the site office at the loading dock and will be responsible to dispense/collect portable medical gas cylinders and provide inventory management for the gases. The types of gases requiring storage at the loading dock include:

- medical air
- medical oxygen
- nitrogen
- nitrous oxide
- carbon dioxide
- gas special mix
- medical dry air

3.2. Flammable Store

Flammable stores are required to store bulk flammable liquids that are needed for general hospital use including goods inwards and outwards. Operationally, there are several types of flammable and corrosive materials used across the campus. 85% of products are used by Pathology, 15% used by research, Business Support Services and some formaldehyde used in places like Perioperative Suites and Delivery Suite etc. Pathology uses 150 litres of flammable products per day.

The medical gas manager is located in the Loading Dock in the site office. The medical gas manager is responsible to dispense/collect portable medical gas cylinders and provide inventory management for the gases (new position from external contractor).

4. Scope of service

The dock is also used as a goods staging/holding area particularly for bulky goods and palletised deliveries that require uncrating/unpacking prior to onwards movement into the hospital or for crating/packing prior to outwards shipment. Inwards and outwards commercial courier shipments are also staged via the dock.

The dock is also used as a permanent holding area and for a range of bulk goods trolleys / bins that are constantly rotated throughout various services areas (e.g. 'Sulo' type waste bins, clinical waste bins, stores trolleys, linen trolleys, sterile instrument trolleys).

The dock area holds waste compactors, waste bins (both clean and dirty) for general, recycling of items and clinical waste. Waste is transported by a licensed contractor in accordance with legislative requirements. The loading dock will facilitate collection of full bins, and delivery of cleaned empty bins to the hospital.

The receiving and dispatch dock needs to accommodate the following services with an uninterrupted flow:

- supply stores - deliveries and returns will be conducted by ACTHD Supply Services warehouse and commercial couriers. The supply services delivery holding area is located adjacent to the dock
- sterilising services goods and services (incoming clean, outgoing soiled)
- waste management - major movement of waste streams will be conducted by waste contractors including the use of compactors and exchange bins
- clinical and sharps waste conducted by contractor
- mail (incoming and outgoing) will be undertaken by ACT Record Services Mail Centre
- linen will be managed by Capital Linen Services (incoming clean, outgoing soiled)

- pharmaceuticals will be delivered by various commercial couriers
- medical equipment and furniture deliveries will be delivered by private contractors
- medical gases / cylinders, various sizes & quantities will be managed by private contractor (incoming full, outgoing empty)

The table below describes the core activities that are undertaken at the dock during a weekly period.

Table 1: Core activity movements to the dock per week (M-F)

Core Activity (M-F)	2016	2021/22
supply	25	30
waste - general	10	10
Waste – paper /cardboard	2	3
waste - clinical	10	15
linen	15	18
sterile services	25	25
couriers	124	150
miscellaneous	96	120
waste - recycled	2	3

Consideration should be given to having a recycling station on the campus and compost for organic matter. The Waste Management Plan will inform the detail of distribution.

The loading dock is a holding area for several delivery trucks and vans that have a large amount of deliveries to occur across varying parts of the Canberra Hospital campus. The table below describes the types of services that leave their vehicle parked at the dock for more than one hour.

Table 2 - Long Stay Deliveries (1 hour or more) include:

Services requiring long stay deliveries	Reason for long stay (> 1 hr)
Canberra Hospital supply services	deliveries to National Capital Private Hospital
sterilising services	deliveries to the hospital wards
Coca-Cola delivery truck	restocking of vending machines throughout Canberra Hospital campus

dangerous goods waste	removal of used dangerous goods from flammable store
various courier services i.e. ACT Health's stationary provider	Orders without a PICS generated purchase order number need to be signed by requesting officer/departmental representative. The driver leaves vehicle parked at loading dock until his delivery is complete to multiple departments.
Furniture companies and removalists	Large bulk deliveries during project upgrades or major developments
Sterihealth	Clinical waste, sharps
GSK Transport	Bulk delivery of renal fluids to Haemodialysis B1 L8 (dialysis unit)
Cope sensitive Freight	Pickup/deliveries of photo-copiers
Secure paper contractor	Picks up all secure paper across CH

5. Model of care summary

The dock is a centralised point for the campus for all items moving in and out of the facility. All inwards and outwards goods and related services for the campus operate from a centralised model with all goods being received and dispatched across the dock area.

The loading dock operates using clean/dirty principles and zones.

Supply stores and linen services are managed offsite (at Mitchell) with large workrooms/stores adjacent to the loading dock for local storage and dispatch. From these store areas, staff distribute items to all areas of the hospital campus.

Waste streaming bays use an exchange bin model where clean, empty spare bins are stored in the nearest disposal room and exchanged for waste bins once they become full. From the disposal room, they are taken by cleaning staff to the dock where one of the following occurs:

- General waste - emptied into compactors
- Paper waste – emptied into compactors
- Held awaiting contractor pick up – clinical waste, sharps, organic, polystyrene, fluorescent tubes, dirty linen, metal waste, batteries, pallets and other recycling.

Some areas throughout the hospital do not have waste streaming or disposal rooms and thus storage area for exchange bins for these areas will continue to be on the loading dock.

Once bins are emptied at the dock, they are cleaned in the bin wash area.

Currently the compactor is a double version which takes up 7 x 10m area. One compactor takes general, the other paper/cardboard. A third is required to take plastic/cans.

The work flows within the dock should reduce the amount of manual handling of any waste products which minimises the exposure of staff to the high risk of injury / infection.

6. Workforce

6.1 Loading dock workforce

Projected staff profiles have been developed to inform this stage of planning and will be subject to adjustment both in numbers and classification as better clarity is gained around the proposed model of care/service delivery model. This staffing profile is required to develop the schedule of accommodation only. Staff profiles are subject to review by Workforce Policy and Planning.

Table 3: Loading dock workforce

Position Levels	FTE		Headcount		Comments
	2018	2028	2018	2028	
supply staff - dock					
medical gas personnel					
Total					

7. Policies impacting on the built environment

Occupational Health and Safety (OH&S) Act

Waste storage areas shall meet the minimum standards of the Industry Code of Practice for the Management of Clinical and Related Wastes, Australia and New Zealand June 2010, the Australian Council of Health Care Standards (ACHS) and Infection Control Guidelines.

- Clinical Waste ACT 1990
- Industry Code of Practice for the Management of Clinical & Related Waste June 2010
- AS 3816:1998

Flammable Store

- Dangerous Substances Act 2004
- Environmental Protection Act
- Emergency Management Act
- Legislation for your consideration:
- Dangerous Substances (General) Regulation 2004
- Work Health and Safety Act 2011
- Work Health and Safety Regulation 2011
- Dangerous Goods Code

- Emergency Management Act
- Environment Protection Act
- Australian Standards including (as a minimum) 1940 but there are up to about 30 Australian standards that are for Dangerous Substances including for gasses etc.
- *NOTE: should any of the above Acts be revised following this HPU briefing, ACT Health will be required to incorporate any new policy change.*

8. Operational description and associated design requirements

8.1. Operational description

8.1.1. Hours of operation

The hours of operation will be 07:00-15:30hrs Monday to Friday for deliveries and pickups by non-ACT Health partners. Several departments within ACT Health provide services outside of the above normal business hours. The dock will have the capability of operating on a 24/7 basis. Processing and treatment of waste may occur outside of business hours. Swipe card access will be provided to the stakeholders as required.

There is no waste removal on Sundays hence changeover bins will be needed to accommodate waste in disposal rooms or at the loading dock.

8.1.2. Access

The zoned approach to the dock will prevent unauthorised access to staff areas of the building.

After hour's access is restricted, however, will be available for other services i.e. linen, sterilising services etc.

After hour's entry/exit to the hospital through the loading dock via supply services delivery holding area should be avoided. A separate doorway that can be visually monitored from the loading dock operator's office should be utilised for after hour's deliveries.

Collapsible bollards at the entrance to the loading dock for added security and regulating traffic flow.

8.1.3. Infection control

The incorporation of effective infection controls within the facility is critical to reducing the potential for the transmission of infectious diseases and the transmission of infections in general.

Both service corridors and goods lifts are required to keep contact and exposure to staff, clients and visitors to a minimum to reduce the possibility of contamination.

8.1.4. Security

Security arrangements will be in line with ACT Health policies and procedures.

The loading dock requires:

- lockdown function from a remote site on campus (e.g. central security control monitoring room)

- closed-circuit television (CCTV). A limited number of CCTV monitors will be required given that not every entry point or exit can practically be monitored. Ideally the design of the dock should facilitate easy monitoring of the area.
- duress alarm (? fixed/mobile - yet to be determined)
- communication with the loading dock is required for receipt and disposal of radioactive and decayed materials
- a radioactivity detector at the dock is required for detection of inadvertent disposal of radioactive material
- restriction of access afterhours with roller shutters
- secure access for personnel to enter lifts and service corridors
- secure access for couriers is required transporting enhanced security items. This will need to be discussed with Pathology (biological security items) and Medical Physics & Radiation Engineering (radiation security items).

8.2. Design requirements

The loading dock will be described under the following zones:

- General overview
- loading dock and truck bays
- clean holding
- dirty holding
- compactors
- storage
- staff areas
- support areas.

8.2.1 General overview

The dock area needs to have the capacity/manoeuvrability for receiving and dispatch of large trucks, semi-trailers and compactor units. A traffic management plan must be conducted for this area. Circulation must allow easy movement of large vehicles whilst other vehicles are unloading. Space for up to five delivery trucks and two courier/delivery vans at any one time

a. Clear, defined separation of clean and dirty functions of the activity on the loading dock
b. fork in/fork off functionality for all bays
c. bunting flags are required to warn of hazards such as possible spills on the dock
d. adequate ventilation, odour control and extraction, exhausts required for the docks particularly the dirty dock
e. provision for continual air quality monitoring, noting the significant amount of putrescible material and truck fumes in the environment
f. greater than normal vermin presence in the dock area, needs to be consideration to vermin control, including birds
g. high level of good controlled lighting for dock precinct and entrances and to support night CCTV
h. trade waste run off
i. radioactivity detector at loading dock is required for detection of inadvertent disposal of radioactive material
j. a radiation area monitor should be at each entry and exit point from the dock or dock area so that linen, waste, delivered goods and movement of people can be monitored
k. holding of clean recycling and waste bins must be provided

l. a large heavy duty service lift/s is required preferably separate clean and dirty service lifts.

The loading dock will consist of 10 bays:

a. 4 x inward general bays (clean)
b. 3 x outward general bays (dirty)
c. 1 x inward food service bays (clean)
d. 1 x outward food service bays (clean)
e. 1 x outward food service bay (dirty)

8.2.2 Loading Dock and truck bays

Design requirements include:

a. the height of the ceiling in the dock will allow for the stacking of pallets and safe use of a forklift
b. dock needs to be graded to allow for stormwater management
c. weather protection for receiving and dispatching of goods
d. enough space for material handle operations
e. automated forklift and pallet access to the receiving and dispatch docks
f. scissor hoist - one set on each of clean and dirty dock sides
g. hoist - ground to dock high capacity scissor hoist to raise and lower goods, trolleys and bins between dock level and ground level
h. access ramp for use by smaller courier companies
i. self- levelling dock
j. corner guards and dock bumpers.

8.2.3 Clean Holding

a. the docks must have enough storage space to hold large pieces of equipment and large volume deliveries for extended periods without interfering with the daily linen, SS (Sterilising Services) or supply warehouse delivery schedules.
b. sufficient space is required to store trolleys and incoming goods before they are distributed to the hospital.
c. clean trolley overflow from supply to be stored in clean side including empty supply trolleys.
d. 6m2 secure caged area for unclaimed deliveries and return stock
e. room/area for the charging of large equipment, e.g. forklifts, pallet trucks, Automated Guided Vehicles (AGVs).

8.2.3.1 Holding – Received Goods General

a. secure storage for unidentified deliveries
b. secure storage for oversized deliveries
c. direct deliveries ordered by individual units

8.2.3.2 Holding – Supply Services Holding

a. supply services holding area prior to moving to the adjacent Supply Services delivery/holding area
b. secure storage area for return stores
c. secure storage area for non medical consumable products

8.2.3.3 Holding – Pharmacy

Pharmacy requires secure storage on dock or direct lift/pulley/AGV access from dock to pharmacy.

8.2.3.4 Holding – Equipment Area

a. an area on the receiving dock to recharge large equipment e.g. forklifts etc.
b. forklift storage, trolley holding areas and charging bays for the electric pallet jack
c. equipment holding area (75m2) Short term equipment storage as to alleviate congestion on the dock
d. additional space should also be made available in the receiving area of the dock to hold large bulky items (hospital beds, equipment, furniture etc)
e. space for AGVs

8.2.4 Dirty Holding

a. secure, refrigerated and locked area for holding of food waste, clinical and related waste. Requires two egresses
b. secure storage space for empty trolleys, pallets and tubs

8.2.4.1 Holding – Clinical Waste / Sharps - Dirty

a. secure, cooled
b. separated from other wastes
c. sharps containers and C64 bins are stored in 5 cupboards on wheels (2m highx1mx1m). Clinical waste is stored in bulk 30 x 120L, 12 x 660L bins. Chemotherapy waste containers included in the above numbers.

8.2.4.2 Holding – Clinical Waste / Sharps – Clean

4 cupboards on wheels (2m highx1mx1m) for C64 clinical waste bins and bulk 30 x 120L, 12 x 660L bins. Chemotherapy waste containers included in the above numbers.

8.2.4.3 Holding – General Waste/Co-mingled/Paper Bin – Clean

Holds bins not accommodated by disposal rooms after being cleaned or awaiting return to disposal rooms. Waste bins that require holding after cleaning 20 x 660L, 15 x 240.

