

patients requiring a general anaesthetic is still to be determined as part of the Building 5 CSB commissioning.

4.1.3. In-Scope MI Modalities

This MI Service incorporates the (residual) MI in Building 12 not transferring to Building 5, CSB. The transferring in-scope MI is referred to as the new Core MI service. Modalities transferring out of Building 12 to a new location include some services that would represent an expansion to current modalities. The proposed Core MI service includes:

- Four general X-ray machines;
- Four Ultrasound machines (one procedural);
- Two procedural Computed Tomography (CT) machines;
- Two Magnetic Resonance Imaging (MRI) machines;
- One Fluoroscopy machine
- One Positron Emission Tomography (PET) / CT;
- Two Single Photon Emission Computed Tomography (SPECT / CT);
- One Gamma Camera;
- One Mammography machine; and
- One Bone Mineral Density (BMD) scanner.

Each of the core in-scope modalities are accompanied by supporting functions such as reception and patient amenities, plant rooms, reporting rooms, control rooms, hot labs, cannulation bays, uptake rooms, stress test room, clean store, medication, dirty utility, High Level Disinfection Unit Room (for ultrasound), and patient change/waiting/recovery areas, amongst other support facilities.

4.2. ROLE

The Core MI service to be relocated will operate extended business hours. The in-scope MI is intended to support:

- All inpatient demand that is not associated with the CSB (during extended business hours);
- All outpatient demand; and
- General community referrals.

The new Core MI service will operate as a 'booked or planned' MI service with some unplanned walk-ins from the community for X-rays. The service will **not** need to respond to the Building 5 inpatient/emergency/ICU demand except in situations where Building 5 requests patient examinations at the Core MI service.

The Core MI services will provide main reception capacity for overseeing booking and scheduling of inpatients and outpatients, supported by a patient kiosk or similar technology that can efficiently process patients on arrival. This means that the service can operate with maximum efficiency and not have emergency examination interrupt daily workflow. The booking system would be structured for the time necessary based on the modality and the types of examination required. There are standard booking slots for different examinations. There may also be additional time for examinations with students.

As the Core MI service, it will need to be accessible to the broader community as well as inpatients and outpatients. MI will operate a single centralised booking system that will include Building 5, University of Canberra Hospital, and Weston Creek Medical Imaging Service. There is also potential to include the future service at North Canberra Hospital site. It is expected that the Core MI services will operate only during extended business hours. All MI demand required by IPU's outside of the planned operating hours would be managed by Building 5's satellite MI services.

CHS provides a consumer-centred digital health environment that delivers on the principle of the "One Person, One Record" and enables clinicians to access and utilise a record that supports the Service Model, clinical workflows and other clinical guidelines and practices across disciplines, and physical locations. For Medical Imaging, EPIC Radiant provides both clinical and administrative needs from workflow, referral, vetting, protocolling, scheduling appointments, completing scans, complication tracking after invasive procedures.

The central booking staff and MI management and administrative staff are in-scope and included in the planned area. However, it is noted that much of this function does not need to be within the MI space. It could be located elsewhere on campus. This means that the Core MI service can be more flexible but will need to operate within the expected functional adjacencies outlined in Table 3-1, support effective wayfinding and operate with a higher level of efficiency than the CSB service.

The future role for MI will also include learning & teaching, and research. Of particular importance will be the Tiers 1 and 2 learning & teaching and research, and the increasing role of AI in the examinations and reading of images. This will be important to the design of the MI area.

The MI service would continue to develop and implement quality and risk management programs that support tertiary level services across CHS and is accredited against the Australian Council on Healthcare Standards (ACHS) and National Safety and Quality Health Service Standards (NSQHSS).

MI diagnostic services also have quality assurance requirements for standards of practice which includes meeting the requirements of the *Radiation Protection Amendment Act 2022*, maintaining Diagnostic Imaging Accreditation Scheme (DIAS), which is required for the provision of Medicare eligible rebates. Radiologists are also expected to actively participate in Royal Australian and New Zealand College of Radiologists (RANZCR) quality, research, and Accreditation programs. RANZCR Accreditation enables the recruitment and retention of appropriately qualified and skilled staff across CHS.

4.3. PATIENT PATHWAY

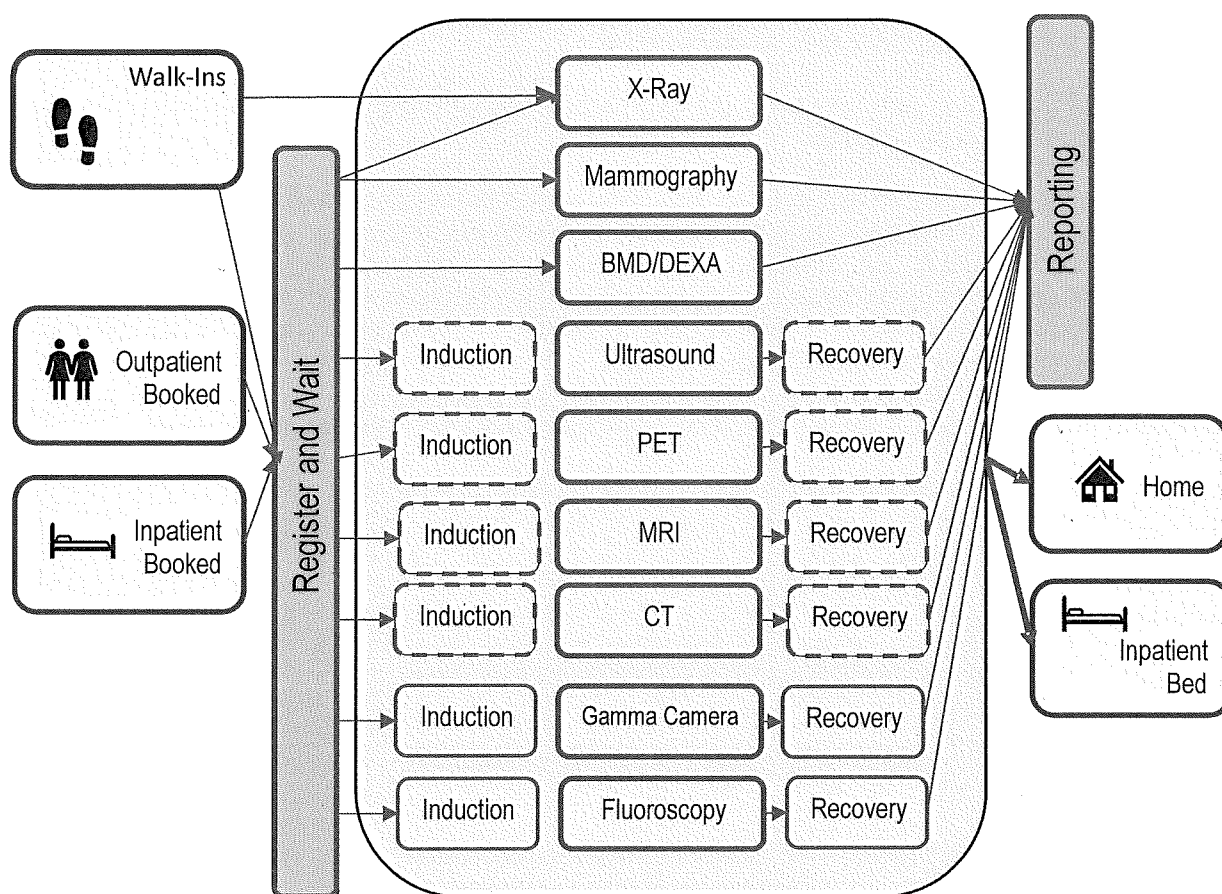
The patient pathway for the Core MI in-scope services is more complex than the patient pathway for the satellite Building 5 imaging service.

Patients, whether public or private, are **booked** (with the exception of walk-in general X-rays which and some unplanned outpatient appointments). All patients – with the exception of walk-ins for general x-ray - will have a scheduled time slot for the required examination for each modality.

On arrival the patient/relative/staff will register the patient against the booked time slot. This will occur at reception, by a receptionist or by electronic kiosk.

The patient pathway for inpatients and outpatients, and public or private, is essentially the same. The main difference is the arrival source and the destination after imaging. (See Figure 4-1 below).

Figure 4-1: Patient Pathway



It is noted that for some imaging examinations, it is necessary to have an induction (of contrast of various types, including radiation induction for some nuclear medicine and PET/CT examinations). These are identified in the following figure as dotted lines. Imaging that requires an induction will often require some level of recovery or observation post examination. Nuclear medicine examinations will require a gamma camera imaging and may also involve the combination of other modalities principally CT-SPECT.

For some imaging examinations, and for some patient cohorts, anaesthesia, or oral sedation (anxiolysis medication) is required. For patients requiring general anaesthesia, this FDB includes these patients being managed as a Request for Admission (RFA) in the MI in building 5, which is closer to the Specialist Post Anaesthetic Care Unit (PACU) for patient recovery.

Patients who may require oral sedation will be identified at the time of booking. The requirement of oral sedation may be noted on the referral, from previous procedures or upon communication with the patient.

Patient departure for inpatients is back to the IPU and for outpatients/community patients, the departure is to home. Some patients may be transferred to the unit from UCH.

4.4. FUNCTIONAL RELATIONSHIPS

Internal

MI as a clinical core support service is expected to be used extensively by the different inpatient and outpatient units. The following functional relationship diagram indicates that MI is important to locate where there is good access to all parts of the campus.

The new Core MI in-scope services may also refer patients to CSB modalities in periods of heavy use and over-booking, or the reverse.

Figure 4-2 identifies relative adjacencies for MI. This indicates that access to MI is pivotal to the efficient provision of inpatient and outpatient examinations across the campus. It has important links with Centenary Hospital for Women and Children, outpatients (particularly fracture clinic/orthopaedics), Building 19 Canberra Region Cancer Centre services and in Buildings 2 and 3. In many respects, it will be difficult to site the core MI service in any location without compromising ideal functional adjacencies for some clinical services.

Figure 4-2: Clinical Core Support Services Adjacencies Matrix – In-Scope Services

Relationship Matrix	Medical Imaging - CSB	Pharmacy	Health Information Services	Learning, Teaching & Research	Cardiology	Cardiology Diagnostics	Dermatology	Respiratory and Sleep	Infectious Diseases	Winter Surge/COVID ward	Endocrinology and Diabetes	Gastroenterology	Hepatology	Palliative Care	Renal Medicine (incl Dialysis)	Rheumatology	Neurology and Stroke	General Medicine	Day Medical (& HITH)	Addiction Medicine	Outpatients	Clinical Trials	General Surgery	Endoscopy	Orthopaedics	Ophthalmology	ENT / Head and Neck	Maxillofacial surgery	Plastic Surgery	Trauma Surgery
Medical Imaging -New Core	3	1	1	3	3	1	1	3	3	3	1	3	3	3	3	3	3	3	3	1	3	1	3	3	3	3	3	3	3	3

Legend

- 1 Directly adjacent (Horizontal / Vertical) 2 Easily accessible (less than 3 minutes) 3 Accessible (3 - 5 minutes)

There is preference in the Phase 2 Redevelopment that would locate the core MI with inpatients and/or outpatients to ensure patient-centred care imperatives. There are particular patient advantages where patient travel on-campus can be minimised, especially for those less ambulant, which means MI needs to be a reasonably short distance from inpatients, and from patient car parking/taxi/public transport, with 'direct paths' between services.

CH will work in partnership with UCH and the North Canberra Hospital to provide hospital MI services to meet the demand of all Canberra residents. As required, transfers from UCH, Weston Creek and the North Canberra Hospital may also occur if the patient requires a modality or examination that requires a Level 6 facility, or particular medical expertise (for example gamma camera or PET examination).

Develop facilities that can support an academic tertiary level teaching and research capability, and fully integrate and embed learning, teaching, and research into the clinical operations of CHS, which means as close as practical to the points of patient care delivery in IPUs, outpatients and clinical support services.

External

As a booked service, the new Core MI services is available to the community, including all referrals by general practitioners (GPs) and specialists, Walk-in Centre referrals not eligible for CHS community imaging (such as bariatric, complex cannulation, and non-ambulant patients), and in many cases by allied health professionals.

CHS has clinical learning, teaching and research partnerships, as well as the core in-house services, with professional groups and education providers for a range of undergraduate and graduate

medical, specialist, nursing, and allied health professions. It is also expected that MI will retain existing training and research activity with the ANU Medical School, UC, ACU, Charles Sturt University, and the CIT.

4.5. WORK PROCESSES

4.5.1. Hours of operation

The Core MI service will operate extended business hours, which is intended to support:

- All inpatient demand that is not associated with Building 5 satellite MI (during extended business hours);
- All outpatient demand; and
- General community referrals.

The extended business hours will be expected to be at least 8am to 8pm on weekdays and some limited hours on weekends for more common (diagnostic) modalities.

The MRI, fluoroscopy, gamma camera and other examinations that require induction are not proposed to be undertaken on the weekend or after-hours (except in the unlikely event that they were urgently required).

After hours emergency and urgent MI examinations would be managed by the satellite MI service in Building 5, not the Core MI service.

4.5.2. Patient transfer and movement

Inpatients and non-ambulant outpatients will generally require transport to and from MI by IPU support/nurse (for inpatients) or self-transfer/family (for outpatients).

There will be a reception area that acts as a central point of MI patient coordination. The reception area will have a general patient wait space. This will be the main waiting area for many modalities, whilst patients may also be directed to sub-wait spaces, particularly where there is a need for induction services. The IPU nurse will handover clinical information about the patient to the MI nurses via face-to-face, telephone, Digital Health Record or clinical documentation. Along with induction services comes the need for patient recovery or observation areas.

4.6. WORKFORCE

Staff and skills mix for the new Core MI service will ensure the following considerations:

- Expected planned demand (by type of examinations) by modality, by time of day will inform efficient rostering of staff for radiologists, radiographers, nursing, allied health, and IPU support staff;
- Planned adjustments of operating hours based on demand provides a more managed response to the effective operation of the MI service;
- Planned adjustments to specialist mix; and
- Enhanced planning of training opportunities in quieter periods.

The workforce will comprise:

- Radiologists, with different interest and modality specialisations, to manage the examinations, review, report images, and participate in research and case meetings. Supporting the consultants would also be Registrars and Junior Medical Officers;
- Chief and Deputy Chief Radiographer;
- Clinical Educator;
- Radiographers (MI Technologists and sonographers), with specialised skills across the modalities;
- Nurses where there are interventional services delivered;
- IPU staff provide 24/7 clinical support by way of manual handling, assisting with skin care and other patient needs, provide internal transport services for the transfer of patients throughout the hospital campus;
- Administration, IPU clerks, technical and other support staff; and
- MI operational management staff including the Clinical Director.

In addition, a future workforce would be in a position to support more learning, teaching, and research positions, particularly in newer modalities, and AI learning.

It is acknowledged that staffing will fluctuate over the course of time and over the course of a day. The indicative staffing above represents a basis for determining support staff spaces and patient/staff flow.

4.7. OPPORTUNITIES AND CHALLENGES FOR MEDICAL IMAGING

4.7.1. Workforce

The MI services at CH may be segregated by the development of the Satellite MI Site at CSB, which means strategies would need to be further considered to reduce the potential for staff isolation and to maintain perceptions of team coherence. These strategies will need to be planned and discussed with staff prior to transitioning to the CSB, and the new Building 10.

4.7.2. Technology-Driven opportunities

Like many areas in healthcare where technology plays a major part, MI has many potential opportunities. Not all of these opportunities are likely to present themselves in the short to medium-term.

Whilst it is possible that there will be technology leaps for MI, technology advancements at CH are most likely to be incremental in their application. This has been evident over recent years with leveraging current technologies that can be hybridised to enable a broader range of services that provide higher quality diagnostics for a range of clinical conditions. For example, hybridisation PET-CT, and for many cancers where nuclear medicine (gamma cameras) is used in combination with CT (SPECT), amongst others.

Other more future focused technologies that are likely to impact MI include:

- **Molecular Probes and Targeted Imaging.** This group of technologies is an extension of the gamma camera and SPECT technologies that can use custom-designed molecular probes to enhance the sensitivity and specificity of MI by targeting specific disease biomarkers. As a result, they can facilitate earlier disease detection, better tumour characterisation, and enable personalised treatment modalities.

This is an example of incremental developments as the replacement PET includes a module (provision by Eckert & Ziegler) that has radioactive labelling of molecules in PET examinations.

- **Portable and Point-of-Care Imaging.** Like other clinical support functions, integration of imaging technology into hand-held devices (such as an iPad) are becoming a major part of the clinical diagnostics. This enables collection of images from point of care locations (and from patients at home). Compact imaging systems provide value by generating quick and efficient diagnosis to aid decision making. This technology has the potential for broad application of MI in non-traditional MI settings.
- **AI and Machine Learning.** AI and machine learning algorithms are being integrated into all areas of healthcare, if not every industry around the world. Their value to MI can be substantial, from assisting (and potentially automating part of) image analysis, interpretation, and diagnosis, to improving the diagnosis accuracy and efficiency. Initially, AI may be used as an aid to Radiologists.

There is opportunity to implement AI assisted technology into operations as much as possible to increase clinical throughput while reducing labour intensive radiologist processes of review and reporting.

- **Ultra-High Field Imaging.** MRI scanners with higher magnetic field strengths (such as 7 Tesla and beyond) can substantially enhance the visualisation of fine anatomical details and subtle pathological variations/changes. They provide improved signal-to-noise ratio, spatial resolution, and have the potential to enable more accurate diagnosis for clinicians.
- **Augmented Reality (AR) and Virtual Reality (VR).** AR and VR technologies are being implemented into many different industries to achieve an enhanced user experience through both immersive and interactive environments. These technologies are particularly valuable (and revolutionising) for MI and medical education, surgical planning, and intraoperative guidance. 3D visualisation not only gives a much more enhanced representation compared with human sight, but also enhances spatial understanding which can be particularly beneficial to clinical practice.

4.7.3. Design and Practice Opportunities

There would appear to be three main areas of focus to improve the operations of MI.

- **Ground floor access.** A key design feature for MI is to be located on the ground floor where it is not land-locked by any other services. This will support the best access for patients, and for large imaging equipment to be removed and replaced with minimal disruption to other services.
- **Capacity to undertake the MI bookings and administration** for CSB, UCH and Weston Creek sites.
- **Provision for holding and uptake rooms** consistent with increased procedures and Gallium production on-site. This increases the space requirements that is not like-for-like.
- **Provision for sufficient ultrasound rooms** to support required undergraduate and graduate clinical learning and teaching requirements. This increases the space requirements that is not like-for like.
- **Future building design.** It is expected that MI modalities will continue to become more efficient and more clinically valuable as has been observed over the past few decades when a 4-slice CT was 'a wonder'.

A tangential development for the future is to reduce the 'table time' of patients in order to get higher examination volumes from the equipment across most modalities. The future design may want to enable the capacity to wheel in two patient trolleys to the CT scanning rooms at the

same time. This would enable staff to undertake a timelier 'slide-off' and 'slide-on' of simultaneously booked non-ambulatory patients and reduce waiting time between imaging procedures.

The design implications are potentially significant regarding radiation safety (partly addressed by modality manufacturers) and 'expendable' adjoining space, which means that spaces adjacent to modality rooms may need to be developed more flexibly to accommodate this future development.

- **Enhanced business opportunities.** A continuation of the same theme is to continue to develop CHS' MI service to support the viability of clinical services, including opportunity to expand the volume of community referrals. This can support the development of new machines, new services and deliver a more accessible MI service to the community. It is a key concept behind Weston Creek.

4.7.4. Operational Challenges

There will be operational challenges for MI whether MI is colocated with the MI services in CSB, or whether MI is located close to where most patients will be receiving services, that is as an inpatient or outpatient.

To consolidate MI with the planned CSB services will generate operational efficiencies for MI and may not result in patient-centred care.

There would appear to be operational challenges associated with the separation of the current MI with two sites; the CSB site and the new (yet to be determined) site for the new Core in-scope services.

- Two sites have the challenge of fragmenting staffing and skills for a service that is currently experiencing significant difficulty attracting and retaining staff. The workforce challenges for MI are also nationwide challenges that are expected to continue for several years.
- Two sites reduce the operational efficiency of MI, especially for the planned and unplanned services at the new Core in-scope service. It is expected to adversely impact service volumes, the FTE required and therefore FTE per examination.
- Having two sites that are not sufficiently proximal will result in the duplication of some support functions, and result in a larger footprint than would otherwise be achievable.

5. Pharmacy

Consistent with the principles of service delivery,

the service model is to consolidate the core pharmacy functions in one location that can generate operational efficiencies, knowledge transfer and leverage scope of practice of pharmacists;

and

ensure that pharmacists travel to and/or virtually participate in direct patient-centred care, including being an active part of multi-disciplinary team planning, undertaking medication histories and support contemporary use of medications.

5.1. DESCRIPTION OF THE SERVICE

The Pharmacy Service is a core clinical support function that supports the provision and quality (safe and effective) use of medicines throughout the health service.

5.1.1. Clinical Capability

The Pharmacy service at CHS operates at a Level 6 clinical capability. It is critically important that Pharmacy continues to operate at the highest clinical capability level as many other clinical services depend on Pharmacy being able to consistently function at Level 6¹⁰.

A Level 6 service means the provision of a comprehensive range of pharmacy functions that includes but not restricted to:

- Clinical pharmacy advice and support to all health service providers at CH in matters relating to quality use of medications in patient care;
- 24-hour on-call arrangements;
- Medication distribution to inpatient, outpatient, and discharged patients;
- Medication distribution to CHS health care locations in the community;
- Sterile manufacturing of cytotoxic medications for inpatients and approved outpatients, and clinical reviews of cytotoxic medicines;
- Pharmacological support for clinical trials;
- Sterile and non-sterile compounding, including infusions, ophthalmological preparations, and total parenteral nutrition;
- Provision of specialised pharmacy services for renal dialysis, drug and alcohol, oncology, and cystic fibrosis;
- Support of contemporary practice with pharmacy as part of a Multi-Disciplinary Team (MDT), particularly for clinical areas with complex or poly-pharmacy patients;
- Medication information distribution and promoting medication safety in the health service; and
- Quality and risk management programs in line with current NSQHS Standards as appropriate.

A description of a Level 6 Pharmacy is provided in Appendix A3.

10. NSW Ministry of Health, NSW Health Guide to the Role Delineation of Clinical Services, Fourth Edition, October 2019, available: <https://www.health.nsw.gov.au/services/Publications/role-delineation-of-clinical-services.PDF>.

5.1.2. Current Location

There are four pharmacies across CHS:

- Main Pharmacy and dispensary, Building 1 Level 3 (street level);
- (Specialist) Oncology Pharmacy, Building 19, Level 4, Canberra Region Cancer Centre. Whilst this pharmacy is not accessible to general patients, pharmacists visit clinics to provide services to oncology patients alongside their treating physicians/specialists;
- Justice Health Pharmacy Level 2 Building 3;
- Northside Hospital; and
- University of Canberra Hospital Pharmacy.

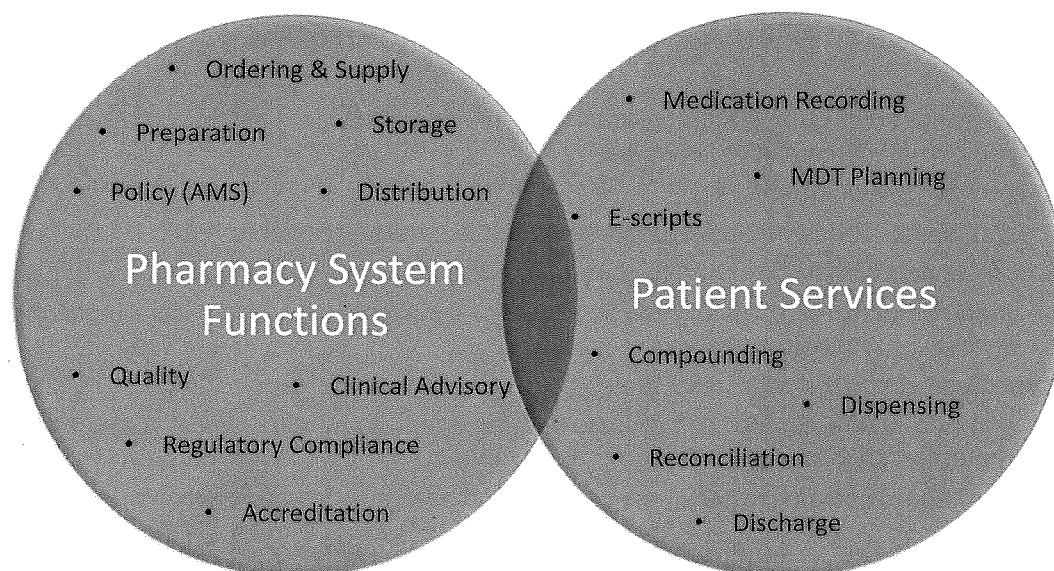
The main pharmacy in B1 is the in-scope Pharmacy service for this Service Model as it represents the criterion of 'like-for-like' relocation.

