital.



- 675,200 residents (12% of Singapore population) along with their health and wellness needs. (Singapore population: 5.5 million, 2015)
- 7% or 63,000 elderly (residents with age ≥65) in the west in 2010.

CEO and CMB were appointed in April 2009 – our work cut

out for immediate priorities

- Immediate tasks to form the management team and clinical leaders, and build a team from scratch
- Recruit sufficient staff to take over the management of Alexandra Hospital from Khoo Teck Puat Hospital team by August 2010
- Appoint the architect and start detailed design of 2 new hospitals for opening by end 2014

Govt investing \$1 billion in two new hospitals in Jurong

to open in 2014 and early 2015

munity Hospital (JCH)

rong General Hospital and care capacity in the West

community as well. Two homes in the West, for in-stance, will open by 2013.

eased congestion at hospi-lik reflects our commitment this such as Tan Fock Seng, for instance, attendance at Tan Fock Seng's emerging Tan Fock Seng's emerging standard for Singaporeans, nearly 20 per cent, which as also brought down walting time for beds. Khoo income group.'



The site was challenging, prompting the need for an innovative approach



- Long & narrow site: 600m x 100m
- New 6-7 lane road cutting into the plot
- Highly urbanised

- Surrounded by commercial buildings and shopping malls
- Flanked by busy roads with high traffic noise

Picked up ideas from hospitals in Asia and in the US – learn from anyone

USA

Northwestern Memorial Hospital, Chicago, Illinois (NWM)

- Wide and well-designed link bridge between towers
- Wayfinding kiosks

Cleveland Clinic, Cleveland, Ohio (CC)

- Sense of arrival and double volume lobby
- •Separation of OT and ICU on different floors linked by dedicated trauma lift

Los Angeles County-USC Medical Centre, Los Angeles, California (LAC+USC)

•Flexibility of design grid for future change of use and space for expansion

Ronald Reagan UCLA Medical Centre, Los Angeles, California (RR)

•Segregation of patients going for surgery on separate floor from OTs

ASIA

Seoul St. Mary's Hospital, Seoul, Korea (SMH)

•Double volume lobby, colours in wards and horizontal fire evacuation plans

Prince of Wales Hospital, Hong Kong (PWH)

•Sense of arrival must be pleasant for patients

Shatin Hospital, Hong Kong (STH)

Therapeutic garden and mobility park

Princess Margaret Hospital, Hong Kong (PMH)

•Isolation room concepts and isolation ward

Our Lady of Maryknoll Hospital, Hong Kong (OLMH)

Space for patient education and community partners

Kowloon Hospital, Hong Kong (KLH)

Sufficient rehab space

Bumrungrad International Hospital, Thailand (BIH)

- ·Sense of arrival at clinics, good signages and way finding
- •Decentralise pharmacy to minimise choke points at medication collection.

Singapore

- Jalousie windows & maximise airflow at KTPH
- Low ceiling height at CGH ward poor ventilation
- •Incorporation of teaching areas at SOC NUH Medical Centre
- •SLH was our key partner to plan and design JCH

... and customised them to fit our context and needs



Improved comfort and ventilation in subsidised ward – "A window for every patient"

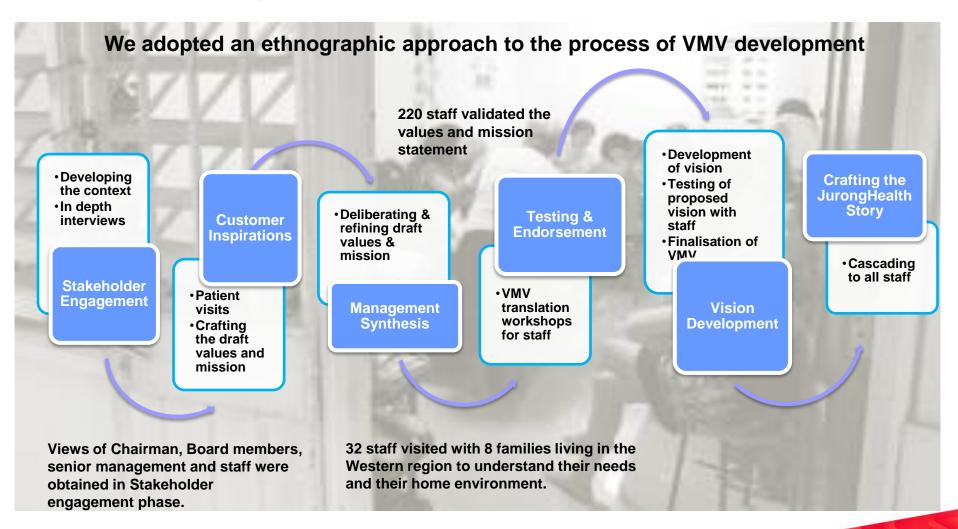
- Patient comfort is optimised ventilation increased 2x
- · Promotes healing for critical patients
- Enhance patient privacy, comfort and recovery
- · Improved infection control
- More spacious and conducive working areas for hospital staff.