8.2.4.4 Holding – General Waste/Co-mingled/Paper Bin – Dirty

a. dirty empty bins for general wasted, paper, comingled, holding for bins waiting to be cleaned
b. general waste bins
c. paper waste bins
d. co-mingled waste bins
e. waste bins that require washing 20 x 660L, 15x240.

8.2.4.5 Holding – Organic Waste

a. secure, cooled
b. organic waste - for empty bins
c. holding space for full bins from food services, cafeteria, IPUs
d. refrigerated
e. 20 x 240L bins, empty and full awaiting pick up 10m2.

8.2.4.6 Holding – Recyclables – Various – Awaiting Pick-Up

a. polystyrene - 660L bins for packaging require 1m x 3m
b. fluorescent tubes & Light Bulbs - 660L bins, some lights don't fit in 660L bins too long require space 1m x 3m
c. recyclable peri-operative equipment - Dishes trays etc., stored in 240L bins 3m x 3m request 9m2

d. metal waste - Large items (beds, fridges) for scrap pick up 2 x 10m request 30m2
e. metal waste - Small to medium items, bin kept on site permanently1 x 6 cubic metre bin
f. batteries (non-acid) - 1 x 240L bin -1 x 1m
g. toner cartridges - Drop off point and collection by contractor 2 x 1m
h. empty pallets, stacked, 20, 1 x 2m.

8.2.4.7 Holding – Soiled Linen Trolley

a. 3m x 7m –trolleys that contain dirty linen bags
b. currently holds 19 trolleys. 57 trolleys a day removed, 3 times per day
c. linen chute.

8.2.4.8 Waste Audit Area

a. open space/area for sorting of waste and auditing used infrequently (utilise bin washing area)
b. table to be set up when this process is required
c. adjustable height (waste height) sorting bench

8.2.4.9 Weighing Area

weighing-in, floor, heavy duty weighing scales capable of handling pallet sized goods and weighing waste products – dirty side of dock

8.2.4.10 Bin Washing Area

a. dedicated for bin washing (located between dirty and clean bin area)
b. segregated drainage.

8.2.5. Compactors

8.2.5.1 Compactors - Waste

a. secure caged area – 3x bin lifters at 6m2 each
b. 3 single compactors – general waste, paper and co-mingled (plastics/cans) 4mx 10m each.

8.2.5.2 Compactors - Workspace

temporary waiting area/ bin holding that will accommodate full bins being emptied into compactor

8.2.6. Storage

8.2.6.1 Store - Medical Gas

The storage area requires:

a. secure
b. caged storage areas with separated compartments
c. to be external to the building in a secured compound

8.2.6.2 Store - Flammable

Stores for dangerous goods inwards contain products being stored prior to use. 4 Dangerous goods inwards are required for:

- toxic
- corrosive
- oxidizing agents and

- Class 3 flammable products.

Stores for dangerous goods outwards contain used products, wastes awaiting collection and disposal. Dangerous goods outwards are required for:
a. 1 store for Class 3 flammable products and
b. 1 store for toxic, corrosive and oxidizing agents.

Dangerous good (flammable) stores have unique design requirements including:
a. this store must be located within the clean dock area and have forklift access. It should not be located under an essential critical service i.e. Operating Theatres, Emergency Dept.
b. by legislation, stores must be located 15-17 metres from a public structure with clear truck access
c. Flame proof walls
d. Roof covering
e. bunding flags and spill kit
f. intrinsically safe lighting, electrical wiring and switches
g. ventilation requirements and one wall open to ventilation.

Table 4 – Dangerous Goods Store at Canberra Hospital

	DS Class Id	Current Qty Stored	Future Storage requirements
Flammable Liquids	3	1400 Litres	2000 Litres
Hazardous Non Dangerous Substances	99	20 Litres	50 Litres

8.2.7 Staff Areas

a. access to change amenities for uniform, PPE, and high visibility clothing (dock staff)
b. site office for goods receipting and dispatch with clear vision of dock activities and scales to accommodate 2 supply staff and 1 onsite medical gas employee

8.2.8 Support Areas

operating space for AGVs

9. Major Technology Requirements

The Receiving & Dispatch Loading Dock should incorporate a fully integrated ICT system. ICT services technology changes rapidly and the design process must acknowledge continuous development of policy and the impact it may have on implementation.

The dock currently has the following technology requirements:

- PA system for dock and related activities
- Radio-frequency identification (RFID)
- integration of bar code readers

- provision for automated guided vehicle (AGV) parking, charging and manoeuvring
- Radiation Detection
- fire exit doors should only be able to be opened from the inside and the area should be alarmed
- fire suppression system.

9.1. Equipment

Table 5 - Equipment Required for the Loading Dock at Canberra Hospital

Equipment	2016	2021
Gas Forklift	1	1
Electric Pallet Jack	1	1
Electric Trolley Tug (AGV)	TBC	TBC
Manual Pallet Jacks	2	2

10. Functional Relationships

Functional relationships describe the physical relationships required between different areas within the Facility. Certain relationships are required to determine the configuration of the facility.

Immediate (<1 minute)	Being the shortest direct, horizontal route. The route must be an Unimpeded Route. Door to door travel time between the two areas or services identified as having an "Immediate" functional relationship must not exceed one minute.
Direct (<2 minutes)	Being a direct horizontal or vertical route. The route must be an Unimpeded Route. Door to door travel time between the two areas or services identified as having a "Direct" functional relationship must not exceed two minutes and there must be minimal corner turns between the two areas or services.
Ready (<5 minutes)	Being a horizontal or vertical route. Door to door travel time between the two areas or services identified as having a "Ready" functional relationship must not exceed five minutes.
Easy (<10 minutes)	Being a horizontal or vertical route. Door to door travel time between the two areas or services identified as having an "Easy" functional

10.1. Internal

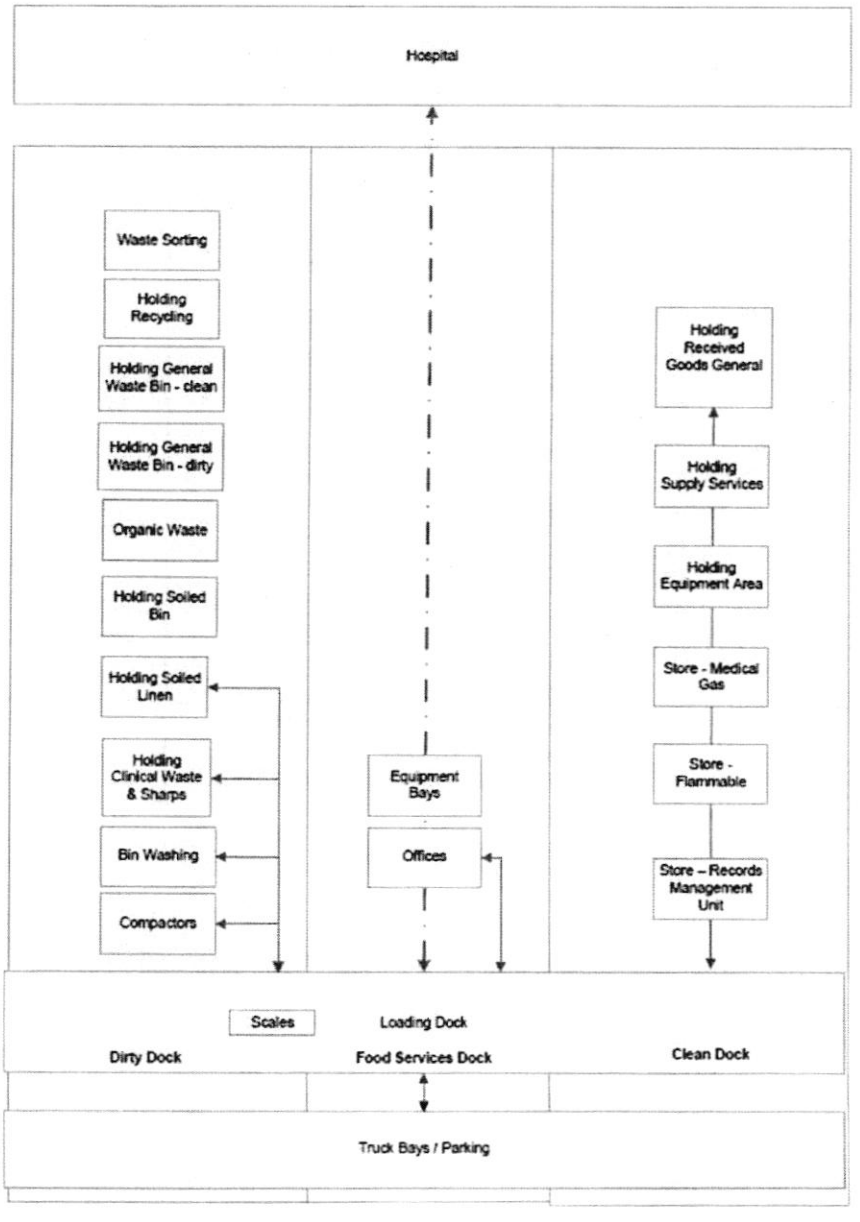
- immediate access between store managers office (centrally located) and loading dock

- immediate access between loading dock and truck bays, car parking and courier parking
- immediate access between loading dock and flammable store
- immediate access to Decontamination shower and Emergency Eye Wash bay, spill containment and spill kit holding area
- direct access between bin wash area and waste sorting area
- direct access between loading dock and service lifts and corridors
- direct access between loading dock and medical gas store.

10.2. External

- direct access to the Supply store
- direct access to Linen Room
- ready access to pharmacy
- ready access to staff amenities
- easy access to the radiation store located in B19 Level 1- CRCC

Figure 1 - Functional Relationship Diagram



11. Future service developments and innovation

- introduction of tracking and bar-coding
- introduction of weighing of waste volumes and movements
- E-Procurement will change the way supply orders are processed
- electronic requisitioning will streamline and tighten the requisition approval and order processing
- WI-FI systems linked to the warehouse to facilitate E-PICKING using hand held devices instead of the current paper based systems
- flammable storage - Other considerations to keep in mind include whether the product quantities of the future require a minimum storage facility or greater. The distances from public places etc. depend on what is being stored and how much etc.
- if the new legislation requires CH to dispose of dangerous substance containers through a chemical pickup scenario, this would create the need for greater storage space.

12. Schedule of Accommodation

AusHFG Code	Deviation from HPU Y/N	Room / Space	Quantity	Room Area	Total Area m2	AHFG's Standard Component Size m2	Deviation from Standard Component m2
TRUCK BAYS							
		Loading Dock - clean	1	50	50		
		Loading Dock -dirty	1	50	50		
		Subtotal			***100***		
		Discounted Circulation		20%	20		
		Total			**120**		
HOLDING - CLEAN							
		Holding – received goods general	1	100	100		
		Holding – supply services	1	80	80		
		Holding – Pharmacy	1	20	20		
		Holding - equipment	1	75	75		
		Loading Dock -dirty	1	50	50		
		Subtotal			***325***		
		Discounted Circulation		20%	65		
		Total			**390**		
HOLDING – (DIRTY AND CLEAN WASTE)							
		Holding – clinical waste, sharps - clean	1	40	40		
		Holding – clinical waste, sharps - dirty	1	40	40		
		General, comingled, paper waste bin holding - clean	1	25	25		
		General, comingled, paper waste bin holding - dirty	1	25	25		
		Holding – organic waste (clean and dirty)	1	10	10		
		Soiled Linen Trolley Holding	1	54	54		
		Waste sorting/audit area	1	10	10		
		Weighing bay	1	3	3		
		Bin washing area	1	45	45		
		Loading Dock -dirty	1	50	50		
		Subtotal			***302***		
		Discounted Circulation		20%	60		
		Total			**362**		
COMPACTORS							
		Compactor - waste	1	30	30		
		Compactor - lifters	1	18	18		
		Compactor - workspace	1	15	15		
		Loading Dock -dirty	1	50	50		
		Subtotal			***113***		
		Discounted Circulation		20%	23		
		Total			**136**		
STORAGE AREAS							
		Store- medical gas	2	15	30		

		Store - flammable	4	20	80		
		Soiled bin holding	1	40	40		
		Linen receiving/holding area	1	20	20		
		Medical gases holding area	0	0	0		
		Dangerous goods store	0	0	0		
		Radiation store	1	20	20		
		Loading Dock -dirty	1	50	50		
		Subtotal			***240***		
		Discounted Circulation		20%	48		
		Total			**288**		
STAFF AREAS							
		Office - 2 person	1	12	12		
		Office – 4 person	1	20	20		
		Loading Dock -dirty	1	50	50		
		Subtotal			***82***		
		Discounted Circulation		35%	29		
		Total			**111**		
SUPPORT AREAS							
		Bay – equipment charging	1	30	30		
		Bay – forklift, pallet jack, scissor lift	1	12	12		
		Bay AGV	5	2	10		
		Cleaners room	1	5	5		
		Hand wash bays	2	1	2		
		Decontamination Shower	1	1	1		
		Emergency eye wash bay	1	1	1		
		Loading Dock -dirty	1	50	50		
		Subtotal			***111***		
		Discounted Circulation		20%	22		
		Total			**133**		