Nevertheless, the proposition is to use the Phae 2 Redevelopment Project to consolidate the three CH campus pharmacy sites as in-scope services.

5.1.3. Medication Management Cycle

The medication cycle can be important in ensuring that key facets of pharmacy that impact on facility design are captured as outlined in Figure 5-1. These can be separated into pharmacy system functions and patient service functions. The two are inter-related.

Figure 5-1: Medication Management Cycle



- Ordering and Supplies (inventory) includes:
 - ▶ Ordering of drugs and other medication-related supplies. Much of the ordering occurs manually. Increasingly, more of the ordering process will be electronic, based on a 'deliver on time' imprest system from suppliers/contractors. This includes pre-packaged (ready to use) medication-related supplies as well as 'bulk' ingredient supplies that require compounding or processing to suitable dosages.
 - ▶ It will be essential that medication use is electronically captured (through an integrated pharmacy system such as CHS's product of choice – *MerlinMAP*, integrating with EPIC

digital health record [DHR]) and so ensure an efficient automated tracking – and ordering - system in the future.

- Medication Inventory. In addition to the stock control and the reliance on an imprest system to deliver timely medicines for all clinical purposes, the on-site storing of medications is expected to change, with reduced space due to an efficient imprest system, and increased space needs due to the ever-increasing range and type of pharmaceutical products that need to be available. Therefore, it is expected that overall inventory space will not reduce.

Pharmaceutical products have different storage requirements including some that are refrigerated (at different temperatures). Others will also require temperature monitoring, even if not refrigerated.

There are regulatory requirements for the secure storage of restricted (scheduled) medications that are applicable within the pharmacy, at satellite pharmacies and, of course, in patient areas.

The storage of pharmaceuticals and medication-related products does mean that inventory systems are an important tool to reduce risks associated with non-compliance, as well as medication error (for example similar looking medications). These risks are ever-present and would be reduced in the future with the development of robotics into the dispensing functions of pharmacies. (see below)

- Dispensing includes ensuring that medications as prescribed are dispensed to the right patient at the right location, and with relevant safety advice and patient information.
- Distribution of Medication. The current distribution is mainly by pharmacy staff delivering to designated wards and other patient areas (by hand, trolley or tugs). Distribution can also occur by patient pick-up at pharmacy, and CH staff collecting medications.

The nature of the medications, including half-life, toxicity and restriction of the medication influences the method of distribution.

The distribution systems are likely to change significantly in the future. There are low tech systems such as pneumatic tubes and ADCs as well as robotics and AI (as per Section 5.6.2)

- Medication Histories includes reviews of patient medications. Ideally, all patients arriving at hospital would have their medications reviewed, particularly for assessed high risk patients such as day surgery, oncology, addiction medicine, ED, and MAPU; or high-risk medicines (such as narrow therapeutic index).
- Therapeutic Drug Monitoring and Medication Safety, including for admitted patients:
 - ▶ For allergies, adverse reactions, patient comorbidities (such as renal/liver function, age, weight etc);
 - ▶ Drug interactions and dosage;
 - ▶ AMS policy compliance;
 - ▶ Reconciliation of all transactions of prescribed medicines; and
 - ▶ Accurate and accounted/reconciled recording of scheduled medicines. The reconciliation function ensures that the intended therapies (considering usual community-based care and the patient's condition) is the prescribed therapy and that all changes to the therapy are clearly documented and communicated to the patient (and the care team), reducing unintentional changes to patient's medicine regimen. This supports continuity of care and reduces medication errors.

- Preparation and Compounding includes the production and supply of customised medications to patients when ready-made preparations are not commercially available. This service is currently provided from the main pharmacy (Building 1) and Canberra Regional Cancer Centre (Building 19). The new facility in oncology will enhance the quality and scope of the compounding service.
- Multi-Disciplinary Team patient planning includes contributing to, and supporting patient planning/decision-making, provide advice on medication prescribing and address medicine-related issues.
- Discharge that includes:
 - ▶ Provision of current medicines list, highlighting relevant information to facilitate continuity of care (e.g. any medication changes and reason for change)
 - ▶ Provision of medication counselling and patient education; and
 - ▶ Communication to support patient through transition points and improve coordination (e.g. to community or aged care settings).

Discharge is often a critical point in the patient flow that can be adversely impacted by a number of factors such as inaccurate prescriptions, and untimely prescriptions, and distribution of medications. This will continue to be a challenge. New and more efficient ways of dispensing to discharged patients will be part of overall enhanced patient experience and operational efficiency. (see below)

- Clinical advisory services include advisory pharmacy services to other CHS sites and public hospitals in the region.
- Clinical Trials. Pharmacy at CH plays an important role in clinical trials including:
 - ▶ Dispensing and/or compounding, storage, education and advisory of drugs used within these trials;
 - ▶ Creation of randomisation and blinding within the trials;
 - ▶ Monitoring of adverse events that may arise during the process; and
 - ▶ Management of compliance including regulatory and ethical considerations and documentation of all necessary processes in relation to the trial.
- Quality, regulatory compliance and accreditation includes:
 - ▶ Electronic drugs of addiction recording: Maintaining an electronic drugs of addiction (Schedule 8) drugs or Controlled Drugs register. Procurement of electronic registers for controlled medicines management are approved but not yet implemented;
 - ▶ Stewardship programs for high-risk medicines;
 - ▶ Drug use evaluations;
 - ▶ Specific compliance frameworks for accreditation, Pharmacy Board of Australia, TGA and AHPRA;
 - ▶ Quality and risk management programs in line with NSQHS Standards; and
 - ▶ Health authorities policies in relation to the use of pharmaceuticals including *anti-microbial Stewardship (AMS)*, which optimises antimicrobial use within clinical practice that minimises the risk of antimicrobial resistance whilst maximising patient outcome.

5.1.4. Training and Research

Learning/Teaching functions are provided by Pharmacy for pharmacy and medical undergraduates.

CHS has six strategic commitments in relation to teaching and learning that is outlined in Section 6 below and applies to pharmacy as it does to any other clinical service.

A cornerstone is to build learning and teaching into the flow of the clinician's day. This means rooms available on each unit or a shared area readily accessible to clinical (patient) areas (Tier 1 and 2 spaces). To complement the integrated clinical spaces, a learning/teaching hub would provide greater opportunities for education.

5.1.5. Research

The research role for pharmacy will be significant as will participation in research, the most obvious being clinical trials but there are many more roles that pharmacy can develop, such as cutting-edge clinical models (such as CAR T-cell therapies and other specific MTM therapies) that are tailored to the individual patient.

5.1.6. Administration

Pharmacy administration is incorporated in the central pharmacy location. Administration includes all CHS pharmacy services including the satellite service at UCH.

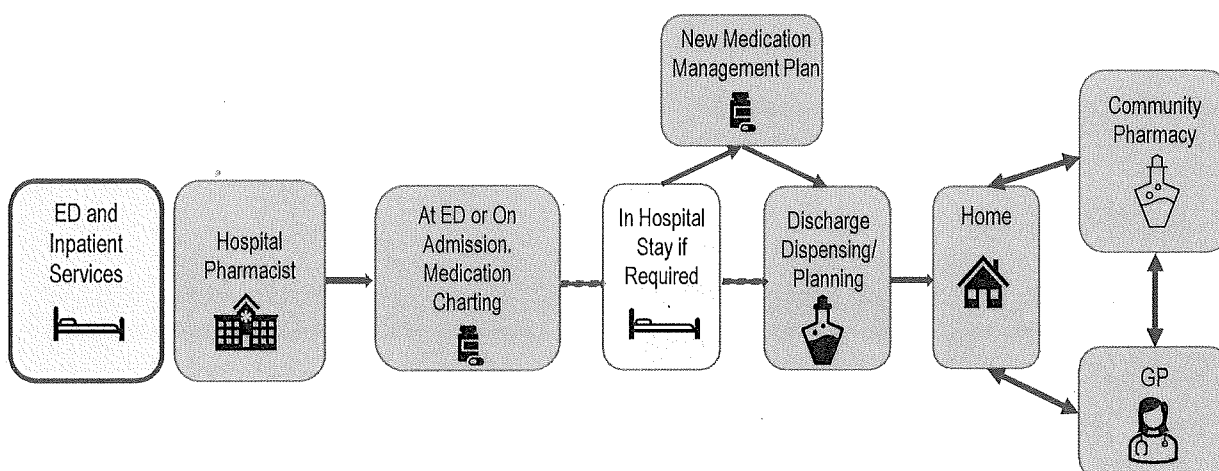
Administration functions are estimated to be approximately 219 sqm NDA.

5.2. PATIENT PATHWAY

The respective patient pathways for inpatients and outpatients at CH in relation to the pharmacy service is shown in Figure 5-2 and Figure 5-3 and described below.

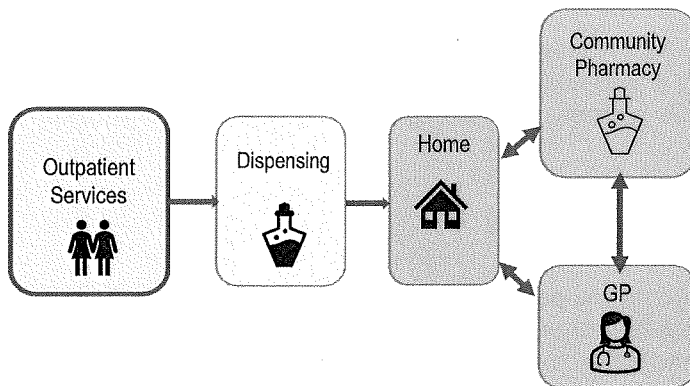
For inpatients, a hospital pharmacist will visit the patient while they are admitted. The patient's current medications will be discussed, and any changes to medications after treatment, if known. Discharge pharmacy services include dispensing of medication (with a default supply equivalent to the quantity outlined under the Pharmaceutical Benefits Scheme) and arranging services with the patient's local community pharmacy.

Figure 5-2: ED and Inpatient Pathway in Relation to Pharmacy Service



For outpatients, some medications may be dispensed by the hospital at the time of the specialist outpatient service. Most often these are medications that are usually only available at hospital pharmacies. Otherwise, scripts are dispensed at the patient's community pharmacy of choice.

Figure 5-3: Outpatient Pathway in Relation to Pharmacy Service



5.3. WORK PROCESSES

5.3.1. Hours of operation

Pharmacy services currently operate from 8.30am-4.30pm Monday to Friday with extended hours (emergency service) from 4:30pm-7.00pm, and on Saturdays and Sundays from 9.00am-4:30pm. There is:

- A remote clinical pharmacy service (5pm to 1am weekdays and 2pm to 10pm Saturdays);
- A limited pharmacy service for surgery that commences at 7am;
- An emergency on-call pharmacy service for all other times; and
- A plan to move towards a 24-hours, 7 days service model in the future.

5.3.2. Care planning

The Pharmacy service of the future will support/contribute to the patient care plan for each multi-day stay patient, and some high risk same-day patients.

The care plan will outline the medication management before and after treatment, and post-discharge medication regime including attendance interval at local GP/community pharmacy for ongoing monitoring and follow up assessment(s).

Patients and carers are counselled about any required change in current medication, as well as newly added medication after procedure, including any potential adverse effects.

5.4. WORKFORCE

Staff and skills mix for the main Pharmacy Service would ensure consideration of the range of general and specialised pharmacy skills, experience, and core competencies to manage the range of pharmacy services expected of a Level 6 service¹¹.

In addition, a future workforce would be able to support more teaching and research positions, particularly in new clinical practices, individual therapies, and safer use of medicines.

11. NSW Ministry of Health, NSW Health Guide to the Role Delineation of Clinical Services, Fourth Edition, October 2019, available: <https://www.health.nsw.gov.au/services/Publications/role-delineation-of-clinical-services.PDF>.

It is acknowledged that staffing will fluctuate over the course of time and over the course of a day. The indicative staffing above represents a basis for determining support staff spaces and patient/staff flow.

Table 5-1: Indicative Pharmacy Staffing by Workforce Category

Staff Category
Clinical Director of Pharmacy
Deputy Directors
Clinical Specialist Pharmacists
Senior and other pharmacists
Pharmacy technicians
Pharmacy Students/Residents/Interns
Pharmacy Informatics Officer
Administrative Support

5.5. FUNCTIONAL RELATIONSHIPS

Pharmacy has functional relationships with **all clinical services at CH and other campuses**.

There are some clinical relationships that are stronger and more prominent than others, which may have influence over the following:

- Automated Dispensing Cabinets (ADCs); and/or
- Regularly assigned pharmacists to patient planning meetings and clinical areas; and
- IPU rounds for newly admitted patients.

Notwithstanding the critical and close clinical support provided by pharmacy, the central pharmacy does not need to be proximal to other clinical services.

External relationships include:

- Healthcare providers (e.g., GPs, specialists, and allied health practitioners): providing medication management such as drug selection, tailored patient (medication) service, advice about drug interactions, dosage requirements/adjustments, and alternative therapies;
- Regulatory Agencies (such as Pharmacy Board of Australia, TGA and AHPRA) to ensure ongoing compliance;
- Health Authorities in relation to regulatory regimes and AMS;
- Research Institutions and Universities;
- Medicines procurement and distribution services;
- Quality and risk management programs in line with NSQHS Standards current as appropriate;
- Aboriginal programs and services including relevant referral pathways; and
- Community pharmacies.

5.6. OPPORTUNITIES AND CHALLENGES FOR PHARMACY

5.6.1. Location and Configuration of Pharmacy Services

As noted above, the main pharmacy in B1 is the in-scope pharmacy service for this Service Model as it represents the provision of 'like-for-like'.

The proposition is that the three CH campus pharmacy sites be consolidated and form part of the in-scope services. The proposition is based on the greater synergies and benefits that would accrue from consolidation of the satellite pharmacy functions. The consolidation benefits include:

- Bringing together limited specialist pharmacy knowledge/expertise;
- Enables better use of pharmacists to operate at the top of their scope of practice, more of the time;
- Knowledge transfer and training of pharmacists can be better developed and coordinated; and
- Provides greater flexibility in the use of pharmacy resources.

Consideration has also been given to the dis-benefits of consolidation. The main reason for developing satellite pharmacies is to bring pharmacy closer to the clinical teams and develop greater depth of pharmacy expertise in specific clinical areas. This major benefit of satellites does not hold as true in the contemporary pharmacy context as most pharmacists can operate virtually and have input into patient care, patient planning meetings, virtual medication histories and secure remote dispensing through ADCs etc.

Similarly, whilst pharmacy need to be well-integrated in the care teams, the functional adjacencies indicates that pharmacy department does not need to be in close proximity to the wards or outpatients. On the basis that pharmacy is not proximal, then there needs to be ICT virtual connectivity, and efficient methods of sending dispensed medications across the campus, particularly to avoid delayed discharge.

On balance, the consolidation option is considered to provide more advantages in the short and longer-term than the current continuation of the three sites on campus.

5.6.2. Technology-Driven Opportunities

There are opportunities for pharmacy services to more suitably utilise existing technologies that are not currently available at CH. These include:

- Automated Dispensing Cabinets. These pharmacy-loaded cabinets would normally be located at relevant POC across the campus, usually wards, and provide a controlled means of distribution (particularly for Schedule 4 and Schedule 8 medications) that can be automatically tracked and updates the DHR.

CH currently has a Pyxis machine ED (which will move to Building 5 CSB), an iDose in Building 7 and is looking to *significantly expand on the use of ADCs across campus. This would include the new in-scope buildings.*

The benefits of ADCs are to monitor the use of (highly restricted) drugs, who accesses the drugs, reduced paperwork for nurses, automatic imprest, and reduced dispensing time of pharmacists. The value of ADCs is broadly accepted across the pharmacy sector, and particularly useful in clinical areas that use higher volumes of S4 and S8 drugs, including critical care, palliative care, mental health amongst others.

- Robotics is becoming more commonplace in larger public hospital pharmacies across Australia. Robotics identify the correct medication and dosage, collect and dispense, reducing human error in the selection, and dispensing of medications, saving the time of pharmacists, automatic stock control, and improving operational efficiency by requiring reduced floor space.

A Single Dose Dispensing robot is seen as a viable option for CH. These systems are best considered when undertaking capital redevelopments as is the case with CH Pharmacy. There are particular benefits of this type of robot including after-hours (say 11pm to 4am) dispensing to prepare for what the wards require the next day and have the right logistics in place for delivery into the wards. These types of robots are not common in Australia at this time. CH would be one of the early adopters of a unit-dose dispensing robot for pharmacy.

A compounding robot may not be as close to bringing to fruition but has not only the benefit of being more precise in compounding, and eliminates OH&S considerations for pharmacy staff.

- Data Analytics and Decision Support appears to be an underutilised tool for the pharmacy service and can be better leveraged to analyse patterns in medication prescription and utilisation, and for optimising medication management. Advanced analytics would be incorporated into an iPharmacy solution as noted above.
- Pharmaco-genomics and Medication Therapy Management (MTM) Programs
 - ▶ Pharmacogenomics complements the burgeoning growth on individualised medical care that would require tailored medications to individual patient needs and offers opportunities for further CH to collaborate in trials and provide pharmacists with an emerging area of career opportunities.
 - ▶ MTM programs involve the development of personalised medication regimes through medication reviews, drug assessments, patient consultation via a multidisciplinary team-based approach. These are leading edge pharmacy services. Such developments would provide a strong recruitment and retention factor for CH.
- Community Pharmacy roles. CH could develop a strong presence that supports clinical liaison pharmacy services in the community (that would not compete with commercial pharmacies) by providing a medication review and advisory service.

5.6.3. Extension of Operations

There are also opportunities in the future that do not require additional technology as much as a change in the 'operating model' for pharmacy. These changes are expected to be incremental and respond to:

- **Enhanced engagement** as an integral part of MDTs;
- **Telehealth (and Tele-pharmacy).** The traditional modes of pharmacy dispensing have been challenged during COVID-19. The increase in remote patient care and monitoring that build on programs such as HITH and other home-based services will necessitate consideration of expanding ways of prescribing for areas such as at-home chemotherapy and other oncology services.

Tele-pharmacy would enable CH to play a more prominent role in advising clinical services at rural and remote hospitals and health services where communities are underserved. In other regional services, this has meant expanding the core of pharmacists to support an outreach role, which in turn provides greater operational scale, and supports additional training. Design of Tier 1 and Tier 2 spaces will be important.

- **Increased specialisation of pharmacist roles** in specialist units; and

- **Extension of hours** to move toward a 24-hour service provision. The dispensary is currently operating 8.30am to 7pm on a weekday and this is expected to be extended. A 24/7 dispensing service is feasible with robotics.

6. Learning and Teaching

This section considers the learning and teaching functions of CHS in the context of the Phase 2 Redevelopment Project. Learning and teaching, are clinical support functions that are integral to the future operations of CHS.

Consistent with the principles for learning and teaching identified in section 2.2.3 above,

The objective of the service model is to:

Develop facilities that can support an academic tertiary level teaching and research capability;

and

Fully integrate and embed learning, teaching, and research into the clinical operations of CHS, which means to embed learning, teaching, and research as close as practical to the points of patient care delivery in wards, outpatients and clinical support services.

6.1. CONTEXT

CHS has a current strategy that set the direction for learning and teaching; *The Canberra Health Services, Clinical Learning and Teaching Strategy 2023 – 2027*.

CHS Office of Research and Education has been tasked to develop and implement the strategy across the organisation to strengthen CHS' position as tertiary academic teaching health service and fully integrate learning, teaching and research as core functions.

As an academic teaching health service, CHS takes a multidisciplinary approach to clinical learning and teaching, providing learners with the exposure to complex patients, rare diseases and learning and teaching that allows them to work and learn from all disciplines involved, including the consumers and carers themselves.

- Learning and teaching programs: The health service offers diverse programs, including medical, nursing, and allied health professional training. These programs emphasise evidence-based practice, interprofessional collaboration, and the acquisition of clinical skills.
- Clinical placements: The health service provides clinical placements for students, enabling them to gain practical experience under the guidance of experienced healthcare professionals.
- Continuing education: The health service promotes lifelong learning among its staff by offering professional development opportunities, conferences, and workshops.

6.2. LEARNING AND TEACHING STRATEGY

CHS' *'Clinical Learning and Teaching Strategy 2023 – 2027'*¹² provides the overarching vision, goals and strategic commitments to clinical learning and teaching. The six Strategic Commitments are:

- Strengthen governance and processes to prioritise and enable learning and teaching.
- Prepare and support the clinical workforce to work safely and effectively at the leading edge of their practice.

12. Canberra Health Service, *Clinical Learning and Teaching Strategy 2023 – 2027*. Available: https://www.canberrahealthservices.act.gov.au/_data/assets/pdf_file/0012/2222040/69e04bc4df49dfd4a9ff49375fe0a3bcfd9dd628.pdf

- Develop and support the clinical workforce to deliver effective, innovative, evidence-based teaching and point of care clinical supervision.
- Establish collaborative environments that maximise and enable effective, innovative, and efficient learning and teaching.
- Foster and strengthen strategic partnerships for learning and teaching with clinicians, consumers and carers, communities, and academia.
- Promote, share, and celebrate learning and teaching.

At the core of the strategies is a pathway to strengthen CHS as a tertiary level academic teaching health service. The current state strategy is one of early foundational steps toward a strong learning culture that embeds a person-centred approach, is learning-focused and evidence-based, and is adaptive to changing healthcare requirements. It is supported by leaders who prioritise and take responsibility for delivering quality learning and teaching outcomes.

The Phase 2 Redevelopment is intended to support the core strategies and enable next steps on the pathway.

6.3. CURRENT STATE

The learning and teaching function is ubiquitous across CHS, although as noted above it continues to develop as an academic tertiary level teaching service.

There are nevertheless some specific issues for the current state that will form a 'platform' for considering teaching and research in the context of Phase 2.

The current state:

- **Teaching integrated with clinical management.** Formal undergraduate and post-graduate teaching that occurs for medicine, nursing and all allied health services, for all clinical service types, is expected to continue, (supported by embedded facilities as identified above).
- **Teaching as a Requirement of Accreditation.** Virtually all clinical subspecialties that are in-scope for redevelopment require evidence of teaching as part of their accreditation. Of particular note are:
 - ▶ Medical Imaging, which currently has:
 - Designated teaching areas (consistent with the in-house training program for MI technologists; and
 - Sufficient space within modalities and viewing rooms that are able to accommodate trainees as needed.
 - ▶ Pharmacy training spaces;
 - ▶ Pathology, which is required to have a teaching program, however this is mainly focused on medical staff. Pathology has provision for:
 - Multi-microscope teaching spaces on benches on different floors;
 - Allied health staff including developing scientists have no current access to dedicated educators or access to training rooms; and
 - Other registrar teaching space, albeit confined.
- **General undergraduate and post-graduate teaching** across the inpatient and outpatient services for in-scope clinical specialties. In many respects teaching space is 'included' in the bedside and clinic points of care for students.

More broadly, there are no designated teaching areas on wards or in outpatients that can be used for teaching that are features of a contemporary hospital design, currently we only have an auditorium in building 2 with limited access and functionality and there is little to no access elsewhere on campus that meets the growing needs of medical, nursing and the allied health workforce.

6.4. A WAY FORWARD

In the context of CHS policy to actively support its teaching function as a core service, the Phase 2 Redevelopment Project provides an opportunity to further develop these strategies.

