



醫院管理局  
HOSPITAL  
AUTHORITY

# CLINICAL SERVICES PLAN

for the Hong Kong West Cluster



## *Acknowledgements*

Special thanks to colleagues of QMH, TWH, GH, DKCH, FYKH, MMRC and TYH for the photographs on the cover and the inside pages



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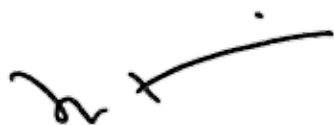


## *Foreword by Chairman*

I am delighted that the Government is in support of the redevelopment of Queen Mary Hospital. The Board and the Hospital Governing Committees of all seven hospitals in the Hong Kong West Cluster are all excited about this golden opportunity to further improve the hospital environment for our patients, medical students, academic partners and colleagues.

Queen Mary Hospital, having been operating since 1937, serves the community diligently as the major acute hospital of the Hong Kong West Cluster, as well as a premier teaching hospital for the Li Ka Shing Faculty of Medicine of the University of Hong Kong. Queen Mary Hospital is the territory-wide tertiary and quaternary referral centre of many complex and advanced services. Hence, a comprehensive approach should be adopted for its redevelopment so as to align the clinical services, research and training within and even beyond the cluster, for innovative and advanced care for the public. Coordination and networking among the seven hospitals in the cluster are utterly important to realise the commitment for excellence.

With the aspiration and dedication from our colleagues, the clinical services plan is formulated to serve the purpose of delineating roles and responsibility of the seven hospitals, collaborating service provision and academic research, coordinating providers along the complex clinical pathways, stressing the importance of teaching, learning and growing. I am grateful for the vast support from the Board, Hospital Governing Committees members, colleagues and patients and look forward to the realisation of this clinical services plan.



**Mr Anthony WU, GBS, JP**

Chairman  
Hospital Authority





## *Foreword by Chief Executive*

The Clinical Services Plan for Hong Kong West Cluster describes exciting clinical service models and strategic directions for the future clinical services development, not only to the cluster, but also Hong Kong. The innovative ideas and strong commitment demonstrated by our colleagues and academic partners are remarkable. The aspiration of driving excellence through integration of services, teaching and research is highly appreciated. Being a privileged partner in medical education with the Li Ka Shing Faculty of Medicine of the University of Hong Kong, we are committed to provide a better soil bed for our budding generations to grow, learn and shine.

My sincere gratitude goes to the wide range of colleagues, academic partners and patrons who have contributed to the development of this important plan. I look forward to the realisation of this plan, especially with the opportunity of Queen Mary Hospital redevelopment. Through the leadership of the cluster management, commitment from our frontline colleagues and collaboration among the stakeholders, the Hospital Authority will be able to provide an even better service to our patients, carers and families.



**Dr P Y LEUNG, JP**

Chief Executive  
Hospital Authority



## *Preface*

The Clinical Services Plan for Hong Kong West Cluster has been prepared by clinicians, senior management and executives of the Hong Kong West Cluster, as well as Hospital Authority Head Office staff in the Strategy and Planning Division. It is the first cluster-wide clinical services plan of the Hospital Authority.

Although the catalyst for this plan is the redevelopment of Queen Mary Hospital, it sets out the overarching future directions and models of care for services in the Hong Kong West Cluster. The Clinical Services Plan will guide the redevelopment of Queen Mary Hospital, as well as the development and organisation of services for more integrated, high quality patient-centred care across the cluster in the coming years.

We would like to express our sincere appreciation to the large number of frontline healthcare professionals from the cluster for their precious time and commitment to the development of this Clinical Services Plan. In particular, we would like to acknowledge the enormous contribution by the Chairs and Co-Chairs of the Clinical and Special Work Groups. Their time and effort have been invaluable in crystallising the future directions and models of care for different key clinical programmes. Finally, we would like to acknowledge the staunch support and guidance from members of the Reference Panel, whose advice has been invaluable during the formulation of the Clinical Services Plan and beyond.



**Dr C C LUK**

Cluster Chief Executive, Hong Kong West Cluster /  
Hospital Chief Executive, Queen Mary Hospital &  
Tsan Yuk Hospital



**Dr S V LO**

Director, Strategy & Planning Division,  
Hospital Authority Head Office







# *Executive Summary*

The purpose of the Clinical Services Plan (CSP) for the Hong Kong West Cluster (HKWC) is to set out the clinical strategies that will ensure the HKWC hospitals provide effective integrated care along the patient pathway, through well-coordinated services. The CSP maps out the guiding principles, models of care and planned future service directions of the cluster, informing role delineation of the hospitals and physical design.

## *Background*

The redevelopment of Queen Mary Hospital (QMH) presents a unique opportunity to enable the hospital to enhance its role as a premier teaching hospital of the Li Ka Shing Faculty of Medicine of the University of Hong Kong (HKU), as well as leading the progress of service development in the whole of the cluster towards integrated care. It is thus necessary to develop a cluster-wide CSP to provide guidance for subsequent planning stages of the QMH redevelopment and ensure the physical design meets the needs of services and users.

## *About the Hong Kong West Cluster*

The HKWC is one of the seven Hospital Authority (HA) clusters, with a population of over half a million people (7.6% of the Hong Kong population). The HKWC manages 3,135 available beds and provides services through seven public hospitals, six satellite institutions and a workforce of around 7,330 staff. The cluster is well known for its tertiary and quaternary services, with around one-third of its acute services delivered to patients from outside the cluster. In particular, patients from across the territory with complex conditions requiring highly specialised advanced care are often referred to QMH.



QMH has a leading role in professional education and training, pioneering research and clinical trials, as well as service innovation. QMH is the only hospital in the HKWC providing a 24-hour Accident and Emergency (A&E) service and is one of the five designated trauma centres in Hong Kong. Since 2003, QMH has become the only designated liver transplant centre in Hong Kong.

The unique role of QMH means it has importance in ensuring care is delivered in an integrated and coherent manner. However, the physical facilities of QMH have not kept pace with rising service volumes, patient expectations, new models of care and innovations, nor are favourable for modern teaching and research. Staff are frequently constrained by outdated design and limitations in clinical space, sub-optimal functional relationships of departments which are, by current standards, neither patient- nor staff-friendly.

Collectively the hospitals in the HKWC aim to provide comprehensive services. Therefore, there is a need to have clearer role delineation between the hospitals to ensure they are providing effective integrated care along the patient pathway.

## *Governance and Methodology*

The project commenced in May 2012 with assistance from overseas consultants with extensive experience in healthcare service planning and hospital architectural design.

Development of the HKWC CSP has been overseen by members of the Directors' Meeting (DM). Formulation of the HKWC CSP was undertaken by a Project Team, comprising senior management and executives from the HKWC and HAHO. In addition, a Reference Panel composed of senior clinicians and academics from the HKWC and HKU, as well as the Deans of both medical schools, was formed to provide advice and guidance to the Project Team on service developments and models of care.

The HKWC CSP was developed through a highly interactive and broad engagement process with cluster staff. The methodology involved a process of vertical specialty / discipline-based and horizontal clinical programme-based consultations. The resultant matrix of information and deliberations form the basis of the strategies in the HKWC CSP, with HA clinical and management policy overlay.

The cluster staff engagement exercises included staff briefings, survey, face-to-face consultation sessions with frontline healthcare professionals, academic staff and hospital management, as well as formation of multi-disciplinary, cross-hospital work groups to consider clinical programmes, research and education, which culminated in a one-day seminar.

The HKWC CSP was made available as a consultation document to around 400 key stakeholders in December 2012, to solicit feedback and suggestions. Stakeholders included senior management, executives and clinicians from the HKWC, HKU and HA, as well as the Hospital Governing Committees (HGC) of HKWC. Overall, comments and suggestions received were supportive of the HKWC CSP. All consultation responses were carefully reviewed and deliberated by the Project Team and used as a basis to refine the CSP.

Following formulation, the HKWC CSP was submitted to the DM, followed by the Medical Services Development Committee and Board for approval and endorsement.

## *The Clinical Services Plan for the Hong Kong West Cluster*

The HKWC CSP progressively outlines the guiding principles, models of care and clinical service directions of the cluster, which underpin and support each other. Together, these inform cluster hospital role delineation and physical design. These are summarised below:

### **Guiding Principles**

Development of the HKWC CSP has been guided by three key principles, which are:

1. The HKWC CSP should be **patient-centred**, with models of care and service directions designed for the benefit of patients and their carers.
2. Services should be **centralised where necessary and localised where possible**.
3. There should be **an integrated and collaborative approach to planning clinical services, education and research**.

### **Key Challenges**

Clinical teams, researchers and educators across the HKWC face the challenges of delivering high quality services, including highly complex tertiary and quaternary services, against increasing service volume, rising patient expectations, as well as developments in technologies and clinical innovations.

Staff have strived to deliver high quality services to a large number of patients by improving efficiency. However, maximising efficiency alone does not solve the underlying problems. The development of corresponding models of care and service directions is needed to support future service demands, new technologies and clinical innovations.

The key overarching challenges for the HKWC, and of particular significance to the redevelopment of QMH, are:

- Demographic shift;
- Rising societal expectations;
- Changing healthcare models;
- Technological advancement;
- Facility requirement; and
- Strengthening links for education, research and innovation.

### *Models of Care*

In order to address the key challenges, and based on the guiding principles, the HKWC CSP emphasises the orientation of services towards streamlined, integrated, multi-disciplinary clinical programmes which are patient-centred and holistic. The purpose is to ensure consistent and aligned delivery of high quality and safe services across the cluster hospitals to achieve the right care, provided at the right time, by the right provider and at the right place.

Given the unique status and role of QMH and the HKWC in education and research, the model of care supports the integration between clinical service, education and research as key drivers of clinical excellence and innovation to support better patient care. The term academic health science centre has been used in the literature to describe hospitals which accomplish such integration and is particularly relevant to QMH.

Also, a major shift in service delivery is towards ambulatory services, reflecting that complex sophisticated health services can be provided in settings more orientated to the needs of patients. Ambulatory services are increasingly important components of care, supporting high quality patient-centred care and managing service demand.

### *Clinical Service Directions*

Based on the models of care, service directions for clinical programmes have been developed. These include seamless delivery of care by multi-disciplinary teams along the patient pathway, supported by enhanced workflow and clearer delineation of services among the HKWC hospitals. Directions on clinical services are delineated as follows:

- **Critical care:** Concentration of resources into a critical care zone to enable the provision of safe, efficient, high quality care for newly admitted and critical patients. A 24-hour focus of QMH with large floor plate for the A&E and a modular design under one roof for the Intensive Care Unit / High Dependency Unit (ICU / HDU).


- **Peri-operative services:** A peri-operative physician-led and protocol-driven model with state-of-the-art facilities, such as hybrid theatres with built-in diagnostic facilities, to improve service excellence and patient outcomes. The physical facilities should be combined with efficiently integrated peri-operative patient flow management processes. Emphasis will also be put on day surgery in ambulatory settings.
- **Cancer services:** A comprehensive organ-based pathway-driven service spanning diagnosis through to palliation, which emphasises cross-specialty and multi-disciplinary collaborations, with cross-hospital coordination. Services will be organised into an integrated cancer centre for a seamless mix of service, education and translational research. There shall be a focus on ambulatory services for diagnostics and post-treatment surveillance, as well as satellite chemotherapy.
- **Neurosciences:** An integrated service with neurology, neurosurgery, neuroradiology, neurophysiology and neurorehabilitation, with common clinical pathways across the care continuum and staff rotation across specialties. There shall be clearly designated facilities for emergency and elective services.
- **Cardiothoracic services:** A comprehensive cluster-based programme comprising cardiac medicine and surgery, including transplantation services, and respiratory medicine. It will work along a collaborative multi-disciplinary model which streamlines cross-hospital services that are complementary to each other.
- **Children's services:** High quality personalised children-centred services, engaged in partnerships and collaborations in education and innovative research to achieve excellence related to paediatrics and child health. Collaborative / complementary acute and community services shall be developed in the context of the Centre of Excellence in Paediatrics, with close collaboration of QMH as a teaching hospital for the training of paediatric specialists.
- **Women's services:** Provision of holistic, patient-centred, multi-disciplinary and multi-specialty care encompassing primary, secondary, tertiary and quaternary services, as well as ambulatory, community and end-of-life (EOL) care. Provision of acute care in a setting with close proximity to collaborating specialties and services is essential.
- **Elderly services:** A cluster-wide hospital network integrated with community services, to provide multi-disciplinary and holistic care to elderly patients uninterrupted along the patient pathway. A focus on early detection and intervention, with the AED and an Acute Care for the Elderly Unit (ACE) to help manage hospital admissions, as well as orthogeriatric service, will provide timely elderly care.
- **Mental health:** A cluster-wide service with a strong community focus, based on



a “hub-and-spoke” approach. Specifically, QMH will be the hub developing sub-specialised services and networked hospitals and clinics delivering more localised ambulatory services to enhance patient access.



- **Gastroenterology:** A disease-based multi-disciplinary approach to common gastrointestinal (GI) diseases through a combined service of gastroenterology, upper GI surgery and colorectal surgery. Adoption of common protocols for disease management and sharing of expertise will enhance effective and efficient patient-orientated care.
- **Kidney diseases:** A collaborative model of close partnership between urology and nephrology to develop pathway- and modality-based approaches to care. The aim is to provide acute care with urology and nephrology working in close proximity at QMH, to support sharing of resources and expertise, as well as joint care of patients, such as renal transplant. Hospital networking shall be coordinated to provide convalescent care, rehabilitation, palliative and EOL care, as well as ambulatory services and satellite haemodialysis.
- **Musculoskeletal and multi-systemic diseases:** An integrated multi-disciplinary approach to care, with emphasis on early diagnosis and treatment of disease and complications. Organisation of services will aim to support seamless care across the patient pathway, such as shared wards, joint clinics, case management and nurse- and allied health-led clinics.
- **Liver transplant services:** The territory-wide liver transplant service at QMH to integrate and align with normal service operations of the hospital, through paired operating theatres (OT) for living and deceased donor liver transplantations and intermediate care for transplant recipients.
- **Hepatobiliary and pancreatic surgery:** The main tertiary referral centre in Hong Kong for hepatobiliary and pancreatic cancers, with a multi-disciplinary and centre-based approach to care. There shall be enhanced collaborations with other specialties for integrated and holistic patient management.
- **Hepatology and viral hepatitis service:** Disease- and severity- based patient management from acute through to palliative care, to match service provision with case-complexity. Advances in investigations and more personalised treatment options will be built upon structured treatment protocols.
- **Diabetes services:** A comprehensive, integrated and seamless service to manage diabetes patients in the HKWC, with a focus on early detection, intervention and management of complications. A coordinated multi-disciplinary approach to the



care of new and old diabetes cases for risk factor and complication assessment, through to preventive care and disease maintenance in the community.

With the above clinical service directions, there is recognition that there are existing specialty-based services which are important, though less apparent in the multi-disciplinary model. It is believed that the continuous drive for service excellence in these areas will also be important in supporting multi-disciplinary care along the patient pathway. In addition, the cluster can embark on those service transformations that do not require the support of new infrastructure.

### ***Hospital Role Delineation***

Taking into account the guiding principles, models of care, clinical service directions, as well as the existing hospital profiles, the future roles of the HKWC hospitals are informed. Collectively these provide a systematic basis for developing the appropriate organisation of services, as well as staff mix and supporting services, to ensure effective, seamless and synergistic care along the patient pathway. The roles of the HKWC hospitals are:

- ***Queen Mary Hospital:*** A premier teaching hospital delivering acute care, tertiary and quaternary services. Through integration of service, education and research, functioning as an academic health science centre.
- ***Tung Wah Hospital:*** A sub-acute hospital for the Central and Western District with a focus on rehabilitation for patients with multiple morbidities, as well as ambulatory services.
- ***Grantham Hospital:*** An academic ambulatory care centre complementary to the clinical programmes and providing cross-cluster services. Sub-acute services for the Southern District.
- ***The Duchess of Kent Children's Hospital:*** A centre for children with chronic diseases, with a focus on rehabilitation and maintenance of independent living.
- ***Fung Yiu King Hospital:*** In-patient facilities for patients with advanced disorders, infirmary and EOL care.
- ***MacLehose Medical Rehabilitation Centre:*** A specialist rehabilitation unit for in-patient, day-patient and ambulatory rehabilitation.
- ***Tsan Yuk Hospital:*** Nurse and allied health out-patient services under the Sai Ying Pun General Out-patient Clinic (GOPC) chronic disease management service. Potential for the complementary expansion of mental health services from the David Trench Rehabilitation Centre.

### **Capacity Planning**

Using demand modelling techniques, a demand projection exercise was carried out to determine the future capacity requirement of the HKWC in terms of hospital beds for the next two decades up to 2031, with 2010 as the base year. The projection has taken into account population growth, demographic changes and age-gender-specialty-specific service utilisation trends. Scenario modelling has also been carried out in the bed projection to factor in the impact of changes in service delivery.

Under the Base Case Scenario around 3,880 beds will be required in the HKWC by 2031, whereas 3,620 will be required under scenario modelling which factors in the impact of changes in service efficiency and delivery.

### **Concept Design of QMH**

A concept design for the redevelopment of QMH, demonstrating how facilities and their configuration can support the new models of care and service directions has been defined. These include large floor plates for integrated multi-disciplinary clinical programmes, zonal arrangements enhancing the functional relationships of specific services (such as “hot floors” including AED, OTs, peri-operative services and ICU), a second access point for the hospital, consideration of circulation and vertical movements for better patient navigation and efficient workflows, storage and logistics, as well as dynamic and flexible use of space for multi-purpose functions and future proofing.

The physical facilities of QMH are expected to be designed according to the landscape painted by the guiding principles, models of care and service directions, including:

- Integration of service, education and research via co-location or proximity of beds, treatment rooms and ambulatory care facilities with teaching and research spaces to facilitate communication between clinical and academic staff, as well as to expedite intellectual exchange and innovation for the benefit of improving patient care; and
- Sharing of physical resources of clinical programmes among different specialties and disciplines.

Key features of the concept design for the redevelopment of QMH are:

- Construction of a site with large floor plates with good circulation distance from the AED and “hot floors”;
- Allowing a second access route to QMH via a ramp through the lower levels of the proposed building, to bring ambulances to a podium where the future AED will be housed;

- Stacking of “hot floors” and programme floors above the podium level;
- Potential for a comprehensive cancer centre, which can be built after services have moved into this new building;
- Having an atrium as an option to connect the buildings and create visual and spatial orientation for people to navigate; and
- Intelligently develop new buildings at the site of the heritage Main Block and Nurses' Quarters A, while retaining the façade. This expansion could be reserved for educational use.

### *Implementation Enablers*

Successful implementation of the HKWC CSP by the cluster requires a number of enablers to be developed incrementally. These include how integrated and cluster-based clinical programmes will be organised and managed, as well as workforce planning to ensure the appropriate mix of skills and expertise to support service delivery. The HA annual planning process will be the mechanism through which additional resources will be sought.

Furthermore, continued engagement of staff and stakeholders of the HKWC is essential, through on-going open communication and information exchange. The HKWC CSP will be most successful and implementable if staff are informed and aligned for the change in culture required, the importance of which cannot be overstated.

### *Concluding Remarks*

Formulation of the HKWC CSP reflects the dedication of staff and their unwavering commitment for improving patient care in the HKWC. The HKWC CSP acknowledges the rich history of all the hospitals, organisations and their services in the cluster, setting out how integrated care can be further developed to support their roles across care pathways.

The redevelopment of QMH presents a unique opportunity to enable the hospital to enhance its role as a premier teaching hospital, as well as ensuring the provision of integrated care across the cluster. Ultimately it sets a journey for the whole cluster in delivering more people-centred care and professional services.

However, enabling change will require the momentum and enthusiasm built-up during the development of this CSP to continue and grow. Already change can begin to support the models of care and service directions.





# 摘要

港島西聯網（下稱「聯網」）臨床服務計劃（下稱「本計劃」）的制訂，是希望透過協調各項服務，確保病人在聯網各醫院接受治療時，均獲得適切和有效的綜合醫療服務。本計劃載列了發展方針、醫護模式、聯網未來的服務發展意向、醫院的角色定位和設施的設計。

## 背景

瑪麗醫院的重建讓該院進一步履行其各項使命。作為香港大學李嘉誠醫學院（下稱「醫學院」）的教學醫院，瑪麗醫院一直肩負著培訓醫護人才的使命，並領導聯網，邁向綜合醫療服務的發展。有見及此，本計劃的制訂必須涵蓋整個聯網，為瑪麗醫院重建項目的各個規劃階段提供指引，以確保醫院的設計可配合服務的發展和使用者的需要。

## 關於港島西聯網

港島西聯網是醫院管理局（下稱「醫管局」）七個醫院聯網之一，人口超過 50 萬（佔香港人口的 7.6%）。目前，聯網管理 3 135 張可用病床，並透過七間公立醫院、六間附屬醫療機構及約 7 330 名員工提供服務。聯網主要提供第三及第四層服務，而約三分之一的急症服務，則由居住其他聯網的病人使用。同時，不少病情較複雜、需要尖端專科治理的病人，亦會從各區轉介至瑪麗醫院接受治療。

瑪麗醫院在教育及培訓、科研、臨床試驗及創新服務各方面均扮演領導角色，它是聯網內唯一提供 24 小時急症室服務的醫院，也是香港五間創傷治療中心之一；自 2003 年開始，它更成為香港唯一的肝臟移植中心。

瑪麗醫院角色獨特，對統一和協調聯網的醫療服務舉足輕重。然而，醫院的基建發展步伐已趕不上實際需要：例如與日俱增的服務需求、病人的期望、新的醫護模式和創新服務，及現代化教學及科研等。因此，醫護人員所提供的服務經常受制於過時的病房空間設計。有限的臨床空間，阻礙部門之間的協調，亦未能配合病人及員工的實際需要。

聯網內各醫院有清晰的共同目標，在病人治理流程中擔任不同的角色，以確保聯網能為病人提供有效的綜合服務。

## 管治及執行方法

本計劃在海外資深醫療服務策劃專家及醫院建築設計顧問的協助下，正式於 2012 年 5 月展開。

過程由醫管局總監會議監察，並由項目小組負責擬定；項目小組成員包括聯網及醫管局總部的管理層和行政人員。此外，由聯網及香港大學高級臨床人員和學者，以及兩所醫學院院長所組成的參考委員會，亦就服務發展及醫護模式向項目小組提出建議。

在制訂過程中，我們廣泛邀請了聯網員工參與，及在諮詢過程中提出建議。計劃的執行方法涉及專科為本（縱向）及臨床計劃為本（橫向）的諮詢程序。當中的回應和意見，再配合醫管局的臨床和管理政策，成為本計劃制訂策略的基礎。

我們就諮詢聯網員工的意見，舉辦了員工簡報會、問卷調查，以及與前線人員、教職員和醫院管理層作出多次面談。此外，我們亦成立跨部門 / 跨醫院的工作小組，以討論臨床計劃、科研及教育的發展，並舉辦為期一天的座談會，分享及討論各小組的建議。

2012 年 12 月，本計劃以諮詢文件的形式向約 400 位持份者蒐集回應和建議。這些持份者包括聯網的前線臨床工作人員、行政人員、醫院管治委員會、香港大學及醫管局的高級管理層。整體而言，各持份者均對本計劃表示支持。項目小組詳細參閱各項意見後，適當地修訂此計劃。最後計劃由醫管局大會通過落實。

## 港島西聯網臨床服務計劃

港島西聯網臨床服務計劃概述了聯網服務的發展方針、醫護模式和臨床服務發展意向。這些範疇相互配合，為聯網醫院的角色定位及醫院設計提供指引，摘要如下：

### 發展方針

港島西聯網臨床服務計劃的發展有三大原則：

1. 計劃必須以病人為中心，醫護模式和服務發展意向均以病人及其照顧者的利益為大前提。
2. 服務必須達到「需要時集中統籌，適當時分區處理」。
3. 臨床服務、教學和科研的規劃必須協調統一。

### 主要的挑戰

聯網的臨床團隊、研究人員和教職員經常面對不同的挑戰，包括如何在服務需求日增、病人期望不斷提高、科技和臨床技術不斷發展的情況下，持續提供優質的服務，尤其高度複雜的第三及第四層服務。

聯網的員工一直致力提高工作效率，為與日俱增的病人提供優質服務。然而，單單提高效率並不足以解決潛在的問題。因此，我們必須發展相應的醫護模式及服務發展意向，以滿足未來的服務需求和配合新科技與臨床技術的發展。聯網面對的主要挑戰如下，當中尤其對於瑪麗醫院重建有深遠影響：

- 人口變動
- 社會期望不斷提高
- 醫護模式轉化
- 科技的進步
- 設施的要求
- 加強教學、科研及創新的配合

## 醫護模式

本計劃旨在提供以病人為中心、透過不同部門合作的綜合臨床服務，以面對目前的主要挑戰；同時透過聯網各醫院的互相協調，務求達至由適當的提供者，在適當的地點和時間，提供適當的醫療服務。

瑪麗醫院和港島西聯網在培訓專才和科研方面均扮演獨特而重要的角色。本計劃所提出的醫護模式著重融合臨床服務、教育和科研，以提升臨床服務質素及創新技術，從而優化醫護服務。文獻中常以「醫療科學中心」一詞來形容此類型的醫院。瑪麗醫院正擔當此重要的角色。

醫護模式的另一項重要轉變是提供日間醫療服務。隨著日間醫療服務的發展，病人將能夠在切合他們需要的環境下，接受複雜而精密的醫療服務。日間醫療對於提供優質的護理服務和管理服務需求，扮演著重要的角色。

## 臨床服務發展意向

根據上術的醫護模式，我們制訂了臨床服務的發展意向，目的是改善工作流程和釐定聯網內各醫院的角色，從而促進連貫的跨專業團隊護理。臨床服務發展意向劃分如下：

- **深切護理**：把資源集中在深切護理區，確保可為危急的病人，提供安全、高效率和優質的治理。在瑪麗醫院設立一個 24 小時運作的大型急症及嚴重病症治療區，當中包括急症室、深切治療部及加護病房，目的是利用環境的優勢來配合危重病人的治理流程，方便急症室、深切治療部及加護病房的合作和聯繫。
- **手術服務**：由專科醫生主導，根據共識的治療模式，再配合先進的設施，如在混合型手術室內設置相關的診斷設施等，以提升服務質素及治療成效。設施除了須與病人的治理流程互相融合外，更可容許日間手術的拓展。
- **癌症治療服務**：服務以病理為本和病人治理流程為基礎，透過不同專科、界別和醫院的協調合作，提供由診斷至舒緩治療等綜合服務。此外，日間癌病護理乃為服務重點，目的是提供診斷、化療服務及治療後的監察。與此同時，聯網將成立一所聯網癌症中心，集合嶄新服務、教育及科研，務求更進一步提升服務質素。
- **神經科學**：提供神經病科、神經外科、神經放射學、神經生理學和神經康復的一體化服務，並統一臨床治理流程，和制訂醫護員工輪調不同專科的機制。此外，聯網必須為緊急和非緊急服務配備合適的設施。
- **心胸科**：涵蓋心臟內科及外科、心肺移植及肺科服務。以聯網為基礎，及跨部門的協作模式，來釐定各醫院的服務範疇。

- **兒童服務**：透過夥伴協作形式，推展與兒科醫療及兒童健康相關的教育及創新科研項目，務求獲得卓越成效和發展以兒童為中心的優質個人化服務。此兒童服務將與兒童專科卓越醫療中心協作發展，互補急症及社區的醫療服務，並培訓兒科醫療專才。
- **婦女服務**：提供以病人為中心的跨部門和跨專科服務，當中包括第一至四層服務、日間醫療、社區醫療及末期護理服務。急症服務的提供地點將與其他專科部門相鄰，以達至高效率和高成效的目標。
- **老人服務**：以聯網為服務單位，目的是與社區服務相緊扣合，讓老年病人無論在醫院內或社區中，均獲得連貫的跨部門及全方位護理。服務重點包括及早偵察病情和介入治療，與急症室及骨科部門攜手合作，為老年病人提供適時的服務。
- **心理健康**：以聯網為服務單位，透過「軸輻模式」，推展社區醫療服務。瑪麗醫院將成為發展軸心，開展專科服務，與其他醫院和診所配合，並組成服務網絡，提供更地區化的日間醫療服務，以提高病人取得服務的便捷度。
- **腸胃病學**：以病理為本，將腸胃病學、上消化道及大腸外科等服務結合，集中推展治療一般腸胃病。透過共議的疾病管理模式，以鼓勵專業知識交流，及提供更有效的治療。
- **腎臟病學**：泌尿和腎臟科將協作發展以治理流程和物理療法為基礎的護理服務。配合瑪麗醫院重建計劃，兩科將共用資源和專業，提供急症護理，共同照顧病人，如腎臟移植的病人等。此外，各聯網醫院將攜手合作提供療養、康復、紓緩及末期護理，並逐步加強日間醫療及血液透析服務。
- **骨骼肌系統及多種系統性疾病**：提供綜合式跨部門護理，重點加強疾病及併發症的早期診斷及治療，例如透過共診、個案管理、護士及專職醫療人員主導的門診服務等，以確保病人在治理流程中獲得無縫的治療。
- **肝臟移植服務**：瑪麗醫院是香港唯一的肝臟移植中心，未來發展著重將其專科服務常規化，透過醫院重建，提供手術室配對，方便同時進行活肝或屍肝移植。此外，亦會加強對肝臟移植者之中期護理。
- **肝膽胰外科**：為香港主要的第三層肝膽胰癌症轉介中心，旨在提供跨部門服務，及統一全面的病人治理。
- **肝病及病毒性肝炎相關服務**：在急症至紓緩治療上，聯網將按病症的嚴重性與複雜性，配以合適的服務；並在治療過程中，注入嶄新的斷症方式以及提供更多個人化護理方案。

- **糖尿服務**：為港島西聯網提供綜合及貫徹一致的服務，完善管理糖尿病個案，措施包括：早期偵察、介入及併發症管理；新舊症跨部門護理、風險因素及併發症評估；社區疾病預防及療養。

以上的臨床服務發展意向未能盡劃所有的專科服務發展。我們相信，各專科的發展對於港島西聯網整體服務的提升有著重大而深遠的影響。此外，聯網亦可同時開展不需要新建設支援的服務轉化。

### 醫院的角色定位

聯網各醫院未來的角色定位，是根據上述的發展方針、醫護模式、臨床服務發展意向及醫院現時的狀況而訂立。這些角色定位將有助聯網組織臨床服務、組合員工及籌劃支援服務，以確保提供優質的醫護治理。聯網各醫院的角色如下：

- **瑪麗醫院**：提供急症護理及第三和第四層服務的教學地區醫院，更是集服務、教育及科研於一身的醫療科學中心。
- **東華醫院**：向中西區提供服務的分區醫院，並設有日間醫療服務，重點為患有多種危疾的病人提供復康服務。
- **葛量洪醫院**：大型日間醫護中心，負責科研、臨床項目及提供跨聯網服務，亦為南區提供次急症服務。
- **根德公爵夫人兒童醫院**：為長期病患兒童而設的中心，重點推展復康護理及協助病人獨立生活。
- **馮堯敬醫院**：為患有複雜症狀的病人提供住院、療養及末期服務。
- **麥理浩復康院**：提供住院服務、日間醫療及日間復康服務的專科康復中心。
- **贊育醫院**：提供由西營盤專科門診主理的慢性疾病管理服務，主要包括護士及專職醫療人員主導的門診服務。同時，亦存有擴展戴麟趾康復中心的心理健康服務的潛力。



## 服務量規劃

醫管局的服務推算以 2010 年為基準。在考慮人口結構變化、人口增長、居民跨區求診的比率、個別專科的服務需求，及醫療服務使用模式轉變等的因素後，醫管局為港島西聯網的醫療服務需求作出未來 20 年的推算，即至 2031 年，港島西聯網的醫療服務需求。聯網於 2031 年約需要 3 620 至 3 880 張病床。

## 瑪麗醫院的設計理念

瑪麗醫院重建的設計理念，是以重建的設施和建築物，去配合全新的醫護模式和服務方針。這些包括：為綜合跨部門臨床項目提供大型樓層；成立不同的服務區域，以增強個別服務之間的協調（例如急症室、手術室、手術服務及深切治療部的「緊急樓層」）；在醫院設立第二個入口，以提高便捷度；考慮人流與縱向流動因素，以改善病人流通和提高工作效率；加強庫存及物流管理；靈活和彈性地使用空間，發掘空間的多元化用途，以及確定未來使用的可行性。

該院設施的規劃藍圖將按照發展方針、醫護模式和臨床服務發展意向而制訂，包括：

- 將服務、教育和科研的功能合而為一，於病房、護理室、日間醫療設施預留教學及科研空間，加強臨床人員和教職員的溝通和交流，以改善病人的醫療服務。
- 不同專科及專職臨床項目可以共用資源。

瑪麗醫院主要的設計理念包括：

- 建設配備大型樓層、能確保急症室與緊急樓層之間有理想流通度的用地；
- 在瑪麗醫院設置第二個入口，貫通低層，讓救護車可沿著坡道駛至將設於平台的急症室；
- 在平台以上設「緊急樓層」及項目樓層；
- 預留空間，在新院開始投入服務後，可開設綜合的癌症中心；
- 考慮以中庭貫通各建築物，營造寬敞舒適的環境，亦可作訪客的座標；及
- 在具歷史意義的主座及護士宿舍 A 座興建新建築物，並保留舊建築的正面；這新舊交融的建築物將作教育用途。

## 成功因素

要成功推展港島西聯網臨床服務計劃，聯網需加強其統籌及管理以聯網為本的臨床項目；發展更有效的人才規劃，以確保醫護團隊有最合適的專業技能和知識組合，並透過醫管局周年工作計劃之機制，進一步落實推行改革。

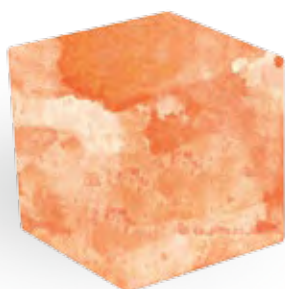
此外，推動聯網臨床服務計劃時，機構文化必會出現適當的調整，與員工和持份者保持坦誠及緊密的溝通和充份的意見交流，方可落實計劃中的理念。

## 總結

在港島西聯網臨床服務計劃的制訂過程中，員工充分顯示了為改善聯網醫護服務的決心和堅定不移的專業精神。此計劃既彰顯了聯網各醫院和相關機構的歷史意義及價值，同時亦勾劃出推行嶄新醫護服務模式後，可帶來的改善和進步。

重建瑪麗醫院能讓該院進一步履行其作為主要教學醫院的使命，及促進聯網整體醫療服務之整合，和發展以人為本的專業服務。

我們需要動力和熱誠，方可成功地及持續地作出改變，推動臨床服務計劃所勾劃的發展路向，提供更優秀的醫護服務。





# Introduction

## *Purpose of the Plan*

This document presents the HKWC CSP, which progressively maps out the guiding principles, models of care and planned future service developments for the cluster, informing role delineation of the cluster hospitals and physical design.