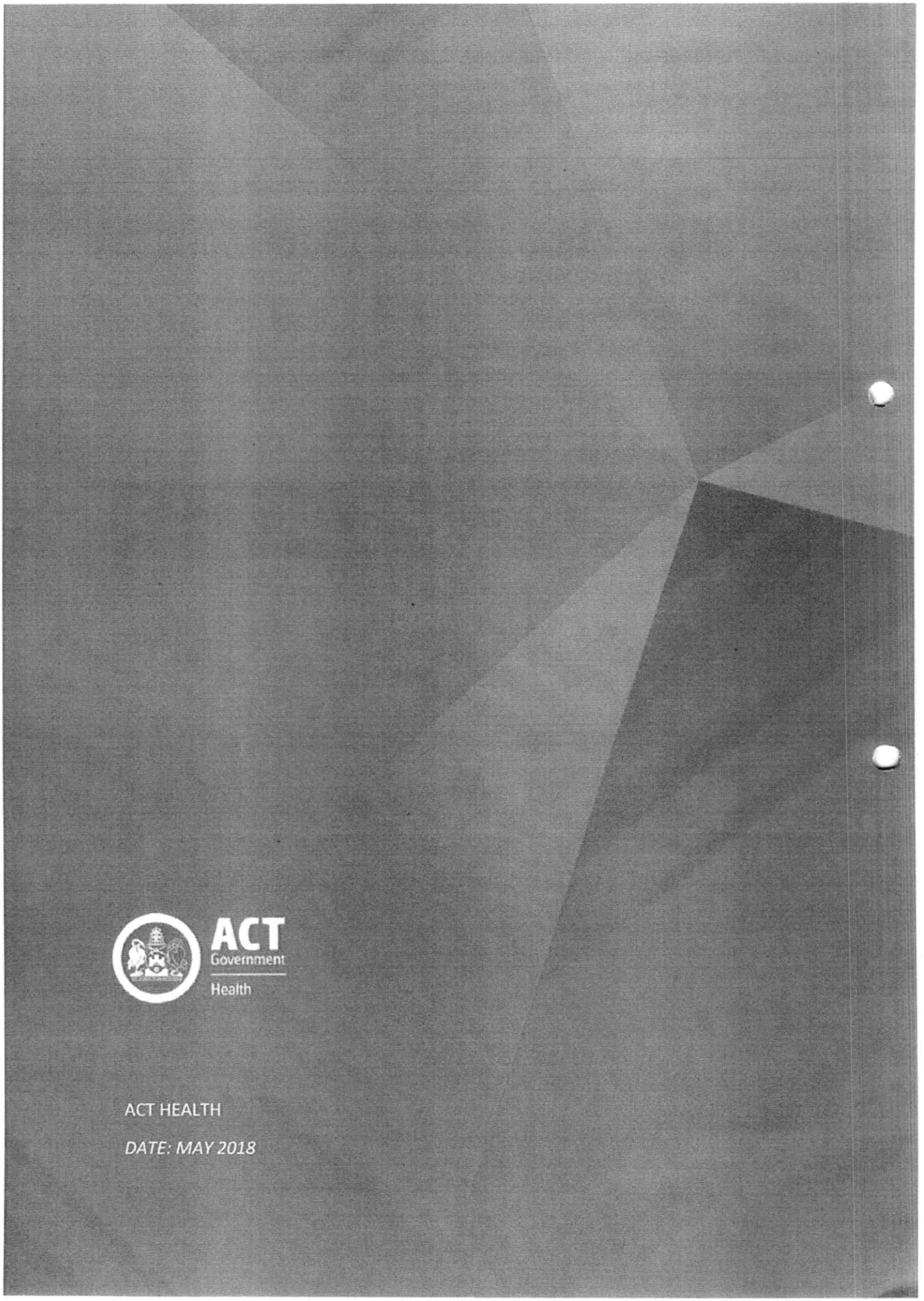
			Total Area m2	Deviation from Standard Component m2
Total Room Area			1273	N/A
Total Discounted Circulation	**Ave**	**21%**	267	N/A
Total Department / Unit Area			**1540**	**N/A**

13. Abbreviations

Abbreviation	Description
AGV	Automated Guided Vehicle
MoC	Model of Care
PICS	Purchasing Inventory Control System
SS	Sterilising Services

HPU brief development participants

Participants in the development of the HPU brief	
Position	Name



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MODEL OF CARE

EMERGENCY DEPARTMENT CHHS

ACT HEALTH

DATE: OCTOBER 2018

Approvals

Name	Position	Signature	Date
Narelle Boyd	Executive Director, Critical Care Division		
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	For Information - Executive Sponsor, Chief of Clinical Operations, ACT Health		

Outstanding issues

Subject	Issue
Nil	

Document Version History

Version	Issue Date	Issued By	Issued To	Reason for Issue
Draft v0.1	16/03/2018	GH	AS/CB	Review, revision prior to further internal and external ED consultation
Draft v0.2	20/03/2018	AS	GH	Health Planning Input
Draft v0.3	21/032018	AS/GH	ED and external input	Review and feedback
Draft v0.4	09/04/2018	AS/GH	Critical Care Exec Director	Incorporated feedback. For review and approval for Critical Care Exec Director
Draft v0.5	01/05/2018	HSPU	UG	Further comment, modified to standard template
Draft v0.6	3/5/2018	UG	HSPU	Integration of Executive Director feedback
Draft v0.7	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 role of the Emergency Department (ED) at the CH is to provide timely, accessible and appropriate health services to people with acute illness or injury. The ED will receive, triage, stabilise and provide acute health care to patients. This includes patients requiring resuscitation and those with emergent, urgent, semi-urgent and less-urgent conditions. The ED also requires the capacity to deal with mass casualty and disaster situations.

The Department is integral to the role of the CH as a Major Trauma Centre and Tertiary Health Facility for the ACT and the surrounding NSW region. The CH ED is a Role Delineation[1] Level 6 Tertiary Service and Trauma Centre, with a Territory-wide and regional role.

The Australasian College for Emergency Medicine has additional guidelines which designates Emergency Departments according to level 1-4. Under this classification, the CH ED has been designated as a level 4 Emergency Department (formerly classified as "major referral ED").

The ED is attended by both adult and paediatric patients who present with a wide range of conditions of varying urgency and complexity. Presentation occurs via 'walk in', private vehicle, ambulance, police, helicopter and correctional services.

There are particular patient types seen in the Emergency Department that may have specific psychosocial and treatment needs. These include: major trauma patients, elderly patients, children and adolescents, patients with physical and intellectual disabilities, victims of child abuse, domestic violence, or sexual assault, patients with mental health illness or mental health

[1] NSW Guide to the Role Delineation of Clinical Services 2016 (Second Edition, May 2017)

disorders, patients with infectious diseases or who are immunocompromised, custodial patients, patients affected by chemical, biological or radiological contaminants.

A child requiring a multi organ Paediatric Intensive Care Unit admission and individuals with a major burn, or spinal injury may bypass the CH and be transported to an appropriate facility for definitive care. However, these patients are more likely to present and require initial management prior to transfer.

2.1 Change to model

A significant key change in the MoC relates to the initial 'front of house' waiting area. This area will be minimalistic, with the aim of transferring patients rapidly to a sub-wait area within each stream.

In general, patients will not be expected to wait in the 'front of house' waiting area. For the majority of time, this waiting area will be utilised by families and carers. Patients will be rapidly assessed at the co-located triage and clerical area; patients will then be directed onwards to the relevant clinical stream. Within that stream, the patient will be immediately placed in an assessment space if available. If there is no available assessment space, the patient will be placed in the "sub-waiting" area which is an integral part of each stream.

With the exception of the resuscitation stream, the sub-waiting rooms will be attached to, or located within each stream. Patients requiring transfer to the resuscitation stream will move directly from triage into the clinical space. Each waiting area is to be designed as an integral part of the stream. Each sub-wait area is to be designed with the capacity to observe patients with ease and to provide timely physical interaction within the stream as a whole.

The south-side Canberra hospital ED located at Woden will be integrated with the north-side Canberra hospital ED. Both ED services will create a Territory-wide Emergency Service, referred to as the Canberra ED – north campus and south campus. Staffing, patient flow and governance links will enhance patient-centred care and service delivery. In accordance with the patients' clinical treatment requirement, an enhancement to the patients' journey may include ambulance and ambulant arrivals being directed to the appropriate ED. The Australasian College for Emergency Medicine recommends an integrated Network approach.

Nurses, allied health staff and doctors will utilise a hand held tablet device to enter relevant patient information, order tests, review results, send outpatient referrals, and provide discharge emails to the patient and the patients General Practitioner. The aim is to enter real time information into the patients' medical record system so that all staff involved in the patients' treatment and care will have timely access to relevant information. The handheld devices should also have the capability to be utilised as a communication system between ED staff and staff outside of the ED environment.

An integrated medical imaging (CT, x-ray, ultrasound) service will be physically located within the ED to assist with timely access to imaging diagnostics. This will enhance clinical decision making for the care of high and low acuity patients and decrease the patients' length of stay in the ED.

Provision will be made for a clinic space/registrar review space as part of, or adjacent to, the ED complex. Geographical separation of this space would assist in facilitating the coordination of patient care, thereby enhancing patient flow and workflow throughout the department. Patients appropriate for triage in this area include low acuity patients referred from specialist teams for admission either within the hospital or transferred from other hospitals. Review time frames, ongoing medical treatment and specific patient care issues would be determined by the inpatient

teams, and will be the responsibility of those teams. These patients would therefore not be in the ED or impeding access to beds for the undifferentiated cohort of ED patients.

A second cohort of patient considered to be appropriate for the clinic space/registrar review space includes patients that have been reviewed in the ED and assessed by a senior ED doctor as appropriate for discharge. This cohort of patient would then be discharged from the ED to the clinic space/registrar review area in order to be reviewed by the treating teams' registrar. A simple notification would be provided to the relevant treating team to advise that the patient has been referred. This area would operate in accordance with the function of the registrar review clinic/ specialty registrar review of the patient before discharge. This model will enhance the efficiencies for those teams as their patients would be co-located in the same area.

3. Care/service setting

The Tertiary wide ED services will be provided at the CH site located in Woden, and will be integrated with the ED services provided at the North Canberra hospital site.

Service delivery within the ED is based on a multidisciplinary team model, led by senior medical officers and senior nursing staff. Patients will be treated within different streams within the ED according to their acuity and clinical needs.

Patients may be seen within different areas or streams within the ED according to their acuity, triage category and clinical requirements. These include:

- Resuscitation
- Adult Acute
- Adult Emergency Medicine Unit (EMU)
- Paediatric Acute
- Paediatric EMU
- Fast Track
- Clinical Forensic Medicine Unit (CFMS)
- Mental Health in the ED, including Behavioural Assessment Rooms

In addition, the Mental Health Short Stay Unit (MHSSU) is located adjacent to the ED, however this unit sits under the governance of Mental Health Justice Health Alcohol and Drug Services (MHJHADS).

3.1 Environmental considerations

The aim of health care is not only to treat illness and injury, but also to create an environment conducive to healing, safety and free of psychosocial elements; this environment can be enhanced through creative design. [2] To this end, the environment and design is to support the MoC.

Noise has been linked with poorer health outcomes and an increase in stress levels for both patients and staff. Noise leads to communication difficulties, and may impede on an individual's privacy. Therefore strategies for minimising noise levels within the ED should be included. This includes, but is not limited to:

- single rooms (three walled bays with curtains)

[3] ACEM Emergency Department Guidelines V3.0 Oct-14

- sound absorbing ceiling tiles
- ceiling battens
- soft floor covering where appropriate.

Lighting levels and exposure to lighting is linked to the wellbeing of patients. It is important to access natural lighting and have the ability to control local artificial light levels. As such, all lighting in clinical treatment areas should be manually controlled in order to enable dimming or brightening as appropriate.

Specific requirements related to care of the elder patient with dementia should be taken into account. When designing an environment for this patient cohort, consideration should be given to bed location, natural lighting, and calming colour schemes. It is also important to consider the availability and access to support staff such as volunteers and dementia friendly activities.

Treatment spaces are to be adaptable and appropriate for treatment needs, for example, if appropriate and comfortable, treatment may be provided to a patient whilst they are positioned in a chair. The elder person's multidisciplinary team (MDT) pro-actively manage the elder person in a patient centric and holistic manner. This care delivery model would also include access to a geriatrician on an on-call basis.

In most circumstances, families and carers are integral to the wellbeing of a patient-centric model within the ED. Where clinically appropriate, the patients family and/or carer will accompany the patient into the allocated treatment space. The ED treatment spaces are to be designed with space allocated to enable families and / or carers to be with the patient. Quiet rooms will be allocated within the ED to support the patients' family and/or carers during times when the patient requires intensive treatment. There will be appropriate rooms designed for sensitive and difficult conversations including the requirement to allow families and carers to grieve.

Patients presenting to the ED may have psychological needs in addition to their physical treatment needs. Examples of patients requiring psychological support may include; domestic or family violence, sexual assault, palliation and miscarriage. With consideration to privacy and the requirement for clinical observation, vulnerable patients presenting with psychological care need should be allocated to an appropriate space within the ED, this space will flexible and multi-purpose.

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

4. Care provision continuum & workforce

4.1 Philosophy and principles of care

Emergency Department Mission Statement:

To provide compassionate, high quality patient-centred care, in a timely and equitable manner. To support a culture committed to academic excellence in teaching and research, and to be leaders in the specialty of emergency medicine and emergency nursing. A workforce culture committed to supporting an environment that fosters personal and professional pride, satisfaction and growth. A commitment to the delivery of a patient-centred approach which aims

to ensure patients, carers and families are well informed and provided with the opportunity to be involved in patient-centred care. Along with maintaining the best practice aspects of the current model, the MoC for the future will include the key changes outlined below.

The focus of ED patient care is to provide streamlined patient assessment and subsequent timely access to the most appropriate area for patient treatment.

Key features of the MoC include:

- co-location of the triage nurse and the registration clerk in order to streamline communication
- upon patient arrival and following triage, patients will be accompanied to the appropriate stream. Each stream will incorporate a waiting room. This will facilitate rapid movement of patients away from the 'front of house' waiting areas and into an appropriate clinical area, this will enable clinical staff to assess, treat and observe the patient.
- territory wide community hospital diversion and avoidance strategies. These strategies are to be integrated with the northern and southern Canberra ED network
- waiting areas within streams may be utilised for patients awaiting results and waiting for access to a treatment space within the stream.
- multidisciplinary teams, including allied health professionals will be accessible and provide a service within all clinical treatment areas
- early identification utilising priority indicators for patients requiring allied health assessments
- movement of patients between streams in response to clinical need;
- early involvement of a discharge liaison nurse with key populations
- increased use of care plans and pathways e.g. elderly or chronic illness
- volunteers engaged in service provision
- medical, nursing and allied health students within teams providing opportunities to learn within a supportive structure
- focused assessment by teams allowing for early referral to an inpatient team, commencement on a pathway or admission/ transfer to a defined clinical area external to the ED. Pathways allow for a more efficient way of managing common presentations
- right skill mix in the right place at the right time
- balance between maintaining privacy and facilitating line of patient sight
- timely access to turnaround diagnostics
- flexibility in design to enable changes of function and facilitate potential changes in MoC.
- appropriate and timely access to information technology, digital solutions, devices and resources to assist with communications, diagnostics, monitoring and treatment delivery.