The way forward can be marked by different 'signposts' of progress toward an academic tertiary teaching hospital. Learning and teaching is proposed to progressively develop:

- **Governance structures** that enable a multidisciplinary centralised approach that enables monitoring and reporting on quality learning and teaching outcomes. CHS will progressively support more academic staff, whether academic clinicians or dedicated clinical staff. It requires continual fostering of leadership, accountability, knowledge exchange and academic engagement.
- **Learning and teaching** that takes a multidisciplinary approach and provides planned exposure to complex patients, rare diseases and learning and teaching that allows them to work and learn from all disciplines involved, *including the consumers and carers themselves*. They need this multidisciplinary approach to become extraordinary clinical experts. The role requires a diversity of facilities and spaces consistent with the tiered analysis above.
- **Health consumers and carers** who are actively engaged in learning and teaching with respect to:
 - ▶ Sharing lived experience;
 - ▶ Family and carer involvement in the future treatment plans;
 - ▶ Consumer-centred simulation, which is where CH would employ consumers and carers to participate as simulated patients or participate in debriefing sessions offering feedback on healthcare interactions and communication in the learning and teaching environment; and
 - ▶ Evaluating effectiveness holistically.

The most important considerations for learning and teaching for the Phase 2 Redevelopment Project include:

- **Collaboration and Interprofessional Learning** that include learning and teaching spaces in or close to patient treatment spaces. These spaces bring together individuals from various disciplines, such as doctors, nurses, pharmacists, and allied health professionals, fostering opportunities for multidisciplinary education and teamwork.
- **Experiential learning** such as simulation spaces and clinical skills labs. These are hands on learning away from patient treatment spaces.
- **Networking and knowledge exchange** that are most likely to have dedicated spaces for sharing experiences, networking and foster informal information exchange.
- **Technology integration** where CH would champion technology enabled infrastructure that incorporates advanced technologies that enhance educational experiences. These may include state-of-the-art audio-visual equipment, virtual reality simulations, telemedicine capabilities, and digital resources.

By integrating technology, healthcare professionals can access up-to-date information, engage in interactive learning experiences, and explore innovative approaches to patient care.

As part of the vision of the *Clinical Learning and Teaching Strategy* a dedicated facility (or facilities) that provides teaching and learning hub with hi-fidelity, consumer-centred simulation laboratories and mobile-simulation capability for teaching across all typical patient settings, with specific access to tutorial, seminar rooms, multi-media spaces and amphitheatres. With the intention of generating revenue in the future from such a learning and teaching hub.

To achieve CHS' strategic commitments in the context of a contemporary health precinct, training space/facilities are to be embedded in the patient care/treatment areas, and for clinicians, built into the flow of the clinical day.

For the design of the new facilities it will mean a **tiered approach**, where:

- Tier 1 is teaching/learning as part of the spaces designed where patients are treated/managed including outpatient rooms, ward areas and clinical examination spaces. The key concept here is **embedding**. These developments would bring CH up to contemporary standards and practices common in newly developed tertiary hospitals;
- Tier 2 is teaching/learning spaces on wards and **proximal to patient treatment areas** that enable review, collegiate discussions, and virtual learning experiences through meeting/consultation rooms. This would also provide suitable teaching space associated with formal training for accreditation in clinical specialties; and
- Tier 3 is teaching/learning spaces that are for more formal learning and teaching away from patient areas that, for an academic tertiary hospital, could be expected to have larger auditorium spaces, academic administration space, teaching demonstration spaces (such as the gross anatomy museum), hi-fidelity simulation spaces for different clinical settings, and consumer experience spaces used for teaching and learning. This could also enable national and international research and large conferences to be held at Canberra Hospital, potentially creating new revenue streams.

The tier 3 type services may be well-suited in a **separate teaching, learning and conference facility on campus** that remains clinically connected. This would be undertaken in collaboration with academic institutions.

The tier 1 and 2 teaching/learning elements are proposed to be designed into the 'fabric' of the new facilities.

7. Research

This section considers the research role of CHS in the context of the Phase 2 Redevelopment Project. Research is an important clinical support functions to the future operations, and reputation of CHS.

Consistent with the principles identified in section 2.2.3 above and repeated from the Learning and Teaching section (above),

The objective of the service model is to:

Develop facilities that can support an academic tertiary level teaching and research capability;

and

Fully integrate and embed learning, teaching, and research into the clinical operations of CHS, which means to embed learning, teaching, and research as close as practical to the points of patient care delivery in wards, outpatients and clinical support services.

7.1. CONTEXT

CHS has a current strategy that sets the direction of research; *The Canberra Health Services, Research Strategy 2021-2025*.

The CHS Office of Research and Education has been tasked to develop and implement the strategy across the organisation to strengthen CHS' position as tertiary academic teaching health service and fully integrate learning, teaching, and research as core functions.

As an academic teaching health service, CHS takes a multidisciplinary approach to clinical learning and teaching, providing learners with the exposure to complex patients, rare diseases and learning and teaching that allows them to work and learn from all disciplines involved, including the consumers and carers themselves.

- Learning and teaching programs: The health service offers diverse programs, including medical, nursing, and allied health professional training. These programs emphasise evidence-based practice, interprofessional collaboration, and the acquisition of clinical skills.
- Clinical placements: The health service provides clinical placements for students, enabling them to gain practical experience under the guidance of experienced healthcare professionals.
- Continuing education: The health service promotes lifelong learning among its staff by offering professional development opportunities, conferences, and workshops.

7.2. RESEARCH STRATEGY

The *Research Strategy* outlines the vision for research to “create an inclusive research community, which aims to deliver exceptional healthcare”, with the primary goal being collaborative research as a core strategic aim of the organisation, enabling academic partnerships to co-create exceptional patient care.

To achieve this vision, the strategy document also sets forth six strategic commitments that reflect CHS's strong aspirations to embed and grow research:

- Establish governance and processes to enable and value impactful research;
- Create a workforce which enables a strong research culture;
- Create an environment which enables research activities;
- Create impactful research partnerships with academic and industry partners;
- Create impactful research partnerships with consumers and communities; and
- Create a strong communication strategy for CHS research.

*A robust research strategy is seen to have the potential to be a major plank in the development and growth of CHS as a health care provider and **recruitment strategy for workforce**.*

The development of research as part of the Phase 2 Redevelopment Project can assist on the path to achieving the strategy, most notably to deliver a large research capacity as a stepping stone to a longer-term research and teaching precinct on CH campus.

7.3. CURRENT STATE

A research ethos is not embedded in the culture of the organisation. Research tends to be ad hoc and subject to the clinical interests of individual clinicians and the capacity of the clinical divisions to support the research.

There are nevertheless some specific issues for the current state that will form a 'platform' for considering research in the context of Phase 2, including research:

- Wet labs on Levels 5 and 6 of Building 10 that, by agreement, are managed by ACT Health.
The total area that is managed by ACT Health is approximately 1,808sqm Net Departmental Area¹³ (NDA) (between 2,100-2,200 sqm GDA) across two levels.
The current range of dedicated in-scope research projects include research in cancer, cardiology, gastroenterology, macrophage biology, endocrinology, paediatrics, and immunology.
It is understood that many of these projects are completing their natural cycle and not all space is being effectively utilised;
- The current research space is Physical Containment level 2 (PC2) certified¹⁴ and that all activity on these floors also need to be PC2 compliant;
- It is also recognised that the current space is not of a contemporary design that results in inefficient research; and
- The 'animal house' in the basement of Building 10 associated with ANU research utilising approximately 121 sqm NDA (163 sqm GDA).

All the above research area is in-scope for the project criterion of 'like-for-like'.

At present ACT Pathology occupies some of the research space on a 'loan' basis whilst not being used for ACT Health research third parties. This is estimated to be 262 sqm NDA:

- Anatomical Pathology (40sqm); and
- Immunology and Infectious Immunoassay (222sqm).

13. Same as "net functional area".

14. https://www.ogtr.gov.au/sites/default/files/files/2021-07/guidelines_for_certification_of_a_physical_containment_level_2_laboratory.docx, March 2013.

The implication is that the current research space that is being 'loaned' is required for core pathology functions and has been incorporated into core space requirements in the Pathology Service Model. This implies that more than 'like-for-like' space will be required by about 262sqm plus circulation and plant whilst retaining all of the current ACT Health research space of 1,808sqm.

Notwithstanding the current position, there are important issues that will need to be addressed that have timelines outside of the Phase 2 planning. These are:

- The strategic value of, and ongoing need for, an animal house for research, or if an animal house is needed, whether the facility is needed as a breeding or housing facility. The working assumption for this service model is that the animal house will be in-scope and on campus.
- The relationship between the ACT Government and ANU announcement of a new 'science and research' facility and CHS's research aspirations is not clear. The newly announced facility could potentially have very significant impact for research at CH, and the problematic issues of clinicians participating in research that is not on-campus and not integrated with clinical practice.
- The relationship with ANU's John Curtin School of Medical Research where a considerable body of pre-clinical research is currently undertaken and their needs for integrated research facilities located at Canberra Hospital.

7.4. A WAY FORWARD

The most important considerations for learning and teaching for the Phase 2 Redevelopment Project are similar to learning and teaching, and include:

- **Collaboration and Interprofessional research** that include research spaces in or close to patient treatment spaces. These spaces bring together individuals from various disciplines, such as doctors, nurses, pharmacists, pathology scientists, and allied health professionals, fostering opportunities for multidisciplinary research projects.
- **Networking and knowledge exchange** that are most likely to have dedicated spaces for sharing experiences, networking and foster informal information exchange.
- **Technology integration** where CH would champion technology enabled infrastructure that incorporates advanced technologies that enhance educational experiences. These may include state-of-the-art audio-visual equipment, virtual reality simulations, telemedicine capabilities, and digital resources. By integrating technology, healthcare professionals can access up-to-date information, engage in interactive learning experiences, and explore innovative approaches to patient care.

In the longer-term, the strategies envisage a dedicated facility (or facilities) that provides a research capability. From the descriptions, it is expected that the research would include some of what it does now, such as clinical trials but also new research that covers a range of categories including:

- Cutting edge clinical research (in a clinical environment such as diagnostic genomics);
- Primary and translational research needing wet labs;
- Clinical trials;
- Therapy and clinical practice research;
- Trialling of new equipment/devices; and
- Broader public health/epidemiological research with different CHS patient cohorts.

Research spaces are complex to define, design and deliver. Current research at CHS is highly dependent on individual clinician researchers and divisional capabilities to support them. The research strategy is designed to build greater **consistency and rigour** around CHS sponsored research.

The research environment is made even more complex for CHS by the recent ACT Government announcement of a new major investment in a science and research facility in Canberra associated with the ANU.

Although the environment is evolving, there are key options and working assumptions on which research would be supported and jointly developed with third party academic institutions. There is again a tiered approach to research, where:

- **Tier 1.** Embedded research into patient treatments (such as clinical drug trials, testing of new equipment/techniques etc). Whilst this does not usually require additional patient space, it does require the incorporation of the function (clinical trials) and related spaces into the core design;
- **Tier 2.** Research spaces proximal towards other clinical support areas that support clinicians engage with research and have access to appropriate facilities, (i.e. wet lab access or sample processing facilities for preclinical research activities). One example would be genomic research and newly developing clinical areas such as CAR-T cell therapies; and
- **Tier 3.** Research space, or specific commercialisation research can be away from patient areas. The tier 3 type research may be well-suited in a separate facility that remains clinically connected and would benefit from being on-campus. It is critical that this development be undertaken in collaboration with academic institutions.

Like teaching and learning, the tier 1 and 2 research elements are proposed to be designed into the 'fabric' of the new facilities.

It is important to acknowledge that the type and extent of research can be significant, and whilst core to the functioning of a tertiary level health service, usually needs to operate within defined parameters. Defining the parameters can be problematic for research governance structures within a large academic hospital. This service model can offer for consideration a basis for 'internal fees' or rental costs of space.

It is becoming increasingly common for research precincts/areas in organisations¹⁵ to support research projects on the basis of their contribution to the organisation's sustainability, especially for newly built facilities.

It is important to note that there are different arrangements that apply across major health services, and the nature of the arrangements are usually influenced by:

- The strategic importance of the research to the health service;
- The alternative uses of the facility (that is the opportunity cost); and
- Whether the organisation incurred construction/refurbishment costs.

[REDACTED]

15. Such as Walter & Eliza Hall, Royal Brisbane Hospital, Peter MacCallum Cancer Institute, Royal Prince Alfred, and The Alfred Hospital Burnet Building

It is important that this project provide advice on the proposed research space that can/should be developed as part of Phase 2. The default position is to replicate the current (~2,000 sqm) actual research space utilised on Levels 5 and 6 of Building 10.

8. Administration and Related Support Services

This section describes administration and other support services that are in-scope for relocation to the new facilities, that are not included elsewhere.

The administration components fall into three categories:

- *Administration for in-scope services that are relocating for the long-term* as part of Phase 2 as well as administration of services in the CSB, not included in Building 5 for the long-term.
- Administration services that are in Buildings 1, 3, 10 and 12 that will need to be relocated on campus, but not for the long-term.
- Administration services that are in Buildings 6 and 23 that need to be relocated on campus, but not in the new facilities. These relocations are generally temporary or short-term transitions.

8.1. LONG-TERM RELOCATIONS IN THE NEW FACILITIES

These administrative services include:

- **Emergency Department (ED) Administration.** ED Administration and clinical learning spaces have not been included as part of the CSB development. It is currently located in Building 1 adjacent to current ED in Building 12. The area is approximately 301 sqm NDA (391 sqm GDA). *ED Administration would ideally be located as close as practicable to the new ED.*
- **Intensive Care Unit (ICU) Administration.** ICU administration and learning spaces were not included in Building 5. The service is currently located in Building 12. The area is approximately 686 sqm NDA (891 sqm GDA).
- **Infection Control Administration.** Infection Control Administration is currently located in Building 4 and will transition to the new clinical buildings for location synergy with Pathology and Pharmacy. The current space is approximately 94 sqm NDA (122 sqm GDA)
- **Junior Medical Officer Lounge** and RMO sleep over facilities are transferring to new clinical buildings on the basis that the JMOs are required to be close to wards. The space for JMO/RMO is on Level 8 of Building 1 and is approximately 122 sqm NDA (159sqm GDA).
- **Building 1 Admin.** The current space is approximately 749 NDA (973 sqm GDA). Clinical administration in the current Building 1 (Level 9 and Level 10) includes offices for a wide variety of functions including Division of Surgery; Division of Medicine; COVID @ Home; Quality and Safety; Pain Management, Medico-legal, Risk and Policy; Consumer Liaison/feedback; Patient Flow, Discharge Liaison and Planning; as well as Art Curator Storage.
- **Medical Officer Support, Credentialing, Employment & Training Unit (MOSCETU).** MOSCETU is currently located in Building 2 and will transition to the new clinical buildings for location synergy with JMO, and Physicians Training Office. The area is approximately 143 sqm NDA (186 sqm GDA).
- **Physicians Training Office (PTO).** PTO will transition to the new clinical buildings for location synergy with JMO, and MOSCETU. The area is approximately 26 sqm NDA (34 sqm GDA).
- **Voluntary Assisted Dying (VAD) Admin.** VAD will be a new service in the new clinical buildings. It is a territory wide service for people who are at the end of their life, who meet strict eligibility criteria and request access to VAD. The service places the needs of a person (requesting the service) at the centre of care, providing consistent pathways and coordination

of care for the person, their family, and the treating healthcare team & staff within the health service. The proposed admin space for VAD is approximately 44 sqm NDA (57 sqm GDA) non-clinical (not on ward), on top of approximately 25 sqm NDA (35 sqm GDA) clinical (on ward).

- **Medical Imaging.** CH's core MI service is currently located in Building 12 Level 2. It will be partially relocated to the new satellite MI service in Building 5 CSB, with the remaining moving to the new inpatient and outpatient building(s). MI office area currently occupies approximately 254 sqm NDA (318 sqm GDA).
- **Pharmacy** is currently located Level 2, Building 1. The administration area is approximately 219 sqm NDA (274 sqm GDA).
- **ACT Pathology's** office/administration space is currently located in Building 10 Level 1. The area comprises approximately 381sqm NDA (461 sqm GDA) and will be moving to the new Building 6.
- **Clinical Handover** is a new function that needs to be located within, or in close proximity to inpatient services. It is proposed that this service is approximately 54 sqm NDA (75 sqm GDA) in size.
- **Teaching and Learning.** The ANU Medical School is located in Building 4 which contains teaching facilities and a library for medical students. The ANU building is currently in scope of the Phase 2 redevelopment, subject to value management.
- **Research – Pre-Clinical**
 - ▶ *Building 10 Basement Support Functions/Staff Areas.* Area is approximately 83sqm GDA.
 - ▶ *Building 10 Basement 'Animal House',* 163 sqm GDA;
 - ▶ B10 Level 5 research area is 897 sqm NDA (1,076 sqm GDA) although the space is currently underutilised.
 - ▶ B10 Level 6 research area is 911 sqm NDA (1,093 sqm GDA) and is also currently underutilised¹⁶.
- **Multifaith space**
 - ▶ This area is currently in Building 3 Level 2. This service is important to provide spiritual resources for patients and staff. This service does not need to be directly adjacent to clinical areas but for ease of location, central to a main thoroughfare;
 - ▶ A suitable area large enough for:
 - 30/40 people for ritual purposes (Mass, Chapel Services, Ceremonies, memorials, combined);
 - Two prayer rooms to accommodate 20 people each, this would enable men and women to use the separate rooms concurrently and a wardrobe and space for linen. Requires discreet connection to MFS close to direction of Qibla;
 - Male facilities – ablutions (including toilet/ feet, face, and hand washing), change rooms with lockers; and
 - Female facilities – ablutions (including toilet/ feet, face, and hand washing), change rooms with lockers.
 - ▶ Entry/exit large enough for bed movement and space for wheelchairs to turn. Including distinct space for people to sit on floor/prostrate if required while others can still sit in chairs.
 - ▶ Store room for furnishings such as chairs/altar/lectern, bookshelf, and piano/organ/harp (as we have music therapists who would use such a space).

16. Currently part of Building 10 level 6 is being used by ACT Pathology. Research activity is expected to continue to build into the future.

- ▶ Vestry for religious purposes (three wardrobes, small table and chairs including small basin).
- ▶ Consultation room nearby (preferably next to MFS and not connected to it) for private conversation. Must not be designed as a clinical space; more like a counsellor's room.
- ▶ Office space nearby MFS (but not connected) for Spiritual and Pastoral Care practitioners.

8.2. NON-PERMANENT RELOCATIONS

These include storage and archive services that can, but do not necessarily need to be in prime clinical space.

- **Pathology Archive Room.** This area stores pathology specimens required to be retained. It is also referred to as the 'Block and Slide' room. The archive room is currently located in the Basement of Building 10 and has an area of approximately 210 sqm NDA (252 sqm GDA). Out of this, 50 sqm NDA will need to relocate into the new facility (those of a shorter-term nature that need to remain on site), with the remaining preferably located off site while CHS transitions into a fully digital hospital.
- **Art Curator Storage.** This is currently located in Level 10B Building 1. The area is 14 sqm NDA (19 sqm GDA).

Non-permanent relocations sum to 211 sqm GDA.

8.3. ADMINISTRATION AND SUPPORT FUNCTIONS – BUILDINGS 6 & 23

These administration functions are identified for temporary relocation as a means of evacuating and demolishing Buildings 6 and 23. There are no relocating staff that are expected to be permanently accommodated in the new facilities.

The scope is estimated to be:

- **General B6/23 Admin:** 85 offices (single and shared) and workstations. The current space is approximately 493 NDA (640 sqm GDA). Clinical administration includes offices for a wide variety of functions including COVID @ Home, Assisted Director of Nursing/Director of Medicine offices, Rheumatology and Dermatology, Diabetes and Endocrinology¹⁷, GP Liaison, and Quality and Safety (QSII – CFET); and
- **Department of Surgery Administration:** 136 offices (single and shared) and workstations. The current space is approximately 1,128 sqm NDA (1,466 GDA)

8.4. ADMINISTRATION CONSOLIDATION

The nature of Phase 2 Redevelopment Project has highlighted a service model issue that may warrant further investigation and development.

It is noted that many of the administrative functions are:

- Highly fragmented across the campus. This reflects more an act of history as CH has developed/evolved over many decades; and
- Most of the administration spaces are accommodated in areas that were not designed for administration.

17. Including Diabetes and Endocrinology services at Centenary Hospital of Women and Children.

Although not in-scope for this project, there would appear to be benefits from a review as how to best consolidate/cluster administrative functions in purpose-built facilities that could:

- Generate operational efficiencies (systems, space, equipment, and expertise);
- Provide greater flexibility in using administrative staff, across priority projects;
- Generate improved 'cross-program' business intelligence and broaden the operational knowledge of the organisation amongst administrative staff; and
- Provide a stronger organisational culture, rather than a more siloed 'service specific allegiance'.

A1. Guiding documents and Canberra Hospital Role Delineation

Current Plans, Strategies and Frameworks considered:

- ACT Health Services Plan (2022 to 2030) ¹⁸.
- CHS Partnering with Consumers Framework 2020-2023¹⁹;
- CHS Clinical Learning and Teaching Strategy 2023-2027²⁰; and
- CHS Research Strategy 2021-2025²¹.

Canberra Hospital Role Delineation

The Role Delineation for clinical services²² were provided by ACT Health from the ACT Health Services Plan, 2022 – 2030.

Service	2021		
	Canberra Hospital	UCH	CPHB
Core services			
Anaesthesia and recovery	6	NPS	4
Operating Suite	6	NPS	4
Intensive Care Service	6	NPS	4
Nuclear Medicine	6	NPS	4
Radiology and Interventional Radiology	6	2	5
Pathology	6	2	5
Pharmacy	6	2	5
Emergency medicine			
Emergency Medicine	6	NPS	4
Medicine			
Acute Stroke Services	5	NPS	4
Cardiology and Interventional Cardiology	6	NPS	4
Chronic Pain Management Services	4	3	NPS
Clinical Genetics	4	NPS	NPS
Dermatology	5	NPS	3
Drug and Alcohol Services	5	NPS	1
Endocrinology	6	NPS	3

18. ACT Government, Health, *ACT Health Services Plan 2022-2030*, available <https://www.health.act.gov.au/about-our-health-system/planning-future/act-health-services-plan-2022-2030#:~:text=The%20ACT's%20population%20is%20growing,and%20effective%20care%20for%20everyone.>
19. Canberra Health Services, May 2022, *Partnering for Exceptional Care - Partnering with Consumers Framework 2020-2023*, available at https://www.canberrahealthservices.act.gov.au/_data/assets/file/0008/1933181/CHS-Partnering-for-Exceptional-Care-Framework_V4_DigitalFA.pdf
20. Canberra Health Services, April 2023, *Clinical Learning and Teaching Strategy 2023 – 2027*, available at https://www.canberrahealthservices.act.gov.au/_data/assets/pdf_file/0012/2222040/69e04bc4df49dfd4a9ff49375fe0a3bcfd9dd628.pdf
21. Canberra Health Services, November 2021, *Research Strategy 2021-2025*, available at https://www.canberrahealthservices.act.gov.au/_data/assets/file/0007/1933171/CHS_ResearchStrategy-2021-2025_03_V2_DIGITAL-FA-1.pdf
22. NSW Ministry of Health, Fifth Edition, December 2021, *NSW Health Guide to the Role Delineation of Clinical Services*.

Gastroenterology	6	NPS	4
General and Acute Medicine	6	NPS	4
Geriatric Medicine	6	5	4
Haematology	6	NPS	3
Immunology	6	NPS	4
Infectious Diseases	6	2	5
Gastroenterology	6	NPS	4
General and Acute Medicine	6	NPS	4
Geriatric Medicine	6	5	4
Haematology	6	NPS	3
Immunology	6	NPS	4
Infectious Diseases	6	2	5
Oncology — medical	6	NPS	2
Oncology — radiation	6	NPS	NPS
Palliative Care	4	NPS	2, CHH 6
Rehabilitation Medicine	2	6	2
Renal Medicine	6	NPS	2
Respiratory and Sleep Medicine	6	NPS	3
Rheumatology	5	NPS	2
Sexual Assault Services	4	NPS	1
Sexual Health	5	NPS	NPS
Surgery			
Burns	4	NPS	2
Cardiothoracic Surgery	5	NPS	NPS
ENT Surgery	6	NPS	4
General Surgery	6	NPS	4
Gynaecology	6	NPS	4
Neurosurgery	6	NPS	NPS
Ophthalmology	5	NPS	3
Oral Health	6	NPS	NPS
Orthopaedic Surgery	6	NPS	4
Plastic Surgery	5	NPS	4
Urology	6	NPS	4
Vascular Surgery	6	NPS	4
Child and family health services			

Maternity	6	NPS	5
Neonatal	5	NPS	3
Paediatric Medicine	5	NPS	2
Surgery for Children	4	NPS	2
Youth Health	4	NPS	NPS
Mental Health			
Adult Mental Health	5	2	4
Child and Youth Mental Health	4	NPS	NPS
Older Persons Mental Health	4	NPS	4

A2. Level 6 Radiology & Interventional Radiology

The NSW Guide to Role Delineation of Clinical Services provides the service scope and requirements, as well as the workforce requirements, of services from Level 1 to Level 6. The new Core MI service at CH is a Level 6 service. See below for these requirements.

