EVOLUTION OF SINGAPORE’S HEALTHCARE LANDSCAPE

1. As Singapore celebrates 50 years of independence, the healthcare sector has played an integral part of Singapore’s social infrastructure throughout nation building. During the early years of nationhood, Singapore’s healthcare priorities were focused on reducing infant mortality, family planning and eradicating diseases associated with poor sanitation and malnutrition.

2. Having transited from an emerging economy to a mature economy, Singapore is today more affluent and better educated than at independence. Singapore’s family structures have also evolved from extended families to that of nuclear or post-nuclear families. All these are happening against a backdrop of greying population as well as dwindling birth rates and working-age population. While Singaporeans are enjoying longer life expectancy, more could also be suffering from diseases of affluence.

3. In 2014, Singapore was ranked second globally by the Economist Intelligence Unit (EIU) for best healthcare outcomes and ranked as the most efficient healthcare system by Bloomberg. While these achievements are laudable, our healthcare model is no significantly different from other healthcare systems around the world. We are still acute care centric, we still lack coordinated and seamless care and we are still far from adopting a preventive approach towards healthcare.

4. Hence, while we attribute our achievements to our healthcare pioneers who have laid a strong foundation for us to inherit, we should scale our healthcare system to greater heights. As economist Ludwig Lachmann once said, “the future is indeed unknowable but it is not unimaginable”. As NHG partakes in envisioning Singapore’s healthcare system for future generations, we must dare to go beyond the conventional ideas and beliefs while ensuring a sustainable system for our future generations to inherit.

OUR CURRENT HEALTHCARE CLIMATE

5. Our healthcare system is an integral part of the economic, social and political structure of Singapore and this affects the design of our systems of care. Hence, prevailing influences and future direction of these structures are important drivers of our strategic directions.

Demographic and Social Shifts¹

6. The population in Singapore has grown over the years, from 4.2mil in 2004 to 5.5mil in 2014, as shown in Figure 1. This has led to increasing demand on our

existing healthcare facilities and Singapore has committed to expand capacity in the coming years.

**Figure 1 – Total Population (’000) as at June each year indicated**

<table>
<thead>
<tr>
<th></th>
<th>2004</th>
<th>2009</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citizens</td>
<td>3,057.1</td>
<td>3,200.7</td>
<td>3,313.5</td>
<td>3,343.0</td>
</tr>
<tr>
<td>PRs</td>
<td>356.2</td>
<td>533.2</td>
<td>531.2</td>
<td>527.7</td>
</tr>
<tr>
<td>Residents</td>
<td>3,413.3</td>
<td>3,733.9</td>
<td>3,844.8</td>
<td>3,870.7</td>
</tr>
<tr>
<td>Non-residents</td>
<td>753.4</td>
<td>1,253.7</td>
<td>1,554.4</td>
<td>1,599.0</td>
</tr>
<tr>
<td>Total</td>
<td>4,166.7</td>
<td>4,987.6</td>
<td>5,399.2</td>
<td>5,469.7</td>
</tr>
</tbody>
</table>

*Source: Department of Statistics*

7. In addition, Singapore is faced with the trends, as shown in Figure 2 and Figure 3 of an increasing proportion of this enlarged population of residents aged 65 years and declining number of working adults to support them.

**Figure 2 - Proportion of residents aged 65 years and above in 2014**

***Increasing Proportion of Residents Aged 65 Years & Over***

1990: 6%
2000: 7%
2014: 11%

**Figure 3 - Old Age Support Ratio in 2014**

***Fewer Working-Age Adults to Support Each Resident Aged 65 Years & Over***

<table>
<thead>
<tr>
<th>Year</th>
<th>Residents Aged 20-64 Years</th>
<th>Residents Aged 65 Years &amp; Over</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>10.5</td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>9.0</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>6.0</td>
<td></td>
</tr>
</tbody>
</table>

8. Assuming current birth rates and no immigration from 2013 onwards, these trends will persist. By 2050, the number of citizens aged 65 and above will triple to 900,000, as shown in Figure 4, and they will be supported by a declining based of working citizens. The ratio of working-age citizen for each citizen aged 65 and above will fall to 2.1 by 2030, as shown in Figure 5. For the society as a whole, this declining support ratio would mean rising taxes and a heavier economic load on a smaller base of working-age Singaporeans.
9. One significant social shift impacting healthcare is the trend towards smaller family size. This implication is that there will be fewer caregivers in each household and the need for supporting caregivers, in the form of domestic helpers and day care centres would be a necessary element in our care systems. Without such caregiver support, the demand of institutionalised care such as nursing home would be insatiable.
10. With our society becomes more affluent and educated, the expectations on our healthcare systems have also increased. The expectations on service, costs and even to the curative ability of medicine are placing significant demands on healthcare personnel and capacity.

**Manpower Constraints**

11. An ageing population will also increases the demand for healthcare and to support this, the professional healthcare force in Singapore, comprising of doctors, dentists, nurses, pharmacists and allied health professionals, would need to be increased by about 33,000 staff by 2030 as shown in Figure 6. Besides that, Singapore also needs to increase the number of support care staff such as healthcare assistants and nursing aides, to about 13,000 by 2030. These manpower requirements are a significant challenge in light of the reducing support ratio as well as constraints in ‘importing’ manpower from overseas.

![Figure 6 - Projected Growth of Healthcare Professionals and Support Care Workforce](image)

**Clinical Care**

12. The need for more healthcare services, such as more frequent and intensive medical care, more care support for chronic diseases as well as new healthcare investigations and treatments, further complicates healthcare delivery. With the increasing co-morbidities in elderly patients and the explosion of knowledge in evidence-based care, the demands on our healthcare professionals are significant. This is where decision support systems, protocolized care and care coordination may serve to manage this challenge delivering clinical care in a consistency and safe manner.

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2 Projection of Foreign Manpower Demand for Healthcare Sector, Construction Workers and Foreign Domestic Workers, Occasional Paper (Nov 2012), National Population and Talent Division, Prime Minister’s Office
PARADIGM SHIFTS AND IMPLICATIONS

13. Other than the specific challenges faced by the Singapore healthcare system, we should also examine some of the paradigm shifts, as shown in 7, in healthcare industries worldwide.

**Figure 7 – Paradigm Shifts**

Decentralization: From hospital to clinic to homes

14. At the 2012 Committee of Supply debate for Healthcare, MOH outlined 3 challenges facing Singapore ahead. One of the challenges included ageing population and higher prevalence of chronic diseases. This warranted the need for healthcare providers to shift their focus from episodic care in the acute hospitals to keeping the population healthy and managing their chronic conditions in the community which is more effective and sustainable in the long-term.

15. Chronic conditions management require a new approach as the treatment is lifelong and requires the patient to be an active participant. Hence, any preventive and maintenance measures have to be incorporated into their daily life at home or around the community where the person resides.

Parallelization: Multiple sensors, multiple data streams

16. As successful health outcomes hinges upon multiple factors, the ability to connect multiple data sources is critical to ensure that the right information gets to the right care provider at the right time.

17. This challenge is further complicated by the fact that the multiple sensors spanning across health, social and emotional wellbeing, are monitored by different agencies of care in our system.

18. The different terminology, and many unstructured and uncodified information collected by different care providers poses a challenge to make sense of the rich data available.
Wellness-Medical Convergence: No longer separate

19. At the 2012 Committee of Supply debate for Healthcare, MOH has reiterated the need to nurture a healthy nation by promoting good health as a healthy population would reduce downstream healthcare costs.

20. Although the shift from curative care to preventive care is logical, it is impossible, if not, challenging to measure the illness that we have prevented as compared to we have cured. Hence, it has been easier to justify investments in curative care versus that in preventive care.

21. It is thus important to recognise that there are 2 systems co-existing in healthcare - a business and a social system. As a business system, we are reactive as only when there is illness, there is business. The social system, on the other hand, requires looking at the maintenance of health to maximize the potential and productivity of our population. It also allows the possibility of planning ahead as the social system is not reactive but it requires a large scale approach.

22. However, most healthcare organizations are only able to see the business perspectives as “prevented” healthcare utilization are not observable. Hence, it is necessary that intentional investments and resources are deployed into preventive care and all healthcare organizations should partake in this convergence as the failure of social system will lead to the an unaffordable business system in the future.