The purpose of the HKWC CSP is to set out the clinical strategies that will ensure the HKWC hospitals provide effective integrated care along the patient pathway, through well coordinated services, taking into account the redevelopment of QMH<sup>1,2</sup>.

The CSP has been produced through a highly participative process, incorporating the views of a wide range of clinical and executive staff from the HKWC, HA and HKU. The development of clinical strategies for the whole of the HKWC enables a more comprehensive approach to planning, which reflects the inter-relations of services and clear delineation of each hospital's role along the patient pathway.

Implementation enablers required for the success of the models of care and service directions are described, as well as the design implications of the preferred clinical strategies for the redevelopment of QMH, to inform the subsequent design and planning.

<sup>1</sup> The 2012-13 Budget Speech, Government of the Hong Kong Special Administrative Region

<sup>2</sup> The 2013 Policy Address of the Chief Executive of the Government of the Hong Kong Special Administrative Region

## Background

The HKWC is one of the seven HA clusters. The cluster comprises of seven hospitals and six satellite institutions, serving a population of over half a million people (i.e., 7.6% of the Hong Kong population) in the Central & Western and Southern Districts of Hong Kong Island (**Figure 1**). The seven hospitals are QMH, Tung Wah Hospital (TWH), Grantham Hospital (GH), also Duchess of Kent Children's Hospital (DKCH), Fung Yiu King Hospital (FYKH) and MacLehose Medical Rehabilitation Centre (MMRC) at Sandy Bay (the "Sandy Bay Hospitals"), as well as Tsan Yuk Hospital (TYH). The six satellite healthcare institutions are David Trench Rehabilitation Centre (DTRC) in Sai Ying Pun, Central District Health Centre, as well as GOPCs in Sai Ying Pun, Aberdeen, Ap Lei Chau and Kennedy Town.

The cluster manages 3,135 available beds (comprising 2,385 acute beds, 468 convalescent / rehabilitation beds, 200 infirmary beds, and 82 psychiatric beds)<sup>3</sup>, through a workforce of around 7,330 staff<sup>4</sup>. In terms of service volume, in 2010/11 the cluster managed 105,480 in-patient discharges and deaths, 124,790 AED first attendances, 760,060 specialist out-patient clinic (SOPC) attendances, and 318,750 GOPC and family medicine specialist clinic attendances<sup>5</sup>.

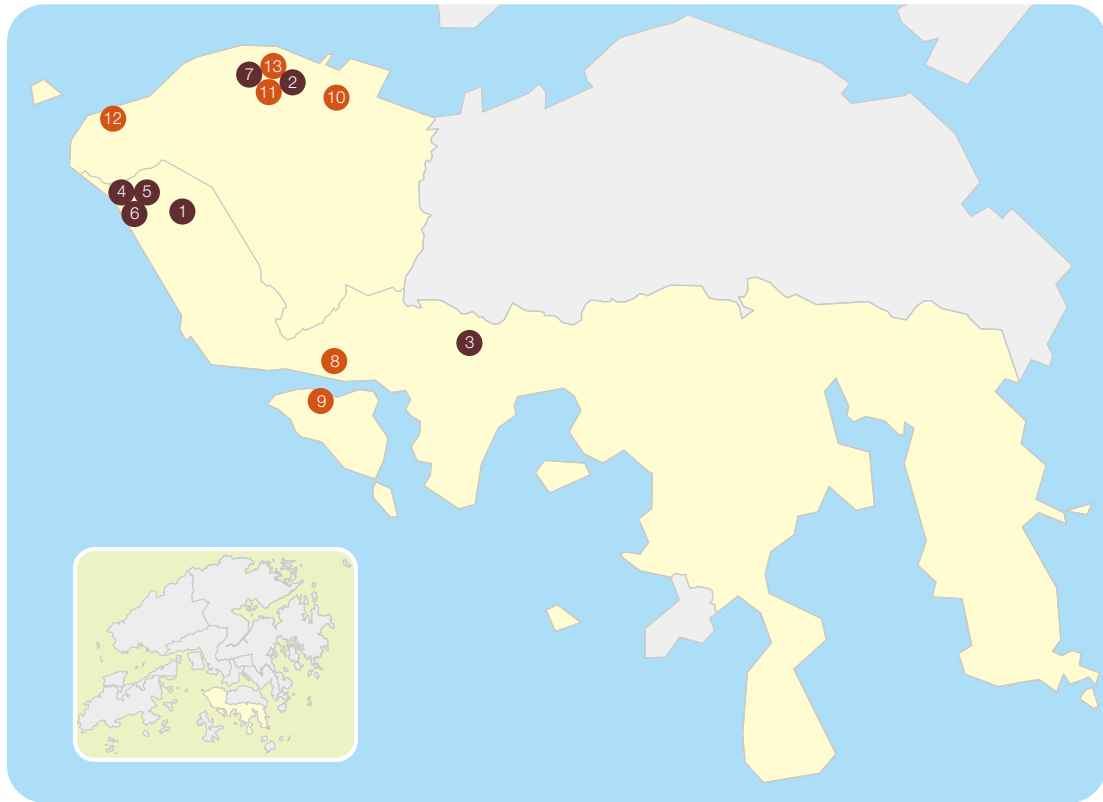
Through the provision of services across its hospitals, the cluster has a relatively high level of self-sufficiency, with 90% of residents in the cluster receiving their care provided by HKWC hospitals. In addition, the cluster is well known for its tertiary and quaternary services, such as liver transplant and paediatric cardiac surgery. Around one-third of the acute services delivered by the HKWC are utilised by people who reside outside of the cluster.

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<sup>3</sup> As at 31 December 2012, HA Statistics and Workforce Planning Department

<sup>4</sup> As at 31 December 2012, HA Statistics and Workforce Planning Department

<sup>5</sup> HA Statistics and Workforce Planning Department

**Figure 1** Map of Institutions of the Hong Kong West Cluster

Name	In-patient / Day-patient service	SOP service	GOP service
1 Queen Mary Hospital +	✓	✓	
2 Tung Wah Hospital	✓	✓	✓
3 Grantham Hospital	✓	✓	
4 The Duchess of Kent Children's Hospital	✓	✓	
5 Fung Yiu King Hospital	✓	✓	
6 MacLehose Medical Rehabilitation Centre	✓	✓	
7 Tsan Yuk Hospital	✓	✓	
8 Aberdeen Jockey Club GOPC			✓
9 Ap Lei Chau GOPC			✓
10 Central District Health Centre GOPC			✓
11 David Trench Rehabilitation Centre		✓	
12 Kennedy Town Jockey Club GOPC			✓
13 Sai Ying Pun Jockey Club GOPC			✓



## *Hospitals of the Cluster*

The seven hospitals in the HKWC aim to provide a comprehensive set of seamless, high quality and safe services to patients. Each of the hospitals within the cluster has a unique history and service mix, with different clinical specialties and sub-specialties, spanning acute care through to rehabilitation and palliation. To support the context of the following chapters in the HKWC CSP, a brief profile of each hospital is set out below.

The current organisation structure of the HKWC is provided at **Appendix 1**, while a summary of services provided by each hospital is provided at **Appendix 2**.

### *Queen Mary Hospital*

QMH commenced its operation in 1937 and is the only acute regional hospital in the HKWC. It is also the teaching hospital of the Li Ka Shing Faculty of Medicine (the Faculty) of HKU. The hospital manages 1,698 available beds, through a workforce of around 5,340 staff<sup>6</sup>. In addition to the 510-strong HA clinician workforce, there are around 150 academic clinicians from the Faculty who jointly deliver care to patients with their counterparts from HA.

The hospital delivers a comprehensive range of services across 19 clinical departments. It is the only acute hospital in the cluster providing a 24-hour A&E service and is one of the five designated trauma centres in Hong Kong.

QMH provides tertiary and quaternary services to patients from the HKWC, as well as from across the territory and neighbouring cities, such as Macao. Patients with complex conditions requiring tertiary care and specialised technological support are often referred to QMH. Such conditions include solid organ and human stem cell transplant, haematological malignancies, neonatal intensive care, complex inherited metabolic diseases, primary immune-deficiencies, infectious diseases, paediatric cardiology, cardiothoracic surgery, assisted reproduction, maxillofacial surgery, reconstructive surgery and neurosurgery.

QMH and the Faculty have been at the forefront of innovation and research. For example, the QMH transplant team pioneered living donor liver transplantation to adults, and the Severe Acute Respiratory Syndrome (SARS) coronavirus was first identified in the world by HKU professors in their pathology laboratories in 2003. Moreover, collaboration with the Faculty for conducting clinical trials and the

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<sup>6</sup> As at 31 December 2012, HA Statistics and Workforce Planning Department

establishment of the Clinical Trials Centre at QMH have enabled further research capability and capacity in the advancement of patient care.

Over the years, QMH has fostered strong partnerships with the faculties of Medicine and Dentistry, as well as the School of Nursing of HKU. The synergy generated has enabled the HKWC to assume a key role in HA in the development of services and to serve as a cradle for the development of doctors, nurses, pharmacists and allied health professionals in the territory.



### ***Tung Wah Hospital***

TWH is 142 years old. It was the first hospital established by local Chinese community leaders to serve the people of Hong Kong and is located in the now densely populated Sheung Wan area.

TWH started out as a Chinese medicine hospital, while western medicine gradually became the predominant type of care in the years that followed. It is now the second largest hospital in the HKWC with 550 available beds and a workforce of around 800 staff<sup>7</sup>.

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<sup>7</sup> As at 31 December 2012, HA Statistics and Workforce Planning Department

Together with the Faculty and QMH, departments were formed including the Department of Medicine and the Department of Surgery. There have also been development of Day Surgery services, Ear, Nose and Throat services, Ambulatory Diagnostic services, Integrated Breast Disease services, Geriatric Urology services, Integrated Western and Chinese Medicine services, Endoscopy services, Renal services, Geriatric Day Hospital services, Stroke Rehabilitation services and Cardiac Rehabilitation services.

Within the hospital premise, a Chinese Medicine Clinic for out-patients has been in operation since 2002. From 2006, Chinese medicine was also made available to a specific group of in-patients and out-patients who were under western medicine treatment.

TWH also provides teaching to medical, nursing and allied health students. With its long association with the Faculty and QMH, TWH has developed a culture of research and training, to pursue excellence. An example is its renal services and the Renal Research Centre, which has pioneered the use of Chinese medicine as an adjuvant for palliative renal care.

Patient engagement and community partnership are strong traditions of TWH and many patient support groups have been organised. Many non-governmental organisations (NGOs) which provide services for the elderly have long-term collaborations with TWH.



### *Grantham Hospital*

GH was established in 1955 by the Hong Kong Tuberculosis, Chest and Heart Diseases Association in the Wong Chuk Hang area, as a hospital for the management of tuberculosis (TB). The hospital subsequently developed cardiac services and has been a pioneer of many cardiac interventions, such as the first heart transplant operation in Hong Kong. In 2008, the Cardiothoracic Surgical and Anaesthetic Units and the Paediatric Cardiology Unit were relocated to QMH.

Today GH manages 372 available beds, through a workforce of around 550 staff<sup>8</sup>. The hospital, designated as a tertiary referral centre, currently caters for patients with adult heart and lung diseases and collaborates with the cardiothoracic surgery unit of QMH to provide pre-operation assessment, work-up and post-operation medical care, including rehabilitation for heart and lung transplant patients. Also, GH is a designated centre for managing multi-drug resistant TB and provides acute geriatric and palliative medicine services.

Since 2009, GH has established a pioneering high volume day cataract surgery service, in collaboration with QMH and HKU. The hospital also continues to play an active role in teaching and runs a School of General Nursing.



<sup>8</sup> As at 31 December 2012, HA Statistics and Workforce Planning Department

### *The Duchess of Kent Children's Hospital*

Renamed in 1968, DKCH was opened in 1956 at Sandy Bay by the Society for the Relief of Disabled Children. It currently has 130 available beds and a workforce of around 230 staff<sup>9</sup>. It provides specialised care in Paediatric Orthopaedics, Spinal Surgery, Child Neurology, Developmental Paediatrics and Neuro-rehabilitation.

The hospital is world renowned for its services and research in the treatment of paediatric orthopaedic problems, including spinal deformities, cerebral palsy, leg length inequalities and congenital skeletal abnormalities. It is one of the two designated centres in the territory for the treatment of scoliosis and serves as a training centre in scoliosis reconstruction for local and overseas orthopaedic surgeons. A Gait Analysis Laboratory was set up in DKCH in the early 1990s for the assessment of walking patterns.



DKCH also treats children with neuro-developmental disorders and neuro-degenerative diseases. The Children's Habilitation Service serves as a model centre for habilitation and rehabilitation of children with chronic handicap in China and South East Asia.

DKCH has been recognised as one of the designated hospitals for the long-term management of ventilator-assisted children. There is also a comprehensive rehabilitation programme for ventilator-dependent children.

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<sup>9</sup> As at 31 December 2012, HA Statistics and Workforce Planning Department



### *Fung Yiu King Hospital*

FYKH was originally known as the Sandy Bay Infirmary, for patients with long-term care and convalescence needs. With support by the Fung Yiu King Charitable Foundation to undergo comprehensive renovation and improvement works in 1987, the infirmary was subsequently renamed Fung Yiu King Convalescent Hospital and then to Fung Yiu King Hospital in 1994.

At present, FYKH is a convalescent / extended care hospital specialising in geriatric services, as well as rehabilitation and convalescence for medical and orthopaedic patients. The hospital has 272 available beds, including 65 infirmary beds under the Central Infirmary Waiting List, managed by around 260 staff<sup>10</sup>. FYKH also operates a Geriatric Day Hospital (GDH) which houses a Continence Clinic, an Elderly Assessment Clinic and an Elderly Health Resources Centre.

The HKWC Community Geriatric Assessment Team (CGAT) is based at FYKH and provides outreach medical consultation and geriatric assessment to residents in Residential Care Homes for the Elderly (RCHes) in the cluster. The HKWC CGAT provides timely assessment and management of health problems for the elderly, including community based rehabilitation programmes, Central Infirmary pre-admission assessment, education and training for carers and residents in RCHes. The HKWC CGAT also collaborates with NGOs to provide seamless health care to identified high-risk elderly in the community.



<sup>10</sup> As at 31 December 2012, HA Statistics and Workforce Planning Department

### ***MacLehose Medical Rehabilitation Centre***

Opened in 1984 by the Hong Kong Society for Rehabilitation, MMRC was established for the comprehensive and intensive rehabilitation of people with physical disability. The MMRC has 110 available in-patient beds (including 10 private beds) and a workforce of around 150 staff<sup>11</sup>.

MMRC is a designated centre for spinal cord injury rehabilitation for Hong Kong Island. Comprehensive rehabilitation programmes at MMRC are delivered through multi-disciplinary clinical teams that include the spinal cord injury team, joint replacement team, rheumatoid arthritis team, stroke team, back trauma team and amputee team. These teams provide long-term care for patients with major disabilities, such as major head injuries, strokes, tetraplegia, paraplegia and amputations. Programme-based day rehabilitation programmes are provided as an ambulatory service.



<sup>11</sup> As at 31 December 2012, HA Statistics and Workforce Planning Department

### *Tsan Yuk Hospital*

TYH in Sai Ying Pun was established to provide maternity services to the community by the London Missionary Society in 1922. In 2001, the obstetric and newborn in-patient services were relocated to QMH. In addition, the gynaecology clinic including uro-gynaecology and menopause clinic services have also relocated to QMH.

TYH currently provides out-patient and ambulatory services for antenatal and postnatal care, including general obstetric clinics, an obstetric day centre and the Department of Prenatal Diagnostic and Counselling.

TYH also provides a range of services which belong to mental health and various elderly programmes. In addition, the DTRC overflows some of its staff and programmes to TYH, while nurses and allied health services, under the Sai Ying Pun GOPC chronic disease management service, are also delivered at TYH.



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## *About the HKWC CSP*

The HKWC CSP arises from a general consensus and recognition among key stakeholders of the HKWC that there is a need to develop a cluster-wide clinical strategy. The rich history, culture and tradition of the HKWC hospitals are carried forward by the parent charitable bodies. However, there is a need to clearly define the roles of each hospital and align their services to ensure effective integrated care along the patient pathway, through streamlined coordination.

Much has been achieved by the staff of the HKWC in improving care and managing demand. However, maximising efficiency alone does not solve the underlying problems. The development of corresponding models of care and service directions is needed to support future service demands, new technologies and clinical innovations.

The unique role of QMH means it has importance in ensuring care is delivered in an integrated and coherent manner across the cluster. However, the physical facilities of QMH have not kept pace with rising service volumes, patient expectations, new models of care and innovations, nor are favourable for modern teaching and research. Staff are frequently constrained by outdated design and limitations in clinical space, sub-optimal functional relationships of departments which are, by current standards, neither patient- nor staff-friendly.

Furthermore, the association of the HKWC hospitals with HKU presents a unique opportunity to review how clinical services, education and research should integrate. For example, translation of the clinical strategies into the physical design of QMH can enhance the opportunities for researchers and frontline clinicians to come together for sharing of cutting edge information and experiences. There is a need for facilities and amenities to be upgraded and modernised for today's undergraduate teaching, especially in view of additional undergraduate intake in the coming years, to provide enough space for didactic teaching, small group tutorials or clinical bedside lessons, as well as student space and communal rest areas.

QMH's strategic role in the cluster means that it will lead this integration, which serves as the key driver of clinical excellence and innovation to support better patient care.



# Planning Process

## Governance

Under the steering of the members of the DM, a Project Team comprising members of HA Head Office (HAHO) and HKWC Planning Teams was formed to facilitate the formulation of the HKWC CSP. Advice during development of the HKWC CSP was sought from a Reference Panel, which was composed of distinguished clinicians, HAHO and HKWC senior executives, as well as renowned academics (**Appendix 3**).

The project commenced in May 2012, with assistance from overseas consultants with extensive experience in healthcare service planning and hospital architectural design.

Following formulation, the HKWC CSP was submitted to the DM, followed by the Medical Services Development Committee and the Board for approval and endorsement.

## Methodology

The HKWC CSP has been developed through an iterative process of staff engagement and participation, which form the basis of the formulated clinical strategies with HA clinical and management policy overlay. The following sections briefly outline the methodological approach and staff engagement process.

### Setting the Scene

In June 2012 a cluster briefing forum was held to mark the beginning of the development of the HKWC CSP. Around 210 service heads, senior clinicians,





management and executives from across the cluster attended the forum. Staff were briefed about the project, its methodology, and invited to fully participate in the planning process.



After the briefing forum a structured two-phase consultation process was used to solicit views on current clinical services, their gaps and opportunities, as well as anticipated changes in models of care and technologies on healthcare delivery in the coming decades.

### ***Vertical Specialty-Based Consultation***

The first phase of consultation comprised vertical specialty-based survey and face-to-face interviews. The purpose of these was to collect a comprehensive set of staff views and comments on current practices and service gaps within specialties or departments, at both hospital and cluster level.

#### ***Survey***

A self-administered survey was sent to each clinical unit, department and institution in the HKWC to understand the existing service provision, staff profile, perceived service gaps, key relationships with other specialties, departments and hospitals, as well as future aspirations for models of care and service developments. Participants also provided input on their current and expected contributions to education, training and research.

The response rate was 85% (out of a total of 295) by survey return and 89% (out of a total of 203) by headcount.

#### ***Face-to-face Interviews***

Using the completed surveys as basis, 137 sessions of face-to-face interviews were held from mid-July to mid-August 2012, with 420 staff members including service heads, medical staff, nursing staff, pharmacy staff, allied health professionals and hospital management. The aim of the face-to-face interviews was to clarify and supplement the survey responses, allowing for further exploration of specific issues highlighted by participants.

While providing in-depth understanding of the services by the HKWC hospitals, the interviews also presented opportunities to obtain preliminary views on future healthcare models from participants. The foci of these discussions were then used to inform the next phase of the CSP development process.

### ***Horizontal Programme-based Consultation***

The second phase of consultation was the formation of horizontal programme-based work groups to further elucidate patient-centred models of care. The purpose of this horizontal approach was to provide a platform for stakeholders from different disciplines, specialties and hospitals to work together towards describing agreed patient-centred clinical pathways, which encompass a coordinated continuum of care from early diagnosis through to palliation across the HKWC hospitals / departments.



Twelve Clinical Work Groups (CWG) were focused on, with a Chair or Co-Chairs appointed for each in August 2012. In addition, two Special Work Groups (SWG) were also tasked to describe research and education requirements in the HKWC, since these were considered by stakeholders as essential cross-cutting themes for all horizontal programmes.

A total of around 170 frontline colleagues were engaged in this phase of consultation.

Culmination of this phase of consultation was a presentation by each of the work groups on their proposals for the HKWC in a one-day seminar. The seminar was facilitated by the Director of the Strategy and Planning Division of HAHO on 12 October 2012. Around 150 participants attended the seminar, including the Chief Executive of the HA and the Dean of the Faculty, Cluster Chief Executives of the HKWC and other clusters, HKWC Hospital Chief Executives, clinicians, academics and other HA executives. Overall, the presentations were well received and generated constructive discussions.

## ***Role Delineation***

Based on the two phases of staff consultation and engagement, particularly on the proposals and information obtained from the horizontal programme-based work groups, the future service profiles for each of the HKWC hospitals was elucidated. The HKWC CSP provides an overarching description of the role and profile of each hospital in the HKWC, with key illustrative features.

## ***Demand Projection***

Service demand and bed number projections with consideration of population growth and demographic changes, as well as age-gender-specialty specific service utilisation trends for the HKWC, were computed up to 2031. Details of the projection are documented in the Capacity Planning chapter.

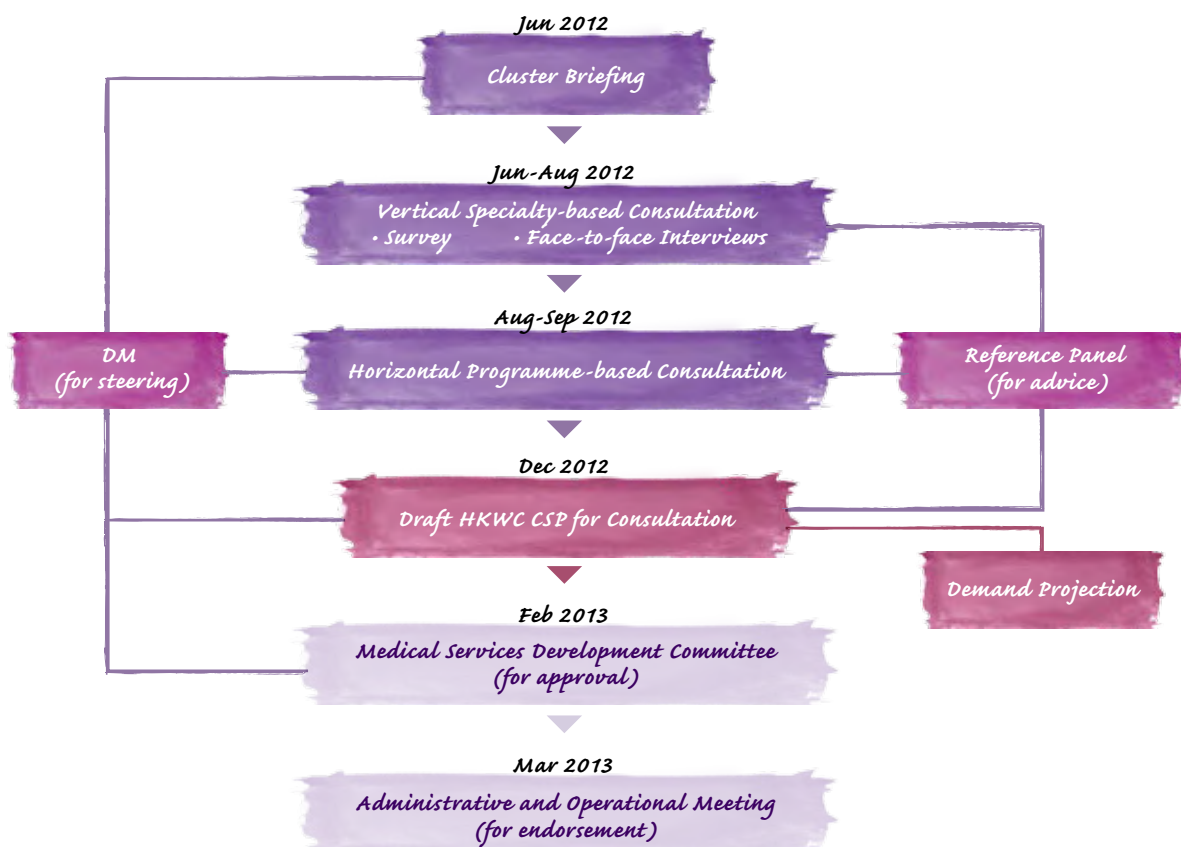
## Policy Overlay

The DM provided the policy overlay to the development of the HKWC CSP. This involved policy decisions at high level with broad considerations of the views of various stakeholders, including the different government bureaux and the Board.

## Consultation

From 20 December 2012 to 21 January 2013, the HKWC CSP was made available as a consultation document to around 400 key stakeholders to solicit feedback and suggestions. Stakeholders included senior management, executives and clinicians from the HKWC, HKU and HA, as well as the HGCs of HKWC. Responses received were carefully analysed and deliberated by the Project Team and used as a basis to refine the CSP.

**Figure 2** provides an overview of the HKWC CSP development process and methodology.



**Figure 2** HKWC CSP development process and methodology



## Guiding Principles

Development of the HKWC CSP has been guided by the following underpinning principles, to create a common platform for the formulation of models of care and clinical service directions, aligning them with HA's Vision, Mission and Values. These are:

1. The CSP should be **patient-centred**, with models of care and service directions designed for the benefit of patients and their carers.
2. In terms of planning services, the maxim “**centralise where necessary and localise where possible**” should be observed. This principle is complementary to being patient-centred. It ensures the appropriate balance between the benefits of centralisation, such as technology or expertise, with convenience to patients and their families<sup>12</sup>.
3. There should be an **integrated approach to service, education and research** through the service network of hospitals in the HKWC. The purpose of this is to support the generation and dissemination of knowledge and evidence, drive innovation and encourage the adoption and advances in medicine and patient care.

<sup>12</sup> This principle was introduced to Hong Kong by Sir Cyril Chantler in the context of the development of proposals for a Centre of Excellence in Paediatrics

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The third principle is of particular relevance to the HKWC by virtue of QMH as a premier teaching hospital. QMH should be redeveloped to enhance its capability to strengthen the interface between service, research and teaching, to further nourish a culture of learning. This can support the rapid and rational adoption or diffusion of new treatments and models of care across the HKWC.

Furthermore, as the only regional hospital in the HKWC, QMH plays a key role in coordinating services across the HKWC hospitals to facilitate patient care along the clinical pathway. True integration of service can only happen through clear role delineation of the hospitals. The integration should be along the care pathway, from primary through to secondary, tertiary and quaternary care.







## *Key Challenges*

Clinical teams, researchers and educators across the HKWC face the challenges of delivering high quality services, including highly complex tertiary and quaternary services, against increasing service volume, rising patient expectations, as well as development in technologies and clinical innovations. Staff have strived to deliver high quality services to a large number of patients by improving efficiency. However, maximising efficiency alone does not solve the underlying problems. The development of corresponding models of care and service directions is needed to support future service demands, new technologies and clinical innovations.