The ED must accommodate rapid flows between functional areas and be designed to avoid congestion. In addition to dedicated patient bay/bed areas, provision is required to accommodate patient surges for extraordinary events through temporary utilisation of appropriate spaces.

4.2 Business rules

Australian and international design guidelines for ED include but are not limited to:

- The Australasian College for Emergency Medicine (ACEM) – Emergency Department Design Guidelines (version 3, last updated October 2014) [1]
- NSW Health – Emergency Departments Model of Care, July 2012 [2]

- International Federation for Emergency Medicine – 2012 International Standards of Care for Children in Emergency Departments [3]
- CHHS Operational Procedure - Emergency Department and Mental Health Interface, April 2017[4]
- College of Emergency Nursing Australasia (CENA) [5]

A comprehensive list of Policies, Guidelines and Standards are provided within this document under the heading of References.

4.3 Patient pathways

Patients may arrive at the ED via a number of avenues including:

- walk – such as self-referral, GP or other ACT Health service recommendations
- emergency services, such as Ambulance, Police or other retrieval source e.g. helicopter
- inter-hospital transfer.

Patients are assessed and triaged in accordance to their clinical urgency as described by the National Triage Scale (*Table*). Patients assessed as Triage category 1 and 2 are seen first. Triage category 3, 4, 5 patients are generally seen in order of arrival.

Table 1: National Triage Scale

ATRS category	Acuity (Maximum wait time)
1 Immediate Resuscitation	Immediate
2 Emergency	10 minutes
3 Urgent	30 minutes
4 Semi-urgent	60 minutes
5 Non-urgent	120 minutes

Source: Policy on the Australasian Triage Scale, ACEM July 2013; Guidelines on the implementation of the Australasian

Patient entry into the ED will be via an ambulant entrance point or the ambulance bay entrance point. Patients arriving via the helicopter retrieval service will have a dedicated entrance point into the ED. This entry point must provide timely access into the resuscitation area.

Ambulant entry

There will be a single point of ambulant public entry for those attending ED (who have not been involved in a contamination incident). Patients who have been involved in a contamination incident will have a dedicated entrance enabling direct access to the decontamination shower.

Ambulance entry

Ambulance services will have a dedicated entry. The ambulance area will be a self-contained stream outside and adjoining the ED, which will be accessible without obstructing access to the ED. The Zone will enable ambulance staff to perform data input (Ambulance Communications Centre) and cleaning and restocking of their vehicles as required. When patients arrive at the ED via ambulance they will be wheeled into the ambulance trolley bay where they will be triaged and streamed into the appropriate stream.

Both the ambulant entry and the ambulance entry patients may be in need of resuscitation, and therefore these entries must be immediately access to the reception/triage area, and the resuscitation area.

Reception and triage

The reception and triage are situated in the same area; this is the focus of the initial presentation and associated clerical/administrative functions. Patients who are deemed stable may be interviewed across the desk. Those patients with more complex conditions requiring a physical examination or discrete questioning will be transferred into the triage office or bay and assessed by a nurse.

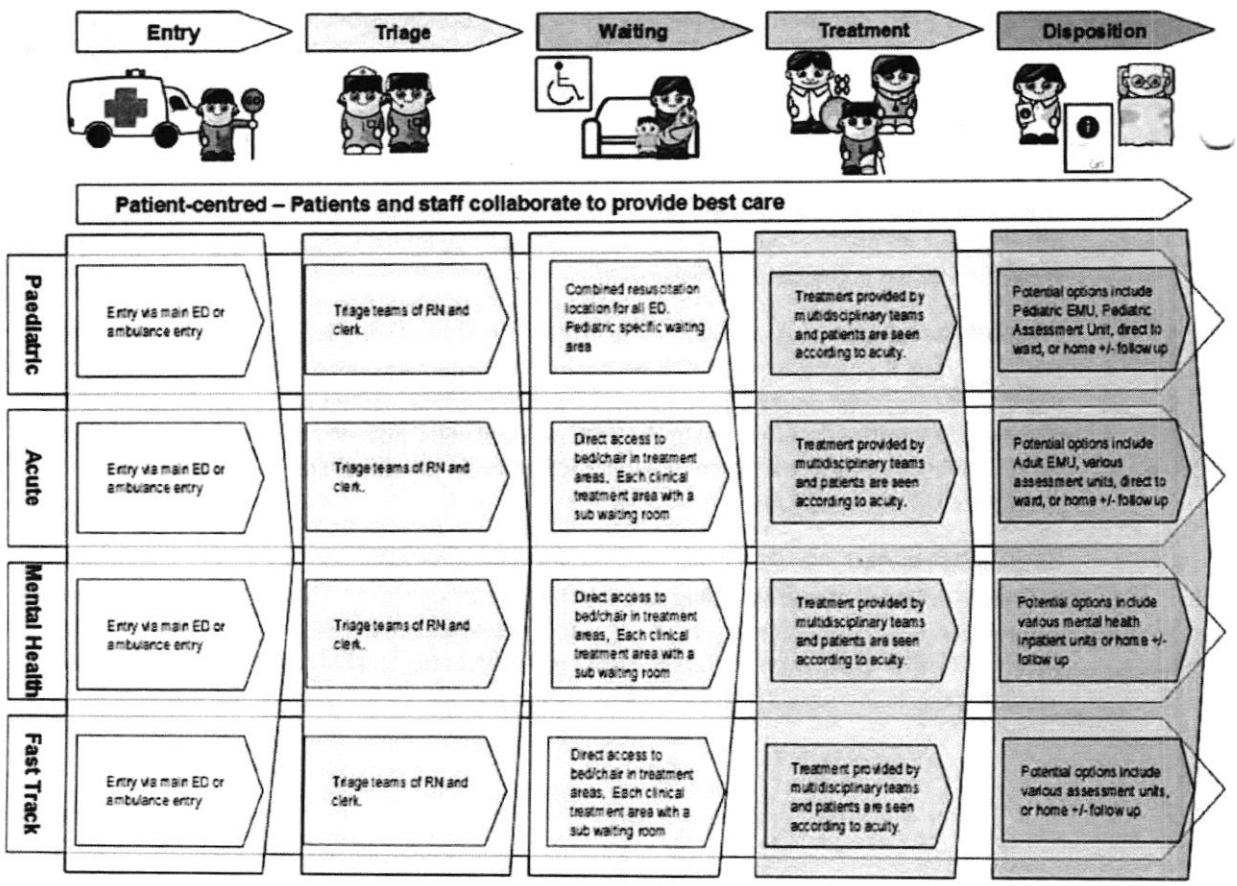
The triage process occurs within 3-5 minutes of the patient arrival and determines the most appropriate patient pathway within the ED setting. Triage takes into account the following considerations:

- the need for medical and allied health assessment and the appropriate treatment stream
- collateral history provided by family, carers or other agencies
- legislative requirements e.g. S309 / Emergency Action. [5]

Triaging will involve a brief patient history and observations as required. Both the administration and the triage nurse will interview the patient concurrently. Triaging should occur in such a manner that patient confidentiality is maintained. The design of the triage area is to be appropriate for taking observations and examining the patient/providing basic first aid in an adjoining treatment area. Patients arriving by ambulance will be assessed in a dedicated ambulance triage bay within the ED.

Following triage, the patient will be directed to the appropriate stream/sub wait area. The focus is to move away from one centralised waiting area. Patients will be seen according to a combination of clinical urgency and their time of arrival. The patient journey following triage is outlined below in Figure 1.

Figure 1: Patient flow within ED



Resuscitation

The most seriously ill or injured patients will be treated in the resuscitation stream. Both paediatric and adult services will be provided. During resuscitation up to 15 people, along with significant amounts of equipment, may attend each patient at the same time. Both ambulant, and ambulance, arrivals may require immediate triage to the resuscitation area.

Adult Acute

Adult patients with severe or potentially severe conditions will be treated in acute assessment beds. Patients will be dressed in a gown, connected to central monitoring and undergo diagnostics, investigations and interventions. Patients who are mid treatment and stable, or considered suitable for relocation pending results, may be transferred to chairs within the acute sub-waiting room. Generally, patients will be transferred to either another area of the hospital, including EMU or home.

Adult EMU

EMU will provide ongoing management, care and observation of patients requiring assessment and short stay admissions. Discharge from the EMU is to be within 24 hours. Patients awaiting an inpatient hospital specialty bed will not be transferred into EMU.

Fast Track

The Fast track Stream will enable rapid assessment, investigation, and treatment of lower acuity patients. A Fast track Stream will provide ready access from the waiting and reception areas. Generally, patients will be discharged home from this area, but if the patient requires internal transfer, the destination is usually into EMU or an inpatient unit. Medical staff, physiotherapists, and other nursing staff will staff this stream.

Registrar Review

A proposed area adjacent to the ED for patients that have been reviewed/assessed by senior ED doctor in the ED and determined that discharge is appropriate with outpatient follow up. The area will be open seven days a week with extended hours. Notification will be provided to the relevant treating team that the patient has been referred to the team. This area would perform many of the roles of the registrar review clinic / specialty registrar review before discharge thereby placing the onus on the speciality teams for timings of review.

The highest volume patients in this group would be adult and paediatric patients awaiting orthopaedic and plastics review. This MoC would improve efficiency for those teams as patients would be located in the same area.

Paediatric Acute

The Paediatric Stream will consist of both Paediatric Acute Assessment Beds and Paediatric EMU beds. These areas will operate separately due to the differing patient characteristics and it must be clearly defined which are acute and which are EMU beds, however they will be co-located and share facilities. Paediatric Acute Assessment will provide care for children with severe or potentially severe conditions.

Paediatric EMU

Paediatric EMU will provide ongoing care for children for up to 24 hours. Children will be moved into the paediatric EMU from the Acute stream, resuscitation and following procedures. Children waiting for other inpatient hospital specialty beds will not occupy EMU. Access to a dedicated paediatric outdoor courtyard is desirable.

Women's Assessment Centre

The WAC is a discrete outpatient unit located adjacent to the ED for the provision of care for women experiencing issues or difficulties in the early stages of pregnancy up to 20 weeks gestation, as well as women experiencing gynaecological issues. The unit will be staffed by appropriately trained obstetrics/gynaecology staff and will be under the governance of the division of Women Youth and Children. The unit will be staffed from 0800 to 2200 hours by registered midwives' with Women's Youth and Children medical staff rostered as required. As demand increases the staffing model and operational hours may change. At this stage of planning it is anticipated that the unit will be closed from 2200 to 0800 and all presentations will be assessed in the ED.

When presenting problems obviously present as gynaecological/obstetric issues in line with agreed guidelines, patients once triaged will be discharged from the ED and transferred to the WAC. Alternatively if symptoms are ambiguous patients will be accessed by ED staff. Once transferred to the WAC, patients will be removed from the Emergency Department Information System (EDIS) and be transferred to the CH ACT Patient Administration System (ACTPAS).

Examples of presenting problems include but are not limited to:

Early pregnancy

- foetal loss
- bleeding and hyperemesis
- medical management of ectopic pregnancies

Gynaecological issues

- heavy menstrual bleeding
- endometriosis/pain management
- Pelvic inflammatory disease
- Bartholin's cyst
- gynaecological lesions or rashes.

Clinical Forensic Medical Service - CFMS

The CFMS will be used by services to assess and collect evidence in cases including:

- adult sexual assault
- childhood sexual abuse
- childhood physical abuse
- victims of general assault including domestic violence
- traffic medicine and collection under the Road Transport Act for the purpose of police bloods
- other forensic assessment services

Patients appropriate to this service, who present to the ED, will be triaged. Patients requiring medical treatment will be streamed to the appropriate area depending on the severity of their injuries. When clinically stable, the patient will then be assessed within the CFMS area.

In order to facilitate best forensic evidence collection practice, and to enable more than one patient to be seen at a time, flow within this unit will be one way. Initially there is to be a lounge/waiting area where family and friends can provide support and police to conduct interviews. The waiting room will then flow into a staff administration space and from there into the consultation area. A CFMS staff member will see the patient in the dedicated CFMS consultation suite for forensic evidence collection. The only people with access to the consultation room will be the patient, staff members and appropriate support persons. Preventing contamination of forensic specimens is paramount. All surfaces within the consultation room undergo cleaning to an infection control and forensic standard and are cleaned

with bleach following each consultation. Specimens will be stored in a secure fridge within the area.

Following initial assessment and review, patients may be transferred internally to other areas of the ED. This may include admission to the EMU. Alternatively, patients may be transferred to other services within the hospital, another hospital or return home.

Mental Health

Patients with mental health concerns may be seen in all clinical areas of the ED depending on their clinical needs.

In order to provide care to Mental Health consumers it is proposed that there be two specific areas within the ED for patients with predominantly mental health presentations including:

1) the behavioural assessment rooms immediately adjacent to the triage/reception area, and
2) the ED-Mental health pod, which should ideally be located close to the interface with the MHSSU.

Patients with severe acute behavioural disturbance may be initially assessed in the resuscitation area, or in a number of behavioural assessment rooms (BAR's) immediately accessible from the triage/reception area. Patients with acute behavioural disturbance who are initially assessed in this area may be found to have an acute medical or surgical issue. There may also be associated co-morbidities, social issues, and substance-misuse co-morbidities. At least one of the behavioural assessment rooms will be functional for children/adolescents with acute behavioural issues and for elderly patients with agitated delirium. Provision of this facility will reduce the use of such interventions as deep sedation. These rooms need to provide both visually and auditory privacy. Assessment in this area will be led by the ED team, and will require close collaboration with, and assessment by, specialised mental health team staff.

