醫院管理局
HOSPITAL AUTHORITY

# STRATEGIC PLAN 2022 - 2027

# TOWARDS SUSTAINABLE HEALTHCARE

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# Executive SUMMARY

The Hospital Authority (HA) Strategic Plan 2022-2027 is the overarching document for guiding all aspects of HA's planning and development in the coming five years. It sets out the corporate-wide directions and strategies for the organisation to pursue, and provides the basis on which our clinicians and executives develop and align their programme initiatives in the annual planning process.

Many of the strategies build upon and dovetail with the key directions laid out by the HA Task Group on Sustainability, as part of a unified approach to tackling the major sustainability issues facing HA and moving the organisation towards fulfilling its vision and mission.

## PLANNING PROCESS

Formulation of the Strategic Plan is led by the HA Board and has been devised with reference to the directions put forward by the Task Group on Sustainability. The process has included in-depth analysis of HA's internal and external environment, and comprehensive consultation with major stakeholders involving around 850 participants.

From the process, four strategic goals and a corresponding set of strategies have been crystallised to map out the priority areas for us to work towards sustainable healthcare.





## STRATEGIC GOALS

Along with increasing service supply, the strategic goals reflect our aspiration to enhance sustainability by changing our service models towards the provision of "Smart Care", which will be implemented with the support and commitment of a "Smart Workforce", and with "Smart Hospitals" as a key enabler. The strategic goals are as follows:

- Provide Smart Care – Adopting new service models and technology to improve health outcomes and reduce the need of our patients for hospital care.
- Develop Smart Hospitals – Using Information Technology (IT), digital technology and Artificial Intelligence (AI) infrastructure to enable Smart Care and enhance operational efficiency.
- Nurture Smart Workforce – Nurturing a robust and flexible talent pool with the skills and knowledge for providing Smart Care.
- Enhance Service Supply – Expanding and modernising healthcare facilities as well as ensuring financial sustainability to meet escalating service needs.

## STRATEGIES FOR PROVIDING SMART CARE

- Leverage on big data and advanced technology to improve health outcomes by adopting data-driven care to predict or stratify health risks of patients so that targeted treatment and personalised care could be provided, and by building up telemedicine and telecare as an adjunct to existing services so that our service delivery is no longer bound by the traditional hospital or clinic setting and can be provided in the community or at home.

- Re-orientate service models to reduce the reliance on inpatient care by promoting ambulatory care and community-based care to cut down on unnecessary hospital stay and facilitate patients' return to the community, and by empowering patients in taking care of their own health.

- Explore care options for high demand services to better manage the workload pressure by implementing alternative options for specialist outpatient service to address the waiting time issue and developing different Public-Private Partnership (PPP) options to share out the demand.

## STRATEGIES FOR DEVELOPING SMART HOSPITALS

- Enable smart care provision by providing AI support for data-driven care; developing technology-enabled healthcare facilities like smart ward, smart clinic and smart pharmacy; and rolling out "Mobile Patient" initiatives that include telecare support and mobile Apps for patient empowerment in the community.

- Enable smart hospital support and management by using IT tools / solutions and robotics to automate supporting services like cleaning and security patrol, and establishing IT platforms to facilitate operational efficiency through the collation of real-time information about different aspects of service.

## STRATEGIES FOR NURTURING SMART WORKFORCE

- Attract and retain staff to ensure adequate manpower by conducting long-term manpower planning of healthcare staff; enhancing staff recruitment and employment; fostering staff career prospects; strengthening staff relations, management and recognition to create a cordial working environment; and driving a digital workplace to reduce manual processes and paperwork and improve convenience for staff.

- Enhance training and development to ensure competent manpower by reinforcing staff training programmes and facilitating staff to attend training with augmented training relief.





## STRATEGIES FOR ENHANCING SERVICE SUPPLY

- Increase healthcare capacity by implementing the two Ten-year Hospital Development Plans to modernise the facilities and build capacity for meeting future service needs, and by expanding the service capacity of existing healthcare facilities to bolster their capability in meeting imminent demand.

- Ensure financial sustainability by working out a viable funding arrangement with the Government, and enhancing the development and use of costing information to identify ways for optimising service efficiency.

## IMPLEMENTATION AND MONITORING

Overall, change management will be essential for the strategies to be implemented successfully. In particular, mindset change among staff will be required under the leadership of top management to take forward the Smart Care strategies, especially the change in service model and practice.

In general, strategies and key initiatives that require the addition or redistribution of resources will be implemented through the annual planning process. In this regard, the five Annual Plans covering the period 2022-23 to 2026-27 will be the specific action plans for implementing the Strategic Plan.

Monitoring of the implementation of the Strategic Plan will be overseen by the HA Board and its relevant committees. A progress report will be submitted to the HA Board on a biennial basis on the implementation.

# Foreword by CHAIRMAN

Over the past three decades, the Hospital Authority (HA) has held steadfast to the commitment of providing affordable and high quality healthcare services to the people of Hong Kong. The linchpin role we play in taking care of the healthcare needs of the community is exemplified amid the unprecedented COVID-19 pandemic, during which our dedicated and highly professional staff have been at the forefront of the battle against the virus and in safeguarding the community's health.

In a way we are a victim of our own success. Essentially serving as a healthcare safety net for everyone, we are inundated with an ever-growing demand for our services. When overcrowded hospitals and immensely long waiting time become a norm, there are ongoing concerns that our operation would not be sustainable in the long run. Hence, the Task Group on Sustainability formed under the HA Board has studied the matter and worked out forward-looking recommendations to tackle the issues, constituting part of the strategic planning process to develop a sustainable future for HA.

Through an extensive consultation exercise, Strategic Plan 2022-2027 has elaborated on and expounded the Task Group's recommendations in an overarching framework of concrete strategies and priorities for the whole organisation to put into action in the coming five years. I wish to express my sincere gratitude to our frontline staff, patient representatives, members of consultative committees and hospital governing committees as well as my fellow Board members for giving their invaluable time and inputs in drawing up the plan.

As we celebrate the landmark of HA's 30th Anniversary and looking ahead, I have every confidence the combined efforts and determination of everyone in the HA family will turn this visionary Strategic Plan into reality. Together with the Government's staunch support, we will meet the healthcare challenges and move towards a sustainable future in serving the people of Hong Kong in the coming years and beyond.

Henry FAN Hung-ling
Chairman

# Introduction by CHIEF EXECUTIVE



I am delighted to present the new Strategic Plan 2022-2027, "Towards Sustainable Healthcare", which sets out the corporate-wide strategies and priorities HA will pursue over the next five years to address the major issues we face.

Over the years through strong support from the Government, we have significantly increased our capacity and rolled out an array of service developments to provide high quality healthcare to the people of Hong Kong. Yet we continue to face the profound challenge of a rising tide of demand, not least from demographic change and the increasing burden of chronic diseases. The sustainability of our service is at stake due to the persistent imbalance of ever-increasing service demand outstripping service supply. A fundamental rethink of the way we deliver healthcare is needed to improve our capability and preparedness in meeting the challenges going forward.

Based on the directions laid out by the HA Board's Task Group on Sustainability, "Towards Sustainable Healthcare" reinvents our service models towards the provision of "Smart Care" to keep people healthy in the community and reduce their need for hospitalisation. Core to this is leveraging on advanced technology and the vast wealth of data at our disposal to provide our patients with proactive and personalised care and to empower them in taking care of their own health.

Overall, the transformation to "Smart Care" hinges on the development of "Smart Hospitals" for the necessary support in terms of information technology and digital innovations, and also calls for the commitment of our staff to be equipped with the appropriate skills and mindset for delivering innovative, effective and efficient healthcare services.

I wish to express my sincere thanks to Members of the HA Board for their guidance and support, and my heartfelt appreciation to all the stakeholders who have contributed to development of the plan. I look forward to working with my fellow colleagues to implement the strategies and move towards a sustainable healthcare service that helps people to stay healthy.

Tony KO Pat-sing
Chief Executive

# OUR PLANNING CONTEXT

HA is a statutory body responsible for managing all public hospitals and providing public healthcare services in Hong Kong, and is accountable to the Hong Kong Special Administrative Region (HKSAR) Government through the Secretary for Food and Health.

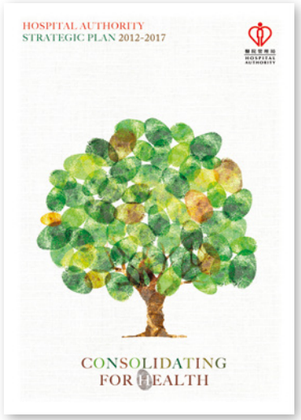
Since our establishment over 30 years ago, we have provided services in accordance with the Government's policy that "no person should be prevented, through lack of means, from obtaining adequate medical treatment", as stated in the HA Ordinance. To achieve this, we ensure that all members of the community have access to comprehensive and affordable preventative, curative and rehabilitation healthcare services through our networks of hospitals, specialist outpatient clinics (SOPCs), general outpatient clinics (GOPCs), and community and outreach services.

HA is supported by a workforce of over 87 000 staff (full time equivalents) and manages 43 public hospitals / institutions, 49 SOPCs and 73 GOPCs as at 31 December 2020. These facilities are organised into seven Clusters according to geographical location, which together serve all of Hong Kong.

## STRATEGIC PLANNING

Since 2009, we have formulated Strategic Plans to serve as the overarching framework to guide service planning and development throughout HA. The Strategic Plans outline the corporate directions and strategies for the organisation to pursue in order to address key challenges and healthcare needs, and provide the basis upon which our clinicians and executives align their priorities and efforts towards achieving HA's vision and mission.

This is the fourth Strategic Plan of HA. It builds upon the successes of our previous plans in strengthening our services and workforce to meet the public healthcare needs of our local communities. As the overarching roadmaps for planning and development, our Strategic Plans have prospectively guided our annual planning process and submission of Resource Allocation Exercise (RAE) bids to the Government over the years.



Correspondingly, progress has been made across all the strategies set out in the Strategic Plans, as reflected by the programmes and initiatives outlined in the respective Annual Plans for implementing the strategies and translating them into actions. For instance, to optimise demand management, our capacity has increased significantly over the last five years, which includes adding around 2 050 hospital beds. Time-critical care for life-threatening conditions, such as heart disease and stroke, has also been enhanced with the roll-out of 24-hour primary percutaneous coronary intervention (PPCI) and intravenous thrombolysis service respectively, along with the implementation of extended-hour intra-arterial thrombectomy service. Moreover, a myriad of initiatives has been put in place to improve service quality, particularly for elderly patients, which includes providing geriatric support at Accident and Emergency (A&E) departments, ortho-geriatric collaborative care for those with fragility fractures, and medical-social collaboration to support discharged elderly patients. In terms of developing our workforce, in the last five years we have added around 8 360 doctors, nurses and allied health professionals. A Locum Office has been set up, and retiring experienced healthcare staff are retained through the Special Retired and Rehire Scheme.

Overall, the new Strategic Plan builds on the progress achieved through our previous Plans by laying out a renewed set of corporate-wide strategies and directions, having regard to the current service gaps, major sustainability challenges and priority areas for improvement.





## CORONAVIRUS DISEASE 2019 (COVID-19)

Our service development is nevertheless impacted by the COVID-19 pandemic, and the daunting challenges it poses have tested the strength of the organisation and our people on numerous fronts. Being the major provider of public healthcare services, we are at the forefront of the Government's response in combating the virus under evolving situations and numerous waves of outbreaks. During the peak of the epidemic, our non-emergency and non-essential services were reduced significantly, and suitable patients diverted to private hospitals for treatment through various Public-Private Partnership (PPP) initiatives so as to focus our attention on handling COVID-19 cases and escalating infection control.

The Government's provision of over $8 billion for HA to combat COVID-19 has buttressed our efforts in fighting the epidemic, particularly in boosting our frontline manpower, shoring up personal protective equipment (PPE) supply, enhancing laboratory testing capabilities, and upscaling infection control facilities such as transforming some of the general wards into isolation wards with negative pressure. Meanwhile, we are conducting COVID-19 tests for the community in support of the Government's laboratory surveillance scheme, and helping to implement the Government's COVID-19 vaccination programme.

To better manage the confirmed cases, a community treatment facility was set up at the AsiaWorld-Expo in mid-2020 to admit patients with relatively stable conditions so that the isolation beds at hospitals could be made available to take care of more severe patients. This was later superseded by the North Lantau Hospital Hong Kong Infection Control Centre (HKICC), a temporary hospital with 816 isolation beds that took only four months to construct using Modular Integrated Construction (MiC) technology with the support of both the Central Government and HKSAR Government. Put into operation in February 2021, HKICC is a huge boost to our capacity with its six independent blocks of ward buildings, all of which equipped with hospital-grade isolation facilities along with the capability to provide intravenous medication and oxygen therapy.

The whole world is still under the grip of the COVID-19 pandemic at the time of formulation of the new Strategic Plan, and it will continue to have an enduring impact on our services in the years to come. We remain vigilant and continue to hone our preparedness for dealing with sporadic spikes as well as other outbreaks of novel infectious diseases. We are also taking steps to deal with the backlog in demand when our services resume under the new normal in time to come, as a result of service reduction during the height of the epidemic.

## HA PRIORITY AREAS

To maximise health gain within allocated resources, our service planning is underpinned by the need for us to prioritise our services. This is guided by the Government's direction, set forth by the Secretary for Food and Health in the report "Building a Healthy Tomorrow" in 2005, which identified the following four priority areas for HA to focus on:

- Acute and emergency care
- Services for the low income group and the underprivileged
- Illnesses that entail high cost, advanced technology and multidisciplinary professional team work in their treatment
- Training of healthcare professionals

It is estimated that in 2021-22 we provided:

- **30174** hospital beds
- **1.96** million inpatient and day inpatient discharge episodes[1]
- **2.20** million Accident and Emergency attendances
- **8.09** million Specialist Outpatient (clinical) attendances
- **3.04** million Allied Health (outpatient) attendances
- **6.58** million primary care attendances
- **2.16** million community outreach visits

[1] Refers to discharges and deaths. This applies to all "discharge episodes".

## GOVERNMENT HEALTHCARE POLICY

Our planning also makes reference to the Government's healthcare policy. This includes the healthcare reform directions of enhancing primary care to reinforce its gatekeeping role in the health system, promoting PPP to address imbalance in the patient loads of the public and private sectors in terms of hospital services, and developing the electronic health record (eHR).

Other areas relevant to HA include the Government's development of District Health Centres (DHCs), promotion of big data analytics, development of telehealth, establishment of Hong Kong Genome Project, and promulgation of Hong Kong Cancer Strategy.

## HA TASK GROUP ON SUSTAINABILITY

In addition, our new Strategic Plan has taken into account the key directions of the Task Group on Sustainability. Against the backdrop of concerns that the organisation would not be sustainable in the long run against ever-growing demand, the Task Group was established by the HA Board in December 2019 to examine the major sustainability challenges facing HA and to formulate strategic directions for coping with the challenges, with a view to facilitating medium and longer-term planning. The Task Group, chaired by the HA Chairman, has looked into the following key areas in consideration of their urgency and impact:

- Hardware and software development
- Development of smart hospitals
- Staff retention and human capital strategies
- Waiting time management of SOPC
- PPP development

Sub-groups have also been formed on some of the above key areas to facilitate detailed discussion. The major directions and recommendations put forward by the Task Group and its Sub-groups in relation to these subject matters have guided the deliberation process in the formulation of the new Strategic Plan.

## VISION, MISSION AND VALUES

Overall, the Strategic Plan is grounded in our Vision, Mission and Values (VMV) which guide the planning, development and delivery of our services.