Meaningful horizontal and vertical adjacencies

- · Modular wards and clinics to facilitate conversions
- Main Operating Theatres (MOT) and Day Surgery Operating Theatres (DSOT) adjacency and flexibility
- Combined Intensive Care Units (ICU) and High Dependency Units (HDU)
- A&E and Diagnostic Imaging adjacency
- A&E and Isolation Ward adjacency
- · Logistics Hub supporting both hospitals
- · Inpatient Rehabilitation (JCH) and General Ward (NTFGH) connectivity
- · Patient, staff, logistics separation
- ED, ICU/HD, MOT, via dedicated trauma lifts

Being new, we have a unique opportunity to develop a sense of Vision, Mission and Values (VMV) that anchor our actions and collective destiny.





Vision

Transforming Care. Bringing Health to Every Home.

Mission

Stay Well . Heal . Empower

Providing integrated healthcare by working hand-in-hand with community partners, patients, caregivers, and staff

Values

Integrity

Patient-Centredness

Openness

. Excellence . Mutual Respect

We uphold trust through all we say and do We design and deliver care around the needs of our patients and their caregivers

We embrace open communication, change & champion innovation

We give our best, every time

We treat each and every individual with dignity



The culture that we want to build is one that is:

"Patient-centred. Genuinely cares for every member of the JurongHealth family, founded on living our values."



We started active communication about the work that we were doing in JurongHealth starting at Alexandra Hospital...

MEDIA RELEASE

Govt investing \$1 billion in two new hospitals in Jurong

The two hospitals are scheduled to open in 2014 and early 2015

By NISHA RAMCHANDANI THE government is channelling some \$1 billion to Community Hospital (JCH) which will open in 2014 and early 2015 respective

"This is a very heavy investment on the part of the government and has not even factored in land cost. It reflects our commitment to raising the healthcare to raising the healthcare service standard for Singa-poreans, especially for those in the lower income group," said Health Minis-ter Khaw Boon Wan at the ground-breaking ceremony yesterday morning. For instance, about

three quarters of JGH's 700 beds will be in the subsi-dised Class B2/C wards.

JGH will also be the first regional hospital in Singa-pore to be integrated with a community hospital from ground up, which is expected to enable the smooth transfer of patients from the acute to the sub-acute setting. It is also in line with the government's strategy of making healthcare both hassle-free and cost-effective, amid an ageing popula-tion. In addition to being wired up for connectivity, the two hospitals - which will be situated along Jurong East Street 21 - will share services such as digit-al imaging, pharmacy, ca-tering, medical records, a warehouse and training fa-

Residents in the West

will benefit from the addi-tion of the new 700-bed Jurong General Hospital and the 286-bed community hospital. We will comple-

care capacity in the West

that is largely anchored by

National University Hospi-

Hospital," said Foo Hee

Mr Khaw also highlighthassle-free health service to eldercare services in the community as well. Two new subsidised nursing homes in the West, for intal, Alexandra Hospital and the St Luke's Community stance, will open by 2013. Recently, the Khoo Teck

Puat Hospital in Yishun

has also brought down waiting time for beds. Khoo Teck Puat currently serves income group. and 2,000 inpatients a

opened its doors, which has taked congenitor at booping tale such as Tan Tock Seng's emergent Tan Tock Seng's emergency department has fallen by nearly 20 per cent, which especially for those in the lower



In designing the hospital's services and process, patients' needs are our main focus and everything

New chief's big vision

Incoming CEO Foo wants holistic care beyond JGH

THE Jurong General Hospital will be completed by 2014, a year earlier than expected, and its chief executive-designate Foo Hee Jug expects to care for

Mr Foo, a public healthcare veteran who is currently chief operating officer (COO) of Singapore General Hospital and group COO and group chief procure-ment officer of SingHealth, will assume his new role on June 1, it was announced

with the new 200-bed community hos-pital to be sited next to it. Both are a walking distance from the Jurong East bus and train interchanges.
"We will work closely with the new

community hospital and other primary

provide patients with holistic care be-Mr Foo, 42, said.