The ED-Mental Health pod has a sub-wait area, and staff station and other clinical facilities as for the other ED streams. Entrance is access controlled, however people can move freely within the area. The pod is permanently staffed by ED nursing staff, medical staff, mental health clinicians and psychiatry medical staff.

As hospital avoidance strategies and to improve patient care, further development of mental health models of coordinated assessment at scene, to prevent hospital presentation

In addition to these two areas within the ED, the MHSSU (governed and staff by Mental Health) will be separate to, but nearby to the ED.

Mental Health Short Stay Unit (MHSSU) – not part of the ED

The MHSSU is a standalone short stay mental health inpatient unit adjacent to the ED, under the governance of Mental Health Justice Health Alcohol and Drug Services, and is staffed with appropriately trained Mental Health, Justice Health, Alcohol and Drug Service (MHJHADS) staff, medical, allied and nursing staff. A separate MoC is available for the MHSSU.

The skilled medical and nursing staff will work in close collaboration with Community Mental Health Teams (CMHTs) and, Home Assessment and Response Team (HAART), private Psychiatrists, families and carers, General Practitioners (GP) and Community Agencies to deliver high quality, timely and appropriate care for people presenting to the ED who require extended assessment or brief admission for mental health treatment and care.

To facilitate appropriate patient care there must be rapid patient flow from the ED into MHSSU, and maintenance of a short stay model in MHSSU with target lengths of stay of 6-48 hours.

Decontamination and Disaster Management

Single person decontamination facilities have been incorporated within the ED, multiple person decontamination will be conducted external to the ED to enable decontamination prior to the entry to ED. The multiple person decontamination process is under review following consultation with ACT Fire and Rescue, the lead combat agency for this type of event.

Depending on the type of incident and level of exposure the most appropriate treatment of decontamination will be determined by the lead agency in consultation with staff at ED.

Treatment and flow within the ED is to be as streamlined as possible utilising wayfinding strategies, in order to increase patient and visitor satisfaction and decrease travel times and distances for staff. Although patients can be moved from any one zone, to another, the general patient flow is outlined below in Figure 2

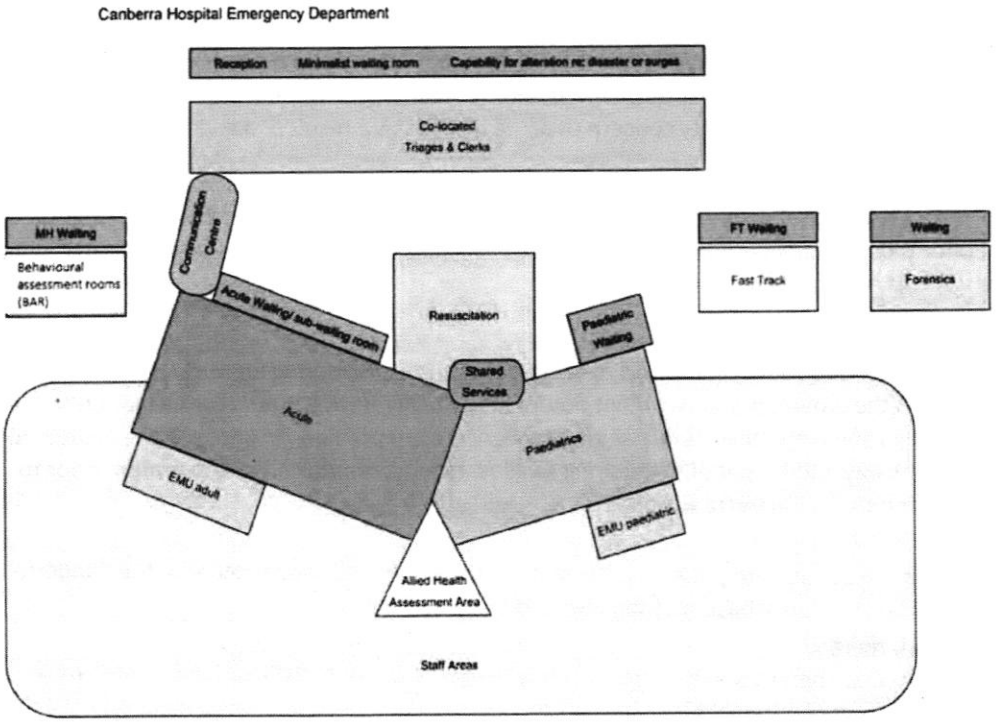


Figure 2 – Stream relationships within ED

Attaining patient history and a record of care occurs contemporaneously. Medical records will be electronic. To facilitate this process, decentralisation of staff stations within each stream will provide write up areas for core staff whilst providing visibility to all patient beds. Mobile device platforms will also be provided adjacent to treatment spaces to enable write up at the patient bedside. Noncore staff will also access computers and write up space within the office - clinical workrooms adjacent to the staff stations. Given that the evolution from paper based medical record to electronic will occur over time, storage for paper based records and charts is to be provided in close location to patient care and at staff stations.

4.4 Workflow and work processes

Care within the ED is interdisciplinary ensuring a patient centric approach, with core staff made up of medical, nursing and allied health staff.

4.4.1 Allied Health

The major allied health services to be provided within the Department will include:

Teams dedicated to ED:

Physiotherapy

- Physiotherapy is currently delivered 7 days a week during business hours and after hours. Services include assessment and management by extended scope, advance practice and primary contact physiotherapy for all non-life threatening fractures and acute soft tissue injury presentations. Secondary contact physiotherapy services are also provided upon referral by medical officers for a broad range of medical presentations.

Social Work

- Currently provided 7 days 8.30am-21.30pm. The business hours allocation of staff is 1.0 FTE HP3 with additional resources regularly deployed as required to meet high priority referrals. After-hours the HP3 staff member is provided with clinical support by an on-call HP4/5 senior social worker.
- Social workers provide psychosocial interventions 7 days per week for patients presenting to the ED requiring crisis support and complex assessment to address issues of safety and to support safe discharge. An after-hours service is provided for trauma presentations or where there is an immediate safety concern or acute distress as a result of a sudden deterioration in health or sudden death.

Future growth in ED services across the Territory will require dedicated allied health resources in the ED for those disciplines currently providing in-reach services. Services available on an in-reach basis via referral include:

Speech Pathology:

- Speech pathology assessment and management is provided during business hours Monday-Friday in the emergency department according to local referral criteria for high priority dysphagia and communication assessment. Services are provided in line with the acute stroke care pathway and for patients requiring swallowing or communication assessment prior to admission to the Canberra Hospital.

Audiology

- services are available to patients presenting to the emergency department at the Canberra Hospital on a referral basis on Mondays and Tuesdays only

Occupational therapy

- Occupational Therapy services are currently delivered on an as needs basis 5 days a week during business hours only.

Aboriginal and Torres Strait Islander Liaison Service

- respond according to clinical prioritisation with no dedicated staffing

Exercise Physiology

Psychology

Podiatry

Nutrition and Dietetics

- Currently no service to the Emergency Department as historically no funding to provide a service

The evidence supported by Queensland's Allied Health Workforce in Emergency Department's document indicates dietetics provide a valuable role in the treatment of patients in ED to avoid admission and also in initiating early treatment for patients requiring admission:

- malnourished patients
- patients who are addicted to alcohol
- unstable diabetes
- patients requiring a percutaneous endoscopic gastrostomy (PEG) or enteral feed regimen and feeds to be arranged during their stay in ED
- patient requiring enteral nutrition to avoid admission e.g. malnourished, eating disorders
- acutely unwell children with metabolic disorders who present with an inter-current illness, requiring assessment and urgent commencement of emergency feeding regime
- patients with eating disorders and very poor nutritional status, who may require rehydration and safe re-feeding plan to be commenced in ED prior to admission to ward
- initiation of a feeding plan for early intervention prior to transfer to the ward.

For an ED of 120beds/bays nutrition and dietetics should be staffed at:

- 1.0FTE HP3 made available on call overnight 24hours

In order to undertake patient care, allied health services will need access to clinical and related facilities including:

- interview rooms
- larger meeting rooms
- consultation rooms in the fast track assessment stream
- treatment rooms
- an area to assess patients on stairs
- storage facilities for equipment, consumables and patient resources.

4.4.2 Medical

Medical Workforce is made up of consultants, post-graduate fellows, registrars, career medical officers, residents and interns. Emergency Physicians in the ED supervise and support **Fellows, Registrars and Residents** (in order of seniority) that are undergoing specialised training in Emergency Medicine and carry out the day-to-day management of high and low acuity patients with levels of supervision as required (based on patient acuity and fellow/registrar/resident skill level). In addition, Interns who rotate across all areas of the hospital also require supervision by the more senior medical team.

Three consultants are currently rostered on most morning and evening shifts, with a consultant usually in charge of a stream; as such, the consultant is ultimately responsible for the care of patients within that stream. When a registrar is in charge of a stream, they are mentored by a consultant elsewhere in the ED.

The **ED Admitting Officer** is an ED Consultant, Fellow, or senior registrar (between 8am and midnight) or an ED Registrar from Midnight to 8am. The Admitting Officer is responsive to the admitting officer phone and receives referrals for patients coming to the ED. The admitting officer (consultant) is currently usually rostered to Fast Track. Medical officers work a variety of shift as outline in Table 2.

Table 2 – Medical staff shift times

Consultant	Registrar	RMO/intern
0800-1800	0800-1800	0800-1600

1400-2400	1330-2330	1530-2330
On call overnight	2230-0830	2230-0830

Consultants, postgraduate fellows and registrars have a portion of their employment as non-clinical commensurate with seniority.

Medical staff are allocated to shifts and streams according to a rostering system. Current staffing numbers per shift are indicated in Table 2. Note that these numbers are a guide only, and on each shift, medical staff may be flexibly moved between streams according to patient presentations and clinical demands. With the expansion of ED, additional staff will be housed in each stream. Current staffing allocation is outlined in Table 3

Table 3 – Current medical staff allocation

Location	Medical staff numbers	Comment
Fast track	6-8	
Acute	6-8	
EMU	2	Consultant/ JMO
Paediatrics	2-3	

At the beginning of the shift, staff members make their way to their allocated stream. Three handovers may occur concurrently, noting however that there are also staggered shift start times, so there are also brief handovers involving more senior staff at other times.

- Combined Acute/EMU at the flight deck (EMU staff will move to acute once work in EMU is completed)
- Paediatrics
- Fast Track

A colour coding team system operates within ED to enable staff to identify which stream a medical officer is working in and in the case of the Acute stream, which doctor is responsible for which patients care. The Acute stream has two teams; patients within that team are allocated to team members by clerical staff according to arrival.

In the future model, the resuscitation area will also require dedicated ED medical staffing.

To support continuity of care and provide the right service at the right time, the ED will interface with all other specialty services in the Canberra Hospital and will adopt the ACEM recommendation for an integrated Territory-wide ED Network approach with the north-side hospital.

4.3.3 Nursing

Nursing flow

At the beginning of each shift a flash handover occurs in the ED administrative space where staff are allocated to a stream, issues and themes are discussed as well as any major incident that have occurred in the shift prior.

Nursing staff will then move to their allocated clinical stream. Each stream will have a nursing team leader whose is responsible for supporting the Nurse Navigator, manage flow within the stream, be the 'go to nurse' within the stream, in addition to having a clinical patient load. The Acute stream has two stream leaders.

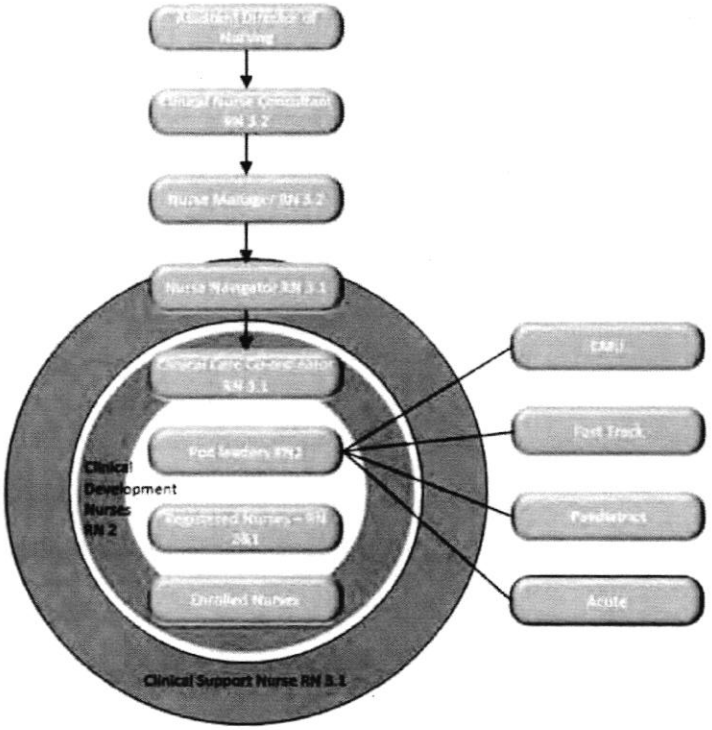
The nursing allocation within the Acute stream is in accordance to geographical location so that nurses can look after a small group of patients who are situated close to each other. Nursing in other streams follows the team nursing model. Rostering occurs within the ED according to the patient: staff ratio model, which differs according to the stream. As a guide the ratios are outlined in Table 4.

Table 4 – Nursing staff to patient ratio according to stream

Area	Ratio Staff to Patient
Acute	1:3
Paediatrics	1:3
Fast Track	1:4
EMU	1:4
Resuscitation	1:1

The ED nursing workforce model consists of clinical, educational and management roles. These roles are represented in Figure 3. Further information regarding position descriptions, roles and responsibilities for each of the positions is provided under the Reference heading contained within this document.