Population vs Individual: Epidemiologic + Personalization

23. Epidemiology has played a significant role in the development of public health programmes and over the years, have helped use understand the causes of chronic disease in our population. However, it falls short of predicting who is and who is not going to develop the chronic disease. To complement epidemiology, a new practice of medicine termed “personalized medicine” has emerged. This approach uses an individual’s genetic profile to guide decisions made in regard to the prevention, diagnosis and treatment of diseases.

24. Without going so far as to adopt genetic profiling, “personalized medicine” also means the tailoring of medical treatment to the characteristics of a particular segment of the population. This would enable a balance approach between personalization and being cost effective.

Big Data Driven Medicine: Spatial, temporal convergence

25. Big data has the potential to revolutionize healthcare, from the potential to predict flu outbreak, preventing diseases, reducing medical costs to providing better quality care. The combination of clinical, health financing and patient-care administrative data with Lifestyle, Geospatial, Behavioural and genotype data will provide healthcare providers with better insights into the health risks of the population and discover new co-relationships between data sets. These insights could be used by patients and care providers to further improve care delivery, guide policy development and enhance patient well-being.
Empowering Primary Care

26. The costs and effects of chronic diseases are significant but chronic disease could be reduced or its onset delayed until much later in life with early intervention. One of the earliest, if not the first, touchpoint for healthcare is at the primary care, be it polyclinic or private GPs. Hence, the opportunity for early detection of risk factors, screening and intervention is the greatest at primary care sector.

27. At the 2012 Committee of Supply debate for Healthcare, MOH has outlined the following measures to empower primary care:
   (a) Encourage GPs to set up Family Medicine Clinics (FMCs) to provide team-based care for patients.
   (b) Set up Community Health Centres (CHCs) to support GPs and provide allied health services for their patients.
   (c) Develop Medical Centres (MCs) to provide community-based services for patients who require day surgery and less complex specialist services.
   (d) Provide portable subsidy to patients under the Community Health Assist Scheme (CHAS) so that they can enjoy subsidised services at private GPs and FMCs.

28. The confluence of the challenges in the Singapore healthcare landscape and the paradigm shifts occurring in healthcare as a whole mandate a major transformation of our healthcare system in Singapore in order to for it to be sustainable.

FOUNDATION OF A SUSTAINABLE HEALTHCARE SYSTEM

29. The development of the model for a sustainable healthcare system for population health takes into consideration the following three components:
   (a) Principles of Public Health
   (b) Determinants of Health
   (c) Big Ills of Healthcare

Principles of Public Health

30. In the context of chronic care, the following principles of public health play an significant role:
   (a) Living Well through healthy behaviour, choices and habits
   (b) Early Detection through identification and changing of risky behaviours, choices and habits, appropriate screening and case findings
      (i) In order to shift from curative care to preventive care, we need to expand our reach from the current known population to the unknown population so that they too could be segmented into specific sub-population with similar needs and risk factors.
      (ii) To reach out to the unknown population, we must engage other health care, social care and community partners. Our primary care providers, polyclinic, private GPs and Family Medicine Clinics,
being the touch point for most of these groups, would need to
opportunistically conduct screening to enable early detection and
intervention

(c) Planned Prevention - through education and other early interventions on
healthy habits in school, workplace and community

(d) Living Well with Chronic Illness through enabling the population to be
able to perform their active daily living through proper maintenance of
their chronic conditions

(e) Efficient, Coordinated and Accessible Acute Care
   (i) With the complexity of co-morbidities in our ageing population and
the co-mingling of social and health issues, the delivery of care has
become more and more complicated. Hence, the systemization and
coordination of care is important to provide a safe, consistent and
quality of care.

(f) Ageing Well, Dying Well
   (i) To manage the expectations of the population, we would need to
work with patients to acknowledge the limitation of medical
intervention, especially when the medical approach has reached the
limits of its efficacy.

Determinants of Health

31. Many factors combine together to affect the health of individuals and
    communities. Whether people are healthy or not, is determined by their
circumstances and environment. To a large extent, factors such as where we live,
the state of our environment, genetics, our income and education level, and our
relationships with friends and family all have considerable impacts on health,
whereas the more commonly considered factors such as access and use of health
care services often have less of an impact.

32. The determinants of health include:
   (a) The social economic environment
   (b) Physical environment
   (c) Person’s individual characteristics and behaviours

33. The context of people’s lives determines their health, and so blaming
individuals for having poor health or crediting them for good health is inappropriate.
Individuals are unlikely to be able to directly control many of the determinants of
health. These determinants, or things that make people healthy or not, include the
above factors, and many others:
   (a) Income and social status - higher income and social status are linked
to better health. The greater the gap between the richest and poorest
people, the greater the differences in health.

\[^3\text{From www.who.int/hia/evidence/doh/en/}\]
(b) Education – low education levels are linked with poor health, more stress and lower self-confidence.

(c) Physical environment – safe water and clean air, healthy workplaces, safe houses, communities and roads all contribute to good health. Employment and working conditions – people in employment are healthier, particularly those who have more control over their working conditions.

(d) Social support networks – greater support from families, friends and communities is linked to better health. Culture - customs and traditions, and the beliefs of the family and community all affect health.

(e) Genetics - inheritance plays a part in determining lifespan, healthiness and the likelihood of developing certain illnesses. Personal behavior and coping skills – balanced eating, keeping active, smoking, drinking, and how we deal with life’s stresses and challenges all affect health.

(f) Health services - access and use of services that prevent and treat disease influences health.

(g) Gender - Men and women suffer from different types of diseases at different ages.

**Big Ills of Healthcare**

34. The current healthcare system has medicalized dying. The rise of palliative care has been one response to calls for greater dignity at the end of life but the wider medical system continues to regard death as something to be resisted, postponed or avoided. With the advent of medical technologies and medicine, physicians face rising challenges of balancing technical intervention with humanistic orientation to their dying patients. Yet, we know that a significant part of healthcare costs is incurred in the last year of a patient’s life and medical interventions make little impact to the inevitable outcome.

35. Other aspect where current healthcare model has failed is that it has medicalized unhealthy behaviour, choices and habits as well as medicalized gaps in social support. Chronic illnesses are not an accidental occurrence; it is the precipitation of a long period unhealthy behaviour, choices and habits such as smoking, poor diet throughout the life of an individual. Similarly, as mentioned in the previous section, a lot of socio-economic determinants affect the health of an individual.

36. As a result of medicalization dying, unhealthy behaviour and social gaps, most of healthcare services ended up being rendered at the hospital by specialists where the intervention is mostly too late to reverse the progression of chronic illnesses and costly.

37. It has also been widely believed that healthcare organizations are an exception from the ‘rule of industries” such as the importance of customer values and needs, the adoption of systems approach, empowering people and the culture of a learning organization.
THE MISSION AND VISION OF NHG

38. NHG’s vision and mission statements, crafted at the first retreat in 2000 when NHG was formed had tremendous foresight. We have reviewed them several times over the course of the last 15 years and found that as broad statements, they remain relevant. These insightful statements are:

Vision : Adding Years of Healthy Life

Mission : We will improve health and reduce illness through patient-centred quality healthcare that is accessible and seamless, comprehensive, appropriate and cost-effective; in an environment of continuous learning and relevant research.

39. However, in order to respond to the transformation required of the healthcare system in Singapore and to create that sustainable healthcare system, NHG needs to examine in detail our mission as well as clarify the deliverables of our vision statement.

