

Australasian Health Facility Guidelines

Part B - Health Facility Briefing and Planning 0620 - Renal Dialysis Unit

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01 INTRODUCTION

01.01 Preamble

This Health Planning Unit (HPU) has been developed for use by the design team, project managers and end users to facilitate the process of planning and design.

The Renal Dialysis Unit HPU was originally developed for NSW Health and issued for Australasian use in 2006. This revision has been informed by an extensive consultation process during 2015 and included clinical experts and consumers.

01.02 Introduction

GENERAL

Renal failure refers to the reduction of renal function to the point where they experiences substantial increases in blood urea and creatinine concentrations. End stage kidney disease (ESKD) is an irreversible reduction of function to the point where an individual cannot survive without dialysis or a transplant.

Renal Dialysis Units are used by those requiring haemodialysis to manage patients with end stage renal failure. Units may be located in a satellite dialysis centre or in a hospital (known as in-centre dialysis).

Selected services may also provide training for home dialysis, both peritoneal dialysis and haemodialysis.

This document should be read in conjunction with the Australasian Health Facility Guidelines (AusHFG) generic requirements and Standard Components described in:

- Part A: Introduction;
- Part B, Section 80: General Requirements;
- Part B, Section 90: Standard Components, Room Data Sheets and Room Layout Sheets;
- Part C: Design for Access, Mobility, OHS and Security;
- Part D: Infection Prevention and Control; and
- Part E: Building Services and Environmental Design.

TERMINOLOGY

Haemodialysis is a treatment for renal failure where the function of the kidneys to remove substances from the blood is replaced by a machine. Treatment requires the patient to be attached to the machine for three to six hours per day three days a week. This process may be undertaken in a purpose-built centre or using a machine installed in a patient's home.

On-line Haemodiafiltration (HDF) is the combination of haemodialysis and haemofiltration which combines the advantages of high diffusive elimination of small ureamic toxins with high convective removal of large ureamic toxins, such as beta 2 microglobulin.

Satellite haemodialysis units may be located on a hospital site, a community health centre or other stand-alone location. Patients are typically medically stable. Others may access satellite services as they lack a dialysis partner or suitable accommodation at home. Selected satellite services will also training for home dialysis, both haemodialysis and peritoneal dialysis.

In-centre haemodialysis units will be colocated in a hospital with other acute services and provide haemodialysis treatment for acute nephrological emergencies, those with significant acute medical or surgical illness not always directly related to and other hospital inpatients. A high level of medical support is needed as patients are typically medically unstable.

Peritoneal dialysis involves the exchange of fluid to and from the abdomen on several occasions each day either manually (Continuous Ambulatory Peritoneal Dialysis) or overnight with the assistance of a machine

(Automated Peritoneal Dialysis). Peritoneal dialysis is performed at home but training in technique and problem solving may occur at a Renal Dialysis Unit.

01.03 Policy Framework

Prior to undertaking a project, planners and project staff are encouraged to familiarise themselves with individual state and territory specific policies (as detailed in the Further Reading section of the Appendices),

Renal services across Australia and New Zealand contribute to the Australian and New Zealand Dialysis and Transplant Registry (ANZDATA). This data set includes a wide range of statistics which relate to the outcomes of treatment of those with ESKD.

www.anzdata.org.au

01.04 Description

DEFINITION / MODEL OF CARE

Those requiring renal replacement therapy have a range of options including:

- home dialysis, either peritoneal or haemodialysis;
- in-centre haemodialysis;
- satellite haemodialysis; and
- other options such as community based homes or a clinical space within a hospital where local people can visit and undertake haemodialysis. This approach is often used when home based options are not suitable.

This HPU addresses only the operational and facility requirements associated with in-centre and satellite services. In addition, related training, often including haemodialysis and peritoneal dialysis are considered as they may be provided in selected centres. The target population is adults however, the information contained in this document can be applied to the development of services in a children's hospital.

Dialysis services form part of a comprehensive renal service. As such, these services will often:

- act as a resource to other staff and the community regarding dialysis related issues;
- participate in pre-dialysis information sessions so those progressing to ESKD may consider their future dialysis options; and
- supervise patients who manage their dialysis at home.

In larger centres, services may collocate other service components such as clinics and clinical offices.

Nocturnal dialysis where patients, usually home based, manage their haemodialysis treatment overnight while they sleep. Clinical outcomes are generally improved as patients have the opportunity to dialysis for longer and more frequently (Agar, JW. 2005, Nocturnal haemodialysis in Australia and New Zealand. Nephrology, 10:222–230). Services may decide to operate a centre-based nocturnal service to increase available options. This may also allow for services to be delivered using less treatment spaces as services operate over three shifts.

Nursing staff ratios in a Renal Dialysis Unit will vary depending on the type of service and patient characteristics. Ratios are typically one nurse to three patients for in-centre and one nurse to four or five/ six patients in satellite services. This reflect relative acuity and dependency levels.

The machines used to undertake haemodialysis need to be regularly maintained by renal technicians. Space will be needed to undertake this work and to ensure that replacement machines are maintained and available, ready for use.