### Vision

*Healthy People, Happy Staff, Trusted by the Community*

### Mission

*Helping People Stay Healthy*

### Values

*People-centred Care*

To provide service with a caring heart, even when we are busy or a patient is demanding, remembering that a good two-way communication is indispensable for understanding and meeting a patient's needs.

*Professional Service*

To increase our knowledge continuously by staying abreast of the latest developments in our profession, taking action to improve our skills, accepting responsibility for the things we do, and having the courage to learn from our mistakes. This is what we aspire to in our work, both as an organisation and as individuals working in it.

*Committed Staff*

To work wholeheartedly, think positively, and take the initiative to go the extra mile in order to serve our patients better.

*Teamwork*

To join hands and work together to achieve the best outcomes. To do this, we must foster positive relationships, and adopt a spirit of openness, mutual respect, and acceptance of different ideas. These factors will allow each of our team members to make his or her unique contribution to our collective success.

# PLANNING PROCESS



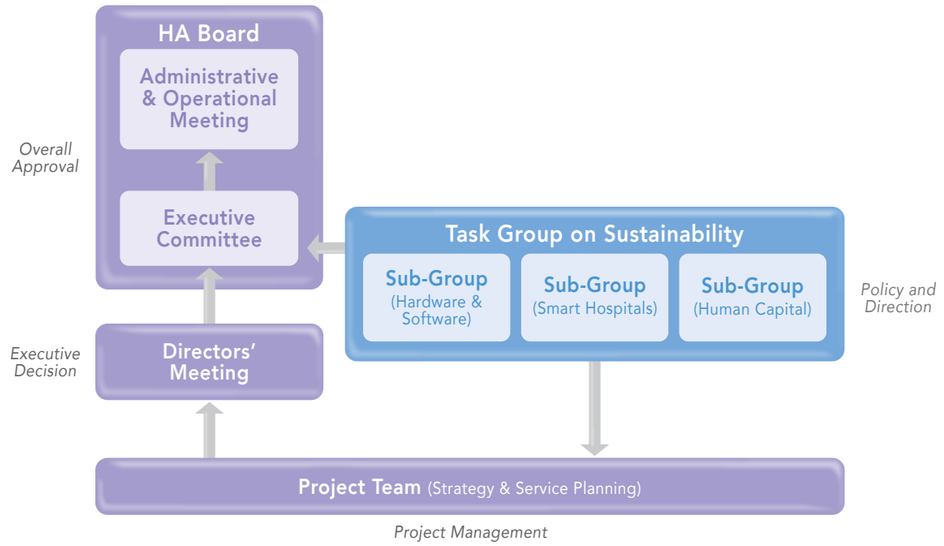
The strategic planning process is broadly participative, with inputs from a wide range of stakeholders. Extensive consultation and discussion were conducted to solicit stakeholders' views on the sustainability issues of HA and the strategies to address them.

## PROJECT GOVERNANCE

The formulation of the Strategic Plan was led and directed by the HA Board, which is the ultimate authority for confirming and approving the strategies and directions of the Plan. Executive decision, on the other hand, was provided through the Directors' Meeting.

A project team was formed under the Strategy and Planning Division of HA Head Office to manage the project and carry out the formulation process. The project team took into account the directions deliberated by the Task Group on Sustainability and its various Sub-groups in consolidating proposed strategies for the Strategic Plan.

The proposed strategies were subsequently presented to the Executive Committee and the Administrative and Operational Meeting of the HA Board for approval after endorsement had been sought from the Directors' Meeting. The overall governance of the project is illustrated in the diagram below.



## FORMULATION PROCESS

Overall, the process of strategy formulation involved a multi-pronged approach that comprised the following components:

- Environmental scanning and situation analysis of HA's internal and external context to examine the priority issues and key challenges.
- Review of the previous HA Strategic Plan 2017-2022 to take stock of the progress and map out prevailing issues and gaps.
- Alignment with the directions laid out by the Task Group and its Sub-groups.
- Consultation exercise with key stakeholders to discuss the Task Group's major directions as well as other issues of concern to them.

A key event in the formulation process was the Board Workshop held in October 2020, at which Board Members discussed the recommendations put forward by the Task Group and its Sub-groups with regard to the sustainability issues of HA. The deliberation substantiated the major directions of the Task Group, which formed the basis for the consultation exercise.

## CONSULTATION EXERCISE

The consultation exercise with key stakeholders took place from November 2020 to April 2021 and included around 850 participants from the following groups listed in chronological order:

- Coordinating Committees (COCs) and Central Committees (CCs) – five consultation meetings were organised in November 2020 with around 120 doctors, nurses, pharmacists and allied health professionals representing 40 COCs / CCs.
- Hospital Governing Committees (HGCs) – briefing was made to Council of HGC Chairmen in November 2020. Views and inputs were also collected from HGC Members via Cluster Chief Executives / Hospital Chief Executives between February and April 2021.
- Senior Executives – presentations were made to the senior executives in January and February 2021, involving Cluster Chief Executives, Hospital Chief Executives, Head Office Directors, Heads and Chief Managers.
- Staff Group Consultative Committees – meetings were held with all the staff groups, including those for doctors, nurses, allied health professionals, supporting staff, and administrative, supervisory and clerical staff between February and March 2021.
- Patient Advisory Committee – discussion with the patient representatives was conducted in March 2021.

The strategic framework and key strategies crystallised from the formulation process and consultation exercise were presented to the Executive Committee of the HA Board for endorsement in May 2021 to facilitate writing of the Strategic Plan. Afterwards, the full write-up of the draft Strategic Plan was circulated in June 2021 to all the stakeholders who have participated in the consultation exercise for comment, and the feedback received was taken into due consideration for refining the draft. The finalised Strategic Plan was then submitted to the HA Board for approval in December 2021 before publication.

# OUR KEY CHALLENGES



As the major public healthcare provider in Hong Kong, HA is at the forefront of safeguarding the health of the population, providing a safety net for all citizens. The organisation plays a linchpin role and shoulders great responsibility in meeting the healthcare needs of the community amidst escalating service demand and unprecedented challenges like the COVID-19 pandemic.

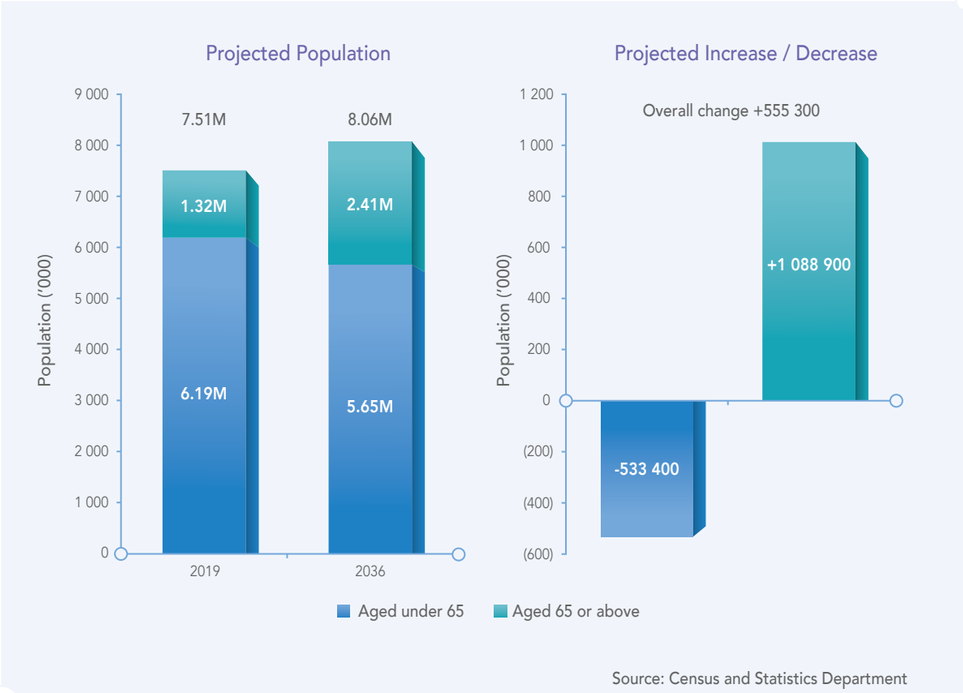
Like many healthcare organisations around the world, HA is facing an existential crisis in the midst of escalating service demand from a growing and ageing population along with the rising prevalence of chronic diseases, while at the same time experiencing resource constraints in essential areas like manpower, physical space and funding which deeply affect the service supply. The traditional hospital-centric model of care is also not conducive to meeting the rising tide of demand and in some cases may even induce further demand. All in all, the imbalance situation of service demand outstripping the service supply is posing major sustainability issues for HA.

## ISSUES RELATING TO SERVICE DEMAND

### Growing and Ageing Population

Hong Kong's population is undergoing significant demographic shift as the number of elderly people continue to grow at a rapid pace. The latest projections by the Census and Statistics Department show that the overall population will increase by around 7% from 7.51 million in 2019 to 8.06 million in 2036, which is mainly attributable to the growth in the elderly population aged 65 years or above while the non-elderly population shrinks in number (Figure 1). The elderly population will rise from 1.32 million to 2.41 million, equating to an increase of 82%, and their percentage in the population will grow from 18% to 30%.

Figure 1. Demographic Change, Year 2019 to 2036




Source: Census and Statistics Department

The growing elderly population is placing significant pressure on the healthcare system. Elderly people generally require more healthcare, especially highly subsidised public healthcare services, and their illnesses are often more complex to manage. Hence the elderly are major consumers of our services. For example:

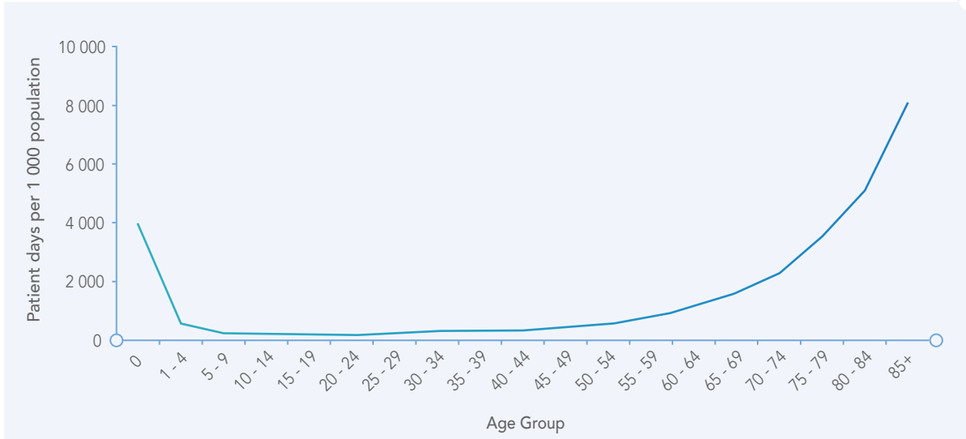
- The utilisation rate of our hospital service (in terms of patient days[2] per 1 000 population) rises exponentially for people aged 65 years and above as illustrated in Figure 2.

- The bed utilisation rates in 2019 of elderly people aged 65-79 and above 80 years old were almost five times and 14 times that of people below 65 years of age respectively. Specifically, the utilisation of acute and extended care beds per 1 000 population was 1.6 beds for non-elderly people, 7.1 beds for elderly people aged 65-79, and 21.1 beds for those above 80 years of age.

- Although elderly people aged 65 years and above made up 18% of the population in 2019, they accounted for around half of all patient days and A&E admissions, and over one-third of our GOPC and SOPC attendances.

- The share of our total cost of service for elderly people aged 65 years and above has risen from 46.9% in 2015-16 to 49.9% in 2019-20.

Figure 2. Per Capita Hospital Utilisation Rate by Age Group in 2019



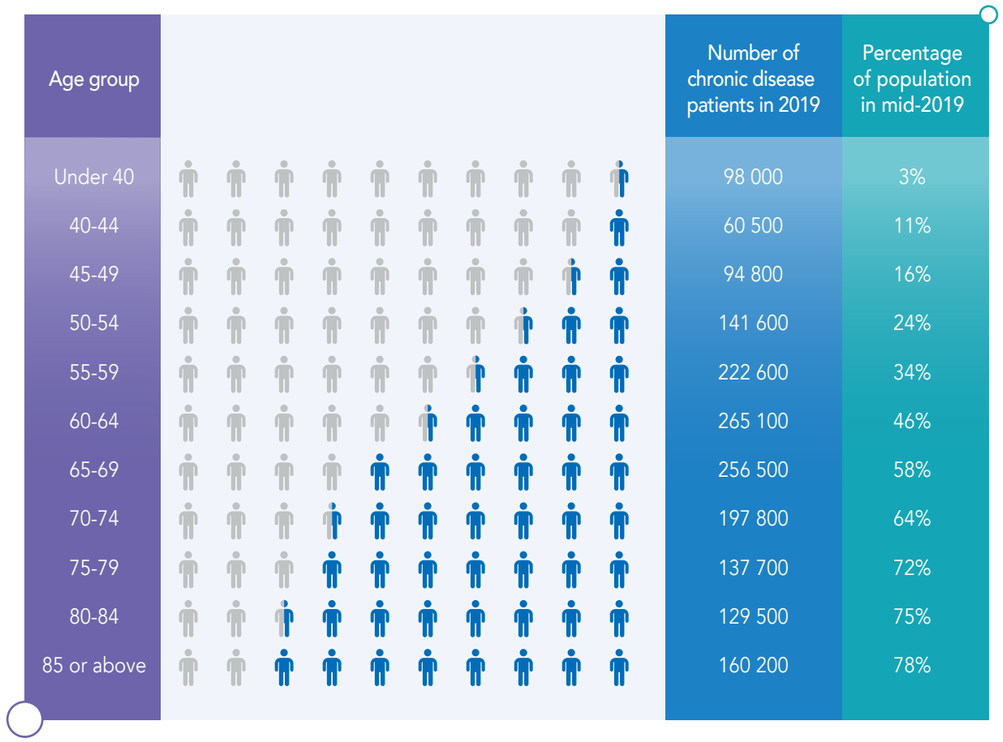

Notes: Per capita hospital utilisation rate refers to patient days per 1 000 population for acute and extended care. For age 0, the patient days are per 1 000 registered births.

[2] Patient days include inpatient bed days and day inpatient discharge episodes. This applies to all "patient days".

## Escalating Burden of Chronic Diseases

Alongside population ageing is a rising occurrence of chronic illnesses like diabetes, hypertension, heart disease and cancer, not only for the elderly population but also middle-age people. It is estimated that of the more than 1.76 million patients treated for at least one of the 25 pre-defined chronic diseases[3] in HA hospitals in 2019, around 95 000 were aged 45-49. Figure 3 illustrates the proportion of chronic disease patients in the population by age group in 2019. It shows that 16% of the population aged 45-49 suffer from chronic diseases. By the age of 65, more than half are chronic disease patients, and the proportion increases to 78% for those 85 years and above. It is further estimated that around 15% of elderly people aged 65 and above suffer from the trio health conditions of hypertension, hyperlipidemia and hyperglycaemia, which can lead to major health problems and complications.

Figure 3. Proportion of Chronic Disease Patients in the Population by Age Group in 2019




There appears to be a disproportionately higher increase in chronic diseases among middle-age people compared to the elderly. For instance, between 2010 and 2019, the number of chronic disease patients aged 40-64 increased by 4.1% per year on average while the population of this age group grew by only 0.8%. Although elderly chronic disease patients aged 65 years and above increased at a slightly higher rate of 5.0% per year, the growth rate of this age group of population was 4.1%.