Strategic Objectives

40. There are three broad concepts that we believe capture the strategic objectives of NHG – that of our responsibilities; our promise to our population; and our aspiration. Table 1 shows the draft statements that elaborate each of these concepts:

<table>
<thead>
<tr>
<th></th>
<th>Responsibilities</th>
<th>NHG is a public, not-for-profit healthcare organization, responsible for:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(a) The promotion of health – both physical and mental well-being, for the central region of Singapore;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(b) Leading and working with partners for the mental health and well-being of Singaporeans;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(c) Leading and working with partners to transform and empower primary care;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(d) Leading and working with partners to deliver dermatological care;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(e) The development of our current and future healthcare workforce</td>
</tr>
<tr>
<td>2.</td>
<td>Promise to our population</td>
<td>We will deliver excellent patient care and work closely with our patients, community and partners to develop innovative programmes to improve the health and well-being of the people in our region. We will do this by:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(a) Continually striving to provide compassionate, safe, reliable, effective, affordable and accessible care</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(b) Continually seeking to improve and add value to</td>
</tr>
</tbody>
</table>
### Our ‘Product’

41. We need also to expand on what our vision of ‘Adding Years of Healthy Life’ means to each of the key groups of our stakeholders:

   (i) Those receiving our care - Patients and community  
   (ii) Staff and staff of our partners  
   (iii) External organisations, including unions  
   (iv) Governing bodies – the Ministry of Health, NHG’s Board of Directors as well as NHG’s Senior Management

42. Broadly, we believe our vision means that:

   (a) We will be a person, family, community and partner centred healthcare system that is easy to use, easy to navigate, accessible, affordable and convenient to use  
   (b) Our staff and our partners are actively engaged and collaborate with us to create and operate this system;  
   (c) The resulting healthcare system is not just sustainable but also one that offers Singapore a competitive advantage as a country; and  
   (d) We will improve the health of the people of Singapore.  
   (e) We will equip the current and next generation of healthcare professionals with the skills and values to serve the needs of the people of Singapore

43. Simply put, these 4 aspects form the ‘product’ that NHG is delivering, as shown in Figure 8.

44. Clarity on what our vision requires us to deliver would help NHG establish the strategic themes moving forward; define the drivers that support the achievement these themes and in turn the measures and specific goals that we must meet.
SUSTAINABLE HEALTHCARE SYSTEM

45. Central to the achievement of our mission statements and delivery of our ‘product’ is the need to look beyond the traditional view of healthcare and look at healthcare from a new perspective, as shown in Figure 9.

46. The traditional view of healthcare being just episodic and transitional illness care, to be delivered only by healthcare professionals, in hospitals or clinics and to delay the inevitable should be reconsidered.

Figure 9 – New Perspective of Healthcare
47. Rather than focusing only on illness care which is often too late to reverse chronic conditions, the role of shaping wellness behaviour through health promotion or preventive measures should play a greater role towards developing a healthy population. For those who have already developed chronic conditions, the focus should be on enabling them to live normal day-to-day life. As their chronic conditions will naturally progress as they grow older, it is also important that the conversations about dying are carried out early so that they are cared for according to their wishes in their end-of-life stage. In doing so, they could maximize their limited time in the way they desire, rather than prolonging the dying process through medical means.

48. As mentioned earlier, healthcare manpower resources are a significant challenge in the future as a result of our demographic trends. Hence, healthcare should not only be within the purview of healthcare professionals as the key dependent of the outcome of chronic care is the patients themselves and their family or caregivers, as it requires changes in behaviour and habits in their day-to-day lives. In the same way, the prevention of chronic illnesses also lies in the ability to influence population behaviour and to do this, healthcare organizations need to find the right partners to engage the population towards adopting healthy behaviour and habits throughout their lives. Hence, central to a sustainable healthcare is an activated population, one which would actively pursue and maintain their own health.

49. By going beyond hospitals to the community, intermediate and long term care as well as home care, we could then shift from a patient-initiated process that is largely limited to a doctor-centric delivery model set in the specialist outpatient or inpatient environment to one where we could deliver care in various settings by various channels of contact and by the most appropriate care provider for each needs. In short, care should be provided at the Right Place, Right Time, by the Right Person, through the Right Channel at the Right Cost (“The 5 Rights”)

50. In order for healthcare system to be sustainable, it is also important not to medicalize all the determinants of health. As described earlier, the advent of poor health could also arise from behavioural or social issues. The right approach should be to address the root of the problems, be it through social support or other suitable non-medical interventions.

51. To influence behaviour of patients effectively, we have to embrace our patients as individuals, as our partners in care, along the journey of care delivery; not just providing them episodic care when they fall ill. Similarly, we would also need to engage the support of various partners in the right setting to intervene appropriately in various stages of the lives of our population, not just for those who are our patients. In order to do this, a key component to a sustainable healthcare model is the development of a long term relationship with our patients and partners in care so as to inculcate trust.

52. Another way to view a sustainable healthcare system is through the context of the care continuum framework as shown in Figure 10. From this perspective, it is clear where the right site to care for patients to establish the various level of care is.

53. Interventions to affect the determinants of health should be provided early in life, before the population had any acute care episodes or develop chronic
conditions. Much of these interventions have to do with changing the behaviour of population towards adopting a healthy lifestyle; thus the home, school, workplace and community are where these interventions should rightly take place. Subsequently, primary care becomes the next avenue for planned prevention where opportunistic health screenings could be conducted for population at risk for early detection.

54. Following an acute-care episode, the objective should be to reintegrate the patient back into his community, including a period of rehabilitation if needed. Such rehabilitation should be delivered either in community hospitals or other integrated intermediate care setting, as well as even in the patient’s home if required. Some members of the population, such as the old and frail, may require on-going support from the community around them.

55. To facilitate a seamless flow across all the care providers and care sites, it is important to establish enablers such as Telehealth (T-Health), Mobile Health (M-Health) and Electronic Health (E-Health). In addition, only through applying systems thinking, adopting a population health perspective, developing a learning organization and empowering our people, that an integrated and seamless connection across the care continuum could be developed and sustained.

Figure 10 – The Care Continuum

56. The common concepts across all the care settings is the focus on establishing a Relationship-based Healthcare System where there is strong long term
relationships between the population and care providers and amongst the diverse set of care providers. This relationship is the foundation towards developing an activated population who would actively pursue and maintain their own health throughout their lives.

CLINICAL CARE MANAGEMENT FLOW

57. Essentially, what the shifts in perspectives mentioned earlier mean to our population is that our regional healthcare system would facilitate them towards:
   (a) **Living Well** – for those who are still well (pre-illness stage)
   (b) **Living with Illness** – for those who are in various stages of chronic illness (early, moderate and severe stages)
   (c) **Crisis Care** – for those who require acute care due to a specific crisis or event
   (d) **Living with Frailty** – for those who are old and frail
   (e) **Dying Well** – for those who are at the end-of-life stage

58. This is illustrated in Figure 11 which shows the various segments of population and their respective care sites, care providers and scope of care.

59. For our healthy population, we will work with partners such as Health Promotion Board, schools, workplace and Community Development Councils (CDCs) to inculcate healthy behaviours and habits into the young as well as those who are still healthy. The importance of this preventive health segment needs to be underscored as it plays the key role in a sustainable healthcare system in the future.

60. Our primary care arm, NHG Polyclinics (NHGP) would serve our population at the pre-illness stage to the severe chronic stages. In order to do this, our primary care model needs to be transformed to strengthen relationships with their patients and to build strong partnerships with private General Practitioners (GPs), Family Medicine Clinics (FMCs) as well as community partners. More details of NHGP’s transformation efforts are provided in **ANNEX A**.

61. As we expand our perspectives upstream and downstream, our current work at Tan Tock Seng Hospital toward providing excellent crisis care will continue. In addition to that, the inpatient departments would aim to establish team-based care, multi-disciplinary rounds as well as better transitional care to support integrated and seamless care for our patients. The outpatient departments would also work closely to coordinate SOC care for our patients to provide a seamless, holistic care, not just within specialists care but also co-manage patients with primary care. Outpatient departments would also work with step-down care partners, Intermediate and Long Term Care (ILTC) partners as well as palliative care partners, to better serve those who are frail or at their end-of-life stage respectively. Doing so would strengthen the role of primary care in a patient’s care as well as their relationship with the patients. More details of some of the initiatives at Tan Tock Seng Hospital are provided in **ANNEX B**.
Figure 11 – Clinical Care Management Flow

<table>
<thead>
<tr>
<th>Popn</th>
<th>Pre Illness</th>
<th>Early [Mld]</th>
<th>Moderate</th>
<th>Severe</th>
<th>Acute/Major</th>
<th>Frailty</th>
<th>SOL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site</td>
<td>Home/School Workplace “Community”</td>
<td>Home/School Workplace “Community”</td>
<td>Home/School Workplace “Community”</td>
<td>Institutions Transient</td>
<td>Institutions: Community/LTC</td>
<td>Community/LTC</td>
<td></td>
</tr>
<tr>
<td>Ownership</td>
<td>Partners/Primary/Grand i-FBE</td>
<td>FBE</td>
<td>School</td>
<td>Employees</td>
<td>FCE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Scope:
- Living Well
- Living with Illness

Processes:
1. Refe of Pr/Community Care
2. Integrating NHP-MPC-CPs
3. Relationship = TeamCare
4. Funding Flow
5. Expansion
6. Evidence/data/outcome/Continual Improvement

Involves:
1. LG/Bkld.
2. Team
3. MDS
4. “Caseload”
5. Major Role Involvement, by Nursing
62. As the needs of those who are old and frail are multi-factorial, there is a need for a spectrum of services such as Post-Acute Care at Home (PACH), Slow stream rehabilitative care, elderly rehabilitative care and long term care. These services need to be integrated to ensure seamless transitions between them. To reduce the length of stay, various rehabilitation options such as home or community should be developed as well. One component of support which could help the realization of these options is the “Home Support” transitional care which helps to ensure caregivers and patients are trained in the necessary care and are aware of some of the red flag signs and symptoms of deterioration in the patients’ conditions.