The key overarching challenges for the HKWC, and of particular significance to the redevelopment of QMH, are:

### *Demographic Shift in the HKWC*

The population of the HKWC is older than Hong Kong overall and is set to experience rapid population ageing. For example, in 2010, 13.5% of the population in the HKWC were over 65 years old, compared to 12.9% for Hong Kong overall. By 2019, the estimated percentage of elderly will rise to 19.9% in the HKWC, compared to 17.4% for Hong Kong overall, and it is expected that this trend will continue. The rapid ageing in population is likely to have a profound impact on service demand, in terms of volume, complexity and types of care.

Clinical services in the HKWC therefore need to be flexible, age- and gender-appropriate, with the right mix of in-patient and out-patient care, through service delivery models which cater for patients with increasing multiple healthcare needs.

## *Rising Societal Expectations*

Healthcare services in the HKWC, as in the rest of HA, are experiencing rising patient and public expectations, which range from the quality and safety of care provided, to all areas of the healthcare experience. With better access to health information, the general population nowadays has greater awareness on differential diagnoses and therapies available, on personalised medical care, as well as on communication of information by healthcare professionals.

Such expectations will need to be addressed through new models of care and as facilities are developed, for example age- and gender-appropriate environments which are welcoming, safe and cater to the different needs of adults and children.

In addition, intelligent service design and configuration sensitive to the needs of different patient groups will increasingly be seen as supporting their holistic needs. As new technologies develop, customisation and choices in healthcare will become more important and a key facet of delivering patient-centred services.

## *Changing Healthcare Models*

Healthcare services around the world are focusing on more patient-centred models of care which, aim to reduce the burden on acute in-patient services, as a way to more efficiently and effectively manage demand. An example of this is the shift towards ambulatory models of care, such as day surgery and day chemotherapy.

The HKWC is a complex and dynamic healthcare delivery system. As the hospitals within the cluster evolve to meet the changing healthcare delivery models, so too are their roles and the nature of services they provide. Thus, there is a need to ensure that the functions of each hospital are well delineated along the patient pathway to enable rational alignment and development of clinical services, with appropriate supporting facilities, capacity and workloads.

## *Technology Advancement*

Sophisticated medical technology is progressively available in HA hospitals, with further advances constantly being made.

Moreover, as a result of the addition of medical nanotechnology (nanomedicine) to the existing knowledge of molecular and cellular biology, it is likely that more accurate and more rapid diagnostic techniques will be devised in the future, as well as new treatments which are more personalised. Thus, as understanding of tissue and cellular biology further evolves, these are likely to lead to advances in areas such as tissue engineering and regenerative medicine.

The development of information and communications and technology (ICT) is another area that has great potential for transforming the future healthcare environment.

## *Facility Requirement*

The development of new models of care and support for existing delivery of services means that clinical areas with outdated and aged facilities need to be modernised.

In QMH, services have developed within the constraints of the existing site, i.e., many facilities are dispersed in and across different buildings. This has led to inefficiencies, such as the way coordinated and time-critical treatments in patient care delivery are provided. The configuration and capacity of facilities and functional relationship among departments, services and hospitals have the potential to be enhanced, so as to better support staff in the delivery of more coordinated and multi-disciplinary models of care.

The redevelopment of QMH provides the opportunity to consider how the hospital infrastructure can support the delivery of modern healthcare. In addition, the optimisation of services and facilities needs to align across the spectrum of patient care, including acute care, rehabilitation, as well as palliative and EOL management.

An example of a key challenge at QMH is the emergency transport of emergency patients to the AED being greatly limited by having only one single hairpin road to access the QMH campus. Another example is the inefficient transportation of patients between AED and OTs. Other examples include the ICU, HDU, OTs and AED, which could be better configured for greater consolidation of expertise and mutual support, with enhanced functional and geographical proximity that enable more seamless and efficient patient care, as well as workflows.


## *Strengthening Links for Education, Research and Innovation*

The integration of education and research with clinical services is seen as the foundation which drives innovation, advances in knowledge and adoption of evidence-based medicine. To realise such integration, it will require significant consideration in the way hospital facilities are organised and how they can be flexible to facilitate the introduction of new technologies and service innovations.

Currently, areas equipped for training and development to support formal and informal learning across clinical disciplines and specialties are limited, and aggravated by the double cohort of medical undergraduates. Also, hospital facilities are not best set-up to cater for the evolving needs of students and teachers, in particular the provision of digital, wireless and mobile platforms. There is a need to incorporate infrastructure and space that will support future medium and modalities of education, training and skills-based learning. The challenge is to embed these in such a way as to nurture future generations of clinicians and scientists who will drive innovation in patient care.

Moreover, in order to advance knowledge and capitalise on the benefits that advancing technologies can bring to patient care, hospital facilities will need to be capable of accommodating the range of research commensurate with modern academic health science centres, such as clinical trials, research laboratories, BioBank and translational medicine centres.

In order to remain a leader in research, the HKWC and the redevelopment of QMH will need to cater for further integration of research to support rapid learning environments and sustained interactions that promote the translation of discoveries to evidence-based care. Future collaboration of the Faculty with QMH and other cluster hospitals for teaching and research is therefore an important theme within the HKWC CSP.



## *Models of Care*

This chapter considers some of the major changes that have occurred in hospital practice in recent decades. During the implementation phases of the HKWC CSP, and specifically the redevelopment of QMH, the HA will need to address all of the enablers to support the proposed models of care and clinical strategies outlined. However, some of the proposed models of care are not dependent on new facilities; thus change can begin now to gradually move towards these models, rather than waiting for the completion of infrastructure. The models of care described below reflect the aspirations of the staff of the HKWC. A key unifying theme underpinning these is integration with multi-disciplinary care.

### *Academic Health Science Centre*

Integration of clinical services, education and research are key drivers of clinical excellence and innovation to support better patient care. In some literature, this type of hospital is termed an academic health science centre<sup>13</sup>. It is particularly important for QMH, being both the regional hospital of the HKWC and the teaching hospital of the Faculty. The redevelopment of QMH provides the opportunity to embed thorough collaboration of HA and academic staff to support these three components which an academic health science centre should offer.

<sup>13</sup> "The role of academic health science systems in the transformation of medicine". The Lancet. 13 March 2010. <http://ahsc-ntf.org/docs/AHSCs/Reports/Dzauetal2010Lancet.pdf>. Retrieved 10 December 2012.



## *Multi-disciplinary Clinical Programmes Along the Patient Pathway*

The integration of clinical services along the patient pathway within the cluster will facilitate services to be effectively delivered in a high quality, well-coordinated and patient-centred manner.

This concept outlines the essence of the clinical programmes, which are further deliberated in the chapter on Clinical Service Directions.

## *Right Care at the Right Time and Place by the Right Provider*

Based on both international literature and proposals of the work groups, models of care that have significant impact on hospital design were identified. In general, they can be grouped into two types – institutional and zonal models.

The **institutional model** is where a full range of clinical services are grouped around a particular sub-specialty or set of sub-specialties. This model is better suited to complex tertiary environments.

Examples of institutional models that can be developed in the HKWC are:

- Integrated clinical programmes — e.g. gastroenterology, neurosciences.
- Children and Women's services.

Being the only acute hospital and the key service provider in the HKWC, QMH has the critical mass in these services to function as independent institutes, and has an important role in collaborating and coordinating services across the cluster, based on the service directions for clinical programmes. For QMH, the size and complexity of some units and departments are as big as hospitals in other parts of the world, which would facilitate delivery of patient-centred care through an institutional model.

The **zonal model** refers to dividing the hospital campus into functional zones, i.e., ambulatory, in-patient and critical care. These zones are specifically designed and located to meet the requirements of users of these services, for best delivery of patient-centred care.

Functional zones include:

- “Hot floors” — with AED, OTs, peri-operative services, critical care.
- An integrated pathology service.
- A comprehensive cancer centre.
- Ambulatory care.

The following sections elaborate on key aspects of the proposed models of care for the HKWC, and in particular help inform the project for the redevelopment of QMH.

### *Illustration of Models of Care in the Integrated Clinical Programme*

Traditionally, departments and specialties operate independently and patients who require care from multiple specialties often have to be separately assessed and managed.

Clinical programmes take a patient pathway approach for patient care and consider the multiple specialties and disciplines required to come together for providing comprehensive care and continuity of services, from acute in-patient settings, through to out-patient and community settings. By identifying clinical programmes and defining the levels of care within, better coordination can be achieved, particularly through a care coordinator for more personalised and holistic treatment.


This new model of care also reduces the chance of service gaps arising from the more traditional models of service delivery. For example, by defining the services within a clinical programme, patients can be diverted to the right services, where there is a concentration of doctors, nurses and therapists trained in the relevant specialties and disciplines. These healthcare professionals can therefore come together to decide the best care plans for patients, reducing the lead time towards actual therapy and strengthening continuity of care.

The details of the clinical service directions can be found in the chapter on Clinical Service Directions.

### *Children and Women’s Services*

There are services that can operate as a distinct entity in the front-of-house, while sharing all the support network of the hospital at the back-of-house — such as laboratory support and pharmacy services.

Worldwide trends are to separate children’s services from adults. This is not simply because of the different types of care, but also for the protection of children. This also provides an environment tailor-made to the relevant age groups, so that sick children, as well as their carers, will feel most relaxed.



Similarly, for women's services (e.g. gynaecology services and obstetric services) it is more ideal to have discrete access to services related to this group of female patients. In particular, services such as peri-natal care should be separated from infertility clinics.

For children's and women's services, this in effect creates a space for children and women to have the perspective that they are in a different place and being managed separately, while in reality they are very much part of a hospital being connected behind the scenes.

### ***Hot Floors***

"Hot floors" accommodate services that are expected to run at maximum capacity round-the-clock.

These time-critical services must be aggregated in an easily accessible part of the hospital campus, and include the AED, Peri-operative Service and Critical Care. This also encompasses services for neurological emergencies, as well as acute cardiac and cardio-thoracic services.

Since QMH is the only hospital in the cluster providing an AED service, this concept applies to the QMH hospital design.

Pathology and Radiology should have significant facilities in close proximity to the "hot floors". As basic diagnostic and interventional tools, Computed Tomography (CT) and Magnetic Resonance Imaging (MRI) need to be strategically located to meet competing demands of "hot floors". Neurosciences and the cardiothoracic programmes should be located immediately above the "hot floors".

### ***Accident and Emergency Department***

The AED is the front door of the hospital. Its requirement to handle large numbers of patients safely and effectively has led to the development of systems of management which are found in most hospitals in developed countries. Hong Kong emergency physicians have been prominent in the development of many of these models.

The following checklist itemises the characteristics of a contemporary AED:

- Unimpeded access for emergency vehicles.
- A purpose-built decontamination facility.
- An incident management office.
- A single point of triage that is safe, discreet and efficient.
- Waiting areas that are secure, under surveillance and child-friendly.
- Sufficient cubicles to ensure that waiting for physically or emotionally distressed patients is behind the triage desk and not in the waiting room.
- Adequate and appropriately located resuscitation cubicles for category one patients.
- Suitable spaces for distressed / grieving relatives.
- Fast-track cubicles for lower triage category patients / follow-ups.
- An observation area for patients who are likely to return home after 4-6 hours of surveillance.
- A secure area where patients with dysfunctional behaviours and / or acute mental health problems can be observed and managed.
- Good functional relationship with imaging modalities (ultrasound, X-ray and CT) within the department.
- Access to social and psychological support around the clock.
- Infection control and isolation facilities.
- A suitable area for patients who are dying, with support facilities for family and friends.
- Appropriate office, education and staff facilities.
- Short-stay units (emergency medicine wards (EMW) in or adjacent to the AED, the Medical Assessment and Planning Unit (MAPU), Surgical Admission Ward (SAW) and Neuroscience Admission Ward (NAW)).

The MAPU and NAW will be described elsewhere in this chapter. The SAW is designed for patients who have been assessed and stabilised but are waiting for an OT or surgical team to become available.

### *Hybrid Procedures / Theatres*

One of the greatest changes in procedural medicine is interventions using multiple modalities.

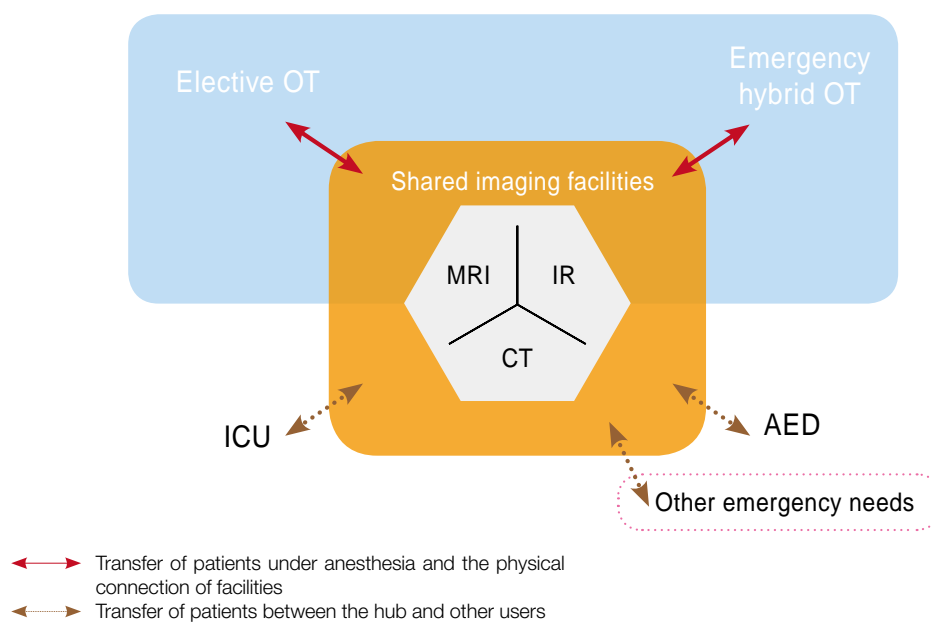
Most tertiary institutions have OTs with built-in angiography to enable a combined or sequential approach for vascular lesions. This principle is now being extended to other diagnostic modalities with MRI and CT being available within or adjacent to surgical suites, with neurosurgery as a particular example. These theatres / procedure rooms are known as “hybrids”. Irrespective of the combination of modalities that any particular discipline may aspire to, there are a number of issues in common:

- They are expensive;
- Very large theatres are required ( $\geq 100$  sq.m.);
- Provision must be made for ease of upgrade and incorporation of new technology; and
- Radiation protection for staff, students and observers is crucial.

An extension of this model is an “interventional hub” (**Figure 3**). This encompasses several theatres clustered around a central hub of diagnostic modalities (e.g. CT, MRI). The appropriate machines could be mechanically shifted to the patient and the operating table flexibly. Furthermore, CT / MRI facilities physically connected to an emergency hybrid theatre, thus forming a diagnostic and therapeutic “hub”, would enable both open surgery with intra-operative imaging service and endovascular interventional procedures.

**Figure 3** Illustration of interventional hub model

(Acknowledgement: Dr Gilberto Leung, Co-Chair of CWG for Neurosciences)





This is particularly relevant to neurosciences and the main target disease group served would be acute stroke. However, this “hub” may also serve patients from other units on the “hot floors”, such as ICU for emergency fluoroscopy-guided interventions, A&E for rapid diagnosis, as well as other activities such as MRI-related research studies. When not in theatre use, the machines could be used for elective patients. Designers in future phases will need to apply innovative skills to create such an arrangement.

### *The Peri-operative Model*


Essential to any major hospital is its capacity to manage its surgical load efficiently and safely. This includes arrangements for the protection of sessions between elective and emergency services and their respective OT caseloads. This is of particular importance to the elective schedule, where unplanned emergency procedures have the potential to cause major disruption.

A successful peri-operative service requires large flexible floor plates and innovative design. The plant and engineering support for a major theatre complex is fundamental to efficiency and safety (as referenced by the protracted downtime experienced in the present theatres at QMH).

The contemporary peri-operative service will follow the patient journey from the moment a decision is taken for surgical admission. The theatre management system should, at the time of the first booking, generate a proposed date of surgery and a booking for the pre-admission clinic. The clinics themselves are nurse-led and protocol-driven. Pre-operative investigations, patient orientation, briefing and education could be provided in this clinic. All patients will then be seen by an anaesthetist. The Anaesthesia Department will be housed in the peri-operative complex and the anaesthetic assessments should be conducted in, or adjacent to, the theatre complex to facilitate patient orientation. Depending on the extent of the procedure, blood transfusion / banking arrangements will be made.

On days leading up to surgery, reminders will be sent to patients, preferably by SMS or social media to maximise contact. On the day of surgery, patients present themselves directly to the generic peri-operative ward, which should have sufficient capacity to accommodate all patients suitable for day of surgery admission (DOSA). The service pledge can include 90% of all patients for DOSA.

The Anaesthesia Department will offer post-anaesthetic observation to ensure rapid recovery and early discharge. After surgery, patients will be moved to recovery or the high dependency Post Anaesthetic Care Unit (PACU). The concept of the PACU will be discussed in the Critical Care section below.



Day-only patients will move on to second stage recovery where their family / carer will be waiting for them. Patients who are to stay in the hospital overnight will be transferred from recovery to the home ward of the appropriate discipline.

Transition to this model requires significant cultural shift and therefore planning in the hospital should start as soon as possible. The anaesthetists and nurse practitioners are usually champions of such change, while patients will need encouragement to feel comfortable with this approach.

### **Critical Care**

Critical care is a generic term applied to a range of intensive care and high dependency units.

For QMH, as with many teaching hospitals around the world, intensive care services have evolved rather than been planned. For example, the main ICU currently has only 17 beds; and there are also small autonomous units scattered throughout the hospital that are owned by various sub-specialties and are not part of a coordinated critical care service. However, this might not be the most appropriate arrangement according to international experiences. Furthermore, assisted ventilation (both invasive and non-invasive) should be part of the critical care floor.

The establishment of a critical care programme will allow a coordinated approach to workforce and facilitate a uniform, quality and safe programme. In most major institutions, HDUs are collocated on a single floor and under one roof. Pods of appropriate size are distributed around the main intensive care floor. Many intensivists would propose that once any unit gets above 12 to 16 beds, it should be divided into two cells for efficient clinical management purposes. Although workforce planning and clinical governance should be programme-based, individual HDUs and their patients can remain under the clinical direction and management of individual specialties.

The tension between the OT service and ICU bed availability is frequently attributed to the demand for beds for post-operative patients. This can be addressed by the introduction of a PACU – These units are usually part of the peri-operative service and physically located with recovery services. The PACU caters for the post-operative care of patients for whom an intensive care bed would normally be booked before the operation.

The unit would typically be under the clinical control of anaesthetists and provide support for up to 48 hours. Patients who develop multi-system organ failure or require haemodialysis or extracorporeal membrane oxygenation (ECMO) can be transferred to the main ICU.

Priority access and physical proximity to imaging and other diagnostics is crucial to the success of the critical care programme. A significant proportion of critical care beds should be isolation beds, i.e., in single rooms and with isolated ventilation.

### *Surgical Services*

Minimally invasive technologies have gradually replaced open procedures as normal practice in many disciplines. These technologies are not only applicable to various body cavities, but also to endovascular interventions.

Progressive refinements in these technologies have seen the introduction of robots to perform some, or all, of a particular procedure.

It should be noted that these technologies are not necessarily reducing operating times nor are they less expensive. The trauma to patients as a whole is diminished, so is the length of stay (LOS), and more patients (the older and sicker) can be offered this technology.


### *Short-stay Medical Ward*

Population ageing is expected to result in many more older people with complex medical problems presenting to the AED. The challenge for health services will be the efficient management of these patients. For HKWC, this problem exceeds that of other clusters, as described in the Key Challenges chapter.

In response to the growing numbers of AED presentations by people with complex medical conditions, several countries (e.g. UK, Australia and New Zealand) have developed a model to streamline management and avoid institutionalisation of patients. The model has several variations and has different names – The MAPU, is probably the most common.

The MAPU enables rapid assessment and, if necessary, acute intervention for patients before their transition to other units or hospitals in the HKWC. This is differentiated from an EMW, since within an EMW the treatment episode is completed under the supervision of an emergency physician. Conditions managed in the EMW may include asthma, closed head injury, chest pain assessment and other minor conditions.

Patients are usually admitted to the MAPU from the AED or referred from step-down beds in other hospitals, GOPC, or even Old Age Homes (OAH). The unit is best located in or adjacent to the AED. At the very least it must be within the “hot floors” zone.



The target group is patients who need intensive rapid assessment before their onward referral is determined. The unit must have senior medical staff empowered to make decisions independently of sub-specialty teams. Priority access to investigations is required, while allied health and other support staff should be available around the clock. The clinical discipline of the medical staff is less important than their experience and delegated authority. Most units are staffed by either doctors from the medical departments or from the AED (or a shared-care model).

It is customary to set a time limit on the LOS in the MAPU – usually 24 hours, but some set on 48 hours. After assessment and stabilisation, patients will be referred to the appropriate level of care which could be:

- home,
- step-down hospital,
- acute care for OAH, or
- medical sub-specialty units.

It should be noted that not all internists are either trained or suitable for working in these units. The stakeholders need to come together to deliberate this arrangement further. For the HKWC, direct diversion to sub-acute step-down and infirmary beds will be a major strategic advantage, since resources at QMH are often over-committed to patients with cancer and transplant programmes.

The literature abounds with evidence of favourable outcomes from MAPU in terms of decreased admission, decreased LOS and improved patient outcomes. The role of MAPU should be complementary to that envisaged for the NAW and the ACE Unit (described in the chapter on Clinical Service Directions).

### *Neuroscience Admission Ward*

A Neuroscience Admission Ward adjacent to the AED is a refinement of the generally accepted stroke unit model. The unit would be staffed on a 24/7 basis, jointly by neurologists and neurosurgeons, with senior staff physically present in the hospital and consultants on-call.

All neurological emergencies for that day are to be admitted to the NAW and appropriate intervention undertaken immediately. A joint consultant round each morning will determine the appropriate transfer of patients from the previous day.

The transfer of stroke victims identified at the roadside or in their home to a dedicated unit after identification by a clinical algorithm is the future of acute stroke management. QMH would certainly be the one of these units for Hong Kong Island.

### ***24-Hour Intervention Units***

Interruption of oxygenation of brain and heart cells accounts for a major share of morbidity and mortality of patients in our communities. It is now recognised that acute coronary syndromes and cerebrovascular insufficiency in all its manifestations should be regarded as medical emergencies. This is because of the narrow window of opportunity during which perfusion and oxygenation can be re-established to optimally minimise or even reverse ischemic damage.

Many hospitals have developed these ad hoc services, but evidence shows that highly specialised systems of care significantly improve health outcomes and restoration of functional status.

These care systems depend on early recognition and rapid transfer to a well-equipped centre where immediately decision on a thrombotic or haemorrhagic episode could be made. For the former, thrombolytic therapy is commenced immediately while for the latter, surgical / endovascular intervention should be contemplated.

### ***Primary Angioplasty for Acute Coronary Syndromes***

The systems for primary angioplasty are advanced for heart attack and the reason is probably that a bedside diagnosis is much clearer. A simple 12-lead electrocardiogram (ECG) can help in decision-making whether the patient should be managed with primary angioplasty or other methods. The evidence in favour of angioplasty is unequivocal for patients with ST-elevation myocardial infarction (STEMI) but is also likely to prove applicable to other acute coronary syndromes.


Currently, primary angioplasty services depend on the proximity of a suitably equipped hospital and the availability of specialists. Patients are more likely to receive primary angioplasty in-hours than out-of-hours.

Units offering this service on a 24-hour basis should ideally be associated with an open heart surgical unit and have an emergency catheter lab on stand-by, preferably adjacent to the AED. QMH is thus ideal to become such a designated unit.

### ***Comprehensive Cancer Centre***

For several decades, health services around the world, led by North America, have developed a model that concentrates resources for the management of cancer in specialist institutions. These centres are known as comprehensive cancer centres, bringing together research, education and service delivery. A comprehensive





cancer centre can be an independent hospital or an identifiable entity within a teaching hospital complex.

The comprehensive cancer centre model has been proven to improve survival and enhance quality of life. A philosophy of research-driven service provision is at its core; while its research covers basic laboratory, translational research and clinical trials on the one hand, and a population approach on the other. The population approach includes epidemiology and screening, as well as public health issues.

Clinically its service profile includes all treatment modalities and embraces alternative therapies, including Traditional Chinese Medicine (TCM). The clinical spectrum from early diagnosis to palliation is managed seamlessly.

Furthermore, many international examples of comprehensive cancer centres have evolved specific management and governance structures to include multiple partners, including health service agencies, universities and research institutes.

### ***Ambulatory Care***

The general community view of a hospital is still of a large austere tower block with a predictable design. It is likely that for the future, the community's identification with the hospital will be in relation to ambulatory care, rather than a building that houses a collection of beds.

The concept of ambulatory care embodies a philosophy that complex, sophisticated health services can be provided in a setting that is orientated to the needs of patients.

Most importantly, ambulatory care can provide a one-stop-service for patients on a multi-disciplinary basis, particularly to those with chronic and / or complex problems. Many patients often find themselves attending hospital clinics on separate occasions, often on consecutive days, to see a diverse range of clinicians, including various medical specialists and allied health disciplines. Under the ambulatory care model, clinics are organised so that individual patients can see their health care team in one visit, or at the very least, during the course of one day.

There are two distinct models of ambulatory care. In a major tertiary institution, such as QMH, a significant proportion of patient groups will need to remain on the campus overnight, either for intensive therapy or because they are not well enough to return home. Under these models it is a more economic use of both physical and human resources for ambulatory patients, and those who will remain on the wards overnight, to be located in close proximity. This is ambulatory care service in a hospital.

The ambulatory care service can offer day surgery procedures to patients across a range of disciplines. These units are usually organised on a circular flow pattern to optimise patient comfort and efficiency. They are all, by definition, based on DOSA. For QMH, greatest efficiency can be achieved if day surgery activities utilise the main theatre complex.

The other model of ambulatory care is the complete separation of ambulatory care and in-patient units (wards). This ambulatory care model usually focuses on high-technology services, but with the patient returning home every evening. It is more suitable to cases that do not require high levels of specialist attention, but for which their conditions necessitate frequent attendances for different kinds of services.

The two models described are at the ends of a continuum. Both have relevance to the HKWC. Ambulatory care services, physically colocated with in-patient units and sharing significant resources enables both in-patients and ambulatory patients to be treated in the same spaces by the same clinical teams.

Many disciplines, such as Endocrinology, Rheumatology, Dermatology and Ophthalmology, for example, have very little reliance on in-patient beds and can offer their services independently of ward facilities. This model may be applicable at GH, as in an ambulatory care centre services can be organised so that health issues faced by an ageing population can be addressed by a multi-disciplinary approach.

Under this model, a healthcare team may offer advice in relation to falls prevention, continence, exercise, nutrition, vision, degenerative joint disease and dentition. A dedicated day procedure centre within the ambulatory care centre can provide surgery, endoscopy, bronchoscopy and other minor procedures for low complexity cases in the whole cluster. The day surgery model can be extended to allow for one overnight stay in a recovery-type environment, thus allowing late afternoon and evening OT lists.

The commonalities of the two models are that clinical consultation is conducted in close proximity to the other modalities appropriate to that discipline, such as physiotherapy and occupational therapy. There are thus opportunities for multi-disciplinary and inter-disciplinary consultations in appropriate spaces. The ambulatory areas also provide facilities and technology to support research and education activities.



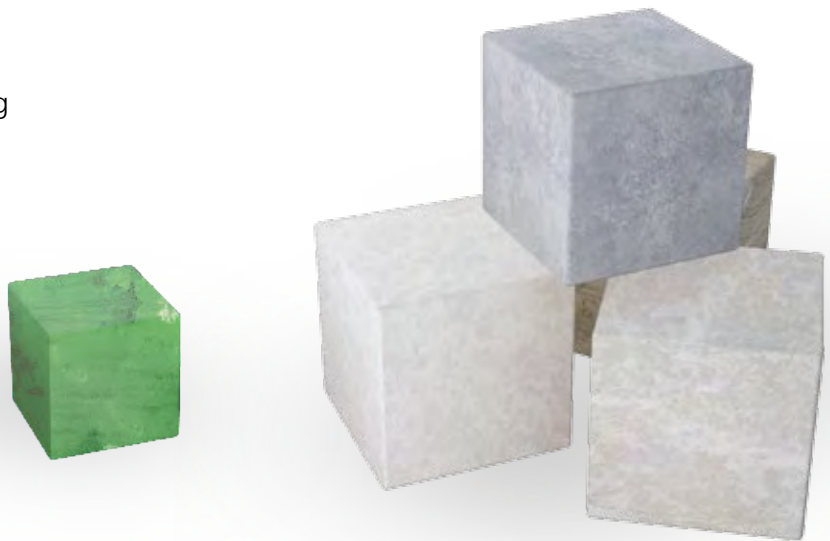
## *Clinical Service Directions*

This chapter presents the recommended clinical service directions, following the agreed models of care. Clinical Work Groups and Special Work Groups, comprising key stakeholders, were formed to deliberate and discuss the development directions. The formulated service recommendations are based on the guiding principles outlined in the CSP and propose multi-disciplinary patient-centred models of care across the care pathway. In addition, there are existing programmes in the HKWC which are already functioning in a multi-disciplinary and ambulatory manner. They are also included here.

There is recognition that there are existing specialty-based services, which are important, though less apparent in the multi-disciplinary model. However, the continuous drive for service excellence in these areas is no less important in supporting multi-disciplinary care across the patient pathway.

Directions on clinical service, education and research are delineated as follows:

- Critical care
- Peri-operative services
- Cancer services
- Neurosciences
- Cardiothoracic services
- Children's services
- Women's services
- Elderly services
- Mental health
- Gastroenterology
- Kidney diseases
- Musculoskeletal and multi-systemic diseases
- Liver transplant services
- Hepatobiliary and pancreatic surgery
- Hepatology and viral hepatitis service
- Diabetes services
- Education and training
- Research



# Critical Care

## Co-Chairs

**Dr W M CHAN** Chief of Service (Adult Intensive Care Unit), QMH

**Dr S H TSUI** Chief of Service (Accident & Emergency), QMH

## Guiding Principles

- Concentration of resources in a critical care zone or “hot floors” to enable the provision of safe, efficient, high quality and seamless care for newly admitted and critical patients.

## Recommendations<sup>14,15,16,17</sup>

### Overview of the Proposed Service Models

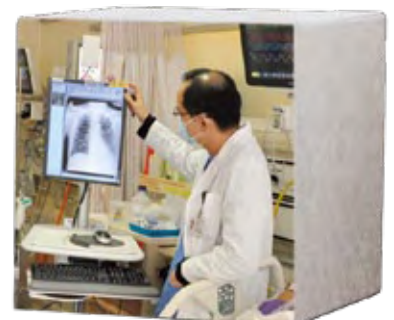
- Establishment of a critical care zone or “hot floors” to function round-the-clock in QMH, to manage all categories of patients admitted through AED and patients who need close monitoring and intensive care.
- The “hot floors” to include AED, Adult ICU, HDU, OTs, EMW, SAW, MAPU, and cardiac catheterisation laboratories.
- After initial stabilisation and treatment, patients can be triaged and stepped-down to the respective specialties, or even to other hospitals in HKWC for further care.
- Majority of patients through AED will be admitted to EMW, MAPU or SAW, according to protocol-driven diagnostic and treatment plans. There should be clinical pathways for illnesses like stroke and STEMI whose treatment are time-critical. There should also be close coordination of services to manage trauma incidents.