Figure 3: Nursing structure within ED



4.3.4 Administrative staff

Clerical staff will be located along side nursing staff at the first point of patient contact at the triage desk. Triaging and administrative information will be gathered at the same time. Clerical staff will require access to various ICT modalities including FAX. In addition clerical staff will be distributed throughout the ED in workroom adjacent to staff stations.

4.5 Workforce

Projected staff profiles have been developed to inform this stage of planning and will be subject to adjustment both in numbers and classification as better clarity is gained around MOCs and service delivery models. This staffing profile is based on a unit of approximately 120-130 spaces. This staffing profile is required to help guide the model of care and help develop the HPU brief and the associated schedule of accommodation (e.g. offices, staff stations and receptions). Staff profiles are subject to review.

The staff listed in Table 5 are those working solely within the ED, except where annotated. Currently, a number of these staff are funded and governed through other management structures in the organisation. For the future new ED, it is highly recommended that all staff who work solely within the ED are funded and governed within ED management structure. This should include, for example, physiotherapy, wards persons, and equipment officers.

Table 5 – Workforce ED

Position Levels	FTE		Headcount		Comments
	2017	2027	2017	2027	
Medical Staff					
Director	1	1		1	
Deputy Director	2	4		4	
Director Training	2	2		2	
Professor	1	1		1	

Senior Lecturer	0	1		1	
Staff specialist	17.75	31		40	See Note 1 below re clinical staff on duty on each shift
Senior Registrar	6	9		11	
Registrar	21.7	35		42	
SRMO	10.5	20		22	
RMO/CMO	16	16		16	
intern	14	14		14	
Medical Education Officer	0	1		1	Mon-Fri day shift. ASO 3 or 4
Nursing Staff					
ADON	1	1		1	Day shift Mon-Fri, majority in office area
Nurse Manager (NM)	1	2		2	Day shift Mon-Fri majority in office area
CNC	1	2		2	1 day shift, 1 evening Mon-Fri
Project Officer	0	1		1	Day shift Mon-Fri, majority in office area
Clinical Support Nurse	1	2		3	1 day/ 1 evening Mon-Fri
Clinical Development Nurse	2	9		12	1 day/ 1 evening 7 days
RN 3/2/1 & EN	145	290		400	Staff split reasonably evenly over 3 shifts, with bias towards evening shift. Maximum number of staff in unit over double handover time – approx. 130. FTE & level: 20 level 3, 50 Level 2, 220 level1.
Allied Health					
Physiotherapy-extended scope	1.4	5	3	8	HP5
Physio rotation (secondary contract)	1	3	1	4	HP1/2
OT	1-2	3		4	HP3
Dietitian	0	1	0	1	HP3
Speech Pathology	0	0.8	0	1	HP3
Clinical Measurement Scientist		3		3	HP3-4
Pharmacy		10		12	SHPA (Society of Hospital Pharmacists Australia) nationally recommend 1 pharmacist per 40 presentations/day. i.e approx. 10 for >150,000 presentations. Range HP1-HP4.
Social Work	1-2	5		8	
Aboriginal and Torres Strait Islander Liaison	0	1	0	1	(currently in-reach only approx. 0.5FTE, no targeted position) HP3/ASO6 permanent position required (business hours) HP3/ASO6 additional role for after-hours services required (evenings and weekends)
Audiology	0	0.5	0	1	Currently no service. Growth in ED services projected for Audiology.
Medical Imaging					
Radiographer	4	10		13	4 during the week, with overlap 0800-1600, 1130-1930, 1500-2300, 2130-0800 for breaks
Sonographer	1	6		8	7days extended hrs
Nursing Staff	2	7		10	24 hr. cover
Wardsperson EDX	3	6		6	for ED imaging purposes only
CFMS					

Doctor	1	1		1	
Nurse	1	2		2	
Police Officer	2	2		2	
Clerical					
Manager	1	1		1	
Admin Officer	1	1		1	
Medical Secretary	0	2		3	For ADON and NM. Full time – days/ weekdays. Located in office area
EDIS auditor	2	2		3	
Medical secretary	2	3		4	For ED senior medical staff
Clerical	20	38			Includes front counter (16), communications (5), Admissions (8), leave relief (3). Casual 6 2 in adult acute, 1 in paediatric stream
Clerical EMU	1.4	3			
Mental Health Staff in ED – within ED (separate to MHSSU)					
MH Clinicians	2d, 2e, 1n	3,3,2			3 day, 3 evening, 2 night shift, seven days a week
Psych reg	1,1,1	2,2,2			2 day, 2 evening, 2 night, seven days a week
CAMHS staff	2,0,0	2,2,1			2 day, 2 evening, 1 night seven days a week
Other Staff					
Wardspersons	9	20		24	6 am, 6 pm, 3 nights. Solely for the ED
Volunteers					1-2 shift
Security	4	9		9	2 per shift 24/7
Equipment officer/biomed	1	2			TO4. Stationed in ED
Play therapist	0	1			
Cleaning staff		14			4 morning, 4 evening, 2 night

Note 1 Medical staff on clinical shift in 2027.

- Day shift and Evening Shift - 6 specialist, 7 registrars, 7 RMO, 4 Interns, 3-4 med students
- Night Shift - 5 registrars, 5 RMO, 4 interns, 1-2 med students
- Non-ED Doctors present in the ED – maximum 30 at one time

Note 2 MHSSU is not part of the Emergency Department. Its model of care and staffing profile should be found in the separate MOC paper.

The following notes are in relation to: *Table 1 - Workforce*

Note 3 One Director, four Deputies, two DEMTs, Prof and two senior lecturers are likely to spend about 50% of their time averaged over all of the admin areas. Other 31 specialists will spend about 25% of their time in admin areas.

Note 4 Double shift staffing: there will be a four hour overlap in the late afternoon and another overlap from 9pm to 1030pm.

Note 5 Registrars generally spend an average of about 10% of their time in admin areas, 0.1x35 = 3.5fte i.e. three-four staff each day.

Note 6 Education will be significant component of the ED functioning, and there will be a very large number of staff involved in those areas each day, again larger on weekdays than weekends.

Note 7 Incorporation of allied health staff within the ED will require consideration of discipline-specific clinical supervision, governance, leave back-fill, workforce/career pathways, and administrative arrangements.

4.6 Training, education and research

A major function of the ED is to facilitate and support education, training and research within the ED. This model is key to placing the patient at the centre of decision making and therefore enhancing the delivery of a high quality service to both adults and children. Ongoing training of the ED team is a major focus of health service delivery into the future. It is anticipated that these essential training and education facilities will be provided within the department to allow easy access by staff. These facilities will also be used to provide venues for internal meetings and family conferences, this model is key to the provision of person centred care.

With an increase in ED presentations to the Canberra Hospital and Health Services (CHHS), from 85,000 in 2016-17 FY, to predictions of over 150,000 in 2031-32[3], the number of staff will approximately double. This will lead to challenges brought about by a large increase in the total number of staff as well as change in seniority. This will also lead to significant challenges in regard to education and training provision and logistics. In addition to registrar training in Emergency Medicine, the ED will continue to train large numbers of medical students and junior medical officers each term. Resources and facilities will be required to provide onsite nursing and allied health training to staff that provides care solely within ED. As a twenty-four hour service delivery model, in order to ensure all staff have access to education and training opportunities, resources and training facilities will be available 24 hours, seven days a week.

Education and training programs are inclusive of, but not limited to: service delivery updates, quality Improvement, mandatory training, mental health training, Advanced Cardiac Life Support, Neonatal Advanced Life Support, in-service education programs, mock scenarios, competency assessments, orientation of new staff, triage program, resuscitation programs, Trauma Nursing Core Course, transition programs.

The ED maintains a strong focus on education, training and research programs through structured positions and portfolios. The ED contributes to teaching students from the Australian National University (ANU) Medical School, University of Canberra, Australian Catholic University, Charles Sturt University, the Canberra Institute of Technology, clinical placements for medics from the Australian Defence Force (ADF) and paramedic services.

5. Service support elements

5.1 Essential equipment and technology services

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

[3] ACT Emergency Department modelling – Hardes and Associates 2018

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.

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 beside entertainment

- 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 for patients located in the ACT to access services provided elsewhere. These facilities can be located in either the Education room or a communal office area.

Communication

ED has the following specific requirements for communication devices.

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 the ED 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

Communications centre

The Communication Centre will be the focal point for communication, with ready access and visibility. A mini switch board will be operated by a clerk/switch operator to manage incoming and outgoing calls and paging within ED. Patient transfer advice and referrals may also be provided by a clinician within this centre. The room requires the ability to be multipurpose and perform a range of activities and functions including switchboard function and space for senior ED staff to co-ordinate urgent and emergent ED issues. This room will also be important in teleconferencing with other facilities.

Biomedical equipment management

Services will be provided by the Biomedical Service in the Canberra Hospital. A workroom will be provided within the ED where Equipment Officers (also known as a Technical Officers) will manage the equipment requirements of ED.

Further to the ED workroom, a satellite Biomedical Workroom, where repairs and maintenance of equipment will be required.

5.2 Environmental and supply services

Food Services

Food for EMU 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 dining room. Within other stream sandwiches, snacks, tea and coffee and water will be provided. These are to be available in close location to treatment areas.

Linen

Linen supplies will be as business as usual. Supplies are delivered by Capital Linen Service and delivered daily. In order to decrease travelling time for staff, linen trolleys are to be distributed within the ED stream and will be stocked by an ED assistant

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 ED. Adequate storage is to be provided, including point of care cupboard and storage within treatment bays.

Waste management

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

5.3 Core services

5.3.1 Diagnostic Imaging

Patients in the resuscitation area will have direct access CT. Diagnostic Imaging modalities including x-ray , OPG and CT and an ultrasound suite will be located in ED. Imaging staff are to be dedicated to and rostered within the ED, with services available 24/7.

Where clinically appropriate, patients will be escorted to the required modality by a Wardsperson. If the patient is critically unwell/unable to be moved, the mobile x-ray/ultrasound will be taken to the patient bedside

There will be multiple portable ultrasound machines in use throughout the ED. As with existing practice, these will largely be used by ED specialists, ED registrars, and for some applications by ED nursing staff.

Within the resuscitation stream gantry style x-ray will be available along with C-arm capability.

5.3.2 Pathology

Sampling will occur at the bedside by a suitably qualified staff member. 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 ED will be provided and include dedicated pharmacy staff based in the ED, and provision of automated dispensing machines (ADM) located throughout the ED 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 ED pharmacist/s who will be available seven days a week extended hours will be required.

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

5.4 Security

At the core of the MoC for ED is the right of staff, patients and others within the ED, to be provided with a safe environment and workplace. To this end there will be appropriate guidelines, policies and where appropriate, training and education to mitigate and safely manage occupational violence and behavioural disturbances. In addition, there will be an area to safely manage individuals exhibiting signs of behavioural disturbance within the ED. This facility will provide the ability for staff to safely observe and manage the care of the patient until the patient has de-escalated or is transferred to an alternate location. These spaces within the ED are to be at the entrance of the unit and modelled on 'behavioural assessment rooms' (BAR's).

Correctional services patients may present to the ED accompanied by two correctional officers. If a correctional services patient requires resuscitation or continuous physiological monitoring, the patient will be managed in the most appropriate clinically area. Otherwise the patient will be managed in single rooms or isolation room where possible. The rooms should be large enough to enable the patient to be accompanied by two correctional officers, the room should be located to enable ease of supervision and provide minimal disturbance to other patients, protect the privacy and dignity of the patient and consideration should be given to the paths of access to and from the room.

To support the safety and security of staff, a fixed duress will be available throughout the unit, particularly in interview rooms and at staff stations.

The hospital security room will also be located within the ED to provide a 24 hour presence within ED, and act as a base for out of hour's security operations within the hospital.

5.5 Business support services

Support services will be in keeping with CHHS inpatient ward requirements. Dedicated cleaners will be allocated to ED. Cleaning equipment is to be located in close proximity to clinical areas to enable prompt cleaning of spills.

5.6 Volunteers

Appropriately trained and credentialed volunteers perform an integral role in the ED. They are part of the overall care for ED patients and play a significant role in the experience of patients, families and support persons in the ED. A volunteer will be available at front of house to assist with enquires and way finding.

5.7 Clinical support persons

Clinical support persons will be dedicated to the ED. 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 and the audible pager system within the ED. In order to ensure that these staff are immediately available and can assist with patient flow, an interchange/setting area is required for use between tasks.

6. Benefits (Service Innovation and Efficiency)

The integration of CH ED on the south-side at Woden with the North-side ED ACT Health will create a Territory wide Emergency Service and will lead to significant benefits. Staffing, patient flow and governance links will enhance patient care. The ACEM also recommends an integrated Network.

The smaller "minimalist" front of house waiting room, in conjunction with sub-waiting rooms associated with each clinical stream will allow rapid movement of patients to the clinical area where they will be assessed and treated; directly adjacent to the clinical staff. This will enhance patient flow, with improvements in National Emergency Access Targets (NEAT) performance, patient care, and the experience of ED patients, their families and support persons.

Focused assessment by teams allowing for early referral to inpatient teams and commencement on pathways for admission/transfer or discharge allows for a more efficient way of managing common presentations.

Tablet devices for all clinicians and administration staff with bedside entry and communication, should lead to minimal requirement for write up space, password protection for confidentiality of clinical records and remote access for triaging of patient referrals.

Electronic wristbands for patients will allow for real time tracking ability, reduction in clinical and identification errors, as clinician devices should be able to scan these to confirm identity and provide alerts for allergies and medical details.

Integration of medical imaging (CT, x-ray, ultrasound) within the ED physically and by processes will enhance care for high and low acuity patients, and reduce length of stay.