63. For patient at the end-of-life stage, outpatient departments, “Home Support” transitional care and palliative care needs to work together to expand EOL care to, not just cancer patients, but also end-stage chronic patients, such as heart failure, renal failure, neuro-degenerative diseases and stroke. It is important to facilitate Advanced Care Planning (ACP) early and the strengthening of relationship between family physicians and patients would facilitate the initiation of ACP conversations with patients and their family early. More details of the strategies for EOL care is provided in ANNEX C.

64. Across hospital, primary care and community settings, a team-based care approach should be established where each of these settings would have a case manager who would work with their counterparts in other settings to ensure seamless and safe care transitions when the targeted patient groups move from one care setting to another care setting. The NHG Care Plus (NHG CP in Figure 10) serves to be the community link between hospital and primary care with the community, serving patients who have severe chronic illness, frail or at their end-of-life stage. One example of such an initiative is the “Neighbours for Active Living” program, or “Neighbours” for short, which is jointly developed by the South East Community Development Council (SECDC) and Eastern Health Alliance (EH Alliance). It is a novel programme combining healthcare and social expertise and resources to train volunteers to care for sick elderly in their own neighbourhoods. Details of this programme are provided in ANNEX D.

CONCLUSION

65. This paper highlighted the concepts and key components of a sustainable healthcare system. At the core of this system is a Relationship Healthcare System whereby we develop a strong long-term relationship with our patients so that the mutual trust established would help in the prevention of chronic illnesses, the delayed progression or chronic illnesses and finally in the advanced care planning in their end of life. The development of care touch point across the care continuum would ensure that care would be accessible at the Right Place, Right Time, provided by the Right Person, through the Right Channel at the Right Cost.

66. This paper is tabled to seek Board’s perspectives or insights on the strategic objectives, our “product” and the sustainable healthcare model.
BACKGROUND - THE NEED FOR PRIMARY CARE TRANSFORMATION

1. Primary Care is the foundation of Singapore’s healthcare system and the cornerstone for population health. However, it faces multiple challenges such as the following:

Porous System

2. In Singapore, our healthcare system is very accessible to the population and patients are free to consult any doctor without restriction and many do not have a regular family doctor. This is unlike many healthcare systems in developed countries such as UK and US which require patients to be registered with a GP clinic practice or a healthcare system. Whilst this makes it extremely convenient to patients, the porosity of our healthcare system encourages doctor or clinic hopping and poses challenges to continuity of care for patients with chronic diseases, accountability of health outcomes by healthcare providers and resource planning.

Supply and Demand Mismatch

3. With an ageing population and longer life expectancies, there is a greater burden of chronic diseases in the population. The resulting increase in patients demand for healthcare services will exceed the limited supply of healthcare resources e.g. doctors if left unchecked. This issue is further compounded by the disproportionate distribution in chronic disease patient load between the public and private sectors. While polyclinics employ about 14% of primary care doctors compared to private sector, polyclinics manage about 45% of patients with chronic diseases in the community. This translates to a polyclinic doctor seeing an average of 5 times more chronic disease patients per day compared to a GP as shown in the MOH Primary Care Survey 2010.

Doctor-centric delivery model

4. The context of primary care has rapidly shifted from a traditional setting of meeting acute episodic medical needs to that of providing continuity and coordination of care to patients with increasingly complex chronic medical conditions. The model of care delivery in polyclinics has however remained largely unchanged
despite the changing profile of patient population where there are more patients with chronic diseases now than before.

5. The current model of care at polyclinics is mainly focused on doctors delivering care to patients regardless of their reasons for consult rather than being patient-centric and matching the most appropriate healthcare professionals (e.g. care managers and allied healthcare professional) to meet the healthcare needs of these patients.

One-size-fits-all approach

6. Currently, our chronic patient population is not stratified based on needs or risks such as patient’s medical, psychological, social and financial conditions, so healthcare resources may not be optimized. Afterall, resource allocation to polyclinics is traditionally based broadly on acute and chronic consultation visits rather than risk categories. Patients also need to make physical clinic attendances regardless of their reasons for clinic visits.

PRIMARY CARE TRANSFORMATION- THE GAME CHANGERS

7. In response, the various game changers that NHGP is in the process of putting in place are as follows:

<table>
<thead>
<tr>
<th>Game Changers</th>
<th>Now</th>
<th>Future</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient empanelment</td>
<td>Brief clinic encounters; majority without specific healthcare providers</td>
<td>Having a family physician-lead team to see the same patients over time will facilitate provider-patient relationship-building and improve accountability and continuity of care</td>
</tr>
<tr>
<td>Risk stratification</td>
<td>One-size-fits-all model</td>
<td>Customised care bundles for well/ at-risk, mild, moderate, moderately severe, and severe patients; Optimised resource allocation</td>
</tr>
<tr>
<td>Team-based approach</td>
<td>Doctor-centric care where doctors become the bottleneck in the service chain</td>
<td>Patient-centric care supported by teams, where expertise and resources are matched to patients’ needs</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Telecare and other support</th>
<th>Face-to-face consultations as sole model of healthcare delivery</th>
<th>Care / monitoring is provided in home setting through technology, saving time and money for patients and freeing up capacity for patients who need face-to-face consults</th>
</tr>
</thead>
<tbody>
<tr>
<td>GP collaboration</td>
<td>Untapped resources in private sector</td>
<td>More GPs involved in managing complex chronic cases, enhancing capability and increasing primary care capacity</td>
</tr>
</tbody>
</table>

**REMODELLING CARE THROUGH EMPLANEMENT OF PATIENTS**

8. The majority of healthcare occurs at the less acute end of the scale in the community, where outcomes are controlled not by physicians or “the system” but by individuals and families, whose healthcare choices are strongly influenced by their values, culture and communities. The best opportunity for a clinician to exert influence on patients’ health outcomes is to develop a relationship with them, so as to influence their health choices. Hence, patient empanelment to a teamlet led by a family physician will be important for population health.

9. The overarching goal of patient empanelment is to have majority of our regular patients with chronic diseases belong to teamlets in each of our polyclinics. This will allow for provider and patient relationship development, which will promote care continuity with increased patient engagement and empowerment, self-management, as well as delivery of holistic and coordinated team-based care.

10. Identification of a panel of patients to be cared for by each teamlet, consisting of doctors, care managers and care-coordinators, is a critical building block for population-based care. This allows proactive care such as tracing patients who default chronic disease treatment, identifying patients who require additional healthcare and psychosocial interventions and multi-disciplinary team approach for patients with complex chronic diseases. In addition, outcomes directly attributable to individual teamlet management can be evaluated, so as to allow each teamlet to continually improve on their care management.

**NHGP’s Transformation of Care Pilot Project (TOC @ Toa Payoh)**

11. The TOC pilot project started in February 2014 with 6,269 patients at Toa Payoh Polyclinic. The provider-patient relationship is the key feature of this TOC pilot project where a panel of patients with chronic diseases are recruited and empaneled.
to a teamlet comprising Family Physicians, care managers and care coordinators. Patients are risk stratified into various risk categories where the appropriate healthcare team member are matched to meet their healthcare needs. Telecare is being used to co-manage or monitor the care of patients remotely by care managers.

12. The project has so far yielded useful information on risk stratification of patients with chronic diseases, on clinical care outcomes for such a mix of patients as well as patients’ and staff’s satisfaction and potentially, overall cost savings for the system. The study will provide information on how chronic care can be funded in its respective risk categories within and beyond polyclinics going forward.