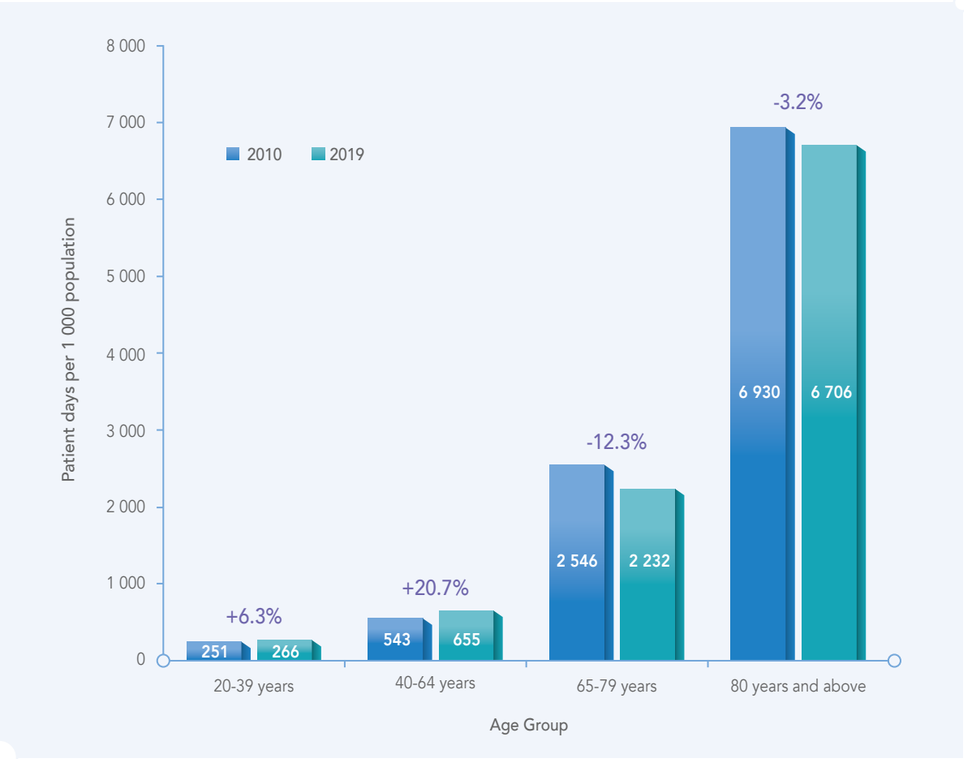
Overall, it is projected that the number of patients with chronic diseases will increase by 50% in 20 years' time, from around 2 million in 2019 to 3 million in 2039. The high and rising number of chronic disease patients poses a significant challenge to HA in terms of service volume and resources. To illustrate, the per capita hospital utilisation rate[4] for our chronic disease patients was three times that of the general population in 2019, and their healthcare costs are generally higher than those of overall HA patients.

The disproportionate increase in middle-age chronic disease patients is a case for concern because it means more patients are living with long-term illnesses for a longer period of time, but there are significant gaps in our current healthcare and social care services in catering to their needs. Our focus all along has been on addressing the service pressure posed by elderly patients, which is met with some success as reflected in the reduction of per capita hospital utilisation rate by 12.3% for patients aged 65-79 between 2010 and 2019, as illustrated in Figure 4. In contrast, during the same period there was a sharp increase of 20.7% in the per capita hospital utilisation rate for patients aged 40-64, partly due to inadequate step-down care, post-discharge and community support services for non-elderly patients.

[3] Refers to 25 common chronic diseases: diabetes mellitus, hypertension, hyperlipidemia, coronary heart disease, stroke, chronic obstructive pulmonary disease, chronic heart failure, chronic kidney disease (stage 3A-5), glaucoma, osteoporosis (approximated by hip fracture), hepatitis B, depression, dementia, Parkinsonism, and cancers of the colorectal region, breast, lung, liver, prostate, cervix, corpus, ovary, nasopharynx, stomach, and Non-Hodgkin lymphoma.

[4] Per capita hospital utilisation rate refers to patient days per 1 000 population for acute and extended care.

Figure 4. Change in Per Capita Hospital Utilisation Rate by Age Group between 2010 and 2019




## Service Induced Demand

On top of demographic change and the proliferation of chronic diseases, particularly among middle-age individuals, the way in which some of our services are coordinated and delivered may also be contributing to service pressure. Specific examples include internal referrals forming the majority of specialist outpatient cases and the heavy reliance on inpatient care, which are elaborated below.

### *Internal Referrals in Specialist Outpatient Cases*

Specialist outpatient clinics are among the greatest pressure areas in HA. Our waiting time issue for new case bookings has been an ongoing concern of patients and the public for many years, although cases triaged as urgent are generally attended to in a timely manner.





While shortage in doctor manpower and space constraints are important limiting factors for SOPCs in managing the mounting demand, the problem may also lie with the service model and clinical practice. For example, it is observed that internal referrals account for the majority of new case bookings. In 2019-20, over 70% of the referrals for all specialties were from hospitals and clinics within HA, often from other SOPCs in the same hospitals. At the same time, among the 7.6 million SOPC attendances, only around 10% are new cases, meaning that most of the appointments are taken up by follow-up or old cases, which may also explain the long waiting time for new cases. Furthermore, many clinicians have heavy inpatient workloads which limit their capacity to see patients in the SOPCs if there is no designated or protected time to do so.

### *Heavy Reliance on Inpatient Care*

Overall, our service is heavily skewed towards inpatient care. In 2019-20 the day patient share as a percentage of total bed days or discharge episodes was only 7.7% and 38.1% respectively. However, inpatient care where overnight stays are involved may not be necessary or the best option for some patients. For instance, there are many procedures internationally regarded as day surgery, whereby a patient is admitted, operated on and discharged on the same day, so there is reduced risk of cross infection, and less stress and disruption to their daily lives. Day surgery also helps to save hospital beds to cater for patients with more serious medical conditions. Nevertheless, out of 18 selected procedures[5] that could be carried out as day surgery, only 17.7% of our cases were actually managed this way in 2019-20.

If the over reliance on inpatient care continues, an ever increasing number of hospital beds would be needed for us to meet the demand, which is not sustainable in the long run. It is projected that our acute and extended care bed days will increase from 7.9 million in 2021 to a range of 9.3 to 9.5 million in 2026. This is around 1.5 million additional bed days, which is the equivalent of having to add around 920 beds every year for the next five years.

[5] The procedures are: myringotomy, reduction of nasal fracture, resection of nasal septum, tonsillectomy, ovarian cystectomy, correction of squint, arthroscopy, excision of ganglion, release of carpal tunnel, removal of implant, anal surgery, circumcision, excision of breast lump, inguinal hernia, lap cholecystectomy, TURBT, unilateral thyroidectomy, and varicose vein ligation and stripping.

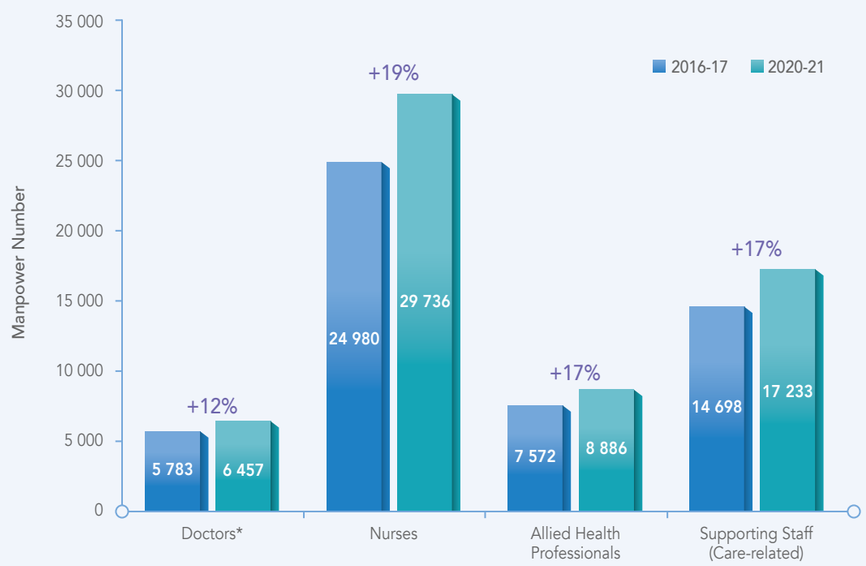
# ISSUES RELATING TO SERVICE SUPPLY

## Manpower Shortage

As the demand for public healthcare escalates, there is a concomitant increase in the requirement of manpower to deliver the services. However, we are facing the chronic issue of manpower shortage, especially for doctors and nurses, mainly due to limited local supply and high staff turnover.

Although our manpower strength has increased by around 670 doctors, 4 760 nurses, 1 310 allied health professionals, and 2 540 care-related supporting staff between 2016-17 and 2020-21 (Figure 5), it is still unable to keep up with the growth in service demand.

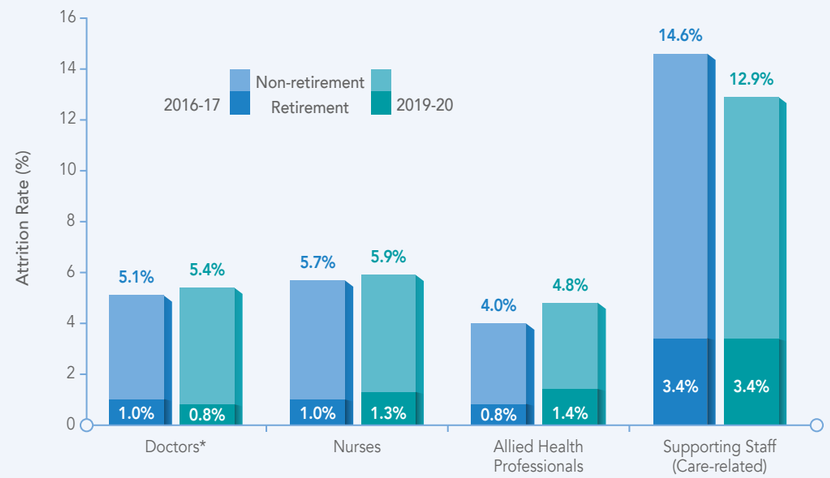
Figure 5. Change in Manpower Strength between 2016-17 and 2020-21




Figures refer to the number of full-time equivalent staff as at 31 March, including permanent, contract and temporary staff.
* Doctors excludes Interns and Dental Officers.

The attrition rates for doctors, nurses and allied health professionals have also increased, as shown in Figure 6. On top of "brain drain" to the private sector, retirement is another major reason for clinical staff attrition. Although the retirement age of new recruits has been extended to 65 since 2015, there is a large cohort of existing staff who have reached or are nearing their normal retirement age of 60, the skills and expertise of whom would be lost from HA unless we step up measures to retain them. Regarding care-related supporting staff, the attrition rate has decreased but still at a high level, mainly because of the type and nature of the work involved as well as their easy mobility.

Figure 6. Attrition Rate in 2016-17 and 2019-20 for Full-time Staff




Figures include permanent and contract staff on a headcount basis.
* Doctors excludes Interns and Dental Officers.

In 2019-20 there was a cumulative shortfall of around 260 doctors in HA. The Government has increased the number of medical training places over the years to help us alleviate the shortage. For instance, in the 2019-20 to 2021-22 triennium the number of medical students is increasing by 60 each year from the original 470. Nevertheless, the demand for doctors will continue to exceed the supply in the coming years.

For nursing and allied health staff, efforts have also been made to fill our manpower shortfall in recent years to some success. In general, the demand for psychiatric nurses and allied health staff can largely be met, but the demand for general nurses will exceed supply again from around 2027 onwards if the nurse supply remains unchanged.

## Physical Space Limitation

The physical space and environment of our hospitals and clinics has a significant impact on service provision. In addition to influencing service capacity, the facilities affect how care is delivered, the way patients and staff interact, and the ability of hospitals and clinics to meet future healthcare demands and accommodate new service models and technologies.

More than 50% of our building stock were completed over 30 years ago and some premises could trace their roots back over 100 years. Their outdated design and condition often do not meet the service requirements, workflow logistics and adaptability of modern healthcare or accommodate the expansion needed to meet the escalating service demand. Most of our hospitals and clinics are currently operating at their full physical capacity and are unable to accommodate the additional service volume required of them. Moreover, owing to the historic location of public hospitals, many are not easily accessible due to poor transport connection, in particular with Mass Transit Railway (MTR) stations.

In response, the Government has earmarked $200 billion for HA to carry out the first Ten-year Hospital Development Plan (HDP) to improve physical capacity and facilities over a ten-year period starting from 2016. Besides major capital works projects for the development of a new hospital as well as the redevelopment and expansion of existing hospitals, a number of primary care facilities are also included in the HDP. We have also commenced planning for the second Ten-year HDP to meet long-term service demands.

Nevertheless, past experience has shown that in-situ redevelopment of existing hospitals is extremely challenging due to the costly and complicated project phasing for decanting and the need to maintain minimal interference to the daily operations of the hospitals. As a consequence, such projects often have unusually long planning and redevelopment time and incur extremely high expenditures. There is a need to explore other possible options for the redevelopment so that the projects can be completed in a shorter timeframe and at a lower cost.

## Funding Sustainability

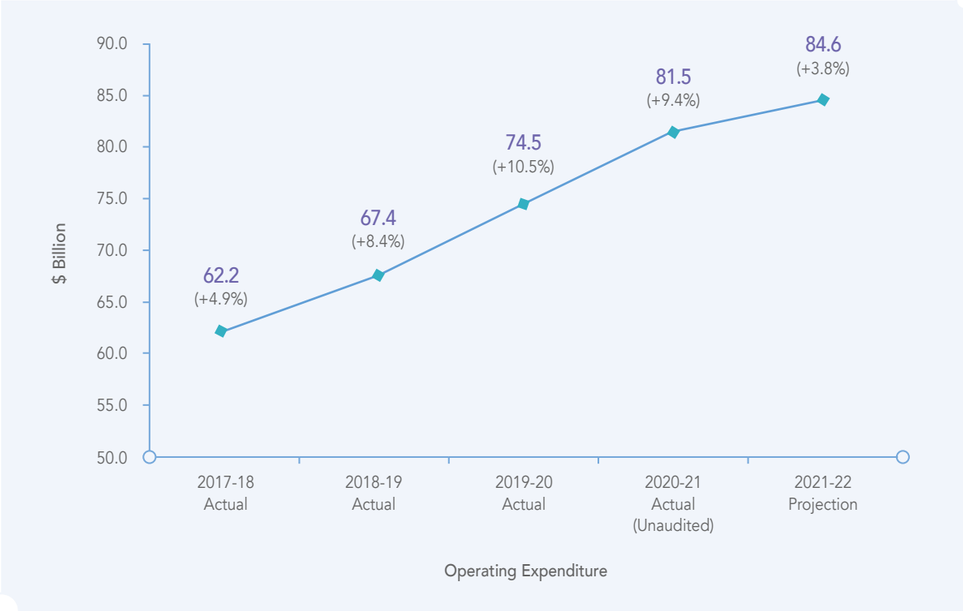
As a public healthcare provider, we rely heavily on the financial provision from the Government to meet service needs in ensuring that no person should be prevented, through lack of means, from obtaining adequate medical treatment. In order for us to formulate more proactive plans to augment service capacity and manpower, the Government announced in the 2017 Policy Address a new funding arrangement for HA from 2018-19 to 2020-21, under which our recurrent funding would increase progressively on a triennium basis having regard to population growth and demographic changes. With the first triennium funding cycle ending in 2020-21, the Government has committed to the second triennium funding arrangement from 2021-22 to 2023-24. Through staunch Government support, our recurrent funding has increased significantly by 45% over the years, from $55.6 billion in 2017-18 to $80.7 billion in 2021-22.

