4.4.1. Variations to workflow and process: the impact of procedure type

The category of operating room and surgical subspecialty required varies in the intraoperative phase according to a range of characteristics, including:

- the body part involved and procedural complexity e.g. simple day procedures (e.g. closed reduction of a fractured bone) compared to a more complex operating room procedure (e.g. hip replacement)
- the degree of invasiveness and associated procedural techniques e.g. minimally invasive techniques using endoscopy, open surgery
- equipment needed e.g. lasers, hybrid theatre imaging equipment, robotic surgery
- number of surgeons or other proceduralist involved, which can vary from one to several for a complex trauma or organ retrieval case.

The procedural characteristics determine the numbers of anaesthetic, nursing and technical staff together with non-clinical staff in the intraoperative phase e.g. more wardspersons are required to assist with patient movement in multi trauma surgical cases.

4.4.2. Preoperative care: overview of work process

The overall work processes and staff involved in the immediate pre-operative phase of perioperative care are described below. Prior to elective surgery the relevant surgical consultant or registrar on-call will undertake a surgery assessment, including medical examination and review of test requirements. For emergency cases this assessment is often undertaken within ED at the same time as the request for emergency surgery is prepared.

Anaesthetist/anaesthetic registrar

The anaesthetist/anaesthetic registrar undertakes an anaesthetic assessment, in preparation for tailoring the anaesthetic to the individual patient's medical history and the type of surgical procedure planned. They assess requirements for appropriate post-operative care to maximise patient safety. Intraoperative care: overview of work process.

Lead Surgeon

Prior to surgery the lead surgeon will assess the surgical approach, including assessment of resource availability to support the procedure and the position for procedural access. Patient care during the intraoperative period is the responsibility of the surgeon or proceduralist, the anaesthetist, and the operating theatre nursing team.

Operating Room Coordinator (ORC)

The ORC is supernumerary to the provision of anaesthesia. The anaesthetist ORC works in close collaboration with the nursing Patient Flow Coordinators in the allocation of defined resources to provide to each of the surgical and medical subspecialties and the respective ideal utilisation of OR and interventional suite capacity according to agreed requirements and sudden temporary variation in demand. Any change/optimisation of the workflow and process is aligned with the patient centred MoC.

Perioperative Patient Flow Coordinator

The Perioperative Patient Flow Coordinator provides resource assessment. This involves coordinating the staffing, equipment and consumable resource requirements, including:

- booking and scheduling the operating room and team, including surgical, anaesthetics, nursing capability and necessary technical support e.g. perfusionist, radiographer (the precise team mix will depend on the nature of the procedures on the surgical list)
- coordination of resource supports such as equipment, stores, implants and prosthetics

- prosthetic, tissue, bone, and other implants required
- additional coordination may be required for specialist equipment or prosthetics from interstate, in consultation with Perioperative resource nurse, hospital supply and equipment loan staff.

In undertaking scheduling and resource coordination the Patient Flow Coordinator adheres to patient categorisation rules, underlying demand for emergency and elective sessions, and any additional support requirements needed (e.g. for organ retrieval).

4.4.3. Intraoperative care: overview of work process

Surgeon and surgical team

Surgery involves a range of work. For instance, it may include excision, resection, ligation, grafts, and insertion of prosthetics, stoma creation, arthrodesis and debridement. The surgeon:

- prepares for the procedure
- performs the procedure
- is accountable for the sterility of the environment and safety of the patient
- is responsible for identifying and resolving intraoperative surgical challenges
- in conjunction with the anaesthetist, assesses the post-operative destination for care provision.

Anaesthetist and anaesthetic team

- induces anaesthesia
- manages pain during procedure
- maintains and monitors anaesthesia
- monitors vital signs
- is responsible for identifying and resolving intraoperative anaesthetic challenges
- reverses the effects of anaesthesia.

Operating room nursing team

- supports the surgeon during surgical procedures
- prepares the operating room
- prepares the instruments and equipment
- maintains a record of instruments and equipment used during the procedure
- is responsible for identifying and resolving intraoperative nursing challenges.

Other intraoperative staff include cleaning staff and wardspersons to assist with patient direct and indirect care. The CH is a tertiary level teaching hospital. The level of theatre throughput can be affected by teaching and research responsibilities.

4.4.4. Post anaesthetic care: overview of work process

Anaesthetist

The anaesthetist is responsible for the patient transfer from the operating theatre to the PACU until the transfer to the recovery area is complete. They provide written and verbal instructions to the PACU nursing staff, based on pre-determined clinical criteria. They negotiate acceptance of the patient to the post perioperative destination and, where relevant, facilitate transport and clinical handover to the inpatient unit.

The anaesthetist is responsible for authorising the patient's discharge from the recovery area. Discharge responsibilities may be delegated to a specialist PACU nurse.

PACU Clinical Nurse Consultant (CNC)

A CNC is responsible for the PACU. There is a ratio of one nurse to each patient in Stage 1 who has not recovered protective reflexes or consciousness. The ratio is 1:2 for Stage 2 recovery.

EDSU/DSU CNC

A CNC is responsible for the EDSU/DSU/discharge lounge. There is a 1:4 nurse: patient ratio in EDSU/DSU.

4.4.5. Service leads

The medical and nursing clinical leads steer the frontline multidisciplinary team (see below). These leaders are responsible for developing the service framework and overseeing work processes, including:

- the coordination of integrated perioperative multidisciplinary care
- the identification, communication and management of perioperative patient risk
- the establishment of local guidelines
- efficient and effective use of perioperative facilities
- measurement, benchmarking and reporting of outcomes to support continuous quality improvement.

SPIRE development will generate a significant investment in theatre capacity and associated support services. Consideration could be given to the development of a dedicated clinical director and director of nursing of perioperative services in response to the growing scale of CH perioperative services.

4.4.6. Team members

The perioperative service is comprised of a frontline multidisciplinary team of surgeons, anaesthetists, nurses and other proceduralists, allied health clinicians and clerks (responsible for liaising and facilitating the work of key stakeholders who manage the patient's surgical/procedural journey). Other team members include:

- Technical staff, including scientists
- Wardspersons/theatre technician/clinical support persons
- Theatre cleaners.

Patient flows will be facilitated by wardspersons/theatre technicians/ clinical support persons. These roles undertake a variety of tasks including direct and inpatient care. Dedicated wardspersons to facilitate patient flow into OR are required for an expanded holding bay and for provisioning transport for patients to IPU post peri-operative journey completion.

Structures and processes of the frontline perioperative service are in place to facilitate their roles and responsibilities to patients and their support people.

At different stages of the patient's perioperative journey, different team members more closely provide patient centred care, depending on the individual patient's progress along the patient care pathway and workflow processes described in Section 3. Typical team member involvement along the care pathway are:

- Before and after hospital admission: primary healthcare providers
- Preoperatively: the anaesthetist, the medical officer with the surgical team and the nurse with the clerk who spend most time with the patient and their support people
- During the intraoperative phase the surgeon, the procedural anaesthetist and the operating theatre nursing team, technicians, clinical support personnel

- Post anaesthetically the patient is primarily cared for by the anaesthetist and nursing staff in the PACU
- During all phases of care members of the perioperative team, including the broader multidisciplinary team, can be called upon to contribute their expertise to patient centred care.

At all times in the revised MoC there should be real time access to updated documentation on each patient's aggregated health and social status, via there electronic medical record.

At all stages all members of the multidisciplinary team are responsible for checking that the patient information shows consistency e.g. the RFA, the consent form, correct site surgery, the ward notes and medications. They must also ensure patient identification and procedure matching requirements are fulfilled.

Details of staffing levels for perioperative services will be considered in development of the perioperative health service plan.

4.4.7. Roles and responsibilities

Table 1: Staff roles and responsibilities

Position Levels	Roles / Responsibilities
Preoperative care (immediate)	
Consultant/fellow/surgical registrar on call	Patient surgery assessment
Anaesthetic consultant/registrar	Patient anaesthetic assessment, preparation and optimisation
ORC	Management of the theatre utilisation
Nurse (Patient Flow Coordinator)	Procedure resource assessment
CNC, DoSA	Manager of the DoSA Unit
Nurses	Nursing support within DoSA, supply management
Intraoperative care	
Consultant surgeon(s)/fellow/registrar (Subspecialty as required by the procedure)	Surgical resourcing assessment; conduct of the procedure
Consultant anaesthetist(s)/fellow/registrar	Anaesthetic service provision pertaining to the procedure/specialty as required
Theatre nurses	Intraoperative nursing care
Technicians – various e.g. perfusionists, radiologists, scientists	Various, depending on the procedure and equipment used
Patient support staff	Wardspersons - patient movement, clinical support Ward assistants – clinical support
Theatre cleaner	Cleaning of theatre surfaces; waste classification and waste removal
Postoperative care	
Anaesthetist	Post-operative anaesthetic assessment and care as required
CNC, PACU	Postoperative nursing care
Nurses	Nursing support within PACU, EDSU, DSU, Discharge Lounge
Patient support staff	Patient direct and indirect care
Other	
Clerical/administration staff	Clerical support to perioperative processes, including patient clerical admissions, recording patient details and procedural processes. Clerical support for administrative functions

Position Levels	Roles / Responsibilities
Supply, physical resource RN, and loan service staff	Obtain required physical resources and specialist equipment and implants from interstate/overseas, as required

4.5. Workforce

Based on the description of pre, intra and post-operative staff and processes presented above, the CH perioperative staffing and work processes will be provided in the detailed Business Case.

Projected staff profiles require development to inform future stages of planning and will be subject to adjustment both in numbers and classification as better clarity is gained around service delivery models. Staff profiles are subject to review by the Workforce Policy and Planning unit.

Future workforce requirements will be determined using relevant College standards e.g. Australian College Operating Room Nursing (ACORN) Standards for Perioperative Nursing; 14th Edition.

4.6. Changes to workforce model

The continued evolution of procedural activity types will see ongoing changes to areas of perioperative care where there is a need for anaesthetic services. Clinical areas where there is a growing need for anaesthetic services are: Diagnostic Imaging; brachytherapy; gastroenterology; mental health unit for electroconvulsive therapy (ECT); pre-admission clinics; High Risk Anaesthetic Patient (HARP) clinic; the acute pain service; use of extracorporeal membrane oxygenation (ECMO); emergency surgery coordination; Cardiac Catheterisation Laboratories; Electrophysiological Laboratory; trauma; medical emergency team (MET) response; disaster management; and the PACU.

The changing mix of procedural activity will generate greater demand for interventional radiology within theatres and an associated requirement for extra anaesthetic staffing.

There is an emerging trend for anaesthetic provision outside the operating room environment. This will generate demand for additional anaesthetic and nursing staff and safe provision of care with medications and resources.

There is a requirement for 24/7 anaesthetic staffing to facilitate acute pain reviews and epidural insertion in labouring women. A registrar and on-call consultant will be available overnight.

4.7. Training, education and research

A major function of perioperative services is to support training, education and research within the perioperative services, to enable and support the delivery of a high quality service to both adults and children. Ongoing training is a major focus of perioperative services into the future.

Perioperative services will continue to train large numbers of junior medical officers each term, in addition to registrars training in streams of surgical and anaesthetic specialties. Facilities will be required to facilitate onsite nursing and medical training.

Programs include facilitation of clinical updates, undertaking of research, quality improvement and accreditation programmes, mandatory training for medical and nursing staff, Basic and Advanced Cardiac Life Support and training, in-service education and training programs for all staff, mock scenarios, competency assessments, undertaking of vivas for medical staff, orientation of new staff, conducting and supporting the Transition To Practice (New Graduate) program annually, and more.

To support education, training and research, perioperative services maintains a strong focus on education and research through structured positions and portfolios and contributes to teaching students from the Australian National University (ANU) Medical School, University of Canberra, Australian Catholic University, and the Charles Sturt University.

5. Service support elements

5.1 Essential equipment and technology

Bedside data entry

- Staff will need access to computers at each bedside, staff stations, in consultation, treatment and procedure rooms.
- Clinicians (nurse, allied health, doctor, etc.) should have a tablet device to enter relevant patient information, order tests, review results, send outpatient referrals, provide discharge emails (to patient and GP). This should include entering information in a real time medical record, that all involved in the patients care can see. These handheld devices should also be the communication method between staff within and outside the ED, and may be best used when plugged into wall mounts.
- Access is required to a mobile device platform (computer on wheels) for the purpose of data entry. One device will be used between two bed spaces.

Wi-Fi

- Provision for medically safe wireless networking throughout the clinical area
- Wi-Fi internet access will be provided throughout the Department (including lounge/wait areas) for use by staff and visitors unless contraindicated in specific areas for patient safety reasons.

Printer

Printers are required at the staff station in each stream, at reception/triage and in close proximity to the ambulance entrance. Space is required for equipment relating to electronic medication/pathology/wristband/programs.

Hearing loop

Hearing loop is to be available at triage/reception and scattered through the streams. Each stream will have at least one area with hearing loop installed; this will include interview, consult and meeting rooms.

Patient monitoring

- Patients should be issued with Electronic wristbands that provide real time tracking ability, can be scanned by clinician devices to confirm identity and provide alerts for allergies etc.
- Patient monitoring at bed spaces, and selected other spaces (e.g. procedure rooms) will be configured for monitoring at a central location with real time reporting.
- All resuscitation beds are to have haemodynamic monitoring and ventilation equipment.
- Central monitoring will feature in all streams.
- All monitoring modalities will be compatible with other critical care areas within the hospital including ICU/CCU and Interventional Suite.

Patient bedside entertainment in DoSA, EDSU/DSU/DPU

- Where appropriate and required, patient entertainment (i.e. TV) will be provided. Bedside data entry for clinical staff will be provided by an alternate system.
- Patient entertainment will be available in all paediatric areas.
- TV in lounge/wait areas providing access to entertainment and health information.

Telemedicine/Video conferencing

Selected clinical spaces will be configured to provide remote telemedicine, these facilities can be located in either the education room or a communal office area.

Communication

The most appropriate latest technology will be required for:

- communicating during systems fail or in disaster response
- audible communication in all clinical and non-clinical areas of perioperative services with access to points in multiple locations
- communication will be via real time direct smart phone/tablet device leading to minimal landline or overhead paging use.

5.2. Information, Communication and Technology (ICT)

Introduction of a dedicated Surgery Management and Anaesthesia Information System (SMAIS) will be introduced as part of the SPIRE development. This will increase overall workflow efficiency within perioperative services. SMAIS integrates inventory systems, scheduling, anaesthesia activity records, documentation, and patient data.

The SMAIS must link to patients' electronic medical record and ACT Patient Administration System (ACTPAS).

5.3. Environmental and supply services

Food services

Patients in recovery areas need access to light refreshments. Staff working in the sterile areas of operating rooms need access to appropriate food services and refreshments that are accessible 24 hours.

Draping

The range of operating room gowns/draping is extensive (e.g. surgical garments include scrub suits, surgical gowns, and uniforms), sheets, large storage areas are required to support access to non-sterile supplies, especially as surgery services function 24 hours per day. Bed linen is a key consumable.