6. RADIOLOGY AND INTERVENTIONAL RADIOLOGY

			Workforce	Minimum Core Services						
Level	Service Scope	Service Requirements		Anest	Op Suite	COU	ICS	Nuc Med	Radiology	Pathology
NPS	No planned service.									
1	Mobile service with a limited range of x-ray capability, dependent on radiographer/ remote operator qualifications and availability, and mobile unit capacity.	Formal links to higher level networked radiology service for consultation, image reporting and patient transfer. May have image processing capacity. May have access to Picture Archiving and Communication System (PACS)/radiology Information System (RIS). Referral pathways to relevant Aboriginal programs and services. Quality and risk management programs in line with current National Safety and Quality Health Service (NSQHS) Standards.	Radiologist available off-site for reporting. Appropriately licensed remote x-ray operator/s, able to provide limited radiography services in rural and remote areas of NSW if radiographer not available to attend. Refer to Appendix IV: Nursing and Midwifery Workforce . May have on-site Medical Radiation Scientist (MRS) (Diagnostic Radiographer). Aboriginal hospital liaison roles available, preferably both male and female.	-	-	-	-	-	-	-
2	Provide low risk diagnostic radiology service as part of ambulatory and inpatient care.	As for Level 1. In addition, dedicated room. Access to PACS/RIS.	Radiologist available for consultation and reporting in business hours. Refer to Appendix IV: Nursing and Midwifery Workforce . MRS (Diagnostic Radiographer) access on-site. Aboriginal hospital liaison roles available, preferably both male and female.	-	-	-	-	-	-	-
3	As for Level 2. In addition, provide comprehensive range of general examinations; may include ultrasound.	As for Level 2. In addition, a Bucky table. Mobile unit available for wards, operating suite and emergency medicine. May have access to an ultrasound facility. May have access to Computed Tomography (CT).	As for Level 2. In addition, radiologist available for consultation and reporting 24 hours. May have MRS (Diagnostic Radiographer) available 24 hours. Staff available for patient transfers.	-	-	-	-	-	-	-
4	As for Level 3. In addition, provide 24 hour diagnostic radiology services, including urgent x-rays. Computed Tomography (CT) and ultrasound. Provide access to basic diagnostic angiography service; may be networked. Provide access to a basic interventional radiology (IR) service, including some Royal Australian and New Zealand College of Radiologists (RANZCR) Tier A procedures such as CT-guided biopsy, drainage, spinal injections, ultrasound-guided biopsy, drainage, spinal injections.	As for Level 3. In addition, general x-ray and ultrasound facilities and access to CT scanner. Mobile image intensifier for operating theatre.	As for Level 3. In addition, certified and credentialled interventional radiologist available for any interventional procedure. Medical officer available 24 hours. Sonographer. MRS (Diagnostic Radiographer) available 24 hours.	3	3	3	-	-	-	3

5	As for Level 4. In addition, provide access to 24 hour complex diagnostic radiology services. Provide access to an intermediate level IR service, including RANZCR Tier A* procedures such as peripherally inserted central catheter (PICC) lines, insertion of ports, nephrostomy. Provide access to some Tier B* procedures (e.g. embolisation) for selected complex major surgical procedures. May provide CT perfusion scanning.	As for Level 4. In addition, all modalities available including full ultrasound service. Basic digital subtraction angiography (DSA) suite for interventional services. CT scanner on-site. Access to Magnetic Resonance Imaging (MRI).	As for Level 4. In addition, clinical head of service. May have medical officer in radiology with three or more postgraduate years of experience as part of a networked arrangement, may be in training with the RANZCR.	4	4	-	4	-	-	4	4
6	As for Level 5. In addition, provide access to comprehensive 24 hour IR service, including RANZCR Tier B* procedures. Provide CT perfusion scanning. Paediatric IR provided by specialist children's hospital. May provide MRI guided IR. May provide trauma IR. May provide interventional neuroradiology (INR).	As for Level 5. In addition, single-plane and/or biplane DSA suite. MRI scanner on-site.	As for Level 5. In addition, medical officer/s in radiology with three or more postgraduate years of experience; may be in training with the RANZCR. Chief MRS (Diagnostic Radiographer). May have access to clinical imaging educator/tutor.	5	5	-	5	-	-	5	5

A3. Level 6 Pharmacy Services

The NSW Guide to Role Delineation of Clinical Services provides the service scope and requirements, as well as the workforce requirements, of services from Level 1 to Level 6. The pharmacy service at CH is a Level 6 service. See below for these requirements.

8. PHARMACY

Level	Service Scope	Service Requirements	Workforce
NPS	No planned service.		
1	Service provided by LHD/SHN network or external pharmacy. Drugs supplied to patients/clients on individual prescription and/or through an imprest system in accordance with NSW Health PD2013_043 <i>Medication Handling in NSW Public Health Facilities</i> .	Access to medicines procurement and distribution service. Access to patient and staff medicines education. Access to therapeutic guidelines. Access to drug and therapeutics committee or equivalent. Referral pathways to relevant Aboriginal programs and services. Quality and risk management programs in line with current <i>National Safety and Quality Health Service (NSQHS)</i> Standards as appropriate.	Pharmacist available for consultation, advice and support (may include virtual care). Aboriginal hospital liaison roles available, preferably both male and female.
2	As for Level 1. In addition, provide on-site clinical pharmacy service (e.g. patient medicines information, medication chart review, staff education).	As for Level 1. In addition, access to information technology to support integrated pharmacy management system. May have dedicated pharmacy space.	Allocated pharmacist resource (may be via LHD/SHN network).
3	As for Level 2. In addition, provide administration and pharmacy management support. May provide medicines procurement, dispensing and distribution services.	As for Level 2. In addition, dedicated pharmacy space. May have processes to provide medications that require compounding (may be networked or external arrangement).	Pharmacist on-site. May have pharmacy support staff (e.g. pharmacy technician, stores person).
4	As for Level 3. In addition, provide medicines procurement, dispensing and distribution services. Drug and therapeutics committee or equivalent. May support specialised services (e.g. renal dialysis).	As for Level 3. In addition, department of pharmacy. Provide service during business hours with access out of hours. Processes to provide medications that require compounding (may be networked or external arrangement). Access to clinical trial and research support. May provide administration and pharmacy management support to other health facilities or services. May supply to other health facilities or services not on-site.	As for Level 3. In addition, service director. Pharmacy support staff (e.g. pharmacy technician, pharmacy assistant, stores person).

5 As for Level 4. In addition, provide support for clinical specialty services (e.g. oncology, haematology), quality improvement, and medication safety and stewardship services. Provide support for clinical trial and research activities.	As for Level 4. In addition, processes for sterile manufacturing and cytotoxic drugs where clinically necessary (may be networked or external arrangement). May provide support for electronic medication management and distribution systems. May provide networked support to lower level pharmacy services within the LHD/SHN (e.g. advice, purchasing assistance).	As for Level 4. In addition, pharmacist appointed as clinical pharmacy educator. Senior pharmacy technician/s. May have clinical specialist pharmacist roles (e.g. oncology, haematology). May have pharmacist management roles (e.g. distribution service, mental health, cytotoxic production unit, aseptic production unit). May have pharmacist medication safety quality improvement role. May have pharmacist stewardship role such as antimicrobial stewardship (AMS). May have pharmacist health informatics role.
6 As for Level 5. In addition, provide advanced level support for wide range of highly specialised services (e.g. cystic fibrosis, cancer services, transplantation including bone marrow transplant, neonatology). Active involvement in clinical trials and research activities (e.g. contribute to Human Research Ethics Committee, extensive numbers of clinical trials). Active involvement in supporting electronic medication management and medication safety quality improvement activities. May provide specialist medicines information services. May have pharmacy automation.	As for Level 5. In addition, 24 hour on call access to pharmacy service. Provide networked support to lower level pharmacy services within the LHD/SHN.	As for Level 5. In addition, clinical specialist pharmacist roles. Senior pharmacists. May have chief pharmacist information officer role.



**Canberra Health
Services**

aspex consulting

Canberra Hospital Capital Redevelopment

DRAFT SERVICE MODEL
MEDICAL SPECIALTIES

Final

25 January 2024

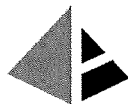


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LIST OF ABBREVIATIONS

ACE	Acute care for the Elderly	HITH	Hospital in the Home
ACTHSP	ACT Health Services Plan	HIV	Human Immunodeficiency Virus
AI	Artificial Intelligence	HWA	Health Workforce Australia
AMHU	Adult Mental Health Unit	IBS	Irritable Bowel Syndrome
ASA	Australian Sleep Association	IBD	Inflammatory Bowel Disease
AMS	Anti-Microbial Stewardship	ICU	Intensive Care Unit
ANU	Australian National University	ID	Infectious Disease
CCU	Coronary Care Unit	MAPU	Medical Assessment and Planning Unit
CH	Canberra Hospital	MDT	Multi-Disciplinary Team
CHS	Canberra Health Services	MERS	Middle East Respiratory Syndrome
CKD	Chronic Kidney Disease	MET	Medical Emergency Team
COPD	Chronic Obstructive Pulmonary Disease	MHSSU	Mental Health Short Stay Unit
COVID	Corona Virus Infectious Disease	NATA	National Association of Testing Authorities
CPAP	Continuous Positive Airway Pressure	NGO	Non-Government Organisation
DORSS	Domiciliary Oxygen and Respiratory Support Scheme	NIV	Non-invasive ventilation
ECG	Electrocardiography	NSW	New South Wales
ECHO	Extended Community Healthcare Outcomes	POC	Points of Care
ED	Emergency Department	PsA	Psoriatic Arthritis
EEG	Electroencephalography	RACP	Royal Australasian College of Physicians
ERCP	Endoscopic Retrograde Cholangiopancreatography	RITH	Rehabilitation-in-the-Home
FDB	Functional Design Brief	SoA	Schedule of Accommodation
FTE	Full-Time Equivalent	SU	Stroke Unit
GEHU	Gastroenterology & Hepatology Unit	TIA	Transient Ischemic Attacks
GI	Gastrointestinal	tPA	Post-thrombolysis
GORD	Gastroesophageal Reflux Disease	UC	University of Canberra
GP	General Practitioner	UCH	University of Canberra Hospital

DISCLAIMER

Please note that, in accordance with our Company's policy, we are obliged to advise that neither the Company nor any employee nor sub-contractor undertakes responsibility in any way whatsoever to any person or organisation (other than ACT Health) in respect of information set out in this report, including any errors or omissions therein, arising through negligence or otherwise however caused.

VERSION CONTROL

VERSION	DESCRIPTION OF CHANGE	ISSUED TO	ISSUED BY	DATE OF ISSUE
1.0	Medical inpatient and outpatient Service Model	CHS	Aspex Consulting	3 July 2023
2.0	Inclusion of comments from CHS Clinical Liaison and Health Facility Planning team Addition of Discharge Lounge	CHS	Aspex Consulting	16 July 2023
3.0	Inclusion of comments from CHS Clinical Liaison and Health Facility Planning team Future Directions for Sleep Laboratory	CHS	Aspex Consulting	18 July 2023
4.0	Revisions to Palliative Care, Renal, and Respiratory. Clinical Lead comments	CHS	Aspex Consulting	24 July 2023
FINAL	Incorporation of all feedback from ACTHD	CHS	Aspex Consulting	24 January 2024

1. Introduction

1.1. PURPOSE

This Service Model focuses on acute medical inpatient and outpatient services that are in-scope for the Phase 2 redevelopment at the Canberra Hospital (CH) and outlines *how* services are planned to be delivered in the future.

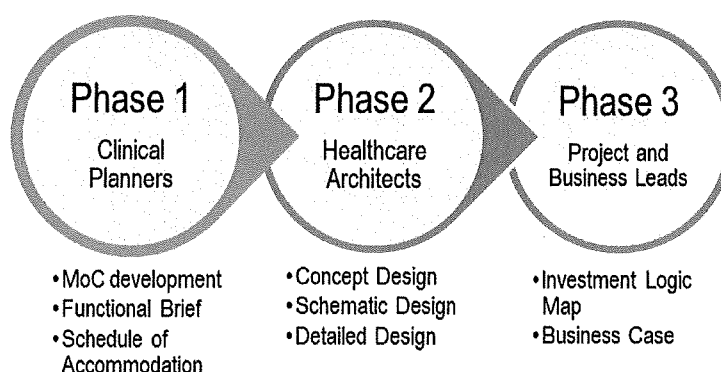
This Service Model describes each medical sub-speciality in-scope for the Phase 2 redevelopment.

Phase 2 involves redevelopment of *like-with-like* services and points of care (POC)¹ into the new facilities. However, this will not necessarily be *like-with-like space*, as new evidence, new technologies, changes in clinical practice, or more efficient or innovative ways of working may result in contemporary *like-with-like services*.

This Service Model incorporates the scope and clinical level of service, the care setting, patient pathway, coordination and integration between services, workflow, and work processes, and the (indicative) POC.

The information in this Service Model will input into the Functional Design Brief (FDB) and the Schedule of Accommodation (SoA), which will be used to inform the new building concept designs. The steps are outlined in Figure 1-1.

Figure 1-1: Canberra Hospital Capital Redevelopment planning phases



1.2. APPROACH

This Service Model has been developed in partnership with the Canberra Health Services (CHS) Clinical Liaison and Health Facility Planning team in the Capital Project Delivery and Infrastructure and Health Support Services Division.

¹ A Point of Care is defined as a place where a patient receives definitive care. This would typically include beds, ED cubicles, operating theatres, labour wards, outpatient clinics, chairs for chemotherapy/dialysis amongst others. It would not normally include recovery spaces from theatre, discharge lounges, other general patient spaces that does not deliver definitive care

2. Service Model Context

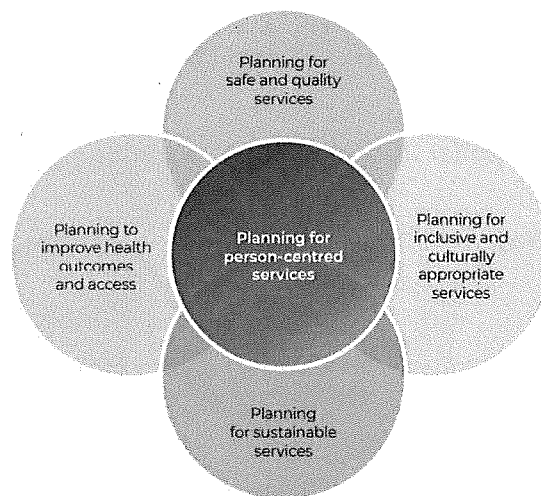
This section provides context within which the Service Model has been developed. It specifically includes:

- ACT Health's planning principles;
- CHS' future directions;
- Overarching key drivers of change;
- System-wide service innovations; and
- Service model options.

2.1. ACT PLANNING PRINCIPLES

The following principles underpin the *ACT Health Services Plan (ACT HSP) 2022-2030*². These principles also accord with the development of this Service Model.

Figure 2-1: ACT Health Service Planning Principles



Person-centred services - The ACT Government consults with consumer and carers so that services are planned to treat consumers with dignity and respect; the ACT Government makes it easier for people to access services equitably, to move between services across the health system, and to partner with health professionals to participate in decisions about the services provided to them.

Inclusive and culturally appropriate services - The ACT Government consults with groups underrepresented in the healthcare system so that services are planned to be inclusive and culturally appropriate and targeted to specific health needs where necessary.

2. ACT Government, Health, *ACT Health Services Plan 2022-2030*, available <https://www.health.act.gov.au/about-our-health-system/planning-future/act-health-services-plan-2022-2030#:~:text=The%20ACT's%20population%20is%20growing,and%20effective%20care%20for%20everyone.>

Safe and quality services - Planning is guided by evidence-informed policy directions, and the ACT Government continually strives to plan for services that improve health outcomes, experiences of receiving care, experiences of providing care, and effectiveness and efficiency of care.

Health outcomes and access - Planning is guided by evidence-informed policy directions, with specific focus on at-risk and priority population groups; planning the right service, at the right time, in the right place, by the right team, every time.

Sustainable services - The ACT Government maximises the use and efficient allocation of limited resources by taking a Territory-wide approach to planning services across the ACT public health system, guided by clear role delineations, service levels, and evidence informed policy directions: service planning activities are prioritised based on need.

2.2. CANBERRA HEALTH SERVICE VISION AND SERVICE DIRECTION

CHS' vision is to **'Create exceptional health care together'**³. Improving the quality of healthcare across the ACT is a key priority for CHS as it aims to be the safest healthcare system in Australia, delivering high-quality, person-centred care that is effective and efficient.

Specifically, CHS will provide health care that is:

- Person-centred: providing care that is respectful, responsive, and focused on the patient's needs;
- Safe: avoiding harm to patients from care that is intended to help them;
- Effective: providing services based on scientific knowledge and which produce a clear benefit;
- Timely: reducing waits and sometimes harmful delays;
- Efficient: avoiding waste and reducing unit costs; and
- Equitable: providing care based on clinical need, and that does not vary in quality because of a person's personal circumstances.

Consumer Principles

A fundamental component of patient-centred care is recognising and understanding the consumer perspective of the service. Central to patient-centred care are the themes of Participation, Communication, Experience and Support. These themes form the basis for Consumer Care Principles, the guiding principles for the Service Model. The Consumer Care Principles are:

- Participation: consumers (and where appropriate their family members and carers) will be equal partners within the multidisciplinary care team, enabling them to be actively involved in their own care;
- Communication: embedding frequent and meaningful communication with consumers, their family members, and carers, about their care for their entire hospital journey, including discharge;
- Experience: care is delivered in a way that supports the consumers' experience of safety and fosters trust; and
- Support: recognising the importance of involving family and carers in the consumer's care and recovery throughout their health journey.

³ https://www.canberrahealthservices.act.gov.au/_data/assets/file/0005/1933187/CHS-Exceptional-Healthcare-Framework_V7_DigitalFA.pd. July 2023

2.2.2. CHS Future Directions

CHS' future service directions are set out in the *ACT Health Services Plan, 2022–2030*.⁴ The desired outcomes from each of the directions are also articulated. These are outlined below.

Addressing key areas of service demand and reform

- Improve health outcomes and access to care, with a particular focus on priority population groups.
- Support access to the services experiencing most significant demand pressures.
- Ensure our services are flexible and inclusive to respond to individual needs and circumstances.
- **There is specific reference to enhanced capability for key medical specialties for cardiology, neurology, respiratory, general medicine, rheumatology, and renal services.**

Transitions of care

- Improve health outcomes and access to care.
- Make it easier for patients, families, and service providers to navigate the service system.
- Address issues of patients 'falling through the gaps' as they move between services and care settings such as between hospital and the community.
- Break down the barriers and silos between services.

The ACT's role as a local, Territory and regional service provider

- Improve access to care closer to home in a safe and sustainable way.
- Reduce unwarranted variation between services.
- Maximise the efficient use of health resources to meet the needs of the community.

Strengthening core ACT Government funded clinical support services

- Improve patient outcomes and reduce length of stay in hospital.
- Ensure that our clinical support services have the appropriate capacity and capability to support new and expanded clinical services.
- Optimise clinical decision making in determining the most appropriate treatment and care for patients.

2.2.3. Learning, Teaching and Research

CHS' *Clinical Learning and Teaching Strategy 2023 – 2027*⁵ provides the overarching vision, goals and strategic commitments to clinical learning and teaching. The six Strategic Commitments are:

- Strengthen governance and processes to prioritise and enable learning and teaching.
- Prepare and support the clinical workforce to work safely and effectively at the leading edge of their practice.
- Develop and support the clinical workforce to deliver effective, innovative, evidence-based teaching and point of care clinical supervision.
- Establish collaborative environments that maximise and enable effective, innovative, and efficient learning and teaching.

4. ACT Government, Health, *ACT Health Services Plan 2022-2030*, available <https://www.health.act.gov.au/about-our-health-system/planning-future/act-health-services-plan-2022-2030#:~:text=The%20ACT's%20population%20is%20growing,and%20effective%20care%20for%20everyone.>

5. ACT Government, *Clinical Learning and Teaching Strategy 2023 – 2027*. Available: https://www.canberrahealthservices.act.gov.au/_data/assets/pdf_file/0012/2222040/69e04bc4df49dfd4a9ff49375fe0a3bcfd9dd628.pdf

- Foster and strengthen strategic partnerships for learning and teaching with clinicians, consumers and carers, communities, and academia.
- Promote, share, and celebrate learning and teaching.

To achieve these strategic commitments, and to develop a contemporary health precinct, a holistic approach to integrated education, training and research activities into the clinical areas will be key. For clinicians, access to teaching and learning will be built into the flow of their day. This means rooms available on each unit or a shared area readily accessible to clinical (patient) areas. To complement the integrated clinical spaces, a teaching and learning hub would provide greater opportunities for education.

Refer to the Clinical Support Service Model for more information on Learning, Teaching and Research.

2.3. OVERARCHING DRIVERS FOR CHANGE

The above strategic and policy positions articulated by ACT Health and CHS are underpinned by a range of drivers for change. The Territory, like other jurisdictions, are facing increasing challenges that are forcing changes in the way people seek and access services. Some of these challenges are driving change are described below.

The ACT Health Services Plan (2022 to 2030) provides context within which the Service Model needs to be considered. The *ACT Health Services Plan* indicates that the Territory's population increased by 14% between 2016-2021 and is projected to increase by 9.7% over the decade to 2030. It is also ageing with those in the 70+ age category increased 34% between 2016-21 and is forecast to rise a further 22.7% by 2030, more than doubling the growth rate for the total population. In addition to population growth and ageing, there are particular factors that drive change for the Territory:

Ageing population and increasing chronic disease – the demand for health services is increasing as people live longer with more chronic and multi-morbid conditions. The aged population are high users of health services;

Access for vulnerable population groups – some population groups in Australia experience health inequalities. Aboriginal and Torres Strait Islanders and people from low socioeconomic areas are likely to have poorer health compared to the general population;

Increasing service demand – for elective and emergency surgery, chronic disease, cancer services, and mental health. These have been exacerbated due to COVID-19;

Climate change – has been causing more extreme weather events, such as bushfires and floods. Instances of heat stress, smoke inhalation, food insecurity, and mental health and wellbeing issues are increased for people experiencing extreme weather events; and

COVID-19 – the delivery of healthcare has rapidly changed since the beginning of the COVID-19 pandemic, especially in terms of how and where care is delivered, with virtual care in the home becoming the norm. COVID-19 patients have caused greater pressure on health system capacity, especially in intensive care units and for multidisciplinary teams treating people experiencing the effects of 'long COVID'. Additionally, workforce availability has been significantly impacted, with burnt out staff choosing to leave their professions and the usual immigrant workforces being unavailable.

2.4. SYSTEMWIDE SERVICE INNOVATION

The drivers of change result in different responses and innovations. The Territory's health services are exposed to continual external and internal influences which drive innovation in healthcare. The onset of the COVID-19 pandemic accelerated innovation in practice, workforce, technology, and infrastructure. Some of the key innovations that influence this Service Model include:

Care in and closer to people's homes is now the preferred model of care for any chronic, non-urgent care. This has been made possible via the widespread adoption of telehealth and telemonitoring, particularly for diabetes, chronic obstructive pulmonary disease, and renal medicine. Telemonitoring is performed using sensors, other wearable devices, or apps to record data which is relayed to the healthcare team. Changes in condition outside set parameters will also alert healthcare providers in real time.