13. The results of the project after the first 12 months of its implementation showed:
   (a) Reduced number of doctor visits
      • Doctor visits dropped by 16%
      • Care manager visits increased by 251%
   (b) Improved patient satisfaction and empowerment scores
      • Patient satisfaction increased by 21.2%
      • Patient empowerment scores increased by 18.5%
   (c) Increased uptake of cancer screening modalities
      • Mammogram uptake increased by 226%
      • Pap smear uptake increased by 1300%
   (d) Improved clinical outcomes
      • Patients with LDL less than 2.6 mmol/L increased by 3% (statistically significant)
      • Patients with blood pressure less than 140/90 increased by 4%
      • Patients with HbA1c less than 7% increased by 0.1%

14. Four more polyclinics have already set up a teamlet in each of their clinics and started empanelling patients. The rest of the polyclinics will follow suit by end of FY15.

COLLABORATING WITH GPs

15. NHGP recognises that primary care transformation will need to involve GPs since they manage 80% of primary care attendances. In general, GPs have capacity to take on more chronic disease patients as they currently manage more acute rather than chronic disease patients as shown in the MOH Primary Care Survey 2010 where 77% of GPs’ patient attendances were for acute conditions and only 12% were for chronic conditions. GP clinics are also very accessible to the community.
Hence leveraging the untapped GP capacity will allow for a more equitable redistribution of chronic disease patient load from polyclinics to private sector.

Enhancing GP Capability

16. NHGP’s Primary Care Academy (PCA) provides training programmes to GPs to help them keep them abreast of the current chronic disease management protocols and guidelines. It also trains GP clinic assistants to better support GPs to care for patients. GPs in the vicinity of NHG Polyclinics also attend the polyclinics’ fortnightly Continuing Medical Education (CME) sessions.

Reorganising Clinic Practices

17. NHGP played a key role in setting up the Ang Mo Kio Family Medicine Clinic (AMK FMC) in 2013 and Unity FMC in 2014 as part of MOH’s Primary Care Masterplan to reorganize GP practices which were mainly solo-practices or single doctor clinics. NHGP also provides healthcare resources such as nurses/care managers and allied healthcare professionals to FMCs who co-manage patients with chronic diseases with GPs so as to optimize patient care. This also frees up GPs’ time to focus on patients with more complex conditions.

18. As a result, AMK FMC saw a reversal in the proportion of chronic versus acute attendances typically seen by the private GPs. Out of the total patient attendances managed by AMK FMC, 85% are for chronic conditions (of which, 83% are for patients with 3 or more chronic conditions).

19. NHGP has also partnered solo GPs to set up the upcoming Hougang FMC @ Ci Yuan Community Club, which will open in September 2015. If this concept of grouping solo GPs under one roof with shared resources is successful, this model can be replicated for other solo GPs.

Transferring Patients to FMCs and GPs

20. NHGP has put in continual efforts to engage GPs in the polyclinics’ vicinity on a regular basis to build relationships and collaborate with them on various projects to transfer NHGP’s CHAS (Community Health Assist Scheme) eligible patients to them.

21. Through a systematic referral and care-transfer process at our polyclinics, NHGP has been able to transfer the care of more than 10,688 chronic patients to FMCs and GP partners.

Empanelling Patients with GP

22. With further subsidies to drug prices for CHAS and PG (Pioneer Generation) patients with effect from January 2015, it has been increasingly challenging for
polyclinics to successfully transfer patients to GP clinics. The next phase of our GP collaboration involves extending the concept of patient empanelment to GPs through a bundled payment scheme. For a start, we have transferred our patients with chronic diseases to a few GPs in AMK as a pilot project.

23. The bundled payment aims to:
   (a) Encourage patients to be transferred to GPs by maintaining patients’ out-of-pocket payment through funding the cost difference between the current subsidised polyclinic’s total bill and the GP’s total bill;

   (b) Incentivise patients to stay on with the same GP by building in an empanelment incentive to patients to encourage ‘stickiness’ to the same GP/clinic practice (see Figure A1); and

   (c) Urge GPs to improve efficiency and cost-effectiveness for patient care by covering the full care package for patients’ chronic conditions and by moving away from a volume based fee-for-service model.

**Figure A1: Bundled Payment Scheme**

24. If bundled payment is proven to be successful, it will potentially be scalable to all FMCs and GPs and hence allowing more GPs to be involved in chronic disease management and population health in the community.

Prepared by : Ms Sharon Chen, Assistant Director, Corporate Planning (NHGP)
Reviewed by : Adj A/Prof Chong Phui-Nah, CEO (NHGP)
1. In 2011, TTSH embraced the Value strategy as the basis for achieving Vision 2016; our shared aspirations to deliver value to patients, through an engaged workforce, service and process excellence, and a culture of safety and quality, despite severe manpower challenges, bed capacity limitations, and preparedness for public health scares in the intervening years.

2. The Value-based strategy is aligned with NHG Strategy Map, NHG 4 Principles & 7 Simple Rules (4P7R) Culture, as well as Ministry of Health’s (MOH) Healthcare 2020 Masterplan. Patient and staff values were identified and articulated with consensus statements defined through extensive patient focus groups and staff engagement. (Figure B1 & B2)

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**Figure B1: TTSH Value Strategy’s alignment with NHG and MOH’s priorities**

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Figure B2: Defining Patient Value and Staff Value

**Patient Value:**

<table>
<thead>
<tr>
<th>Good Outcomes</th>
<th>Proper communication of the right diagnosis and to be cared for through the best possible treatment plans;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safe Care</td>
<td>An environment where professional, safe, and gentle care is delivered throughout the entire patient journey;</td>
</tr>
<tr>
<td>Value for Money</td>
<td>Patient’s time is respected and they are not made to go through duplicate processes</td>
</tr>
<tr>
<td>Coordinated Care</td>
<td>Empathy of their journey as patients, with this journey made as efficient and accessible</td>
</tr>
<tr>
<td>Being Valued as an Individual</td>
<td>(Needs, Feelings, Relationship) To be treated like they are our family members, whose needs and feelings are heard and attended to, and their opinions considered.</td>
</tr>
</tbody>
</table>

**Staff Value:**

3. Value delivery is measured via cascading Value dashboards reflecting stakeholder concerns (e.g. Hospital Acquired Infection Rate) and indicators contributing to the patient’s journey (e.g. Admission wait time), which enabled value to be driven at both strategic and transactional levels. (Figure B3). In 2014, TTSH’s clinical foci were on Better Communication (and relationships), Safer Care, and battling Hospital-based Infections.
Figure B3: TTSH Value Dashboard

**TTSH VISION: ADDING YEARS OF HEALTHY LIFE**

**VISION 2016: To be a Great Institution**
- A Great Place to Work
- A Great Place to Learn
- A Great Place to Becoming the Best

### The Signposts – Value creation as signposts to guide our strategy

<table>
<thead>
<tr>
<th>Patiens Value</th>
<th>Staff Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GOOD OUTCOMES</strong></td>
<td><strong>CORE VALUE</strong></td>
</tr>
<tr>
<td>Proper identification of the right diagnosis and to manage through the prescribed treatment in a timely manner</td>
<td>CARITY We will...</td>
</tr>
<tr>
<td>Safe care: an environment where professional and patient care is delivered through the entire patient journey</td>
<td>RESPECT We will...</td>
</tr>
<tr>
<td>Space for privacy: That time to be respected and serve to go through diagnostic process</td>
<td>REACH for...</td>
</tr>
<tr>
<td>Coordinated care: Smooth flow of patient journey as provided and the journey to make society at possible</td>
<td>REALITY We will...</td>
</tr>
<tr>
<td>Value added to an individual to be treated to family member, whole and social and also have an opportunity to live and their opinion</td>
<td>ENJOY for...</td>
</tr>
<tr>
<td>Needs and relationship</td>
<td>OPPORTUNITY We will...</td>
</tr>
</tbody>
</table>

### The Hospital Level Strategy – Things we need to achieve

**Better Care**

- Reduce the value indicators of Inpatient Satisfaction via: Reduced and fewer errors in storage the patient
- Improve coordination & integrate through
  1. Learning from other programs
  2. Learning from the others
  3. Learning from the others
  4. Learning from the others

**Better People**

- To improve value indicators of Quality, Safety and Service, we need to Home Engagement:
  - The core focus of the community
  - Home visits: To foster a more connected community
  - To reduce the value indicators of Inpatient Satisfaction via: Reduced and fewer errors in storage the patient

### The Division Level Workplans – Things we need to do

**The Outcome**

Delivering Care Faster: Better Quality Safer with Empowerment & Engaged Staff in a Guiding Institution
4. TTSH today provides care through 3 Institutes, 33 clinical departments, and numerous specialist and multi-disciplinary service-lines or integrated tracks, governed by an integrated inter-professional Clinical Board overseeing Medical, Nursing, Allied Health, Pharmacy, and Health Technologists family groups. A significant number of our services are ranked first or second across Singapore in terms of comprehensiveness and complexity of services, patient volume, critical mass of expertise, and outcomes (where measured e.g., Trauma Services). TTSH remains the best teaching hospital ranked by students of YLL NUS Medicine in 4 out of the past 5 years.