Stores

A range of store room areas are required, including for: sterilisation services, surgical garments/draping's, anaesthetics, dirty linen, cleaning stores, sterile medical supplies, and chemical stores.

Business support services

Easy access to appropriately qualified translators. Dedicated cleaners will be allocated to perioperative services.

Administrative support staff

Clerical staff will be located in Clerical Admissions. Clerical staff will require access to various ICT modalities including facsimile. In addition clerical staff will be distributed throughout the perioperative services.

Volunteers

Not applicable

Waste Management

The range of waste materials that require standardised processes for categorisation is extensive. Waste should be categorised into three groups: reducing, reusing and recycling. This categorisation should apply to used medical supplies, wrappings, devices, waste pharmaceuticals, blood and other fluids, tissue, contaminated gowns and drapes, cardboard and other paper, glass, plastic, and used disinfectants.

5.4. Core services

5.4.1. Anaesthetics and Perioperative Medicine

The Department of Anaesthesia and Perioperative Medicine provides a 24 hour service encompassing pre-anaesthesia assessment, intraoperative anaesthesia, post operative anaesthetic support, anaesthesia services to units outside of the operating suites, and tertiary trauma care. The department also supports and manages the Acute Pain Management Unit.

ACT Health Anaesthetic and Perioperative Medicine services are providing anaesthetic services for all elective and emergency surgery at the Canberra Hospital and Calvary Public Hospital Bruce. Anaesthetic services at the Canberra Hospital are provided in many locations outside the operating suites including Diagnostic Imaging; brachytherapy; gastroenterology; mental health unit for electroconvulsive therapy (ECT); pre-admission clinics; High Risk Anaesthetic Patient (HARP) clinic; the acute pain service; use of extracorporeal membrane oxygenation (ECMO); emergency surgery coordination; Cardiac Catheterisation Laboratories; Electrophysiological Laboratory; trauma; medical emergency team (MET) response; disaster management; and the PACU.

5.4.2. Diagnostic Imaging

The use of Diagnostic imaging in the theatres is increasing. This is in part due to the trend towards less invasive procedures. Provision for a range of equipment is needed, including:

- mobile imaging such as image intensifiers, general x-ray, ultrasound, video laryngoscopes for tracheal intubation, stereotactic equipment and in some instances, mobile CT
- fixed imaging such as C-arms, angiography, CT, ultrasound and – in limited circumstances - MRI
- mobile equipment needs storage in a dedicated location when not in use. New technology, such as mobile CTs is very large, requiring extensive space
- in hybrid environments, the fixed imaging unit ideally should have a location away from the sterile field. This makes the room more flexible when the technology is not in use
- additional radiographer full time equivalent (FTE) is needed to manage the increased imaging requirement for emergency patients.

5.4.3. Pathology

A range of pathology related activities are needed to support the operating rooms, including:

- point of care testing
- frozen sections whereby a fresh tissue specimen is taken in the operating room, reviewed by an anatomical pathologist and then results provided to the surgeon within a 20 minute timeframe. The results are relayed from the pathologist back to the surgeon, so the surgical procedure can continue
- other tissue specimens that are not time critical are placed in a fixation agent and sent to the pathology department for preparation and examination. Most samples are transported in pre-filled specimen containers. Larger specimens require decanting and a suitable exhaust ventilation system is needed to manage fumes

- Pathology and blood specimens are currently transported from operating rooms to pathology via vacuum tubes.

5.4.4. Pharmacy

Central storage for medications is needed within the perioperative suite, including provision for appropriately stored S4D and S8 drugs in a locked safe. Remaining medications to be accommodated in accordance to legislation.

Decentralised storage is needed to support the DoSA unit and PACU, which will experience increased patient flows as a result of projected increases in patient surgical activity and the SPIRE development.

Each operating room needs proximate access to a drug safe in either the anaesthetic or operating room. Ideally, refrigerated medications will be centrally stored within the operating suite so they can be accessed as required with cold chain monitoring to a central assessment point where temperature excursions are monitored, identified and mitigated.

An automatic pharmaceutical ordering system is required to improve efficiencies and to support the 'just in time' delivery of medications to the patient.

5.4.5. Bone bank and other tissue

An area to receive and store allogenic bone and other tissues (e.g. skin grafts) is required to support surgical procedures.

5.4.6. Clinical engineering

A room for equipment testing and repair is required because of the large number of theatres in SPIRE and Building 12. This room will be accessed by clinical engineering staff who require benches for equipment testing. Space is needed for storage of equipment and consumables. This includes space for medical gases and a range of perioperative equipment, including back-up anaesthetic machines.

Hybrid/complex/robotic theatres, because of their extensive equipment use, require additional space for a range of technical support staff.

5.4.7. SSD

Rinsing and sterilising of surgical equipment occurs in the SSD. The rinsing process removes organic material of instruments immediately after surgery by rinsing instruments under warm running water, prior to sterilisation. Sterilisation is currently undertaken on site to support a significant proportion of Building 12 theatre needs for sterilised tools and equipment.

The pre-rinse and sterilising functions within the operating theatre suite are to be retained in the redevelopment. It is proposed this function be renamed from Pre Rinse Sterilising Unit (PRSU) to the SSD, to reflect the extensive roles it undertakes. The SSD must have the capacity to deliver decontamination of used instruments together with capacity for steam, ethylene oxide and dry heat sterilisation.

Dedicated space is needed for undertaking checking, packing and storage of sterilised items. SSD in the future will be significantly automated.

5.4.8. Security

Detainee patients may present, in conjunction with two correctional officers. If a patient requires resuscitation or continuous physiologic monitoring, they will be managed in the most clinically appropriate area. Otherwise patients will be managed in single rooms or isolation rooms where possible. The rooms should be large enough to enable the patient to be accompanied by two correctional officers, should be located to enable ease of supervision and provide minimal

disturbance to other patients, protect the privacy and dignity of the patient and consider paths of access to and from the rooms.

6. Benefits (service innovation and efficiency)

Overall theatre capacity will be increased, along with pre and post-operative patient holding and recovery areas.

Hybrid/complex/robotic theatres will potentially lead to improvements in the patient experience, a reduced length of stay in hospital and peri-operative hospital stays. Fewer procedures will require general anaesthesia during patient treatment; some procedures will only require sedation – these procedures should be considered for completion outside the major theatre environment.

Traditional boundaries of the surgical space will blur. Endoscopic and endovascular procedures will replace certain surgery types. Many currently performed surgical procedures will only require an ambulatory setting, increasing demand for ambulatory/overnight facilities.

6.1 Qualitative benefits

Qualitative benefits of the SPIRE development include:

- increased access to single patient rooms with enhanced privacy and increased patient safety, improving Infection Prevention and Control (IPC) outcomes
- reduced waiting periods for both elective and emergency surgery because of increased perioperative capacity
- fit for purpose day surgery areas will streamline the admission process for day surgery, paediatric and miscarrying women provide greater privacy and general comfort levels e.g. access to more toilets
- an enhanced DoSA will enable separation of adult and paediatric patients, gynaecological miscarrying women from pregnant/surgically assisted birthing women
- additional theatre capacity will enable more theatres to have a specialised, streamlining theatre set-up, intraoperative procedural efficiency, access to the required equipment and more efficient post-operative cleaning e.g. dedicated theatres for emergency vascular procedures, digital subtraction angiograms
- greater staff satisfaction associated with improved working environment amenity
- increased ability to attract and retain quality multidisciplinary staff because of the enhanced facilities.

6.2. Quantitative benefits

Quantitative benefits of the SPIRE development Building 12 refurbishment include:

- greater surgical throughput due to greater capacity and streamlined patient flows to different theatre types (and supported by additional post procedural bed capacity), which will also reduce the number of procedure postponements
- enhanced support amenities
- reduced length of stay due to use of less invasive surgical techniques enabled by hybrid theatres (this may be offset by greater willingness to undertake surgical interventions for higher risk patients)
- reduced hospital acquired infections (and associated hospital readmissions) because of the greater number single rooms and improved hospital layout, enabling better separation of sterile and non-sterile areas in the perioperative suite
- reduced surgical waiting times

- improved perioperative patient flow
- improved preoperative opportunities to optimise surgical, anaesthetic and perioperative nursing care.

7. Monitoring and evaluation

7.1. Nationally reportable KPIs

7.1.1. Australian Council Healthcare Standards (ACHS) Clinical Indicator Program

Monitoring and evaluation will occur via the ACHS Clinical Indicator Program on which the quantitative and qualitative indicators are based. See: https://www.achs.org.au/programs-services/clinical-indicator-program/

7.1.2. Australian Government; Australian Institute of Health and Welfare; Elective surgery waiting times

- numbers of additions to, and removals from, public hospital elective surgery waiting lists
- admissions from public hospital elective surgery waiting lists, by public hospital peer group, states and territories
- admissions from public hospital elective surgery waiting lists, by surgical specialty, states and territories.
- admissions from public hospital elective surgery waiting lists, by intended surgical procedure, states and territories
- waiting time statistics for admissions from public hospital elective surgery waiting lists, states and territories
- waiting time statistics for admissions from public hospital elective surgery waiting lists, by intended surgical procedure, states and territories.
- admissions from public hospital elective surgery waiting lists, by clinical urgency category, states and territories
- unplanned readmissions reported as following admission (a) from an elective surgery waiting list, states and territories.3

7.1.3. Australian Government Productivity Commission; Report on Government Services

- waiting times for elective surgery in public hospitals, by State and Territory, by procedure and hospital peer group (days)
- waiting times for elective surgery in public hospitals, by State and Territory, by remoteness area (days)
- waiting times for elective surgery in public hospitals, by State and Territory, by remoteness area (days)
- waiting times for elective surgery in public hospitals, by State and Territory, by SEIFA IRSD quintiles (days)
- classification of elective surgery patients, by clinical urgency category (per cent)
- ACT elective surgery waiting times, by clinical urgency category, public hospitals
- separations with an adverse event, public hospitals
- ACT selected sentinel events (number).

[3] Australian Government; Australian Institute of Health and Welfare; Elective surgery waiting times

8. Appendix

8 1. EDSU Model of Care Admission Criteria

The Extended Day Surgery Unit (EDSU) is an open surgical unit catering for Day Surgery and Extended Day Surgery patients. Patients who are identified as requiring an overnight stay, which does not exceed 23 hours, can be accommodated in EDSU. EDSU is a 12 bed unit with the capacity to flex up to 14 if required. Patients can be booked onto the Elective or Emergency Theatre lists.

EDSU is managed and funded by the Division of Surgery and Oral Health.

EXCLUSION CRITERIA	RATIONALE
1. Length of Stay(LOS) exceeding a 23 hour stay	To facilitate effective patient flow through the peri-operative unit, patients booked into EDSU should require only 1 night post operative stay.
2. Patient's Age (<15 years)	Patients less than 15 years old should be booked to the adolescent unit in WYC. The parents/carers may request to stay overnight with their child.
3. Non surgical patients 4. -with the exception of Medical Imaging patients.(2)	Patients not requiring a surgical procedure should be admitted into an appropriate unit to facilitate optimum patient care. Exception: 2 x Post procedural Medical imaging patients requiring an overnight stay can be allocated to EDSU as per agreement between SaOH and MI.
5. Infectious patients	As per the infection control policy; Patients with an MRO require single room accommodation with MRO precautions.
6. Patients with co-morbidities affecting their ADL's	Patient's with a complex medical history which affects their daily living activities require additional support and post operative care. **Assessment and Consideration** into: • Mobility/Falls risk/Lifter equipment • Cognition/Delirium/Dementia • Vision • Respiratory • Cardiac • Complex wounds/wound management regime • Chronic Pain • Swallowing issues • Pressure Injury/Skin integrity May affect the suitability of the patient to be admitted into EDSU
7. Major pre and post operative patients	Major pre and post operative care require additional clinical support and resources which cannot be accommodated within the environment and required functionality of EDSU.
8. Pre op patient's with a lower limb fracture	Lower limb fractures have a tendency to swell prior to theatre resulting in delayed surgery time and extended stay in EDSU. (Can be reviewed on an individual basis for patient anticipating surgery that day)
9. Patient's under guard	Patients requiring additional security cannot be accommodated in EDSU due to the open environment and decreased ability to provide privacy. The confined area of the

	bed spaces in EDSU cannot accommodate an additional person to remain overnight.
10. Patient's with Mental Health issues	Mental health clients can be unpredictable in their behaviours. The open environment of EDSU can be intimidating and distressing which can exacerbate their existing condition.
11. Patient's with an intellectual disability	Patients with an intellectual disability can be unpredictable in their behaviours. The open environment of EDSU can be intimidating and distressing which can exacerbate their condition. They will often require a known carer to assist them throughout their stay.
12. Bariatric patients >140kgs	Bariatric patients cannot be accommodated in EDSU due to their required specialised equipment. Specialised equipment such as lifters, bariatric commodes and wheelchairs are not available in EDSU. The trolleys and toilets in EDSU do not have the weight tolerance to accommodate bariatric patients. Bariatric patients also have contributing health issues and co-morbidities, which increase their LOS.
13. Gynaecological patients	Patients having gynaecological procedures requiring an overnight stay should be booked into WYC to receive the required specialised post operative care.
14. Patients requiring a carer to stay, 15. (or 'special')	Patients requiring an additional care person cannot be accommodated in EDSU due to the open environment and decreased ability to provide privacy. The confined area of the bed spaces in EDSU cannot accommodate an additional person to remain overnight.