In order to combat the COVID-19 epidemic, the Government has provided HA over $8 billion for ensuring sufficient support and protection for frontline healthcare staff and timely treatment for patients. Having regard to the importance of maintaining HA's financial stability, it has also been mentioned in the 2019-20 Budget Speech that $10 billion would be earmarked for setting up a public healthcare stabilisation fund to help HA meet any additional funding requirement in case of unexpected circumstances.

While the amount of Government funding is significant, resources are always finite so it is incumbent on us to use the public resources effectively and efficiently. In response to the intensifying service demand, our operating expenditure is projected to increase considerably from $62.2 billion in 2017-18 to $84.6 billion in 2021-22 (Figure 7). Since healthcare provision is labour intensive, around 70% of our expenditure is on staff costs, while the remainder is on drugs, medical supplies and equipment, repairs and maintenance, etc. It means that fluctuations in our workforce can have major impacts on expenditure.

In addition, the commissioning of new hospitals as well as the redevelopment and expansion of existing hospitals has significant additional recurrent cost implications. Given the large number of major capital works projects in the pipeline under the two Ten-year HDPs, it is important for us to devise a feasible financial plan for meeting the anticipated extensive financial requirements in the future.

Figure 7. Operating Expenditure of HA, 2017-18 to 2021-22




While the Government is committed to continuing its staunch support to HA, the current economic outlook is uncertain due to the COVID-19 pandemic and various external factors. We need to look into possible ways of enhancing our cost efficiency and long-term financial sustainability in meeting the healthcare needs of the population.

## SUMMARY

HA is at the forefront of safeguarding the health of the population and provides a strong public safety net for all citizens. However, like many healthcare systems around the world we are facing a number of formidable challenges which threaten the sustainability of our services. The root of the issue is a widening imbalance arising from the escalating demand outstripping our service supply. Specifically, mounting pressure from population growth and ageing and the rising burden of chronic diseases are major factors driving up the demand. In addition, some aspects of our service model, like the heavy reliance on hospital-based care, render the organisation less able to adapt and cope effectively with the rising tide of demand. As for our service supply, despite staunch Government support, it is constrained by the daunting issues of chronic manpower shortage, physical space limitations and funding sustainability.

In the coming years, rebalancing service supply and demand by addressing the above issues will be a major priority, so as to lay the foundations for HA's ongoing sustainability and to enable the organisation to better meet the healthcare needs of the Hong Kong population.

# STRATEGIC FRAMEWORK

Based on the consultation exercise and the directions of the Task Group on Sustainability, four strategic goals and a corresponding set of strategies have been formulated to map out the priority areas for us to work towards sustainable healthcare. Along with increasing service supply, the goals and strategies reflect our aspiration to enhance sustainability by changing our service models towards the provision of "Smart Care", which will be implemented with the support and commitment of a "Smart Workforce", and with "Smart Hospitals" as a key enabler.

The four strategic goals are as follows:

- Provide Smart Care – Adopting new service models and technology to improve health outcomes and reduce the need of our patients for hospital care. That includes data-driven care, which leverages on the power of big data and advanced technology to predict or stratify the health risks of patients so that targeted treatment and personalised care could be provided. It also means changing our service models to be less reliant on inpatient care, such as by promoting ambulatory and community-based care with the help of digital technology like telemedicine and telecare, along with empowering patients for self-care.

- Develop Smart Hospitals – Incorporating a wide range of advanced IT, digital technology and AI infrastructure in the development of healthcare facilities in order to enable Smart Care and enhance operational efficiency through automation, digital solutions and robotics. Alongside data-driven care supported by AI, technology-enabled healthcare facilities like smart ward, smart clinic and smart pharmacy will also be incorporated in the Smart Hospital projects. The digital platforms are also crucial for the development of telemedicine and telecare, as well as mobile Apps for patient empowerment.

- Nurture Smart Workforce – Nurturing our staff to equip with the skills and knowledge suitable for the provision of Smart Care, and enabling them to develop their full potential for creating a robust and flexible talent pool. Digital Workplace initiatives such as automation, paperless office, chatbots and mobile Apps for staff management will also be promoted to cut down on manual processes and paperwork and improve convenience for staff.

- Enhance Service Supply – Increasing healthcare capacity by expanding and modernising HA facilities to better accommodate the service model change and rising service volumes. At the same time, ensuring financial sustainability by working out a viable funding arrangement with the Government and optimising cost efficiency so that adequate resources are available to meet the escalating service needs.

The strategic goals and the corresponding directions and strategies are laid out in the following chapters. The strategic goals delineate what we want to achieve over the coming five years, the strategic directions outline the broad directions for us to pursue for achieving the goals, and the strategies delineate what we need to do in order to meet the goals. Presented on the next page is the overall framework, which also illustrates how the strategies align with HA's vision.





| Strategic Goals (What we want to achieve) | Strategic Directions (Where we are going) | Strategies (How we get there) | HA Vision |
|---|---|---|---|
| Provide Smart Care | Leverage on big data and advanced technology | Adopt data-driven care | Healthy People |
| | | Develop personalised care | |
| | | Build up telemedicine and telecare | |
| | Re-orientate service models | Promote ambulatory care | |
| | | Enhance community-based care | |
| | | Empower patients for self-care | |
| | Explore care options for high demand services | Implement alternative options for specialist outpatient service | |
| | | Enhance and develop different PPP options | |
| Develop Smart Hospitals | Enable smart care provision | Provide AI support for data-driven care | |
| | | Develop smart ward, smart clinic and smart pharmacy | |
| | | Roll out "Mobile Patient" initiatives | |
| | Enable smart hospital support and management | Automate services via IT tools / solutions and robotics | |
| | | Establish IT platforms to facilitate operational efficiency | |
| Nurture Smart Workforce | Attract and retain staff | Conduct long-term manpower planning of healthcare staff | Happy Staff |
| | | Enhance staff recruitment and employment options | |
| | | Foster staff's career prospects | |
| | | Strengthen staff relations, management and recognition | |
| | | Drive Digital Workplace | |
| | Enhance training and development | Reinforce staff training programmes | |
| | | Facilitate staff to attend training | |
| Enhance Service Supply | Increase healthcare capacity | Implement Hospital Development Plans | Trusted by the Community |
| | | Bolster the capability of healthcare facilities in meeting demand | |
| | Ensure financial sustainability | Work out a viable funding arrangement with the Government | |
| | | Enhance the development and use of costing information | |

# PROVIDE SMART CARE

Aligned with HA's mission of Helping People Stay Healthy, the strategic goal "Provide Smart Care" aims to adopt advanced technologies as well as new service models to improve health outcomes and keep our patients healthy in the community, thus reducing their need for hospital care. It is our foremost target for moving towards sustainable healthcare in the years ahead.

Our approach to Smart Care is to leverage on the advances in data analytics and digital technology for predicting and stratifying health risks so that proactive and tailored regimens could be provided to reduce the complications of chronic diseases and ameliorate treatment outcomes. More advanced treatment modalities and better service coordination will also be incorporated for the provision of personalised and patient-centred care. Additionally, it includes re-orientating our service model to reshape the way we deliver care, such as providing alternative options to hospital stays and other high demand services. Therefore, our Smart Care is an all-round approach for managing the mounting service demand, which is to step up our capability in delivering diversified healthcare options that will more fittingly match with individual patients' needs to achieve better outcomes and reduce the demand.

The strategies for providing smart care are as follows:

- Leverage on big data and advanced technology to improve health outcomes by adopting data-driven care, developing personalised care, and building up telemedicine and telecare.
- Re-orientate service models to reduce reliance on hospital care by promoting ambulatory care, enhancing community-based care, and empowering patients for self-care.
- Explore care options for high demand services to better manage the workload pressure, which include implementing alternative options for specialist outpatient service, and enhancing and developing different PPP options.

## LEVERAGE ON BIG DATA AND ADVANCED TECHNOLOGY

HA possesses an enormous volume of patient data which is continually growing. By harnessing this set of big data in innovative ways we can unlock the vast wealth of information to provide data-driven and personalised care for our patients to achieve better treatment results. Meanwhile, advancements in IT and digital technology have dramatically enhanced the ways clinical teams are able to interact and communicate with patients and each other remotely. Hence, we are also riding on the opportunity to build up telemedicine and telecare so that our service delivery is no longer bound by the traditional hospital or clinic setting and can be provided in the community or at home.

### Adopt Data-Driven Care

Broadly speaking, data-driven care is the application of data to generate actionable information and insights that can enhance clinical decision-making to improve treatment outcomes and patient experience, as well as automate processes to drive healthcare efficiency. Through the amalgamated use of electronic data and digital technology, data-driven care can be applied in diverse clinical areas such as triage, diagnostics, prognostics, treatment decision support, chronic disease management, etc. At the same time, advances in machine learning and AI have enabled us to unleash the power of our datasets so that we can move from descriptive analysis that merely describes past observations, towards predictive and prescriptive analytics that are beyond simple regression models and could generate information about the likelihood of certain conditions developing in the future and what preventive or remedial actions to take.

A good example is the Hospital Admission Risk Reduction Programme for the Elderly (HARRPE) developed by our clinicians and statisticians in collaboration a decade ago. It is a validated automated tool used across HA hospitals to identify elderly patients who are at risk of readmission within 28 days after hospital discharge. Its risk prediction scores are generated from 14 variables relating to a patient's medical, social-demographic and hospital utilisation data which are routinely captured in our clinical system. The scores enable our healthcare teams to tailor clinical plans to support the patients upon discharge, thus reducing their likelihood of readmission. An evaluation study shows that HARRPE can reduce these patients' A&E attendance and emergency admission by 16% and bed days by 15%.

Riding on the success of HARRPE, in the coming years we will capitalise on our well-developed Clinical Management System (CMS) and patient datasets to build up different types of predictive risk modelling for early identification and treatment of high-risk patients, in order to prevent or delay the onset of complications or associated morbidity. For instance, an e-Frailty Index (eFI) will be developed using advanced statistical and modelling techniques to identify high-risk elderly patients with frailty impacts on clinical management, so as to guide the clinical teams in their care planning. We are also in the process of creating a Diabetes Mellitus (DM) Risk Engine based on a machine learning model to predict the probability of a DM patient developing certain adverse conditions, such as renal failure, over a five-year time horizon. In the long run, the tool may be integrated into our mobile App "HA Go" to provide patients with additional information about their condition along with advice on managing their own health.

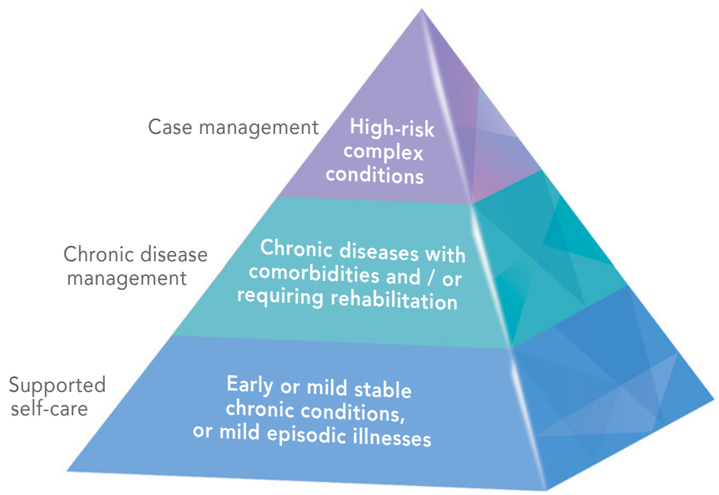
In fact, in light of the many opportunities for AI innovation and development across the different aspects of clinical service leveraging on our CMS, we have established a governance structure and a set of guiding principles for the adoption of AI for clinical use, and some AI initiatives have already been implemented accordingly. For example, a chest X-ray AI tool has been put in place to detect abnormalities in GOPC patients so that such cases could be prioritised for early reporting, covering 14 abnormalities. The AI Chest X-ray also screens and detects mass and nodules for A&E and SOPC patients in order to reduce the chance of missing lesions. Another AI tool for Hepatitis B has also been deployed to automatically detect and flag up positive laboratory results so that appropriate follow-up treatment could be provided to the patients in a timely manner.

## Develop Personalised Care

Rather than using a one-size-fits-all or trial-and-error approach, the automated tools developed in data-driven care will enable us to tailor treatment options for individual patients based on their risk prediction and stratification information. For instance, customised care plans can be developed in both the primary care and hospital settings for a diabetic or elderly patient according to his / her respective DM or eFI risk prediction profile.

Taking elderly patients as an example, stratified care will be provided according to their health risks as illustrated in Figure 8. Supported self-care through patient education and empowerment is the focus for the majority of elderly patients who are living in the community with early, mild and stable chronic conditions. Chronic disease management will be provided for those with multiple chronic diseases or requiring rehabilitation to prevent further deteriorations. As regards the relatively small proportion elderly patients with high-risk complex conditions such as impairments arising from disease complications, case management will be offered to reduce avoidable hospital admissions.

Figure 8. Risk Stratified Care for Elderly Patients Based on a Pyramid of Needs




A current example of case management approach is the Integrated Discharge Support Programme for Elderly Patients (IDSP) meant for hospitalised high-risk patients identified through the HARRPE tool. Coordinated services are tailored according to the patients' specific needs for facilitating their return to the community and avoid unnecessary readmission to the hospital. The scope includes discharge planning, personal and social care services delivered by non-governmental organisations (NGOs), nurse telephone advice via our Patient Support Call Centre (PSCC), outreach nursing or allied health services, and rehabilitation at geriatric day hospitals. Similarly, when the eFI tool is developed, elderly patients found to be at high-risk of frailty could be referred to receive customised services, such as fall prevention and intensive multidisciplinary support to build up their functional capacity and resilience.

This requires strong coordination across different settings, so that patient-centred services can be delivered to meet the different levels of patient needs during the course of their illness, ranging from acute care through to rehabilitation and recovery, and maintenance and management in the primary care and community settings. At the same time, more advanced treatment modalities will be incorporated for the provision of customised or personalised care. These include new drugs, tests and surgical procedures that could facilitate more precise and effective treatment for the patients.

## Build up Telemedicine and Telecare

The potential for IT and digital technology to enable the delivery of healthcare beyond the four walls of the hospitals and clinics has accelerated in recent years, especially since the start of the COVID-19 pandemic. In particular, significant advances in portable devices, wearables and smartphone-based Apps, along with reliable and stable data connections and high connectivity means delivering remote patient care through telemedicine and telecare have become a viable option for a large segment of patients in the community.

Hence, we will foster the development of telemedicine and telecare as an adjunct to existing services. The aim is to offer more flexible healthcare options for relieving the pressure on our hospitals as well as enhancing the accessibility of patients who have difficulties getting the required services, such as those with mobility problems or infection control risks. Examples include:

- Video consultations in the follow-up management of stable medical or psychiatric patients, and the provision of services like genetic counselling where in-person attendance is not necessary.
- Video-conferencing with Residential Care Homes for the Elderly (RCHEs) or NGOs to provide professional advice and monitor the patients' conditions, which will complement our outreach services to reduce the need of the patients for hospital or SOPC visits.
- Telecare using the "eRehab" function on the "HA Go" mobile App for patients to carry out rehabilitation exercises at home according to the training schedule and videos designed by our allied health teams, and monitoring their progress.
- Remote monitoring of patients' vital signs and other parameters such as blood pressure, glucose levels, pacemaker data, etc. Coupled with AI, this could facilitate early detection of deteriorations and alerts for clinical teams to carry out proactive intervention.

Besides streamlining the care processes, our clinical teams could also bolster their coordination and collaboration through telemedicine. This includes video-conferencing for discussing complex cases, especially when the expertise is located elsewhere; providing specialist advice remotely to primary care or community-based teams; and rendering time-critical specialists' support such as out-of-hours radiologist input for trauma cases.