5. As the Acute Hospital for Central RHS and providing services to approximately 40% of the population living outside of our region TTSH’s clinical mission in delivering excellence in patient value can be classified under five key domains listed below. Short term initiatives of each domain over the next few years are described in paragraph 6 - 10:
   (a) Solution Shop: diagnosis & treatment of patients with complex care needs
   (b) Focused Factory: standardized processes for quality and efficiency in well-defined procedures and clinical care-paths.
   (c) High-Reliability Organization: provision of acute care in a high risk environment, where flat organizational hierarchy and teamwork is critical.
   (d) Preparedness for large scale civil and infectious emergencies, and
   (e) Keeping people healthy, in the community, with our partners.

6. Solution Shop
   (a) To be the specialist provider of choice in central RHS, TTSH’s critical mass and expertise committed to this area is a must. Sound clinical solutions based on excellence in diagnosis and evidence-based treatment expertise underpins public confidence in NHG’s over-arching population health strategy. TTSH will continue to invest judiciously in training and maintaining its expertise and evidenced-based capabilities. In the short-term, two important projects to further enhance our solution shop mission will be:
      i. Develop of the National Centre for Infectious Disease which will open in end 2018 to be the national disease outbreak management facility, a national referral centre for infectious diseases, establishes excellence in ID diagnostics, infection control, public health response, epidemiology surveillance and analyses, foster international and local intelligence networks, public engagement, education and research. The HIV Patient Care Centre, for example, will have MPH-trained medical social workers by 2017 to study social factors and establish strategic public health engagement programs.
ii. Leveraging on the CENTRE Grant awarded to TTSH in 2013 to build infrastructure and promote translational research in Genomic Medicine, TTSH will develop the **Personalized Medicine clinical and genomic laboratory service** by 2016, to provide **Pharmacogenomics** (using genetics to minimize adverse effects and to maximise efficacy of medications), **Clinical Genomics** (using genomics to guide treatment of cancers and complicated chronic diseases), and **Diagnostic Odyssey** (using modern genomics to help patients suffering from diseases that have eluded diagnosis) services. This is assisted with a collaboration with the Mayo Clinic Foundation Personalized Medicine service since 2013.

7. **Focused Factory**

   (a) TTSH clinicians are already advanced adopters in the application of **Clinical Improvement Methodology**, **Lean Management**, and using comprehensive tools for its **clinical safety, quality and improvement** strategies since the inception of NHG in 2000. For example, **Value-Stream Mapping, Failure Mode Analyses and Root-Cause Analyses** are embedded in its clinical applications and review methodology. In 2012, the **TTSH-SPRING Clinical Innovation Office** was established to enhance design thinking and innovation for current unresolved healthcare problems, and to support health product and device innovations. In 2014, TTSH announced the establishment of the **Centre for Health Innovation** (CHI) to be completed by 2019, to provide thought-leadership in health services, workforce productivity innovation and the development of community and population participation in healthcare. TTSH will also establish a **Simulation-based Health Education** (SBHE) strategy to credential clinical skills and further enhance patient safety.

   (b) In 2014, TTSH established the **Medical Device Committee (MDC)** in tandem with Ministry of Health’s Health Technology Assessment Committee\(^7\) to formulate evidence-based policies on the acquisition, use, and safety procedures relating to medical devices/ implants, and to review the utilisation of standard implants in compliance with guidelines. Patient value is derived from the mass adoption of standardized implants in well-defined care paths, which drives safety and cost-effectiveness. TTSH’s high utilization of **standardized implants** in **hip replacement surgery**, and top performance in **cardiac care** is evidenced in the Public Hospital Performance Report 2014. *(Figure B4)*

   (c) Further value would be derived for patients along with the Ministry’s push for **bundled payments pilot schemes** for specific conditions with well-

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\(^7\) Farid M. “Health Technology Advisory Committee – Update and framework for Implementation” DMS-CMB Chairmen Of Medical Board Meeting Paper 2014/02
defined care paths, such as **Cataract surgery** and **Hip Fractures**, to ensure affordability and better support of transition across care settings and providers, and encouraging the adoption of safe and cost-effective approaches to care with well-defined care paths and high utilization of standardized implants.

(d) TTSH intends to be a key partner and collaborator for the work of the proposed **National Agency for Care Effectiveness (ACE)** through its contributions, participation, and over 15 years of experience in its **Technological Assessment** process and MDC.

(e) TTSH P&T Committee and Pharmacy is now working actively with NHG Polyclinics and NHG Pharmacy to establish a **Single Formulary** and **pharmacy distribution network** for the benefit of patients in central RHS.

(f) TTSH’s clinical process innovations in management of acute admissions (Day Surgery adoption; Medical Day Centre; Hot Clinics; Direct ED to OT or CH schemes; TTSH-MENH Collaboration; Stratified Ward Systems & allocation; Bed Management AIU systems) continue to underpin our ability to bend the curve with regards to the relentless growth of resources needed for the ageing population demographics. (Figure B5)

**Figure B4: TTSH Public Hospital Performance Report**
8. **High Reliability Organization (HRO) for Acute Care.** TTSH heavy commitment to providing emergency services, comprehensive trauma services, acute cardiology and neurological procedures and requires a HRO infrastructure to provide patients with safe and high quality care round the clock under complex environment with unpredictable demands. Team-based care with a flattened hierarchy available 24/7 is a key feature and as an essential component\(^8\). In addition to a clear commitment to place broad-based expertise on the ground, TTSH has also moved to broaden its definition of the care team beyond clinicians to all “professionals working in healthcare” (GCEDO, NHG). This is critical in establishing a comprehensive whole-of-hospital response to large scale emergencies (Para 9). The inter-disciplinary programs operating under a unified governance through the **Office of Clinical Governance** provide for alignment of care delivery goals, quality improvement, accountability and governance. This sets the tone for optimization of teamwork and safety at the frontline.

9. **TTSH’s Preparedness for Mass Civil Emergencies and Outbreak Management** requires capability to rapidly ramp up services and capacity to handle civil emergencies, disease outbreaks, and national emergencies.

   (a) The **Hospital Emergency Committee** has reviewed and formulated plans and strategies to respond to various planning scenarios, integrating operational and medical measures, and commands resources including manpower, infrastructure, equipment, logistics and supplies from respective units to ensure optimal allocation to various response areas, for readiness training and exercises, drawing from the expertise

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acquired during past outbreaks, and in the recent preparations for Ebola and MERS-COV containment response.

(b) A key requirement is the establishment of an emergency preparedness system of well drilled teams with protocols and constant exercises. The EVEREST simulation training program for Ebola preparedness at SIMTAC is an example of the on-going work. This requires allocation of resources, manpower and time-commitment to ensure operational readiness outside of ‘business as usual’.

(c) TTSH Operations is spear-heading a Command Centre (C3) project in collaboration with MOH and multi-agencies, to further enhance our operational capability and sensing in normal and crisis management and operations.

10. **Network Partnerships** TTSH’s contributions to NHG’s Population Health. Is reflected in its nearly 8 year commitment to community based programs development with the ILTC and community sectors through the establishment of the **Division of Integrated and Community Care** in 2008. Towards this end, TTSH has further enhanced its transitional care programs and infrastructure to develop strong network with community health partners and resources over the past 5 years.

(a) **Primary Care Engagement Liaison Taskforce (P CELT).** This forum provides for TTSH’s coordination with NHG RHS HQ, NHG Polyclinic, NHG Diagnostics, Pharmacy, private primary care partners and establishes outcome objectives to enhance the flow of patients between the community and TTSH for services and discharges. In addition, the **Primary Care Partners Office (PCPO)** provides personalized liaison services with private sector GP partners to rollout important GP enabler programs (e.g., CHAS, CRISP) to manage flow of patients back into primary care, and the **Clinical-SOC** group implement and align to policies to fulfil and right-siting efforts. To date, we have enrolled more than 40 GPs in our **CRISP Network Program** since 2014.