<sup>14</sup> College of Intensive Care Medicine of Australia and New Zealand, ABN: 16 134 292 10, Minimum Standards For Intensive Care Units 2011

<sup>15</sup> Scottish Executive Health Department, Better Critical Care, Report of Short-Life Working Group on ICU and HDU Issues 2000

<sup>16</sup> Standards For Intensive Care Units, Intensive Care Society, UK, 1997

<sup>17</sup> Andreas Valentin, Patrick Ferdinande and ESICM Working Group on Quality Improvement. Recommendations on Basic Requirements for Intensive Care Units: Structural and Organisational Aspects. Intensive Care Med (2011) DOI 10.1007/s00134-011-2300-7





- Availability of HDU beds for sub-specialties to provide support for patients largely with single organ failure, or for intensive post-operative monitoring. There should also be provision of HDU beds separately managed as a part of the labour suite for high-risk peri-partum care.
- Setting up a PACU in the “hot floors” for post-operative care, as most of these patients do not have multi-organ failure and do not require the intensive care of the ICU.

### **Short-term Recommendations**

- A Critical Care Coordinating Committee to take forward the implementation of the recommended service model.

### **Long-term Recommendations**

- Development of sub-specialty critical care training and administration.

## **Implementation Enablers**

- Designated critical care zone to facilitate efficient flow of patients among functional areas, such as AED, urgent diagnostics and OTs. If on different floors, preferable for them to be linked by designated lifts.
- Strategic location of AED for direct access by ambulance and direct transfer of patients in the critical care zone, with a radiation emergency area, decontamination area, infection control area, and command centre for major civil disasters. AED size and design should be of contemporary standard for clinical needs, surges and contingencies.
- Adult ICU should be equipped with on-site endoscopy and ready access to imaging services, e.g. CT and MRI scanners, and preferable in close proximity to Paediatric ICU.
- Establishment of HDU modules under the same roof as the Adult ICU to allow for rapid transformation and maximal flexibility.
- Accommodation of training and research components, especially simulation training in future infrastructure.

# Peri-operative Services

## Co-Chairs

Dr Y E CHEE	Consultant (Anaesthesiology), QMH
Prof Simon LAW	Professor (Surgery), HKU / Honorary Consultant (Surgery), QMH

## Guiding Principles

- A multi-disciplinary team approach to provide integrated, coordinated and seamless patient care.
- Protocol-driven pathways to ensure patient safety and operational efficiency.
- Striving for the highest standard of care with clinical outcomes comparable to those of world-class healthcare groups.
- Modern infrastructure with state-of-the-art facilities.
- Achievement of international accreditation and recognition.

## Recommendations

- A peri-operative physician-led and protocol-driven model striving to reduce hospital bed days, improve service efficiency, improve cost-effectiveness, improve surgical outcomes and improve patient satisfaction.

## Implementation Enablers

- Setting up special programmes for cardiovascular disease management, transplant programmes (heart / lung / liver / kidney), comprehensive cancer care programme and blood management programme, etc.
- Provision of nurse-led services (pre-operative patient education, post-operative patient follow-up, peri-operative medication management programme, etc).
- Concentration of all surgical specialties together on “hot floors”, including AED, trauma centres, imaging centres, blood bank, satellite pathology units and OTs. Also, directly above AED can be the specialist out-patient department, PACU, pre-operative patient education centre and pharmacy.
- OT equipped with Wi-Fi and at size of 600 sq. ft. minimum, preferably 1,000 sq. ft. or more. Sufficient hybrid OTs shall be shared by cardiothoracic surgery, vascular surgery and neurosurgery, with one hybrid OT on standby for life-threatening emergencies.
- State-of-the-art audio-visual setup and overseas teleconferencing systems in OTs, all lecture theatres, auditoriums and seminar rooms.
- Simulation rooms for doctors / nurses / students, and virtual skills laboratory for surgeons.
- Tailor-made protocol-based computer booking system and the most up-to-date image guidance system (e.g. iCT, iMRI, biplane digital subtracted angiography) shall be available.

Peri-operative  
services



## *Cancer Services*

### *Co-Chairs*

Dr Ava KWONG	Consultant (Surgery), QMH
Dr Rico LIU	Deputy Hospital Chief Executive II / Consultant (Oncology), QMH

### *Guiding Principles*

- Organ-based, pathway-driven services from diagnosis to palliation.
- Emphasise cross-specialties and multi-disciplinary collaboration.
- Centralised, one-stop service when possible, and localised service to specialty units when indicated.

### *Current Situation and Services Gaps*

#### *Screening*

- Different practices within the HKWC and for different programmes.
- Research on cancer screening is being considered.

#### *Diagnosis*

##### *Imaging*

- Significant waiting period for diagnostic and staging scans and image-guided biopsy.
- Lack of PET-CT scanning service.

##### *Pathology*

- At times, sub-optimal turnaround time for frozen sections in QMH and TWH. Need for enhancement of molecular diagnostics for some tumour types.

### **Multi-disciplinary Team (MDT) or Clinic**

- Current system not facilitating the documentation of activities by different disciplines contributing to MDT services.
- Space limitation for allied health and volunteers in clinics and chemotherapy day centre.
- Unsatisfactory development of the role of case managers in support of multi-disciplinary care of patients; these managers need to be properly trained in the field and are likely to be nurses.

Cancer services

### **Treatment**

- Limited OT sessions, long radiotherapy waiting times and limited space of chemotherapy day centre.

### **Post-treatment Surveillance & Imaging**

- Continuous growth of cancer survivor population, thus the persistent growth in the number of follow-up cases in specialist clinics.
- Cancer survivors also require regular post-treatment surveillance scanning, thus are competing with active cases for appointments to scanner sessions.

### **Palliative Care**

- Insufficient accessibility, service coverage and bed inadequacy for palliative services in general.

### **Teaching & Research**

- Lack of space and insufficient support.

### **Information Technology**

- Need of enhancing clinical data retrieval from the Clinical Management System and database development to facilitate diagnosis, monitoring and research.
- Improving accessibility to clinical data at cluster and HAHO level for research purposes.





## *Recommendations*

### *Overview of the Proposed Service Models*

- Organisation of services into an integrated cancer centre for a seamless mix of services, teaching and translational research; also as a centre of excellence to better use manpower and resources and to attract donations.

### *Short-term Recommendations*

- Formation of a coordination committee for cancer services to formalise the MDT's structure, define the role of case managers, and estimate and make projections on the caseload for post-treatment surveillance imaging.

### *Medium-term Recommendations*

- Provision of space for MDT activities and review of work flow, e.g. the payment process for patients.
- An additional module to the present IT system to capture MDT activities.
- Development of organ-based pathways, aiming for multi-disciplinary participation and cross-hospital coordination.
- Enhancement of service scope of molecular diagnostics in Pathology.
- Shared-care with Family Medicine or other frontline practitioners to be explored, so as to manage the growing population of cancer survivors.

### *Long-term Recommendations*

- Operation of cancer services in an integrated ambulatory centre where diagnostic activities and post-treatment surveillance can be concentrated, in view of anticipated growth of more functionally independent patients.
- Development of comprehensive and integrated palliative services, with tailored environment for patients requiring different categories of care, e.g. hospice care.
- Improvement of transition between acute care and convalescent / hospice care.
- Enhancement in mortuary services.

## Neurosciences

### Co-Chairs

<b>Dr K H CHAN</b>	<b>Clinical Assistant Professor (Medicine), HKU</b>
<b>Dr Raymand LEE</b>	<b>Consultant (Diagnostic Radiology), QMH</b>
<b>Dr Gilberto LEUNG</b>	<b>Deputy Chief of Service (Neurosurgery), QMH / Clinical Assistant Professor (Surgery), HKU</b>

Neurosciences

### Guiding Principles

- Timely and effective care for acute neurological emergencies with an emphasis on (a) common patient pathways; (b) common care plans across specialties; and (c) clearly designated facilities for emergency services.
- Adoption of state-of-the-art clinical paradigms and facilities for elective procedures.
- Neurorehabilitation services unified and streamlined throughout the acute, post-acute and post-discharge stages, and across clinical specialties and allied health services.
- Rotation and training of nursing staff enabled in neurology and neurosurgery.
- Dedicated full-time specialist to patients with neurological conditions.
- A research-led and training-orientated approach to clinical service provision.

### Current Situation and Services Gaps

- No facility dedicated for emergency neuro-interventional service for ultra-acute conditions, such as stroke. Patients frequently need to wait until elective procedures are finished before receiving indicated treatment.
- No unified clinical pathway for acute neurological conditions across specialties. Patients with identical conditions may receive different treatments under Neurology and Neurosurgery.
- Present OTs for elective surgeries do not cater for state-of-the-art treatment approaches, e.g. intra-operative imaging and anaesthetic care.

- Radiosurgery service – the current facilities for radiosurgery are outdated and are not dedicated to radiosurgical treatment for neurological patients. The waiting list is so long that cancer patients may need to receive alternative, less appropriate treatment instead. The current hardware also does not cater for modern standard therapeutic options, such as fractionated or intensity modulated radiosurgery.
- Rehabilitation services not fully supporting rehabilitation during the acute stage, and inadequate coordination between specialties during the post-acute stage. Thus, patients with identical training potentials may be sent to centres of different service provision.
- No rotation training of nursing and medical staff between specialties which share in their demands for specialised skill-sets.
- Specialists may need to undertake clinical duties outside their own fields, adversely affecting their ability to dedicate fully to patients with neurological conditions, especially emergency conditions. For example, neurologists need to do general medicine call.
- Infrastructure not facilitating advancement in research or teaching.

### *Overview of Proposed Service Model*

- Acute admission pathway – a single admission ward for neurological emergencies, followed by definitive care and subsequent triaging to neurosurgical or neurological teams.
- Acute stroke service – a dedicated on-call team (neurology, neurosurgery, radiology, anaesthesiology) providing protocol-driven treatments at an imaging facility and a hybrid OT dedicated for emergencies.
- Elective surgery – a dedicated team (neurosurgery, anaesthesiology, nursing) at dedicated hybrid theatres, with ready access to peri-operative MRI / CT facilities.
- Radiosurgery – a dedicated facility dedicated to radiosurgery is to be installed and come under the joint supervision of neurologists, neurosurgeons and oncologists. To maximise utilisation, the facility may serve as a territory-wide radiosurgery centre that is available for use by units from other clusters. This concept of a dedicated cross-cluster centre has already received support from the Central Committee on Neurosurgical Service.

- Neuro-intensive care – in close proximity to the main ICU, led by attending neurologists, neurosurgeons and neuro-anaesthesiologists, with ready access to urgent imaging and interventional facilities.
- Nursing – rotation through acute neuro-admission, neurology and neurosurgical wards. Case management system. Extended training in OT service.
- Neurorehabilitation – multi-disciplinary service (physicians, physiotherapy, occupational therapy, speech therapy). “Rehab port” or “Satellite gymnasium” in acute wards. Common triaging protocol to defined levels of post-acute facilities.
- Research – anticipate and prepare for advanced treatments in neuromodulation, cell-based transplantation, endovascular therapies, neurointensive care and personalised medicine. Establishment of a Clinical Research Unit.
- Teaching – teleconferencing and simulation facilities in OT, interdisciplinary census, seminars and student clerkships.

Neurosciences

### **Acute Neurological Admission and Stroke Service**

- An acute admission ward located near ICU, CT / MRI unit and OT.
- Defined admission policy.
- Staff from anaesthesiology, neurology, interventional radiology and neurosurgery dedicated full-time to their own specialties.
- Rotation of trainees between specialties.
- Joint nursing service from neurology and neurosurgery.
- Same condition, same protocol-driven management.
- Imaging and hybrid theatre dedicated for emergencies (vs. “chipping in” during elective lists), but which may be shared with other service streams to maximise utilisation (e.g. ICU, AED and others). This will serve as an operative-interventional hub”.
- Joint post-call round by neurologists and neurosurgeons.
- Limited length-of-stay (e.g. 24 hours) prior to triaging to appropriate specialties.
- Primary stroke diversion may be considered.



### ***Elective Surgery***

- Case management led by a nursing team.
- Hybrid theatre with a bi-planar X-ray machine and MRI. The latter may be adjoined to the operative-interventional hub that provides acute service as above, and also research.
- Adjoined and shielded console for anaesthesiologist and intra-operative monitoring staff to ensure radiation safety.
- Comprehensive physiological data collection system, providing seamless data acquisition and transfer in / between the acute neuro-admission ward, OT and neuro-ICU.
- Neuro-anaesthesiologist to provide pre-, intra- and post-operative care in theatre and neuro-ICU.
- Scrub nurse to include rotating ward staff on extended training and career path
- Multi-disciplinary consultation and treatment planning for neurovascular, movement disorder, functional, pain and epilepsy.
- Access to teleconferencing, BioBank and Good Manufacturing Practice (GMP) facilities.

### ***Neuro-rehabilitation***

- Multi-disciplinary input from physicians, physiotherapy, occupational therapy and speech therapy.
- Begin in neuro-ICU and acute ward.
- “Satellite gymnasium” or “Rehab port” in wards.
- Common pathway for medical and surgical patients with defined triaging criteria for post-acute rehabilitation.
- Joint care from surgeons and internists.
- Same condition, same rehabilitation programme.
- Clear distinction between facilities for intensive rehabilitation, convalescence, infirmary and hospice.

***Programme-based Services***

- Expand on existing programmes – neurovascular, trauma, movement disorder and epilepsy and radiosurgery.
- Develop new programmes – neuro-oncology, neuro-intensive care.
- Neuro-restoratology.

***Others***

Neurosciences

- Radiosurgery – possible site for a joint centre in Hong Kong.
- Infirmary beds – designated beds for appropriate level of care.
- GMP facilities and BioBank for research.
- Neuroscience module within / close to main ICU.

***Recommendations******Short-term Recommendations***

- Establish protocols and define clinical pathways for common acute conditions currently under the independent care of neurology and neurosurgery.
- Establish post-acute triage protocol for neurorehabilitation.
- Enhance the current extended programme for surgical nursing staff and case management system.
- Initiate rotation of nursing staff between neurology and neurosurgery.
- Initiate staff training, audit meetings and research collaboration between specialties.

***Mid-term Recommendations***

- Obtain manpower to enable specialists in anaesthesiology, neurology and radiology to provide full-time service in the neuroscience stream.
- Establish multi-disciplinary consultation and treatment planning systems for complex conditions.
- Enhance rehabilitation during the acute stage.



- Expand rotation programmes for medical trainees and surgical nurses across specialties.

### *Long-term Recommendations*

- Establish enabling structures and associated treatment paradigms.
- Full implementation of acute care pathways.
- Introduction and development of advanced treatment in, for example, neuro-regenerative therapy.

### *Implementation Enablers*

- An acute admission ward.
- CT and MRI facilities dedicated for emergency and intra-operative use but not exclusively for neurological patients.
- One hybrid OT dedicated to emergency, close to ICU to cater for both neurological and non-neurological patients who require X-ray-guided procedures.
- One hybrid theatre for elective procedures, with shielded console and data transfer system to / from neuro-admission ward and neuro-ICU.
- A “bunker” dedicated to radiosurgery.
- “Satellite gymnasium” or “Rehab port” in / close to wards.
- Bio-banking for clinical specimen.
- GMP facility for regenerative therapy.
- Clinical Research Unit.

## Cardiothoracic Services

### Co-Chairs

Dr Timmy AU	Chief of Service (Cardiothoracic Surgery), QMH
Dr Stephen LEE	Consultant (Medicine), QMH / Director of Cluster Invasive Cardiac Intervention Services, HKWC / Honorary Clinical Professor of Medicine, HKU

Cardiothoracic  
services

## Cardiac Services

### Guiding Principles

- A multi-disciplinary and holistic approach with close collaboration with medical, nursing and allied health specialists.
- Streamline of service programmes and centralisation of resources and facilities.

### Current Situation and Services Gaps

- Provision of cardiothoracic services in HKWC has long been shared by three distinct hospitals – QMH, GH and TWH – which has created service gaps for patients along the care pathway.

## Recommendations

### Overview of the Proposed Service Model

- Establishment of a cluster-wide programme for cardiothoracic care, comprising cardiac medicine and surgery, including transplantation services, and respiratory medicine.
- Streamline activities of existing cardiac catheterisation laboratories and coronary care units (CCU).
- Combine existing heart, lung and heart-lung transplant programmes into one comprehensive clinical programme with distinct roles for QMH and GH.

- GH to expand cardiac rehabilitation, non-invasive cardiology and ambulatory care programmes.
- TWH to provide sub-acute care for cardiac rehabilitation patients.

### *Key Areas of Future Development*

- Development of a strong link and comprehensive network with all regional HA hospitals which provide secondary paediatric cardiac care, and adopt a shared-care model.
- Strengthening of the existing 24-hour primary PCI and AMI clinical pathway.
- Setting up a designated cardiothoracic centre for paediatric cardiac surgery, adult congenital heart surgery, heart and lung transplantation, Ventricular Assist Device services and stem cell therapy research.
- Enhancement of high-tech circulatory support programme encompassing ECMO.
- Development of hybrid cardiac surgery with hybrid minimal invasive OT.
- Continued development of heart valve interventions and surgeries.
- Training and development of perfusionists.

### *Implementation Enablers*

- Locating cardiac surgery OTs in close proximity with CCU, cardiac catheterisation laboratories and paediatric Cardiac Intensive Care Unit.
- Reserve ample space for carrying out teaching and clinical research activities.
- Construct hybrid cardiac catheterisation laboratories.
- Setting up an ambulatory day care centre.
- Ensure corridors and lifts connecting between OT, ICUs, AED and Radiology to be able to accommodate patients with 3-4 large life-supporting machines (such as up to 6-8 syringe pumps, ECMO, intra-aortic balloon pump, nitric oxide machine, etc.).
- Construct multi-purpose conference room that can receive live broadcast from OTs, hybrid and all cardiac catheterisation laboratories.



## *Respiratory Services*

### *Guiding Principles*

- A collaborative inter-disciplinary team and patient-centred approach for the management of respiratory conditions.
- Ambulatory day-patient or out-patient service for patients with chronic respiratory disease, or in-patient care during acute exacerbation and at terminal stage.
- Evidence-based, multi-disciplinary and individually designed pulmonary rehabilitation.
- Service provision and clinical / translational research and teaching/training must go hand-in-hand, especially for prevention, detection and intervention at early stages of chronic respiratory diseases.
- Respiratory specialists to play prominent role in the service development for transmissible infectious diseases.

Cardiothoracic  
services

### *Recommendations*

#### **Short-term Recommendations**

- Enhancement of specialty service facilities for diagnoses and in-patient respiratory care.
- Provision of optimal physical facilities and human resource needs for ambulatory services, especially for patients who needs are closely linked (e.g. intercalated) with in-patient care.
- Enhancement of physical environment of wards in GH to improve patient comfort, such as air-conditioning with ventilation requirements up to standards for infection control.
- Provision of CT scanner in GH for direct access and diagnosis of in-patients, as well as for meeting increasing demands in the HKWC.
- Development of ambulatory pulmonary rehabilitation by providing adequate resources, including space, equipment and experienced allied health and nursing staff.
- Collaboration with palliative care specialists to cater for advanced stage disease of both cancer and non-cancer patients, in a collaborative care model.

- Enhancement of a multi-disciplinary team approach in managing lung cancer.

### ***Intermediate to Long-term Recommendations***

- Enhancement of service provision and research in specific areas of respiratory medicine by QMH and GH in a complementary fashion.
- Expansion of the multi-end user facility for pulmonary function testing for use by medicine, paediatrics, surgery, etc.
- Development of programme-based care for common chronic respiratory diseases, with emphasis on case management, which is patient-focused, coordinated and promptly meets the needs of patients with changing conditions.
- Provision of adequate in-patient facilities in QMH for specialty respiratory care, including designated space for non-invasive ventilator support, respiratory oncology or other complicated respiratory cases, instead of the current dispersed arrangement across general medical wards. These are preferably in close proximity to the facilities of thoracic surgery, cardiac and general intensive care, due to the high level of inter-disciplinary needs.
- Relocation of bronchoscopy service in QMH from the combined endoscopy suite to a new combined medical and surgical bronchoscopy and pulmonary intervention suite, with C-arm fluoroscopy and other new navigational equipment.
- Provision of adequate wards with isolation facilities to prepare for endemic viral respiratory infections, such as SARS or swine flu.
- Improvement of QMH multi-end user sleep laboratory service to meet demand in adult and paediatric sleep studies, day-time utilisation (e.g. service for specific home procedures) and quaternary referrals for complex examinations of daytime sleepiness.
- Individualised care with appropriate forms of chronic / home ventilator support for patients with end-stage respiratory failure.
- Development of allergy testing, with potential of providing territory-wide service.
- Development of a lung cancer screening programme (e.g. low-dose CT) for high risk populations, in close collaboration with smoking cessation programmes.
- Coordinated and seamless care of TB patients in GH and chest clinics under the Department of Health (DH).

## Children's Services

### Chair

**Prof Godfrey CHAN** Chief of Service (Paediatrics), QMH /  
Professor (Paediatrics), HKU

### Guiding Principles

- Provide high-quality children-centred care services to the community.
- Training of graduates and post-graduates of distinction, committed to lifelong learning, integrity and professionalism.
- Engagement in both basic and clinical research of innovation and high impact, within and across disciplines.
- Forming alliances and partnerships in order to achieve excellence in clinical services, training and research related to paediatrics and child health.

Children's services

### Current Situation and Services Gaps

- Current children's services in HKWC serve as the tertiary and quaternary referral centre for paediatric patients for Hong Kong Island. Yet, in the next one to two decades, the HKWC faces imminent challenges due to the Government's plan in setting up a medical centre of excellence in paediatrics (CEP) in Hong Kong.
- It is of paramount importance to review how the HKWC should position its service in the era of a CEP. In the event that the CEP project proceeds along the original concept, with full commitment to service, training and research in paediatrics, then many HKWC flagship programmes, such as paediatric cardiology, paediatric haematology oncology and transplantation, may move to the CEP.





## *Recommendations*

### *Personalised In-patient Service*

- Single room as the preferred design for paediatric patients, solving the problem of gender segregation and infection control, while providing flexibility in buffering different paediatric sub-specialty admissions.
- Grouping of all paediatric patients, including medical, surgical and psychiatric patients, in the same child-friendly area with a healing-conducive environment.

### *Ambulatory Paediatrics Service Expansion*

- Review of the ambulatory care model to cater for future ambulatory care service volume, since treatment delivery models will likely require less in-patient activities due to continued medical advancements.

### *Chronic Rehabilitation Services*

- DKCH to concentrate on services towards chronic rehabilitation of children, e.g. chronic ventilator-dependent patients.
- Development of quaternary allied health services for children in DKCH to complement the medical services.

### *Community Paediatric-related Care Development*

- Development of multi-disciplinary referral services to treat complex cases that satellite community service centres have difficulty in managing, e.g. patients with substances abuse and adjustment disorders, which are escalating in the HKWC.

### *Stem Cell and Gene Therapy*

- Many incurable chronic illnesses may no longer exist, with the development of these therapies. An integrated clinical investigation centre with paediatric coverage would be essential to support their development.

## *Implementation Enablers*

- Concept of “hospital within a hospital”, with separated “paediatric floors” to serve young patients in a general hospital, giving the impression of a separate part of the hospital designed specifically for children and their family.
- A “paediatric corner” in several floors, such as neonatal unit on the maternity floor.

# Women's Services

## Chair

Prof Hextan NGAN    Chief of Service (Obstetrics & Gynaecology), QMH

## Guiding Principles

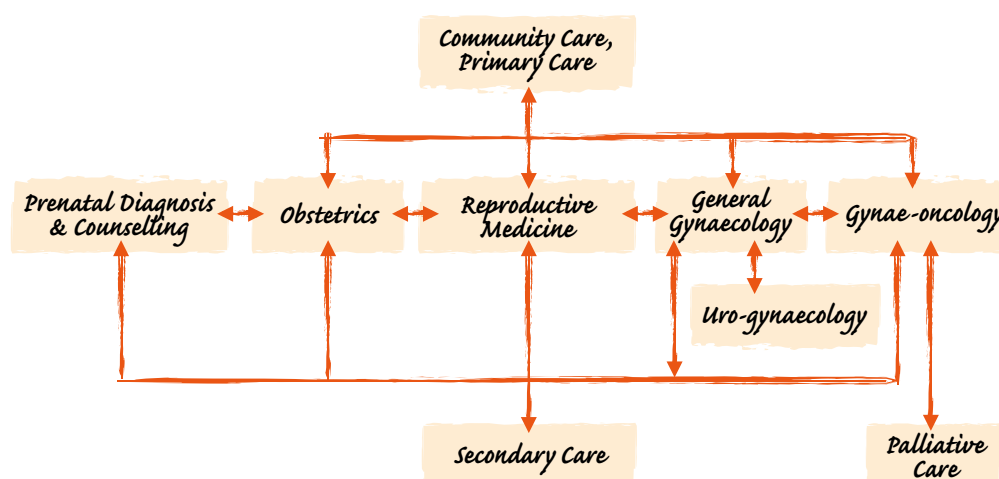
- Provision of true patient-centred, multi-disciplinary care with high international standard in a friendly environment.
- Incorporation of primary, secondary, tertiary and quaternary services, as well as community and palliative care, holistically throughout patient journey.
- One-stop care to be centralised where necessary, localised where possible.
- Enhancement of ambulatory care activities.
- Combining clinical service, education and training and research.
- Involvement and interaction with other professional staff.

Women's services

## Recommendations

### Overview of Proposed Service Model and Implementation Enablers

**Figure 4** Proposed model



### ***Prenatal Diagnosis & Counselling***

- Multi-disciplinary support and improvement in patient experience in counselling, non-invasive and invasive testing.
- Development of fetal therapy and in-utero treatment.
- Proximity to labour ward and adequate space for clinic and laboratory areas.
- Proximity between reproductive medicine lab and pre-natal diagnostic laboratory.

### ***Obstetrics***

- Multi-disciplinary approach, with “one-stop” clinics in a “baby-friendly” hospital.
- Triage area before admission.

### ***Reproductive Medicine***

- Multi-disciplinary approach, with comprehensive treatment for all reproductive disorders and conditions.
- Pregnancies following assisted reproduction managed at QMH.
- Psychological support for patients who fail to get pregnant.
- Proximity to Prenatal Diagnostic Laboratory and clinical geneticist.

### ***General Gynaecology***

- Multi-disciplinary approach, with “one-stop” service for ambulatory care, day surgery and same day surgery.

### ***Urogynaecology***

- Multi-disciplinary approach, by trained urogynaecologists offering “one-stop” service for ambulatory care, day surgery, and same day surgery.

### Gynae-oncology

- Seamless multi-disciplinary and holistic approach for active management and coordination with palliative services, including faster inter-disciplinary consultation and services, as well as smoother coordination for complex treatment plans.
- Greater move towards day services, e.g. day chemotherapy.
- Territory-wide tertiary / quaternary referral centre, for centralised care.
- Efficient referral and long-term follow-up system from primary / secondary care.
- Patient-friendly environment with privacy for counselling.
- Vision for an internationally recognised research centre in this specialty.

Women's services



# Elderly Services

## Chair

Dr James LUK

Consultant (Geriatrics), FYKH

## Guiding Principles

- Provide multi-disciplinary and holistic care for all elderly patients.
- Early detection and intervention as development focus.
- Uninterrupted care along the patient journey.
- Fostering a setting for aging and dying with dignity.

## Current Situation and Services Gaps

### Issues in Community Services

- Lack of services to support elderly patients living at home.
- Inadequate community-based centres for performing allied health assessments and interventions.
- Insufficient manpower for community services provision.
- Escalating demand for Memory Clinic services and medications to treat dementia.

### Issues in Hospital Geriatric Services

- All elderly attending AED who require further medical treatments are directed to the general medical wards, which may not be entirely suitable for managing complex elderly patients.
- Lack of early transfer of elderly patients with complex medical, geriatric and psycho-social problems to step-down geriatric units for comprehensive geriatric assessment and care planning.
- Sub-optimal service transition from hospital to community, e.g. a lack of standardised discharge notes to facilitate follow-up and treatment in the community.

## Recommendations

### Community Geriatrics

- Enhancement of community services to RCHEs with regular CGAT, Community Visiting Medical Officer, Community Care Nurse (CCN) and allied health services (social services, physiotherapy, occupational therapy, dietetics, prosthetics and orthotics and podiatry) for RCHEs in the HKWC.
- Development of “hospital at home” services with CCNs providing frequent attendances to high risk elderly living at home, offering 24-hour protocol-based care with a case management and patient empowerment approach.
- Provision of EOL care services in RCHEs in the HKWC, with residents able to select either EOL care in hospital or to stay in RCHE until the last moment before being transferred to AED to pass away.
- Enhancement of Multi-disciplinary Community Centres (MC<sup>2</sup>) at different areas in the HKWC by engaging existing services, e.g. Wah Fu Community Centre and NGO Day Care Centres (DCC), to offer point-of-care assessment by multi-disciplinary teams for geriatric problems such as dementia, depression and falls.

Elderly services

### Hospital Geriatric Services

- Establishment of a MAPU close to the AED, with a dedicated team including geriatric, nursing and allied health professionals for elderly patients to provide comprehensive assessment, timely investigation (e.g. blood tests, imaging) and treatment with acute geriatric protocols. MAPU offers short-stay (LOS less than two days) and effective discharge planning and support (i.e., engagement of integrated discharge and assessment programme for home care, or smooth transfer to step-down care hospitals).
- Establishment of an ACE Unit at QMH to manage AED admissions, mainly via MAPU or step-down hospitals, with a proposed capacity of 20 beds.
- Establishment of an Orthogeriatric service in collaboration with orthopaedic surgeons, offering multi-disciplinary input before and after surgery, for patients aged 65 years or over suffering from fragility fractures (e.g. hip fracture).