"In designing the hospital's services and process, patients' needs are our main focus and everything should be hassle-free for them," he said, adding that it would cater to residents' health and fitness needs

The hospital's design specification and the appointment of various consult-ants are being finalised.

Mr Foo has a Bachelor of Science degree from the National University of Singapore, as well as Masters degi in Business Administration and Public Health (Health Services Management) from the Anderson School at University of California, Los Angeles,

He has 15 years' experience in nealthcare and his roles include overseeing infrastructure development and emergency planning operations integra tion at SGH and the four national specialty centres at Outram.

ciate Professor Cheah Wei Keat was also medical board. Assoc Prof Cheah is currently division head of general surgery at the National University Hospital.

The IGH will work closely with the Health Ministry and restructured hospitals to recruit, train and develop new

I envision building an environment where all staff are empowered to excel in their work and deliver effective care to patients, as well as given plenty of room to grow through comprehen e training," said Mr Foo.

Hiring will be ramped up in the

coming months for a seamless transition of management at Alexandra

Bigger C-class rooms at Jurong hospital

Hassle-free experience for hospital patients





细节:在紧张的构制,指

病床, 投權和邱葆拔医贸

裕鄉综合医院将与教 属社区医院兼密配合,可

保病人在妥当的地方接受

治疗,并协助病人更有效

加坡保健服务集团营运总

院候任总裁。国大医院外 2.病中心。 统统往总裁。由六齿统为 卫生都也计划扩建国 科部门高级顾问医生谢惟

西部的裕麻医院的新职务

和工作流程时会以病人需

卫生邮委任了现任新

特代若读到领导位于

卫生部长许文远在总

特殊政方针的卫生抵附证

增加床位,卫生部宣布了

各项发展计划。包括为位

于欧南田院区的国家心脏中心新建筑和中央医院病

理科大橋,以及肯特岗的 第二所心脏中心和痛吞中

牙科服务、并且提升老年 病学和复健的医疗服务。 卫生部宣布,SI連拔

医髋在2010年投入服务

之后,至历山大医院将雄 蒙运作。卫生部将在裕卿 东兴建拥有700张病床的 裕康综合医院。別異裕節 院及诊所紧密合作,为日

,还有陈驾生园院的新

JurongHealth Internet Portal

Staying resilient despite setbacks...

In May 2014, we were hit by construction delays due to building façade NSC



Undaunted, JurongHealth staff re-prioritised work to get facilities ready. Major construction milestones were achieved, enabling handover, defects checking & rectification, testing & commissioning

May 2014

- -Turned-on of electricity and water supply.
- -Awarded Med equipment contracts.

Jun & Jul 2014

-Setup server room, telecommunications and data lines



Jan 2015

- Health Minister on-site walk
- Handed over ICU, ED and OT.







Nov 2014

- -Awarded Non-med equipment contracts;
- -Attained TOP for Basement



Conducted multiple rounds of department & hospital Full Dress Rehearsals for staff to familiarise with new systems and workflows



With the support of the public healthcare family and other public agencies, we achieved a safe and smooth transfer and opened JCH and NTFGH as planned

To Minimise Patient Transfer Risk:

- 4 patients moved to JCH ward in NTFGH on 18 Jun 2015
- 17 acute inpatients safely transferred to NTFGH
 Ward on 29 Jun 2015 order of move determined by clinical risk factors

















Since our opening, we have served 105,300 unique patients - 62.7% of them live in the west region (Jurong East, Jurong West, Bukit Batok, Choa Chu Kang, Bukit Panjang, Clementi)

Data as of 01 Jun 2016 Taman Pasir Gudang off & Country Bahru Taman TG Puteri Resort Central Catchment Airport Higher intensity represents more patients in the region. MORE

Despite the setback of construction delays, the new hospitals caught up with original schedule only after 3 months of opening.