## Telemedicine

According to the World Health Organisation, telemedicine refers to the delivery of healthcare services at a distance through information and communications technology, connecting users who are not in the same physical location, so as to improve health outcomes.[1] Examples include video-conferencing for patient consultations with doctors. Often, telemedicine and telehealth are used synonymously and interchangeably.

## Telecare

Telecare refers to the use of computers and other telecommunication technologies to monitor patient activity and clinical findings at a distance, consult with patients and clinical colleagues, and deliver health and social care to people in their own homes.[2]

Source:

1. WHO Global Observatory for eHealth. (2010). Telemedicine: opportunities and developments in Member States: report on the second global survey on eHealth. World Health Organisation.
2. Segen's Medical Dictionary. (2011). https://medical-dictionary.thefreedictionary.com/telecare [Accessed March 2021].

## RE-ORIENTATE SERVICE MODELS

In parallel, we are re-orientating our service delivery model to be less reliant on inpatient care, by shifting from the traditional hospital-centric model to one with emphasis on promoting ambulatory care and community-based care. Besides our usual focus on developing primary care, it also includes empowering our patients with the necessary skills and knowledge to participate in self-care and stay healthy in the community. The new service models could be facilitated with the implementation of telemedicine and telecare to ensure that clinical input is available beyond the hospitals, where and when needed. In addition to relieving the heavy pressure on hospitals, the re-orientation also enables a more optimal mix of services to cater for different healthcare needs and ensuring that patients receive the right level of care at the right place and time.

### Promote Ambulatory Care

Ambulatory care generally refers to healthcare services provided in a clinical facility on a non-inpatient basis or with the intention that the patients are admitted and discharged on the same day without overnight stay. It encompasses a variety of day services, the setting of which can be broadly categorised as function-based or programme-based. A function-based ambulatory setting typically comprises a specific portfolio of high volume and low complexity procedures. Examples include a day diagnostic centre offering blood tests and imaging; day treatment centre delivering chemotherapy and dialysis; and day surgery centre performing less complex surgical and medical day procedures as well as endoscopy.

On the other hand, a programme-based ambulatory setting usually adopts an integrated approach for managing a specific group of patients, such as those with a particular disease or in a particular demographic cohort. Cross-specialty and multidisciplinary teams are often involved to deliver "one-stop" service to the patients during the course of a day, as with our existing geriatric day hospitals. An ambulatory centre may also offer chronic disease management programmes for patients with complex chronic conditions, or prehabilitation and rehabilitation programmes to enhance surgical patients' functional capacity and recovery.





As the scope is quite wide, we are in the process of formulating a Strategic Service Framework (SSF) to guide the development of ambulatory care services in HA. In terms of facilities, ambulatory centres will be incorporated into our major hospital development projects, so that they are available and accessible in every Cluster. Moreover, with the future relocation of clinical services from Queen Elizabeth Hospital to the new acute hospital under construction at the Kai Tak Development Area, consideration will be given to developing a large-scale ambulatory care centre at the vacated King's Park site, in view of its central location.

### Enhance Community-Based Care

Community-based care is well suited for managing the vast majority of elderly or chronic disease patients whose conditions are stable and main healthcare requirements being regular monitoring on a long-term basis. To reduce unnecessary hospital stay, our emphasis in the coming years is on strengthening medical-social collaborations for these patients to continue living in the community, and enhancing post-discharge support to facilitate their return to the community when hospital admission is required due to disease complications or for resolving an acute episode of illness.

#### *Strengthen Medical-Social Collaboration*

We are in the process of developing a medical-social collaboration framework to guide the provision of community-based care services and set out role delineation with our community partners, including patient groups, NGOs, Government departments like Social Welfare Department, and service providers in the private sector. The aim is to enhance our collaborative networks and improve the coordination of health and social care services for elderly patients as well as chronic disease patients, particularly those in the middle-age group or with complex conditions, such as young stroke patients who currently fall through the service gaps.

A prominent example of our existing medical-social collaborations is the IDSP rendered in partnership with NGOs to high-risk elderly patients identified through the HARRPE tool. Priority areas of collaboration in the coming years will include community rehabilitation programmes at DHCs steered by the Food and Health Bureau; self-monitoring schemes for supporting chronic disease patients; support services for carers of dementia patients, such as respite care; and outreach home support services for palliative and end-of-life care of terminally ill patients.

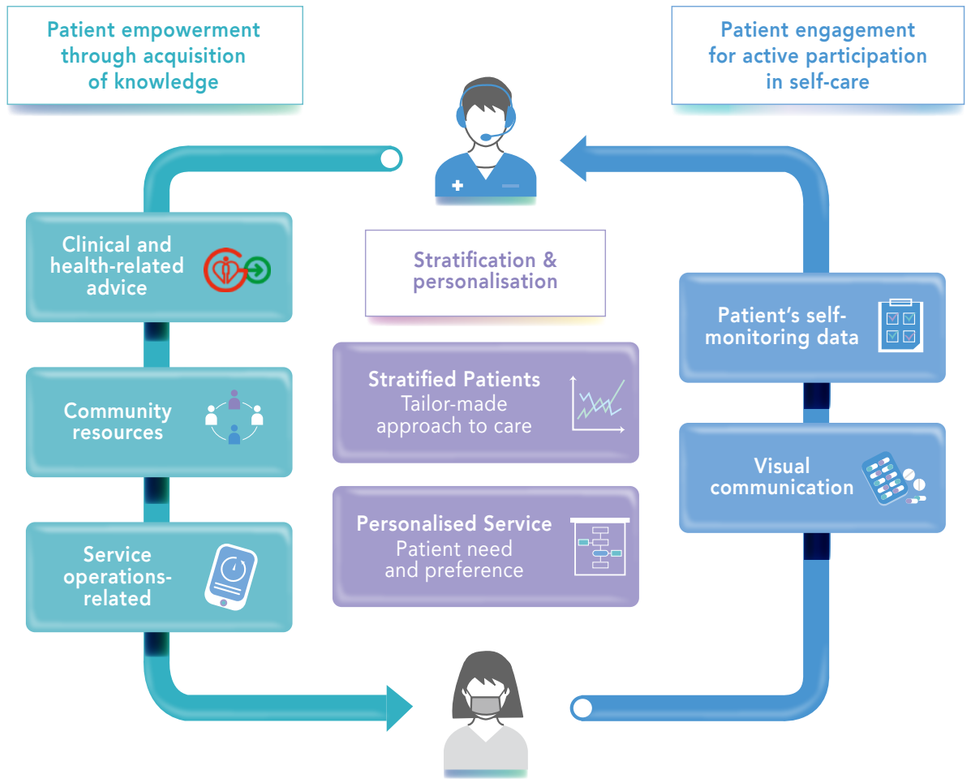
Meanwhile, we will continue to strengthen medical-social collaboration for supporting elderly residents living in RCHEs, the majority of whom are HA patients. In addition to outreach medical, nursing and rehabilitation support, our Community Geriatric Assessment Teams (CGATs) are offering training to upskill the RCHE staff, particularly on infection control measures. They are also scaling up end-of-life services for those residents who are terminally ill in collaboration with NGOs and the RCHEs to facilitate a more dignified and peaceful dying process through Advanced Care Planning and coordinated care.

## *Enhance Post-Discharge Support*

Early multidisciplinary discharge planning is an integral part of hospital care to facilitate the timely discharge of patients when they are medically ready. Over the years, we have rolled out a number of measures to enhance post-discharge support to smooth out the transition of patients from the hospital and back to the community setting. These include day rehabilitation; various community outreach services, such as CGAT, Community Nursing Service and Community Allied Health Services; PSCC for nurses to provide telephone advice for targeted elderly and chronic disease patients discharged from the hospital, and connect them with primary care physicians and NGOs when needed; and medical-social collaborations like the IDSP for high-risk elderly patients who otherwise might require hospital readmission.

In the coming years, we will continue to reinforce the post-discharge support initiatives. In particular, the current telephone-based service in the PSCC will be modernised with a digital visual platform incorporating our future development in data-driven care and telecare to offer more personalised support for discharged patients. Using the risk assessment and stratification tools, the intensity of post-discharge support will be tailored according to individual patients' needs and preferences. As illustrated in Figure 9, patients will be provided with tailor-made health advice and information such as on community resources, while information on their health condition can be supplemented using self-monitoring data and visual communication so that appropriate instruction and / or intervention could be rendered. In other words, the upgraded PSCC will help to reinforce the empowerment of discharged patients with relevant information for taking care of their own health in the community.

Figure 9. Future Features of the PSCC Service



## Empower Patients for Self-Care

Patients hold the keys to their own health and wellbeing, with the right information and knowledge they can become invaluable partners and participants in looking after their own health. In this regard, we will expand the various initiatives developed over the years as well as explore new opportunities to engage and empower our patients for self-care.

Various electronic platforms, particularly our mobile App "HA Go", will be mobilised for fostering patients' ability in self-care by leveraging on the development of telemedicine and telecare. For instance, in addition to the Rehab function and possible incorporation of risk prediction tools like DM Risk Engine previously mentioned in this chapter, we plan to enhance "HA Go" to include other information customised for individual patients, such as targeted training videos, website links, bespoke push notifications on health advice, and reminders on medical appointments. At the same time, patients could keep track of their progress and health condition by using the App to record parameters like blood pressure, blood sugar level, activity level, medication and food diaries, and share the information with their healthcare providers for monitoring. This way, the enhanced "HA Go" could form an important part of the PSCC service for discharge support and patient empowerment.

HA Go is a one-stop mobile App for patients to manage their own health. Currently with HA Go, patients can check their appointments, book outpatient appointments, pay HA bills, view medication, follow rehabilitation exercise, and access their medical record. Patients can also download various HA mobile Apps via HA Go.

Source: https://www2.ha.org.hk/hago/en/home [Accessed May 2021].

In parallel, we will continue to expand the content of our Smart Patient Website, which serves as a one-stop information hub for our patients and covers a wide range of information on disease management and caring tips, preparation for common procedures, community resources, etc. Patient empowerment in collaboration with community partners will also continue. For example, collaboration with DHCs as future providers for patient empowerment services will be explored.

Furthermore, in addition to clinical teams providing support to patients and their carers during the course of a disease or illness, the role and function of our Patient Resource Centres will be strengthened to serve as the hospital focal points for engaging community partners, and liaising with our patients as well as their family members and caregivers for enhancing support according to patient needs.

## EXPLORE CARE OPTIONS FOR HIGH DEMAND SERVICES

To better manage the heavy workload pressure, we are also reviewing some of our high demand services to see if there are ways to streamline the processes as well as explore different care options to diffuse the demand. In the coming years we will focus on examining our SOPC service to put in place alternative options for addressing its waiting time issue, and will also bolster different PPP options for sharing out the demand with our community partners.

### Implement Alternative Options for Specialist Outpatient Service

All along we have been taking various measures to tackle the extremely long waiting time for the new case bookings of SOPCs, which include adding manpower and capacity, reviewing the booking patterns, and diverting suitable cases to Family Medicine (FM) clinics and nurse or allied health clinics. Yet, the new case waiting time remains a significant issue.

As pointed out in "Our Key Challenges" chapter, part of the problem lies in the fact that the majority of the SOPC new cases come from internal referrals and most of the appointment slots are taken up by follow-up cases. Moreover, in the hospitals the heavy inpatient workloads of doctors may have limited their capacity in attending to SOPC patients when there is no designated or protected time to do so. Therefore, in the coming years we will examine our clinical practice to identify alternative options, starting with reviewing the referral and case closing mechanism. We will also look at developing different models of care as an alternative or adjunct to the existing SOPC service.

#### *Review SOPC Referral and Case Closing Mechanism*

The priority is on reviewing our referral mechanism, including the guidelines and practice for internal referrals, in order to understand more on the reasons for the referrals to SOPCs. This will enable us to identify ways to ensure the appropriateness of referrals, and to work out different options at the upstream for managing the patients or channeling them to alternative settings where appropriate. For instance, allowing GOPCs and FM clinics greater access to certain investigations and specialist drugs might reduce their referrals to SOPCs.

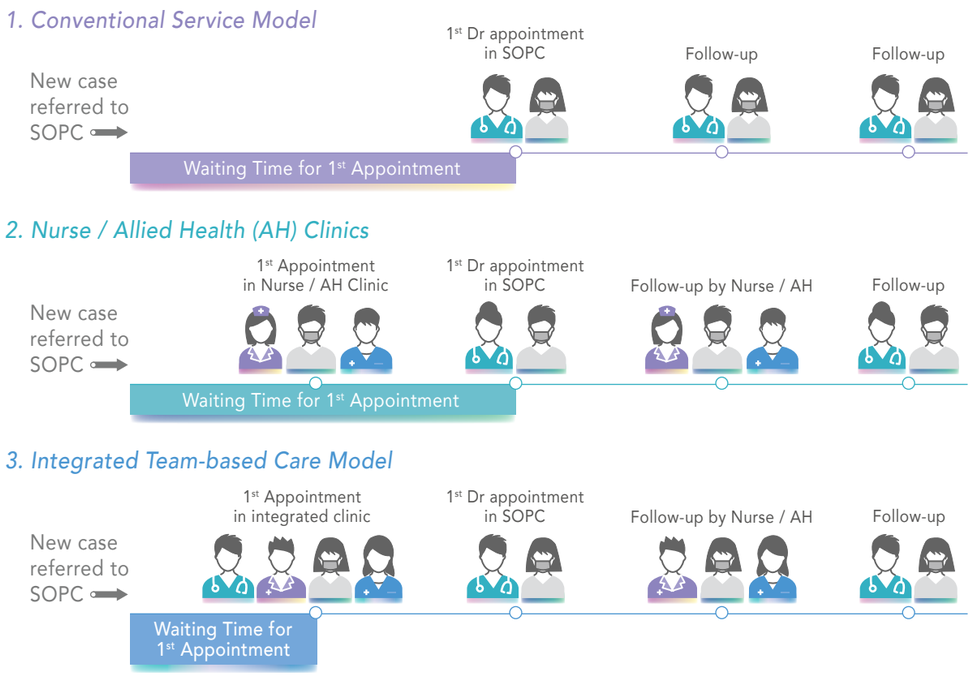
At the same time, we will examine the SOPC exit mechanism for discharging stable cases who no longer require specialist care, so that they can receive appropriate follow-up management in an alternative setting. For example, the patients could be discharged back to the original referring private practitioners, or to nurse / allied health step-down clinics as well as primary care service like the GOPCs. To offer the patients a safety-net and the doctors peace of mind in closing the case, a mechanism will also be put in place to enable discharged cases to re-join our SOPC system on a fast-track basis if needed.

In addition, telemedicine could be deployed to reinforce the referral and case closing mechanism. For instance, allowing remote access of primary care doctors to specialist advice when required will help to reduce the need for making referrals to SOPCs, and will also give them more confidence in accepting patients discharged from SOPCs. Auto-alerts could also be transmitted to SOPCs if there are abnormal changes in the clinical condition of their discharged patients, so that proactive advice or intervention could be provided if deemed necessary.

#### *Develop Alternative Models of Care for SOPC Service*

Currently, the shortage of doctor manpower is often the bottleneck of SOPCs in responding to new case bookings. However, a patient's first appointment does not necessarily have to rely on doctors. Other well-trained healthcare professionals can actually start early investigation and attend to the patient, and also provide care at different stages along the clinical pathway. Therefore, we are re-orientating the conventional SOPC service delivery model towards an integrated multidisciplinary team-based model involving doctors, nurses and allied health professionals, which is illustrated in Figure 10. The team-based approach facilitates communication among different healthcare professionals, enhances the continuity of care, and cuts down unnecessarily long waiting time for new case appointments. It also helps to ensure that right care is provided by the right person at the right time for the patients.