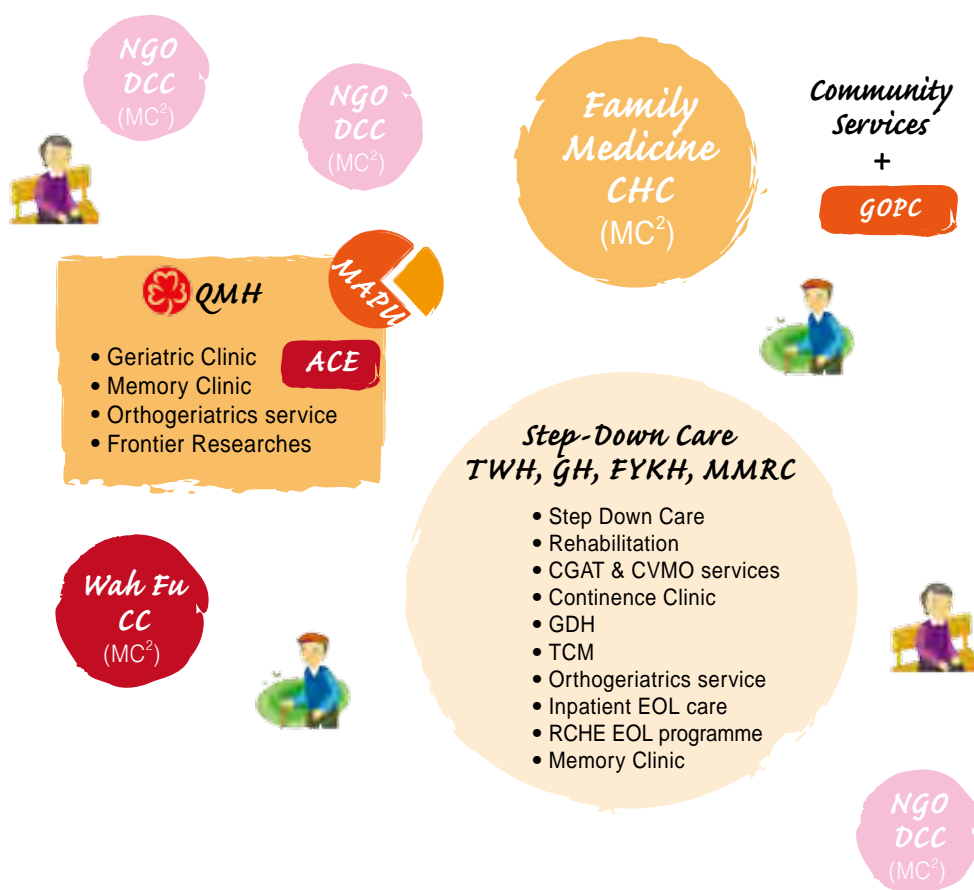


### Re-organise Geriatric In-patient and Clinic Services

- Development of guidelines for case selection to step-down care at FYKH, GH or TWH. This should facilitate abolishing screening before patient transfer by having a uniform algorithm.
- Expedition of allied health referral and assessment, which in many cases are as important as medical care. There should be enhancement of on-site geriatric specialty nurse and allied health services in the geriatric clinic.

**Figure 5** summarises the proposed organisation of geriatric services in the HKWC.

**Figure 5** Proposed organisation of geriatric services in the HKWC



# Mental Health

## Chair

**Dr Michael WONG**      **Clinical Stream Coordinator (Mental Health), HKWC /  
Chief of Service (Psychiatry), QMH**

## Guiding Principles

- Future development on a “hub- and spoke-” approach, with QMH as the hub, developing sub-specialised services, and the network hospitals or clinics as spokes aimed at localising services to enhance access for patients.

## Recommendations

Mental health

### Overview of the Proposed Service Model

#### QMH Component

- On top of general psychiatry cases, QMH should provide in-patient services for cases from child and adolescent psychiatry, the early psychosis programme, substance abuse and maternal-baby service. Supporting AED is another important function of the department.

#### Ambulatory Component

- QMH will likely also provide ambulatory care, but the priority is to centralise sub-specialty services. Ambulatory centres like DTRC will continue to provide clinics and ambulatory mental health services to adult and elderly patients.
- Community psychiatry services should continue to be based in the community for outreach and crisis intervention, with two centres needed in the community – one in the Central and Western District and another in the Southern District.
- Due to near-saturated capacity at DTRC, one additional “satellite” out-patient department and ambulatory service centre will be needed to meet demand in the HKWC.
- Residents in some parts of the Southern District (e.g. Aberdeen, Ap Lei Chau, Wong Chuk Hang) have no direct public transportation to reach DTRC apart from taxi. Another centre would provide psychiatric care to these residents within the HKWC.

## *Implementation Enablers*

### *In-patient Services*

- Gender-specific wards should be available for adults and adolescents.
- Separate wards for young children and adolescents to cater for their different clinical problems and service need.
- Patient- and carer-friendly environment with enhanced privacy and rehabilitation capacity (e.g. family interview room, sky garden, open area).
- Allied health units with contemporary rehabilitation and training facilities, and also in close proximity to wards to facilitate patient escort.
- Designated area for specialised treatments, including electroconvulsive therapy, trans-cranial magnetic stimulation and deep brain stimulation, which should follow international standards. There should be separate reception area, preparation area, treatment area and recovery area, adequate facilities for general anaesthesia and resuscitation.
- Adequate safety measures in consultation rooms in AED and other specialty wards.

### *Ambulatory Services*

- Child and Adolescent: Day Hospital, Youth and Adolescent Centre, Youth and Adolescent Substance Abuse Centre, as well as Mother-Child Day Unit.
- Substance Abuse Service OPD and Day Unit.
- Early psychosis OPD and Day Unit.
- Special Psychiatric Treatment Services:
  - > Psychotherapy room(s) with one-way mirror and video-recording facilities for individual / group psychotherapy, teaching and training purposes.
  - > Multi-function room(s): for collaboration programmes with NGOs and allied health (e.g. physiotherapy, clinical psychology).

### *Teaching and Training to Medical Students and Staff*

- Adequate space and facilities for teaching students (e.g. medical, nursing, occupational therapy, clinical psychology, social work) and for training of staff in the wards.

# Gastroenterology

## Co-Chairs

<b>Prof W L LAW</b>	<b>Professor (Surgery), HKU / Honorary Consultant (Surgery), QMH</b>
<b>Prof W K LEUNG</b>	<b>Professor (Medicine), HKU / Honorary Consultant (Medicine), QMH</b>

## Guiding Principles

- A disease-based multi-disciplinary approach to common gastrointestinal (GI) diseases, by re-organisation of in-patient services by the two departments.
- Sharing of resources and expertise of the two departments, minimising patient referral and waiting time.
- Adoption of a common protocol for disease management to improve the standard and quality of patient care.

Gastroenterology

## Current Situation and Service Gaps

- The discussions of the group were limited to delivery of luminal gastroenterology and endoscopy services in QMH and the HKWC.
- Considerable overlaps on the existing services delivered by the Medical Gastroenterology and Surgical GI teams, particularly on endoscopy services and out-patient clinics.
- Currently, two joint clinics for specific groups of GI patients – The Inflammatory bowel disease clinic and the Gastroesophageal reflux disease clinic being run by the combined efforts of staff of the two departments to reduce service overlap, minimise resources and waiting time, as well as provide the best care to patients.
- Only two endoscopy suites in the HKWC, with QMH contributing the main bulk of workload. With the increasing demand of endoscopy services particularly on colonoscopy screening and surveillance, there is a need to increase the capacity of the current endoscopy unit.

- Rapid change in GI disease patterns in the past few decades, due to aging population and westernisation of lifestyle. Diseases / conditions such as colorectal cancer, gastroesophageal reflux diseases, inflammatory bowel disease and obesity are increasing in Hong Kong. Future service delivery should take into consideration these areas with rapid growth in service demands.

## *Recommendations*

### *Out-patient Service*

- Enhancement of joint clinic services by setting up a dyspepsia clinic, functional GI clinic and bariatric clinic in QMH.

### *In-patient Service*

- Establishment of a combined GI ward for in-patient service, with medical and surgical gastroenterology sharing the same ward. This could substantially facilitate the combined care of patients and minimise inter-departmental consultations, reducing patients' hospital stay. Common protocol will also be adopted for the management of common GI diseases, such as GI bleeding.

### *Endoscopy Service*

- Setting up of another Ambulatory Endoscopy Unit in the HKWC, to cater for high volume ambulatory procedures, such as diagnostic oesophago-gastro-duodenoscopy, sigmoidoscopy and simple colonoscopy. The endoscopy unit in QMH will continue to focus on the delivery of endoscopic services to in-patients and patients requiring complicated endoscopic procedures.
- Enhancement of services for capsule endoscopy and urea breath tests.

## *Implementation Enablers*

- A large area to accommodate the GI wards, endoscopy units, consultation areas, teaching and research facilities, preferably all on the same floor.
- Future endoscopy unit in QMH with state-of-the-art endoscopic equipment, facilities and flexible spaces for research and teaching activity, e.g. seminar room.
- In addition, the endoscopy suite should be equipped with audio-visual facilities for recording and broadcasting of endoscopic procedures.



# Kidney Diseases

## Co-Chairs

Prof Daniel T M CHAN	Chief of Service (Medicine), QMH (2010-2013) / Chief of Nephrology, QMH / Chair Professor (Medicine), HKU
Dr M K YIU	Consultant (Surgery), QMH

## Guiding Principles

- A pathway- and modality-based, patient-centred multi-disciplinary team approach to prevent fragmentation of clinical management.

## Current Services Gaps and Situation

- Inadequate collaboration between nephrology and urology, impeding further development of services.

### Nephrology Service

Kidney diseases

- Increasing elderly patients with multiple co-morbidities.
- Increasing chronic kidney disease (CKD) patients.
- Increasing acute kidney injury (AKI) patients due to increased interventional procedures with the use of contrast and increase in CKD patients.
- Anticipated 5-6% increase of renal replacement therapy.
- Increasing proportion of haemodialysis (HD) patients — currently peritoneal dialysis (PD) / HD ratio is too high despite many patients not doing well on PD.
- Increasing kidney transplant patients with long follow-up — more long-term complications expected, e.g. malignancies and vascular complications.
- New treatments currently unable to be adopted because of constraints in manpower and hardware facilities, e.g. kidney-pancreas transplantation, transplantation across blood group barrier.



### *Urology Service*

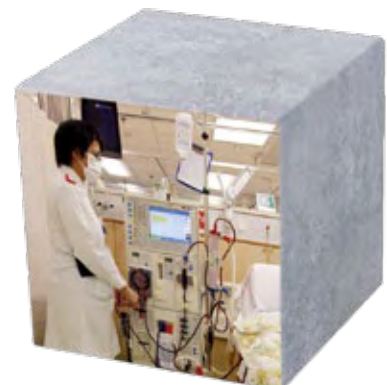
- Large load of patients admitted as emergency or acute cases, as well as ambulatory patients who require various investigative or treatment procedures.
- Focal interface with other specialties, especially nephrology (i.e., renal transplantation and dialysis patients).
- Huge out-patient workload.

### *Recommendations*

- Close proximity of the nephrology and urology wards for in-patient services, to encourage communication between physicians and surgeons and between disciplines, in particular for joint care of renal transplant patients.
- Development of ambulatory services for a common pathway to patients with symptoms not clearly indicative of being a medical or surgical problem.
- Exploration of the role of Traditional Chinese Medicine (TCM) in renal palliative care.

### *Implementation Enablers*

- An ambulatory area with scanning services, haemodialysis services, as well as extracorporeal shockwave lithotripsy, diagnostic flexible cystoscopy, video urodynamic investigation, bedside ultrasounds, transrectal ultrasound-guided prostate biopsy, ambulatory nurse-led clinics, intravesical Bacillus Calmette–Guérin and joint pre-admission clinics with anaesthesiologists.
- Role delineation of units across the cluster:
  - > **QMH** – Kidney transplantation, AKI, HD and PD services, general nephrology, major robotic / uro-oncology cases, reconstructive surgery and ambulatory care area for both nephrology and urology services.
  - > **TWH** – Renal rehabilitation, convalescent care, TCM, HD and PD services and palliative care.
  - > **GH** – Palliative care, TCM, convalescent care and ambulatory care centre for both nephrology and urology services.



## Musculoskeletal and Multi-systemic Diseases

### Co-Chairs

Prof Kenneth CHEUNG	Chief of Service (Orthopaedics & Traumatology), QMH / Jessie Ho Professor in Spine Surgery / Head (Orthopaedics & Traumatology), HKU
Prof C S LAU	Chair & Daniel CK Yu Professor in Rheumatology & Clinical Immunology (Medicine), HKU / Honorary Consultant (Surgery), QMH

### Guiding Principles

- A patient-centred, integrated multi-disciplinary approach in the management of patients, with shared wards and combined clinics.

### Current Situation and Service Gaps

- Long waiting time for patients.
- Ineffective triaging system.
- Delayed diagnosis of underlying disease and complications.
- Ineffective cross-referrals / communication among hospitals.
- Geographically scattered facilities.
- Ineffective use of space and equipment.
- Inadequate follow-up.
- Insufficient integration with community.

Musculoskeletal  
and multi-systemic  
diseases

### Recommendations

- Integrating recent advances in the following areas will improve the outcome of patients with musculoskeletal and multi-systemic diseases and significantly enhance the clinical service for these patients in the HKWC.

### *Immunology*

- More sensitive autoantibody assays, specific cellular or cytokine assays, and advanced immunogenetics help to improve the rate of diagnosis, predict disease outcome, monitor disease progress and possibly the development of personalised medicine.

### *Treatment Options*

- Further development of treatment options through immunomodulation (such as cytokine, chemokine and cellular therapy) and surgical advances (such as day surgery, robotic surgery, minimally invasive surgery).

### *Radio-imaging*

- Advances in radio-imaging techniques, such as high sensitivity ultrasonography, molecular MRI and Quantitative CT now enable clinicians a better understanding of the pathogenesis of inflammatory arthritis and allow early diagnosis, monitoring and prognostication of patients with these conditions.

### *Multi-disciplinary Approach*

- A multi-disciplinary approach with specialist nurses and specialist allied health professionals in the management of musculoskeletal disorders, such as rheumatoid arthritis, osteoporosis, etc.

## *Proposed Model of Care*

- A seamless, one-stop, patient-centred and multi-disciplinary approach to the model of care, with an emphasis on early diagnosis and treatment of disease and complications. The proposed model should include:
  - > Establishment of a management and training centre for musculoskeletal and multi-systemic diseases to be headed by a clinician.
  - > Adoption of a case manager approach to all cases.
  - > Enhanced emphasis on nurse- and allied health- led triage clinics.
  - > Setting up of an ambulatory centre for education, assessment and treatment.
  - > Multi-disciplinary care throughout different stages of patient journey.
  - > Design to allow close proximity of related departments and OTs.
  - > Organisation of regular case conferences.
  - > Strengthening of integration into the community, including step-down care or family clinic and community rehabilitation.

- > Organisation of registries, regular audits and to develop research.
- > Protected resources for elective care.



## *Implementation Enablers*

The following service requirements should be met to facilitate the multi-disciplinary model of care:


### ***Case Managers from Triaging to Long-term Care of Patients***

- Including the following healthcare professions as case managers:
  - > Specialist nurse.
  - > Physiotherapist.
  - > Occupational therapist.
  - > Clinician.

### ***Setting up an Assessment, Counselling and Treatment Centre / Clinic***

- The following proposed requirements shall be available:
  - > Specifically cater for persons with physical disabilities.
  - > Individual and combined clinics.
  - > Equipped with facilities for radio-imaging, e.g. plain / ultrasound / “portable” MRI / Dual-energy X-ray absorptiometry.
  - > Equipped with facilities for biologic / immuno-and cellular therapies.
  - > Easy access to physiotherapy / occupational therapy / prosthetic & orthotic / podiatry / medical social work / radiology departments.
  - > Central immunology laboratory.

Musculoskeletal  
and multi-systemic  
diseases

- 
- > Case conference facilities.
  - > Community resource centre.

### ***Establishment of Surgical Centre***

- Protected elective surgery time.
- Day surgery.

### ***Seamless Rehabilitation***

- Dedicated team of allied health professionals.
- Critical mass.

## ***Additional Considerations***

### ***Quaternary Multi-disciplinary Services in the HKWC***

- Musculoskeletal tumours.
- Scoliosis.
- Paediatric orthopaedic surgery.
- Biologics and cellular (e.g. stem cell) therapy and tolerised immune cell therapies, for joint diseases.
- Set-up a joint replacement centre for Hong Kong Island.

# Liver Transplant Services

## Contributor

Prof S C CHAN

Professor (Surgery), HKU /  
Honorary Consultant (Surgery), QMH

## Current Situation

- QMH is currently the only liver transplant centre for the whole of Hong Kong. The service has also developed into one of the largest programmes in Asia.
- Case load - Around 80 liver transplants were performed yearly in the last three years with an anticipated increase to 120 recipients (i.e., a 50% increase) per year a decade later, as well as an increase in living donor liver transplantation (LDLT) for overseas patients.
- Deceased donor liver transplantation and high-urgency LDLT are emergency operations, while elective LDLTs are scheduled regularly on Mondays in two OTs.
- Transplant candidates (recipients and donors) are worked up as in-patients in the liver transplant ward. If they have poor general condition or worsening liver function, they will also stay in the ward.

## Service Gaps

- No OT assigned for the liver transplant service. Since every LDLT requires two OTs, if there is an emergency operation on Monday, one elective LDLT will have to be cancelled. The impact of such cancellation is substantial to patients, their families, donors and medical staff, as they would have been waiting for weeks.
- ICU filled to capacity by transplant patients who do not necessarily receive the best care for their conditions there:
  - (i) Liver transplant recipients who recover slower than average, so cannot yet be transferred from ICU to the liver transplant ward.
  - (ii) Patients who are too ill or unstable for care in liver transplant ward, including:
    - > Living donors who do not need organ support after operation but require close and vigilant monitoring, as well as careful surgical therapeutics for identification and management of complications without delay.

Liver transplant  
services



- > Patients with liver failure who require medical and nursing care that cannot be provided in the liver transplant ward, due to its lower staff-to-patient ratio.
- > Patients with hepatic encephalopathy who need continuous cardiac, hemodynamic and urine output monitoring.
- With only 28 beds, the liver transplant ward cannot handle the estimated 50% increase in demand in the next decade.
- Inefficient operational flow of staff, since liver transplant ward and staff offices are not located in the same block.

## *Recommendations*

### ***Dedicated and Paired OTs for Liver Transplantation (2 theatres)***

- One OT for donor operation and another for recipient operation should be located side-by-side for quick and direct transfer of liver graft, with a sliding door separating them. This will also ensure smooth running of elective LDLTs, not jeopardised by emergency operations.

### ***Setting up a Liver Intermediate Care Unit (16 beds)***

- Lighten the load and bed occupancy of the ICU by transferring patients who have smoothly undergone liver or pancreatic surgery directly from OT to a proposed liver intermediate care unit.

### ***Close Proximity of Related Facilities***

- OTs, the ICU and liver transplant ward shall be in the same area or block. Clinical areas and offices for liver transplantation staff (medical, nursing and clerical) shall also be in close proximity, preferably in the same block.

# Hepatobiliary and Pancreatic Surgery

## Contributor

### Division Chief

Prof Ronnie POON      Chair Professor (Surgery), HKU

## Current Situation and Service Gaps

- QMH is considered a centre of excellence in the management of hepatobiliary and pancreatic (HBP) cancers, not only in Hong Kong but worldwide. As the main tertiary referral centre for these cancers in Hong Kong, it sees about 350-400 (20%) of the approximately 1,800 new cases of primary liver cancer each year in Hong Kong.
- Patients receive both surgical and nonsurgical treatments from surgeons at the HBP Division, while interventional radiologists, hepatologists, clinical oncologists and medical oncologists are consulted to provide specialised care.
- Currently, many EOL services for terminally ill patients with HBP cancers are at QMH, which hinders timely provision of treatment to those with curable cancer.
- This model is inefficient and patients may need to wait a long time for consultation before appropriate management is provided, which may adversely affect cancer patient outcome.
- There is no single pathway for patients with acute hepatobiliary conditions – patients are sent to the HBP Division or the Division of Hepatology and Gastroenterology.
- Borderline cases considered not operable in other hospitals because of limitation in experience and support are referred to QMH. Since this depends on the initiative by patients and sometimes by surgeons in other hospitals, many patients may miss the chance of curative surgery.
- Regarding ablation therapy for liver cancer, QMH is the leading centre with the most comprehensive ablation technologies in Hong Kong, and also the only HA hospital with a high-intensity focused ultrasound machine. We are also planning to acquire the latest technology for irreversible electroporation.

Hepatobiliary and  
pancreatic surgery

- The development of laparoscopic and robotic surgery in HBP surgery, overall, is behind the other fields of surgery. Also, OT sessions in the existing minimally invasive surgical theatres are fully occupied by other specialties.
- On research, the HBP Division is one of the most active at QMH to conduct clinical trials on new therapies for HBP cancers, mostly sponsored by drug or device industries.

## *Recommendations*

### *Multi-disciplinary Care of HBP Cancers*

A multi-disciplinary model with centre-based care, comprising the following components:

- One-stop service approach for immediate consultation / advice and devising a management plan. All patients will be seen in a joint clinic with HBP surgeons, as well as hepatologists / gastroenterologists, clinical oncologists and medical oncologists.
- If a management plan cannot be decided on the initial patient visit, all specialties involved will discuss complicated cases at weekly multi-disciplinary meetings.
- Designated imaging sessions for HBP cancer patients in diagnostic and interventional radiology and in radiation therapy.
- A liaison clerk or nurse to help arrange investigations and treatments, as well as to provide additional information to patients for managing their conditions.
- A network hospice hospital / centre to provide hospice care to terminally ill patients.

### *Development of Minimally Invasive Therapies and Surgery*

- Expand ablation therapy for liver cancer to more patients, as well as develop an effective referral system to serve patients from other hospitals.
- Develop laparoscopic and robotic surgery in HBP surgery in the next 10 years, via designation of dedicated sessions in minimally invasive surgical theatres, expanding the overall minimally invasive surgical service, training of surgeons and OT nurses and provision of adequate resources for new instruments.

### **Improvement in Acute Care for HBP Diseases**

- A combined care approach for acute hepatobiliary conditions. Sharing a common roster with HBP surgeons and GI physicians in acute endoscopy service for biliary emergency cases and joint management of these patients will facilitate appropriate decision-making for medical and surgical management of these conditions.

### **Network with Other Hospitals**

- A structured network with surgeons, oncologists and gastroenterologists in other hospitals, so borderline cases of resectability can be discussed. This may involve a regularly teleconference meeting or an easy referral system via the Internet, which supports sharing of diagnostic images from other hospitals / centres, before a formal referral is made.
- Enhance the network with other hospitals to streamline referral of patients who may benefit from clinical drug / device trials after failure of conventional therapies.



Hepatobiliary and  
pancreatic surgery

## Hepatology and Viral Hepatitis Service

### Contributors

Prof M F YUEN	Professor (Medicine), HKU / Honorary Consultant (Medicine), QMH
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### Guiding Principles

- Allocation of medical resources according to case complexity.
- Minimising use of in-patient hospital beds.
- Efficient patient-centred care for complex liver conditions.

### Current Situation and Services Gaps

#### Out-patient Services

##### Hepatitis B Virus (HBV)

- Greater than 10,000 cases per year (in which >80% are HBV related) are being managed at the two medical liver specialist out-patient clinics.
- The current out-patient care model not conducive to tailored care for complicated hepatitis cases.
- In addition, the QMH tertiary Hepatobiliary Surgery service care for a proportion of patients with liver problems requiring input from the medical team.

##### Hepatitis C Virus (HCV)

- The current HCV clinic, historically a research clinic, is at capacity in providing HCV care.
- Anti-HCV treatment with interferon-based therapy is the current standard of practice, but there is an increasing prevalence of anti-HCV observed in recent reports<sup>18,19</sup>. At the same time, newer anti-HCV drug treatments approved by

<sup>18</sup> Fu Y, Wang Y, Xia W, Pybus OG, Qin W, Lu L, Nelson K: New trends of HCV infection in China revealed by genetic analysis of viral sequences determined from first-time volunteer blood donors. *Journal of viral hepatitis* 2011, 18(1):42-52.

<sup>19</sup> Fu Y, Qin W, Cao H, Xu R, Tan Y, Lu T, Wang H, Tong W, Rong X, Li G et al: HCV 6a prevalence in Guangdong province had the origin from Vietnam and recent dissemination to other regions of China: phylogeographic analyses. *PLoS one* 2012, 7(1):e28006.

the Food and Drug Administration and the DH, with better treatment efficacy are becoming available. Previous treatment non-responders can again be considered for retreatment with success. Thus, the demand for HCV treatment is expected to rise.

### **Investigations**

- Tests for HBV DNA, liver ultrasonography and liver elastography are required to better stratify HBV infected patients for care<sup>20,21</sup>. At present, the majority of chronic HBV patients are advised to have the above investigations undertaken in private laboratories / clinics.
- The recent discovery of individual interleukin-28B polymorphism treatment outcome correlation is an important pre-treatment prognosticator for chronic HCV patients. However, the test is not yet available to our patients.

### **Chronic Viral Hepatitis-related Hospital Admissions**

- Despite the commencement of universal HBV vaccination to newborns since 1988, on-going admission for liver-related complications in the coming 30 years is expected for various reasons like new immigrants from China.
- Elective admission for surgical opinions for portal hypertension, hepatocellular carcinoma and liver transplantation workup, requiring patients to stay as in-patients for 2-3 days, are still required to hasten consultation time by different specialties.
- Life expectancy of patients with chronic liver disease (e.g. patients with liver cirrhosis) is longer due to advancements in medical care. This contributes to the problem of increasing demands for in-patient beds.

## **Recommendations**

### **Overview of the Proposed Service Models**

- Development of disease-based as well as severity-based management of patients to enhance effective utilisation of resources.
- Development of multi-disciplinary ambulatory medical care services to reduce in-patient hospital stay.

<sup>20</sup> Lok AS, McMahon BJ: Chronic hepatitis B: update 2009. Hepatology 2009, 50(3):661-662.

<sup>21</sup> EASL clinical practice guidelines: Management of chronic hepatitis B virus infection. J Hepatol 2012, 57(1):167-185.



### ***Short-term Recommendations***

- Assign clinic quotas according to case complexity stratification.
- Set up a nurse-led hepatitis clinic to offer routine medical follow-up for a large subset of stable chronic HBV patients.

### ***Medium-term Recommendations***

- Develop separate hepatitis treatment pathways or protocols to cater for advancement in investigations and treatment options.
- Set up an ambulatory liver care centre to handle simple day procedures, such as liver biopsy, liver elastography measurement and regular elective paracentesis.

### ***Long-term Recommendations***

- Set up a one-stop ambulatory care model involving physicians, surgeons, radiologists, oncologists and palliative care specialists for patients with decompensated liver cirrhosis, to offer timely multi-disciplinary care.

## ***Implementation Enablers***

- Role delineation of the cluster hospitals:
  - > Acute and ambulatory medical care for liver patients should be offered in QMH.
  - > Convalescent care and palliative care for decompensated liver patients to be offered in TWH, FYKH and GH.



## Diabetes Services

### Contributors

#### Co-Chairs

Prof Karen LAM	Chair Professor & Head (Medicine), HKU / Director of Diabetes Centre / Honorary Consultant (Medicine), QMH
Dr W S CHOW	Associate Consultant (Medicine), QMH

### Guiding Principles

- A comprehensive, integrated and seamless service to all diabetic patients in the HKWC.

#### Broad Principles

- To modify patients' unhealthy lifestyles through education, experience sharing and empowerment programmes.
- An ambulatory service delivery model for minimizing hospitalisation, through a coordinated, multi-disciplinary team.
- An integrated comprehensive complication and risk factors assessment programme, to enable prevention and timely management of diabetes related complications.
- A diabetes registry on all patients in the cluster for evidence-based service planning and development.
- Enhancement of laboratory-based and clinical research for the advancement of medical knowledge in the field of diabetes.
- A regional training and accreditation centre for the provision of high calibre diabetes related professionals.

Diabetes services

## *Recommendations*

### *Overview of Proposed Patient Journey*

#### *New Case Pathway*

- Nurse-led pre-clinic assessment programme for stratification of patients with complicated and unstable diabetes, including Type 1 diabetes, to receive early attention.
- Diabetologist-led new case triage clinic ensures back-referrals of stabilised diabetic patients to Primary Care Clinics.

#### *Hospital Discharged Patients*

- Early discharge programme for shortening of hospital stay and reduction of unplanned readmissions, with continued management of any unsolved medical problem ensured by a dedicated diabetologist.

#### *Old Case Follow-up*

- Diabetes registry enables pre-clinic identification and channelling of patients with Type 1 diabetes, or poor glycaemic control, to a dedicated diabetologist for treatment optimisation and referral to nurse clinic and education programmes.
- Nurse-led and diabetologist-supervised ambulatory dosage adjustment programme, based on protocol-driven strategies.
- Diabetes registry for bi-directional flow of patients, so stabilised patients can be referred back to primary care clinics for follow-up, whereas unstable patients can have prompt access to diabetologist-led clinics.

#### *Comprehensive Complication and Risk Factors Assessment*

- Regular protocol-driven comprehensive complication and risk factors assessment programme provided for all diabetic patients attending HKWC Specialist Clinics.
- Risk factors counselling and advice on treatment modification by dedicated diabetologists.
- Timely referrals to respective specialists for prompt management of diabetic complications.

### *Joint Clinics / Counselling Sessions with Other Professionals for Seamless Patient Care*

- Combined diabetes clinic with Obstetricians enables optimisation of glycaemic control during pre-conception, gestational and post-partum periods, which minimise maternal and fetal morbidities and mortalities.
- Joint clinic with Vascular Surgeons provides prompt management of peripheral vascular diseases.
- Joint clinic with Orthopaedic Surgeons for early treatment of foot problems and reduction in the need for amputation.
- Joint counselling sessions by clinicians and various allied health professionals to enhance patient engagement.

### *Clinical Research to Enhance Patient Management*

- Self-initiated clinical research and clinical trials on new treatment modalities or improved strategies.
- Optimising the diabetes registry and data analysis for outcome-based service planning and development.

### *Proposed Service Delivery Models*

#### *Education Programmes*

- Regular introductory and refresher education classes by nurses, dietitians, podiatrists, prosthetist-orthotists and physiotherapists, as well as small group discussions and nurse- or dietitian-led patient self-help group meetings.
- Technology-based interactive games or education programme for knowledge enhancement.

#### *Hands-on Experience*

- Regular dietitian-led cooking classes or self-help group initiated sharing sessions on practical tips for lifestyle modifications.
- Exercise courses and physiotherapist-led training sessions motivate diabetic patients to participate in regular exercise programmes, which can be tailor-made to cater for personal preferences or physical incapacities.

Diabetes services

### *Comprehensive Complication Assessment*

- Eye assessment – visual acuity, fundal photography using retinal camera and optical coherence tomography with digital transmission to Ophthalmologist-led image grading centre.
- Nephropathy – blood and urine tests ± on-site renal ultrasonography for early identification of diabetic nephropathy and exclusion of other renal pathologies.
- Neuropathy – vibration perception threshold, 10-g monofilament test and on-site nerve conduction study enable early detection of peripheral neuropathy.
- Macrovascular complications – on-site carotid and lower limb Doppler studies, intima-media thickness measurement and treadmill ECG utilising the exercise room to provide one-stop assessment services for underlying atherosclerosis, as well as to enable early referrals for coronary or lower limb re-vascularisation procedures.

## *Implementation Enablers*

### *Enabling Structures*

- All facilities on the same floor for efficient patient flows in view of the large patient population.
- Adequate waiting area, barrier-free access and friendly environment for individuals with disabilities, since diabetic patients are usually the elderly with multiple co-morbidities, e.g. old strokes or lower limb amputation.
- A multi-purpose lecture and conference room for education classes, tutorial rooms for patient self-help group meetings and student tutorials, as well as consultation rooms for clinics and counselling sessions.
- A well equipped kitchen for cooking classes and provision of hands-on experience.
- An exercise room for regular exercise class and training activities, as well as treadmill stress test.
- An ultrasound room for carotid, kidney and lower limb examinations.
- A dark room for visual acuity assessment, slit lamp examination, fundal photography and optical coherence tomography, with Internet access for transmission of retinal images to the image grading centre.
- A Podiatry room equipped with a treatment chair for podiatric assessment and education on foot care and also for performing of minor operative treatment for foot ulcers and other foot problems.