9. Abbreviations

Abbreviation	Description
ACHS	Australian Council Healthcare Standards
ACORN	Australian College Operating Room Nursing
ACT	Australian Capital Territory
ACTPAS	ACT Patient Administration System
ADON	Assistant Director of Nursing
ANU	Australian National University
ANZCA	Australian and New Zealand College of Anaesthetics
CCU	Coronary Care Unit
CH	Canberra Hospital
CHWC	Centenary Hospital for Women and Children
CNC	Clinical Nurse Consultant
CPHB	Calvary Public Hospital Bruce
CT	Computer Tomography
DoSA	Day of Surgery Admission
DPU	Discharge Planning Unit
DRG	Diagnosis Related Group
DSU	Day Surgery Unit
ECMO	Extracorporeal Membrane Oxygenation
ECT	Electroconvulsive Therapy
ED	Emergency Department
EDSU	Extended Day Surgery Unit
ENT	Ear, Nose and Throat
EVAR	Endovascular Aneurysm Repair
FTE	Full Time Equivalent
GESA	Gastroenterology Society of Australia
GP	General Practitioner
HARP	High Anaesthetic Risk Patient
HMA	Healthcare Management Advisors
HSPU	Health Service Planning Unit
ICU	Intensive Care Unit
IPC	Infection Prevention Control
MET	Medical Emergency Team
MoC	Model of Care
MRI	Magnetic Resonance Imaging
MRO	Multi-Resistant Organism
NSW	New South Wales
ORC	Operating Room Coordinator
PACU	Post Anaesthetic Care Unit
PIMS	Perioperative Information Management System
PRSU	Pre Rinse Sterilising Unit
RACS	Royal Australian College of Surgeons
RFA	Request for Admission
SET	Surgical Education and Training
SMAIS	Surgery Management and Anaesthetic Information System
SPIRE	Surgical Procedures Interventional Radiology and Emergency
SRG	Service Related Group
SSD	Sterilising Services Department
TWSS	Territory Wide Surgical Services

10. MoC development participants

Participants in the development of MoC	
Position	**Name**
A/g Executive Director Surgery and Oral Health (SAOH)	Daniel Wood
Assistant Director of Nursing (ADON) Perioperative	Kerri Reeves
A/g Director of Nursing (DON) SAOH	Cathy Burns
Director of Anaesthesia	Prof Thomas Brussel
Clinical Director of Surgery	Dr Frank Piscioneri
Perioperative Resource Manager	Kate Scott
Clinical Director of Women, Youth and Children	Dr Boon Lim
Paediatric surgeon	Dr Rajay Rampersad
A/g ADON Neonatology/Paediatrics	Donna Cleary
Perioperative Patient Flow Coordinator	Felicia Cooper
ADON Surgical Bookings and Pre-Admission	Nicole Larkin
Clinical Nurse Consultant (CNC) EDSU/DSU	Deanne Cole
A/g CNC PACU	Emma Riley
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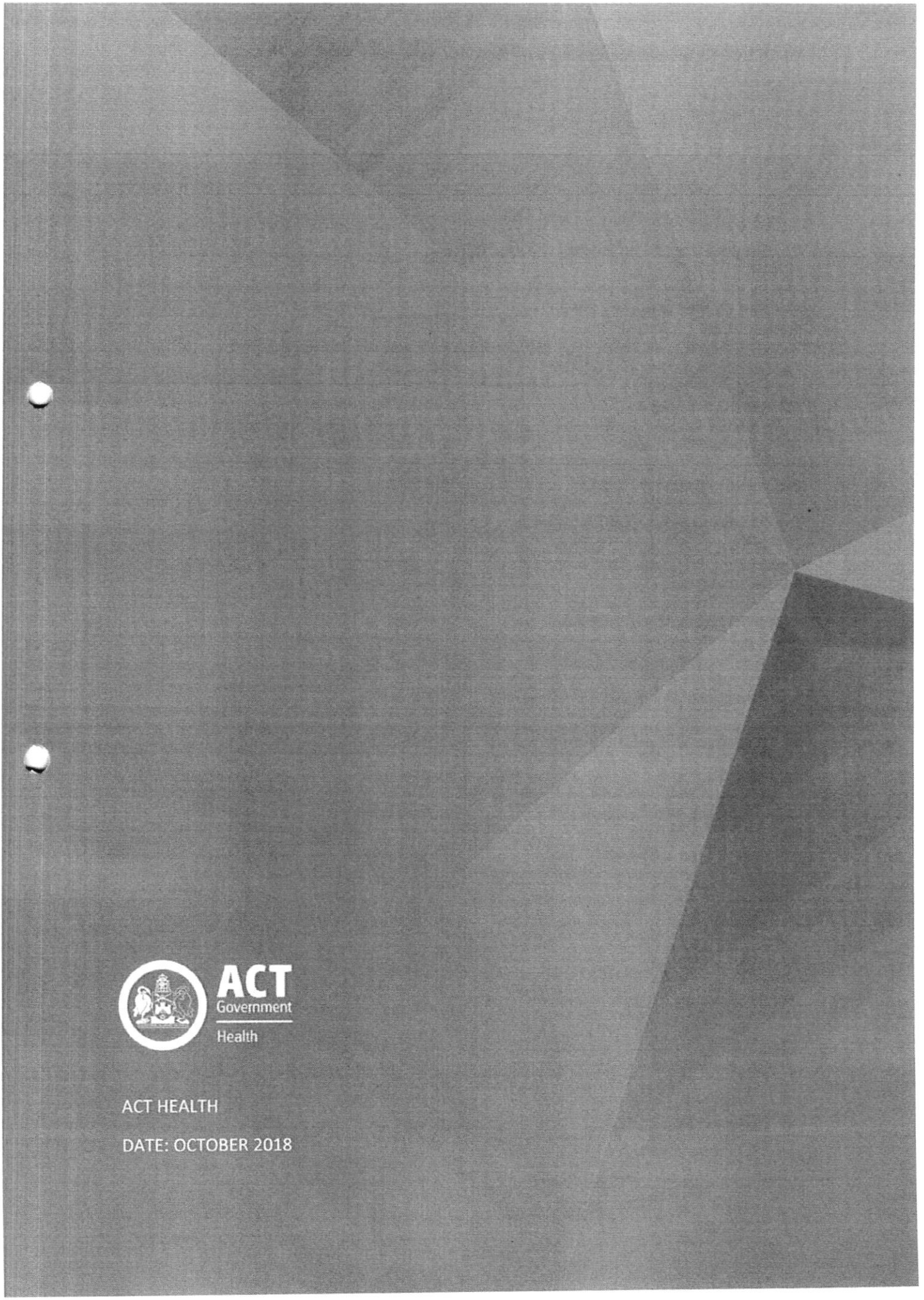

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MODEL OF CARE

ACUTE CARDIAC CARE UNIT AND INTERVENTIONAL CARDIOLOGY LABORATORIES

ACT HEALTH

DATE: OCTOBER 2018

Approvals

Name	Position	Signature	Date
	Executive Director, Division of Medicine		
	Deputy Director General, CH and Health Services		
	For Information - Executive Sponsor, Chief of Clinical Operations, ACT Health		

Outstanding Issues

Subject	Issue
Workforce	Current and projected staffing numbers indicative only. Further analysis required.

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Draft v0.1	14/3/18	HMA	ACT Health	Preliminary draft
Draft v0.2	14/3/18	ACT Health	HMA	Comments added
Draft v0.3	20/3/18	HMA	ACT Health	User group feedback v0.2
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Draft v0.7	1/5/18	HMA	ACT Health	Final draft
Draft v0.8	8/10/18	HSPU	BHSP	For Proof of Concept

Table of Contents

1. Introduction

In September 2016, ACT Government announced the construction of a Surgical Procedures, Interventional Radiology and Emergency (SPIRE) Centre to be built at Canberra Hospital (CH). This infrastructure project is part of the ACT Government's 10-Year Health Plan and is in response to the increasing demand on ACT hospitals and health services across the territory.

The ACT Government 2017 Budget provided funding for the first stages of the SPIRE project which includes planning and the commencement of design. A Model of Care (MoC) is a planning document that broadly defines the way health services are delivered and outlines best practice care for a person using this service. This MoC planning document has been developed for building design only and is required by the prospective design consultants to enable design development. For noting, a complete patient journey MoC is a subsequent piece of work.

ACT Health engaged Healthcare Management Advisors (HMA) Pty Ltd to undertake the MoC development in collaboration with staff from Health Services Redesign and Building Health Service's Program. Development of this document occurred between February and March 2018 with internal ACT Health stakeholders who have been identified within this document. Outstanding issues that require resolution over the next design phases are noted at the beginning of this document.

2. Description of the Service

The CH is the only tertiary cardiology care service for the region. Cardiac care is a level 6 referral centre as per the NSW Guide to the Role Delineation of Clinical Services.

Cardiology Services at the CH encompasses:

- Acute Cardiac Care Unit (ACCU)
- Interventional Cardiology Laboratories (ICL)
- Cardiac Diagnostic and Imaging Services
- Ambulatory Cardiology Care

The Cardiac Diagnostic and Imaging Services and Ambulatory Cardiology Care are outside of the scope of this document.

The Department of Cardiology at the CH provides expert advice and specialist care for patients with acute and chronic heart conditions such as:

- acute coronary syndromes including acute ST elevation MI management
- cardiac arrhythmias (brady and tachyarrhythmias)
- decompensated acute and chronic heart failure
- post elective coronary and structural heart interventional procedures including IABP support
- post cardiac electrophysiology (EP) interventional procedures (includes ablation and cardiac devices)
- elective DC cardioversion for atrial arrhythmias
- pericardial tamponade
- other conditions with haemodynamic instability eg pericardial tamponade, pulmonary embolism, pulmonary hypertension, infective endocarditis.

Treatments provided include:

- cardiac monitoring: invasive and non-invasive; hard wired with or without telemetry
- invasive haemodynamic monitoring
- co-ordination and administration of appropriate drug therapies including thrombolysis

- non-invasive ventilation (CPAP, BiPAP)
- haemodialysis
- elective cardioversion
- intra-aortic balloon counter-pulsation
- transthoracic echocardiography (TTE) - may be performed at the bedside in the process of cardiac rehabilitation
- exercise stress testing and management of patients with temporary pacing wires
- discharge planning and patient education/rehabilitation.

CH does not manage complex congenital heart disease or inpatient paediatric cardiology services.

This document outlines the model of care for following the Cardiology Services at the CH:
- Acute Cardiac Care Unit (ACCU)
- Interventional Cardiology Laboratories (ICL)

2.1. Acute Cardiac Care Unit (ACCU)

The ACCU is a specially staffed and equipped inpatient ward for the support, diagnosis, monitoring (including ECG monitoring and telemetry) and treatment of acute patients with medical or surgical cardiac conditions, which are life threatening or potentially life-threatening. The ACCU will provide inpatient and ambulatory management of cardiac conditions such as:
- acute coronary syndromes including acute ST elevation myocardial infarction management
- cardiac arrhythmias
- decompensated acute and chronic heart failure
- post elective coronary and structural heart interventional procedures including Intra-Aortic Balloon Pump (IABP) support
- post cardiac electrophysiology (EP) interventional procedures (includes ablation and cardiac devices)
- elective Direct-Current Cardioversion for atrial arrhythmias
- pericardial tamponade
- other conditions with haemodynamic instability e.g. pericardial tamponade, pulmonary embolism, pulmonary hypertension, infective endocarditis
- management of bariatric patients with cardiac conditions

The ACCU is a discrete unit for monitoring of patients with acute coronary syndrome, heart failure or life threatening arrhythmias. It provides a full range of invasive and non-invasive monitoring for cardiac patients, with access to the full range of cardiac investigations and 24 hour on call echocardiography, angiography, angioplasty and permanent pacemaker services. The ACCU comprises:
- Multi-day beds including:
  - acute & ST-Elevation Myocardial Infarction (STEMI) bed in case of acute STEMI
- Sub-acute beds
- Chest Pain Evaluation Unit (CPEU)
  - is a dedicated area within the ACCU used for the evaluation of chest pain, and to initiate treatment under protocol. It will require access to exercise stress testing (treadmill exercise testing) 18 hours per day. Patients usually stay in the CPEU for less than four hours. Patients may require exercise stress testing and focus echocardiography in the adjacent procedure area. Following evaluation patients may be transferred to an overnight bed in the ACCU, the ICL or discharged home
- ACCU Procedure Rooms

- ACCU Clinical Support area, including central analysis station for electrocardiography transmission

2.1.1. Multi day beds

Provides acute inpatient cardiology beds and an ST-Elevation Myocardial Infarction (STEMI) bed. These beds are cardiac protected and require specialised cardiac monitoring, networked to a central monitoring station.

2.1.2. Sub-acute beds

These beds provide an intermediary space between Acute Cardiology and ward beds. They are cardiac protected and have telemetry monitoring.

2.1.3. Chest Pain Evaluation Unit

This unit is a dedicated area within the ACCU used for the evaluation of chest pain, and to initiate treatment under protocol. It will require access to the ACCU procedure room for exercise stress testing (treadmill exercise testing) 18 hours per day. They are cardiac protected and have telemetry monitoring.

2.1.4. ACCU Procedure Room

The procedure rooms provide internal access for the ACCU to dedicated non sterile procedure space i.e. cardiac ultrasound, stress testing, and advanced cardiac monitoring.

2.1.5. Clinical Support Area

Location of staff station to support the staff functions within the clinical environment, including central monitoring and Central Analysis Station for 12 Lead ECG from ACT Ambulance Service, NSW Ambulance, regional and district Southern NSW hospitals via the STEMI pathway, as shown in figure 2 below. Enabling prompt advice in relation to appropriate reperfusion therapy for acute myocardial infarction.

2.2. Interventional Cardiology Laboratories (ICL)

The Interventional Cardiology Laboratories consisting of the Cardiac Catheterisation Laboratories (CCL), Electrophysiology Laboratory (EPLab), Procedure rooms and Hybrid Cardiac Catheterisation Laboratory are specialised diagnostic and interventional therapeutic services within cardiac services at the CH. The laboratories are support by Interventional Cardiology Day Unit.

The ICL standard operating hours are 0800 -1800 Monday to Friday. However, there is a 24/7 Primary Percutaneous Coronary Intervention (PCI) service for acute ST elevation myocardial infarction and capacity to accommodate other emergency interventions as required.

The ICL is staffed by an experienced interventional cardiology team. Interventional activities are supported by the ICL Day Unit and the ACCU.

The hybrid cardiac catheterisation laboratory allows for future proofing of the cardiology interventional services at CH.

2.2.1. Cardiac Catheterisation Laboratory (CCL)

Cardiac catheterisation procedures are usually done with local anaesthesia and conscious sedation. A minority of cases are under general anaesthetic for agitated patients. Some can be performed as day or short stay procedures, although some will require longer periods of observation depending on the type of procedure and patient co-morbidities.

CH provides emergency, Primary Percutaneous Coronary Interventions (PCI) 24 hours a day, seven days a week and planned elective interventions during business hours.

Cardiac Catheterisation procedures are categorised as either diagnostic or interventional.

Diagnostic catheterisation involves the insertion of a catheter into an artery (usually in the thigh or wrist) which is threaded through to the heart. Dye is then injected into the coronary arteries to reveal any blockages. Catheterisation can also be done for myocardial biopsy.

Interventional catheterisation includes:

- balloon angioplasty where a catheter with a 'balloon' is passed through to a coronary blockage then inflated to allow more blood flow
- stenting where a small, metal mesh tube is placed within a coronary artery after balloon angioplasty to prevent the artery from reclosing
- septal closure devices used to non-surgically close defects in the atrial septum
- atherectomy to remove hardened and calcified blockages (plaques)
- thrombectomy to remove loose debris within the coronary arteries, prior to angioplasty or stenting.

Day procedure for a selection of angioplasty patients is the preferred model of care. In these instances, patients are admitted as a day-only patient and recovered for a minimum of four hours before discharge. This reduces patient bed days and subsequently improves bed access. [4]

2.2.2. Electrophysiology Laboratory (EP Lab)

Electrophysiology study (EPS) are conducted within the EPLab where the heart's electrical system is tested to diagnose electrical conditions triggering heart arrhythmias. During the EPS, the diagnosed condition may be ablated (if appropriate), using either high frequency electrical energy (RF ablation) or intense cold (cryoablation). Cardiac device implantation is also undertaken in the EP lab.