Geographically separate registrar review space to the ED will enhance flow, and coordinated patient care.

Dedicated allied health teams in the ED will improve timely access to allied health services within NEAT guidelines at a patient's first contact with the health system and improve patient flow to the wards or to outpatient community services (thereby avoiding patient admission).

For future service development and innovation it is essential that there will be identification of space for future expansion adjacent to the ED, such that should future requirements direct that extension of the ED is necessary, this will be done in such a way that maximises functional outcome, and can be achieved without major effect on other structures.

ED avoidance strategies

The tertiary ED services will be provided at the CH site in Woden, and will be integrated with the ED services provided at the North Canberra hospital site. Opportunities to improve patient flows by directing patients to the most appropriate ED will be explored.

There may be a privately managed GP service provided adjacent to the ED for patients willing to pay for services (future state unknown).

Consideration is being given to establishment of an ambulatory Specialist Registrar Review Clinic external to the ED, to which patients can be referred for follow up at the conclusion of the ED episode of care.

7. Monitoring and evaluation

The model of care will be monitored and evaluated through quantitative measures such as improvement in KPIs, e.g. NEAT, and qualitative measures including complaint and compliment analysis, culture surveys, Quality assurance process outcomes.

Outcome	Measure (KPI)	Target
Improved patient flow National Emergency Access Target (see definitions)	• National Emergency Access Target (NEAT) requires ED patients to be admitted, referred for treatment in an inpatient unit, or discharged within four hours. • At the time of writing, NEAT is no longer used nationally, but continues to be used at jurisdictional level to drive performance.	80%+
Patients who arrive in the ED are seen and do not depart without waiting	• Did not wait % • Include specific measure of Mental Health patients	<5%
Seclusion	• All instances of seclusion are reviewed	100%
Improved pathways	• Percentage of patients admitted to inpatient wards from a short stay unit	Less than 15%
Improved patient experience	• Percentage of patient rating their experience as good or very good	greater than 90%

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9. Abbreviations

Abbreviation	Description
ACEM	Australasian College for Emergency Medicine
ACT	Australian Capital Territory
ACTAS	Australian Capital Territory Ambulance Service
ADM	Automated dispensing machine
ADON	Assistant Director Of Nursing
ATRS	Australian Triage Rating Scale
CARAU	Child At Risk Assessment Unit
CDN	Clinical Development Nurse
CH	Canberra Hospital
CNC	Clinical Nurse Consultant
CNE	Clinical Nurse Educator
COU	Close Observation Unit
CSSD	Central Sterilising Supply Department
CT Scan	Computed Tomography Scan
DON	Director of Nursing
DRGs	Diagnosis-Related Group is a statistical system of classifying inpatient stay into groups.
ED	Emergency Department
EDIS	Emergency Department Information System
EMU	Emergency Medicine Unit
ENT	Ear Nose and Throat
ETP	Emergency Treatment Performance is a measure of the percentage of patients discharged from ED within 4 hours of arrival.
Fast Track	Dedicated ED zone to treat patients with less urgent complaints
FTE	Full Time Equivalent
GP	General Practitioner
HITH	Hospital In The Home
ICP	Intensive Care Paramedics
ICT	Information and Communication Technology
ICU	Intensive Care Unit
IR	Interventional Radiology
KPI	Key Performance Indicator
MDT	Multidisciplinary team, comprising medical, nursing and allied health professionals across numerous clinical specialties as required
MRI	Magnetic Resonance Imaging
N-Class Isolation	Negative Pressure Isolation
NEAT	National Emergency Access Target (NEAT)
NETS	Newborn and paediatric Emergency Transport Service
NHPPD	Nursing Hours Per Patient Day
NUM	Nurse Unit Manager
OH&S	Occupational Health and Safety
PCN	Preliminary Care Nurse
PFU	Patient Flow Unit
RMO	Resident Medical Officer
RN	Registered Nurse

Role Delineation	Describes the minimum support services, workforce and other requirements for the safe delivery of clinical services.
S309	Court-ordered Mental Health assessment
Separation	The process by which an episode of care for an admitted patient ceases. A separation may be formal or statistical.
SRG	A SRG (Service Related Group) is a classification based on Australian Refined Diagnostic Related Group (AR-DRG) aggregations for categorising admitted patient episodes into groups representing clinical divisions of hospital activity.
SSU	Short Stay Unit, Inpatient unit co-located in the ED designed for patients that are likely to be discharged within less than 24 hours.
Tertiary Hospital	Generally offers services at Level 5 or 6, according to clinical services role delineations.
VMO	Visiting Medical Officer

10. MoC development participants

Participants in the development of the MoC	
Position	**Name**
Clinical Director	Greg Hollis
Acting ADON	Nicole Slater
Manager Acute Support Physiotherapy	Kerry Boyd
Director Medical Imaging	Mark Duggan
HPU senior planning officer	Amanda Slater
Director, Clinical Forensic Medical Services	Vanita Parekh
Program Director Health Services Redesign	Carolyn Bartholomew
Executive Director, Health Services Program	Vanessa Brady
Clinical Director Obstetrics and Gynaecology	Boon Lim
Executive Director Women, Youth & Children	Elizabeth Chatham
Operational Director, Adult Acute Mental Health Services, MHJHADS	Helen Braun
ED Leadership committee	Medical, Nursing, Administration representatives

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MODEL OF CARE

PERIOPERATIVE & INTERVENTIONAL CENTRE

ACT HEALTH

DATE: OCTOBER 2018

Approvals

Name	Position	Signature	Date
	Executive Director, Surgical and Oral health Division		
	Deputy Director General, Canberra Hospital and Health Services		
	For Information - Executive Sponsor, Chief of Clinical Operations, ACT Health		

Outstanding issues

Subject	Issue
Workforce	Workforce recurrent costs have not been included in the document. This will be provided in the detailed Business Case.
Workforce	Staff profiles are subject to review by Workforce Policy and Planning Unit

Document Version History

Version	Issue Date	Issued By	Issued To	Reason for Issue
Draft v0.1	14/3/18	Healthcare Management Advisors (HMA)	ACT Health	Draft for review
Draft v0.1	9/4/18	Health Services Planning Unit (HSPU)	Perioperative Services	Circulation prior to face-to-face consultation on 12 April 2018
Draft v0.2	10/4/18	HMA	ACT Health	Draft for review
Draft v0.2	10/4/18	HSPU	Perioperative Services	Circulation prior to face-to-face consultation on 26 April 2018
Draft v0.3	29/4/18	HMA	ACT Health	Draft for review
Draft v0.4	24/5/18	HSPU	ACT Health	Draft for review
Draft v0.5	8/10/18	HSPU	BHSP	For progression to Design Consultant 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

CH is the major tertiary and trauma referral centre for the catchment, and manages trauma and emergency cases that cannot be provided by other facilities in the region. This means CH is in a distinctive situation compared to most other equivalent hospitals in metropolitan settings; the hospital is significantly limited in its capacity to request initiation of bypass system in periods of high demand for surgery services.

Perioperative services is integral to the role of the CH as a Major Trauma Centre and Tertiary Health Facility for the ACT and the surrounding NSW region. CH perioperative services is a role delineation[1] level 6 clinical service for most surgery and encompasses a Territory-wide and regional role.

As a role delineation level 6 clinical service in most specialty areas, this means:

- **For the operating suite** CH provides complex surgical procedures, manages patients at the highest level of surgical risk. Provides specialised surgery such as cardiothoracic surgery and/or neurosurgery
- **For the anaesthesia and Post Anaesthetic Care Units (PACU) areas** CH "provide(s) anaesthesia for all levels of patient risk undergoing complex major surgical procedures." [There is] "subspecialty anaesthesia on-site, such as neurosurgery, cardiothoracic surgery....."[2]

The only service related groups (SRGs) where CH does not provide level 5 or 6 role delineation capability are transplantation (SRG 61) and extensive burns (SRG 62). There is insufficient activity generated within the CH catchment to justify developing level 6 capability for transplantation or ongoing management of extensive burns.

The CH perioperative services target population is the ACT and Southern NSW patients who require tertiary level surgical procedures. The CH provides capacity for surgical procedures to be undertaken 24 hours a day, seven days per week. The hospital provides elective and emergency surgical procedures, including organ and lifesaving surgery between 2100 and 0700 hours.

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[1] NSW Guide to the Role Delineation of Clinical Services 2016 (Second Edition, May 2017)

[2] NSW Guide to the Role Delineation of Clinical Services 2016 (Second Edition, May 2017), p.11, p.13.

Less complex elective and emergency adult surgical procedures and high volume short stay procedures are provided at Calvary Public Hospital Bruce (CPHB). The perioperative profiles and role delineations for the public hospitals delivering surgical services will be articulated in the Perioperative Service Specialty Plan.

2.1. Surgery types

The tertiary perioperative services provided at the CH include:

- cardio-thoracic
- dental
- ear, nose and throat (ENT)
- general
- gynaecology
- neurosurgery
- obstetrics
- oral-maxillary-facial
- organ retrieval
- orthopaedics
- ophthalmology
- paediatrics
- plastics
- trauma
- urology
- vascular.

2.2. Classifications

Surgery is classified on the basis of a patient's presentation and subsequent care (not by time periods to surgery):

- **Emergency surgery** is surgery to treat trauma or acute illness subsequent to an emergency presentation. Emergency surgery includes unplanned surgery for admitted patients and unplanned surgery for patients already awaiting an elective surgery procedure (for example, in cases of acute deterioration of an existing condition). A *request for emergency operating time* classifies patients according to the following urgency categories:
    - category 1: Life threatening (operate <1 hour)
    - category 2: Organ threatening (operate <4 hours)
    - category 3: Non-critical but emergent (operate <8 hours)
    - category 4: Non-critical, non-emergent (operate <24 hours)
    - category 5: Subacute (operate >24 hours <72 hours).
- **Elective surgery** is planned surgery that can be booked in advance as a result of a specialist clinical assessment resulting in placement on an elective surgery waiting list. A request for admission categorises patients according to the National Elective Surgery Urgency. Categories:
    - category 1 Procedures that are clinically indicated within 30 days
    - category 2 Procedures that are clinically indicated within 90 days
    - category 3 Procedures that are clinically indicated within 365 days.
- **Caesarean Section surgery** is the use of surgery to assist the birthing of a baby. Classifications for caesarean section surgical procedures are:
    - category A: Delivery within 30 minutes
    - category B: Delivery within 60 minutes

  - category C: Delivery within 6 hours
  - category D: Delivery to suit ORs and D/S.
- **Other surgery**: transplant surgery and planned obstetrics procedures.

2.3. Care streams

There are broad phases to the perioperative patient pathway:

- prior to a surgical procedure (preoperative care)
- conduct of the surgical procedure (intraoperative care)
- after the surgical procedure (post anaesthetic care).

2.3.1. Preoperative care

Surgical bookings

The surgical bookings unit is responsible for the management of the scheduling of patients on the CH Elective Surgery Waiting List that includes booking of patients on to a theatre list. This unit works in collaboration with the Central Waitlisting Service, as part of the Territory Wide Surgical Services (TWSS) team, who are mainly responsible for reviewing and assessing the Request for Admission (RFA) form and adding patients to the electronic waiting list. The management of patients waiting for elective surgery is in line with the Elective Surgery Access policy, which aims to ensure equity of access to all patients waiting for elective surgery based on identified clinical urgency timeframes.

Pre-admission

The pre-admission service conducts preoperative assessment for elective surgical patients as part of a multidisciplinary team. These services are provided for all people undergoing elective surgery. The aim of the service is to ensure patients are admitted in the best possible state of health, with all test completed prior to admission.

The clinic is staffed by nursing and anaesthetic staff who complete a thorough health assessment in order to ensure the patient is ready for surgery. Dependent on various factors (e.g. patient co-morbidities and socio-economic characteristics), this consultation may take place in the form of a face to face consultation or via telephone. The results of that assessment are made available to the treating specialist and General Practitioner (GP). The service operates a High Anaesthetic Risk Patient (HARP) clinic for people with complex needs and multiple comorbidities.

Day of Surgery Admission (DoSA)

DoSA describes the process whereby patients are admitted to CH and undergo surgery on the same day. This is the admission policy for most CH elective patients.

Holding bay

Nursing and anaesthetic assessments are undertaken in the holding bay, prior to entry to the operating theatres. Several patients are often in the holding bay area to ensure the next patient is always ready for theatre.

2.3.2. Intraoperative care

The intraoperative area will consists of the existing operating theatres (13 including MRI), with the addition of 10 hybrid, complex/robotics, interventional radiology suites, and a shell for a future 10 hybrid/complex/robotic theatres.

The hybrid operating suite will include operating rooms with angiography suitable for endovascular work e.g. cardiothoracic, neurological, and vascular.

For space planning purposes it has been assumed that the ten room SPIRE suite will comprise:

- four hybrid operating rooms with angiography equipment requiring control and computer rooms initially for use in cardiac, cardiothoracic, vascular surgery (EVAR), neuro interventional, and trauma surgery
- four complex/robotic surgery operating rooms with garaging facilities for robotic tools for use initially in ENT, urology, gynaeoncology, colorectal, paediatric services, and appropriate emergency cases
- one intraoperative room with direct access to an MRI scanning room
- one intraoperative room with direct access to specialised imaging equipment, yet to be determined (e.g. simulation theatre).

Hybrid theatres have a fixed imaging platform designed to support minimally invasive surgery. Hybrid theatres enable surgeons to perform combined open, minimally invasive, image-guided and/or catheter-based procedures in the same operating room.

The hybrid/complex/robotic theatres will include provision for robotic surgery, mobile robot arms and tactile feel technology systems.

Hybrid/complex/robotic theatres require additional space to house extra equipment as well as accommodate more staff who are present during a procedure.

Initially it is expected that hybrid theatre activity will be focussed in the following four surgery specialties:

- interventional neurology
    - digital angiography is used for neurovascular surgery and spinal surgery
    - Computer Tomography (CT) scan or MRI scan is applied in brain tumour surgery
- neurosurgery/orthopaedic surgery – the o-arm system is specifically used in spinal surgery
- vascular
- cardiothoracic.