Increased utilisation of available and emerging technologies. This applies to the current virtual service provision but will also apply to emerging remote clinical treatment and the broader use of artificial intelligence (AI) for diagnosis and patient pathways. AI analyses big data, which are extremely large data sets, to reveal patterns, trends, and associations to predict a diagnosis. From big data a common patient pathway for someone with the same diagnosis can also be obtained. AI in healthcare is currently infantile in Australia.

Patient engagement in healthcare has been increasing to the point where a patient is now at the centre of their care. Patients provide input into their care planning, treatments and care locations and patients are encouraged to discuss any concerns they may have with their treating team. The other aspect of patient centred care is self-management of their risks and lifestyle whilst they are not in hospital, such as tracking their exercise or diet, alcohol consumption or their use of medications. This further encourages patients to become central to their care.

Social prescribing is treating a person holistically and linking a person undergoing healthcare to social supports as required, to relieve social isolation or other factors that may be impacting on that person's mental health and wellbeing. These supports may range from walking groups to book clubs, to financial aid or housing services. Social prescribing models are well established in the United Kingdom and Canada, and they are becoming more prevalent in Australia.

Value-Based Health Care (Better Value Care) is a contemporary service model designed to develop patient-focused care in a meaningful (structured) way to create enhanced outcomes (value) to the patient and value to the funder. This is a potentially important, albeit radical model to consider in the development of (a selected number of) clinical services that can be 'clustered to deliver end to end' outcomes for patients. The model transcends current hospital structures that are not designed to deliver value to the patient and where there are only very blunt outcome indicators. Value-based Health care models go to the issues of clinical practice controlled by the clinicians and make decisions based on improved outcomes, not traditional patient flow through operational silos.

This is an important consideration as it impacts on the organisation and flow of patients that is not only efficient but improves patient outcomes (value). It is potentially a game-changer.

All of these trends are inter-related and can have a major impact on the organisation and service options available.

2.5. MEDICAL MODELS OF CARE

More specific models that are important to consider for the Phase 2 Redevelopment are:

A 'pull model' from the Emergency Department (ED) for multi-day stay medical patients ensures that there is direct medical consultant/registrar availability to ED, and protocols that will enable transfer of medical patients to a Medical Assessment and Planning Unit (MAPU) or other medical ward to reduce demand pressures in ED. 'Pull models' are currently in operation in hospitals of similar size and clinical capability as Canberra Hospital (CH). The 'pull model' not only assists with patient flow at the front door, but it also facilitates patient flow through to discharge.

A focus on complex discharge and models that support acute care for the elderly (ACE). This is a key complementary strategy for all medical wards and is the principal focus of MAPUs and the holistic management of complex medical patients, usually frail elderly patients. It has a focus on patient flow and minimise 'bed blocking'. It is designed to address those aspects of post-surgery care that a more holistic, reduce post-anaesthetic anxiety/delirium, and has a specific attention to factors that inhibit elderly surgical patients from being discharged.

Providing services closer to home will require a focus on the further development of Hospital in the Home (HITH) as a key strategy. More generally, the HITH model is not a stand-alone strategy. It needs to be developed as part of a broader approach to care models including diversion and substitution of patients. The more challenging service models then extend these above into a Better Value Care model as described above.

A specific policy commitment will require the development of an inpatient palliative care ward. The bed-based palliative care unit will provide care for patients who have increasing complexity of needs. This service would complement the community palliative care model currently in place and the existing 27 bed Hospice.

Bariatric care. Bariatric services manage a patient cohort who are likely to have more comorbidities and more severe comorbidities, which makes them even more vulnerable than non-bariatric patients. The task of caring for the bariatric patients is therefore more challenging as it puts workers at risk of injuries during repositioning and nursing care activities that assist patients in meeting their daily activity needs, including hygiene, bathing, ambulation, and dressing changes. The rates of overweight persons within the broader population are variable. However, for Victoria and NSW there are expected rates of ~11% of the population over 40 years being obese⁶. The population rates often do not translate to hospital admissions, but when they do, the patient is more problematic to manage. There are specific models of care developed for bariatric patient care across CHS.

The Service Model is to make provision for bariatric facilities as they are being designed and constructed and minimise any retrospective fit outs. This means for beds, chairs, patient therapy tables, equipment such as hoists, clinic facilities and patient amenities: *Whilst there is no benchmark for bariatric provision it is expected that for medical wards there will need to be (at least) two POC able to manage bariatric patients.*

Clinical learning, teaching, simulation, and research capability. The service model integrates learning, clinical teaching, and research fully and effectively as core functions in patient care areas. This is consistent with the CHS *Clinical Learning and Teaching Strategy, 2023 to 2027*; and *CHS Research Strategy, 2021 to 2025*.

The development of teaching and research are embodied in the design of the new facilities through a **tiered approach**, where:

- Tier 1 is teaching/learning as part of the spaces designed where patients are treated/managed including outpatient rooms, ward areas and clinical examination spaces. The key concept here

6. Victorian Population Health Survey, 2015 approximately 29% of the adult population over 40 years are overweight persons and 11% of the population are obese. This translates to ~80,000 to 90000 for CHS catchment population over 40 years.

is embedding. These developments would bring CH up to contemporary standards and practices common in newly developed tertiary hospitals;

- Tier 2 is teaching/learning spaces on wards and proximal to patient treatment areas that enable review, collegiate discussions, and virtual learning experiences through meeting/ consultation rooms. This would also provide suitable teaching space associated with formal training for accreditation in clinical specialties; and
- Tier 3 is teaching/learning spaces that are for more formal education away from patient areas that, for an academic tertiary hospital, could be expected to have larger auditorium spaces, academic administration space, teaching demonstration spaces (such as the gross anatomy museum), hi-fidelity simulation spaces for different clinical settings, and consumer experience spaces used for teaching and learning. This could also enable national and international research and large conferences to be held at Canberra Hospital, potentially creating new revenue streams.

The tier 3 type services may be well suited in a separate teaching, learning and conference hub on campus that remains clinically connected. This would be undertaken in collaboration with academic institutions.

3. In-Scope Services

This medical service model has the following in-scope inpatient and outpatient services as well as clinical support services. These are described in Table 3-1.

The ACT Health Directorate uses the NSW Role Delineation Framework⁷ to classify the level of clinical capability for each clinical service, as well as for the required core support services. Role delineation defines the level of clinical complexity for each specialty service provided at a particular facility or setting which will enable the workflow to be directed to the most appropriate facility. Role delineations describe the minimum service requirements, staffing, core support services and other elements necessary for the clinical service to be delivered safely. Levels range from Level 1 (least complex) to Level 6 (most complex). Clear role delineation helps to ensure that planned services can be delivered safely. (Refer to Appendix 1A).

Table 3-1: Canberra Hospital In-Scope Medical Services

Inpatient Specialty Service	Inpatient (Clinical Level)	Outpatients	Anaesthetics	Op Suite	Close Observation	ICU	Nuclear Med	Medical Imaging	Pathology	Pharmacy
Cardiology Diagnostics	6	x								
Dermatology	5	x	4	4	4	4	4	4	5	4
Respiratory and Sleep	6	x	6	6	-	5	5	5	5	5
Infectious Diseases	6	x	6	6	-	6	4	6	6	6
Winter Surge/COVID	-									
Endocrinology & Diabetes	6	x	5	5	-	5	-	5	5	5
Gastroenterology	6	x	5	5	-	5	5	5	5	6
Hepatology	6	x								
Palliative Care	4		2	2	3	-	-	2	3	3
Renal Medicine (incl Haemodialysis)	6	x	6	6	-	6	5	6	6	5
Rheumatology	5	x	4	4	-	4	4	4	4	5
Neurology and Stroke	5	x	5	5	-	5	4	5	5	5
General Medicine	6	x	5	5	-	5	5	5	6	6
HITH	-	x						3	5	5
Clinical Trials		x						6	6	6

7. NSW Health, *Guide to the Role Delineation of Clinical Services*, 2021. Available: <https://www.health.nsw.gov.au/services/Publications/role-delineation-of-clinical-services.PDF>

3.1. SERVICE MODEL PRINCIPLES

The main service model principle for medical services is for close (proximal) location of as many in-scope *medical sub-specialty* inpatient units with their respective medical sub-specialty outpatient services. This means location within the same building/facility to enable maximum operational efficiencies within and between medical sub-specialties, and support/facilitate a multi-disciplinary Service Model.

Ideally, this could also mean a Service Model that has reasonably close access to:

- Clinical core support services, particularly medical imaging, pharmacy, and pathology; and
- Surgical inpatient and outpatient services.

Consistent with the above principle, the aims of the Service Model are to have **timely and efficient site access**.

Staff travel across the hospital should be minimised wherever possible, by clustering complementary services together. Staff should not have to travel through clinical units to get to their destination. This may require linkways such as aboveground bridges and underground tunnels.

Patient travel, particularly for services with a proportion of non-ambulant patients, should be able to access the service close to where their care is being provided. This might mean a drop-off point outside the dialysis unit, for example.

3.2. OVERARCHING SERVICE MODEL

Consistent with the principles for service development in the Territory:

the service model is to enhance patient-centred care through the consolidation and collocation of acute medicine (sub-specialty) inpatient units in the same building as their respective outpatient service.

Consolidation and collocation that enables greater care continuity, critical mass of expertise, knowledge transfer, effective operation of Multi-Disciplinary Teams (MDTs), staff flexibility within and between sub-specialties, and reduced staff travel.

3.3. FUNCTIONAL ADJACENCIES

Figure 3-1 provides an overview of the functional adjacencies for in-scope acute medical services with each other and with clinical support functions. There are few functional adjacencies that require close proximal relationships within three minutes. Those that do require close proximity include:

- Cardiology (and cardiothoracic) outpatients with cardiology diagnostics;
- Infectious Diseases with the Winter Surge capacity/COVID;
- Dialysis close to the renal medicine IPU;
- Clinical trials with research capacity;
- Teaching and learning close to all patient sub-specialties; and
- Pharmacy services accessible by inpatient and outpatient services.

Figure 3-1: Matrix of Functional Adjacencies for In-Scope Acute Medicine Units

Relationship Matrix	Medical Imaging - CSB	Pathology	Pharmacy	Health Information Services	Cardiology Diagnostics	Dermatology	Respiratory and Sleep	Infectious Diseases	Winter Surge/COVID ward	Endocrinology and Diabetes	Gastroenterology	Hepatology	Palliative Care	Renal Medicine (incl Dialysis)	Rheumatology	Neurology and Stroke	General Medicine	Day Medical (& HITH)	Addiction Medicine	Clinical Trials	General Surgery	Endoscopy	Orthopaedics	Ophthalmology	ENT / Head and Neck	Maxillofacial surgery	Plastic Surgery	Outpatient clinics (med and surg)	Teaching, training and research	
Medical Imaging - New Core In-Scope MI	3	-	-	-	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	1	
Pathology		x	-	-	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2	1
Pharmacy			x	-	-	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	-
Health Information Services				x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cardiology Diagnostics					x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	
Dermatology						x	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	2	3	
Respiratory and Sleep							x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	
Infectious Diseases								x	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	
Winter Surge/COVID ward									x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	
Endocrinology and Diabetes										x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	
Gastroenterology											x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	
Hepatology												x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	
Palliative Care													x	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	
Renal Medicine (incl Haemodialysis)														x	-	-	-	1	-	-	-	-	-	-	-	-	-	2	3	
Rheumatology															x	-	-	-	-	-	-	-	-	-	-	-	-	2	3	
Neurology and Stroke																x	-	-	-	-	-	-	-	-	-	-	-	2	3	
General Medicine																	x	1	-	-	-	-	-	-	-	-	-	2	3	
Day Medical (& HITH)																		x	-	-	-	-	-	-	-	-	-	2	3	
Addiction Medicine																			x	-	-	-	-	-	-	-	-	2	3	
Clinical Trials																				x	-	-	-	-	-	-	-	2	3	
General Surgery																					x	-	-	-	-	-	-	2	3	
Endoscopy																						x	-	-	-	-	-	2	3	
Orthopaedics																							x	-	-	-	-	2	3	
Ophthalmology																								x	-	-	-	2	3	
ENT / Head and Neck																									x	1	2	2	3	
Maxillofacial surgery																										x	-	2	3	
Plastic Surgery																											x	2	3	
Outpatient clinics (med and surg)																												x	3	
Teaching, Training and Research																													x	

Legend

1 directly adjacent (Horizontal / Vertical)

2 easily accessible (less than 3 minutes)

3 accessible (3 - 5 minutes)

Legend
1 directly adjacent (Horizontal / Vertical)
2 easily accessible (less than 3 minutes)
3 accessible (3 - 5 minutes)

4. General Medicine

4.1. SERVICE DESCRIPTION

General Medicine cares for patients with diagnosed and undiagnosed medical conditions, or those with multiple medical conditions and there is no clear subspecialty admitting team, or adults who would benefit from a period of investigation and management prior to discharge home.

General medicine is a Level 6 service.⁸

There are 32 inpatient PoC, although not all are currently utilised. General Medicine would also accommodate a future (reinstated) MAPU of 6-8 beds. Outpatient clinics operate five days a week.

The admission criteria for general medicine are adults over the age of 16 years of age.

Examples of patient cohorts are:

- Inpatients from the Adult Mental Health Unit (AMHU) who require urgent medical treatment under a generalist medical model. This does not include patients requiring surgical intervention;
- Those who require toxicology treatment for acute toxicity or overdose or those with an alcohol and other drug related illness requiring medical stabilisation;
- Those with an eating disorder who require a multi-disciplinary approach and strict adherence to individual specific care plans;
- Step down for patients from intensive care unit (ICU) with acute illness for conditions such as intentional overdose or sepsis and require close clinical monitoring on arriving to the ward. These patients may require multiple medical consults and intense allied health input over a long period of time;
- Those with chronic pain who require ketamine infusions for opioid management and stabilisation as part of chronic illness and pain management; or
- Delirium of uncertain aetiology, weight loss for investigation, functional decline, sepsis, and patients from community aged care with multi-system illness not requiring a dementia specific unit for management.
- When required, General Medicine also admits patients under other specialties when there is a hospital demand for bed. This includes patients under the specialties of cardiology, respiratory, renal, infectious disease, neurology, dermatology, and rheumatology.

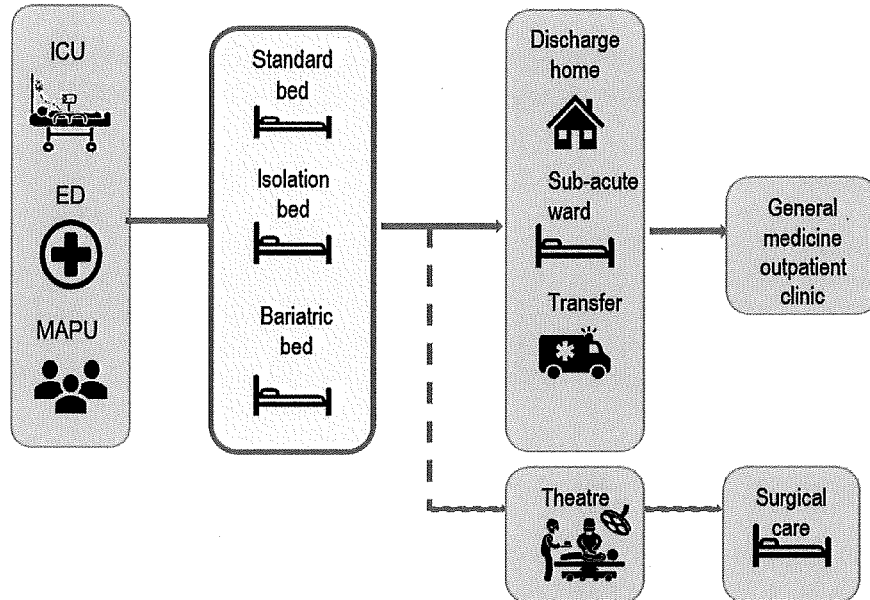
The General Medicine Unit has been used as an infectious threat response unit for COVID 19, and potentially used for Ebola, Middle East Respiratory Syndrome (MERS), and other pandemic response.

4.2. PATIENT PATHWAY

The general medicine patient pathways are depicted below in Figure 4-1.

8. NSW Health, *Guide to the Role Delineation of Clinical Services*, 2021. Available: <https://www.health.nsw.gov.au/services/Publications/role-delineation-of-clinical-services.PDF>

Figure 4-1: General Medicine patient pathways



Patients admitted to General Medicine usually present in one of the three following ways, from:

- ED;
- A direct admission from the community or an elective list;
- Transfer from another inpatient unit;
- Medical Assessment and Planning Unit (which has not been operational since COVID); or
- ICU as step-down care.

There may also be instances of transfer from other CHS healthcare facilities such as North Canberra Hospital, University Canberra Hospital (UCH), Adult Mental Health Unit (AMHU) and the Alcohol and other Drugs (AOD) withdrawal inpatient unit, or a non CHS health care facility such as a private hospital.

Patient discharge may be to subacute services (rehabilitation, geriatric evaluation and management or palliative care), HITH, to home, an alternative living facility, or to a surgical team for a procedure. Follow-up care may be provided through the general medicine outpatient clinic, the patient's GP, subacute services in the home, such as Transition Care or Rehabilitation-in-the-Home (RITH), or Community Health Services.

4.3. WORK PROCESSES

The medical inpatient units support adults of all acuity, frailty, and disability and those living with co-morbidities. The work processes that support patients admitted to General Medicine are described below.

4.3.1. Hours of operation

General Medicine admits and cares for patients 24 hours a day, 7 days a week.

Ward clerks are available from 8am to 4pm Monday to Friday. An after-hours ward clerk is contactable outside of these hours.

General medicine outpatient clinics provide ongoing monitoring and treatment. Access to outpatients is by appointment, with initial appointment triaged based on the most urgent condition.

4.3.2. Care planning

The treating team will establish a care plan for each patient admitted to the units. The care plan will outline the care pathway, the team members to be involved in patient care (including multidisciplinary staff), special considerations relating to individual patient (or family/carer) needs, and the expected discharge date, destination and supports to be provided (by whom) following return to the community. Any deviation from the initial patient pathway will be documented, noting additional services required.

4.3.3. Conditioning

Allied health bed-based therapy will be provided to inpatients as soon as possible after admission to support early rehabilitation and patient mobility. A multi-purpose gymnasium will also be available for therapy with Allied Health practitioners, focusing on mobility, strength, and activities of daily living.

4.3.4. Patient transfer and discharge

Due to the complexity of the general medicine patient cohort, patients require intense allied health, case conferences and family meeting input as part of discharge planning.

Patients may require transfer to other clinical services within CHS. Transfers may be temporary and relate to medical imaging or interventional cardiology or radiology labs. Some patients may also be transferred to theatre for planned or unplanned surgical procedures, or to the ICU for more intensive monitoring or management. Patients may also be transferred to the North Canberra Hospital or the UCH for subacute care.

If a bed or chair in the Discharge lounge is available, the patient will be transferred into the lounge to await discharge summary, medications, and transport to their end destination point. This can be by private transfer, taxi or ambulance dependent on discharge destination.

4.4. WORKFORCE

The workforce requirements for a Level 5/6 service include a general physician available 24 hours per day, a medical officer on-site 24 hours per day and a post graduate trainee with three or more post graduate years who may be in training with the RACP.⁹

The general medical registrar may also cover some of the medical sub-specialities overnight, depending on the rostered requirements. Nursing staff will be rostered for 24 hours per day according to the patient ratios. Administrative staff will support the unit.

9. NSW Health, *Guide to the Role Delineation of Clinical Services*, 2021. Available: <https://www.health.nsw.gov.au/services/Publications/role-delineation-of-clinical-services.PDF>

4.5. CLINICAL AND NON-CLINICAL SERVICE SUPPORT FUNCTIONS

Refer to section 19 for clinical and non-clinical supports and separately provided Clinical Support Services Service Model.

4.6. FUNCTIONAL RELATIONSHIPS AND ADJACENCIES

The key internal and external functional relationships for General Medicine are:

Internal:

- ED;
- Other acute and subacute medical inpatient units;
- Medical Imaging;
- Pharmacy;
- Pathology;
- Hospital in the Home;
- Alcohol and Drug Service;
- Acute Chronic Pain Service;
- Psychiatry;
- Stomal Therapy;
- Outpatients;
- ICU;
- Allied health;
- Language services;
- Food services;
- Spiritual Support Services;
- Environmental services; and
- Mortuary.

External:

- GPs;
- Community specialist consultants;
- Residential Aged Care facilities;
- Ambulance and non-emergency patient transfer services.

The principal functional adjacency for General Medicine is for the general acute ward to be proximal to the medical day ward, accessible in 3-5 minutes.

4.7. CHALLENGES AND OPPORTUNITIES

Recognising and reversing Frailty. Identifying that an older person has frailty, or has the risk of frailty, is important as this patient cohort are more vulnerable to being unable to cope with everyday activities and acute stressors as well as having poorer outcomes such as impaired life function, need for nursing care and death.¹⁰ Frailty is defined as a clinically recognisable state of increased vulnerability resulting from ageing-associated decline in reserve and function across multiple physiological systems.¹¹

Frailty has been operationally defined by Fried et al. as meeting at least three out of five criteria indicating compromised energetics: low grip strength, low energy, slowed waking speed, low physical activity, and/or unintentional weight loss.¹² Alternatively, the “frailty index” is considered the more sensitive predictor of adverse health outcomes, which involves counting the number of deficits

10. Takatori K, Matsumoto D. Social factors associated with reversing frailty progression in community-dwelling late-stage elderly people: An observational study. PLoS One. 2021 Mar 3;16(3):e0247296. doi: 10.1371/journal.pone.0247296. PMID: 33657160; PMCID: PMC7928521.

11. Xue QL. The frailty syndrome: definition and natural history. Clin Geriatr Med. 2011 Feb;27(1):1-15. doi: 10.1016/j.cger.2010.08.009. PMID: 21093718; PMCID: PMC3028599.

12. Xue QL. The frailty syndrome: definition and natural history. Clin Geriatr Med. 2011 Feb;27(1):1-15. doi: 10.1016/j.cger.2010.08.009. PMID: 21093718; PMCID: PMC3028599.

accumulated over time, including disability, diseases, physical and cognitive impairments, psychosocial risk factors, and geriatric syndromes (e.g. falls, delirium, and urinary incontinence) for a score out of 40.

Reversibility of frailty applies not only to physical frailty but also to mental and psychological frailty, including mild cognitive impairment and social frailty, with intervention of exercise based social activities.¹³ Routine frailty assessments for older adults (65 – 75+ years) can help to identify people with, or at risk of, frailty requiring intervention.

Acute Care for the Elderly. Directly related to the above is the recognised programs developed within health services that can translate indexes and tools into actions and tasks. ACE programs are designed to ensure that there are needs of elderly acute patients that transcend their acute condition that need to be addressed if the patient is to recondition, recover and restore functional independence at least to the level at pre-admission.

13. Takatori K, Matsumoto D. Social factors associated with reversing frailty progression in community-dwelling late-stage elderly people: An observational study. PLoS One. 2021 Mar 3;16(3):e0247296. doi: 10.1371/journal.pone.0247296. PMID: 33657160; PMCID: PMC7928521

5. Medical Assessment and Planning Unit

5.1. SERVICE DESCRIPTION

A Medical Assessment and Planning Unit (MAPU) provides care for shorter-stay medical emergency inpatients who have presented through the ED. In the MAPU, patients will be clinically assessed and screened for risk. The MAPU facilitates patient flows through the ED, reduces delays in comprehensive assessment, diagnoses and determines a definitive care pathway earlier than would be normal practice.¹⁴

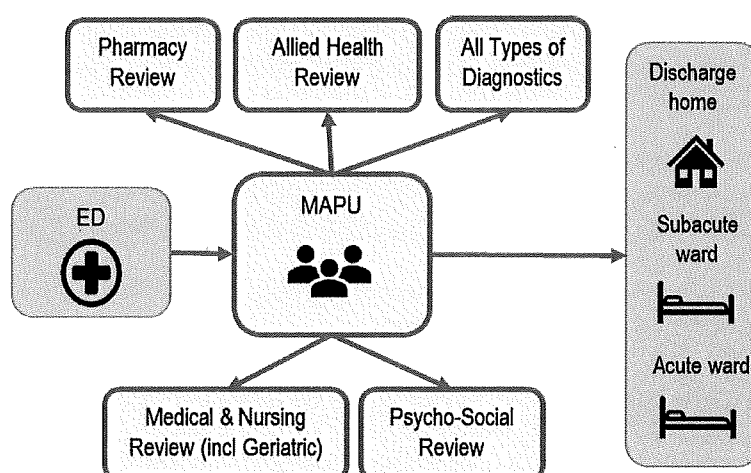
CH was operating a MAPU prior to 2020. However, with the COVID-19 pandemic, MAPU beds were required for COVID patients, and the MAPU ceased operating. The MAPU originally had eight POC. The intent in this Service Model is for the MAPU to become once again operationalised in the redevelopment. It will also be important that the MAPU functions as a genuine MAPU and not simply as more acute medical beds.