Ng Teng Fong hospital opening ahead of schedule

Officially opened by PM Lee yesterday, 500 of its 700 beds are already in use

Salma Khalik

Senior Health Correspondent

tal in Jurong East has put more department. wards into use ahead of schedule, cates of 80 per cent.

The hospital, which took in its. in the region healthy. first patient on June 30, started opof its 700 beds are in use.

are indeed opening ahead of sched-oped with patients in mind. ule. We found that we were operasoon as possible."

pital by Prime Minister Lee Hsien. recover faster." Loong yesterday, Mr Foo rattled

The Ng Teng Fong General Hospi- 19,000 patients at its emergency

but is still facing high occupancy closely with doctors, grassroots kitchen, one management team leaders and others to keep people and electronic medical records.

erating with 365 beds. Today, 500 about two hours touring the hospi- than a conventional hospital, and tal and the adjoining 400-bed Ju- the 550 solar panels completely The hospital's chief executive rong Community Hospital, said take care of their hot water and officer, Mr Foo Hee Jug, said: "We these new hospitals were devel- landscapelighting needs.

tionally ready and would like to windows for every patient, no hamad Salich Arshad, 56, a diabetic. add to the national capacity as matter which class of ward they. When he was told he needed to

of 64 beds by year end, and will of natural light, greenery outside, At the official opening of the hos- tion, good views. Lift your spirits, they are so good to me," he said.

To patients, the two hospitals op-

off some impressive figures. In just, erate as one. A patient who has sur-1002 days, the hospital has treated. Brty in the general hospital and re-31,000 patients at its clinics, covers in the community hospital 16,300 patients in its wards, and will get just one bill for his stay.

Mr Foo said the integrated development gives economies of scale. But he stressed the need to work with both hospitals sharing one

The hospitals are eco-friendly, us-The Prime Minister, who spent ing 40 per cent less potable water

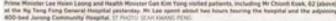
One patient who gave two The fan-shaped wards provide thumbs-up-to the hospital is Mr Mohave his right leg assiputated, he told He plans to open one more ward. Said PM Lev. "It gives them lots, the doctors he would rather die.

But they convinced him that life need to recruit more doctors and at least when there is no haze, and is what he makes of it. "They are so every patient with good ventila- caring. The doctors, the nurses,

Yesterday, he sang English and Hokkien songs and had the VIPs, including PM Lee and Health Minister Gan Kim Yong, cheering him on.

salma@sph.com.sq. Effacebook.com/ST.Saima









Tower A (NTFGH Clinics)

Level 1

•Training facilities, auditorium and Radiology

Level 2

 Pre-surgery evaluation, Medical Social Services, Retail

Level 3 to 7

•Specialist Outpatient Clinics (120 consultation rooms)

Level 8

Administration

Tower B (NTFGH Wards)

Level 1 to 4

•Emergency Department and other critical care areas such as the ICU and OT

Level 5 to 10 (West Wing)

Non-subsidised Wards

Level 5 to 16 (East Wing)

Subsidised Wards

Tower C (JCH)

Level 1

· Admissions & Business Office

•JCH Outpatient Clinics

Mezzanine Level

Clinical and Administration

Level 2 and 3

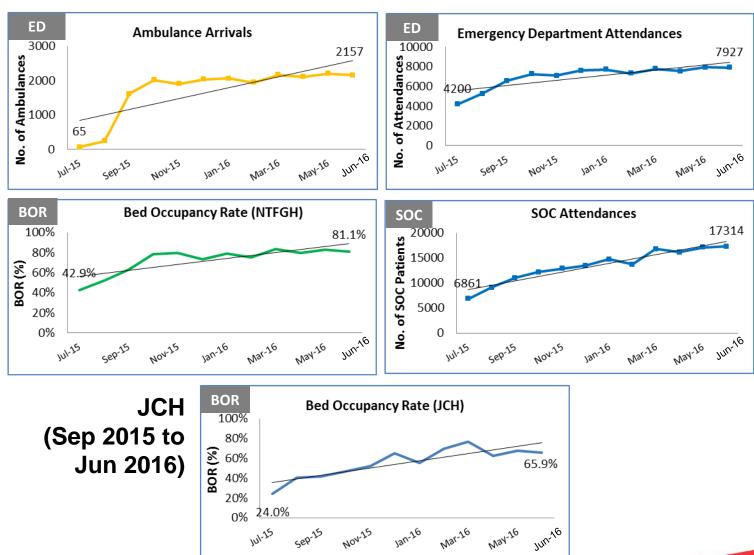
Non-subsidised Wards

Level 4 to 12

Subsidised Wards

1 year on and our workload has increased steadily...