EPS and ablations typically require a general anaesthetic or heavy sedation. Some EPS are done as day procedures, although patients that receive ablation may require a longer stay.

Occasionally patients will require emergency interventions in the EPLab, although this will be dependent on the availability of an Electrophysiology Cardiologist.

2.2.3. ICL Procedure Room

The procedure room will provide a dedicated sterile space for transoesophageal echocardiograms and sterile procedures.

2.2.4. Interventional Cardiology Day Unit

The Interventional Cardiology Day Unit supports the function of the ICL through the provision of pre and post procedure beds and is staffed by trained medical, nursing and technical staff.

Patients suitable for the Day Unit (23 hour) beds include:

- inter-hospital transfer patients, pre and post CCL procedure
- elective patients post angioplasty/stent (who cannot remain in recovery beds)
- elective patients requiring 'follow on' angioplasty
- DC Cardioversions pre and post-procedure
- post-operative elective pacemaker procedures
- pre and post hospital transfer pacemaker procedures

2.2.5. Hybrid Cardiac Catheterisation Laboratory (shelled)

The Hybrid Cardiac Catheterisation Laboratory is a soft shelled space, which has capacity to support future development in interventional technology and practice. The exact use will be determined by future demand.

2.2.6. ICL Clinical Support

Location of staff station to support the staff functions within the clinical environment.

2.3. Target population

The target population includes ACT residents and patients requiring tertiary level services (e.g. level 5 or 6) from the surrounding NSW regions.

Cardiology patients include adults of all ages, acuity, frailty and disability, and increasingly patients with comorbidities. Cardiac inpatients have special needs in that they are often fully aware of their surroundings but may be restless, distressed and agitated and may require immediate and critical emergency care.

2.4. Changes to existing service

The possibility of heart failure increases with age and with the incidence of diabetes. As the general population ages, more patients will require assessment and treatment. Heart failure treatments are becoming more complex resulting in greater levels of ambulatory and inpatient care for heart failure. Consequently, reliance on cardiology specialist staff and diagnostic tests is also increasing. [2]

Advances in technology in the Cardiology space may increase demand for Cardiology services over and above population growth rates and historical trend projections. For example:

- technological advances are improving the safety and efficiency of interventional cardiac treatments
- the demand for intervention electrophysiology is increasing with complex arrhythmias now able to be treated with three-dimensional mapping techniques
- advances in pharmacology resulting in more complex drug regimens for patients post-surgery / procedure has increased the need for close observation of patients in a ACCU. [3]

Other trends in models of care that will impact on future service delivery include the use of CCU beds for non-infarct patients (such as unstable angina or recovery after a cardiac procedure) and the need for integrated CCUs with transitional or step-down bed availability.

3. Care/service setting

A dedicated cardiac precinct will be developed as part of SPIRE including an ACCU and the ICL.

Colocation of Cardiology services is designed and intended to provide safe and efficient care of patients. Colocation will enable central bed management capabilities, single management structure, effective use of resources (space and staff), minimising the transfer distance for patients between the CCL and post-intervention recovery beds, increased staff rotation and skill development, flexibility of bed usage during peak times. [4]

3.1. Environmental considerations

The aim of health care is not only to treat disease, but also to create a healing environment for patients that is safe and free of psychosocial elements created through poor design. To this end the environment and design is to support the MoC.

Noise has been linked with poorer outcomes and increased levels of stress, for both patients and staff. Noise leads to communication difficulties, and may impede on an individual's privacy. Therefore

strategies for combating noise levels within the ACCU should be included. This includes, but is not limited to:

- single rooms
- noise attenuation ceiling tiles
- ceiling battens
- soft floor covering where appropriate.

Light has also been shown to be an important consideration for the wellbeing of patients, not only access to view and natural light, but also the ability to control artificial light levels locally. As such all lighting in treatment areas is to be manually controllable to enable dimming or brightening as clinically appropriate.

Families and carers are often integral to the wellbeing of the patient in ACCU and ICL. Where clinically appropriate carers will accompany patient into treatment spaces. Spaces are to be designed with space allocation for carers and well as quiet rooms for family/friend of those patients who are receiving intensive treatment, as well as appropriate space for grieving.

Regardless of specific environmental considerations, the design is to support a balance between line of sight and privacy of patients in treatment areas and waiting areas from staff areas, specifically staff stations.

4. Care provision continuum & workforce

4.1. Philosophy and principles of care

The vision for Cardiology services is to provide improved care and outcomes for patients with, or at risk of, cardiovascular disease. This means person-centred care from early diagnosis to end of life care, with improved access for vulnerable groups. [5]

The ACCU and CCL incorporates concepts of a 'Healing Environment' including appropriate décor to create a relaxed ambiance for patients, sound proofing in consulting and testing rooms to ensure adequate privacy for patients and decentralised inpatient room design to increase privacy.

Health care at the CH is delivered in a way 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 cost
- equitable – providing care that does not vary in quality because of a person's characteristics.

4.2. Policies and business rules

Cardiology services provides evidence based treatment under the Clinical Guidelines of the National Heart Foundation of Australia and Cardiac Society of Australia and New Zealand: Australian Clinical Guidelines for the Management of Acute Coronary Syndromes 2016 https://www.heartfoundation.org.au/for-professionals/clinical-information/acute-coronary-syndromes).

In addition, the close monitoring of patients in the ACCU requires a nurse to patient ratios of 1:2, plus super-numerary nursing staff, based on NSW Nurses and Midwives' Association recommendations for nursing ratios 2017.

4.3. Patient pathways

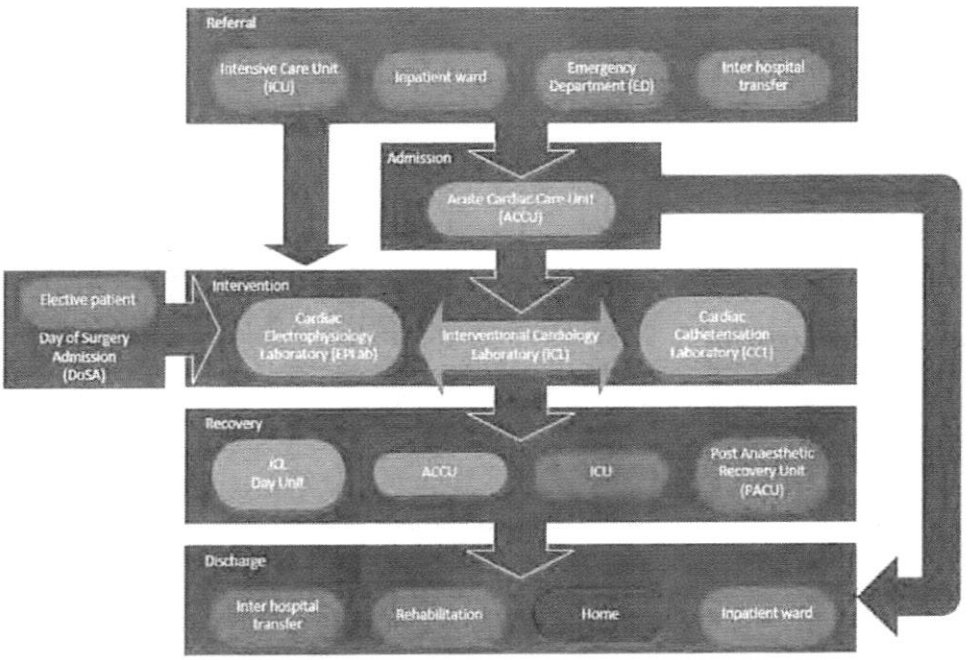
4.3.1. ACCU and ICL Admission

Patients are admitted to the ACCU and ICL for diagnostic and interventional procedures from:

- ED
- inter-hospital transfers
- inpatient wards
- post-catheterisation or electrophysiology procedures (diagnostic or interventional) as required.
- ICU
- CH outpatient clinics
- community (ICL only)

Patient Flow through the cardiology service at the CH is shown in the below diagram.

Figure 1: Patient Pathway



Admissions to the ICL can be classified as elective or emergency:

- Elective

As part of an elective admission, patients may attend pre-admission in the outpatient setting. During this appointment patients may have a 'walk through' of the area to familiarise themselves with the area.

On the day of the procedure elective patient admissions will present to the Day of Surgery Admission (DoSA) for clerical admission. Patients will be directed to the ICL day unit for nursing and medical admission.

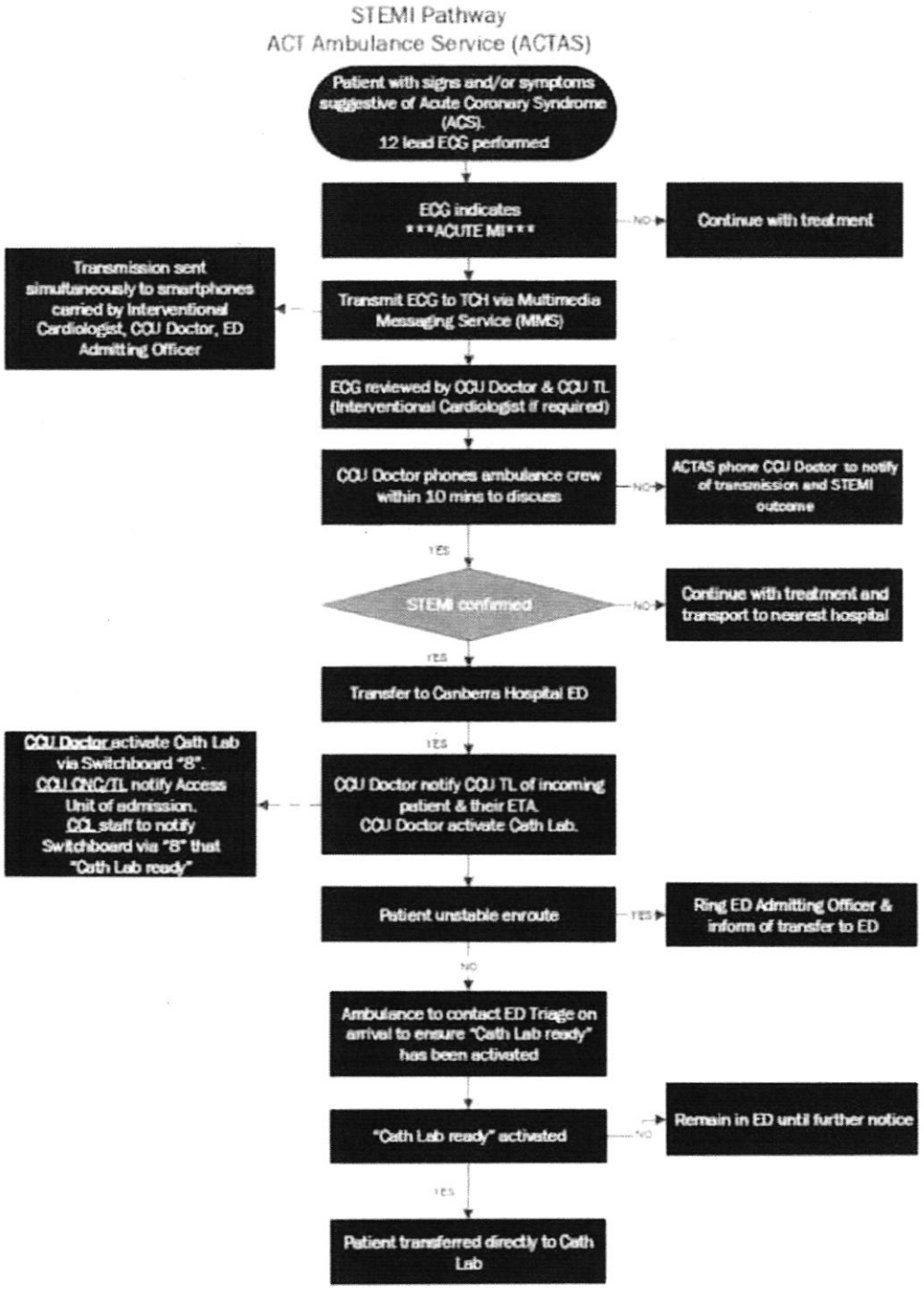
After admission patients will wait in the ICL Day Unit until they are taken into the laboratory for their intervention.

- Emergency

Patients can be admitted directly from ACTAS/NSWAS, transferred from CPHB, Regional NSW hospitals, the ED or transferred from inpatient wards, including ICU. Post intervention, patients will be transferred to either ACCU, ICU or PACU.

Emergency procedures, including PCI will follow the STEMI pathway.

Figure 2: STEMI Pathway



Source: Canberra Hospital and Health Services, Operational Procedure. ST Elevation Myocardial Infarction (STEMI) Pathway (2016)

4.3.2. Treatment

A majority of patients having procedures in the ICL will be given a conscious sedation, this will occur in the location of the procedure. However a portion of patients will require full anaesthetics, these patients will be induced in the anaesthetic room.

Approximately 10% of patients undergoing EPLab procedures are likely to require stage one recovery, ongoing ventilatory or haemodynamic support. These patients will be transferred directly to Post Anaesthetic Care Unit (PACU) or ICU from the ICL.

4.3.3. Patient recovery and discharge

Patients are monitored following cardiac catheterisation/EPS procedures. Options for recovery include:

- ICL Day Unit
- ACCU or cardiac inpatient unit
- stage one recovery in PACU
- ICU

Overnight beds are made available for patients from geographically isolated areas who may not be able to return home immediately or following complications.

Once stable, inpatients will return to their own unit. Patients referred from other hospitals may be transported back to the referring institution, or to another healthcare facility with access to appropriate monitoring, or may be discharged home.

Patients are discharged from the ACCU and ICL to:

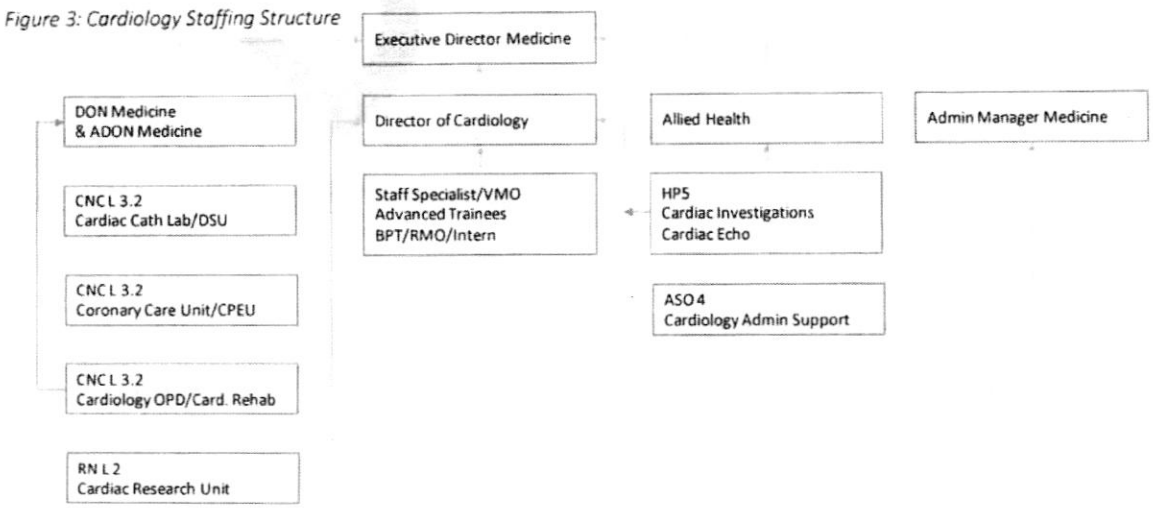
- inpatient unit
- inpatient rehabilitation unit
- community rehabilitation
- transferred back to the referring hospital
- home.