5.2. PATIENT PATHWAY

Patients entering the MAPU arrive through the ED. Often patients in MAPU require diagnostic tests, so they may be transferred to Medical Imaging and/or bloods taken and almost certainly have a pharmacy review.

Some MAPU patients will receive definitive care and be discharged home from the MAPU, whilst many patients will transfer to an acute medical ward, or to subacute services.¹⁵ Refer to Figure 5-1 below for the patient pathway.

Figure 5-1: MAPU patient pathway



14. Victorian Department of Health, *The role of Medical Assessment and Planning Units in Victorian Health Services*, October 2011. Available: <https://www.health.vic.gov.au/sites/default/files/migrated/files/collections/research-and-reports/t/the-role-of-medical-assessment-and-planning-units-in-victorian-health-services---pdf.pdf>

15. Victorian Department of Health, *The role of Medical Assessment and Planning Units in Victorian Health Services*, October 2011. Available: <https://www.health.vic.gov.au/sites/default/files/migrated/files/collections/research-and-reports/t/the-role-of-medical-assessment-and-planning-units-in-victorian-health-services---pdf.pdf>

5.3. WORK PROCESSES

5.3.1. Hours of operation

The MAPU operates 24 hours a day, 7 days a week as part of another acute medical ward, usually general medicine.

5.3.2. Care planning

This is a particular role of MAPU. The MAPU team will expediently establish a care plan for each patient based on a comprehensive assessment and diagnostics. The care plan comes from a MDT with particular expertise in frail elderly complex patients.

5.3.3. Conditioning

Allied health is part of the treatment team in MAPU. They will provide bed-based therapy as soon as possible after admission to support early rehabilitation, conditioning, and patient mobility.

5.3.4. Patient transfer and discharge

Patients may require transfer to other clinical services within CHS. Transfers may be temporary and relate to medical imaging or interventional cardiology or radiology labs. Patients may also be transferred to the North Canberra Hospital for subacute care. Patients will also be discharged home or to alternative living facilities from the MAPU.

5.4. WORKFORCE

Medical specialists are responsible for patients admitted to MAPU and should be available 24 hours a day. In some cases, and by agreement with protocols, ED may have admitting rights directly to MAPU. This is dependent on the Service Model of choice for CH. Nurses are responsible for ongoing patient care.

Multidisciplinary teams in the MAPU include physiotherapists, occupational therapists, nutritionists, psychologists, and social workers. Presently, these categories of staff tend to be only available during business hours which works against the philosophy and Service Model of a MAPU¹⁶.

Nursing and medical staff will generally have expertise in the care of complex frail patients. Particular skills will often include geriatric and geriatric medicine.

5.5. CLINICAL AND NON-CLINICAL SERVICE SUPPORT FUNCTIONS

Refer to section 19 for clinical and non-clinical supports and separately provided Clinical Support Services Service Model.

16. Victorian Department of Health, *The role of Medical Assessment and Planning Units in Victorian Health Services*, October 2011. Available: <https://www.health.vic.gov.au/sites/default/files/migrated/files/collections/research-and-reports/t/the-role-of-medical-assessment-and-planning-units-in-victorian-health-services---pdf.pdf>

5.6. FUNCTIONAL RELATIONSHIPS AND ADJACENCIES

The key internal and external functional relationships for MAPU are:

Internal:

- Emergency Department;
- Subacute inpatient units;
- All Allied Health categories;
- Medical Specialties;
- Medical Imaging;
- Pharmacy;
- Pathology; and
- Language services.

External:

- GPs and community medical specialists;
- Residential Aged Care facilities
- Ambulance and non-emergency patient transfer services

The principal functional adjacency for MAPU is with General Medicine. Indeed, it is incorporated within the General Medicine ward.

5.7. CHALLENGES AND OPPORTUNITIES FOR MAPU

Key opportunities and challenges are the same as for General Medicine (Section 4).

In addition, there is the challenge of re-establishing a viable MAPU capable of meeting its clinical objectives.

6. Respiratory and Sleep Medicine

6.1. SERVICE DESCRIPTION

Respiratory medicine at CH is a Level 6 service.¹⁷ Respiratory medicine involves the diagnosis and treatment of disorders of the respiratory system (for example, the lungs, trachea, and diaphragm). Disorders include, but are not limited to, asthma, chronic obstructive pulmonary disease (COPD), tuberculosis, emphysema, pneumonia, cystic fibrosis, and pulmonary hypertension.

Respiratory is part of a larger service including the Sleep Medicine Unit, the Respiratory diagnostic laboratories, and a Cystic Fibrosis Clinic. Respiratory also manage a Tuberculosis Clinic.

Sleep Medicine provides Specialist appointments for assessment and management of sleep disorders by a sleep physician. This service is provided as an outpatient appointment at CH and is also available for inpatients at CH.

The Sleep Medicine service also provides hospital (type 1) and home based (type 2) sleep studies and positive airway pressure acclimatisation. Sleep studies are conducted and analysed by sleep scientists and reported by sleep physicians. This service is only for the adult patient cohort. There is no paediatric sleep laboratory service.

The Sleep Disorders Unit (Sleep Lab) provides diagnostic reports and tests for people experiencing issues with their sleep, usually resulting from airway problems. The current Service Model has overnight as well as day only sleep disorder services. The service also caters for inpatients or outpatients with type two respiratory failure and patients with suspected sleep disordered breathing who are pregnant. Primary insomnia is not managed by the respiratory and sleep team however referrals to exclude sleep disordered breathing or restless leg syndrome in patients presenting with insomnia will be accepted.

The respiratory outpatient clinics provide multidisciplinary respiratory care for interval care, acute episodes, and post-acute care.¹⁸ A home ventilation or home oxygen service is also offered.

The Respiratory Physiology Laboratory provides diagnostic tests for people with breathing problems. The range of tests performed in the Respiratory Physiology Laboratory include:

- Spirometry
- Static Lung Volume Measurements
- Gas Transfer
- Bronchial Provocation Testing
- 6 Minute Walk Tests
- Cardiopulmonary Exercise Testing
- Hypoxic Challenge Testing¹⁹

Bronchoscopy and Endobronchial Ultrasounds are also offered to assist in diagnosis.

17. NSW Health, *Guide to the Role Delineation of Clinical Services*, 2021. Available: <https://www.health.nsw.gov.au/services/Publications/role-delineation-of-clinical-services.PDF>

18. NSW Health, *Guide to the Role Delineation of Clinical Services*, 2021. Available: <https://www.health.nsw.gov.au/services/Publications/role-delineation-of-clinical-services.PDF>

19. <https://www.canberrahealthservices.act.gov.au/services-and-clinics/services/respiratory-physiology-laboratory-and-sleep-disorders-unit-sleep-lab>

The Cystic Fibrosis clinic provides specialist, multidisciplinary care for adults living with cystic fibrosis.

Respiratory and Sleep Medicine currently operates both inpatient and outpatient clinics five days a week including:

- Acute Respiratory Day Program;
- Overnight Sleep labs;
- Day only ambulatory sleep medicine;
- Outpatient clinic, including 1 physiology lab.

An investigation is underway to determine if further overnight sleep laboratories are required, and whether any, or all, can be situated in the community.

6.2. PATIENT PATHWAY

The inpatient pathway for respiratory patients is shown in Figure 6-1 below.

Patients admitted to respiratory usually present from the Emergency Department or from the ICU for step-down care. A small percentage of patients will be a transfer from another CHS inpatient unit. There may also be instances of transfer from another health care facility.

The Sleep Laboratory currently conducts diagnostic and treatment titration sleep studies. Home based sleep studies can be performed for diagnostic purposes provided the patient is mobile, fairly independent and does not have severe obesity. Those who are suspected to have respiratory failure, have underlying unstable medical problems, neuromuscular disease, intellectual disability, or those with BMI>50 will require an attended sleep study in hospital. Patients from a correctional facility are also required to attend the hospital for a diagnostic sleep study. Treatment titration sleep studies cannot be performed at home due to the need for the sleep scientist to adjust PAP settings during the sleep study.

Figure 6-1: Respiratory inpatient pathway

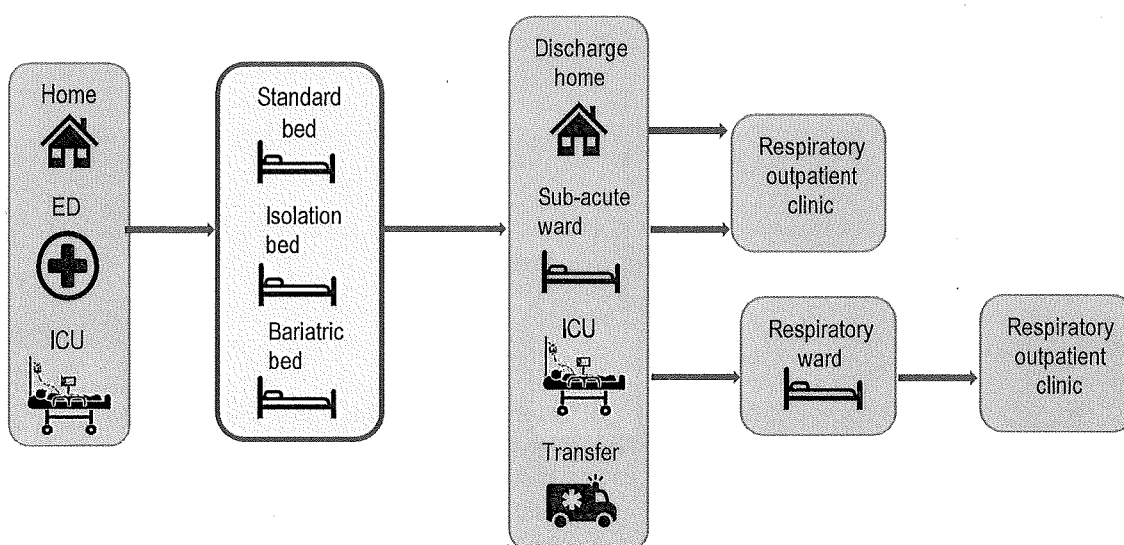
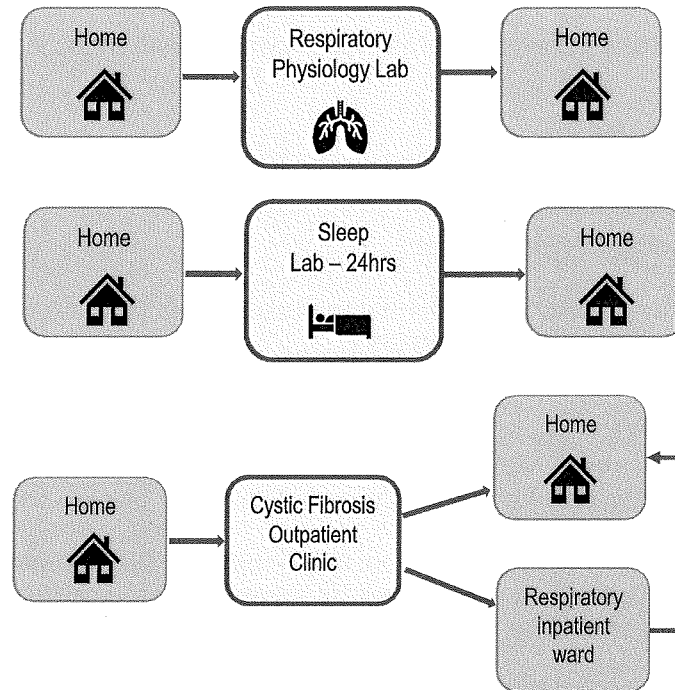


Figure 6-2: Respiratory Physiology Lab, Sleep Lab, and Cystic Fibrosis Clinic pathways



Patient discharge may be to subacute services (rehabilitation, geriatric evaluation and management or palliative care), to home or an alternative living facility, or to ICU with clinical deterioration. Follow-up care may be provided through the respiratory outpatient clinic.

The sleep laboratory admits patients from home for an overnight stay. The respiratory physiology laboratory is an ambulatory service.

6.3. WORK PROCESSES

6.3.1. Hours of operation

Respiratory Medicine admits and cares for patients 24 hours a day, 7 days a week; and outpatient clinics provide ongoing monitoring and treatment.

The Sleep Laboratory operates 24 hours a day, as patients are admitted for overnight observation. The Physiology Laboratory operates during business hours only.

6.3.2. Care planning

The treating team will establish a care plan for each patient admitted to the units. The care plan will outline the care pathway, the team members to be involved in patient care (including multidisciplinary staff), special considerations relating to individual patient (or family/carer) needs, and the expected discharge date, destination and supports to be provided (by whom) following return to the community. Any deviation from the initial patient pathway will be documented, noting additional services required.

6.3.3. Conditioning

Allied health bed-based therapy will be provided to inpatients as soon as possible after admission to support early rehabilitation and patient mobility. A multi-purpose gymnasium will also be available for therapy will Allied Health practitioners, focusing on mobility, strength, and activities of daily living.

6.3.4. Patient transfer and discharge

Patients may require transfer to other clinical services within CHS. Transfers may be temporary such as to medical imaging. Some patients may also be transferred to theatre for planned or unplanned surgical procedures, or to the ICU for more intensive monitoring or management. Patients may also be transferred to the North Canberra Hospital for subacute care.

If a bed or chair in the Discharge lounge is available, the patient will be transferred into the lounge to await discharge summary, medications, and transport to their end destination point. This can be by private transfer, taxi or ambulance dependent on discharge destination.

6.4. WORKFORCE

The workforce required to operate a Level 6 respiratory inpatient and sleep medicine service includes respiratory medicine physician, a sleep medicine physician, or a dual trained physician as Head of Unit. Additional physicians should also be available during hours. Medical officers with at least three years of post-graduate training, which may be with the RACP, are required onsite for 24 hours per day, although this medical officer may cover several sub-specialities. Allied health and dedicated nursing staff support is also required.²⁰ Nursing staff will be rostered for 24 hours per day according to the patient ratios. Administrative staff will support the unit.

6.5. CLINICAL AND NON-CLINICAL SERVICE SUPPORT FUNCTIONS

Refer to section 19 for clinical and non-clinical supports and separately provided Clinical Support Services Service Model.

6.6. FUNCTIONAL RELATIONSHIPS AND ADJACENCIES

Internal:

- ED;
- Medical acute and subacute Inpatient wards;
- Medical Imaging;
- Pharmacy;
- Pathology;
- Outpatients;
- ICU;
- Coronary Care Unit (CCU);
- Electrophysiology;
- Obesity management services;
- Antenatal outpatient services;
- Allied health;
- Language services;
- ACT Equipment Scheme.

External:

20. NSW Health, *Guide to the Role Delineation of Clinical Services*, 2021. Available: <https://www.health.nsw.gov.au/services/Publications/role-delineation-of-clinical-services.PDF>

- GPs and community medical specialists;
- Residential Aged Care facilities;
- Ambulance and non-emergency patient transfer services.

Ideally the general medicine beds would be close to the overnight respiratory and sleep medicine service.

The day sleep disorder service could be close to other day ambulatory services.

6.7. CHALLENGES AND OPPORTUNITIES FOR RESPIRATORY

Structure of Clinical Centres

The nature and practice of Sleep Medicine are very different to Respiratory Medicine:

- Respiratory medicine is predominantly outpatient practice rather than inpatient practice. A significant proportion of services can be delivered in the community setting;
- Sleep Medicine inpatients often have high care requirements due to presence of respiratory failure and severe co-morbidities. Severe obesity and severe neuromuscular diseases are very common in Sleep medicine inpatients. Most of these patients will require non-invasive ventilation (NIV) in hospital.
- Sleep Medicine is a laboratory-based discipline with well-established standards set out by the Australian Sleep Association (ASA) / the National Association of Testing Authorities (NATA).²¹
- Sleep medicine has high rates of Medicare Billing with significant potential to generate income if the unit is structured well with appropriate administrative support.

Sleep Medicine may benefit being a standalone unit. The current mixed Respiratory/Sleep model does not work well, and it is difficult to gauge demand and supply of services. The Lead Physician in Sleep Medicine has no mandate over the other physicians practising Sleep Medicine and has significant difficulty ensuring that acceptable standards of practice and level of engagement is being adhered to meet NATA standards for accreditation. Some staff physicians are disengaged from the service and not able to provide timely and quality service at present. Other hospitals such as Sir Charles Gairdner Hospital in Perth have used this standalone model for years with success.

Location of Sleep Medicine Services

Home based sleep studies can be provided in a Community Health Care setting. Set up of monitoring equipment will occur at the Centre and the patient will return to their usual residence for the study. The draw-back of this approach is that Sleep Scientists rostered for the evening shift cannot attend to both home-based sleep study patients in the community health centre and at the hospital on the same night.

Complex sleep studies for suspected respiratory failure or parasomnia as well as Continuous Positive Airway Pressure (CPAP) and NIV treatment will need to be conducted in the hospital setting with medical backup. This facility needs to have infrastructure to manage patients with severe obesity and those who are immobile. Some of the complex patients may benefit from having nursing support in addition to scientist attendance during sleep study.

The majority of sleep medicine inpatients are those who have type 2 respiratory failure for a variety of reasons who are commencing on Non-invasive ventilation. There is also a need to provide

21. National Association of Testing Authorities in Australia (NATA) is Australia's peak body responsible for accrediting labs and inspection/calibration services, producing certified reference materials, and providing proficiency testing schemes.

ventilator support for some patients with tracheostomy who require very slow weaning. These patients should be nursed in a special nursing area to improve efficiency and safety of delivering NIV in the ACT. This will allow the development of nursing expertise with delivery of timely quality care and reduce frustration of the Sleep Physicians managing the care.

The ideal location of Sleep Medicine Service is in a quiet corner within the CH with some access to the Medical Emergency Team (MET) when required. Co-location of sleep laboratory and sleep clinic will allow both areas to share facilities such as clinic rooms (e.g., physician consultation during the day, patient PAP education in the afternoons and set up of home-based sleep studies in the evenings), cleaning areas, thermo-disinfectors, and storage areas.

This allows central storage of all equipment such as CPAP/NIV machines and all the masks and accessories and eliminates the need for repeated travel between two areas by Sleep Scientists during the clinic sessions, which affects the efficiency of the clinic operation.

In summary, the ideal configuration of Respiratory and Sleep Medicine is:

- Sleep Clinic in CH to accommodate complex sleep patients with significant disabilities.
- Sleep Clinic in the community health centre setting to provide services closer to the patients' homes, reduce congestion in the hospital and increase capacity to meet community demand.
- Development of specific Sleep Medicine Outpatient service to service areas of unmet needs with collaboration with other Departments within ACT Health to provide timely service for those who need rapid access, such as high-risk pregnant women, patients with new onset cardiac arrhythmias. This would be a similar model to the currently operational Obesity Management Service.
- Six-Bed Hospital-based Sleep Laboratory with adequate sleep scientist and administration support allocation to meet the demands of the service and provide a more efficient service and have the ability of providing training to novice sleep scientist with minimal supernumerary staffing. This facility will be primarily used for diagnosis of complex sleep disorders as well as titration of positive airway pressure therapy.
- Home-based sleep studies for diagnosis of sleep disordered breathing in stable ambulatory patients. This can be provided through the hospital-based sleep laboratory or as a community-centre based service.
- Respiratory failure unit with 4-6 beds with bariatric equipment for management of acute non-invasive ventilation patients and for ICU patients requiring long-term ventilation via tracheostomy or slow ventilator weaning as a transition strategy to a stabilised ward environment and ultimately to rehabilitation.

Workforce

The Sleep Laboratory will need to increase its hospital-based sleep study activity to 6 nights per week within the next 12 months in order to meet the current demand. This will require recruitment of additional 3.0 FTE sleep scientist. The sleep laboratory staffing has been difficult to recruit and retain in the last 6 years since the Sleep Laboratory opened at the Canberra Hospital. It is essential that the sleep laboratory staffing allocation includes ongoing trainee position that are ready to step-in in the event of staff resignation as it has proved difficult to recruit trained sleep scientists within the Canberra community and it takes 12 months for a novice sleep scientist to become independent in all aspects of Sleep Science.

Sleep Medicine should establish a trainee Sleep Medicine Physician position in the near future. Recruitment of Respiratory and Sleep Physicians to Canberra has proved to be difficult in the last 10 years. This will allow provision of inpatient care for NIV patients as well as Sleep Medicine Outpatient consultations and Sleep Study Reporting under supervision. This position would be

suitable for final year Advanced Trainees in Respiratory and Sleep Medicine and potentially attract future Physicians to Canberra and surrounding areas. Further recruitment of sleep physicians is essential to meet the demand and ensure that Sleep Medicine is able to provide timely service and minimise risk to the organisation.

Ideally administration for ACT government funded CPAP and NIV devices to provide a seamless transition from CPAP/ NIV acclimatisation in both inpatient and ambulatory settings.

Non-invasive ventilation service

There is a need to establish a Respiratory Failure unit within ACT Health to manage patients who require non-invasive ventilation in the ward environment. Current delivery of NIV within a General Medical Ward environment is suboptimal and at timely delivery of the service with adequate medical oversight is a major issue. Lack of equipment maintenance is also an issue in the current ward environment. Establishment of a Respiratory Failure Unit within the Canberra Hospital will facilitate development of a nursing workforce with expertise in NIV delivery in the acute setting. This service should be serviced by Sleep Medicine Physicians who are experts in this area and able to provide a continuum of service with transition to patient self-managed domiciliary NIV when required. This can be provided with an open ward design with 4 beds with the option of 1-2 isolation rooms with equipment to manage immobile bariatric patients up to 400kg in weight. The unit will need to be supported by the Sleep Medicine Physician Trainee and Resident Medical Officer. There is currently no provision of dedicated ambulatory NIV service to manage unexpected problems for long term NIV patients and this need to be developed in the long run as the number of patients receiving NIV in the community is increasing. Current arrangements of contacting usual Sleep Physician or presenting to the Canberra Hospital Emergency Department in the event of NIV device malfunction can be prevented if there is a dedicated Non-invasive Ventilation Coordinator position. The Non-invasive Ventilation Coordinator position would suit an experienced nurse or sleep scientist who has sufficient knowledge to troubleshoot NIV device by telephone or in person, able to facilitate rapid replacement of devices if required and provide patient education prior to discharge and assist with transition to self-managed home NIV therapy.

There is a requirement for adequate Sleep Medicine Physicians to run an NIV service at the Canberra Hospital and provide outreach NIV support to the University of Canberra Public Hospital with establishment of a Sleep Medicine Physician Trainee position and a Non-invasive Ventilation Coordinator.

Domiciliary Oxygen and Respiratory Support Scheme (DORSS)

The current DORSS are administered through the ACT Equipment Service. Staff at DORSS do not have specific experience in clinical delivery of domiciliary oxygen, CPAP or NIV. ACT Health relies on the use of contractors for delivery of such services and at times Physicians face significant challenges to have timely delivery of devices that meet the patient's clinical needs. It is hard to ensure adequate education has been provided to these patients on provision of devices when contractors and at times subcontractors are used to deliver this service. The delivery of ACT government funded CPAP and NIV devices may be better provided through the Sleep Medicine Services with dedicated administration staff and utilisation of sleep scientists to provide education.

7. Endocrinology and Diabetes

7.1. SERVICE DESCRIPTION

Endocrinology and Diabetes involves the diagnosis and treatment of conditions of the endocrine system (glands which produce hormones).

Endocrinology services provide education, assessment, diagnosis, treatment, and management of endocrine disorders. These include diabetes and its complications, thyroid, pituitary and adrenal disease, neuroendocrine conditions, endocrine tumours, disorders of growth and puberty, congenital and acquired endocrine dysfunction, lipid and nutritional abnormalities, metabolic bone disease, osteoporosis, menopause, and other endocrine disorders. Endocrine disorders affect many body systems across all age groups, and often require lifelong management.