Use of hybrid theatre techniques is evolving rapidly. Other areas where hybrid surgery techniques could expand in the medium term include orthopaedics and trauma.

2.3.3. Post anaesthetic care

PACU

The PACU, operated by specialist nursing staff, is responsible for the management of patients' immediate post-procedural period. Following conclusion of the surgical procedure there are typically three stages of recovery:

- Stage 1 recovery accommodates unconscious patients who require constant observation and monitoring with a one-to-one patient nurse ratio. Open planned bays are provided that can be observed from a staff station
- Stage 2 recovery accommodates:
    - patients who have regained consciousness after anaesthesia but require further observation
    - patients who have undergone procedures with local anaesthetic who may bypass recovery stage 1
    - post-operative obstetric patient needs including facilitating breast feeding as per the breast feeding-friendly hospital policy.

Extended Day Surgery Unit (EDSU)

EDSU is a flexible area where patients can have their entire episode of care within the perioperative environment. Bed allocation is for patients who meet the 23 hour EDSU admission criteria and do not require admission to an inpatient unit as they meet the admission criteria for the unit which ensures patient safety and have a planned discharge within 23 hours after the surgery/procedure.

Stage 3 (discharge lounge)

Stage 3 (discharge lounge) provides comfortable chairs for patients who are awake and ready to discharged, generally to their home.

2.4. Care needs

2.4.1. Additional needs

CH makes provision for perioperative patients identified as having additional needs (e.g. physical disabilities, medical conditions, mild learning disabilities or profound cognitive impairment, developmental delays, and emotional vulnerabilities). Patients may require additional planning and resource allocation coordinated via a multidisciplinary approach for their perioperative journey. This planning and support is required across the various phases of perioperative care including pre-admission clinics, pre-operative care and post-operative care.

Justice Health detainee patients requiring a surgical procedure also need consideration given to additional resourcing e.g. separate areas in recovery.

2.4.2. Needs of Aboriginal and Torres Strait Islander People

It is important that perioperative care is delivered in culturally safe and competent ways. To overcome the evolving barriers to lifelong care that Aboriginal people may experience, perioperative services need to work in partnership with Aboriginal health care providers to tailor care to achieve optimal perioperative health outcomes. In particular, this should include a demonstrated commitment to building trust with Aboriginal people to ensure assessment, planning, referral and follow up processes are tailored to the individual.

2.4.3. Paediatric, obstetrics and miscarrying gynaecology patients

The patient journey for paediatric patients and women who are miscarrying is to be sensitive, and to acknowledge the special needs of these groups. Children and women will need/want support and there will the ability to facilitate this. Paediatric, obstetric and miscarrying gynaecology patients require appropriate streaming for each cohort from DoSA through the operating theatres and into PACU. Separation of miscarrying women from surgically assisted birthing women is required in both DoSA and PACU.

- Parent access to stay with children as long as possible is required in appropriate areas of the operating theatres
- Appropriate post anaesthetic care environments are required for each cohort including the ability for an optimal first breast feed for post caesarean women and their babies.

2.5. Changes to model

- An integrated booking system Perioperative Information Management System (PIMS) will be introduced to manage and streamline bookings and the waiting list, with the ability to differentiate between elective and emergency surgery
- Centralised pre-admission for all elective surgery

- Dedicated areas for different patient cohorts will facilitate a patient centred journey, where the environment is appropriate the cohort- such as paediatrics etc. facilitating communication that is targeted, appropriate and informed
- Waiting space for relatives
- Commencement of the discharge planning from the time of admissions with the establishment of a Discharge Planning Unit (DPU)
- Allocation of a dedicated nurse for the duration of care within the perioperative suite to facilitate the patient journey and decrease the length of stay
- Onsight Sterilising Services Department (SSD) will increase efficiency in pre-rinse and sterilising processes.

3. Care/service setting

Perioperative care will be provided in dedicated facilities at the CH. Existing perioperative services are located at the CH site in Woden, in Building 12, Level 3, with the exception of the pre-admission unit located on Level 2. Perioperative services are an inpatient service type.

Perioperative services include preoperative, intraoperative and postoperative activity. Facilities utilised within the perioperative services will depend on the individual's requirements.

The scope of perioperative services covered by this MoC is:

- Operating Suites, comprising:
- surgical and procedural clerical admissions
- holding areas
- high volume surgery operating/procedure suite
- conventional surgery operating/procedure suite
- hybrid / complex / robotic operating suite.
- Interventional Radiology Suite
- holding area
- Interventional Radiology/Angiography rooms
- Perioperative support areas, including:
- DoSA unit
- Day Surgery/Procedure Unit - preoperative and postoperative
- PACU for recovery, including a dedicated paediatric area
- EDSU.
- Anaesthetics Services
- SSD.

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 perioperative services should be included. This includes, but is not limited to:

- sound absorbing ceiling tiles
- ceiling battens.

Lighting is to be consistent with the AHFG 0520 – Operating Unit 3.5. Interior décor should be chosen that does not alter the observer's perception of skin tones.

Infectious, custodial and/or other patients with privacy needs will require an appropriate environment ensuring a balance between privacy and observation, given that this space will be multi-purpose.

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 and workforce

4.1. Philosophy and principles of care

Effective perioperative care is reliant on the following key elements:

- The perioperative process prepares the patient, support people for the patient, for the whole surgical/procedural journey
- All patients require pre-admission review using a triage process
- Pre-procedure preparation optimises and supports management of the patient's perioperative risks associated with their surgery/procedure and anaesthesia
- The multidisciplinary team collects, analyses, integrates and communicates information to optimise patient centred care
- Each patient's individual journey should follow a planned standardised perioperative pathway
- Support safe, efficient person-centred care, supported by evidence-based practice, and enhance patient experiences and outcomes.

Workflow improvement will be facilitated by:

- Greater specialisation of some operating rooms for:
- elective and emergency/non-elective surgery
- greater specialisation of theatres for specific surgery types e.g. cardiac, urology, vascular and neurosurgery
- relocation of the majority of the urology case load to procedure rooms
- Improved patient flows in the pre, intra and post-operative phases of perioperative care
- More efficient movement of equipment and consumables (including clearer delineation of clean and dirty zones in the perioperative space).

Perioperative care delivers knowledge sharing to support patient centred care. This involves the collation, analysis, integration and communication of information relevant to a number of domains:

- patients: preferences, expectations, concerns needing to be addressed
- medical information: health status, social support, recent investigations
- GPs/primary care: address concerns, expectations
- surgery: staffing, equipment and other resources required to deliver a procedure
- anaesthetic requirements: to optimise care for each patient, consideration must be given to staffing, equipment, assistant for procedures, resourcing for pre-operative anaesthetic care, technical backup for high-risk patients
- hospital: resources, targets, process indicators and health outcomes
- an important aspect of perioperative services is partnering with patients and their support people; this optimises shared decision making for the whole perioperative journey
- patient-centred perioperative care involves a comprehensive team. This comprises: the patient, their support people, GPs, surgeons, proceduralists, anaesthetists, nurses, administrative and

clerical staff, allied health professionals, clinical support and operational support personnel (e.g. theatre technicians and cleaners), primary care providers, Aboriginal health workers, and multicultural and diversity health workers.

The SPIRE centre and refurbished perioperative services in Building 12 will provide an environment that seeks to decrease unnecessary patient stresses whilst streamlining the care pathway and facilitating the separation of patient flows for complex and high volume short stay surgery, day procedures, paediatrics, obstetrics and miscarrying gynaecology patients, interventional radiology, and interventional cardiology.

Facilities must be provided to enable staff to have breaks/timeout without leaving the unit.

4.2. Business rules

There is a hierarchy of policies and business rules that are relevant to Perioperative services.

The overarching standards at a national level are provided by the Australian Commission on Safety and Quality in Healthcare. These standards seek to improve the quality of health service provision in Australia.

National specialty bodies specify standards relevant to their interest area e.g. Royal Australian College of Surgeons (RACS) Surgical Education and Training (SET) requirements, the Australian and New Zealand College of Anaesthetists (ANZCA), and the Australian College Operating Room Nursing (ACORN) Standards, Recommended Practices, and Guidelines, Infection Control in Endoscopy, Gastroenterology Society of Australia (GESA).

ACT Health and CH Perioperative related policies, standard operating procedures, and guidelines.

4.3. Patient pathway

A key function of perioperative services is to ensure the patient is optimally prepared for their complete surgical/procedural journey and that this occurs in a safe, efficient and patient-centred manner. The patient's procedural journey begins with the patient at home (or other location in the community) and ends when the patient is safely returned to their place of residence.

There are multiple points of entry to perioperative services. These include via:

- Emergency department (ED)
- Pre-admission and DoSA, for elective patients
- From other areas of the hospital including the intensive care unit (ICU), inpatient units, outpatient clinics, Hospital In The Home, and retrieval services
- Centenary Hospital for Women and Children (CHWC)
- patients who have undergone procedures with local anaesthetic who may bypass recovery stage 1.

The actual patient pathway through PACU varies according to the nature of the procedure conducted. EDSU is a flexible area where patients can have their entire episode of care within the perioperative environment. Bed allocation is for patients who meet the 23 hour EDSU admission criteria and do not require admission to an inpatient unit as they meet the admission criteria for the unit which ensures patient safety and have a planned discharge within 23 hours after the surgery/procedure. Based on the summary description of pre, intra and post-operative processes presented above, this section presents an overview of the CH perioperative patient flows (see Figure 1 on the next page).

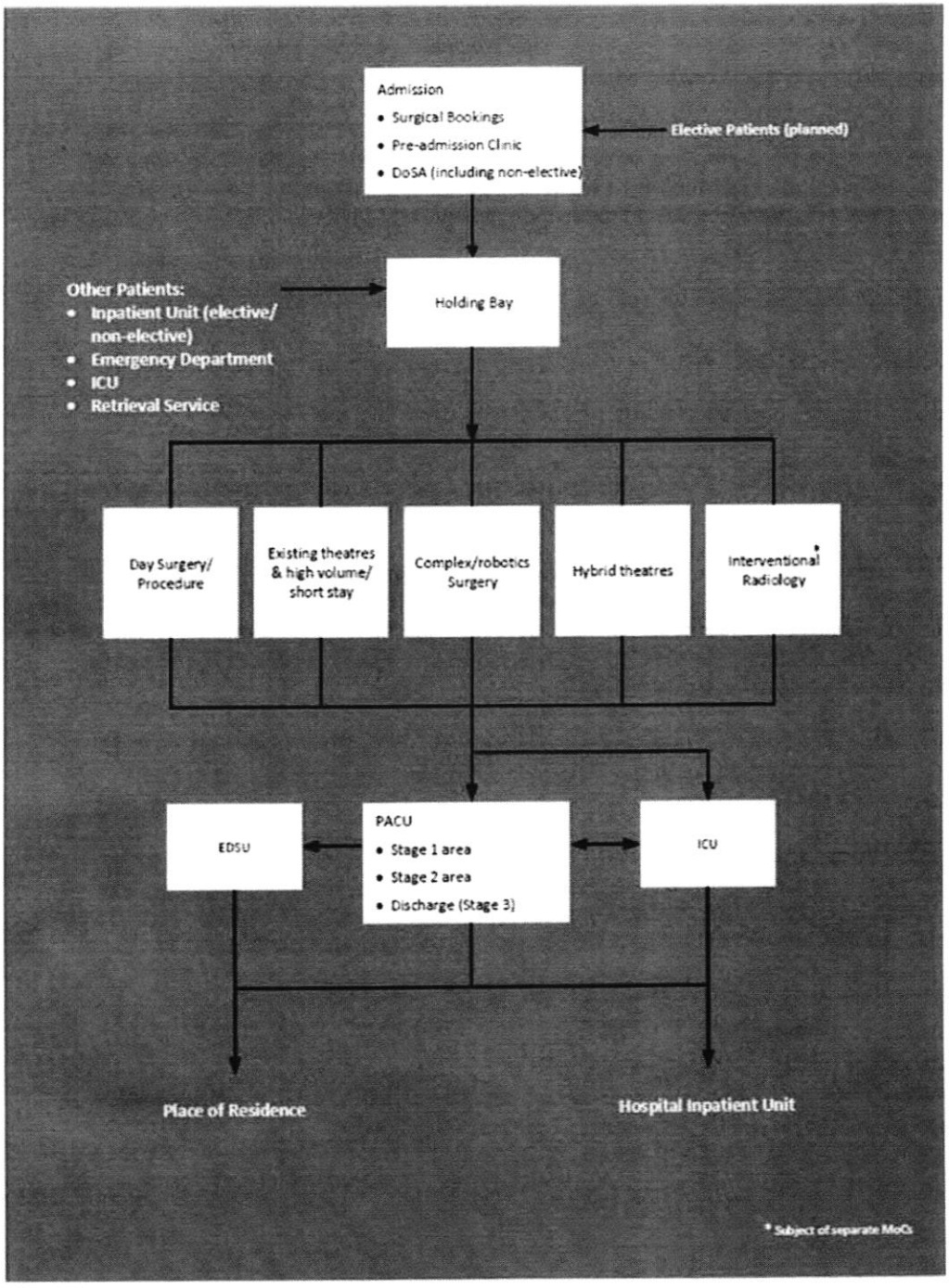

Figure 1: Patient pathway for perioperative services at CH

4.4 Workflow and work processes

Overall staff workflows are guided by the patient pathways through perioperative services. Perioperative services involve a wide-ranging number of specialised staff.

A perioperative management structure supports efficient and effective fiscal, human resource, and materials management practices for both elective and emergency streams. This includes utilisation of an Operating Room and Anaesthetic Management System.

Information management unit staff support the provision of sound data for planning and analysis.

Figure 2 –Organisational structure for perioperative services at CHl