For the first 24 hours post-angiography, day patients should remain within an accessible distance of a service that is able to manage relatively common complications.

4.4. Workflow and work processes

The staffing structure within Cardiology services is outlined in Figure 2.

Figure 3: Cardiology Staffing Structure



4.4.1. Medical

The Director of Cardiology at the CH is a Cardiologist (senior Staff specialists registered with the Royal Australian College of Physicians (RACP)). In addition to Director of Cardiology, a Cardiologist must be available in the CCU at all times, this may include specialists and visiting medical officers (VMOs).

Senior Cardiologists supervise and support Fellows, Registrars and Residents (in order of seniority) that are undergoing specialised training in Cardiology and carry out the day-to-day management of patients. In addition, Interns who rotate across all areas of the hospital also assist the more senior medical team. The EPLab requires a Cardiologist that specialises in electrophysiology, an Electrophysiologist.

To support continuity of care and provide the right service at the right time Cardiology Services in the CCU interface with other specialty services such as Cardiac Rehabilitation, Cardiothoracic Surgery, Anaesthetics, Lung and Vascular Departments, Renal and Endocrinology Departments, ICU, ED, Geriatrician and Sleep medicine.

4.4.2. Nursing

There are a number of senior nursing positions that are integral to the running of the ACCU described below.

Assistant Director of Nursing (ADON) – is the registered nurse (RN, Level 4) responsible for the management of the ACCU including strategic planning, budgetary responsibilities and supervision of other senior nursing staff.

Nurse Manager (NM) – is a registered nurse (RN Level 3) in charge of the unit responsible for the coordination of staffing and resources. This position combines leadership, management and resource allocation.

Clinical Nurse Consultants (CNCs) – are registered nurses (RN Level 3) responsible for overseeing the professional management of nursing staff. There is a CNC for the ACCU and Chest Pain Evaluation Unit, a CNC for the CCL and Day Unit (including the EPLab). There is also a CNC for the Cardiology Outpatient Department and Cardiac Rehabilitation Unit (these services are out of scope for this MoC document).

Nurse Practitioner (NP) – are registered nurses who hold endorsement as nurse practitioners. The nurse practitioner's duties include in depth cardiac assessments, working closely with physicians and providing health education to patients and families.

Clinical Development Nurse is the registered nurse (RN Level 2) in charge of the Cardiac Research Unit and education support.

Registered nurses (RN Level 1 and 2) specialising in cardiac care provide care in the ACCU and ICL.

Cardiac Liaison Nurses will provide coordinate care and collaborate with the team to improve the patient journey.

4.4.3. Allied Health

Specialised allied health professions are required for the ICL, including:

- Cardiac technologists
- Medical physicists

Other Allied Health professionals are available on call. The composition of the Allied Health team varies depending on patient need, but may include:

- Occupational therapists
- Pharmacists
- Physiotherapists
- Social Workers
- Speech Pathologists.

4.4.4. Administrative staff

In addition to their clerical duties, administrative staff will be located at the staff station in a position that can facilitate a meet and great role, providing the first point of contact to the unit.

4.4.5. Clinical support personnel

Clinical support persons will be allocated to ACCU and ICL. Clinical support persons will assist with manual handling, patient transfers, moving medical equipment and after-hour blood couriering. The service is required 24hrs a day 7 days per week. Hospital Assistant role includes restocking point of care locations and cleaning treatment cubicles between patients. Communication with these staff will occur via pager.

4.5. Workforce

Current and projected staffing numbers are provided in Table 2. These numbers are indicative only. Further analysis will be provided at a later date.

Table 1: Current and projected staffing requirements

Position Levels	FTE			Headcount		
	Current	Additional	Total	Current	Additional	Total
Cardiologists/Fellow				10		
Electrophysiologist	1	0	1	1	0	1
Registrar						
Resident						
ADON	1	0	1	1	0	1
Nurse Manager	1	0	1	1	0	1
CNC	2	0	2	2	0	2
Clinical Development Nurse	1	0	1	1	0	1
Registered Nurse						

4.6. Training, education and research

A major function of a tertiary hospital is to support education, training and research, to enable and support the delivery of a high quality service. Ongoing education is a major focus of the department into the future. Facilities for training and education will be provided within the Department so that they can be easily accessed by staff. These facilities will also be used to provide venues for internal meeting, including but not limited to: updates, quality assurance meetings, in-service education program, competency assessments, orientation of new staff and more.

To support education, training and research, the department maintains a strong focus on education and research and contributes to teaching students from the Australian National University (ANU)

Medical School, University of Canberra, Australian Catholic University, Charles Sturt University and the Canberra Institute of Technology.

The Department of Cardiology is a fully accredited site as per the RACP for core training. Cardiology accommodates three Advanced Trainees in each year. There are five Physician Readiness for Expert Practice (PREP) trainees attached to each rotation in Cardiology and there are four rotations per year. There are three Interns attached to Cardiology per rotation and there are four rotations per year.

Training, education and research roles within Cardiology include providing:

- training medical students and medical graduates in the management of cardiovascular disease
- teaching a wide range of medical, nursing and allied health staff on Cardiovascular diseases
- lay and professional advice on public health aspects of cardiovascular diseases
- education through the Cardiac Rehabilitation facilities to patients, family and the community
- clinical and cardiovascular support to the Department of Cardiac Surgery.

5. Support service elements

5.1. Information Communication Technology (ICT)

5.1.1. Bedside data entry

Staff will need access to computers at each bedside, staff stations, in consultation, treatment and procedure rooms.

Clinicians (nurse, allied health, doctor, etc.) should have a computers to enter relevant patient information, order tests, review results, send outpatient referrals, provide discharge emails (to patient and General Practitioner). This should include entering information in a real time medical record, that all involved in the patients care can see.

Access is required to a mobile device platform (computer on wheels) for the purpose of data entry. One device will be used between two bed spaces.

5.1.2. Wi-Fi

Provision for medically safe wireless networking throughout the clinical area.

Wi-Fi internet access will be provided throughout the Department (including lounge/wait areas) for use by staff and visitors.

Dedicated, secure Wi-Fi is required to support telemetry cardiac functionality.

5.1.3. Multifunction devices

Printers are required at the staff station. Space is required for equipment relating to electronic medication/pathology/wristband/programs.

5.1.4. Hearing Loop

Hearing loop is to be available within the entire department.

5.1.5. Patient monitoring

Patients should be issued with Electronic wristbands that provide real time tracking ability, can be scanned by clinician devices to confirm identity and provide alerts for allergies etc.

Patient monitoring at bed spaces, and selected other spaces (e.g. procedure rooms) will be configured for monitoring at a central location with real time reporting.

All monitoring modalities will be compatible with other critical care areas within the hospital including ICU/ED and Perioperative and Interventional Centre.

5.1.6. Patient beside entertainment

Where appropriate and required, patient entertainment (i.e. television) will be provided. Bedside data entry for clinical staff will be provided by an alternate system.

Patient entertainment will be available in all areas.
Television in lounge/wait areas providing access to entertainment and health information.

5.1.7. Telemedicine/video conferencing

Selected clinical spaces will be configured to provide remote telemedicine for patients located in the ACT to access services provided elsewhere.

5.1.8. Communication

Staff and patients will have access to telephone communications, and technology to support communication during systems failure or in disaster response

5.1.9. Biomedical Equipment Management

Services will be provided by the Clinical Engineering Service in the CH.

5.2. Environmental and supply services

5.2.1. Food Services

Food for patients will be delivered to the ward in a food retherm trolley and docked for distribution by a food services staff member. Meals are not provided to families; however they will have access to tea and coffee facilities, reheating facilities and a shared patient/family beverage bay.

5.2.2. Linen

Linen supplies will be as business as usual. Supplies are delivered by Capital Linen Service and delivered daily.

5.2.3. Stores

Stores are delivered regularly, with stock levels monitored by Purchasing and Inventory Control System (PICS). A large selection and quantity of stores is required within the Cardiology services. Adequate storage is to be provided, including point of care cupboard and storage within treatment bays.

5.2.4. Waste Management

Waste will be managed as per ACT Health facility-wide policy for managing waste. Waste streaming bays will be available throughout the department.

5.3. Core services

Clinical support services for ACCU and ICL include:

5.3.1. Diagnostic Imaging/Interventional Radiology

Medical Imaging provides diagnostic imaging, interventional radiology and nuclear medicine services for patients. Cardiology accesses medical imaging for a range of imaging needs including chest x-rays, CT, MRI, nuclear medicine and PET. Echocardiography may be undertaken in the ACCU at the bedside

for those patients too sick to be transferred to the cardiac investigations unit. Nuclear Medicine is an imaging modality that administers radiopharmaceutical agents to patients for diagnostic imaging and for treatment of a range of medical conditions.

5.3.2. Pathology

Sampling will occur at the bedside by a suitably qualified staff member. Pathology services provide a ward collection service during business hours. Pathology services will include the use of point of care testing, which is expected to increase in use over the lifespan of the facility. Rapid access to pathology labs through the use of pneumatic tube and electronic result system, including immediate electronic notification of results availability.

5.3.3. Pharmacy

Rapid access to pharmacy services within the department will be provided and include pharmacy staff rounds, and provision of automated dispensing machines (ADM) located throughout the department to support clinical care. ADM stock levels are monitored electronically, with restocking managed by a pharmacy technician. Restricted and individualised medications are monitored and stocked by the pharmacist/s who will be available seven days a week.

A wall mounted medication safe is required for storage of restricted medication as a safeguard against ADM failure.

5.3.4. Additional services

Aboriginal Liaison Service

The Aboriginal Liaison service provides support to Aboriginal and Torres Strait Islander clients liaising with clients, their families, as part of the multi-disciplinary team to assist clients negotiate and develop appropriate and achievable treatment plans.

Business Support

Business support services will be provided in keeping with the CH inpatient ward requirements. Dedicated cleaners will be allocated to the department. Cleaning equipment will be located in close proximity to clinical areas to enable prompt cleaning of spills.

Central Equipment and courier service

For the delivery of bariatric slings, pathology and pharmacy couriering, delivery and collection of air mattresses, humidifiers, hover mattresses, hi-low beds, bariatric equipment and heel elevators; and medical equipment (infusion pumps, calf compressors, syringe drivers and Patient Controlled Analgesia equipment.

Clinical Engineering Service

Clinical engineering is responsible for the management of medical equipment, medical electrical systems and medical IT-networks. Within in Cardiology services, the insertion of devices and increasingly complex machinery has given rise to the need for enhanced engineering services. As equipment becomes increasingly technical and complex there is a growing need for this to be maintained by the vendors. These agreements and/or contracts are negotiated through Biomedical Engineering. Cardiology currently has relationships with four medical device companies. This is managed through informal agreements and the doctors' services can be billed as a Medicare item number.

Hospital in the Home (HITH)

HITH is an inpatient service of the CH. It provides access to health care for patients in their home 24 hours a day, 7 days a week. HITH patients have access to hospital services such as physiotherapy, occupational therapy, pharmacy, pathology and social work.

Infection Prevention and Control Unit (IPCU)

IPCU service provides advice/guidance on issues pertaining to patients requiring support for transmissible microorganisms, multi resistant organisms and other infectious diseases. IPCU also provides feedback in relation to blood stream infections, support and advice on hand hygiene, education, maintenance, cleaning, linen and reusable stock and equipment.

Interpreter service

Interpreter services will be provided as needed, either in person or via telephone.

Medical Physics and Radiation Engineering (MPRE)

MPRE is responsible for the provision of expert advice on, services for, training in and management of the quality assurance, radiation safety and use of radiation producing devices used for the prevention, diagnosis and treatment of disease.

Patient Flow Unit (PFU)

The PFU coordinates the bed allocations, patient flow and facilitates transfer of patient into and out of CH.

Tissue Viability

Provides expert advice and education regarding the management of all wound types across specialties. This service also provides opportunities for Registered Nurses to participate in the Tissue Viability 6-month training program. The CNC participates in the Preventing and Managing Pressure Injuries National Standard Committee and provides relevant and up-to-date data on the number of facility-acquired and pre-existing pressure injuries within CH.

Spiritual Support

The Chaplaincy and Pastoral Care services provides pastoral care and healing as part of holistic health care. Pastoral Care involves physical, social, emotional, and spiritual support – not only to patients, but also their families, visitors and CH staff.

6. Business rules

The CH aligns with National Standards set by the Australian Council on Healthcare Standards (ACHS).

All ACT Health facility wide policies impact on the Cardiology services.

Patients requiring intubation with mechanical ventilation are not suitable for this ACCU.

7. Benefits (service innovation and efficiency)

Based on the Australian Council of Healthcare Standards (ACHS), monitoring should occur across the following areas:

- Cardiovascular disease management
- Average length of stay (ALOS)
- Day-procedure including:
  - Preadmission preparation
  - Procedure non-attendance or cancellation
  - Adverse events and unplanned returns to the procedure room
  - Unplanned transfers and admissions or unplanned delays to discharge.

- ACS Clinical Standard of Care
- Risk Management
- Cardiology Morbidity and Mortality Meeting
- Monitoring of adverse reactions

7.1. Qualitative benefits

Qualitative elements of the Cardiology MoC can be measured through the patient satisfaction survey.

This new service:

- consolidates service delivery for patients with cardiac rhythm disorders
- ensures timely assessment and treatment of cardiac arrhythmias at CH
- ensures evidence-based and best practice care for the community is adopted
- improves healthcare and patient safety outcomes.

7.2. Quantitative benefits

The co-location of Cardiology units (ACCU and ICL) is designed to provide a consolidated and streamlined service for patients that will ensure timely assessment and treatment of cardiac arrhythmias at CH, improve healthcare and patient safety outcomes.

Cardiology performance indicators for cardiovascular disease management may include:

- Congestive heart failure (CHF) prescribed ACE inhibitor/Angiotensin II receptor antagonist (A2RA)
- CHF prescribed beta blocker
- CHF and atrial fibrillation prescribed warfarin
- CHF chronic disease management referral including physical
- Percutaneous transluminal coronary angioplasty vessels where primary success was achieved [7]
- ALOS.