The CHS Endocrinology and Diabetes Service provides acute and ambulatory outpatient services to health care consumers over the age of 16 in the ACT and surrounding NSW region. This includes treatment and education to patients with diabetes and their carers. Patients may be offered care through inclusion in clinical trials where appropriate. Endocrinology specialists provide clinical advice on request from other hospital-based specialities, other hospitals and GPs in the ACT and surrounding region.

Diabetes educators provide diabetes self-management education and care across the continuum for children, adolescents, adults, and women during pregnancy for people who have diabetes.

Services provided include:

- Group programs and individual appointments for people with newly diagnosed diabetes;
- Individual appointments for people with diabetes with complex care needs including ambulatory initiation of insulin and other diabetes injectable medication (CH, Gungahlin, and Tuggeranong Community Health Centres);
- Insulin pump initiation and stabilisation;
- Continuous glucose monitoring;
- Paediatric service for infants and children up to 18 years (Paediatric Endocrine and Diabetes Service);
- Transition Service (Youth and Adolescent Service for ages 16-23 years);
- Specialised satellite multidisciplinary diabetes services which include Diabetes Nurse Educators, Specialist Diabetes Medical Practitioners and Allied Health Practitioners within community settings (Gungahlin and Tuggeranong Health Centres). There is future requirements for Diabetes Nurse Practitioners; and
- Diabetes Education Pregnancy Service for women planning pregnancy, gestational diabetes, type 1, and type 2 diabetes during pregnancy.

Endocrinology inpatient POC are colocated with Respiratory and Rheumatology inpatients.

The outpatient service involves a multidisciplinary team comprising an Endocrinologist, Diabetes Nurse Educator, Dietitian and Social Worker. These clinics are provided in the ambulatory outpatient setting at CH:

- Diabetes Endocrinologist clinic;

- Individual and group appointments for diabetes;
- Insulin initiation and stabilisation;
- Continuous glucose monitoring; and
- Pre-diabetes group education.

Endocrinology outpatient clinics operate five days a week.

7.2. PATIENT PATHWAY

The patient pathway for endocrinology inpatients is shown in Figure 7-1 below. A patient may step down from ICU and be admitted to the endocrinology ward, or a patient may have escalating care requirements and be transferred from the ward to the ICU.

Figure 7-1: Endocrinology inpatient pathway

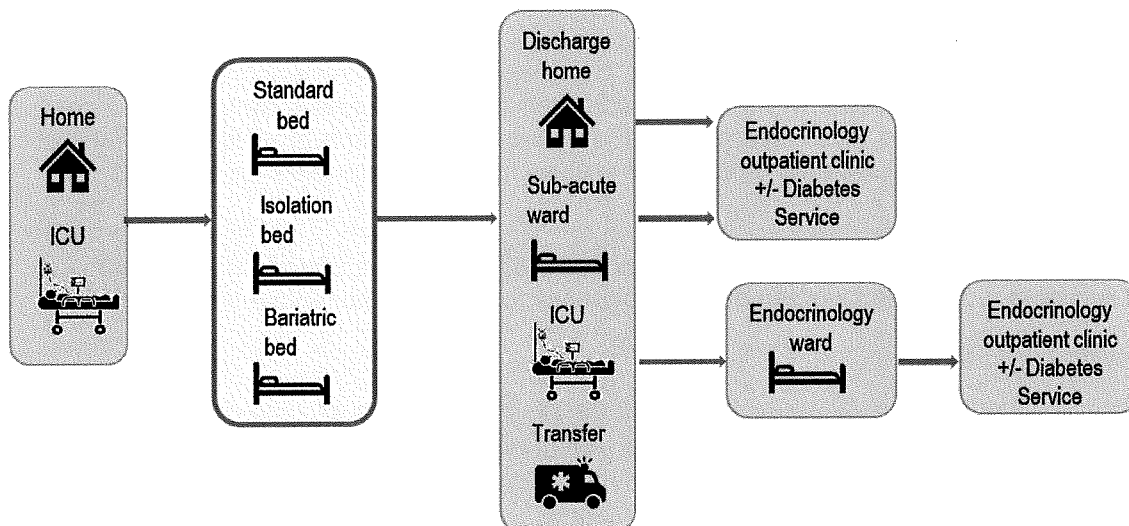
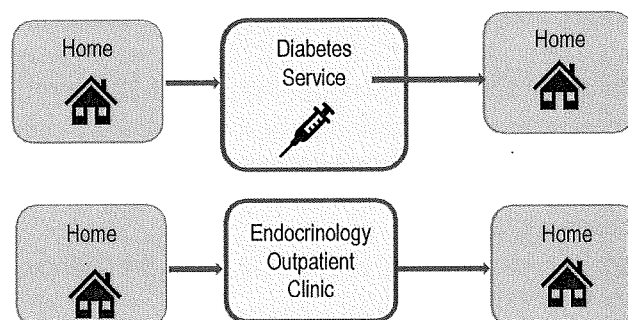


Figure 7-2: Endocrinology Outpatient and Diabetes Service patient pathways



Patients admitted to Endocrinology usually present through the Emergency Department. There may also be instances of transfer from another health care facility.

Patient discharge may be to subacute services (rehabilitation, geriatric evaluation and management or palliative care), to home or an alternative living facility. Follow-up care and monitoring takes place through the endocrinology outpatient clinic and/or the Diabetes service.

7.3. WORK PROCESSES

7.3.1. Hours of operation

Endocrinology admits and cares for patients 24 hours a day, 7 days a week. Endocrinology medicine outpatient clinics provide ongoing monitoring and treatment.

7.3.2. Care planning

The treating team will establish a care plan for each patient admitted to the units. The care plan will outline the care pathway, the team members to be involved in patient care (including multidisciplinary staff), special considerations relating to individual patient (or family/carer) needs, and the expected discharge date, destination and supports to be provided (by whom) following return to the community. Any deviation from the initial patient pathway will be documented, noting additional services required.

7.3.3. Patient transfer and discharge

Patients may require transfer to other clinical services within CHS. Transfers may be temporary, such as to medical imaging. Some patients may also be transferred to theatre for planned or unplanned surgical procedures, or to the ICU for more intensive monitoring or management. Patients may also be transferred to the North Canberra Hospital for subacute care.

If a bed or chair in the Discharge lounge is available, the patient will be transferred into the lounge to await discharge summary, medications, and transport to their end destination point. This can be by private transfer, taxi or ambulance dependent on discharge destination.

7.4. WORKFORCE

The workforce requirements for a Level 6 service include a consultant Endocrinologist as Head of Unit, and a consultant Endocrinologist on-call 24 hours per day. A registrar should be onsite 24 hours per day. During the day, Endocrinologists, and medical officers with at least three years of post-graduate training, which may be with the RACP, should be onsite. Allied Health professionals for Endocrinology should include social workers, physiotherapists and or occupational therapists. Specialist diabetes nurses will also form part of a Level 6 team, as will an exercise physiologist and psychologist.²² Ward nursing staff will be rostered for 24 hours per day. Administrative staff will support the unit.

The FTE nursing workforce for Endocrinology are combined with Respiratory and Rheumatology inpatients as these services are all in one unit.

7.5. CLINICAL AND NON-CLINICAL SERVICE SUPPORT FUNCTIONS

Refer to section 19 for clinical and non-clinical supports and separately provided Clinical Support Services Service Model.

22. NSW Health, *Guide to the Role Delineation of Clinical Services*, 2021. Available: <https://www.health.nsw.gov.au/services/Publications/role-delineation-of-clinical-services.PDF>

7.6. FUNCTIONAL RELATIONSHIPS AND ADJACENCIES

Internal:

- ED;
- Other inpatient acute and subacute medical wards;
- Medical Imaging;
- Pharmacy;
- Pathology;
- Outpatients;
- ICU;
- Allied health; and
- Language service.

External:

- GPs and community medical specialists;
- Residential Aged Care facilities
- Ambulance and non-emergency patient transfer services

7.7. CHALLENGES AND OPPORTUNITIES FOR ENDOCRINOLOGY

Endocrinology ECHO. (Extension for Community Healthcare Outcomes) is a telemonitoring program which increases capacity and capability for complex disease management in areas with low rates of medical specialists per population.²³

The format includes a hub (specialist endocrinologist) and spokes (geographically dispersed primary care providers) linked through regular audio-visual meetings where the primary care providers present local cases for discussion and progressively build expertise. This enables the reach of endocrinology far beyond the specialist capacity.²⁴

The ECHO project concept would also apply to other specialties where regional access is limited, such as specialist palliative care.

23. Bouchonville MF, Paul MM, Billings J, Kirk JB, Arora S. Taking Telemedicine to the Next Level in Diabetes Population Management: a Review of the Endo ECHO Model. *Curr Diab Rep.* 2016 Oct;16(10):96. doi: 10.1007/s11892-016-0784-9. PMID: 27549110.

24. Shivani Agarwal, Michelle L. Griffith, Elizabeth J. Murphy, Carol Greenlee, Jeffrey Boord, and Robert A. Gabbay; for the Innovative Models of Diabetes Care Taskforce of the Endocrine Society, "Innovations in Diabetes Care for a Better "New Normal" Beyond COVID-19", 2021

8. Gastroenterology and Hepatology

8.1. SERVICE DESCRIPTION

Gastroenterology and Hepatology Unit (GEHU) is a Level 6 service at CH.²⁵ GEHU involves a wide range of digestive system diseases and disorders (of the bowel, intestines, stomach, oesophagus, liver, and pancreas). Conditions treated include polyps and cancer of the colon, Chron's disease, Gastroesophageal Reflux Disease (GORD), Irritable Bowel Syndrome (IBS), Celiac disease, liver cancer, peptic ulcers, pancreatitis, cirrhosis, hepatitis, non-alcoholic fatty liver disease, obesity, and biliary cholangitis.

Inpatient services include the following:

- General gastroenterology consultative and endoscopic services for persons with upper/lower gastrointestinal (GI) tract symptoms and digestive diseases, including liver and biliary tract disease;
- Inpatient care of patients with gastroenterological diseases; and
- Services for clients with Hepatitis C and liver cirrhosis through the hepatology service.

Gastroenterology clinics care for people with problems with the liver, people who have Inflammatory Bowel Disease, and post-procedural patients. The main functions of the outpatient clinics are:

- Specialist consultation and examination;
- Clinics for patients with viral hepatitis, liver disease, inflammatory bowel disease (IBD), inherited gastrointestinal cancer and complex gastrointestinal disorders;
- Support and follow up for participants in the National Bowel Cancer Screening Program;
- Endoscopic service (gastroscopy, endoscopy), colon cancer screening, gastrointestinal bleeding, interventional endoscopy (*refer to the Surgical Service Model for more information*);
- Endoscopic ultrasound and endoscopic retrograde cholangiopancreatography (ERCP) for examination of the duodenum (beginning of small bowel), gallbladder, liver, and pancreas for the selection of patients for day case treatment or in-patient procedures;
- Pre-operative / procedural assessment;
- Follow up and monitoring the condition of patients after day case procedures or inpatient procedures; and
- Discharging patients from the care of the hospital with referral, if necessary, to other health care providers.

For the Gastroenterology procedural service and sterilisation requirements, refer to the Surgical Service Model for more information.

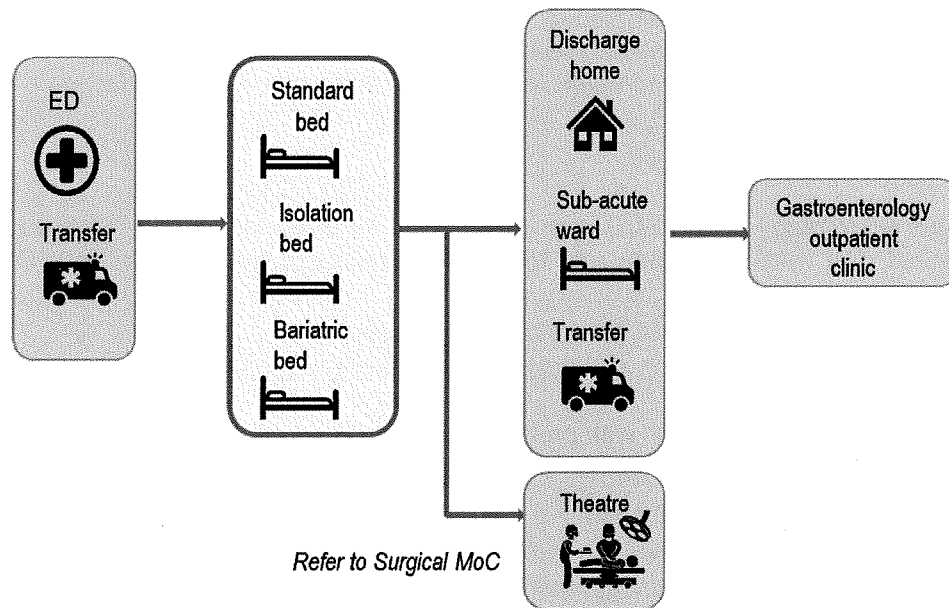
GEHU has both inpatient and outpatient clinics which operate five days a week. The outpatient clinics will ideally be co-located with the GEHU procedural service.

25. NSW Health, *Guide to the Role Delineation of Clinical Services*, 2021. Available: <https://www.health.nsw.gov.au/services/Publications/role-delineation-of-clinical-services.PDF>

8.2. PATIENT PATHWAY

The patient pathway for Gastroenterology and Hepatology inpatients is shown in Figure 8-1 below. Services fall into one of three categories, ambulatory outpatient clinics, day only procedures where patients arrive and discharge on the same day, and overnight admissions in the inpatient unit. *Note the day only procedure patient pathway is described in the Surgical Service Model.*

Figure 8-1: Gastroenterology and Hepatology inpatient pathway



Patients admitted to GEHU usually present through the Emergency Department, transfer from another health care facility, or through direct GP referral.

Patient discharge may be to subacute services (rehabilitation, geriatric evaluation and management or palliative care), to home, or an alternative living facility. Follow-up care and monitoring takes place through the GEHU outpatient clinic.

8.3. WORK PROCESSES

8.3.1. Hours of operation

GEHU admits and cares for patients 24 hours a day, 7 days a week. Ambulatory outpatient clinics provide ongoing monitoring and treatment.

8.3.2. Care planning

The treating team will establish a care plan for each patient admitted to the units. The care plan will outline the care pathway, the team members to be involved in patient care (including multidisciplinary staff), special considerations relating to individual patient (or family/carer) needs, and the expected discharge date, destination and supports to be provided (by whom) following return to the community. Any deviation from the initial patient pathway will be documented, noting additional services required.

8.3.3. Conditioning

Allied health bed-based therapy will be provided to inpatients as soon as possible after admission to support early rehabilitation and patient mobility. A multi-purpose gymnasium will also be available for therapy will Allied Health practitioners, focusing on mobility, strength, and activities of daily living.

8.3.4. Patient transfer and discharge

Patients may require transfer to other clinical services within CHS. Transfers may be temporary, such as to medical imaging. Some patients may also be transferred to theatre or the endoscopy suite for planned or unplanned surgical procedures, or to the ICU for more intensive monitoring or management. Patients may also be transferred to the North Canberra Hospital for subacute care.

If a bed or chair in the Discharge lounge is available, the patient will be transferred into the lounge to await discharge summary, medications, and transport to their end destination point. This can be by private transfer, taxi or ambulance dependent on discharge destination.

8.4. WORKFORCE

The workforce requirements to support a Level 6 service include a gastroenterologist or dual trained general physician on-call 24 hours per day, a medical officer with at least three years of post-graduate training, which may with the RACP, on-site 24 hours per day. During the day, Gastroenterologists, and medical officers with at least three years of post-graduate training, which may be with the RACP, should be onsite.²⁶ Nursing staff will be rostered for 24 hours per day according to the patient ratios. A multi-disciplinary approach is adopted for both inpatients and outpatients. Administrative staff will support the unit. An on-call arrangement is in place for endoscopy medical and nursing after-hours.

8.5. CLINICAL AND NON-CLINICAL SERVICE SUPPORT FUNCTIONS

Refer to section 19 for clinical and non-clinical supports and separately provided Clinical Support Services Service Model.

8.6. FUNCTIONAL RELATIONSHIPS AND ADJACENCIES

The GEHU-related services are 'scattered' across four locations, including the endoscopy suites, liver clinics, Irritable Bowel Disease and general clinics in Building 1 Level 2, gastroenterology offices in Building 2 Level 3, Staff offices on Building 1 Level 10B, and General Outpatients department Building 1 Level 2. There can be operational efficiencies with collocation.

Internal:

- | | |
|-------------------------------|----------------------|
| ■ ED; | ■ Pathology; |
| ■ Palliative Care; | ■ Outpatients; |
| ■ Chronic Disease Management; | ■ ICU; |
| ■ Medical Imaging; | ■ Allied health; and |
| ■ Pharmacy; | ■ Language services. |

26. NSW Health, *Guide to the Role Delineation of Clinical Services*, 2021. Available: <https://www.health.nsw.gov.au/services/Publications/role-delineation-of-clinical-services.PDF>

External:

- GPs and community specialist consultants;
- Residential Aged Care facilities
- Ambulance and non-emergency patient transfer services

There are no particular adjacencies that would be ideal for gastroenterology and hepatology.

8.7. CHALLENGES AND OPPORTUNITIES

An innovative Service Model that can improve access to health services, meet growing demand and have services closer to home, is the introduction of Nurse Endoscopists. Specialist medical staff (gastroenterologists, general surgeons, and colorectal surgeons) can manage and treat more patients, and improve their access, as Nurse Endoscopists can be delegated appropriate cases.²⁷

Health Workforce Australia (HWA) launched the Expanded Scopes of Practice Program in February 2012, which has evolved over the last 10 years to a functioning program of training of Nurse Endoscopists. The program has been successful in innovatively increasing medical specialist workforce productivity, recruitment, and retention.

The program was also developed to address increasing demand for endoscopic procedures, in particular colonoscopy, after the implementation of the National Bowel Cancer Screening Program. This would appear to be a suitable contemporary model for CHS.²⁸

27. Austin Health, *Why should we utilise Nurse Endoscopists?* Updated 2023. Available: <https://www.austin.org.au/WhyNurseEndoscopists/>

28. Austin Health, *Why should we utilise Nurse Endoscopists?* Updated 2023. Available: <https://www.austin.org.au/WhyNurseEndoscopists/>

9. Neurology and Stroke

9.1. SERVICE DESCRIPTION

The **Neurology and Stroke** inpatient services at CH are a Level 5 service.²⁹

Neurology involves non-surgical care for people with disease of the nervous system and brain. Conditions include general neurology, stroke, Transient Ischemic Attacks (TIA), movement disorders, neuro-ophthalmology, severe epilepsy, severe migraine, Parkinson's disease, Multiple Sclerosis, Motor Neurone Disease, and peripheral neuropathy.³⁰ Acute strokes are out of scope for the redevelopment as they are treated in the Critical Services Building in ED and the Endovascular suites.

Canberra Hospital also includes an allied health led investigation service in the Neurophysiology unit. The Neurophysiology Unit monitors brainwaves and nerves to diagnose conditions. Investigations include:³¹

- Electroencephalography (EEG) and Sleep-deprived EEG;
- Nerve conduction studies;
- Electromyography; and
- Brainstorm, Visual and Somatosensory Evoked Potentials.

The Neurology inpatient unit currently has 14 beds (PoC), of which four are 24/7 monitored acute stroke beds in a Stroke Unit (SU). This will increase to 9 monitored stroke beds in the redevelopment. Neurology currently shares a 28-bed ward with respiratory, endocrinology and renal. Currently, this is the only medical ward that can receive patients with a tracheostomy from ICU.

Neurology outpatients includes:

- General clinics for a range of neurological conditions (such as epilepsy, Parkinsons Disease, dementia etc); and
- Stroke/TIA follow up clinic.³²

Long-term specialised rehabilitation requirements are referred to subacute ambulatory services at the University of Canberra Hospital.

9.2. PATIENT PATHWAY

CHS is part of an ACT/NSW stroke network service. Patients with acute stroke will either transfer into Stroke Unit from ED, direct from another hospital, other inpatient area or from an interventional suite post endovascular clot retrieval. Occasionally patients are intubated for airway support and these patients will be transferred to ICU from ED or interventional suite.

29. NSW Health, *Guide to the Role Delineation of Clinical Services*, 2021. Available: <https://www.health.nsw.gov.au/services/Publications/role-delineation-of-clinical-services.PDF>

30. Cleveland Clinic, *Neurologist*, updated 2023. Available: <https://my.clevelandclinic.org/health/articles/22277-neurologist>

31. ACT Government, Canberra Health Services, *Neurophysiology*. Available: <https://www.canberrahealthservices.act.gov.au/services-and-clinics/services/neurophysiology>

32. The stroke clinic is currently in Building 15.

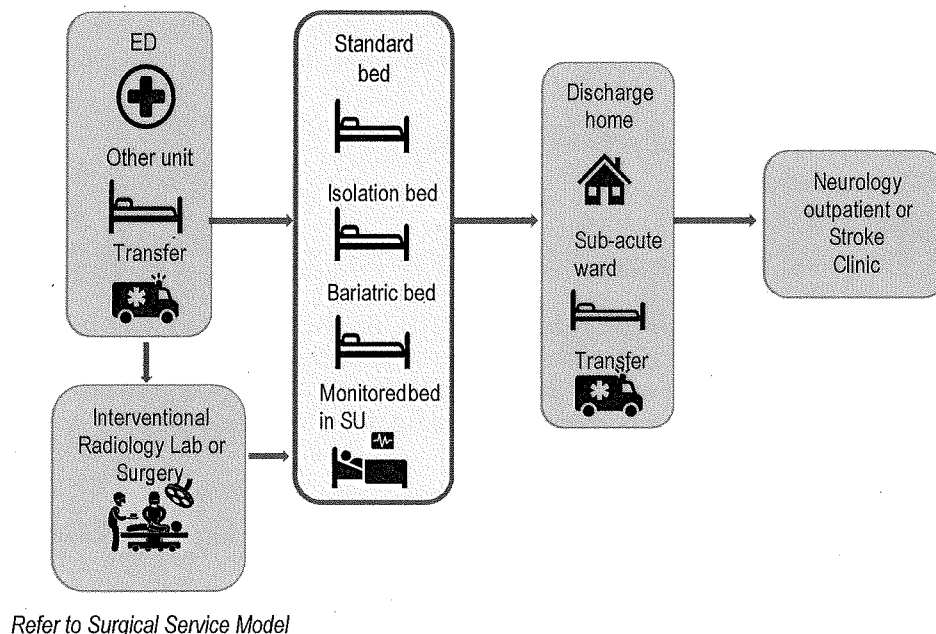
CHS has a dedicated stroke team who are activated through a 'stroke call'. This is led by specialised stroke nursing and medical staff which are notified of stroke and review patients in ED or another ward within CHS. Decisions regarding timing of transfers out of the Stoke Unit are made in collaboration with medical teams and nursing leadership and are dependent on acuity and bed demand.

There are four acute stroke monitored beds at CH, which will increase to 9 in the redevelopment.

Patient discharge may be to subacute services (rehabilitation, geriatric evaluation and management or palliative care), to home or an alternative living facility, or to a surgical team for a procedure.

Follow-up care may be provided through the general medicine outpatient clinic, or through a surgical clinic if a procedure occurred.

Figure 9-1: Neurology and stroke pathway



9.3. WORK PROCESSES

9.3.1. Hours of operation

Neurology admits and cares for patients 24 hours a day, 7 days a week. The Neurology outpatient clinics provide ongoing monitoring and treatment five days a week.

9.3.2. Care planning

The treating team will establish a care plan for each patient admitted to the unit. The care plan will outline the care pathway, the team members to be involved in patient care (including multidisciplinary staff), special considerations relating to individual patient (or family/carer) needs, and the expected discharge date, destination and supports to be provided (by whom) following return to the

community. Any deviation from the initial patient pathway will be documented, noting additional services required.

9.3.3. Conditioning

Allied health bed-based therapy will be provided to inpatients as soon as possible after admission to support early rehabilitation and patient mobility. A multi-purpose gymnasium will also be available for therapy will Allied Health practitioners, focusing on mobility, strength, and activities of daily living.