- A clinical research room with facilities for specimen processing and temporary storage. This room can also be used for infusion of biologics, e.g. for Type 1 patients, if applicable.

### ***Training of Diabetes Health Care Personnel***

- Personnel including doctors, optometrists, nurses, as well as other health care workers involved in diabetic complication assessment. This guarantees the credential of providers of patient management, education and assessment at both primary and secondary care sectors of the HKWC, while also further strengthens QMH as a training centre for diabetes care, regionally and nationally.

### ***Protocol Development***

- Including development of exercise programmes in collaboration with physiotherapists for weight reduction and improvement of insulin sensitivity, and review of collaborative protocols with primary care clinics.

### ***Physical Area***

- Design of a floor plan to accommodate lecture / conference room, kitchen, exercise room, joint clinic consultation rooms, individual consultation /counselling rooms, anthropometric assessment and blood-taking room, vascular assessment and ultrasound room, podiatry / minor operation room, as well as clinical research / tutorial rooms.



Diabetes services

# Education and Training

## Co-Chairs

Dr Albert LIE	Deputy Chief of Service (Medicine) / Consultant (Medicine), QMH / Honorary Clinical Professor of Medicine, HKU
Prof David WONG	Chief of Service (Ophthalmology), QMH / Chair Professor & Head (Ophthalmology), HKU

## Guiding Principles

- Cultivation of an environment conducive to learning, which should encompass both formal and informal learning.
- Student-centred teaching for all disciplines of health professionals.
- The concept of teaching, research and delivery of clinical care going hand-in-hand, for patients' best interest, as part of the culture at the QMH teaching hospital, as well as in the HKWC.

## Recommendations

### Proper Identification of Stakeholders

- The group considered the stakeholders to include medical, nursing, pharmacy and allied health students. They also include healthcare professionals, such as doctors, nurses, allied health professionals and other HA staff, as well as visiting doctors, patients and their relatives.
- Students (of all disciplines, including undergraduate and post-graduates) as proper citizens of the hospitals. There should be facilities that cater to their needs, both for formal and informal learning.

### Delivery of Diverse Educational Activities

- As undergraduate formal education
- As Continuing Professional Development activities
- As annual accreditation in workplace for various workers
- As clinical shadowing opportunities



- As disease-specific information, tailored for patients and their relatives

### *Inclusion of Facilities for Education and Training Needs*

- Core facilities – They should be shared. E.g. exam halls, Objective Structured Clinical Examination stations, auditorium for live-cast of surgery, 24-hour on-call rooms for nurses and students, and video ward-rounds.
- Generic facilities – They could be multi-purpose. E.g. wet labs or simulation training centres, which would play an increasingly important role.
- Dedicated facilities – They have a single purpose, so can be disseminated in departments. E.g. labs for simulation using human cadaver / animal organs and tissues.
- A “Learning Common” – An important open space for students to gather, access information digitally, receive tutorials, study (at special quiet areas) and, most importantly, interact with one another. This facility should be open 24 hours a day.
- Emphasis on changing needs in the future, when digital and wire-free communications will become more and more important. Envisage stakeholders will access learning materials via mobile platforms. The HKWC needs to thoroughly consider the acquisition of digital materials and their dissemination, and thus wi-fi for students should be ubiquitous.
- Hospitals to be equipped with facilities to centrally store images and videos from surgery, endoscopy, etc. In the future these materials will play an increasing role as the substrate for professional learning, and thus must be safely stored and easily accessible.
- Teaching theatres and out-patient clinics to deliver student-centred learning. This would require 20% extra clinic space.
- An additional OT equipped with simulators for specialised surgery. The demonstration of basic competencies using simulators will be important for many surgical specialties, before students readily conduct procedures on patients. Examples are drawn from college requirements overseas.

Education and  
training



# Research

## Chair

Prof Y L LAU

Chair Professor (Paediatrics) /  
Associate Dean (Research), HKU

## Guiding Principles

- Establishment of an academic health science centre that will translate research / innovation to clinical service rapidly, as well as identify clinical issues for scientific investigation to advance knowledge.

## Recommendations

### Governance<sup>22</sup>

- Integration of HA / HKU HR policy / system to ensure a unified governance and management structure for service, research and education.

### Rapid E-Learning Environment<sup>23</sup>

- Reconfiguration of clinical and laboratory information capturing system to facilitate rapid learning from large cohorts of patient experience, which can be translated rapidly into structured research to further define clinical utility of innovative approaches to disease. The purpose of this reconfigured information system is to integrate routine data capture into a unified platform that will enable rapid retrieval of all clinical and laboratory data of a group of de-identified patients sharing a common feature, which could be a diagnosis, an abnormal laboratory finding, or any well-defined feature.

### Physical Design

- Imaginative design of physical space that will enhance immersion into research and innovation, as well as total and sustained interaction between basic and clinical researchers, HKU and HA staff in their pursuit of innovation and research to facilitate the cycle of bedside to bench, and back to bedside (B to B cycle) again.

<sup>22</sup> Ovseiko PV, Davies SM, Buchan AM. Organisational models of emerging academic health science centres in England. *Academic Medicine*, 2010; 85:1282-1289.

<sup>23</sup> Ginsburg GS, Staples J, Abernethy AP. Academic medical centres: ripe for rapid-learning personalised health care. *Science Translational Medicine* 2011; 3:1-3.

## Implementation Enablers

### Integrated Clinical Investigation Centre (IC<sub>2</sub>)

- Science, data integrity and subject protection are the three pillars of clinical research. A successful clinical study not only requires a solid scientific basis but also needs assurance that research data are properly collected, verified, analysed and reported and the health and safety of human subjects are well protected. The proposed Integrated Clinical Investigation Centre (IC<sub>2</sub>) will consist of four components – Clinical Trials Centre, Phase I Clinical Trials Unit, Ambulatory Research Centre and Cell and Gene Therapy Unit.

### Personalised Health Care Centre (PHCC)

- With the sequencing of the human genome and completion of HapMap<sup>24</sup>, there are great progress in the areas of sequencing technology, genetic knowledge and targeted treatment. Much more are understood about the genetic causes and contributors towards Mendelian disorders and complex diseases, the genetic context determining differential drug responses and adverse effects. Furthermore, progress in gene therapy and targeted treatment, aiming at particular molecules, has made it possible to translate such genetic findings into clinical applications. Thus, personalised health care to embrace the best scientific advances to bring about highest quality clinical care is becoming increasingly feasible and necessary.
- The proposed PHCC will consist of three components:
  - > Clinical Genetics Unit,
  - > Genomic Diagnostic Unit, and
  - > Translational Genomics Centre.
- The Clinical Genetic Unit shall be under the leadership of 3-4 properly accredited consultant clinical geneticists who are strongly linked to academic departments within HKU. The consultant clinical geneticists should be supported by 3-4 genetic counsellors. The Genomic Diagnostic Unit will comprise a Laboratory for Genetic and Metabolic Diseases and Laboratory for Pharmacogenetics and Pharmacogenomics. The Translational Genomics Centre will provide back-end technological, informatics, and laboratory support to the Clinical Genetics Unit and the Genomic Diagnostic Unit with the following five components:
  - > Omics technology platforms, including DNA sequencing, RNA sequencing, proteomics and metabolomics;
  - > Computer system with massive data storage and data processing capacities, managed by a team of approximately four Information Technologists;

Research

<sup>24</sup> Haplotype Map

- > Data management and processing team, consisting of approximately eight Genome Informaticists, who will manage databases and operate data analysis pipelines;
- > Report interpretation team, consisting of approximately eight Population Geneticists with detailed knowledge of gene function and the mutational spectrum of the local population; and
- > Functional validation team, consisting of approximately six Genome Biologists, who will maintain and operate laboratory platforms for validating the role of candidate mutations on disease.

### ***BioBank and Translational Medicine Laboratories***

- Infrastructure to facilitate the process of bench to bedside, and back to bench again, with the following components:
  - > BioBank;
  - > Translational Diagnostic Laboratories; and
  - > State Key Laboratories.

### ***Human Tissue and Microbial BioBank***

- Well-annotated human tissue, blood, serum and fluid samples, linked to clinical and outcome data, are invaluable sources for discovery research and for the validation of biomarkers of disease and of response to therapy, which are crucial in molecular diagnostics for personalised health care. BioBanks need ethical oversight from an independent reviewing board and the governance process is intended to be public.

### ***Translational Diagnostic Laboratories***

- Setting up of technology and service development laboratory(ies) within diagnostic laboratories to accommodate laboratory tests newly found to be applicable to patient management, as well as to research / develop tests which will transform patient service. It is estimated 20% of service laboratory space and funding should be reserved for this purpose.

### **State Key Laboratories**

- State Key Laboratories (SKL) of China are key components of China's science and technology research system. The Faculty currently has three SKLs and envisages more SKL will be established in the near future. A unified platform for promotion of SKL activities and focusing on Translational Medicine should be advocated, such as the core facility to handle Biological Safety Level-3 (BSL-3) pathogens, laboratory space to process clinical samples.

### **Training and Education**

- Training system to nurture passion for research early in the next generation of clinicians and scientists, who are committed to translational research that will bring innovation in science rapidly to the bedside for patients' benefits.



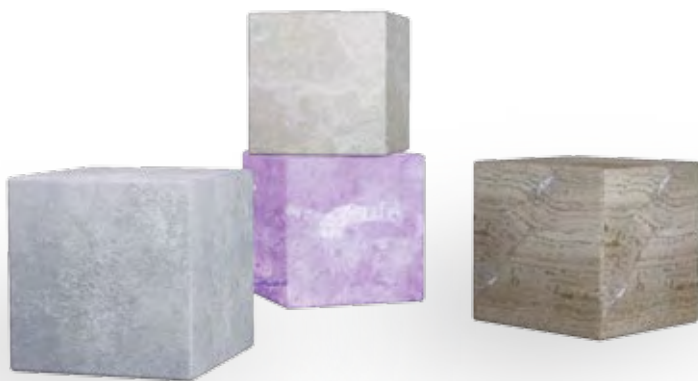
Research



## *Role Delineation*

This section presents the role and profile of each hospital in the HKWC, given the models of care and clinical service directions are fully implemented.

Defining the role and profile of each hospital in the HKWC provides a systematic basis for developing an appropriate organisation and delivery of healthcare services across the cluster, which is aligned with the models of care and service directions outlined in the CSP. In turn, this informs development of hospital clinical services, supporting services, staff mix and other requirements, to ensure they operate effectively, seamless and in synergy across the care pathway.





The role of each hospital is presented, with an overarching statement, in **Figure 6**.

**Figure 6** Overarching statement of HKWC hospital roles





## Queen Mary Hospital

A premier teaching hospital delivering acute care, tertiary and quaternary services. Through integration of service, education and research functioning as an academic health science centre.

Organ transplantation will remain the emblematic service of the hospital where the most advanced transplantation of heart, lung, kidney, bone marrow and pancreas are performed. QMH will also house a cancer centre and a comprehensive set of services for women.

Also, 24-hour interventional stroke care will be provided by the services of neuroscience and acute cardiac services providing round-the-clock intervention for heart attack will be located at QMH.

## Tung Wah Hospital

A sub-acute hospital for the Central and Western District with a focus on rehabilitation for patients with multiple morbidities, as well as ambulatory services.

In view of its strong ties with TCM, this shall continue to be developed in conjunction with the renal service.

There is currently a substantial amount of surgical activities in TWH. With the provision of a significant number of OTs in QMH, there is a possibility that some services may consolidate, especially for high risk cases that may require intensive care. Therefore, depending on the volume of services that QMH may handle, the profile of surgical cases being managed by TWH may change.

Finally, transfer of the university's Well Women's Clinic from TYH may be considered, and should be negotiated with the Faculty.

## Grantham Hospital

An academic ambulatory care centre complementary to the clinical programmes; and providing sub-acute services for the Southern District. Ambulatory services will also cater for cross-cluster populations.

GH is well-positioned adjacent to the new MTR station, which is going to be completed in 2015. Sitting on a strategic position with good accessibility, GH could be developed as a free-standing academic ambulatory care centre, which will function independently of the existing blocks and in-patient units and be able to serve the needs of patients beyond the HKWC.

GH has great achievements in its history as a hospital excelling in respiratory and cardiac services. While GH has a traditional role in Respiratory Medicine and TB, the provision of acute cardiac services should be considered within the wider context of the cluster. It is recommended that Acute Cardiology, including evaluation and work-up for cardiac transplant, be transferred to QMH. GH shall continue providing cardiac and respiratory rehabilitation and palliative care programmes, particularly for patients with non-malignant disorders.

The hospital will also provide sub-acute services for the Southern Districts.

A list of possible services to be provided at GH is shown below:

- Day Surgery
  - > ENT, eye, plastics and orthopaedics
- Day Procedures
  - > endoscopy and bronchoscopy
- Satellite haemodialysis
- Satellite chemotherapy
- Day patient rehabilitation centre
- Diabetes day hospital
- Day hospital for the elderly
- Major musculoskeletal ambulatory centre
- Children's clinics
- Mental health clinics
- GOPC
- Ambulatory cardiac and respiratory centre
- Diagnostics (CT, MRI etc), and
- Post-surgical cancer surveillance.

### **Duchess of Kent Children's Hospital**

DKCH will continue to focus on the maintenance of independent living and rehabilitation of children with chronic disease, including ventilator-dependent children, reflecting the long and proud history of DKCH in providing services to children from across Hong Kong and beyond.

The Spinal Surgery Unit and Paediatric Neurology Service at DKCH are both of world-class standards. With the future establishment of a CEP, it is possible that these two services may be relocated to the CEP. If they are not, it is recommended that they are relocated to QMH.

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## **Fung Yiu King Hospital**

FYKH will have a role in the provision of services for patients with advanced conditions requiring infirmary care, palliative or EOL care.

To contribute to these programmes, the facilities at FYKH will require progressive upgrading, in particular to provide comfortable and dignified facilities for EOL patients and their families.

## **MacLehose Medical Rehabilitation Centre**

The MMRC will function as a specialist rehabilitation unit providing in-patient, day-patient and ambulatory rehabilitation.

Through the streamlining of referrals for rehabilitation and step-down care, MMRC will receive patients from Neurology, Neurosurgery, Orthopaedics, as well as patients with spinal injuries who require ongoing rehabilitation but do not have significant co-morbidities. Patients who do have significant co-morbidities, which may cause complications for their rehabilitation, will be managed at TWH. In addition, MMRC will continue to offer rehabilitation services to various categories of private patients.

## **Tsan Yuk Hospital**

Tsan Yuk Hospital is a significant hospital with an important history. It is strategically located and will have access to the new MTR stop on the Western line extension.

TYH will continue to provide nurse and allied health out-patient services under the Sai Ying Pun GOPC chronic disease management service. In the long term, there is the potential for the complementary expansion of mental health services from the DTRC to TYH.

However, antenatal and assisted reproductive services may be relocated to QMH. The Well Women's Clinic provided by the Faculty, will become isolated when the other women's programmes relocate to QMH.





# Capacity Planning

A key factor underpinning the formulation of the HKWC CSP is the projected demand for clinical services, which forms the basis for capacity planning.

## Methodology

Using demand modelling techniques, a demand projection exercise was carried out to determine the future capacity required of HKWC in terms of hospital beds and OTs for the next two decades up to 2031, with 2010 as the base year.

The projection took into account population growth, demographic changes and age-gender-specialty-specific service utilisation trends. Scenario modelling was also carried out in the bed projection to factor in the impact of changes in service delivery.

## Data Sources

Projections were based on data from four main data sources:

- Service utilisation data from 2004 to 2010 from the HA data warehouse, which included the Integrated Patient Administration System, the Obstetrics Clinical Information System for newborn delivery data and Operating Theatre Record System;
- Local birth statistics in 2010 and birth projection figures from 2010 to 2031, obtained from the Census & Statistics Department (C&SD) of the Government;
- Population projection figures from the C&SD, and district-based population projections from the Planning Department of the Government, from 2010 to 2031; and
- Cross-border eligible persons (EPs) quantified in consultation with the C&SD.

## *Planning Parameters*

All parameters for the projections were age-gender-specialty-specific. They comprised a combination of the following age, gender and specialty groups:

- For acute care, 10 age groups of 0-4, 5-14, 15-24, 25-34, 35-44, 45-54, 55-59, 60-64, 65-69, 70+ years, with 17 specialty groups (ICU / HDU, Medicine, Surgery, Cardiothoracic Surgery, Neurosurgery, Orthopaedics, Gynaecology, Obstetrics, Neonatology, Paediatrics, Ophthalmology, Ear, Nose & Throat (ENT), Oncology, Hospice, Dental, Emergency Medicine and Other / Unclassified specialty).
- Age-specific rates per female population for Obstetrics and Gynaecology specialties.
- For Neonatology, including Neonatal Intensive Care Unit (NICU) and Special Care Baby Unit (SCBU), planning parameters were devised from birth data.
- Ratio of acute to extended care (convalescence / rehabilitation + local infirmary) bed days occupied per linked episode for extended care.
- For Psychiatry, planning parameters involved 3 age groups of <18, 18-64 and ≥65 years and 16 sub-groups of diagnoses.

## *Bed Projection Model*

### *Projection Methodology*

For the projection of bed requirement for each clinical specialty, other than Obstetrics, Neonatology and Psychiatry, the volume and mix of expected service demand from residents in each of the 21 districts were first computed taking into account age-gender-specialty specific hospital service utilisation rates and average length of stay (ALOS) per episode at base year (2010), as well as population growth and ageing over the period to 2031.

Using the base-year data on specialty-specific cross-district patient flow for acute bed days, the hospital patronage pattern across the 21 districts was computed. The demand for HKWC acute bed days was then derived by applying this hospital patronage pattern specifically for the HKWC, i.e., the proportion of residents residing in each of the 21 districts who used HKWC services.

Significant growth in the number of cross-border EPs was observed in the past years. It was estimated that the utilisation by cross-border EPs in 2010 was around 5% and 1% of the total patient days for Paediatrics specialty and in-patient hospital services, respectively. The demand from cross-border EPs was also incorporated into the projection.

For Obstetrics services, the bed demand was derived from projected births in Hong Kong, including births to local and Mainland mothers. Territory-wide projected local birth figures were distributed across districts, based on the districts' projected female population aged 15 to 49 years, together with the territory-wide age-specific fertility rates. For projected births to local mothers at district level and Mainland mothers at territory-wide level, the respective base-year hospital patronage patterns, first between public and private sectors and second among the eight HA Obstetric Units, was applied to derive the projected Obstetric service bed demand for the HKWC.

For Neonatology, the projected births at QMH formed the basis for estimating the demand for SCBU and NICU, with the use of respective utilisation and tertiary referral rates among inborns (i.e., infants born in HA hospitals). The demand for NICU from outborns (i.e., infants born in non-HA hospitals) was based on the NICU utilisation rate from total projected births at private hospitals, as well as the relative distribution of outborn admissions among QMH and the other seven NICU units in HA. The demand for SCBU and NICU beds was estimated using the respective ALOS per episode projection parameters.

Additionally, the projected extended care bed requirement for HKWC was computed, using HA-wide age-gender-specialty ratio of acute to extended care bed days occupied per linked episode.

For Psychiatry care beds, a similar demand modelling technique was used. The projection model took into account population growth with consideration of cross-border EPs, demographic changes, age- and disease-specific service utilisation rates (comprising 16 sub-groups, as in **Table 1**), and anticipated impact with the expansion of community services shifting from in-patient care to community-based care.

**Table 1** Age- and disease-specific psychiatric sub-groups used in Psychiatry service demand projection model

<i>Age group (years)</i>	<i>Diagnosis group</i>
<18	<ul style="list-style-type: none"> <li>• Psychosis (F20-29)</li> <li>• Disorders of psychological development / Mental retardation (F80-89, F70-79)</li> <li>• Affective disorders (F30-39)</li> <li>• Disruptive behavioural disorders (F90-92)</li> <li>• Emotional disorders (F93-94, F40-48)</li> <li>• Others</li> </ul>
18-64	<ul style="list-style-type: none"> <li>• Schizophrenia (F20-29)</li> <li>• Affective disorders (F30-39)</li> <li>• Neurotic, stress-related and somatoform disorders (F40-48)</li> <li>• Mental and behavioural disorders due to psychoactive substance use (F10-19)</li> <li>• Others</li> </ul>
≥ 65	<ul style="list-style-type: none"> <li>• Dementia (F00-03, G30)</li> <li>• Schizophrenia (F20-29)</li> <li>• Affective disorders (F30-39)</li> <li>• Neurotic, stress-related and somatoform disorders (F40-48)</li> <li>• Others</li> </ul>

Diagnosis groups based on consultation with representative psychiatrists in Hong Kong and WHO ICD-10 codes.

The projection framework was developed on a headcount basis using 2010 as base year. Based on the average utilisation rate from 2008 to 2010, the model was applied to project service demand for the 16 sub-groups. The projected headcounts were then applied to the age- and disease-specific ALOS data at base-year to obtain the projected bed days up to 2031.



Similar to other acute care specialties, by using base-year data on cross-district hospital flow for bed days, as well as the projected population at district level, the hospital patronage pattern was computed. Demand for QMH was derived by applying the pattern specifically for QMH.

### **Casemix Adjustment**

There are different service networking systems in HA for different specialties. For each specialty, there is a variation in casemix profile among clusters. Therefore, casemix data from 2009 to 2011 were used to identify the variation in complexity of acute in-patient services across clusters.

It is observed that the LOS increases with the case complexity. Hence for every hospital and age-gender-specialty subgroup, an anticipated LOS was computed based on the actual number of episodes of each Diagnosis Related Group and the corresponding HA-wide ALOS. Results from this analysis on the complexity of acute in-patient services delivered among different specialties of HA hospitals were subsequently factored into the projection.

### **Assumptions for Bed Projection**

The projection models described above provided a base case scenario to demonstrate the nature and volume of work to be expected for the HKWC in 2031, assuming the market share of HA, the patient mix and volume, referral patterns and policy remain the same over the projection horizon for the cluster.

The projection covered both in-patient and day-patient bed days. In consultation with the cluster management teams, the projected bed days for acute care beds were translated into the number of in-patient acute beds required for each specialty, by assuming an 85%-90% occupancy rate dependent on the proportion of emergency caseload, whereas 120% was assumed for day beds under acute care.

For specialties of ICU / HDU, NICU and Obstetrics, a lower occupancy rate of 80% was assumed since these departments generally admitted patients on an urgent but random basis so more flexibility should be allowed. Furthermore, a 90% occupancy rate was assumed for extended care services.

For Psychiatry, clinical views from the Coordinating Committee in Psychiatry were sought. Their views of expanding community-based care, by assuming an increase in coverage of community care for the two sub-groups of schizophrenia (F20-29) and

affective disorder (F30-39) patients in the age group of 18-64 years, were factored into the projection model. By assuming an 85% occupancy rate, the projected bed days were translated into the number of in-patient acute beds required. Under the model, the number of beds for psychiatry care required at QMH by 2031 will be around 100.

### ***Scenario Modelling in Bed Projection***

Besides the base case scenario, in which all the projection parameters were assumed to be unchanged as in base year 2010, a different scenario was constructed to model the anticipated changes in service delivery, including changes in ALOS and service substitution and diversion, which sought to promote effective alternatives to reduce reliance on in-patient hospital services.

Based on past years data (2004 to 2010), the utilisation rate of future years were forecast using statistical modelling techniques for each specialty, age and gender subgroup.

Finally, clinical views from different Coordinating Committees / Central Committees on the utilisation rate projections were sought. In particular, representatives reviewed different sets of projections of their own specialty and recommended the set which would better reflect their anticipated growth or decline. Further analysis was done, for some specialties, to support decision making on the trend modelling and if capping on the parameters was required. Agreed changes were then incorporated into the model.

### ***Projected Bed Requirement***

The projected bed requirements for the HKWC and QMH by 2031 are summarised in **Tables 2 and 3**.

Variations in bed requirements were obtained from different scenarios due to different projection assumptions. The Base Case Scenario illustrated the impact of population growth and aging on the HKWC service demand, whereas Scenario 1, on top of the population effect, considered the improvement in service efficiency and change in models of care.

Under the Base Case Scenario, the number of beds required at the HKWC by 2031 was around 3,880 and for QMH around 1,910.

Compared to the Base Case Scenario, a lower number of beds were required under Scenario 1. The number of beds required at the HKWC by 2031 was around 3,620 and for QMH around 1,810.

**Table 2** Projected bed requirement for the HKWC in 2031 under different scenarios

<i>Care Category</i>	<i>Base Case Scenario</i> (Impact of population growth & ageing effect on service demand)	<i>Scenario 1</i> (Base Case Scenario with improvement in service efficiency and change in models of care)
Acute Care <sup>(1)</sup>	2,640	2,480
Adult Intensive + CTS / NS High Dependency Care <sup>(2)</sup>	70	70 <sup>(2)</sup>
Extended Care <sup>(3)</sup>	870	780
Psychiatry Care	100 <sup>(4)</sup>	100
Others <sup>(5)</sup>	200 <sup>(5)</sup>	200 <sup>(5)</sup>
<b>Total <sup>(6)</sup></b>	<b>3,880</b>	<b>3,620</b>

**Table 3** Projected bed requirement for QMH in 2031 under different scenarios

<i>Care Category</i>	<i>Base Case Scenario</i> (Impact of population growth & ageing effect on service demand)	<i>Scenario 1</i> (Base Case Scenario with improvement in service efficiency and change in models of care)
Acute Care <sup>(1)</sup>	1,690	1,590
Adult Intensive + CTS / NS High Dependency Care <sup>(2)</sup>	50	50 <sup>(2)</sup>
Psychiatry Care	100 <sup>(4)</sup>	100
Others <sup>(5)</sup>	70 <sup>(5)</sup>	70 <sup>(5)</sup>
<b>Total <sup>(6)</sup></b>	<b>1,910</b>	<b>1,810</b>

## Notes:

- Includes Medicine, Surgery, Cardiothoracic Surgery, Neurosurgery, Orthopaedics, Gynaecology, Obstetrics, Ophthalmology, ENT, Oncology, Hospice, Dental, Emergency Medicine and Other / Unclassified specialty under acute care, but excludes intensive care or high dependency beds under Cardiothoracic Surgery and Neurosurgery. Also includes the specialties of Paediatrics and Adolescent Medicine, as well as Neonatology.
- Includes intensive care or high dependency beds managed by the central ICU team, Cardiothoracic Surgery and Neurosurgery. Projected result refers to Base Case Scenario.
- Includes Convalescence / Rehabilitation and Infirmary Care but excludes beds for Central Infirmary Waiting List placement.
- Projected result refers to Scenario 1.
- Includes nursery cots and beds for Central Infirmary Waiting List placement. The bed number as at year 2010 has been adopted throughout the projection horizon.
- Sum of individual figures may not equal the total due to rounding.



## *Implementation Enablers*

The models of care, clinical service directions and hospital role delineation outlined in the HKWC CSP reflect the complex system of inter-related services and functions that take place across the cluster, both within and between hospitals. Successful implementation by the cluster requires a number of enablers to be developed incrementally, which are described below. These include physical design, workforce planning, how integrated and cluster-based clinical programmes will be organised and managed, ICT, as well as financial resources. The HA annual planning process will be the mechanism through which additional resources will be sought.

### *Physical Design*

The design of facilities, during the planning stages of the QMH redevelopment project, should be informed by the requirements of the models of care, service directions and care delivery methods, and importantly the needs of users. The way in which services are provided by healthcare professionals, and the experience of patients and their families, is heavily influenced by the physical facilities in which they are delivered.

The provision of **a friendly, supportive and culturally appropriate environment** for patients, their families and carers is a priority which should be pursued. Studies have demonstrated that environments which incorporate cultural symbols, artwork, greenery and external vistas contribute to patient healing and recovery. In addition, **barrier-free access** is an important consideration for HA, particularly in the design of new or redeveloped healthcare facilities.

With the establishment of new models of care, physical settings and the functional relationships of clinical departments and teams will need to support efficient and coordinated multi-disciplinary models of care. **Integration of flexible and shared space** will support the collaboration between multi-disciplinary teams within the hospital setting. Such considerations in physical design include:

- Large rooms for multi-disciplinary consultation.
- Co-location of consultative and diagnostic services.
- Appropriate waiting areas.
- Flexibility in configuration of ambulatory space.

In the future, **appropriate and sufficient spaces** should be provided **for family and carers** to participate and assist in patient care, to wait for health professionals or patient results, hold private discussions with health professionals, as well as grieve when necessary. The physical design of facilities is therefore an essential component in supporting patient privacy and dignity, being age- and gender- appropriate.

Furthermore, design should provide a **high level of spatial orientation** for patients, achieved by direct visualisation. This usually requires the use of a central atrium and multiple mezzanine floors that allow vertical travel by escalators. Patient amenity and access to health-related education should be maximised.

Moving towards more multi-disciplinary and patient-centred models of care, facilities need to support the **coordinated delivery of multiple services** which enable patients to receive a series of consultations in a single visit, rather than over the span of several days or weeks. This is of particular importance in ambulatory settings, where there are large patient volumes. Intelligent design and use of advanced information technology have the potential to transform the patient experience, from one in which long waiting is the norm, to that where patients are electronically alerted to their clinic appointments and waiting areas are used productively as pleasant focal points for education and health promotion activities.



### **Hot Floors**

Under the proposed models of care, time critical services are aggregated on “hot floors”. These include services which need to be integrated to cope with acute work 24 hours a day, seven days a week, and for which resources are concentrated at nights and on weekends.

Patients who utilise the “hot floors” include those requiring 24-hour intervention services for accidents and emergencies, trauma, critical care such as stroke, neuroscience conditions and acute coronary syndromes. Departments and units located on “hot floors” include AED, ICU / HDU, OTs, NAW, SAW and MAPU.

As an example of service co-location, the concept of a “radiology interventional hub” enables direct patient transport (including under general anaesthesia) between hybrid theatres and a central core of diagnostic imaging facilities. Through good functional relationships, services such as from AED and ICU can achieve good access to hybrid theatres and rapid diagnostics and interventions.

QMH is the only hospital within the HKWC providing AED services and is a designated trauma centre in Hong Kong. The physical design and good functional relationships of these services are a critical component to successful operation.

In terms of design, emergency services and critical care should be clearly identifiable, and with facilities which optimise the management of patients with different categories of need. The aim is to achieve smooth patient flows and efficient management of patients into, through and out of emergency and critical care services. Thus, key components include large floor plates, with the AED at podium level, accompanied by supporting observation areas, teaching and office space. In close proximity should be the peri-operative floors and integrated critical care services, made up of the main ICU with HDU arranged around it in a module-based layout.

Moreover, strategically located diagnostic services (i.e., both pathology and imaging services) dedicated to the “hot floors” facilitate their use for both diagnostics from the AED and for patients who might require urgent scans within the “hot floors”. Such configurations support efficient workflows and facilitate the appropriate concentrations of expertise, skills and technology, as well as the positioning of key support services, such as the Theatre Sterile Supply Unit (TSSU) to the peri-operative floors, to enable optimal functioning of the hospital and its services.

Although facilities on the “hot floors” may likely be assigned for cardiac, cardiothoracic and neurosurgical care, they will not be owned by that department / specialty, nor should their use be regarded as exclusive.