Performance indicators for day procedures include:

- Booked patients assessed before admission
- Booked patients who fail to arrive
- Cancellation of the procedure after arrival due to pre-existing medical or an acute medical condition, or due to administrative/organisational reasons
- Patients who experience an adverse event during care delivery
- Unplanned return to the operating room
- Unplanned transfer / admission –overnight or ongoing
- Unplanned delayed discharge for clinical or non-clinical reasons
- Post-discharge follow-up occurred within 7 days. [7]

8. Monitoring and evaluation

Monitoring and evaluation will occur via the ACHS Clinical Indicator Program on which the quantitative and qualitative indicators are based. [8]

https://www.achs.org.au/programs-services/clinical-indicator-program/

9. Abbreviations

Abbreviation	Definition
ACCU	Acute Cardiac Care Unit
ACHS	Australian Council on Health Care Standards
ACT	Australian Capital Territory
ACTAS	Australian capital territory Ambulance Service
ACTPAS	ACT Patient Administration System
ADON	Assistant Director of Nursing
AHPRA	Australian Health Practitioner Regulation Agency
AMC	Australian Medical Council
BOD	Burden of Disease (expressed as DALY) is a measure of the health impact of disease on a population in a given year.
CPHB	Calvary Public Hospital Bruce
CDN	Clinical Development Nurse
CSSD	Central Sterilising Department
CHHS	CH and Health Care Services
CCL	Cardiac Catheterisation Laboratories
CDN	Clinical Development Nurse
CNC	Clinical Nurse Consultant
CRIS	Clinical Records Information System
CVD	Cardiovascular disease
DALY	Disability-Adjusted Life Year
DON	Director of Nursing
DOSA	Day of Surgery Admission
EDSU	Extended Day Stay Unit
EPS	Cardiac Electrophysiology (EP) Service
EPLab	Cardiac Electrophysiology Laboratory

General Hospital	Generally offers level 4 or 5 services, according to clinical service role delineation definitions
GP	General Practitioner
HITH	Hospital in the Home
ICL	Interventional Cardiology Laboratories
ICT	Information Communication Technology
IR	Interventional Radiology
JMO	Junior Medical Officer
MoC	Model of Care
MRO	Multi-resistant organisms
NHPPD	Nursing Hours per Patient Day
NP	Nurse Practitioner
NSW	New South Wales
NSWAS	New South Wales Ambulance Service
OPD	Outpatient Department
RACC	Rehabilitation, Aged and Community Care
RSI	Relative Stay Index
RMO	Registered Medical Officer
Role Delineation	Describes the minimum support services, workforce and other requirements for the safe delivery of clinical services
SSP	Specialty Service Plan
Tertiary Hospital	Generally offers services at Level 5 or 6, according to clinical services role delineations
VMO	Visiting Medical Officer

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11. MoC Development participants

The following personnel were consulted in the MoC preparation	
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MODEL OF CARE

INTENSIVE CARE UNIT

ACT HEALTH
DATE: NOVEMBER 2018

Approvals

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Outstanding issues

Subject	Issue
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Table of Contents

1. Introduction

In September 2016, ACT Government announced the construction of a Surgical Procedures, Interventional Radiology and Emergency (SPIRE) Centre to be built at Canberra Hospital (CH). This infrastructure project is part of the ACT Government's 10-Year Health Plan and is in response to the increasing demand on ACT hospitals and health services across the territory.

The ACT Government 2017 Budget provided funding for the first stages of the SPIRE project which includes planning and the commencement of design. A Model of Care (MoC) is a planning document that broadly defines the way health services are delivered and outlines best practice care for a person using this service. This MoC planning document has been developed for building design only and is required by the prospective design consultants to enable design development. For noting, a complete patient journey MoC is a subsequent piece of work.

ACT Health engaged Healthcare Management Advisors (HMA) Pty Ltd to undertake the MoC development in collaboration with staff from Health Services Redesign and Building Health Service's Program. Development of this document occurred between February and March 2018 with internal ACT Health stakeholders who have been identified within this document. Outstanding issues that require resolution over the next design phases are noted at the beginning of this document.

2. Description of the service

An Intensive Care Unit (ICU) is a specially staffed and equipped, separate and self-contained area of a hospital dedicated to the management of patients with life-threatening illnesses, injuries and complications, and monitoring of potentially life-threatening conditions. It provides special expertise and facilities for support of vital functions through the skills of medical, nursing, allied health and other personnel experienced in the management of these problems.

At the CH, ICU staff also provide services outside of the ICU such as emergency response e.g. Medical Emergency Team (MET), trauma response, tracheostomy follow up and outreach services.

The provision of care to critically ill patients is by nature unpredictable and unexpected. This results in the need for consideration of surge capacity as a core requirement of any MoC.

2.1. Target population

CH provides tertiary level services in the Territory and neighbouring regional centres in surrounding Southern NSW. The target population of the ICU is critically ill patients from the CH catchment as a tertiary referral hospital. There are two distinct patient groups which will be provided for in future through Intensive Care Services at the Adult Intensive Care Unit (AICU) and the Paediatric Intensive Care Unit (PICU).

The AICU will provide care for critically ill patients, in single or multiple organ failure, and those at risk of further deterioration (e.g. post complex surgery), aged 16 years or more. In addition AICU staff will provide an outreach service which extends care beyond the walls of the physical ICU, providing acute resuscitation for those patients who deteriorate on the general wards, tracheostomy review and care, a response to the trauma calls in the Emergency Department (ED) and follow up of ICU discharges.

The PICU is envisaged to provide care for critically ill patients, in single or multiple organ failure, and those at risk of further deterioration (e.g. post complex surgery), from 28 days of age through to 16 years. This service is one not currently provided by the ICU service within the Division of Critical Care. However, due to the geographical isolation of the area and lack of alternative immediately

accessible options, the AICU has historically admitted children aged between two and 16 years for the purpose of short term organ support in the event of critical illness, while awaiting transfer to a PICU and/or resolution of their acute single organ failure.

For the same reasons, the Neonatal Intensive Care Unit (NICU) at CH has historically managed children beyond 28 days, up to as old as two years, for immediate resuscitation and support while awaiting Newborn and Paediatric Emergency Transport Service (NETS) transfer and/or definitive management depending on the condition.

It is likely that the age and weight criteria for admission to NICU, PICU and AICU will be considered in interim stages as the capacity is built up in the ACT to provide this service. The emergency response and outreach service for paediatric patients in CH is not currently supported by the AICU. However, it is envisaged that within the model of a stand-alone PICU, the PICU staff would provide a similar service for the wider hospital population as the AICU staff, with response to deteriorating patients, tracheostomy review and care, trauma response and ICU follow-up. Response to infants in the neonatal period will continue to be provided out of the NICU.

CH has level 6 (Tertiary facility) intensive care services as per the NSW Guide to the Role Delineation of Clinical Services. As per the College of Intensive Care Medicine (CICM) Guidelines the CH ICU is a level 3 ICU capable of providing complex multi-organ support for adult patients for indefinite periods of time. [1] The ability to support some specialised conditions are limited by the hospital's subspecialty provision which is currently in evolution. At the present time:

- Spinal and burns patients are resuscitated and stabilised, but then moved to specialised ICUs in NSW capable of providing for their highly specialised complex care needs. It is not anticipated that this will change in the near future and that these patients will continue to be transferred out of the ACT after short term stay in the ED or ICU.
- Patients in need of Extra-Corporeal Membrane Oxygenation (ECMO) are currently transferred to Sydney. However, it is anticipated that under the planned new MoC, a large proportion of these patients will remain in the ACT. A proportion of these patients will still require transfer to Sydney e.g. for solid organ transplant and/or left ventricular assist device/artificial heart implantation, as the highly specialised services will not be provided in the ACT. Paediatric ECMO will not be provided within the ACT.
- Critically ill children with multi-organ failure or projected requirement for greater than 24 hours of ventilator support are currently transferred to the Sydney Children's Hospital Network. However, it is anticipated that a large majority of these patients will be cared for within a PICU within the ACT under the planned new MoC. A small number of critically ill children with complex care needs will still require transfer to the Sydney Children's Hospital Network for specialised services not provided in the ACT, such as highly specialised surgical or transplant management.

3. Care/service setting

Within CH, the ICU is grouped under the Critical Care Division, along with ED, Retrieval Services, Patient Flow Management and Assessment and Planning Units. [2] Currently the ICU is located on level 3 of Building 12 of the CH. Under the proposed SPIRE development, the ICU will relocate to level 7 of the SPIRE building.

The ICU is a physical location in which critically ill patients or patients at high risk of deterioration such as post complex elective surgery, are cohorted and managed under the direction of a specially trained doctor who is a Fellow of the CICM. ICU provides special expertise and facilities for the support and monitoring of vital functions and uses the skills of medical, nursing, allied health and other personnel experienced in the clinical management of patients with life-threatening illnesses,

conditions, injuries and complications. Paediatric and Adult Intensive Care service provision require different though complimentary skill sets, and staff working within these separate areas are trained specifically in these skills.

Intensive care staff provide some acute resuscitation and support to patients who deteriorate or are at risk of deteriorating that are not yet physically located in the ICU in the form of medical emergency response, direct outreach referrals, tracheostomy service (TRACS) and trauma response.

Historically patients admitted to the ICU have been loosely defined as either "Intensive care" or "High dependency" type patients and in the past were physically moved around the footprint of the unit depending on these categories of care. In the evolution of this specialty service it is recognised that these tight definitions are no longer applicable as this describes only the nursing: patient ratios (1:1 care for intensive care and 1:2 for high dependency level patients) and is a fluid determination which can change multiple times in a day. These changing care needs are now seen as part of the critically ill patient's journey while they remain within the physical ICU, and there are no physical separations of an intensive care or high dependency care bed.

3.1. Environmental considerations

With the expansion of the Outreach service, it is anticipated that the future ICU will be divided into operational 'pods' for the treatment of patient cohorts with similar needs, for example:

- general medicine
- cardiovascular including cardiothoracic surgery patients, patients with cardiac failure, and in future ECMO therapy patients
- surgical patients including elective surgery, trauma and neurosurgery
- chronic critical illness
- paediatric patients.

Within in each pod there will be designated staff, space to accommodate up to 12 bed spaces, access for bariatric patients and negative or positive isolation room/s (class N or P). One pod will also be designed for cohort isolation with patient and staff flow arranged to minimise potential contamination to the remaining ICU. The care of families is pivotal in the service delivery model. Hence, design should take into account the need for some families to stay for extended periods of time with their critically unwell loved one. For AICU patients, this area would be suitably located outside of the treatment space. However, for PICU patients, family space would need to be considered adjacent or within the treatment space. Other considerations specific to the care needs of the critically ill patient group are:

- access to outdoor spaces which allow for continuation of their multi-organ support in these environments, especially critical for the long stay patients
- access to a rehabilitation space, which allows for continuation of their multi-organ support
- access to suitable spaces for palliative care requirements including larger areas that can accommodate larger families including children
- waiting areas that are family-friendly and allow for some privacy among family groups.

Another specific requirement is consideration of the patient and family who are undertaking a process of organ donation. The donation after cardiac death process especially requires urgent transport between the area of palliation and the operating suite within minutes of the declaration of death.

The ICU provides a virtual 'external pod', which includes specialist medical staffing for the outreach service, which includes MET response, management of admissions to the ICU (e.g. admitting office

for direct referrals from ED and Retrieval service), trauma response, TRACS and in future the follow up of ICU survivors.

3.2. Change to model

At present the CH ICU has a physical footprint that includes 31 beds with dedicated cardio-thoracic bays, and four combined alternating pressure isolation rooms (enabling the room to have either negative or positive pressure).

The CH ICU is planning to expand the range of services to be provided to consumers in the region, which will include:

- ECMO - AICU only
- PICU
- follow up and bereavement clinic/support
- Integrated psychological and social support
- infectious threat quarantine and access.

The future service will also include separate negative (class N) and positive (class P) pressure isolation rooms in accordance with the Australasian Health Facility Guidelines (AHFG). [3]

Under the new MoC, the CH ICU will remain a level 3 ICU, but will have expanded care capacity as described above. In addition, future service provision may also include invasive organ supports as the technology and skills in this area develop.

ECMO

Extra corporeal membrane oxygenation (ECMO) therapies, venoarterial (VA) and venovenous (VV), are now commonly offered to a wide range of ICU patients with severe cardio-respiratory failure and can be regarded as the standard of care for patients with these conditions in whom conventional therapy is failing. Initiation of ECMO therapies is time critical in some cases, which makes the need for hospital transfer for this therapy sub-optimal. Development of ECMO services will require specialist ECMO equipment (machine) and upskilling of staff to support this service provision.

PICU

At present, many children who could otherwise be cared for locally are retrived interstate to the Sydney Children's Hospital Network. An independent review conducted in 2014 supported the development of a PICU services in Canberra. At this stage, the proposed PICU will be co-located with the AICU in a separate pod and attended by specially trained staff using paediatric specific equipment.

Follow up and bereavement clinic

Post Intensive Care Syndrome is a collection of health conditions common to survivors of a critical illness, typically involving neurological, psychological and functional problems. Post Intensive Care Syndrome is more common after prolonged ICU admission and is associated with ongoing healthcare resource utilisation, increased hospital readmission rates and outpatient presentations. [4]

Families of patients who do not survive their ICU stay require support and bereavement counselling. Social work services currently include grief counselling and information that is provided to patients/families where comfort care is anticipated or when death occurs.

Bereavement follow up is currently offered to families who have been identified at high risk of complicated grief. Aboriginal Liaison Officer follow up with bereavement, 'sorry business' and support is also provided for Aboriginal and/or Torres Strait Islander families.

The expansion of the follow up and bereavement program would enable support to all patients and their families in the period of time after critical illness. These multidisciplinary services will be designed to improve community level care and reduce hospital presentation and admission rates.

Integrated psychological and social support

The involvement of a clinical psychologist on a more regular basis in the care of critically ill patients and support of their families would enhance the holistic care of ICU patients and families. The model of this service would be based on that currently provided within CH.

Infectious threat and quarantine

Future service provision planning needs to consider quarantine of patients including cohorting of patients, and flow of potentially infectious patients and contaminated waste in and out of the unit without risk to other patients requiring ICU support services. The AHFG recommend [3] that one hospital in each Australian capital city will have designated Class Q isolation room/s providing facilities for patients with highly infectious pathogens such as haemorrhagic fevers and pneumonic plague. These patients require a further level of containment over and above the standard negative pressure isolation room.

4. Care provision continuum and workforce

4.1. Philosophy and principles of care

The mission of the CH ICU is to deliver seamless, outstanding care to critically ill patients and their families.

The ICU current and planned MoC is a multidisciplinary team (MDT) based approach to holistic patient care, including compassionate care for patients' families and friends. Highly specialised medical, nursing and allied health staff work collaboratively with referring clinicians to adopt the most appropriate evidenced based care for each patient.

Patient observation and proximity of staff to patients are critical factors in the MoC. The clinical infrastructure and staff profile required to provide an ICU service needs to reflect the complex nature of the monitoring and therapeutic interventions undertaken within the service. An ICU should be designed to minimise the movement of critically ill patients during their stay (i.e. if a patient's condition improves or deteriorates, a bed move should not be required).