9.3.4. Patient transfer and discharge

Patients may require transfer to other clinical services within CHS. Transfers may be temporary, such as to medical imaging. Some patients may also be transferred for surgery and to ICU for more intensive monitoring or management. Patients may also be transferred to the North Canberra Hospital for subacute care.

Patients will also be discharged home or to alternative living facilities from the ward or from the Discharge Lounge. Follow-up care may be provided through the Neurology outpatient clinics, the patient's GP, RITH, and Community Health Centres.

9.4. WORKFORCE

The workforce required to support a Level 5 Neurology inpatient service is a Neurologist available on-call 24 hours per day. A Neurosurgeon should also be on-call 24 hours per day. There should also be a medical officer with three or more post-graduate years of training, which may be with the RACP, on-call 24 hours per day, as well as a medical officer in Neurology on during the day. Allied Health support includes physiotherapists, occupational therapists, speech pathologists, social workers, and a dietitian.³³ Nursing staff will be rostered for 24 hours per day according to the patient ratios of 1:3 for general beds and 1:2 for acute stroke monitored beds. Administrative staff will support the unit.

The acute stroke nurses are responsible for assessment of hyperacute stroke patients in the Emergency Department or inpatient areas of CH along with the medical teams. They are involved in the initiation of reperfusion therapies (thrombolysis/endovascular clot retrieval) in collaboration with clinicians in the emergency department, radiology, and neurology.

9.5. CLINICAL AND NON-CLINICAL SERVICE SUPPORT FUNCTIONS

Refer to section 19 for clinical and non-clinical supports and separately provided Clinical Support Services Service Model.

9.6. FUNCTIONAL RELATIONSHIPS AND ADJACENCIES

Internal:

- ED;
- Other Inpatient acute and subacute wards;

33. NSW Health, *Guide to the Role Delineation of Clinical Services*, 2021. Available: <https://www.health.nsw.gov.au/services/Publications/role-delineation-of-clinical-services.PDF>

- Neurosurgery;
- Interventional Radiology Suite / Hybrid operating theatre;
- Medical Imaging;
- Pharmacy;
- Pathology;
- Outpatients;
- ICU;
- Allied health;
- Language services.

External:

- GPs and community specialist consultants;
- Residential Aged Care facilities; and
- Ambulance and non-emergency patient transfer services.

10. Cardiology Ambulatory and Diagnostic Services

10.1. SERVICE DESCRIPTION

Canberra Hospital Cardiology Department provides level 6 inpatient (out of scope), outpatient and ambulatory diagnostic tertiary health services to ACT and Southern NSW Local Health District residents. This includes cardiac rehabilitation services and patient education.

Cardiology diagnostics involves a range of Allied Health, and Cardiology Physician led diagnostic investigations, including Electrocardiography (ECG), Stress Electrocardiography (Exercise stress test), ambulatory electrocardiography (Holter monitoring) and Echocardiography.

The cardiology services work closely with the cardiothoracic surgeons in diagnosing and developing care plans.

Key areas of focus include valve disease, coronary artery disease, heart failure, arrhythmia, hypertension, and electrophysiology.

An ECG traces the heart and rhythm. Exercise stress tests require patients to walk on a treadmill, or pedal on a stationary bike, with increasing intensity, to help diagnose blockages or narrowing of arteries, or coronary heart disease. Holter monitoring involves a patient wearing the monitor for 24 to 48hrs to assess the effectiveness of cardiac medication and any irregularity in heart rhythm. An echocardiogram is an ultrasound test to observe heart valves and pumping action, to observe any heart muscle damage, valve dysfunction and the measurements of the heart structure.

The **outpatient clinics for cardiology and cardiothoracic** patients provide diagnosis and management for discharged patients.

The Cardiology clinics include:

- Heart Function Service including rehabilitation;
- Pacemaker and Defibrillator Clinic;
- Cardiac Pre-admissions Clinic;
- Cardiac Rehabilitation Program;
- Cardiology Research Trials Clinic; and
- Advanced Care Planning Service – Chronic Care Program.

There is medical telephonic advice available for GPs and specialists in other hospitals.

The Nursing staff provide initial education to all patients with coronary artery disease, including post heart attack and stenting, surgical patients post coronary artery bypass grafts, providing guidelines on resuming normal activities after discharge.

Cardiology and cardiothoracic outpatient clinics will have 23 PoC, comprising:

- 11 general consultation rooms;
- 1 universal access consultation room;
- 6 consult/interview rooms;
- 3 treatment rooms; and

- 2 stress testing rooms.

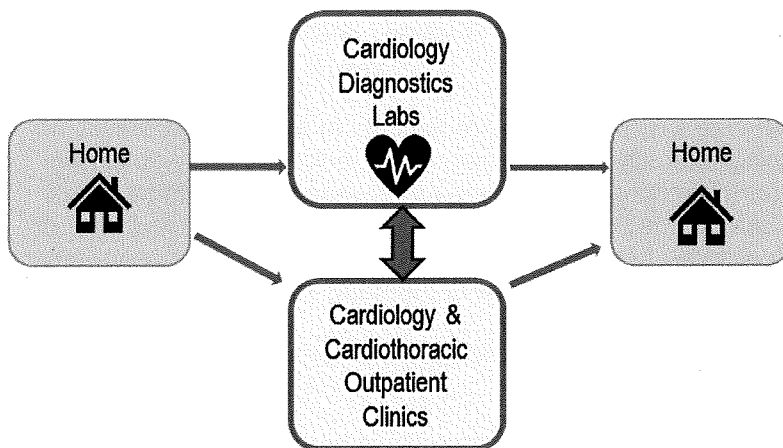
It is noted that Cardiology inpatients, the CCU, Cardiac Catheter Laboratories, and Cardiothoracic Surgery will operate from the CSB (Building 5). Therefore, all in-scope cardiology-related services are ambulatory.

10.2. PATIENT PATHWAY

The Cardiology Diagnostic Laboratory is an ambulatory service, thereby people arrive from home (or their alternative living facility), have their diagnostic tests, and return home again.

In the case of Holter monitoring, the patients must wear the monitor overnight (at home), for continual monitoring for 24 to 48 hours. Therefore, the patient will need to re-present to the Cardiology Diagnostic Laboratory following monitoring period to return the monitor.

Figure 10-1: Cardiology diagnostics laboratory patient pathway



10.3. WORK PROCESSES

10.3.1. Hours of operation

The Cardiology diagnostics laboratory operates during business hours, 8am to 5pm.

10.3.2. Patient referral

Patients may require referral to Cardiothoracic Surgery or Interventional Cardiology for a procedure. The Cardiology Diagnostic Laboratory will be part of the assessment for surgery as well as general cardiac conditions. Alternatively, patients may be required to have follow-up diagnostic testing for monitoring and testing.

10.4. WORKFORCE

The workforce to support the Cardiology Diagnostics laboratory are echo sonographers and cardiac electrophysiologists during business hours. Cardiologists review all studies.

10.5. CLINICAL AND NON-CLINICAL SERVICE SUPPORT FUNCTIONS

Refer to section 19 for clinical and non-clinical supports and separately provided Clinical Support Services Service Model.

10.6. FUNCTIONAL RELATIONSHIPS

Internally, the ambulatory cardiology services have the closest relationship with:

- Interventional cardiology, coronary care, and cardiac surgery;
- Cardiac rehabilitation inpatients and community programs at North Canberra Hospital

There are also typical relationships with the main support services such as:

- | | |
|---|----------------------|
| ■ ED; | ■ Pharmacy; |
| ■ Inpatient cardiology (critical care and procedural beds)' | ■ Pathology; |
| ■ Cardiothoracic services; | ■ Outpatients; |
| ■ Allied Health; | ■ ICU; |
| ■ Medical Imaging; | ■ Allied health; |
| | ■ Language services. |

External:

- GPs and community specialist consultants;
- Residential Aged Care facilities; and
- Ambulance and non-emergency patient transfer services.

The ideal positioning of Cardiology diagnostics and outpatients would be as close to the CSB as possible, to minimise cross campus travel time of Cardiologists and cardiothoracic surgeons.

11. Renal Medicine

11.1. SERVICE DESCRIPTION

Renal Medicine is a Level 6 service at CH.³⁴ Renal medicine involves the diagnosis and management of renal related medical conditions, hypertension, and electrolyte disorders. Conditions include acute haemodialysis and therapeutic plasma exchange, chronic kidney disease, and renal weight management.

CH provides comprehensive inpatient and outpatient care for people with all forms of kidney disease including hypertension, dialysis, pre and post care of renal transplantation, acute renal failure, and management of the complications of chronic kidney failure. Mobile intermittent haemodialysis is a service provided to the ICU and other areas where the patient is not stable enough to be transported to the haemodialysis unit.

The Renal Department at the CH is the hub of the Renal Network³⁵, providing governance across the entire network. The Renal Department manages patients with acute kidney injury (including after hour emergencies for dialysis), and chronic kidney disease (CKD), as well as the care of patients requiring investigation and renal biopsies related to their renal impairment.

Nurses are qualified in managing renal specific treatments, including peritoneal dialysis. The ward patients are treated by a Nephrologist assigned on a rotational basis and supported by an Advanced Trainee registrar and junior medical team. The service contributes to research in the areas of vasculitis, vaccination, sleep disordered breathing and micronutrient deficiencies as well as quality improvement surveillance of patients with renal disease.

Nephrologists also provide a consultative service for patients in ICU, Coronary Care or Surgical inpatient units. Patients that require haemodialysis will generally remain with the primary unit and travel to the haemodialysis unit when required during their inpatient stay.

Satellite haemodialysis units are located across the ACT and Southern NSW. The dialysis in the CH on Level 8 of Building 1 has 12 chairs that accommodate all general ward dialysis and will book community patients to improve utilisation of the unit if required. The 12 chairs include four single rooms with negative pressure and six open bays.

Outpatient renal clinics are conducted from Building 15 via telehealth and face-to-face in multiple hospitals and health centres across the ACT and Southern NSW. CH Renal Medicine provides specialised renal support to lower-level services.

Clinic structure is primarily face to face consultations with additional telehealth consultations available to other Renal Network sites. There are renal clinics for:

- CKD management;
- General nephrology management;
- Transplant clinics (with transplant surgeons);
- Urgent Registrar review clinic;

34. NSW Health, *Guide to the Role Delineation of Clinical Services*, 2021. Available: <https://www.health.nsw.gov.au/services/Publications/role-delineation-of-clinical-services.PDF>

³⁵ The Renal Network includes ACT and south eastern NSW.

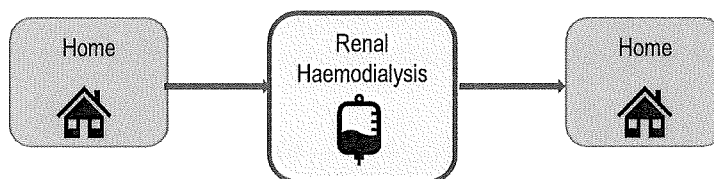
- Post inpatient-stay clinic;
- Renal Supportive Care Clinic;
- Rural Outreach Clinics;
- Telemedicine clinics to outreach clinics;
- Glomerulonephritis clinic; and
- Renal Research clinics.

The general renal inpatients ward has eight POC, along with the 12 dialysis chairs/beds.

11.2. PATIENT PATHWAY

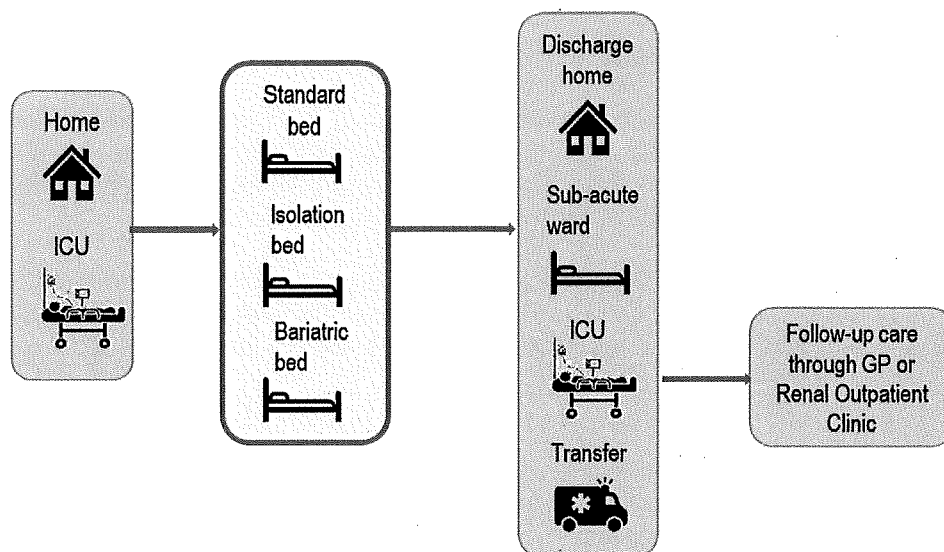
For renal haemodialysis patients, an initial assessment is performed prior to commencement of treatment by a Nephrologist. If the patient meets the criteria for haemodialysis, a routine, scheduled maintenance treatment plan will be established. This service is a same-day admission for planned care only. The patient pathway for renal haemodialysis patients is shown in Figure 11-1 below.

Figure 11-1: Renal haemodialysis patient pathway



The patient pathway for general renal inpatients is shown in Figure 11-2 below. A patient may step down from ICU and be admitted to the renal ward, or a patient may have escalating care requirements and be transferred from the ward to the ICU. Patients may also be admitted directly from HITH if they have deteriorated clinically.

Figure 11-2: Renal inpatient pathway



11.3. WORK PROCESSES

11.3.1. Hours of operation

Renal admits and cares for inpatients 24 hours a day, 7 days a week. Renal haemodialysis operates Monday to Saturday from 8.30am to 6.30pm. Renal medicine outpatient clinics provide ongoing monitoring and treatment.

11.3.2. Care planning

People requiring hospital care may be admitted under a Nephrologist to the Renal Medical Ward. During the day this ward also accommodates patients from other clinical areas who require dialysis. There are currently 10 acute stations providing dialysis services to patients admitted to hospital including Therapeutic Plasma Exchange.

The treating team will establish a care plan for each patient admitted to the units. The care plan will outline the care pathway, the team members to be involved in patient care (including multidisciplinary staff), special considerations relating to individual patient (or family/carer) needs, and the expected discharge date, destination and supports to be provided (by whom) following return to the community. Any deviation from the initial patient pathway will be documented, noting additional services required.

For haemodialysis patients, an initial assessment by a Nephrologist will determine suitability for haemodialysis. This may be performed in the unit, or at a patient's home.

11.3.3. Conditioning

Allied health bed-based therapy will be provided to inpatients as soon as possible after admission to support early rehabilitation and patient mobility. A multi-purpose gymnasium will also be available for therapy with Allied Health practitioners, focusing on mobility, strength, and activities of daily living.

11.3.4. Patient transfer and discharge

Patients may require transfer to other clinical services within CHS. Transfers may be temporary, such as to medical imaging. Some patients may also be transferred to theatre for planned or unplanned surgical procedures, or to the ICU for more intensive monitoring or management. Patients may also be transferred to the North Canberra Hospital for subacute care.

If a bed or chair in the Discharge lounge is available, the patient will be transferred into the lounge to await discharge summary, medications, and transport to their end destination point. This can be by private transfer, taxi or ambulance dependent on discharge destination.

11.4. WORKFORCE

To support a Level 6 renal service there should be a Nephrologist as Head of Unit, as well as physicians available within business hours. A registrar or JMO should also be rostered during business hours, preferably someone with at least 3 years of post-graduate training, which may be

with the RACP. Nurses are rostered for two shifts a day: 8.30am to 5pm and 10am to 6.30pm. After hours, on-call medical and nursing staff are available from 6.30pm to 8.30pm.³⁶

11.5. CLINICAL AND NON-CLINICAL SERVICE SUPPORT FUNCTIONS

Refer to section 19 for clinical and non-clinical supports and separately provided Clinical Support Services Service Model.

11.6. FUNCTIONAL RELATIONSHIPS AND ADJACENCIES

Internal:

- | | |
|---|---------------------|
| ■ ED; | ■ Pathology; |
| ■ Other Inpatient acute and subacute wards; | ■ Outpatients; |
| ■ Medical Imaging; | ■ ICU; |
| ■ Pharmacy; | ■ Allied health; |
| | ■ Language services |

External:

- GPs and community specialist consultants;
- Residential Aged Care facilities
- Ambulance and non-emergency patient transfer services

Ideally, there would be proximity of location for the renal inpatient service and dialysis.

11.7. CHALLENGES AND OPPORTUNITIES FOR RENAL

Renal Medicine as a discipline is changing like many others. One of the most obvious changes over the last decade has been the intermittent roller coaster expansion-contraction of home-based dialysis. It is expected that home-based dialysis (along with evening dialysis) will expand, particularly as the technology improves further and the patient monitoring in homes improves with the potential for real-time interventions.

36. NSW Health, *Guide to the Role Delineation of Clinical Services*, 2021. Available: <https://www.health.nsw.gov.au/services/Publications/role-delineation-of-clinical-services.PDF>

12. Infectious Diseases

12.1. SERVICE DESCRIPTION

Infectious Diseases (ID) at CH is a level 6 role delineated service.

Infectious diseases service is concerned with prevention, education, diagnosis, management, and treatment of patients with infections. They also lead the Antimicrobial Stewardship program (AMS) across all hospital campuses and contribute to the management of communicable disease outbreaks, infectious threats, and pandemic responses. The clinical service involves diagnosis and management of patients with complex infections, including severe sepsis and infections in the immune-compromised, interpretation of laboratory results, travel medicine, infections due to multi resistant bacteria, Human Immunodeficiency Virus (HIV) medicine and extrapulmonary tuberculosis.

The service provides care to all age groups through hospital outpatient clinics, inpatient care and through a consultation service to community health facilities. The service works closely with other clinical specialties to provide care and advice as appropriate.

The ID service works in close collaboration with other hospital-based services such as clinical microbiology, pharmacy, and many clinical specialties. Staff provide telephone advice and an infection control advice. There is a 24-hour, 365-day phone consultation service provided to GPs and community nurses in ACT and Southern NSW local Health District by the ID consultants based at CHS.

There is also collaboration with external organisations such as the Australian Government Department of Health, Australian National University Research School of Population Health, and local and national organisations, such as the Public Health Laboratory Network, the National Surveillance Committee for Notifiable Disease Surveillance, and the Australian Group for Antimicrobial Resistance

Infectious Diseases provide a consultative service for patients admitted to other specialties who have infections, as well as patients with undiagnosed illness and high fever. There are usually also a small number of people admitted to Infectious Diseases who have complex infections, such as Influenza and COVID-19.³⁷ However, during the winter months, the prevalence of Flu and COVID-19 increases, and a Winter Surge strategy is required to manage a higher influx of infectious disease patients during this time. Overflow of patients to dedicated Winter Surge beds is usually required. Severely unwell infectious patients will be admitted to ICU in an isolation bed.

Post-COVID, there are five Infectious Diseases beds.

12.2. PATIENT PATHWAY

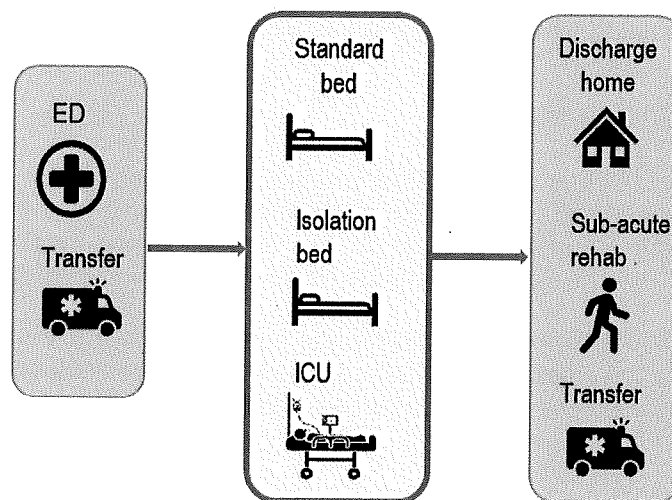
Infectious disease patients are admitted through the ED or may be transferred from another health facility or another CH ward.

37. ACT Government, Canberra Health Services, *Infectious Diseases Unit*. Available: <https://www.canberrahealthservices.act.gov.au/services-and-clinics/services/infectious-diseases-unit>

Patients hospitalised with COVID-19, the Flu or other infectious disease will all have different recovery times based on any pre-existing conditions. Physical, psychological, or cognitive changes can last for weeks or months.³⁸ Rehabilitation may be required for muscle weakness, difficulty swallowing, fatigue, or difficulty performing daily tasks.³⁹

The pathway for infectious patients will require barrier nursing and the provision of several (approximately four) negative pressure single rooms and ensuites.

Figure 12-1: Infectious Diseases patient pathway



12.3. WORK PROCESSES

The infectious diseases unit supports adults of the full range of mild to aggressive infections and for all acuity, frailty, and disability and those living with co-morbidities. The work processes that support patients admitted to Infectious Diseases are described below.

Staff caring for infectious patients must use personal protective equipment (gloves, gowns, masks, and goggles or face shields) to minimise any risk of transmission of the condition.

12.3.1. Hours of operation

Infectious Diseases admits and cares for patients 24 hours a day, 7 days a week.

Infectious Diseases outpatient clinics provide ongoing monitoring and treatment. Access to outpatients is by appointment, with initial appointment triaged based on the most urgent condition.

12.3.2. Care planning

The treating team will establish a care plan for each patient admitted to the units. The care plan will outline the care pathway, the team members to be involved in patient care (including multidisciplinary

38. The Johns Hopkins University, The Johns Hopkins Hospital, and Johns Hopkins Health System, *Coronavirus: Recovery after a Hospital Stay*, 2020. Available: <https://www.hopkinsmedicine.org/health/conditions-and-diseases/coronavirus/coronavirus-recovery-after-a-hospital-stay>

39. The Johns Hopkins University, The Johns Hopkins Hospital, and Johns Hopkins Health System, *Coronavirus: Recovery after a Hospital Stay*, 2020. Available: <https://www.hopkinsmedicine.org/health/conditions-and-diseases/coronavirus/coronavirus-recovery-after-a-hospital-stay>

staff), special considerations relating to individual patient (or family/carer) needs, and the expected discharge date, destination and supports to be provided (by whom) following return to the community. Any deviation from the initial patient pathway will be documented, noting additional services required.

12.3.3. Conditioning

Allied health bed-based therapy will be provided to inpatients as soon as possible after admission to support early rehabilitation and patient mobility. A multi-purpose gymnasium will also be available for therapy will Allied Health practitioners, focusing on mobility, strength, and activities of daily living.

12.3.4. Patient transfer and discharge

Patients may require transfer to other clinical services within CHS. Transfers may be temporary and relate to medical imaging or interventional labs. Some patients may also be transferred to theatre for planned or unplanned surgical procedures, or to the ICU for more intensive monitoring or management. Patients may also be transferred to the North Canberra Hospital for subacute care.

If a bed or chair in the Discharge lounge is available, the patient will be transferred into the lounge to await discharge summary, medications, and transport to their end destination point. This can be by private transfer, taxi, or ambulance dependent on discharge destination.

12.4. WORKFORCE

The workforce requirements for a Level 5/6 service include a general physician or specialist infectious diseases physician available 24 hours per day, a medical officer on site 24 hours per day and a post graduate trainee with three or more post graduate years who may be in training with the RACP.⁴⁰

The general medical registrar may also cover some the medical sub-specialities overnight, depending on the rostered requirements. Nursing staff will be rostered for 24 hours per day according to the patient ratios. Administrative staff will support the unit.

12.5. CLINICAL AND NON-CLINICAL SERVICE SUPPORT FUNCTIONS

Refer to section 19 for clinical and non-clinical supports and separately provided Clinical Support Services Service Model.

12.6. FUNCTIONAL RELATIONSHIPS AND ADJACENCIES

Internal:

- | | |
|---|------------------|
| ■ ED; | ■ Pathology; |
| ■ Other Inpatient acute and subacute wards; | ■ Outpatients; |
| ■ Medical Imaging; | ■ ICU; |
| ■ Pharmacy; | ■ Allied health; |

40. NSW Health, *Guide to the Role Delineation of Clinical Services*, 2021. Available: <https://www.health.nsw.gov.au/services/Publications/role-delineation-of-clinical-services.PDF>