(b) **Discharge Oversight Committee.** This committee oversees the re-integration efforts of long-staying patients with high social or medical programs back into the community, failing which, placement to nursing home is a last resort. It works in close partnership with AIC, and with the community social services sector through the Counselling and Care Department. It oversees the enablement of social and transition capabilities in doctors, nurses and therapists managing inpatients’ discharge to home and community.

(c) **Transitional Care Leadership (TCL) Group.** To ensure that all our efforts in meeting the MOH RHS priorities are optimally coordinated and integrated, TTSH has reorganized and unified the efforts under a Transitional Care Leadership Group (Figure B6).
11. In addition to rationalising and integrating the present outreach and community-related services, the TCLG will undertake to reorganise our present hospital based Care Coordination, Disease and Case Management structure through the following phases in 2015-16.

(a) **Integrate** all current coordinators, case managers, health managers under a single care-coordination group

(b) **Redefining and Redesigning** roles
   - Nursing sub-specialty/track for care integration (WRNs)
   - Common Core Competencies of Care-Coordinators
   - Disease Management Domain-Expertise

(c) **Establish Training & Competency**
   - e.g. Core + Modularised Training (disease pathways, VH, coordination for post-discharge care, institutional (CH/NH) discharge processes, EOL, etc.)

(d) Routine Care-Path management & Disease Management Report will be incorporated into **next generation EHR** decision-support / alert / reporting systems

(e) **Structured relationship** with Community Medical / Social / and NHGP / RHS service organisations or units.

(f) **Leadership representation** from Medical / Nursing / MSW / Allied Health Service in the NHG RHS group
12. **Enhancing Clinical Efficiency and Productivity Efforts with a smaller workforce.** The reorganization of ongoing initiatives aims to provide the following key objectives for sustainable healthcare over the next **18 months**: 

(a) One **“Single Coordinating Specialist”** to integrate hospital-based specialist care and formulate one care plan. This provides a holistic management view for complex-needs patients, this is supported by a lean health-management team or **“One Case Manager”** for these patient’s care journey across various settings.

(b) **SOC “Reconciliation”** process to effect the reduction of unnecessary SOC appointments by consolidating care under an over-arching coordinating specialist wherever appropriate. This has been piloted and effected in July 2015

(c) **“Telephone Consults”** as a well-established standard intra-hospital service within TTSH for inter-disciplinary and specialty consultations to reduce direct physical. This will be established in September 2015

(d) For the community / primary care sector, the key objective is to work with our NHGP and private sector colleagues to establish a **“Single Primary Care Physician”** to execute clear transition plans with community providers for medical and social support. To achieve this, optimisation strategies involves creation of inter-specialist telephone consult process and logistics, radical reconciliation of specialist visits and ownership, shared clinical care and right-siting programmes with primary care physicians which overcomes price gradients across care settings through pharmacy support, to ensure safe and effective transitioning of patients to the community. The establishment of a **CRISP GP Network** to accelerate the pace and scale of primary care involvement in central RHS.

(e) Establish relationships with **Co-ordinating Social Support Agencies** based on geographical location and scope of services in central RHS.

(f) Provide for a network of diagnostic and pharmacy outlets across Central RHS to serve patients closer to their community through the resources of TTSH’s efforts in the **End-of-Life, ILTC and Step-down Care partnerships**, including our establishment of an **Integrated Intermediate Care Hub (IICH)** by 2021.

13. TTSH is also establishing a **Workforce Council** to be chaired by its CEO to consolidate and address workforce initiatives in increasing value, productivity, career development and job-enrichment programs and coordinate inter-collegial and inter-professional initiatives. This Council will complement the existing **Quality Council** to provide the full scope for its developing Value-based strategy.
14. The **NHG Care Transformation project**\(^9\), is a key enabler to the sustainability of our efforts in NHG, to embark on an enterprise-wide next generation Electronic Healthcare Records (EHR) where information from inter-disciplinary care episodes at multiple settings is integrated on a scalable platform to enable continuity of care, decision support, and patient safety, with big data analytics for population profiling and performance optimization, forms the other pillar to achieving High Reliability in TTSH’s value creation journey.

15. In summary, Tan Tock Seng Hospital’s clinical services’ approach to sustainable healthcare and creating value for its patients and staff is predicated upon its ability to deliver on its five core clinical missions as outlined. Shorter and longer term goals have been listed in this Annex and Annex C. In particular, the community engagement and networking efforts to create an entire person-centric ecosystem in Central Region will require TTSH to careful apportion and husband its resources to meet its priorities in a balanced, considered and effective manner. **As MOH and NHG prepare to move beyond 2020 Health Masterplan to develop the next Healthcare Model** for sustainable healthcare by 2030, TTSH is well placed to deliver on its Mission.

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**Prepared by**: Dr Christina Tiong, Head Medical Affairs & Dir, Clinical Research & Innovation Office (TTSH)

**Inputs from**: Clinical Divisional Chairpersons (TTSH)
: Director, Allied Health & Pharmacy (TTSH)
: Chief Nurse (TTSH)
: Head, Dept of Community and Continuing Care (CCC) (TTSH)
: Corporate Planning Office, CEO Office (TTSH)

**Reviewed by**: A/Prof Thomas Lew, CMB (TTSH)

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\(^9\) NHG Care Transformation team “Development Planning Committee (DPC) Paper for NHG Care Transformation”

*NHG ITC 04/2014 Paper 2*
END-OF-LIFE CARE FOR PATIENTS WITH CHRONIC DISEASE AT HOME

Principles

1. The prognosis of patients dying from chronic disease is difficult to predict. At present, the available scales are generally accurate to a level of about 50-60% for a one-year prognosis.

2. Each chronic disease have their different trajectories of deterioration, and there are different therapeutic alternatives at each stage of the patient’s deterioration. For example, a patient who has end-stage renal failure is likely to die quite rapidly after the onset of uraemia. However, patients with pulmonary and cardiac disease may have a longer lingering, but unpredictable course. Patients with neurodegenerative illness may survive for a long period of time if they opt for ventilatory support. However, they will die rapidly if they do not opt for it. The preferences of such patients also tend to change over time.

3. Thus in order to develop a good management plan, healthcare providers must be familiar with the characteristics of the different chronic illnesses and of their terminal phase.

4. From the patient’s and family’s point of view, the difficulty in prognostication potentially can give rise to a number of issues:
   (a) Families and patients find it difficult to articulate plans of care. Furthermore, patients with chronic disease can change their preferences at the end-of-life more than once.
   (b) Frequently families and patients err on the side of caution. This results in more families and patients choosing hospitalisation as part of their care plan
   (c) Because of the imprecise pattern of deterioration, patients and families have more psychosocial issues. These psychosocial issues may also be longer in duration.

5. Because survival can vary among individuals who can be labeled at the end-of-life, it is not always possible to take a wholly palliative approach to the management of these patients. Frequently there is a continued need for good control of their chronic disease, and management of geriatric syndromes, if any.

6. Generally, patients have a preference for death to take place in their home. This should nearly always be the aim unless there is an absence of a suitable caregiver, or unless there are difficult to control symptoms.
7. With the difficulties in prognostication, patients with chronic disease at the end-of-life have never been prospectively identified in NHG. As such, the needs, present coping strategies, and size of this population has not been systematically studied.

Current Providers of End-of-Life Care for Chronic Disease at Home in the central region

8. AIC-Home. AIC-Home is a service that provides care for patients with End-of-Life issues suffering from end-stage renal, respiratory and cardiac disease. The service however does not cover all chronic illnesses. This is a national programme under AIC. About one-third of all patients are from TTSH. The existing team is already facing capacity issues. It has started to engage other home care providers to provide palliative care.

9. Dover Park Hospice (DPH) Home Care. Dover Park Hospice home care manages both patients with both oncological and non-oncological end-of-life patients. About 70-80% of patients are from TTSH. Although Dover Park Hospice home care is poised to increase its capacity in the coming years, this capacity is likely to be matched by a corresponding increase in cancer incidence. The team foresees their capacity to manage patients with chronic disease will be challenged in the short to medium term. The team at DPH has been strongly supported by TTSH, through a process of secondments and visiting consultancies.