NTFGH (Sep 2015 to Jun 2016)



ONE Infrastructure and facilities integration: connected outside and within



External link bridges connect to public transport, business, retail, dining and entertainment facilities.



Internal link bridges connect patients seamlessly within NTFGH and JCH



ONE kitchen



ONE pharmacy



ONE logistics hub and shared resources optimise productivity

Inpatient Wards: A Window for Every Patient

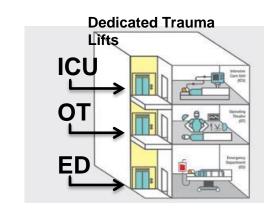
- •Natural light to aid in patients' physical recovery and improved mental state. Promotes awareness of time of day and reinforce the natural circadian rhythms.
- •Optimise infection control and enhance care by staff.
- Incorporated haze management measures for subsidised wards.





Emergency Department of the Future: Ready to meet the Emergency Needs of the West

- Pandemic-prepared, mass-casualty and decontamination-ready for industrial accidents due to proximity to industrial areas/Jurong Island.
- Dedicated Trauma Lifts for critical cases to be transferred directly to the operating theatres and Intensive Care Unit for swift and immediate medical care.









- Modular Trauma-ready Rooms where each room combines two typical resuscitation units to provide space for life-saving care.
- Elderly-friendly Features such as natural lighting; ambient temperatures; larger fonts on signage; warm colours; and vinyl flooring with built-in layer of cushioning for better foot comfort

ICU/HD: One Location, One Team, One Standard of Care



- •First Intensive Care Medicine Department in Singapore.
- •The only <u>combined</u> critical care facility merging the convention ICUs (Surgical, Medical, Cardiac) and HD for better utilisation of staff and resources.
- •Convertible flexibility between HD and ICU to reduce the need for transfers of patients.
- •"Same-handed" rooms to promote patient safety.
- •First outdoor Healing Garden access to adjacent outdoor areas with natural light, greenery for stabilised ICU patients who can be wheeled to outdoor Healing Garden...

Specialist Outpatient Clinics (SOC): Modular and Patient-centred Design

- Modular design provides for maximum flexibility and ease of conversion in the future.
- Thoughtful co-location of clinical services on the same floor to optimise patient experience. For example, for the convenience of elderly patients, Geriatric, Diabetes, Eye and Podiatry services are located on the same floor.
- Satellite pharmacy on almost every floor at the SOC.
- One Queue, One Bill: Patient provided with visit itinerary and consolidated bill at the end of visit. Enables staff to focus on financial counselling and other value added services while managing a monthly load of 12,000 outpatients.



One Queue, One Bill







Jurong Community Hospital: Adjacent post-acute and rehabilitation 400-bed facility, fully integrated with NTFGH

- Siting JCH adjacent to NTFGH allows for the convenient and safe transfer of patients from acute-care to post-acute and continuing care facilities.
- Co-location of both hospitals allow for better co-ordinated and integrated care.
- Design of the wards mirrors the fan-shaped design of those in NTFGH, providing a window for every patient.





LIFE Hub features a unique three-room HDB mock-up flat for patients to gain confidence and rehabilitate back into their home environment under guidance of therapists.

JurongHealth Mobility Park – a first of its kind in Singapore to feature a life-like simulated environment to patients



- First outdoor rehabilitation facility with simulated features.
- Purpose-built next to JCH's indoor rehabilitative facility as part of its holistic care.
- Prepare patients, elderly and people with special needs to reintegrate into the community after discharge from the hospital and regain confidence in moving and getting around.

Efficient back-end processes

Integration of catering services, materials management, housekeeping, portering, facility management and security offer:

- Same standard of care at NTFGH and JCH
- Fewer duplication of work
- Economies of scale

A centralised kitchen for NTFGH / JCH churns out 3,300 meals a day and supports:

- Better space and equipment utilisation
- Competitive pricing of ingredients
- Economies of scale





Transforming Care. Bringing Health to Every Home

Powered by

Technology that Works





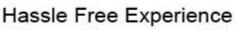












4 Less: Paper-less, Chartless, Scriptless & Filmless



Consolidated for Intelligence

Clinical decision support - enable preventive and predictive analysis



Designed for Collaboration

Beyond the hospital walls - enable collaboration with patients and community partners



Raising productivity

Increase value-added work



Architected for Transformation Beyond illness care to wellness care

Electronic Medical Record System (EMR-Epic) – We are "4-less" - A Single Integrated EMR

The integration between NTFGH and JCH:

- •reduces manual transcription in the hospitals with information from Emergency, ICU, Radiology, Laboratory, Appointment Scheduling, Bed Management and MRO merged into one system for seamless patient information flow.
- •limits toggling between different system interfaces and lower errors and lag time.
- provides consistent statistical data.