### **Programme Floors**

The location and arrangement of in-patient space is important, particularly at QMH which provides significant tertiary and quaternary services. In the new models of care, many services will not be delivered on traditional department / specialty basis, but rather on an integrated programmatic basis, which translates directly into design of programmatic hospital floors. This requires the provision of space that enables all the clinical activities that need to take place at the bedside, through to diagnostics and out-patient care. For example, all specialist consultations will be conducted within integrated programme areas, rather than separately identified specialist out-patient clinics. Within the programme floors, all treatment or diagnostic areas will be utilised by both in-patients and ambulatory patients.

To illustrate, the integrated service of cardiothoracic care may be provided on one floor and located just above the “hot floors”. This floor will include the cardiac catheterisation laboratories, echocardiography and other diagnostic units, in-patient wards, consultation clinic facilities, as well as research laboratories and offices. On this floor, the cardiologist, cardiothoracic surgeons, nurses and related allied health professionals will operate collaboratively to provide one-stop services to patients.

### **Wards**


In terms of in-patient facilities, typically large ward spaces configured into several smaller modular pods enable flexible and efficient patient management. Wards designed to make use of plug-in technologies as far as possible allow for rapid transformation to cope with changing service demands. Single workstations strategically placed allow visual and electronic surveillance of pods and corridors. In addition, the configuration of wards should facilitate the movement of equipment, supplies and services.

The provision of high quality ward facilities, which are age-, gender- and condition-appropriate is important, to cater to the needs of different patients, such as children and adolescents. For example, modular design of children’s wards enables age- as well as gender-cohorting. Furthermore, for patients with special requirements, such as those immune-compromised, isolation facilities, appropriate access and circulation routes are important.

### **Ambulatory Care**

Ambulatory care will be of increasing importance, given the rise in numbers of chronic disease patients, as well as advances in medicine which enable more care to be delivered on an ambulatory basis. As described above, programme floors contain components of ambulatory care providing mainly complex out-patient specialist care. However, for a large proportion of ambulatory care, localising services for less complex cases is considered more desirable.





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This can be achieved by a separate ambulatory centre. Day surgery facilities can be incorporated in the centre, which can accommodate endoscopy and other procedures to be done on a day-only basis. Other diagnostic services like post-treatment cancer surveillance can be performed in high volume without affecting the needs of acute services in the main hospital block. Ambulatory renal dialysis services and rehabilitation programmes can also be accommodated. Such a centre will be an opportunity for HA and the Faculty to come together and introduce a new paradigm for health services in Hong Kong. This is possibly appropriate for the GH campus, in which access to the hospital will be significantly enhanced by the extension of the MTR, which is scheduled for completion in 2015.

Despite possessing high levels of patient amenities, ambulatory areas should offer the highest level of technology and sophistication. Similarly, they should be wireless, paperless and filmless environments. Ambulatory areas should have large rooms for multi-disciplinary clinics and case conferences, with good access to procedural and diagnostics facilities. In addition, there should be multiple points of connectivity between ambulatory and other clinical areas to enhance operational efficiency and facilitate the movement of patients and staff, subject to hospital setting and the model of ambulatory care adopted.

### ***Integrated Approach to Clinical Services, Education and Research***

A key facet of the CSP is the integration of clinical services, education and research, to promote the acquisition, dissemination and application of knowledge and innovation into clinical practice to benefit patients. This requires a high level of integration of teaching, research as well as diagnosis and treatment spaces in hospital design. The purpose is to enhance the daily interaction of clinicians, teachers and researchers as the catalyst for inquiry and discovery.

The environment should therefore be welcoming for professionals and students from all disciplines. Large floor spaces in hospitals support the co-location of service, research and teaching and embed these components in everyday activities. In addition, flexible design will cater for the smooth introduction of clinical and technological innovation as they develop.

As part of the dissemination of knowledge and learning the HA supports and facilitates academic research. The HA has a standard procedure for data requests, to support clinical research, and assure data integrity and the protection of patients.

## Workforce Planning

Although it is beyond the scope of this CSP to examine quantitative issues in relation to workforce numbers, it is important to reinforce the magnitude of the proposed changes and to emphasise that such changes should start now, rather than to wait until the completion of redevelopment of hospital facilities. Key aspects to consider include:

First, the identification of new skills, new roles and even new staff has a long lead time. Regardless of what management arrangements are in place to progress recommendations from this CSP, it is crucial that **change management and workforce development skills** be included.

Second, workforce is the most important asset in hospitals. **Sufficient amenities to support staff welfare** are important components to consider in the design of new facilities and clinical spaces. Importantly, quiet areas should be provided for time-out and contemplation. Facilities for recreation, exercise and contemplation are not only beneficial for enhancing staff performance, but also can enhance staff recruitment and retention.

Third, the concept of **care coordination** is becoming an important component in patient management, especially for those with chronic disease or disabilities. Care coordination in essence means that patients along the care pathway from diagnosis to recovery (or palliation) will be looked after by a coordinator. In keeping with these trends, care coordination is included in the models of care of several services (e.g. Cancer Care, as well as Musculoskeletal and Multi-systemic Diseases). Such coordinators will be trained in disease and care management, patient information management, discharge planning and skilful in facilitating team work with different disciplines, specialties and hospitals, to enhance effective and efficient patient care. The aim is to achieve the right care, at the right time and place, by the right provider.

Already some existing clinical programmes have case managers and/or cluster coordinators in place. However, some will need to develop them afresh. With each hospital serving a distinct role in the cluster, it is crucial to recognise these posts as key for smooth management of clinical programmes and patient transition across different care settings in the HKWC.

In order to facilitate, it is important to recognise the necessary skills and training for these roles, the arrangement as additional posts for existing staff, the need of hiring new staff, and the possibility of branding it as a new healthcare profession.

In terms of the three main workforce professions, each will have different roles in enabling change. These include:

### ***Nursing Staff***

Initiatives recommended in this CSP, as well as some currently underway at QMH and other hospitals, will offer new and exciting prospects for nurses. For example, Neurosurgery has proposed a multi-skill model for nurses, allowing them to rotate across specialties but within the programme of Neurosciences. Such a nursing operation model will enhance the skill set of the nursing workforce within the programme, thus broadening the scope for staff development and helping with staff retention.

In addition, many disciplines are pursuing nurse-led services and clinics, such as the pre-anaesthetic assessment protocols for peri-operative services.

Finally, another prospect for nurses is in care coordination. Most hospitals with care coordinators have recruited these posts from the nursing grades.

### ***Allied Health Professionals and Pharmacy Staff***

The recommended integrated model of care has a fundamental paradigm of multi-disciplinary care and multi-disciplinary teams. Overall, allied health and pharmacy practitioners are supportive of cross-hospital multi-disciplinary models, while their professional and managerial accountability remain within their disciplines. They are willing to accept clinical direction and clinical governance in a multi-disciplinary team, with the benefits of collegiality. This is especially so when the number of practitioners in the disciplines are large. For smaller units and smaller disciplines, allied health and pharmacy professionals may seek to retain an organisational identity.



### **Medical Staff**

Several issues arose during development of the HKWC CSP, as listed below, which when addressed should help enhance staff morale, as well as improve clinical programme and cluster coordination. They are:

- The need for a general medicine stream within internal medicine and the tension between specialty rosters and general intake.
- The different terms and conditions available to HA staff and HKU staff, particularly in relation to academic leave and protected time for research.
- The segregation of the public and private sector without a mixed option for HA staff, encouraging movement to the private sector.
- HKU initiatives outside QMH and the resulting demands on academic staff who work in the HKWC.

## ***Organisation & Management of Cluster-based Clinical Programmes***

Integrated cluster-based clinical programmes will be similar to those outlined in the chapter on Clinical Service Directions. The work groups formed to generate proposals on respective clinical programmes should be retained to provide clinical alignments on a cluster-wide basis.

Also, according to the HA review of the cluster structure in 2009, there was recommendation to develop a management reporting mechanism along the hospital line-management. This will be particularly difficult for small departments, such as Prosthetics and Orthotics, that have fewer than ten staff in the cluster and all along have been aligning services for cross-hospital support, both for administrative reasons (e.g. vacation arrangements) and professional reasons.

The models of care proposed are cluster-based and the requirement for a cluster-wide coordinator or manager is implicit in most of the models of care. Establishment of programme managers / coordinators and the roles of site managers in each hospital and Chiefs of Service will require further consideration and deliberation. It is recommended that the Cluster Chief Executive designate a person to monitor the implementation of recommendations in this CSP.

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Finally, of particular importance going forward is the continued dialogue, engagement and provision of multiple common platforms for staff within the cluster, to facilitate continued discussions on the development and implementation of services. As the clinical strategies in this CSP are realised, their success will very much depend on the open communication and trust that is established and built amongst the healthcare professionals and across the different teams within the cluster.

### *Information & Communications Technology & Financial Resources*

ICT and financial resources fall outside the scope of the CSP. However, they are mentioned as they are key enablers in realising new models of care, services directions and facility design.

There are demands for ICT to streamline the evolution and introduction of new technologies in the public sector. In order to take the project forward, the funding for commencing many of the new or improved services will be processed through the HA annual planning mechanism.





## *Concept Design for QMH*

This chapter considers some of the specific design implications of the HKWC CSP on the redevelopment of QMH, as well as the current existing site. It culminates in a concept design for the QMH redevelopment, which translates the models of care and clinical service directions into a design.

### *About QMH*

QMH is a hospital built on a mountainous slope more than 150m above sea level with fine views to the west over the sea. The main entrance of the hospital and the AED has a single access road, which winds up from Pok Fu Lam Road, at the Sassoon Road crossing.

The Main Block, which has been extended several times, divides the north-south terraced site in half and still houses major hospital treatment and diagnostic departments. The Main Block together with the Nurses' Quarters A, both built in 1937, has been classified as graded historic buildings.

The first major extension to the hospital in the late 1980s was the 28-storey K Block, to the north of the Main Block.

The hospital has a gross floor area of 164,000m<sup>2</sup>, with services operating out of different buildings across a large footprint, which contributes to inefficient travelling between buildings for patients and staff.

## *Design Considerations*

The redevelopment of QMH should achieve a hospital environment that is easy and convenient to use for patients and staff. To achieve an efficient and patient-friendly design, the need is for appropriate spatial arrangement of clinical activities that are centred on patient journeys. Integration of flexible and shared spaces will support collaboration among different multi-disciplinary teams within the hospital and also the delivery of high quality care.

One of the two overseas consultants for the HKWC CSP, who is an expert in architecture and hospital design, recommended the “20% rule” for building an academic health science centre, where approximately 20% of space shall be allocated to each of the following functions:

- (i) ambulatory services,
- (ii) treatment and diagnostics,
- (iii) research and education,
- (iv) wards, and
- (v) other front-of-house / back-of-house activities.

The close relationship between QMH and the Faculty, with the integration of education and research, means that infrastructure needs to be adaptable enough to enable flexible harnessing of new technologies, innovative treatments and modes of service delivery.





### Large Floor Plates

Maximising large floor plates is one of the most important considerations for the future QMH. This will help to accommodate the new AED where all of its activities should be on the same floor at ground level. Large floor plates will also help facilitate the housing of all the future OTs on two floors and multiple modules of ICU / HDU on one.

Integrated programmes can function independently as an “institute” on a large single floor (see **Figure 7**). For example, the gastroenterology programme shall have in-patient wards, consultation areas, endoscopy suites, teaching areas, research offices and laboratories all on the same floor. This arrangement will further facilitate the integration of service, education and research because it enables clinical and research staff of different specialties and disciplines to communicate and consequently facilitate intellectual exchange. This will speed “bench” to “bedside” innovation and continue to enable HKWC and QMH to be pioneers of research and patient care.

**Figure 7** Illustration of large floor plates with integrated space and activities





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### ***Zonal Arrangements of Services***

In the future QMH, facilities will be strategically located, coupled with an intelligently designed transport system to allow efficient patient and staff movements and workflow.

The “hot floors” zone previously mentioned includes the AED, ICU, OTs and emergency diagnostic facilities. Location and connection to enable smooth and swift workflow is crucial. For instance, if a major accident of multiple casualties occurs, the AED should have enough space to handle the cases with fast diversion to emergency diagnostics within close proximity and also fast track to OTs via designated lifts. After operations, patients can be transported to the ICU, which should be functionally connected to the OTs.

Future pathology services should also be arranged in a zonal manner, where activities are concentrated on several connected floors and smartly linked to satellite units supporting the OTs and ICU.

The design of the cancer centre is influenced by factors such as shielding and bunker requirements, for equipment to meet relevant safety and regulatory standards and would best fit this zonal arrangement.

### ***Site Access***

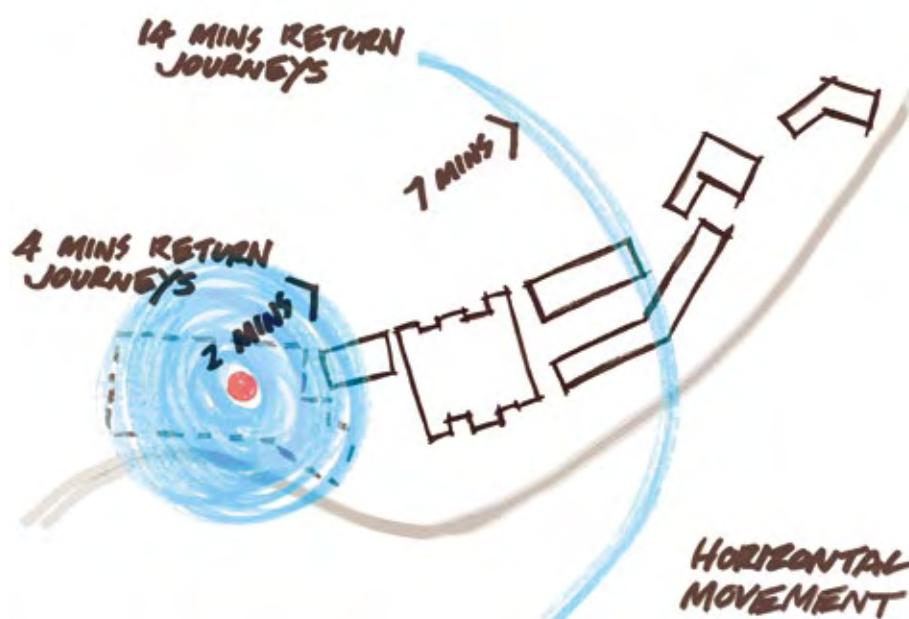
Enhanced vehicular access, particularly for ambulance routes to AED, is important for a major trauma centre like QMH. The current site has a single access road and will benefit from an additional one.

### **Circulation and Vertical Movement**

In order to function effectively, highly connected horizontal and vertical circulation is essential, providing a three-dimensional network of access that is easy to navigate (see **Figure 8**).

The concept of intuitive “way-finding” for orientation and movement is an important component to incorporate into design. The use of space, and in particular open space of an atrium, could support user-friendly navigation for patients, families and carers, staff and other visitors.

**Figure 8** Illustration of circulation and movement



It is likely that the redevelopment of QMH will result in tall buildings. In the future, the use of new lift technologies will be required, such as destination control lifts, continuous-motion lifts and express escalators.



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### ***Storage and Logistics***

Circulation spaces, corridors and lobbies, are often used for parking and storage of furniture, trolleys and equipment because of inefficient logistics to and from the central store. For the QMH redevelopment, every programme and “hot” floor will need a logistics store which is connected to a loading dock and central logistics store.

### ***Dynamic and Flexible Space Use***

Except for specific areas like bunkers and rooms with built-in shielding, space will need to be flexible. An implicit agreement in the CSP is the principle of sharing physical resources among different clinical programmes. This means a notional allocation to clinical programme areas, but with maximum flexibility and generic use wherever possible. Spaces considered as adaptable modules, where they can be readily converted for different uses if required, can cater for additional service requirements in the future. Future functional areas, such as consultation rooms, seminar rooms or ambulatory activity areas will be equipped with plug-in capability for rapid transformation into other service use.

### ***Sustainability***

Hospitals are large public buildings that have significant impact on the environment. They are heavy users of energy and water and produce large amounts of waste. Because hospitals place such demands on community resources they are natural candidates for sustainable design.

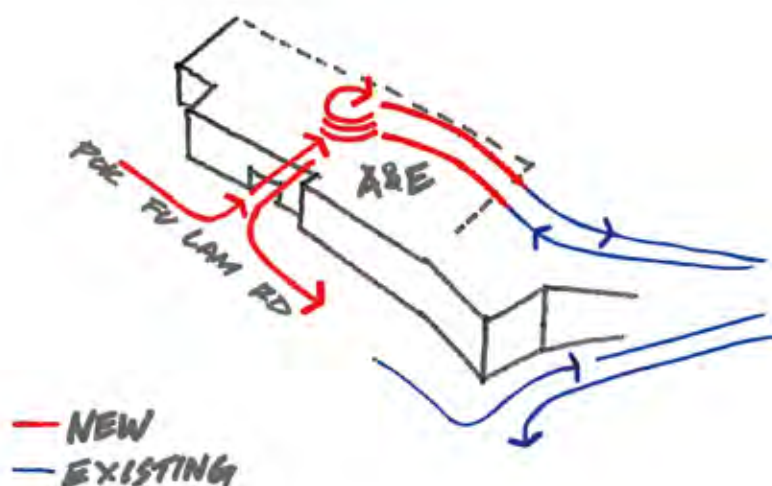
## Concept Design

The concept design for QMH is developed from design studies, building and site investigations and consultations. The design develops an architectural scope and operational order to deliver and sustain the recommendations in this CSP. A major aim is to minimise disruption to services.

The recommendation is construction of a site with large floor plates at the north end of the campus with good circulation distance from the AED and hot floors. This shall allow for the design of a second access point to QMH from Pok Fu Lam Road (see **Figure 9**).

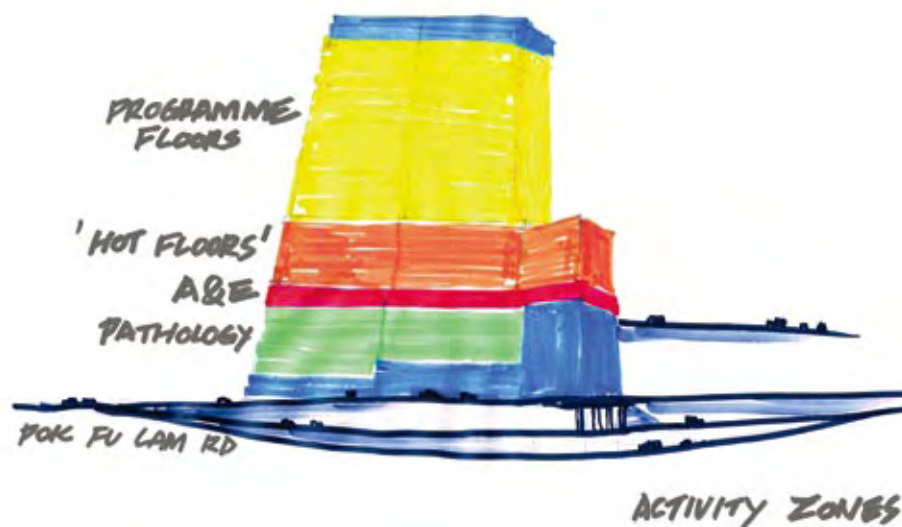
Most of the clinical activities, except for pathology services, can operate as usual while this block is being built.

**Figure 9** Illustration of a second access point to QMH from Pok Fu Lam Road



The future AED shall be on the whole floor at a podium level, with the pathology floors below facing the sea. Other “hot floors” could be positioned immediately above the AED and then the programme floors on top (see **Figure 10**).

**Figure 10** Illustration of zonal arrangements of services



In turn, this organisation can vacate the rest of the buildings, such as the Main Block, Blocks J and L, Professorial Block, New Clinical Building, nurses' quarters and Administration Block. A comprehensive cancer centre can then be considered to be built to also house the function of a future tissue bank and possibly of private wards at the current site of the Main Block. Building an atrium among buildings will facilitate the sense of wholeness, as well as to provide visual and spatial orientation.

This concept plan has provision for further expansion. The heritage Main Block and Nurses' Quarters A are not functional for clinical use. However, new buildings can be built intelligently, while keeping the façade of Nurses' Quarters A and can be reserved for educational use. A hospital lawn and garden is proposed in front and can be contained by the historic Main Block.

The critical aspect is to allow adequate space for future growth and change. Undoubtedly, services will continue to expand and hospital models of care and medical practice will continue to evolve. This plan has allowed enough space in the south end of the campus for future expansion.



## Conclusion

The HKWC CSP sets out a comprehensive clinical strategy for the major future models of care and clinical service directions within the HKWC. These inform the role delineation of hospitals in the cluster to ensure they provide effective integrated care along the patient pathway, through well coordinated services.

With a strong academic culture, the HKWC envisions an integration of service, education and research through the development of an “academic health science network” and brings future endeavours to a higher level.

The HKWC CSP will be an integral part of the guidance for the subsequent planning stages of the QMH redevelopment, to ensure the physical design meets the needs of services and users. In particular, as part of the drive for better integration of clinical services, education and research, the HKWC CSP supports development of QMH towards an academic health science centre – enabling the hospital to enhance its role as a premier teaching hospital.

Through the process of mapping out the future models of care and clinical service directions, staff in the HKWC conceptualise their services as clinical programmes, involving seamless delivery of care by multi-specialty teams along the patient pathway. Enhancement of workflow by re-arrangement and clearer delineation of services among the HKWC hospitals, and incorporation of teaching and research into healthcare delivery are key components. The models proposed, such as critical care (including MAPU, NAW and SAW), peri-operative and ambulatory models, all reflect international best practices and aim towards improving patient care, as well as delivering efficient professional services.



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Leading on from this, the way in which health care services are delivered and the patient experience are inextricably linked with the physical design of facilities. This concept of “function before form” means that facilities are designed to support the activities within them, to best meet the need of users.

The concept design for the redevelopment of QMH is therefore informed by the models of care and future service delivery outlined herein. These include consideration of large floor spaces to accommodate the different services of each clinical programme. Zonal approaches to service delivery, which incorporate intelligent design and spatial arrangements, can improve the patient experience and optimise the efficiency and synergy of services, departments and teams. Such examples described in the CSP include “hot floors” and “ambulatory zones”.

Also, the concept design for the QMH redevelopment shows how education and research may be further embedded into the fabric of the hospital, such that these components become naturally incorporated with service delivery. Finally, the concept design supports the flexible and dynamic use of space and circulation to allow for future developments and advancements in medicine.





## *Way Forward*

Enabling change will require the momentum and enthusiasm built-up during the development of this CSP to continue and grow. Much change can begin now and the management and organisation of services can be leveraged to support these changes.

Despite a golden opportunity to facilitate the changes, the redevelopment of QMH is a long project requiring perseverance and a strong commitment from the management. It is therefore essential to have staff and other stakeholders fully engaged through on-going open communication and information exchange. The HKWC CSP will be most successful and implementable if staff are aligned for the change in culture required, as well as the provision of enablers such as workforce, ICT and financial resources – the importance of which cannot be overstated.

The HKWC CSP will inform the on-going design process and eventually the development of the Master Development Plan for the redevelopment of QMH.

## *Concluding Remarks*

The formulation of this plan reflects the dedication of staff and their unwavering commitment for improving patient care in the cluster. The HKWC CSP acknowledges the rich history of all the hospitals, organisations and their services in the cluster, setting out how integrated care can be further developed to support their roles across the care pathway. Ultimately, it sets the journey for the whole cluster in delivering more people-centred care and professional services.

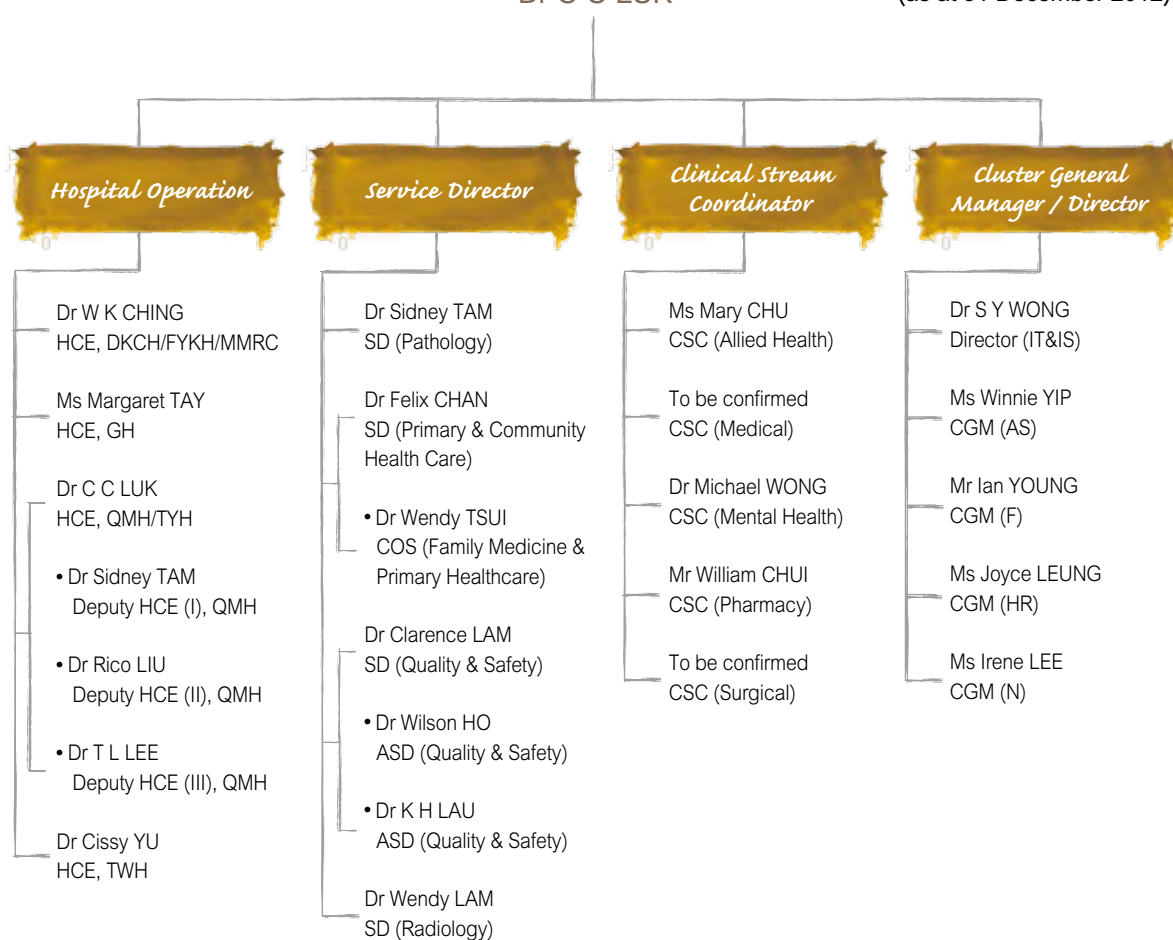
# Appendices

## Appendix 1 Current Organisational Structure

### Hong Kong West Cluster

Cluster Chief Executive  
Dr C C LUK

(as at 31 December 2012)



## *Appendix 2*

### *Summary of Current Services*

#### **Catchment Area**

The main catchment area of the HKWC covers the Central & Western and Southern Districts of Hong Kong Island, with a population slightly over half a million. However, the actual population being served is significantly greater due to cross cluster referrals for tertiary and quaternary clinical services. There are seven hospitals and six satellite healthcare institutions in the cluster. As at 31 December 2012, there were 3,135 hospital beds available in HKWC, including 117 private beds and 293 day beds<sup>25</sup>.

#### **Hospitals and Institutions**

1. **Queen Mary Hospital** – a regional acute hospital and the teaching hospital of the Faculty; also a tertiary and quaternary referral centre for highly specialised clinical services such as liver, heart and lung, and bone marrow transplants and neonatal intensive care.

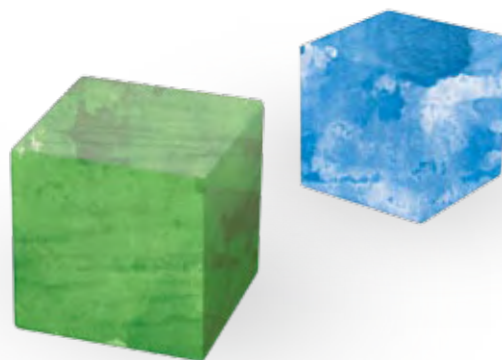
##### *Scope of Services*

- 24-hour Accident and Emergency Service
- Anaesthesiology
- Cardiothoracic Anaesthesiology
- Cardiothoracic Surgery
- Chaplaincy
- Clinical Oncology
- Clinical Psychology
- Dietetics
- Ear, Nose and Throat
- Medicine
- Medical Social Service

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<sup>25</sup> HA Statistics and Workforce Planning Department

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- Microbiology
  - Neurosurgery
  - Obstetrics and Gynaecology
  - Occupational Therapy
  - Ophthalmology
  - Oral Maxillo-facial Surgery and Dental Surgery
  - Orthopaedics and Traumatology
  - Paediatrics and Adolescent Medicine
  - Paediatric Cardiology
  - Pathology and Clinical Biochemistry
  - Pharmacy
  - Physiotherapy
  - Podiatry
  - Prosthetics and Orthotics
  - Psychiatry
  - Radiology
  - Speech Therapy
  - Surgery
  - Volunteer Services



2. **Tung Wah Hospital** – the oldest hospital under the medical division of the Tung Wah Group of Hospitals, providing acute and extended in-patient care as well as ambulatory and day surgery services; rehabilitation day services; tertiary ENT, integrated breast diseases care and renal dialysis services; general and specialist out-patient services; primary care.

### *Scope of Services*

- Anaesthesia
- Audiology
- Chaplaincy
- Clinical Psychology
- Dietetics
- Integrated Western and Chinese Medicine
- Medical Social Service
- Medicine: Cardiology, Renal, Stroke and Neurology Rehabilitation, Gastroenterology, Dermatology, Diabetes, Geriatrics, Palliative Medicine
- Occupational Therapy
- Pathology
- Pharmacy
- Physiotherapy
- Podiatry
- Prosthetics & Orthotics
- Radiology
- Speech Therapy
- Surgery: Breast, ENT (Ear, Nose and Throat), Plastic and Reconstruction, Urology, Hepatobiliary, Endocrine, Colorectal
- Training and research:
  - > Teaching of medical, nursing and allied health students
  - > One of the two surgery examination centres in Hong Kong for examination of final year medical students, specialist college examination and Hong Kong Medical Council Licentiate examination
- Volunteer services

3. **Grantham Hospital** – a major referral centre providing comprehensive medical treatment of adult heart and lung diseases, palliative medicine and acute geriatrics services, with Enrolled Nurse (General) training programmes rendered by its School of General Nursing

*Scope of Services*

- Acute Geriatrics
- Bereavement Counselling
- Cardiac Medicine
- Chaplaincy
- Clinical Physiology (e.g., lung function tests)
- Clinical Psychology
- Dietetics
- Medical Social Service
- Palliative Care
- Pathology (including TB laboratory)
- Pharmacy
- Physiotherapy
- Occupational Therapy
- Ophthalmology (Cataract Centre)
- Speech Therapy
- Tuberculosis and Chest Medicine
- Volunteer Services



- 4. The Duchess of Kent Children's Hospital** – a tertiary specialist hospital specialised in Paediatric Orthopaedics, Spinal Surgery, Developmental Paediatrics, Paediatric Neurology and Neurorehabilitation covering the whole territory of Hong Kong.