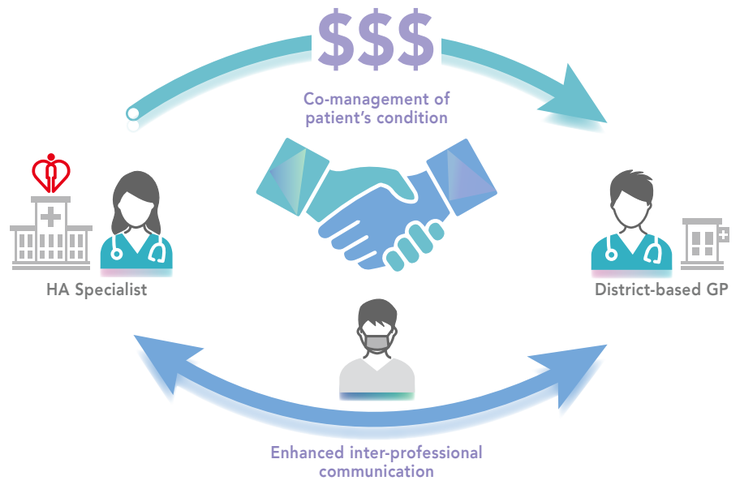
Figure 10. Integrated Team-based Care for SOPC Patients




Meanwhile, we are in the process of developing a Co-care Service Model to share out the heavy demand. Specifically, stable follow-up cases which could be discharged from our specialist services would be referred to General Practitioners (GPs) in the community for ongoing management under a shared-care / co-management model with HA specialists (Figure 11). By referring a proportion of the follow-up cases to the private sector, the shared-care model could free up the SOPC capacity for attending to new cases and help address the waiting time issue. It will also reduce the need for follow-up patients to make time-consuming SOPC visits.



Figure 11. Overview of the Co-care Service Model




## Enhance and Develop Different PPP Options

Collaborating with the private sector, NGOs and social enterprises to expand healthcare services and choices for our patients has become an increasingly important strategy for us to share out the demand and enhance access to high demand services. Specifically, PPP initiatives have enabled us to tap into the capacity and expertise provided by our community partners to relieve some of our pressure areas, especially for high volume and low complexity elective services.

In line with the Government policy direction, a wide range of PPP initiatives have been implemented since 2008, covering areas such as primary care, cataract surgery, haemodialysis, radiological investigation, glaucoma treatment, colon endoscopy, and infirmary care. To cope with service adjustment during the COVID-19 pandemic, we have also rolled out urgent PPP initiatives to divert a portion of public hospital patients to receive treatment in the private sector, including neonatal jaundice treatment, caesarean delivery, radiotherapy for cancer patients, orthopaedic surgery, cystoscopy, gastroscopy, and breast cancer surgery. We will continue to enhance and develop different PPP options using designated funding from the Government, especially the $10 billion endowment fund allocated to HA in 2016 for regularising and enhancing clinical PPP programmes being undertaken on a pilot basis and the development of new clinical PPP initiatives.

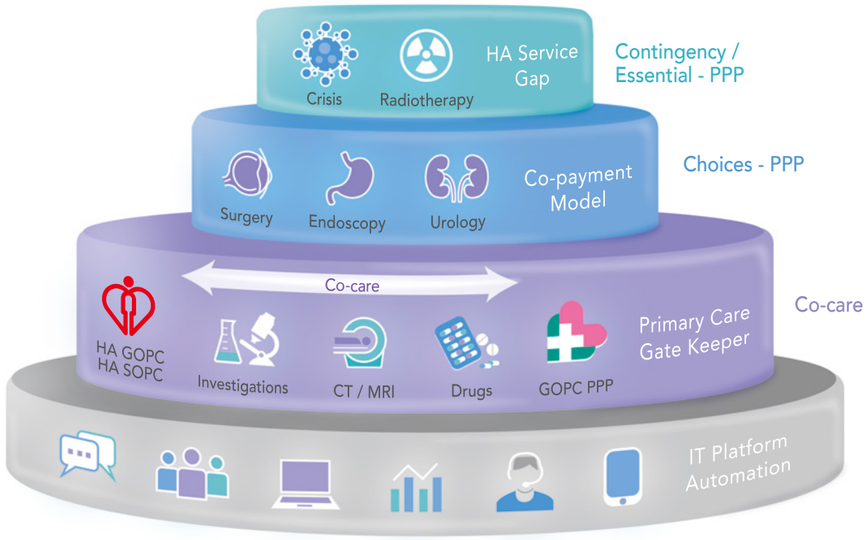
Going forward, the Management Committee for HA PPP Fund and Clinical PPP Programmes has established a corporate vision for the future development of PPP initiatives. The vision is built on three main functions of clinical PPP programmes in relation to HA services, which are (i) to serve as contingency options to fill service gaps or when HA's essential services come under intense pressure due to demand surges or during a crisis situation; (ii) to offer choices for public patients to receive non-urgent services elsewhere so that HA could free up capacity to focus on urgent or priority services; and (iii) to share the care of public patients in high demand services and help to clear the backlog of cases.

In this connection, the future scope of PPP will comprise the following three categories of initiatives as illustrated in Figure 12:

- Essential and Contingency PPP – current examples include the long-standing haemodialysis PPP, as well as the urgent radiotherapy PPP implemented during the COVID-19 pandemic.
- Choices PPP – existing examples cover cataract surgery and colon endoscopy. It is envisaged that co-payment will be a more prominent feature in this category.
- Co-care Service Model – the primary care or GOPC PPP currently in place is a key initiative in this category. Leveraging on the broad participating GP network developed under the primary care PPP, a new Co-care Service Model will be developed for patients who can be discharged from our specialist services, as mentioned in the previous section. Further collaborations will also be explored. For instance, instead of making SOPC referrals, A&E departments could refer suitable patients to the participating GPs for follow-up treatment.

The vision is underpinned by an IT platform that forms the backbone of all our PPP operations, leveraging on the advances in digital technology and AI to support automation. The Government-led electronic health record sharing system (eHRSS) will constitute part of the platform and provide a secure infrastructure for the sharing of patient data among the public and private healthcare providers. Using telemedicine could also enhance their communication and care coordination.

Figure 12. Vision for PPP Future Development




Nevertheless, we are also mindful of the potential impacts PPP might have on our workforce and other aspects of our service provision, and will try to strike a balance when planning new PPP initiatives. For instance, there is a need to prevent "brain drain" from HA when relying on the private sector to deliver services because our doctors might be recruited by them to cope with the increased service volume. Care should also be taken to retain services with important training value in HA, and to avoid creating additional workloads such as those inadvertently generated through unnecessary investigations for patients in the absence of robust PPP guidelines or protocols.

# DEVELOP SMART HOSPITALS

Innovations in digital technology, IT infrastructure, AI, automation, mobile communications and the Internet of Things (IoT) have the potential to make our healthcare services more efficient and effective. In particular, they are a key enabler for the provision of Smart Care and in supporting the smooth operation of our healthcare facilities, the foundation of which is high interconnectivity and interoperability of the different systems.

The strategic goal "Develop Smart Hospitals" rides upon the Smart Hospital Strategy endorsed by the HA IT Services Governing Committee in 2019. It reflects how our buildings and facilities, digital technology and devices, IT systems and data can all be harnessed together to drive clinical excellence, patient-centred care and operational efficiency, where the delivery and management of high quality healthcare is made easier and more sustainable. It also follows the principle of developing digital solutions with "high-touch", "high-visibility", "user-centred" and "rapid delivery" features so as to maximise the impact and benefits for patients and staff.

The strategies in developing Smart Hospitals are as follows:

- Enable smart care provision by providing AI support for data-driven care, developing smart ward, smart clinic and smart pharmacy, and rolling out "Mobile Patient" initiatives.
- Enable smart hospital support and management by automating services via IT tools / solutions and robotics, and establishing IT platforms to facilitate operational efficiency.

## ENABLE SMART CARE PROVISION

In the coming years, digital solutions and AI-enabled tools will be adopted in our healthcare facilities and care pathways to facilitate the Smart Care strategies. In particular, there will be AI support for the development of data-driven care. We will also use digital technology and automation to make our wards, clinics and pharmacies into smart spaces that prompts connection between people, processes and services. At the same time, our digital platforms will be reinforced for patients to access healthcare information and services beyond hospital walls anytime and anywhere through the "Mobile Patient" initiatives.

### Provide AI Support for Data-Driven Care

Data-driven care relies on sophisticated analytical tools like machine learning algorithms and AI embedded in our clinical systems to generate and present meaningful insights from both structured and unstructured patient data. To take full advantage of the benefits, we will build up skills and capabilities in advanced analytics among relevant staff, and develop the necessary machine learning and AI powered tools for clinical application with input from frontline clinicians and end-users.

In general, AI-enabled solutions are able to reduce human errors and enhance the quality and safety of care in a wide range of clinical settings, by providing clinical decision support, early detection of disease deterioration, and streamlining treatment planning and workflows. As mentioned in the "Provide Smart Care" chapter, in addition to the development of risk prediction and stratification tools of e-Frailty Index and DM Risk Engine, we have already rolled out a number of AI initiatives. Specifically, all 73 GOPCs have implemented the AI Chest X-ray to reduce the report turnaround time for abnormal chest X-rays, and the laboratory AI tool for flagging up Hepatitis B positive cases supports early treatment as well as medication safety.

With the foundation of the CMS, filmless radiology and the more recent electronic vital signs projects, a lot of standardised big data is now available to support HA's AI strategy that can facilitate service transformations, reduce staff workloads, improve efficiency, and enhance patient safety. In particular, the HA data analytics platform is being built to collect multiple sources of data, provide timely and accurate information on clinical services requirement, and enable the timely analysis of clinical data at the point of care.

### Develop Smart Ward, Smart Clinic and Smart Pharmacy

Meanwhile, we are building an integrated set of platforms and innovative digital capabilities to support technology-enabled wards, clinics and pharmacies to improve patient care and experience, as well as creating a "digital workplace" for our staff.

#### *Smart Ward*

The Smart Ward concept relies on automated systems and mobile devices to provide real-time information to clinical teams, allowing monitoring of patients and delivery of care from anywhere in the hospital or clinic. Examples include the vital signs app "e-Vital" and electronic bed panel "Smart Panel" already being deployed in some of our hospital wards. The e-Vital app can interface with physio-monitor devices, providing auto-charting, auto-scoring, aberrations alert and data sharing of patients' medical conditions such as blood pressure, blood oxygen level, heart rate and temperature via the Vital Signs Chart in the CMS. Besides streamlining the workflow of vital signs collection, the worklist and alert features also prompt clinical staff to take necessary actions in a timely manner.

In parallel, the bedside electronic platform of Smart Panel is integrated with the CMS and also incorporated with the e-Vital app to display vital information about the healthcare needs and medical conditions of individual patients. Through the Smart Panel, clinical staff can access the patients' laboratory and radiology results as well as conduct a wide range of clinical functions, including electronic patient assessment, paperless ward rounds, medicine prescription through the Inpatient Medication Order Entry System (IPMOE), and electronic booking for blood tests and other investigations.

### *Smart Clinic*

Following the implementation of the Corporate Queue Management System in our clinics, we are developing real-time queuing information through the "HA Go" mobile App, providing more flexibility for patients waiting for their appointments. Patients can also use "HA Go" to make mobile payments and manage their appointments.

Moreover, self-service physio-monitor devices will be rolled out to enable patients to take their own measurements before the treatment, with the data automatically integrated into a patient's electronic medical record, which will both reduce the workload of clinic staff and improve the data accuracy. In line with the Smart Care strategies, telemedicine and telecare solutions will also be made available for the clinic teams to follow up and monitor the health status of patients, providing a convenient option for patient follow-up.

### *Smart Pharmacy*

Having put in place the closed loop medication management system of IPMOE that fully digitalises the process of prescription, pharmacist review and vetting, dispensing and medicine administering, we will continue to use IT and automation to enhance the safety and efficiency of our medication process. This includes rolling out the Automatic Medication Unit Dose Dispensing Systems (AMUDDS) and Smart Cabinets. Interfaced with IPMOE, the AMUDDS allows multiple solid medicines of individual patients to be machine-packed into unit-dose bags for each time of administration. The unit doses are also automatically arranged in the order of administration time, thereby enhancing the speed and accuracy of drug administration. The AMUDDS also generates ward stock oral solid medicines in the form of unit pack (one tablet / capsule per pack), which can be placed inside the Smart Cabinets. Equipped with a biometric identification system, Smart Cabinets are fully automated dispensing machines providing controlled access to stock medications at any time in the clinical settings.

Pharmacy logistics will also go paperless and automated for processes such as auto-storage and retrieval systems for certain medicines, Radio Frequency Identification (RFID)-based automated picking systems, and automated inventory management systems that can trace drug inventory in real-time to support supply chain logistics. Autonomous mobile robots (AMRs) are also being explored for delivering drugs from the pharmacy to the ward in a secure and timely fashion.





### Roll out "Mobile Patient" Initiatives

Meanwhile, we will make use of smart phones, advanced connectivity, and new remote monitoring devices including wearables to empower patients in taking care of their own health. The focus is on expanding our suite of Apps on the "HA Go" platform to provide a personalised care experience for patients according to their conditions and healthcare needs. As highlighted earlier, "HA Go" will also support telecare, as well as a wide range of general features such as access to a patient's own medical record, appointment management and payment of HA bills.

## ENABLE SMART HOSPITAL SUPPORT AND MANAGEMENT

Alongside enabling Smart Care, our hospital support services and back-of-house functions will be modernised using IT systems and automation. IT platforms will also be set up to optimise operational efficiency and facilitate an integrated "whole-systems" approach to healthcare management.

### Automate Services via IT Tools / Solutions and Robotics

In general, automation has the ability to enhance the efficiency and consistency of our services, especially for work that is repetitive and manual in nature. In particular, a myriad of supporting services that contribute to the smooth running of our hospitals and clinics are amenable to automation, which can streamline the functions, improve user experience and reduce the workload burden on our staff. The scope includes patient and visitor services, transportation logistics, and cleaning and security services.

For instance, for the convenience of patients and visitors, self-service kiosks have been installed in many of our healthcare facilities to provide one-stop electronic service, such as for them to carry out registration and make payment of medical bills. Meanwhile, "HA Go" will include location maps and digital navigation for them to find their way and locate useful amenities in our hospitals using their smart phone.

Going forward, we are exploring the use of AMRs to automate our supporting services. In this regard, a variety of Smart Robots are being piloted in Tin Shui Wai Hospital (TSWH) to perform concierge, logistic and security functions. The concierge robot has a screen for digital visual communication and possesses AI self-learning ability that can recognise landscapes and move around pre-set locations. Besides providing self-service enquiry assistance and interactive navigation for patients and visitors, it can also enable tele-visits at the bedside for patients whose family or carers are unable to visit in person, as well as video consultations between doctors and patients. Additionally, some of the models could support real-time monitoring of patients' health status through various sensors for measuring vital signs such as body temperature, heartbeat, blood pressure and blood oxygen.

The delivery, cleaning and security robots are three other types of Smart Robots trying out at TSWH. The autonomous delivery robot can be used to transport a variety of materials, including clinical supplies and housekeeping items such as linen. With an enormous payload capacity, it can reduce the risk of manual handling injuries for frontline staff. The cleaning robot, which can be switched between autonomous and manual modes, can be deployed to clean the floor of common areas like lift lobbies, corridors and clinic waiting areas at any time of the day. The security robot patrols and monitors indoor and outdoor venues along pre-configured routes. Using 360-degree camera for full vision coverage, together with high definition night vision and security flashlight, this autonomous robot guard can patrol in extreme weather and at night time, allowing the staff to monitor the situation using computers in the security control room or via mobile devices on a real-time basis.