The EMR is also interfaced with over 900 medical devices and the Vendor Neutral Medical Devices Middleware Integration System which transmits medical data from various medical devices into the EMR to reduce charting errors.



Digital Hospital: Attaining HIMSS Analytics EMRAM Stage 6 on 2 September 2015 (less than 2 months after hospital opening) – HIMSS level 7 preparation underway

HIMSS EMRAM Stage 6 benchmark is a recognition in utilising technology for better patient care and improved efficiency for its healthcare professionals.



"NTFGH has an impressive disaster recovery/ business continuity strategy and they have integrated multiple medical devices with the EMR beyond just vitals monitors. I fully expect they will be ready for a Stage 7 validation very soon."

There are 24 hospitals in Asia Pacific that have achieved HIMSS EMRAM Stage 6, and 3 that have achieved Stage 7.

- John Daniels, HIMSS Global Vice President

To provide care sustainably for our population, we must extend beyond the walls of the hospitals

TRANSFORMING CARE. BRING HEALTH TO EVERY HOME.

STAY WELL

Staying Well

HEAL

Managing Illness

EMPOWER

Living well with illness Dying well

- 1. Maximise the well being of our population
- 2. Work upstream to do pre-emptive care and downstream to rehabilitate
- 3. Empower and enable primary and community care
- 4. Integrated care at the right-site



What did we learn along this journey?

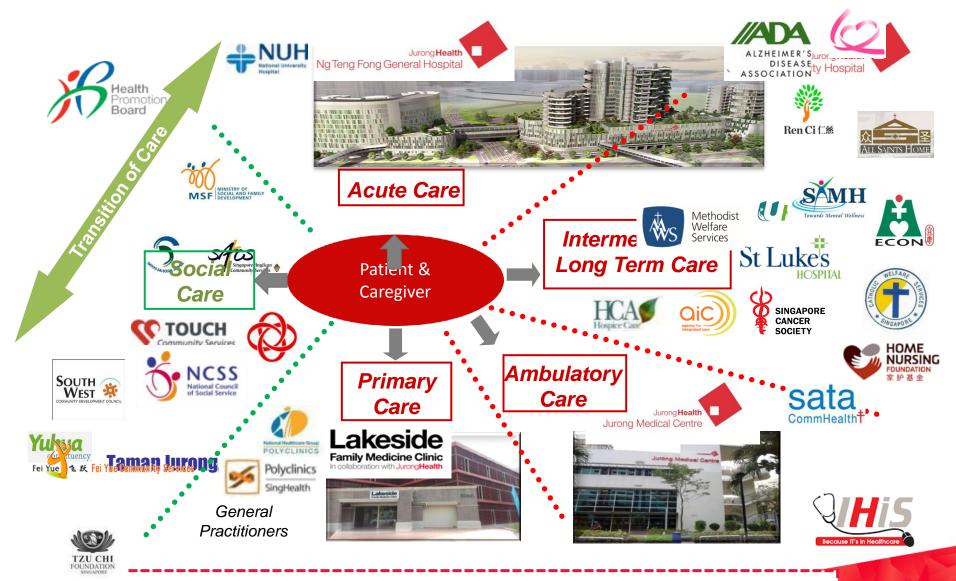
Building JurongHealth is about 5 buildings:

- Building our Hospital, the 700-bed NTFGH and 400bed JCH
- Building our People, in terms of numbers and capability
- Building our Culture, of patient-centredness and a focus on health (not illness)
- Building Bridges to our Community, as we work towards providing integrated care for our population
- Building Partnerships, with key stakeholders in the healthcare and social ecosystem to achieve our mission





Everyone in JurongHealth comprises the RHS – we (NTFGH, JCH, JMC, LFMC and partners) are the RHS





Thank you!