10. HCA Hospice Care. HCA Hospice Care does provide end-of-life care for patients with chronic disease. The service however mainly provides care for patients with cancers. As such, they have no specialised capability to do so. There is also a capacity issue as there is a high demand for oncological palliative care. This has resulted in them being able to manage patients who are imminently dying and the need for the chronic care of the patients to be met by other services.

11. Project Dignity. This is a project managed by DPH and funded by Temasek Care Foundation till 2017. It targets patients with dementia, and works closely with TTSH Geriatric Medicine department. As it is still in its initial phases of development, it will still have the capacity to take patients with dementia who are at the end of life. The project’s leader is a palliative care physician seconded to DPH from TTSH.

Other types of palliative care for chronic diseases in the community

12. In the nursing homes, palliative care provision is not widespread. Either the nursing home belongs to the Project CARE collaboration; otherwise management is dependent on the General Practitioner. The GP will have to identify patients at risk and then refer them to one of the home hospice services. The approach is therefore
not systematic and only meets the needs of a small number of patients. Project CARE provides end-of-life care for 7 nursing homes in the NHG RHS. It performed more than 2000 visits in the year 2014.

13. The traditional hospice resources, for example, inpatient hospices and hospice daycare services, also do manage patients dying from chronic diseases. However, at the moment this forms a small proportion of their workload. Both the major hospices (namely DPH and Assisi Hospice) are supported by staff from TTSH, through a process of secondments.

14. In addition, Ang Mo Kio-Thye Hua Kuan Community Hospital has been actively developing their capability in palliative care. It is one of the community hospitals identified as a major stakeholder in the National Palliative Care strategy. Ang Mo Kio-Thye Hua Kuan Community Hospital is supported by clinicians through a visiting consultancy scheme from the Department of Continuing and Community Care (CCC), TTSH.

15. Currently, home care teams do have patients with chronic disease at the end-of-life on their list of patients. However they generally do not provide systematic palliative care.

**Key Success Factors**

16. The Key Success Factors for palliative care for chronic disease management in the community (non-Nursing Home) are as follows:

   (a) A strategy to identify patients with chronic disease who are at the end-of-life.

   (b) A leader with dedicated FTE within the palliative care service to spearhead the programme

   (c) A coordinator to provide case management support. This coordinator should span the entire spectrum of the care continuum. The coordinator should have full access to data from all patient care layers. As much of the information resides within the acute hospital, the coordinator will likely need to be sited with the acute hospital.

   (d) Continued management by a primary specialty, where the primary specialist is familiar with the principles of palliative care

   (e) A palliative care service which has home care capabilities and access to outpatient and inpatient services.
(f) A specialised psychosocial service, with clear understanding of the psychosocial issues that can arise in these groups of patients, to manage the psychosocial issues that may arise. This would include grief issues as well.

(g) A means of meeting, communication and decision making among providers.

(h) A coordinated Advanced Care Planning (ACP) / Preferred Plan of Care (PPC) discussion strategy involving all partners in the Regional Health System. The strategy should be one that allows the ACP / PPC to be performed by all parties, to be viewed by all parties, and be respected by all parties.

(i) Ensuring that the community partners providing long-term care are familiar with the issues of palliative care.

(j) Not to build additional layers as this will complicate communication and clinical workflows.

**Strategy**

17. In view of the difficulties of managing chronic diseases at the terminal stage, an appropriate strategy for NHG should focus on the strengths of its potential partners, and to integrate, when appropriate, major players that are providing care in the region.

   (a) Defining the current landscape in terms of needs, current coping strategies, psychosocial profile and scale of the population. This could be done as a collaboration between TTSH palliative medicine department, TTSH department of continuing and community care, and NHG HSOR.

   (b) Developing and testing strategies to identify patients of various chronic diseases, with at least a 60% accuracy.

   (c) Identifying and strengthening one to two existing partners who have the interest and capability of developing an integrated system, for example Dover Park Hospice and Ang Mo Kio-Thye Hua Kuan Hospital.

   (d) Reintegrating AIC-Home into NHG under the auspices of TTSH or the selected partner. After integration, the scope of services should be enlarged to take on at least 80% of chronic diseases.
(e) Building case management capability in the Department of Palliative Medicine.

(f) Building a dedicated medical and nursing expertise in the Department of Palliative Medicine.

(g) Integrating communication and clinical workflows among the ACP, Palliative Medicine, CCC (PACH and VH) teams, and key hospital-based teams

(h) Expanding Care and Counselling services to be able to meet the psychosocial needs of such patients. Integrating this aspect of Care and Counselling with the identified partners

(i) Support the inpatient capability of Ang Mo Kio-Thye Hua Kuan Community Hospital and Dover Park Hospice for the management of patients with chronic disease at the end-of-life. If they do survive their period of deterioration, the patient should then be transited back to the community

(j) Availability of 24/7 Doctor / Nursing support for the family

(k) When a foundation in clinical practice has been established, to work with other community partners who manage the chronic care of patients.

**Conclusion**

18. Our overall strategy should be to strengthen a few key partners, for example Dover Park Hospice and Ang Mo Kio – Thye Hua Kuan Community Hospital; provide funding to the Department of Palliative Medicine, TTSH to develop this aspect of care; and take AIC-Home programme into the TTSH umbrella.

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EXAMPLE OF COMMUNITY CARE PROGRAM - EASTERN HEALTH ALLIANCE (“EHA”) NEIGHBORS FOR ACTIVE LIVING (“NEIGHBORS”) PROGRAM

1. This program was piloted in 2013 in Bedok and Siglap Division where the EHA Neighbors team works in partnership with Southeast Community Development Council (SE CDC), together with Residents’ Committee (RC), Senior Activity Centres (SACs), Community Resources, Engagement, and Support Team (CREST), City For All Ages (CFAA), grassroots leaders and community volunteers, to help address healthcare and social issues of the clientele group. This is illustrated in Figure E1.

   **Figure E1 – Illustration of Neighbors program network**

2. Since then, the program has expanded to cover Kembangan-Chai Chee, Marine Parade, Geylang Serai and Fengshan. The partners engaged in the different areas are shown in Figure E2.

3. The targeted clientele groups are the frequent admitters and vulnerable elderly, such as those with depression and dementia or living alone in rental flats. These are identified by EHA as well as referred from various community services as indicated in Figure E2.

4. The objectives of the Neighbors program are as follows:
   (a) Facilitate active living and ageing-in-place in the community
   (b) Understanding and tracking the needs of residents through life long partnerships
   (c) Building linkages between health, social and community partners
How the Program Works

5. A community care team, who are staff with healthcare or social work backgrounds, is sited full time within the neighborhood. When they receive a referral, they will visit the client to assess and work out the specific steps needed to help him or her. This program deploys trained volunteers who were trained by the community care team and matched to specific clients to help stabilize and monitor the client’s condition. The volunteers then continue supporting and monitoring the client’s recovery. This support has no time limit and continues for as long as client needs it.

6. In Siglap, as at 31 July 2014, 33 volunteers have been trained to serve about 106 clients in that area. These volunteers are residents in the neighborhoods they volunteer in. They are trained in communicating with seniors, befriending skills, how to create and monitor an age-friendly living environment for clients, and how to advise clients should they need help in the event of illnesses, emergencies and financial hardship. Once trained, each volunteer is specifically matched to their clients so that enduring relationships can be formed.

A Client Profile

7. Mdm Wong Choi Ow, a 79 years old, sells tissue and lives alone in a 3-room flat in Bedok. She was grateful to receive help from the Neighbours team after sustaining a hip injury after a fall last December. The Community Care team helps manage Mdm Wong’s recovery, ensuring that Mdm Wong takes her medication regularly, accompanying her to medical appointments and even helping her follow up on letters from government agencies regarding social assistance etc. Trained Neighbours volunteer Mdm Monica Ma lives in the next block and visits Mdm Wong every week. She also helps to make transport arrangements for Mdm Wong’s visits to a TCM clinic. They have since become good friends and Mdm Monica has even started to rope in her daughter to visit Mdm Wong as well.

Summary

8. Essentially, the Neighbors program engages community support within the nodes where the client resides and builds capacity in the community through the volunteers, as a means of establishing community-based care. This would help to ensure that patients who are discharged from acute care or rehabilitative transitional care receive the necessary support at home and in the community where they live.

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