## Establish IT Platforms to Facilitate Operational Efficiency

The complexity of hospital operations requires various administrative and management functions working in concert to facilitate smooth workflow and patient flow. To enhance the operational efficiency of these processes, we will draw on digital technology to provide real-time information about different aspects of our service. This includes using digital dashboards to facilitate the coordination of service operations such as patient admission and bed allocation, and making use of IoT devices to strengthen our supply chain management and keep track of assets like medical instruments. These converging technologies support the bringing together of key staff in a single location to rapidly review, manage and make key decisions regarding hospital operations, typically referred to as a Hospital Command Centre, which is being piloted at Queen Elizabeth Hospital.

Digital dashboards collate relevant data from various sources based on an integrated "whole-systems" approach in healthcare management, and generate graphical displays that will enable key decision-makers to identify potential bottlenecks or problems and instigate corresponding remedies. For instance, we are in the process of developing a capacity management dashboard to provide real-time information about patient admissions and discharges, bed availability and distribution, A&E cases queuing for admission, etc. so as to facilitate hospital managers in optimising the efficiency of bed usage and improving patient flow. A "portering dashboard" is also being built to support the planning and deployment of our hospital porter service and Non-Emergency Ambulance Transfer Service (NEATS). The dashboard will include information like current and forecasted demand from different services, status of work assigned, availability of staff, and real-time location tracking.

In parallel, we are adopting IoT devices for inventory tracking and supply chain management using real-time locating system (RTLS), such as RFID, Bluetooth Low Energy (BLE), IoT Gateway and Wi-Fi positioning technology. For example, RTLS can help our staff to keep track and find the position of equipment and supplies like medical devices, surgical instruments, stretchers and wheelchairs in a fast and easy way. It can also be set up to provide alerts when unauthorised removal of materials from a secure location is detected.

# NURTURE SMART WORKFORCE

People are at the heart of healthcare. Crucial to the provision of Smart Care and the development of Smart Hospitals is a workforce that possesses the right skillsets and mindset for making changes and delivering the new service models, particularly with regard to the use of digital technology and AI in patient care.

The strategic goal "Nurture Smart Workforce" reflects the importance we place on attracting and retaining staff in the face of manpower shortage. It also highlights our ongoing commitment to invest in human capital through staff training and development, so that we have a capable workforce with the relevant skills and expertise to meet our dynamic operational needs, while at the same time enabling our staff to develop their full potential and fulfil their career and professional aspirations for greater job satisfaction. Ultimately, we aim to sustain a robust talent pool of adaptive and responsive healthcare staff that can meet the growing service needs of the changing healthcare landscape.

The strategies for nurturing a smart workforce are as follows:

- Attract and retain staff to ensure adequate manpower by conducting long-term manpower planning of healthcare staff; enhancing staff recruitment and employment options; fostering staff's career prospects; strengthening staff relations, management and recognition; and driving a digital workplace.
- Enhance staff training and development to ensure competent manpower by reinforcing staff training programmes and facilitating staff to attend training.

## ATTRACT AND RETAIN STAFF

In the coming years, we will continue to put in substantial efforts to recruit more staff and reduce staff turnover, so as to alleviate the manpower constraint and workload pressures of our staff. Besides conducting long-term manpower planning to facilitate sufficient supply of healthcare professionals, more flexible staff recruitment and employment options will be explored. Staff retention strategies, on the other hand, include improving their career prospects, strengthening staff relations and recognition to boost their morale, and developing a digital workplace to cut down on manual processes and paperwork for our staff. At the same time, safety culture will continue to be fostered, particularly in enhancing occupational safety and health to provide staff with a secure work environment and improve their well-being.

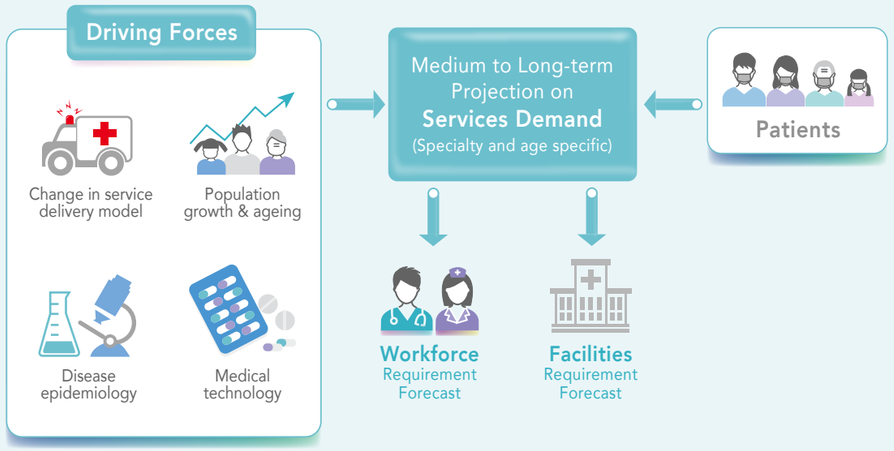
### Conduct Long-Term Manpower Planning of Healthcare Staff

Manpower planning is essential in ensuring we have adequate supply and appropriate deployment of clinical staff to keep up with our current and anticipated service needs arising from the escalating service demand, changes in service models, and capacity enhancement initiatives like the Ten-year HDPs and opening of new beds.

The basis of our long-term manpower planning is the manpower requirement forecast, which is one of the major outputs of our integrated planning model for projecting service demand across the spectrum of HA services, as illustrated in the diagram on the next page. The manpower projections cover all clinical grades, including doctors, nurses, allied health and pharmacy professionals, as well as care-related supporting staff.

### Integrated Planning Model

HA's integrated planning model for service demand projection forms a common basis for service, facility and workforce planning.




Correspondingly, in line with our statutory responsibility we continue to advise the Government on the needs for healthcare services and the resources for meeting those needs, including manpower requirements, so as to facilitate their planning of the number of publicly-funded healthcare training places. In particular, we will continue to provide information support and methodological advice to the Government's Strategic Review on Healthcare Manpower Planning and Professional Development, as and when required.

## Government's Strategic Review on Healthcare Manpower Planning and Professional Development

The Steering Committee on Strategic Review on Healthcare Manpower Planning and Professional Development was set up by the Government in 2012, and commissioned the University of Hong Kong (HKU) and the Chinese University of Hong Kong (CUHK) to provide professional and technical support on healthcare manpower projections and professional development and regulation respectively.

Chaired by the Secretary for Food and Health, the Steering Committee released its report in 2017 and set out recommendations for ensuring the availability of sufficient qualified healthcare professionals to sustain the development of healthcare services. The recommendations included increasing the number of publicly-funded healthcare training places where required, and conducting manpower planning and projections for healthcare professionals once every three years.

Following the report, the Government has increased the number of publicly-funded first-year-first-degree training place by 60 for medicine and 60 for nursing in the 2019-20 to 2021-22 triennium, and commissioned a new round of manpower projection exercise to update the demand and supply forecast for the 13 healthcare professions which are subject to statutory registration. The results of the latest round of manpower projection exercise were reported to the Legislative Council Panel on Health Services in March 2021.





## Enhance Staff Recruitment and Employment Options

In line with our manpower planning, we are taking proactive steps to recruit more healthcare staff from a broad range of talent pools. More employment options, such as flexible working, will also be explored to cater for different work preferences in order to attract new recruits as well as retain the talents and expertise of our existing staff.

Specifically, we will continue to recruit all qualified locally trained medical graduates along with non-locally trained doctors who have successfully passed the licensing examination of the Medical Council of Hong Kong. Apart from doctors with full registration, qualified non-locally trained doctors without full registration are also being recruited through limited registration as one of the manpower measures to alleviate the heavy workload of frontline doctors. At the same time, we are hiring part-time and temporary clinical staff to meet our operational needs. In particular, locum doctors, nurses, allied health professionals and supporting staff will be engaged for short-term flexible deployment on a need and ad-hoc basis for relieving the pressure of manpower shortage and supplementing our full-time workforce.

In accordance with the recommendations of the Government's Strategic Review on Healthcare Manpower Planning and Professional Development, which stated that HA should make every effort to attract retired doctors and other healthcare professionals to work in the public sector after retirement, the Special Retired and Rehire Scheme (SRRS) has been enhanced with "1+1" contract and the flexibility of early engaging retiring doctors to consider staying in HA after their normal retirement age of 60. For all new recruits across HA, the retirement age has already been extended to 65 since 2015.

In parallel, we are offering eligible full-time staff the option of conversion from contract to permanent terms, except those in directorate grade management posts, as a recognition of their service and loyalty to HA and to step up our overall staff retention efforts.

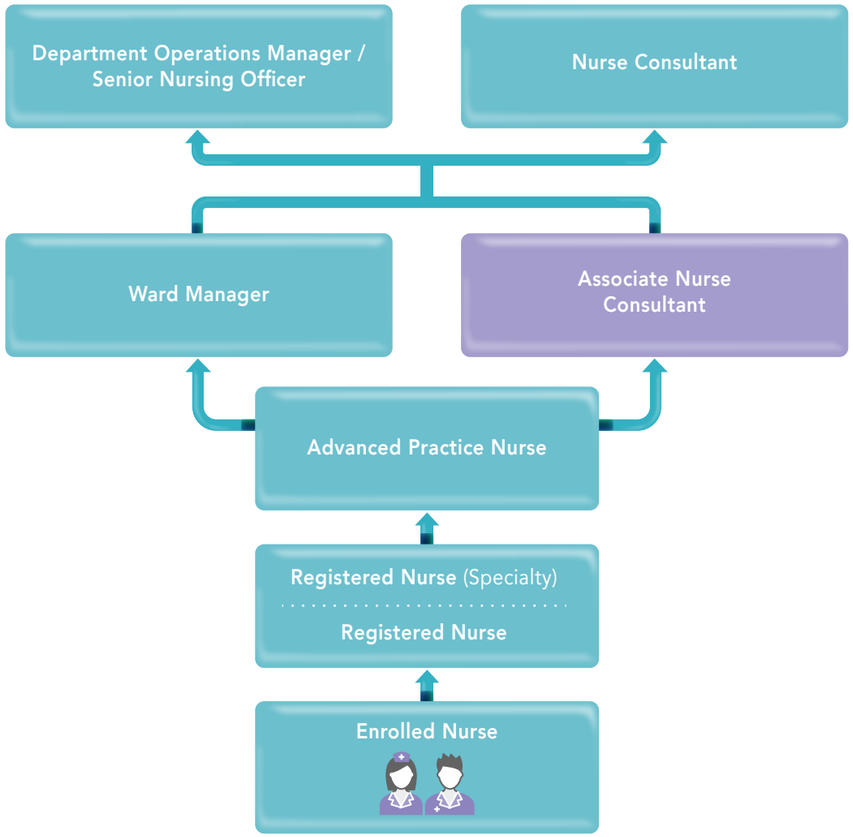
## Foster Staff's Career Prospects

Meanwhile, we will strive to create a fulfilling and motivating workplace for high calibre staff to realise their career aspirations by providing more opportunities for career progression and promotion as well as creating more flexible career paths. Examples include:

- Introducing additional measures to enhance the promotion opportunities of doctors, targeting at the promotion of serving Associate Consultants to Consultants for the retention of expertise;
- Providing additional Advanced Practice Nurse and Nurse Consultant posts for the promotion of nurses;
- Continuing the Specialty Nurse Allowance to support and encourage nurses to further their professional development;
- Upgrading allied health posts to enhance the promotion prospects of allied health professionals; and
- Continuing the respective annual progression exercises for designated groups of Patient Care Assistants, Operation Assistants and Executive Assistants in inpatient wards or services.

With regard to career paths, we are cognisant of the fact that our healthcare workforce has been developed to perform highly specialised roles within relatively rigid and hierarchical professional career structures. In the coming years, we will explore the feasibility of developing more flexible career paths, including a dual track career development option in promotion opportunities. For instance, an enhanced nurse career structure will be piloted to allow nurses to choose their career progression either in the clinical or management stream. Specifically, we are exploring the creation of a new rank, namely "Associate Nurse Consultant", under the Nursing Grade, as illustrated in Figure 13. The Associate Nurse Consultants at the clinical frontline will work closely with Ward Managers, with guidance provided by both the Department Operations Managers and Nurse Consultants. The new rank could form a talent pool for the succession planning of senior nurse managers (i.e. management stream) and expert nurses (i.e. clinical stream).

Figure 13. Enhanced Nursing Career Structure



## Strengthen Staff Relations, Management and Recognition

Another important focus in the coming years is to improve the relations, management and recognition of our staff, so that they could feel valued and motivated working in a cordial environment. This is guided by HA's values of people-centred care, professional service, committed staff and teamwork.

Good communication is the foundation in improving staff relations. We will actively seek to communicate and engage with our staff who come from a diverse range of backgrounds, perspectives and opinions, which we consider a valuable asset. Besides the usual communication channels like staff group consultative committees, staff forums and social media platforms, staff surveys will be conducted to better understand staff's views on various issues. We are also strengthening engagement with the younger generation and building closer working relations with staff unions / associations. Staff Relation Officers will be established at the hospital level to help mediate conflicts, act as staff advocates, serve as a single point of contact for communication with staff unions / associations, and provide support in staff complaints.

To foster a friendly working environment, a Work Group on Building Workplace Harmony has been set up to advise on the strategies and initiatives for reinforcing a caring and respect culture. A number of culture building initiatives, such as seminars, training programmes, posters, short video clips and toolkits are being developed to serve as reminders and reference materials for staff at all levels in building a harmonious workplace.

The alignment of Human Resources (HR) practices across Clusters will also continue for a more consistent approach to staff management. For instance, the Staff Complaint Handling Working Group comprising members from Head Office and Cluster HR is reviewing the Staff Complaint and Appeal Mechanism regularly and ensuring that the practices are aligned across Clusters, and will also benchmark best practices on complaint management with other organisations.

As regards staff recognition, we will continue to find meaningful ways to show appreciation for the contributions made by our staff and for strong individual and team performance. Existing measures at the corporate level have included long-service awards in recognition of the commitment and loyalty of staff who have served ten consecutive years or more, and the outstanding staff and team awards as well as young achiever awards for acknowledging exemplary role models and work performance. Many of the department heads have also shown appreciation for their staff in different ways, such as written thank you notes, spot awards, appreciation tea, etc., which could not be more apt for a large organisation like HA. Department heads are essential in our staff recognition efforts and are encouraged to thank their staff for outstanding efforts and achievements on a regular basis.

## Drive Digital Workplace

To further support our staff in their everyday work, we are moving towards a digital workplace to minimise manual processes and paperwork and improve convenience for staff. In particular, under the "Digital Workplace Project", our HR and Information Technology and Health Informatics (IT&HI) Divisions are working together to develop more initiatives on automation, enablement and better user experience, including paperless office, chatbots and mobile Apps, so as to streamline workflows, cut down on administrative burden and facilitate staff to spend more time on direct patient care. Going forward, we will draw on the experience during the COVID-19 pandemic, such as the use of remote working, virtual meetings and telemedicine to advance the development of digital workplace.

## ENHANCE TRAINING AND DEVELOPMENT

HA has a statutory responsibility to promote, assist and take part in the education and training of healthcare professionals, which is essential to sustaining the Hong Kong healthcare system and facilitating ongoing service improvement. In this regard, besides placing a strong focus on the training and development of our own staff, we are also taking a leading role in coaching and building up the local healthcare workforce.