*Scope of Services*

- Anaesthesiology
- Audiology
- Chaplaincy
- Child Assessment Service and Children's Habilitation Institute
- Clinical Psychology
- Developmental Paediatrics / Child Neurology / Neurorehabilitation
- Dietetics and Catering
- Medical Laboratory
- Medical Social Service
- Occupational Therapy
- Optometry
- Orthopaedics and Traumatology (Spinal Surgery, Paediatric Orthopaedics and other Orthopaedic Subspecialties) and Centre for Spinal Disorders
- Pharmacy
- Physiotherapy
- Prosthetics & Orthotics
- Radiology
- Speech Therapy
- Volunteer Services

5. **Fung Yiu King Hospital** – the hospital provides geriatric services, rehabilitation and convalescence for medical and orthopaedic patients, and community outreach services through its Community Geriatric Assessment Team.

*Scope of Services*

- Chaplaincy
- Community Nursing Service
- Dietetics and Catering
- Elderly Assessment Clinic
- Geriatrics
- Geriatric Day Hospital
- HKWC Community Geriatric Assessment
- Infirmary
- Medical, Geriatric, and Orthopaedic Rehabilitation
- Medical Social Service
- Medicine
- Occupational Therapy
- Orthopaedics and Traumatology
- Pharmacy
- Physiotherapy
- Podiatry
- Prosthetics & Orthotics
- Radiology
- Speech Therapy
- Volunteer Services

- 6. MacLehose Medical Rehabilitation Centre** – the centre provides comprehensive and intensive rehabilitation programmes for persons with physical disabilities arising from injury or disease. It is also a centre for spinal cord injury rehabilitation for Hong Kong Island.

*Scope of Services*

- Ambulatory Rehabilitation Centre
- Chaplaincy
- Clinical Psychology
- Dietetics and Catering
- Medical, Neurosurgical, and Orthopaedic Rehabilitation
- Medical Social Service
- Occupational Therapy
- Physiotherapy
- Prosthetics and Orthotics
- Radiology
- Speech Therapy
- Volunteer Services



7. **Tsan Yuk Hospital** – primarily a community family health centre with focus on antenatal and postnatal care, general obstetrics out-patient and ambulatory services, also housing the Prenatal Diagnostic Centre.

*Scope of Services*

- Antenatal classes
- Day Centre (relatively simple and largely non-invasive clinical and diagnostic procedures relating to antenatal care are performed)
- Dietetics
- Lady Helen Woo Women's Diagnostic and Treatment Centre (managed by the Department of Obstetrics and Gynaecology of The University of Hong Kong)
- Mrs Wu Chung Prenatal Diagnostic Laboratory
- Offices for the case managers of the Personalised Care Programme and Intensive Care Team of the Department of Psychiatry
- Pharmacy
- Physiotherapy
- Prenatal Diagnostic and Counselling Services
- Specialist Out-patient Clinics:
  - > Antenatal and Postnatal Care

## 8. Seven satellite institutions:

### i. David Trench Rehabilitation Centre - Reprovisioning completed in April 2011 with enhanced service scope:

- > General psychiatric day hospital
- > Psychogeriatric day hospital
- > Psychiatric Out-patient Department
- > Physiotherapy
- > Occupational Therapy
- > Phoenix Clubhouse

### ii. Six General Out-patient Clinics (GOPC):

- > Aberdeen GOPC
- > Ap Lei Chau GOPC
- > Central District Health Centre GOPC
- > Kennedy Town Jockey Club GOPC
- > Sai Ying Pun Jockey Club GOPC
- > Tung Wah Hospital GOPC



## Appendix 3

### Structure and Governance

#### HKWC CSP Project Team

##### Terms of Reference

1. To plan, guide, steer and formulate development of the HKWC CSP.
2. To analyse, scrutinise and advise on the principles, assumptions, models of care, capacity planning and key recommendations proposed in the development of the CSP.
3. To receive the report generated by the external consultants and produce a final CSP for consideration by the Directors' Meeting.

##### Membership

###### Co-Chairs

Dr S V LO	Director (Strategy & Planning), HAHO
Dr C C LUK	Cluster Chief Executive, HKWC / Hospital Chief Executive, QMH & TYH

###### Members

Dr Anthony HO	Chairman of Hospital Governing Committee, QMH & TYH
Prof David WONG	Chief of Service (Ophthalmology), QMH / Chair Professor & Head (Ophthalmology), HKU
Prof Simon LAW	Professor (Surgery), HKU / Honorary Consultant (Surgery), QMH
Dr Albert LIE	Deputy Chief of Service (Medicine) / Consultant (Medicine), QMH / Honorary Clinical Professor of Medicine, HKU
Dr Cissy YU	Hospital Chief Executive, TWH
Ms Margaret TAY	Hospital Chief Executive, GH
Dr W K CHING	Hospital Chief Executive, DKCH, FYKH & MMRC
Dr Sidney TAM	Deputy Hospital Chief Executive I, QMH / Service Director (Pathology), HKWC / Chief of Service (Pathology & Clinical Biochemistry), QMH / Honorary Clinical Professor of Pathology & Medicine, HKU
Dr Deacons YEUNG	Chief Manager (Financial Planning) / Consultant (CSP, QMH Redevelopment), HKWC

Dr Libby LEE	Chief Manager (Strategy, Service Planning & Knowledge Management), HAHO
Dr Kenneth TSANG	Senior Manager (Strategy & Service Planning), HAHO

## HKWC CSP Reference Panel

### Terms of Reference

- To review, comment and provide advice to the Project Team in the development of the HKWC CSP.
- To review and provide expert comment and feedback to the Project Team on the key observations, recommendations and concept design proposed by the external consultancy on the HKWC CSP.

### Membership

#### Convener

Dr S V LO	Director (Strategy & Planning), HAHO
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#### Members

Prof S P LEE	Dean, Faculty of Medicine, HKU
Prof T F FOK	Dean, Faculty of Medicine, Chinese University of Hong Kong
Prof C M LO	Chair Professor (Surgery), HKU
Prof Raymond LIANG	Professor (Medicine), HKU
Dr Hong FUNG	Cluster Chief Executive, New Territories East Cluster / Hospital Chief Executive, Prince of Wales Hospital
Dr C C LUK	Cluster Chief Executive, HKWC / Hospital Chief Executive, QMH & TYH
Dr Libby LEE	Chief Manager (Strategy, Service Planning & Knowledge Management), HAHO



## Appendix 4

### Membership of Work Groups

#### Critical Care

##### Co-Chairs

Dr W M CHAN	Chief of Service (Adult Intensive Care Unit), QMH
Dr S H TSUI	Chief of Service (Accident & Emergency), QMH

##### Members

Prof S C CHAN	Professor (Surgery), HKU / Honorary Consultant (Surgery), QMH
Dr Y E CHEE	Consultant (Anaesthesiology), QMH
Dr Joseph CHIU (PhD)	Department Manager (Physiotherapy), QMH & DTRC
Dr Y M LAM	Associate Consultant (Medicine), QMH
Dr Gilberto LEUNG	Deputy Chief of Service (Neurosurgery), QMH / Clinical Assistant Professor (Surgery), HKU
Dr Frances LUI	Consultant (Anaesthesiology), QMH
Dr S Y WONG	Director (Information Technology & Information Systems), HKWC / Consultant (Medicine), QMH

## Peri-operative Services

### Co-Chairs

Dr Y E CHEE	Consultant (Anaesthesiology), QMH
Prof Simon LAW	Professor (Surgery), HKU / Honorary Consultant (Surgery), QMH

### Members

Dr Timmy AU	Chief of Service (Cardiothoracic Surgery), QMH
Dr Jonathan CHAN	Associate Consultant (Ophthalmology), QMH
Dr Kelvin CHAN	Resident Specialist (Medicine), QMH
Prof S C CHAN	Professor (Surgery), HKU / Honorary Consultant (Surgery), QMH
Dr W M CHAN	Chief of Service (Adult Intensive Care Unit), QMH
Dr Raymond CHEANG	Associate Consultant (Cardiothoracic Anaesthesia), QMH
Dr Winnie CHOI	Assistant Professor (Oral & Maxillofacial Surgery), HKU
Dr H P CHUNG	Chief of Service (Surgery), TWH / Consultant (Surgery), QMH
Dr S R DAS	Chief of Service (Cardiothoracic Anaesthesia), QMH
Prof Michael IRWIN	Chief of Service (Anaesthesiology), QMH / Professor (Anaesthesiology), HKU
Dr Wendy LAM	Service Director (Diagnostic Radiology), HKWC / Chief of Service (Diagnostic Radiology), QMH
Dr Y M LAM	Associate Consultant (Medicine), QMH
Dr Rock LEUNG	Associate Consultant (Haematology), QMH
Mr Barry LO	Ward Manager (Operation Theatre Services), QMH
Dr W M LUI	Chief of Service (Neurosurgery), QMH
Dr F Y NG	Associate Consultant (Orthopaedics & Traumatology), QMH
Dr Wallace NGAI	Associate Consultant (Adult Intensive Care Unit), QMH
Prof John NICHOLLS	Professor (Pathology) / Assistant Dean (Education), HKU
Dr T C PUN	Consultant (Obstetrics & Gynaecology), QMH

Dr Russell SIT	Associate Consultant (Anaesthesiology), QMH
Dr Morris TAI	Associate Consultant (Clinical Biochemistry), QMH
Dr T C TSANG	Senior Medical Officer (Accident & Emergency), QMH
Dr N S TSOI	Consultant (Paediatrics), QMH
Dr Birgitta WONG	Deputy Chief of Service (Ear, Nose & Throat) / Associate Consultant (Ear, Nose and Throat), QMH
Ms Sylvia WONG	Department Operations Manager (Operation Theatre Services), QMH



## Cancer Services

### Co-Chairs

Dr Ava KWONG	Consultant (Surgery), QMH
Dr Rico LIU	Deputy Hospital Chief Executive II / Consultant (Oncology), QMH

### Members

#### Representative from Department of Surgery

Dr Ambrose HO	Associate Consultant (Ear, Nose & Throat), QMH
Ms M K CHAN	Registered Nurse (Surgery), TWH
Ms N F SHUM	Advanced Practice Nurse (Surgery), QMH
Ms Ling WONG	Advanced Practice Nurse (Surgery), TWH

#### Representative from Department of Medicine

Dr Roland LEUNG	Resident Specialist (Medicine), QMH
Dr Thomas YAU	Assistant Professor (Medicine), HKU

#### Representative from Department of Clinical Oncology

Dr M Y LUK	Consultant (Oncology), QMH
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#### Representative from Department of Radiology

Dr K K WONG	Consultant (Diagnostic Radiology), QMH
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#### Representative from Department of Anaesthesia

Dr Y E CHEE	Consultant (Anaesthesiology), QMH
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#### Representative from Department of Pathology

Dr Tony SHEK	Consultant (Anatomical Pathology), QMH
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#### Representative from Department of Family Medicine

Dr Catherine NG	Staff Clinic Associate Consultant i/c (HKWC Family Medicine & Primary Health Care), QMH
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#### Representative from Palliative Medicine Specialty

Dr Michael SHAM	Consultant i/c (Palliative Medical Unit), GH
Dr K Y CHAN	Associate Consultant (Palliative Medical Unit), GH

#### Representative from Allied Health Professionals

Dr Damaris HUNG	Clinical Psychologist (Clinical Psychology), QMH & GH
Ms Ritchie KWOK	Clinical Pharmacist (Pharmacy), QMH

#### Representative from Information Technology

Dr S Y WONG	Director (Information Technology & Information Systems), HKWC / Consultant (Medicine), QMH
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### Neurosciences

#### Co-Chairs

Dr K H CHAN	Clinical Assistant Professor (Medicine), HKU
Dr Raymand LEE	Consultant (Diagnostic Radiology), QMH
Dr Gilberto LEUNG	Deputy Chief of Service (Neurosurgery), QMH / Clinical Assistant Professor (Surgery), HKU

#### Members

Ms Fanny IP	Ward Manager (Medicine), QMH
Dr Leonard LI	Consultant (Medicine), TWH
Dr W M LUI	Chief of Service (Neurosurgery), QMH
Dr Clara POON	Consultant (Anaesthesiology), QMH
Ms Helen WAN	Ward Manager (Surgery), QMH

## Cardiothoracic Services

### Co-Chairs

Dr Timmy AU	Chief of Service (Cardiothoracic Surgery), QMH
Dr Stephen LEE	Consultant (Medicine), QMH / Director of Cluster Invasive Cardiac Intervention Services, HKWC / Honorary Clinical Professor of Medicine, HKU

### Members

Prof Daniel T M CHAN	Chief of Service (Medicine), QMH (2010-2013) / Chief of Nephrology, QMH / Chair Professor (Medicine), HKU
Dr Kelvin CHAN	Resident Specialist (Medicine), QMH
Dr Adolphus CHAU	Chief of Service (Paediatric Cardiology), QMH
Dr S R DAS	Chief of Service (Cardiothoracic Anaesthesia), QMH
Dr Katherine FAN	Chief of Service (Cardiac Medical Unit), GH
Prof Mary IP	Professor (Medicine), HKU
Dr M H JIM	Consultant (Cardiac Medical Unit), GH
Prof Karen LAM	Chair Professor & Head (Medicine), HKU / Director of Diabetes Centre / Honorary Consultant (Medicine), QMH
Dr Wendy LAM	Service Director (Diagnostic Radiology), HKWC / Chief of Service (Diagnostic Radiology), QMH
Dr Y M LAM	Associate Consultant (Medicine), QMH
Dr Libby LEE	Chief Manager (Strategy, Service Planning & Knowledge Management), HAHO
Dr Leonard LI	Consultant (Medicine), TWH
Dr C C LUK	Cluster Chief Executive, HKWC / Hospital Chief Executive, QMH & TYH
Dr Sidney TAM	Deputy Hospital Chief Executive I, QMH / Service Director (Pathology), HKWC / Chief of Service (Pathology & Clinical Biochemistry), QMH / Honorary Clinical Professor of Pathology & Medicine, HKU
Ms Margaret TAY	Hospital Chief Executive, GH

Dr Kenneth TSANG	Senior Manager (Strategy & Service Planning), HAHO
Prof H F TSE	Chair Professor (Medicine), HKU
Dr C F WONG	Chief of Service (Tuberculosis & Chest Medical Unit), GH
Dr P C WONG	Consultant (Tuberculosis & Chest Medical Unit), GH
Dr Gabriel YIP	Associate Consultant (Cardiac Medical Unit), GH

## Children's Services

### Chair

Prof Godfrey CHAN	Chief of Service (Paediatrics), QMH / Professor (Paediatrics), HKU
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### Members

Dr Adolphus CHAU	Chief of Service (Paediatric Cardiology), QMH
Dr Wilson HO	Assistant Service Director (Quality and Safety), HKWC / Senior Medical & Health Officer (Neurosurgery), QMH
Dr Patrick IP	Associate Professor (Paediatrics), HKU
Dr Wendy LAM	Service Director (Diagnostic Radiology), HKWC / Chief of Service (Diagnostic Radiology), QMH
Prof Y L LAU	Chair Professor (Paediatrics) / Associate Dean (Research), HKU
Dr S L LEE	Consultant (Paediatrics), DKCH
Prof Paul TAM	Chair Professor (Surgery), HKU
Dr N S TSOI	Consultant (Paediatrics), QMH
Ms Connie WAN	Department Operations Manager (Paediatrics), QMH
Prof Virginia WONG	Professor (Paediatrics), HKU / Honorary Consultant (Paediatrics), DKCH



## Women's Services

### Chair

Prof Hextan NGAN	Chief of Service (Obstetrics & Gynaecology), QMH
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### Members

Prof Godfrey CHAN	Chief of Service (Paediatrics), QMH / Professor (Paediatrics), HKU
Dr Karen CHAN	Associate Professor (Obstetrics & Gynaecology), HKU
Prof Annie CHEUNG	Professor (Pathology), HKU
Ms Alice CHOI	Department Operations Manager (Obstetrics & Gynaecology), QMH
Dr W S CHOW	Associate Consultant (Medicine), QMH
Ms Susanna HUI	Ward Manager (Obstetrics & Gynaecology), QMH
Dr Anita KAN	Consultant (Obstetrics & Gynaecology), QMH
Dr Ava KWONG	Consultant (Surgery), QMH
Dr Philip KWONG	Consultant (Oncology), QMH
Dr Tina LAM	Consultant (Diagnostic Radiology), QMH & TWH
Dr C P LEE	Consultant (Obstetrics & Gynaecology), QMH
Dr Frances LUI	Consultant (Anaesthesiology), QMH
Ms Money LUI	Medical Social Worker, QMH
Ms Grace MA	Midwife Consultant (Obstetrics & Gynaecology), QMH
Prof Ernest NG	Professor (Obstetrics & Gynaecology), HKU
Dr T C PUN	Consultant (Obstetrics & Gynaecology), QMH
Dr Michael SHAM	Consultant i/c (Palliative Medical Unit), GH
Dr Lina WU (PhD)	Senior Clinical Psychologist (Clinical Psychology), QMH
Prof W YEUNG	Professor (Obstetrics & Gynaecology), HKU

## Elderly Services

### Chair

Dr James LUK	Consultant (Geriatrics), FYKH
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### Members

Dr Felix CHAN	Service Director (Primary & Community Health Care), HKWC / Chief of Service (Medicine), FYKH / Consultant (Medicine), QMH & TWH
Dr T C CHAN	Resident Specialist (Medicine), QMH
Ms M Y CHEUNG	Ward Manager (Acute Geriatrics Unit), GH
Dr Joseph CHIU (PhD)	Department Manager (Physiotherapy), QMH & DTRC
Dr Patrick CHIU	Associate Consultant (Geriatrics), QMH, FYKH & TWH / Associate Consultant (Acute Geriatrics Unit), GH
Mr William CHUI	Clinical Stream Coordinator (Pharmacy), HKWC / Department Manager (Pharmacy), QMH
Ms Celina HO	Department Operations Manager (Integrated Community Service), HKWC
Dr Alfred KWONG	Associate Consultant i/c (Family Medicine & Primary Healthcare, HKWC / Central & West District), Sai Ying Pun Jockey Club GOPC & Family Medicine Specialist Clinic
Ms Vibro LEE	Manager (Patient Resource Centre), HKWC / Medical Social Worker i/c (Medical Social Service), FYKH
Dr K W LIU	Associate Consultant (Medicine), QMH
Dr Winnie MOK	Associate Consultant (Medicine), QMH / Associate Consultant (Geriatrics), FYKH
Ms W C NG	Unit Manager (Community Care Service), HKWC
Dr H K TONG	Consultant (Accident & Emergency), QMH
Ms Kania WAN	Department Manager (Occupational Therapy), MMRC & FYKH
Ms Selina WONG	Department Operations Manager (Nursing), FYKH
Mr W T YU	Ward Manager (Medicine), QMH
Mr Anders YUEN	GM(N), TWH / OSH Coordinator, HKWC

## Mental Health

### Chair

Dr Michael WONG	Clinical Stream Coordinator (Mental Health), HKWC / Chief of Service (Psychiatry), QMH
-----------------	---

### Members

Dr Phyllis CHAN	Consultant (Psychiatry), QMH
Ms June CHAO	Senior Occupational Therapist (Occupational Therapy), QMH
Prof Eric CHEN	Head, Professor (Psychiatry), HKU
Ms Mary CHU	Clinical Stream Coordinator (Allied Health), HKWC / Department Manager (Occupational Therapy), QMH
Dr Eileena CHUI	DTRC Centre Director / Associate Consultant (Psychiatry), QMH
Dr Albert CHUNG	Associate Consultant (Psychiatry), QMH
Dr K F CHUNG	Associate Professor (Psychiatry), HKU
Dr Carmen LAM	Associate Consultant (Psychiatry), QMH
Dr K H LAU	Associate Consultant (Psychiatry), QMH
Dr C W LAW	Associate Consultant (Psychiatry), QMH
Ms Brenda WONG	Department Operations Manager (Psychiatry), QMH
Mr K L WONG	Nurse Consultant (Psychiatry), QMH
Mr Raymond WONG	Senior Occupational Therapist (Occupational Therapy), QMH
Dr Gabriel YU	Consultant (Psychiatry), QMH

## Gastroenterology

### Co-Chairs

Prof W L LAW	Professor (Surgery), HKU / Honorary Consultant (Surgery), QMH
Prof W K LEUNG	Professor (Medicine), HKU / Honorary Consultant (Medicine), QMH

### Members

Dr S Y CHAN	Associate Consultant (Surgery), QMH
Dr Ivan HUNG	Associate Professor (Medicine), HKU
Prof Simon LAW	Professor (Surgery), HKU / Honorary Consultant (Surgery), QMH
Dr Jensen POON	Associate Professor (Surgery), HKU
Dr W K SETO	Clinical Assistant Professor (Medicine), HKU
Dr K H TONG	Associate Consultant (Surgery), QMH
Dr S Y WONG	Director (Information Technology & Information Systems), HKWC / Consultant (Medicine), QMH

## Kidney Diseases

### Co-Chairs

Prof Daniel TM CHAN	Chief of Service (Medicine), QMH (2010-2013) / Chief of Nephrology, QMH / Chair Professor (Medicine), HKU
Dr M K YIU	Consultant (Surgery), QMH

### Members

Ms Frances CHIU	Nurse Consultant (Medicine), QMH
Dr Cindy B Y CHOY	Consultant (Medicine), QMH
Dr K L HO	Consultant (Surgery), QMH
Ms P C HUI	Ward Manager (Medicine), TWH
Ms Helena LEUNG	Ward Manager (Medicine), QMH
Dr W K LO	Consultant (Medicine), TWH
Dr S L LUI	Consultant (Medicine), TWH
Dr Michael SHAM	Consultant i/c (Palliative Medicine Unit), GH
Dr James H L TSU	Associate Consultant (Surgery), QMH
Dr C C WONG	Associate Consultant (Surgery), QMH
Dr Dan ZHU	Practitioner, TWH Chinese Medicine Clinic

## Musculoskeletal and Multi-systemic Diseases

### Co-Chairs

Prof Kenneth CHEUNG	Chief of Service (Orthopaedics & Traumatology), QMH / Jessie Ho Professor in Spine Surgery / Head (Orthopaedics & Traumatology), HKU
Prof C S LAU	Chair & Daniel CK Yu Professor in Rheumatology & Clinical Immunology (Medicine), HKU / Honorary Consultant (Surgery), QMH

### Members

Dr Eric CHAN	Consultant (Immunology), QMH
Dr Joseph CHIU (PhD)	Department Manager (Physiotherapy), QMH & DTRC
Ms Mary CHU	Clinical Stream Coordinator (Allied Health), HKWC / Department Manager (Occupational Therapy), QMH
Dr Carmen HO	Associate Consultant (Medicine), TWH
Ms Gladys KWOK	Advanced Practice Nurse (Medicine), QMH
Dr J C LAWMIN	Consultant (Anaesthesia), DKCH
Dr H B LEUNG	Associate Consultant (Orthopaedics & Traumatology), MMRC
Ms Connie LOONG	Registered Nurse (Medicine), QMH
Dr Joyce WONG	Associate Consultant (Diagnostic Radiology), QMH
Mr Kenneth WONG	Department Manager (Prosthetic & Orthotic), QMH
Dr Y C WOO	Associate Consultant (Medicine), QMH
Dr C H YAN	Clinical Assistant Professor (Orthopaedics & Traumatology), HKU
Dr Catherine YUEN	Associate Consultant (Medicine), QMH

## Liver Transplant Services

### Contributor

Prof S C CHAN	Professor (Surgery), HKU / Honorary Consultant (Surgery), QMH
---------------	--

## Hepatobiliary and Pancreatic Surgery

### Division Chief

Prof Ronnie POON	Chair Professor (Surgery), HKU
------------------	--------------------------------

### Members

Dr Albert CHAN	Assistant Professor (Surgery), HKU
Dr T T CHEUNG	Consultant (Surgery), QMH
Dr S H CHOK	Consultant (Surgery), QMH
Dr W C DAI	Associate Consultant (Surgery), QMH
Prof S T FAN	Chair Professor (Surgery), HKU (former)
Prof C M LO	Chair Professor (Surgery), HKU
Dr Simon TSANG	Associate Consultant (Surgery), QMH
Dr Tiffany WONG	Assistant Professor (Surgery), HKU
Dr W K YUEN	Honorary Consultant (Surgery), TWH & QMH

## Hepatology and Viral Hepatitis Service

### Contributors

Prof M F YUEN	Professor (Medicine), HKU / Honorary Consultant (Medicine), QMH
Dr David BUT	Resident Specialist (Medicine), QMH
Dr W K SETO	Clinical Assistant Professor (Medicine), HKU



## Diabetes Services

### Co-Chairs

Prof Karen LAM	Chair Professor & Head (Medicine), HKU / Director of Diabetes Centre / Honorary Consultant (Medicine), QMH
Dr W S CHOW	Associate Consultant (Medicine), QMH

### Members

Dr Joseph CHIU (PhD)	Department Manager (Physiotherapy), QMH & DTRC
Dr Elaine HUI	Clinical Assistant Professor (Medicine), HKU
Dr W Y IP	Clinical Associate Professor (Orthopaedics & Traumatology), HKU
Mr Terrence KWONG	Prosthetist-Orthotist I (Prosthetic & Orthotic), QMH
Dr C P LEE	Consultant (Obstetrics & Gynaecology), QMH
Ms Elaine LEUNG	Nurse Consultant (Medicine), QMH
Prof Kathryn TAN	Clinical Professor (Medicine), HKU
Dr C W TING	Consultant (Surgery), QMH
Ms Karen WONG	Advanced Practice Nurse (Medicine), QMH
Prof David WONG	Chief of Service (Ophthalmology), QMH / Chair Professor & Head (Ophthalmology), HKU
Dr Y C WOO	Associate Consultant (Medicine), QMH
Mr Michael YAM	Podiatrist I, QMH
Dr C Y YEUNG	Associate Consultant (Medicine), QMH
Ms Emily YEUNG	Department Manager (Dietetics), QMH

## Education and Training

### Co-Chairs

Dr Albert LIE	Deputy Chief of Service (Medicine) / Consultant (Medicine), QMH / Honorary Clinical Professor of Medicine, HKU
Prof David WONG	Chief of Service (Ophthalmology), QMH / Chair Professor & Head (Ophthalmology), HKU

### Members

Dr Philip BEH	Clinical Associate Professor (Pathology), HKU
Prof Godfrey CHAN	Chief of Service (Paediatrics), QMH / Professor (Paediatrics), HKU
Ms Denise CHEUNG	Nursing Student, HKU
Ms Mary CHU	Clinical Stream Coordinator (Allied Health), HKWC / Department Manager (Occupational Therapy), QMH
Mr William CHUI	Clinical Stream Coordinator (Pharmacy), HKWC / Department Manager (Pharmacy), QMH
Dr Gilberto LEUNG	Deputy Chief of Service (Neurosurgery), QMH / Clinical Assistant Professor (Surgery), HKU
Dr Matthew NG	Chief of Service (Medicine), TWH / Consultant (Medicine), QMH / Honorary Clinical Professor of Medicine, HKU
Prof Agnes TIWARI	Professor & Head, School of Nursing, HKU

## Research

### Chair

Prof Y L LAU	Chair Professor (Paediatrics) / Associate Dean (Research), HKU
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### Members

Dr Eric CHAN	Consultant (Immunology), QMH
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Dr Vincent CHENG	Infection Control Officer, HKWC / Consultant (Microbiology), QMH
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Prof C W LAM	Clinical Professor (Pathology), HKU / Honorary Consultant (Clinical Biochemistry), QMH
Prof Karen LAM	Chair Professor & Head (Medicine), HKU / Director of Diabetes Centre / Honorary Consultant (Medicine), QMH
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Prof Irene NG	Chair Professor (Pathology), HKU / Honorary Consultant (Pathology), QMH
Prof Pak SHAM	Chair Professor, (Psychiatry), HKU
Prof K F SO	Chair Professor (Anatomy), HKU
Prof H F TSE	Chair Professor (Medicine), HKU
Prof K Y YUEN	Chief of Service (Microbiology), QMH / Chair Professor (Microbiology), HKU

## Appendix 5

### Abbreviations

<b>A&amp;E</b>	Accident and Emergency
<b>ACE</b>	Acute Care for the Elderly Unit
<b>ALOS</b>	Average Length of Stay
<b>CCN</b>	Community Care Nurse
<b>CCU</b>	Coronary Care Unit
<b>CEP</b>	Centre of Excellence in Paediatrics
<b>CGAT</b>	Community Geriatric Assessment Team
<b>CT</b>	Computed Tomography
<b>CWG</b>	Clinical Work Group
<b>DKCH</b>	The Duchess of Kent Children's Hospital
<b>DOSA</b>	Day of Surgery Admission
<b>DTRC</b>	David Trench Rehabilitation Centre
<b>ECG</b>	Electrocardiography
<b>ECMO</b>	Extracorporeal Membrane Oxygenation
<b>EMW</b>	Emergency Medicine Ward
<b>EOL</b>	End-of-life
<b>EP</b>	Eligible person
<b>FYKH</b>	Fung Yiu King Hospital
<b>GDH</b>	Geriatric Day Hospital
<b>GH</b>	Grantham Hospital
<b>GMP</b>	Good Manufacturing Practice
<b>GOPC</b>	General Out-patient Clinic
<b>HA</b>	Hospital Authority
<b>HDU</b>	High Dependency Unit
<b>HKU</b>	University of Hong Kong
<b>HKWC</b>	Hong Kong West Cluster
<b>IC<sub>2</sub></b>	Integrated Clinical Investigation Centre
<b>ICT</b>	Information and Communications Technology

<b>ICU</b>	Intensive Care Unit
<b>LDLT</b>	Living Donor Liver Transplantation
<b>LOS</b>	Length of Stay
<b>MAPU</b>	Medical Assessment and Planning Unit
<b>MMRC</b>	MacLehose Medical Rehabilitation Centre
<b>MRI</b>	Magnetic Resonance Imaging
<b>NAW</b>	Neuroscience Admission Ward
<b>NICU</b>	Neonatal Intensive Care Unit
<b>NGO</b>	Non-governmental Organisation
<b>OAH</b>	Old Age Home
<b>OT</b>	Operating Theatre
<b>PACU</b>	Post-anaesthetic Care Unit
<b>PHCC</b>	Personalised Health Care Centre
<b>QMH</b>	Queen Mary Hospital
<b>RCHE</b>	Residential Care Home for the Elderly
<b>SAW</b>	Surgical Admission Ward
<b>SCBU</b>	Special Care Baby Unit
<b>SKL</b>	State Key Laboratory
<b>STEMI</b>	ST-elevation Myocardial Infarction
<b>SWG</b>	Special Work Group
<b>TCM</b>	Traditional Chinese Medicine
<b>TSSU</b>	Theatre Sterile Supply Unit
<b>TWH</b>	Tung Wah Hospital
<b>TYH</b>	Tsan Yuk Hospital



Published by:  
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