4.2. Business rules

The College of Intensive Care Medicine of Australia and New Zealand (CICM) has a suite of Intensive Care policies, guidelines and standards, including Minimum Standards for ICUs (IC-1) and ICU based Rapid Response Systems (IC-26). The full list of resources is available from the CICM website. [5]

The Minimum Standards for ICU also outline staff, equipment and floor space requirements. [1] The standards for PICU are described in these documents as well.

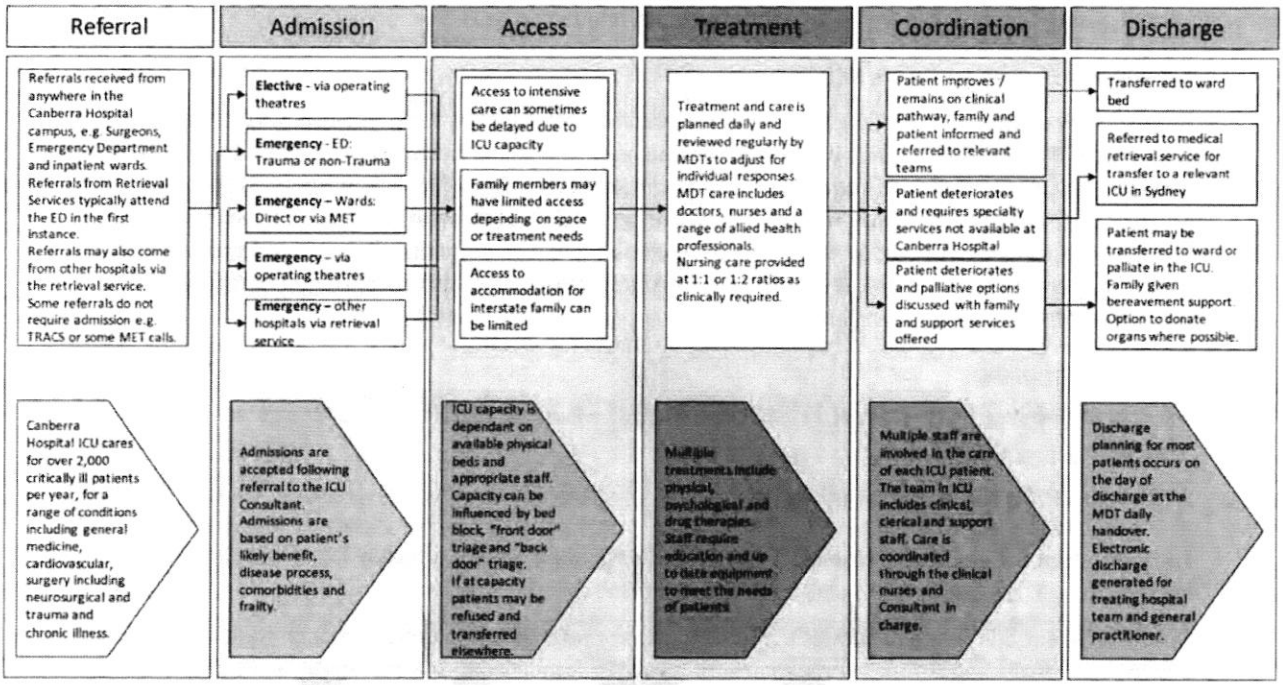
ACT Health CH specific policies and procedures relevant for the ICU include:

- Code Blue and Deteriorating patient procedure and policy documents
- Relevant Specialist referral pathways
- Tracheostomy Care Service (TRACS) referral procedure policy document.

4.3. Patient pathways

Referrals to the Intensive Care service for potential admission to the unit occur via numerous means as described in the following sections and presented below (both PICU and AICU).

Figure 1: ICU patient pathway



4.3.1. Referrals

Referrals are received from any area in the CH. Most emergency admissions to the ICU are referred via the ICU Outreach team from the ED, Retrieval Service or inpatient wards.

- ED
  - Trauma: the ICU Outreach doctor is on the trauma code team as per the Trauma Team Activation guideline. On activation of the trauma code page, the ICU Outreach doctor attends the ED, with the final disposition of the patient under the direction of the Trauma code team leader. A large proportion of these patients will be admitted to ICU via the angiography suite or theatre suite.
  - Non Trauma: any ED patients who are identified by an Emergency physician to potentially require ICU admission are referred to the ICU via the ICU Outreach doctor via the ICU Outreach pager or registrar phone.
- Retrieval service (Canberra Region Retrieval Service in the ACT or Medical Retrieval Unit in NSW):
  - Trauma being transported to CH via the retrieval service will always be transferred to the ED and referred to ICU via the Trauma team activation process. Retrieval doctors may contact the ICU Outreach doctor (usually consultant phone) to alert them to the transfer to ED if the patient is likely to be admitted eventually to ICU – in order to determine capacity and therefore best transfer destination.

  - Non trauma referrals to ICU from retrieval services will occur to the ICU Outreach consultant phone. As per the inter-hospital transfer/referral procedure policy document, the default is transfer from an ICU to an ICU or transfer from an ED to an ED.
- Wards at CH:
  - Via MET activation according to the Code Blue and deteriorating patient procedure policy documents.
  - Direct referral from inpatient teams to the ICU team occurs via the ICU Outreach registrar phone or pager, only after the admitting specialist has been contacted via the Specialist referral pathway outlined in the relevant procedure policy document.
- Theatres at CH:
  - The anaesthetic or surgical team contact the ICU Outreach consultant or registrar phone to refer an operative patient for emergency admission to ICU. The majority of these emergency admissions from theatre do not transition through the PACU prior to ICU admission and usually require 1:1 nursing care in ICU even if not ventilated. This is negotiated on a case-by-case basis with the relevant clinical teams.

Non-CH referrals

Direct referrals are not usually accepted from clinical areas outside of the CH without involvement of the retrieval service.

Within the Territory, a patient who is considered to require ICU services requires review by the local ICU specialist *before* referral to retrieval or ICU at Canberra Hospital. For example, if a patient located in the Calvary Public Hospital Bruce (CPHB) ED requires ICU admission, the ICU specialist or their delegate located at CPHB would review the patient first, determine their suitability for ICU and decide on the best location for the provision of this service, and make the referral to CH and/or Retrieval services as required.

External calls for referral to CH ICU should be directed to the ICU Outreach consultant phone.

Non-admitted referrals

There are some services for which referral is made to ICU services for patients who do not ultimately require admission to the ICU, as follows:

- TRACS: patients are referred to this service as outlined in the TRACS referral procedure policy document. ICU provides staff to perform at least twice weekly rounds on all patients in the CH who have been referred to this service.
- MET activations who do not require admission at that time to ICU are occasionally placed on an Outreach referrals list and are followed up by a member of the ICU outreach team at time intervals determined by the ICU consultant responsible for the service at this time.
- In the planned new MoC, there may be a role for an outpatient clinic for ICU survivors and/or their families (including bereavement care), and follow up of discharges from the ICU.
- It is anticipated that under the new MoC that there will be a separate Paediatric Outreach team which will fulfil the functions of the ICU Outreach team for patients aged 28 days to 16 years, while the Adult Outreach team will receive referrals for patients greater than 16 years of age.

4.3.2. Admissions and access

The decision on whether a patient is admitted to the ICU at CH ultimately lies with the rostered ICU specialist. This is underpinned by ACT Health's philosophy of treating the right person at the right place at the right time. However, admission is limited by the capacity of the ICU service which has restricted surge resourcing.

The decision on whether to admit to ICU is based on whether the patient is likely to benefit from invasive monitoring and/or organ supports, depending on the disease process and its likely reversibility, underlying comorbidities and frailty of the patient being referred for consideration of admission. All of these factors determine whether the patient will survive the ICU admission with a reasonable quality of life. In some cases, the burden and suffering the patient is likely to experience as a result of the organ support provided in the ICU may outweigh the expected benefit of the care, in which case the admission would be considered futile and may be refused. In some circumstances patients will be admitted to the ICU to facilitate expert palliative care and/or expected referral for the purpose of facilitating donation of organs.

Access

Movement of patients into and out of the ICU should have a separate route available from public entry/exit. Rapid and urgent access to the perioperative unit and ED is required.

Elective admissions

Some patients undergoing complex elective surgery, or who have significant comorbidities undergoing less complex surgery, may require ventilation in the immediate post-operative period, or a higher ratio of nursing care during the immediate and intermediate post-operative period. These patients may require management decisions provided by a doctor who is immediately available and physically on site in the hospital. These patients are usually admitted to the ICU from Monday to Friday only. However, weekend bookings may be accepted by exception if there are sufficient resources to accommodate them. The capacity for elective surgical bookings is determined each year under budgetary discretion from the organisation, which takes into account previous year's activity. The patients accepted for admission are indicated on the surgical lists each morning as having a post-operative destination as being ICU. Whether the patient requires a 1:1 or 1:2 ratio of nursing care is at the discretion of the ICU care team. The referral process may occur via one of the following methods:

- A bed is requested by the surgical team through completion of "request for admission" (RFA) form, processed through surgical bookings team. If on the "automatic acceptance" list which is reviewed annually by the surgical, anaesthetic and ICU senior clinicians, this patient is booked into ICU for the respective day. If not on the automatic admissions list, then the patient is presented to the ICU consultant group for consideration of admission.
- A bed is requested by the Anaesthetic team, and either indicated on the anaesthetic record completed in the pre-admission clinic, which is processed through the surgical bookings team as above, or through direct referral to the ICU Outreach consultant or their delegate. If accepted for admission, the patient is placed on the elective admission list to ICU for that day.
- A bed is requested for an existing inpatient by the Anaesthetic or Surgical teams, for a patient who is undergoing a planned procedure on an elective list on a future date, by contacting the ICU Outreach consultant. If there is capacity in the unit on that day, and the patient is suitable for admission, then the patient is booked in for an elective bed by the Clinical Nurse Consultant (CNC) and confirmed with surgical bookings and theatre flow coordinator.

The majority of elective surgical admission who do not require post-operative ventilation transition through the Post Anaesthetic Recovery Unit (PACU) and achieve discharge criteria from that area before admission to ICU.

4.3.3. Treatment and coordination

The ICU provides MDT care under the direction of the ICU specialist to critically unwell patients or those who require an intensive level of monitoring and treatment. Clinical management includes, but is not restricted to, MDT ward rounds conducted at least twice daily, continuous monitoring and treatment provision, family meetings and regular multidisciplinary and multispecialty meetings. Patients are continuously monitored and ongoing reviews and treatment is planned out as required.

The Intensive Care model incorporates intensive care patients and high dependency patients ensuring safe de-escalation of care for high dependency patients. Although the patient will not physically move from the ICU, high dependency patients have reduced nursing requirements. As per the CICM guidelines, nurse to patient ratio are determined by patient acuity. Patient requiring intensive care are nursed 1:1 or greater as necessary. High dependency patients are nursed at a ratio of 1:2 or as required. [1]

Due to the seriousness of ICU patient conditions, family and visitors are critical to the provision of care and advocacy of patient wishes. Family members play an important role in the psychological wellbeing of patients and there are no restrictions to visiting times, though physical restriction of space and dignity of patients during certain care activity, may require modification of visitor numbers and timings.

The type of specialised equipment required in the ICU depends on the organ failures to be supported and is constantly evolving. At the current time this includes but is not restricted to:

- information technology equipment to support a fully electronic ICU including sufficient data and power outlets for all equipment
- ventilators, both transport and static
- monitors for heart rate and rhythm, blood pressure, oxygen, carbon dioxide, respiratory rates, intracranial pressure and cerebral electrical activity
- cardiac output monitors including more invasive (pulmonary artery catheter), less invasive (transpulmonary dilution) and non-invasive means
- dialysis machines which include capacity for plasmapheresis
- X-ray machines
- ultrasound machines including transoesophageal and transthoracic echo capabilities
- Intra-aortic balloon pump, and in the future ECMO and carbon dioxide removal
- transvenous pacing and external pacing modules
- simulators including high fidelity mannequins, airway and bronchoscopy mannequins, intravenous access mannequins
- medication management systems for storage and dispensing including appropriately locked cupboards for certain drugs as per organisational policy
- computers on wheels for each patient pod in addition to the computers at each bed space
- large viewing screens for radiology and viewing screens to facilitate patient flow and identification
- blood gas and other point of care testing equipment (e.g. thromboelastography)).

The design of the ICU needs to include adequate space for the storage of specialised equipment, both disposable and reusable components, as well as charging points as required.

The patients' length of stay in the ICU varies depending on the reason for admission and the patients' comorbidities. Length of stay could be a short as 12 – 24 hours post-surgery, or 18 months or more for some conditions..

The physical space for treatment in the ICU needs to accommodate for the varied needs of patients and families, while maintaining open plan design to accommodate required visual observation by clinical staff.

The accommodation should be configured to facilitate efficient and effective patient care. Each pod should have its own clinical service and can function independently. Bed space layout needs to be sufficient to accommodate the varying equipment required as well as clinical staff that will include doctors, nurses and allied health and families. Bed bays should be designed to enable nursing ratios for patients while maintaining direct line of sight (e.g. for 1:2 patients a single nurse needs to be able to visualise two patients simultaneously even when providing care to one patient while optimising privacy for patients and family members. This could be achieved through use of partitions or retractable walls.

The intention is for all patients to remain in the same room / space for the duration of their admission in ICU unless they develop additional conditions which would require a move e.g. acquisition of resistant/easily transmitted organism or chronic critical illness. However, most equipment is mobile in case patients are required to be moved to another bedspace or pod.

All patient rooms are capable of providing all intensive care needs for all patients including bariatric patients.

Consideration needs to be given to the acoustic design to minimise noise between bed bays; lighting to provide a calming environment and diurnal variation with natural light, access to outdoor areas (e.g. balconies) especially for long-term patients or terminally ill patients; and ability to control the ambient temperature to address the minimal movement and clothing of ICU patients.

Additional private meeting spaces for the purpose of family meetings need to be provided of sufficient size to accommodate large family groups, multiple care teams and patients if required. Within the waiting areas, which may be located inside and/or outside the ICU itself, consideration should be given to families with small children with appropriate spaces to support breastfeeding with privacy and safety for play and supervision of children as required.

Treatment of patients includes bedside teaching of more junior healthcare staff and students from all professions. This needs to be considered in the future planning of patient treatment spaces.

4.3.4. Discharge

Discharge planning in the ICU commence on admission and the patient retains a care speciality team (i.e. the admitting specialist who originally admitted the patient to the hospital) throughout the ICU admission. Discharge from the ICU occurs when intensive monitoring and treatment is no longer required, as determined by the ICU specialist on duty, in consultation the patients' primary care team.