In the coming years, we will continue to reinforce our staff training programmes as well as explore different ways of facilitating our staff to attend training in the midst of their busy schedule. Through structured training programmes delivered either internally or in partnerships with external parties, we aim to build up a Smart Workforce that is adaptive and responsive to our changing service needs. It is important that our staff have the necessary skillsets and mindset to take forward the strategies of Smart Care and Smart Hospital, particularly for the re-orientation of our service models and the application of big data and AI in patient care.

### Reinforce Staff Training Programmes

Our training programmes range from generic competency training to specialised professional training, covering both clinical and non-clinical staff. We will continue to offer corporate scholarship programmes for our clinical professionals to receive overseas training or attachments in priority service areas. Our training arm, the HA Institute of Health Care (HAIHC) and its member Institute of Advanced Nursing Studies (IANS) and Institute of Advanced Allied Health Studies (IAAHS), will also enhance their courses to upskill and train our medical, nursing and allied health professionals in the delivery of new and advanced services.

In addition, the newly established HA Institute of Health IT is developing structured ways of raising staff awareness and enhancing our workforce's digital literacy, including knowledge in using big data, digital technology and innovations, and the development of smart hospitals.

Moreover, with the recent establishment of the HA Institute of Vocational Training, we are better positioned to develop and provide systematic training as well as proper accreditation of training programmes for our supporting staff to meet dynamic operational needs. Besides enhancing flexibility in job deployment, the improved training opportunities will also facilitate the career progression of our supporting staff.

### Facilitate Staff to Attend Training

Besides, steps will be taken to enable our staff to attend training in view of their busy workload. Given our chronic manpower shortage, it is often not easy for our clinical staff to be released for training because such an arrangement must be balanced with service needs. The duration of training, especially overseas training, is also often cut short so that the staff can resume their frontline duties. Moreover, staff who act as trainers have less time to spare for conducting training activities, especially during office hours.

To tackle this issue, we will augment training relief support for the departments or service units to arrange additional manpower necessary for maintaining the service operation while their staff attend training or take up trainer duties. Specifically, the designated training fund will contribute to providing training relief for programmes that support our strategic priorities, such as corporate scholarship and simulation training for clinical professionals. Moreover, experienced staff retained through the SRRS may also contribute to the training of younger staff by taking up trainer duties and providing training relief.

# ENHANCE SERVICE SUPPLY

Complementary to the Smart Care and Smart Hospital strategies for improving our demand management through lowering the need of our patients for hospital care and increasing our operational efficiency respectively, we will take steps to enhance our service supply for meeting the escalating service needs. This is carried out mainly by scaling up the capacity of our healthcare services and facilities, and ensuring we have adequate financial resources to meet our operational requirements.

The strategic goal "Enhance Service Supply" recognises the intrinsic need to expand and modernise our hospitals and clinics so that they are better able to accommodate the mounting service volume as well as new service models and advanced technology expounded in the previous chapters. At the same time, in view of rising healthcare expenditure as a result of increasing service supply and medical inflation from advances in medical technology and pharmaceutical products, robust financial planning and resource management are essential for making the best use of available resources in a judicious way.

Overall, the strategies for enhancing service supply are as follows:

- Increase healthcare capacity by implementing Hospital Development Plans (HDPs) and bolstering the capability of healthcare facilities in meeting demand.
- Ensure financial sustainability by working out a viable funding arrangement with the Government and enhancing the development and use of costing information.

## INCREASE HEALTHCARE CAPACITY

In the coming years, we will continue to adopt a dual track approach to increasing our healthcare capacity. Firstly, a long-term capital planning approach is taken to carry out hospital (re)development and expansion projects through implementing the two Ten-year HDPs to modernise our facilities and build capacity for meeting future needs. Secondly, we continue to expand the service capacity of existing healthcare facilities and shore up their capability in meeting imminent demand.

### Implement Hospital Development Plans

The Government announced in the 2016 Policy Address that $200 billion had been earmarked for HA to implement a Ten-year HDP covering a total of 16 projects. Over 6 000 additional public hospital beds and more than 90 additional operating theatres will be provided upon completion of this First Ten-year HDP. Projects that have commenced and are currently in progress include the following:

- Extension of Tuen Mun Hospital Operating Theatre Block, and expansion of Haven of Hope Hospital, United Christian Hospital, North District Hospital and Lai King Building of Princess Margaret Hospital;
- Redevelopment of Kwai Chung Hospital, Kwong Wah Hospital, Prince of Wales Hospital phase 2 (stage 1), Queen Mary Hospital phase 1, Grantham Hospital phase 1 and Our Lady of Maryknoll Hospital;
- Development of the new acute hospital in Kai Tak Development Area; and
- Construction of HA Supporting Services Centre, and community health centre (CHC) cum social welfare facilities at Pak Wo Road in North District.

In addition, two CHC projects in Shek Kip Mei and Anderson Road are under planning. Subject to funding approval by the Finance Committee of the Legislative Council for the remaining projects, the First Ten-year HDP is planned for full completion by 2028.

We have also commenced planning for the Second Ten-year HDP after receiving policy support from the Government in the 2018 Policy Address.

#### *Design and Project Considerations*

Given that in-situ redevelopment of existing hospitals is very costly and requires a long lead time for decanting and maintaining minimal interference to the hospitals' daily operations, we will look into opportunities to make use of alternative and / or additional sites in the neighbouring vicinity to help shorten the timeframe and reduce costs. For instance, we are exploring the feasibility of carrying out the redevelopment of Princess Margaret Hospital using other sites in the vicinity to speed up the process.

Opportunities will be taken to subsume modern design and infrastructure in the hospital development projects for supporting our new service models and keeping up with contemporary standards of medical care. For example, a large ambulatory care centre offering a comprehensive range of day services will be incorporated in the (re)development of major acute hospitals. The information and communications technology fittings for supporting Smart Hospitals development, particularly trunking, will also be integrated into the building infrastructures. In addition, the feasibility of creating access links between the hospitals and nearby MTR stations will be actively explored whenever the opportunity arises in major capital works projects.

At the same time, the new or redeveloped hospitals and clinics will incorporate flexible space and facilities to allow for service adjustments according to the peaks and troughs in demand during the year, or in response to crisis situations such as infectious disease outbreaks. For instance, we are building general hospital wards with the necessary ventilation and design features for them to be switched to isolation wards and augment our infection control facilities as required, such as during epidemic or pandemic situations. The new ambulatory and outpatient facilities will also have adaptable spaces that can be readily reconfigured to meet different operational needs, such as rooms that can switch between consultation and multidisciplinary modes, and layouts that can be adjusted for additional infection control measures and supporting community testing or mass vaccination programmes.

Overall, the service commissioning of the HDP projects will be carried out in phases in accordance with the prevailing service needs of the community and resource availability, which will be deliberated through the corporate annual planning mechanism. The paced approach to service commissioning will help to ensure it is well tied in with the planning of manpower and other resources.

## Bolster the Capability of Healthcare Facilities in Meeting Demand

In parallel, minor works projects such as alteration and addition works will continue to be carried out in our hospitals and clinics to improve their facilities and service capabilities. This is put into effect using the one-off grant of $13 billion from the Government that was approved in 2013 for carrying out minor works projects over a ten-year period (starting from 2014-15). Around 5 000 projects are estimated to be carried out using the grant, the scope of which can be categorised as follows:

- Capacity Enhancement Programme such as renovating hospital wards to accommodate additional beds, and GOPCs to create more space for consultation rooms. Other examples include expanding treatment and diagnostic facilities like operating theatres, endoscopy units and cardiac catheterisation laboratories.

- Facility Rejuvenation Programme for improving and modernising the physical environment of our wards and clinics that have deteriorated through age and heavy utilisation.

- Universal Accessibility Programme for enhancing barrier free accessibility to our facilities. Examples include provision of lift towers, link bridges, ramps, dropped curbs, tactile guide paths, accessible toilets with grab rails and emergency call bells, tactile / braille signage, and visual fire alarms for persons with hearing impairment.

- Safe Engineering Programme for upgrading engineering installations to prevailing standards, such as lifts, electrical main distribution switchboards and emergency generators. This is especially important in light of the increasing use of advanced technology and medical equipment and the shift to a digital workplace.

- Regular maintenance / minor works and preparation for major capital works projects which include the general upkeep of our property portfolio such as repair works to structural elements, replacement of building services installations, and renovation to facilities other than wards and clinics, and carrying out feasibility studies and preparatory works for major capital works projects.

Meanwhile, we continue to expand the provision of high demand services. This includes opening additional beds as well as more operating theatre and endoscopy sessions, stepping up radiology and pathology capacity, and increasing SOPC and GOPC attendances. New facilities like discharge lounges will also be set up where appropriate to expedite the turnover of hospital beds to cater for the intensifying demand.

We are also keeping up service enhancements, particularly for time-critical care of life-threatening conditions like cancer, heart disease, stroke and renal failure. The scope and scale of the enhancement for specific services are in accordance with our published Strategic Service Frameworks (SSFs), including those for Cancer Services, Coronary Heart Disease, Genetic and Genomic Services, Rehabilitation Services, Palliative Care Services, Adult Mental Health Services, and Elderly Patients.

## ENSURE FINANCIAL SUSTAINABILITY

As the major public provider of healthcare services, HA relies heavily on the financial provision from the Government to meet service needs in ensuring that no person should be prevented, through lack of means, from obtaining adequate medical treatment. In turn, we have a responsibility to advise the Government on the needs of the public for hospital services and of the resources required to meet those needs. Our statutory obligation is to use the resources accountably and efficiently for providing high quality services.

In this regard, we will continue to discuss with the Government on a viable funding arrangement so that there is predictable and steady funding to enable our short- and medium-term service planning. We will also enhance the development and use of costing information to identify ways for improving the efficiency and long-term sustainability of our services.

### Work Out a Viable Funding Arrangement with the Government

Robust financial planning is performed through regular assessment of our service demand and corresponding financial resource needs. We are using a rolling medium-term financial projection model to carry out financial planning and facilitate discussion with the Government on the financial resource requirements of HA in the coming years. After deliberation, it was announced in the 2021-22 Budget Speech that the Government will continue to increase our recurrent funding progressively on a triennium basis for 2021-22 to 2023-24, having regard to population growth and demographic changes.

This will facilitate proactive plans of enhancing our service and manpower in alignment with the Smart Care, Smart Hospital and Smart Workforce strategies. Going forward, we will continue to reassess future funding needs and advise the Government on our resource requirements in the coming years.

### Enhance the Development and Use of Costing Information

Detailed costing information has become an essential tool for providing transparency in understanding how our resources are used and distributed, which would help to identify areas of inefficiency as well as opportunities for service enhancement. Hence, we will continue to develop and make use of costing information, service activity data and performance measures to provide useful insights for our clinical leaders and hospital management to make informed decisions about service improvements and transformation.

In particular, the costing analytics tool "Total Patient Journey Costing" (TPJC) has been developed to conduct resource utilisation analysis and forward service planning. TPJC uses an allocation model to work out the average service cost incurred by different groups of patients in a given time period. Taking into account the costs of different services provided during the course of patient care, along with patients' service utilisation, socio-demographic characteristics and disease profiles, the costing analysis can be conducted according to different dimensions, such as by age group and / or disease type. For example, analysis using TPJC and the data on non-communicable diseases retrieved from the HA Chronic Disease Virtual Registry can shed light on the average resource consumption of different groups of patients. Based on the characteristics of the groups that utilise the most of certain healthcare services and resources, targeted strategies and interventions could be worked out to better manage and address their needs. In the coming years, we will continue to develop and refine the TPJC tool and widen its analysis to generate more robust information.

# IMPLEMENTATION AND MONITORING

Strategic Plan 2022-2027 outlines the corporate directions and strategies for us to pursue in the coming five years to address our key sustainability issues. Overall, change management will be essential for the strategies to be implemented successfully. Specifically, mindset change among staff will be required under the leadership of top management to take forward the Smart Care strategies, especially the change in service model and practice.

The Strategic Plan serves as the overarching framework for guiding all aspects of our planning and development, based on an integrated planning approach that includes our services, facilities, manpower, IT, business support, financial resources, etc. In particular, it provides the foundation upon which our clinicians and executives develop and align their programmes and initiatives through a longer-term planning outlook.

In general, strategies and key initiatives of the Strategic Plan that require the addition or redistribution of resources will be implemented through the annual planning process. The Service and Budget Planning Committee (SBPC) chaired by the Chief Executive of HA and comprising all Directors and Heads and Cluster Chief Executives will steer the annual planning process to ensure the Annual Plans align with the Strategic Plan. In this regard, the five Annual Plans covering the period 2022-23 to 2026-27 will be the specific action plans for implementing the Strategic Plan.

In addition, the Strategic Plan will provide the overarching framework to guide the formulation of service plans for major clinical areas, such as the SSF on ambulatory care services, as well as the implementation of our existing SSFs and Clusters' Clinical Services Plans. In parallel, as the series of major capital works of hospital and clinic development projects proceed in accordance with the two Ten-year HDPs, the Strategic Plan will provide high-level directions for the service commissioning of completed projects. Overall, these will be pursued under the relevant governance mechanisms in HA.

At the same time, we will take into account and regularly review demographic and service statistics, with service demand projections covering the whole spectrum of HA services carried out at intervals to assess future trends. These data will further inform and guide the implementation of the strategies, and whether any fine tuning is needed in working out the details of the various service programmes and initiatives.

Similarly, the manpower situation will be closely monitored in terms of turnover rates, vacancies, manpower strength and age profile to facilitate workforce planning and deployment in the near term. Manpower projections carried out at intervals will also be used to inform about the longer-term staffing requirement of HA. Meanwhile, through staff surveys as well as other communication channels we will seek to better understand staff concerns and views on areas HA can further improve on.

Monitoring of the implementation of the Strategic Plan will be overseen by the Board and its Functional Committees. A progress report will be submitted to the HA Board on a biennial basis on the implementation.

Besides gathering information from Head Office subject officers on the developments in their respective subject areas, the progress report will also make reference to other existing reports on HA's services and performance, including for example:

- Quarterly progress report on strategic priorities and programme targets of the HA Annual Plan;
- Quarterly progress report on Key Performance Indicators (KPIs), covering aspects of clinical services, human resources and finance. This includes indicators on service growth, access, quality improvement, efficiency, manpower situation, staff wellness and financial position;
- Reports of various audit and outcome monitoring programmes in HA, such as the Surgical Outcomes Monitoring and Improvement Programme (SOMIP) report, and Annual Report on Sentinel and Serious Untoward Events; and
- Survey reports on patient satisfaction and experience.





# Abbreviations

| | |
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| A&E | Accident and Emergency |
| AI | Artificial Intelligence |
| CMS | Clinical Management System |
| COVID-19 | Coronavirus Disease 2019 |
| DHC | District Health Centre |
| DM | Diabetes Mellitus |
| GOPC | General Outpatient Clinic |
| HA | Hospital Authority |
| HARRPE | Hospital Admission Risk Reduction Programme for the Elderly |
| HDP | Hospital Development Plan |
| IDSP | Integrated Discharge Support Programme for Elderly Patients |
| IoT | Internet of Things |
| IT | Information Technology |
| MTR | Mass Transit Railway |
| NGO | Non-governmental Organisation |
| PPP | Public-Private Partnership |
| PSCC | Patient Support Call Centre |
| RCHE | Residential Care Home for the Elderly |
| SOPC | Specialist Outpatient Clinic |
| SRRS | Special Retired and Rehire Scheme |
| SSF | Strategic Service Framework |

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We welcome your suggestions on the
Hospital Authority Strategic Plan.
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This Strategic Plan can also be downloaded
from the Hospital Authority website.

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