Patients may be discharged to one of the following locations:

- a speciality inpatient ward at the CH or the Centenary Hospital for Women and Children (CHWC) – actual ward depends on what condition the patient has, and the patients' ongoing treatment and care needs. ICU coordinates inpatient beds with the patient flow unit (PFU) or the after-hours nurse manager for after-hours discharge if required (after hours discharge is minimised from ICU).
- inter-hospital transfer– requires discussion with and acceptance from the receiving ICU specialist and an admitting specialist from an inpatient team identified
- home (occasionally) or discharge lounge while awaiting paperwork/medications to facilitate discharge home
- hospice
- Mortuary.

4.3.5. ICU Outreach

MET response (Adult and Paediatric)

The MET aims to provide rapid assistance in response to emergency management of a patient as deemed necessary by any nurse or doctor. The aim of this service is to improve patient outcomes by identifying deterioration where possible prior to organ failure occurring and instituting the correct treatment as early as possible after deterioration is identified. This does not necessarily avoid the need for ICU admission. [5]

The MET service provided out of adult and paediatric ICU will be responsible for calls to deteriorating patients as identified in the relevant organisational policy and procedure documents at the time.

The outreach team reviews any patient referred to ICU services who are located on the CH campus. This includes direct referrals from any ward area, PACU/theatres and Emergency including Trauma code activations.

The outreach team is involved in TRACS currently under the governance of allied health.

In future the outreach team may also be involved in ICU survivor review and outcome clinic, and there may be some role in bereavement care which has not yet been determined.

4.4. Workflow and work processes

ICUs are staffed by large MDT's including the highly trained specialised doctors and nurses, as well as pharmacists, dieticians, physiotherapists, occupational and speech therapists, orthotists, radiographers and social workers.

ICU doctors and nurses respond to medical emergency response calls as outlined above.

ICU Nursing staff provide continuous nursing care to patients and their families; support the medical team in procedures and administration of medications; and alert medical staff if a patient deteriorates. Nurses work closely with medical and allied health staff to provide high quality evidenced based care and are an integral part of the twice daily formal rounding usually led by the medical staff. Nurses liaise closely with families to ensure they are well informed of the patient care plan including discharge planning and palliative planning as relevant.

Allied Health staff are responsible for ensuring a timely response to referrals, providing care and expert advice to the medical and nursing team and the patient or family in their field of expertise, and ensuring necessary follow up care has been organised. Allied health professionals are also an integral component of the regular daily ward rounds lead by the medical staff.

Formalised MDT ward rounds are conducted regularly and include the patient and family, and external specialist teams where possible.

4.4.1. Medical

Medical staff in the ICU are responsible for assessing patient suitability for admission in consultation with referring doctors, this done by the Intensivist or their delegate. Once admitted, doctors are responsible for stabilising the patient and creating care plans and coordinating and leading the care team. Doctors conduct at least twice daily ward rounds to review and alter patient care plans, but additional cares and decisions are being made constantly throughout the day and night.

Doctors work closely with nurses and allied health to provide best practice intensive care to patients, and ensure patients and families are well informed of the care plan. Doctors are responsible for assessing patient suitability for discharge from the ICU and ensuring necessary follow up has been organised including handover to accepting teams. The care of patients includes intra-hospital transfers for the purpose of care delivery (e.g. cardiac catheterisation, angiography, endoscopy) and

investigation (e.g. radiology, cardiac intervention suite), usually provided by a combination of nursing, medical and support staff.

ICU is an Intensivist-led MDT service. It is expected that all registered medical specialists in the ICU are Fellows of CICM. As the peak professional organisation for critical care, the CICM has significant interest in ensuring the highest standards of medical care for patients are maintained.

The ICU is accredited by the CICM as a training facility and provides training and education to a variety of medical, nursing and allied health staff. In CICM accredited facilities, ICU Intensivists oversee the training of junior medical staff comprising advanced trainees, basic trainees and registrars from other disciplines.

Intensivists supervise and support Provisional Fellows, Registrars and Residents that are undergoing specialised training in Intensive Care Medicine and carry out the day-to-day management of patients. A summary of the medical team hierarchy is provided below.

Intensivist

A consultant is a medical practitioner who has completed their specialist training, is registered with AHPRA as a specialist, and employed as a Staff Specialist (salaried) or Visiting Medical Officer (fee for service) by ACT Health.

Intensive Care consultant is a Fellow of the Australian and New Zealand College of Intensive Care Medicine and referred to as an Intensivist.

Provisional Fellow

A Provisional Fellow in Intensive Care has completed their final College of Intensive Care Medicine Fellowship Examination and who is usually in their final year of training ("transition year"). A Provisional Fellow is supported by a Consultant Intensivist who is rostered to this role.

Senior Registrar

A Senior Registrar in Intensive Care is enrolled in the College of Intensive Care Medicine for vocational training and is usually in the advanced training pathway, after successful completion of their primary examination.

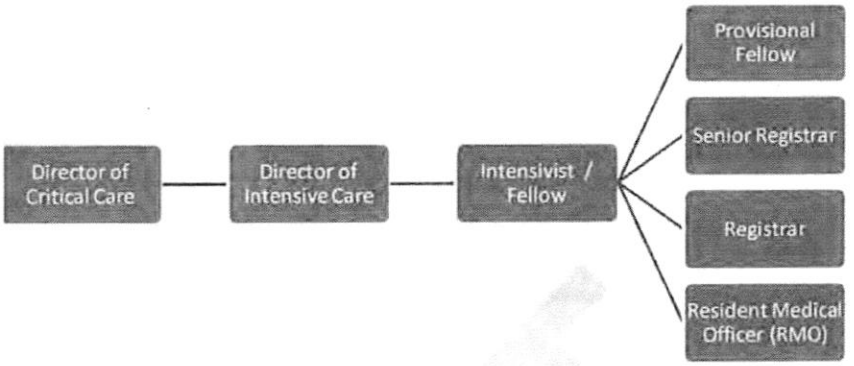
Registrar

A registrar is a medical practitioner who is at least four years post Bachelor of Medicine degree (classification PGY4 or higher). Registrars will usually have enrolled in vocational training in Intensive Care, Anaesthetics or Emergency Medicine, though this is not essential for the position. This is usually a pre-primary examination position.

Senior Resident Medical Officer (RMO)

Senior Resident Medical Officer (RMO) employed in Intensive Care are either employed as critical care residents, rotating through ED, ICU and Anaesthetics during the year, or are junior trainees of Basic Physicians or Basic Surgical programs. These medical officers require full support and supervision 24/7 in Intensive Care and are not expected to undertake any independent decision making while working in ICU.

Figure 2: Medical staff workflow



4.4.2. Nursing

The Australian College of Critical Care Nurses recommends there must be a designated critical care qualified senior nurse per shift who is supernumerary. The Australian College of Critical Care Nurses provides vital resources for ICU nursing and plays a key role in the transition of nurses into intensive care and post-graduate critical care nursing, ongoing upskilling and professional development. ICU nursing staff comprises of the following:

Assistant Director of Nursing (ADON) - (RN level 4.3) is responsible for Operational Governances, Clinical Governance, Workforce Management, and Business Management.

Nurse Manager (NM) - (RN level 3.2) is responsible for recruitment, rostering of nursing staff and contract management.

Clinical Nurse Consultant (CNC) - (RN level 3.2) is responsible for operational performance, staff performance and workplace safety.

Clinical Support Nurse (CSN) - (RN level 3.1) is responsible for workforce development, quality performance, research and education.

ICU Clinical Care Coordinators (CCC) - (RN level 3.1) are responsible for patient flow in the unit.

Clinical Development Nurse (CDN) - (RN level 2) is responsible for orientation, workforce development and undergraduate and postgraduate coordination.

Bay Leaders - (RN level 2 and 1) are responsible for direct patient care and supporting consistent safe and effective nursing care, improve leadership and clinical support at the bedside in each clinical zone.

Access Nurses - (RN level 2 and 1) are responsible for practical support to each clinical zone, attend 2nd response MET calls and accommodate unplanned admissions when required.

Figure 3: Nursing staff workflow

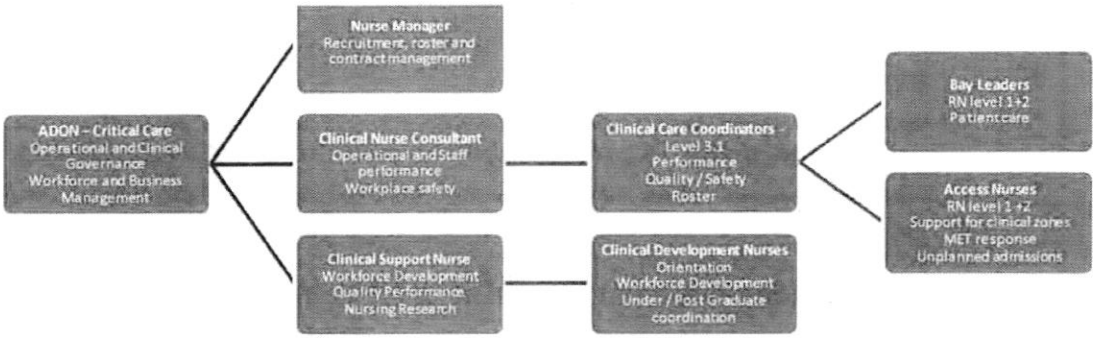


Table 1: Current Nursing FTE

Role	WEEKDAY	WEEKEND
Internal pod		
CNC (RN level 3.2)	2.1 Full Time Equivalent (FTE)	Morning shifts only
CCC (RN level 3.1)	1.0 FTE. Position vacant	N/A
CSN RN3.1	1.0 FTE	No coverage
CDN (RN level 2)	2.0 FTE	No coverage
RN Level 2	44.0 FTE	
RN Level 1	76.5 FTE	
RN Level 1 New Graduate	7.5 FTE	
MET - Nursing Outreach External POD		
CNC (RN3.1)a	1.0 FTE Morning shift only	No coverage
CDN (RN2)	1.0 FTE Morning shift	No coverage
RN2	9.08 FTE	

4.4.3. Allied Health

Allied Health services are provided to the ICU from the Department of Allied Health. Some Allied Health professions have a dedicated FTE allocation for ICU services, while others are provided on an on-call basis only.

Physiotherapy

- Physiotherapy is delivered 7 days a week during business hours and after hours. Direct physiotherapy staff are supported by a HP4 team leader, providing service coordination and clinical backfill.
- Physiotherapists assess patients' respiratory, cardiovascular, neurological and musculoskeletal systems to formulate treatment plans. They focus on the respiratory management of intubated patients and exercise rehabilitation of recovery patients.

Dietetics

- Dietetics provide a key role by assessing patient nutrition needs, guiding decisions about appropriate nutritional therapy, monitoring fluid and electrolyte status, adjusting the nutrition care plan to the specific disease status and changes in the patients' clinical condition

- Dietitian assessment is delivered five days a week during business hours with cover provided for urgent referrals on Saturday and on call phone support available on Sunday. Dietetics staff are supported by a Health Professional Level 4 (HP4)team leader, providing service coordination and clinical backfill to the larger dietetics team.

Occupational therapy

- Occupational therapists have a key role in the cognitive assessment and management of patients, activities of daily living, functional assessment and customised splint provision.
- Occupational Therapy (OT) services are delivered on an as needs basis 5 days a week during business hours only. There is no identified position for ICU and no allocated FTE to ICU. Referrals for OT are prioritized and triaged according to urgency and balanced against the workload of the department and other areas of need in the hospital.

Pharmacist

- The ICU Pharmacists monitors the drugs that are prescribed for interactions and appropriateness to ensure the prescribing guidelines are adhered to. Reducing error and harm from medicines through safe and quality use is an important element of Intensive Care Medicine and assists in achieving patient safety and quality standards.
- Current recommendation for Pharmacy support of ICU is one pharmacist per 10 patients, with an additional HP4 to provide supervision and training. Operational support for imprest requires additional Pharmacy technician officers.

Podiatry

- Podiatry is currently provided as a referral service without dedicated resourcing attached to the provision of care for critically ill patients.

Social Work

- Social workers take a lead role in addressing the needs and concerns of the family members in the ICU as well as assessing the ongoing psychosocial needs of the critically ill patient.
- Social work currently provide an extended hours service to ICU from 0830 - 2100, seven days per week. Social workers work in collaboration with the ICU MDT colleagues to provide holistic psychosocial assessment and interventions including practical and emotional supports to patients/family members. Co-ordination, clinical oversight and backfill is provided by a HP4 team leader, with additional on-call supervision provided by a senior social worker HP4/5

Speech Pathology

- Speech Pathologists provide assessment and intervention for swallowing and communication for tracheotomy and extubated patients.
- Speech Pathology currently provides ICU support during business hours Monday-Friday only. Clinicians will see patients in ICU according to their clinical caseloads (general medicine, tracheostomy, and neurology/neurosurgery).

Psychology

- Clinical psychology does not currently provide a dedicated service for critically ill patients in ICU. Future service provision should examine a collaboration between psychology and social work services to achieve a shared service model similar to that currently existing within the Trauma service.

Aboriginal and Torres Strait Islander Liaison (ALO) Service

- The ALO Service currently delivers an on needs basis service five days a week during business hours. There is no identified FTE/position for ICU. The ALO Service works within a MDT model and provides cultural assessments and supports engagement of other MDT members, including practical support to patients and their families.

Allied Health Assistants

- This position does not currently exist. The development of a multidisciplinary critical care Allied Health Assistant position (e.g. physiotherapy/occupational therapy/speech) would support health professionals providing clinical service to the ICU.

Table 2 Current Allied Health requirements

Role	WEEKDAY	WEEKEND
Physiotherapy	HP4 Team Leader HP3 1:6 patients HP1/2 support	HP4 team leader HP 3 1:12 patients
Pharmacy	HP4 Team Leader HP3 1:12 patients (5 for 60 beds) HP2 1:15 patients (3 for 60 beds) (total 0.1FTE/bed) TO2 2.0FTE (supply and imprest)	HP3 (2)
Social work	HP4 Team Leader HP3 1:6 patients	HP4/5 Team Leader or On call HP3 1:6 patients
Dietician	0.04FTE per patient	Nil
Speech pathology	0.04FTE per patient	Nil
Psychology	0.04FTE per patient	Nil

4.4.4. Clinical support persons

Wardspersons play an integral role in patient care and patient flow (discharges to ward/mortuary, transport to other areas of the hospital for clinical input into patient care).

Other support staff for the ICU include equipment officers and operational staff such as ward clerks and cleaners

4.4.5. Administrative and support staff

Administrative staff in the ICU have responsibility for reception, secretarial support for educational and other administrative activities. These are articulated in the CICM Policy Document IC-7. [7]

Duties of the administrative staff include

- individual secretarial support to specialists, trainees and other members of the department as required
- prepare, circulate and update departmental duty rosters, maintain departmental and medical records and general administration including minuting departmental meetings
- educational support including coordinating administrative aspects of continuing medical education, clinical review and quality assurance activities of all departmental staff
- duties to support research staff activities including data entry, maintenance of databases, literature searches, manuscript preparation and correspondence with hospital committees and outside agencies. [7]