The nature of kidney disease and links with other chronic diseases such as heart disease and diabetes, provides opportunities to consider a broader range of treatment options aimed at prevention. For example,

diabetes is the leading cause of end stage renal failure across Australia and New Zealand (2014 ANZDATA). This provides the opportunity for Renal Dialysis Units to provide additional services to address particular issues associated with diabetes. An example is a Sydney-based satellite dialysis unit that provides podiatry services chair side while patients are having haemodialysis treatment.

02 PLANNING

02.01 Operational Models

SERVICE CONFIGURATION

A Renal Dialysis Unit may be provided as:

- a dedicated unit within a hospital building (in-centre services);
- in a stand-alone location on a hospital site (satellite services); or
- a service within a community health or ambulatory care service (satellite services).

Each location may affect the requirements for support such as reception, outpatient clinics, teaching and research and staff amenities. For example, where services are located in a stand-alone location, sharing of infrastructure such as reception and staff amenities, is not always possible.

As in-centre services manage medically unstable patients, these services are usually collocated with tertiary hospitals.

02.02 Operational Policies

Operational Policies have a major impact on facility requirements and the capital and recurrent costs of health facilities and must be established at the earliest stage possible. Users may be guided by local policies.

Unit specific operational policies are detailed below. For a list of general operational policies that may apply, refer to Part B: Section 80 General Requirements.

OPERATING HOURS

Units typically operate between 7.00am and 9.00pm each day allowing two sessions per machine per day.

Units will operate a varying number of days per week from three days in small rural centres to six or seven days in larger centres depending on demand.

On-call services may be provided to support acute hospital services and/or patients at home.

Selected services may offer nocturnal dialysis. These services will be provided overnight.

AMENITIES – PATIENTS AND VISITORS

A full range of amenities should be located within the Unit or in close proximity for those receiving treatment and the carers accompanying them. These should include:

- waiting areas. Patients and their carers can spend a lot of time each week in Renal Dialysis Units so these areas should be welcoming, comfortable and provided access to a beverage bay. There will be activity peaks as patients come and go at scheduled times during each day;
- access to meeting rooms so that patients and their carers can undertake private phone calls and/or conversations;
- toilets and showers (if nocturnal dialysis services are provided);
- space to store personal effects at each dialysis treatment space;
- space to accommodate a chair for a carer while the patient is receiving treatment;
- audio-visual entertainment to waiting areas and each patient treatment space; and
- access to Wi-Fi.

Units providing services to Indigenous people may need to consider culturally specific requirements such as separate toilets for males and females.

AMENITIES - STAFF

A range of amenities and services are required by staff. Depending on the size and/or location of the service, they may be provided within the Unit or may be shared with another area adjacent to the Unit. These will include office and related support space, toilets, a staff room, lockers and access to a meeting room.

FOOD SERVICES

It is usual to provide a light meal to people receiving treatment and have beverages available. Food will be prepared elsewhere and delivered to the Unit.

A beverage bay to be provided for relatives and friends to prepare light meals and beverages for receiving treatment. As patients often bring their own food, so they will need access to a refrigerator and a microwave.

MEDICAL RECORDS MANAGEMENT

Increasingly, services will use an electronic medical record. Staff will access the record via workstations on wheels (WOW) or fixed PC located nearby.

Haemodialysis machines also have the capability to collect a range of diagnostics that can be linked to an electronic medical record.

Where these systems are in use, one computer is usually provided to each nurse which will reduce the number of PCs at staff bases.

Where a hard copy record is in use, these records will need to be securely stored.

MEDICATIONS MANAGEMENT

All medications will be held in the Clean Utility Room in accordance with jurisdictional policies. The use of medications is significant in in-centre environments as the acuity of patients is high.

In satellite units, most patients will bring their own medications so storage requirements are much less. There will be little or no use of restricted medications although this may vary in selected locations

A fridge will be needed for:

- vaccines to support blood borne virus screening and management programs; and
- other medications.

STORAGE

Large quantities of liquid substances, disposable consumables and other supplies are delivered on pallets to the Unit on a regular basis. This activity requires the following:

- a dedicated area to receive and debox in larger units;
- provision of an adequately sized main storeroom with sufficient aisle width to enable access by a pallet lifter. A roller door access may be required to provide adequate width to the entry into this space, especially for larger, stand-alone units;
- location of the main storeroom on the external perimeter of the Unit with a roller door to facilitate pallet lifter access;
- easy access from a loading dock to the main storeroom;
- heavy duty shelving and/or compactus to hold the large quantities of supplies in an organised and space efficient manner;
- storage for trolleys used to transport consumables to treatment areas;
- temperature-controlled conditions so the stability of liquid concentrates (especially those which are glucose-based) is maintained; and
- selected consumables will be stored at the point of use (e.g. tape and gauze) although quantities should be kept at a minimum.

WASTE MANAGEMENT

Substantial quantities of waste (both general and contaminated) are generated by the Unit. Clinical staff will generally use bins located within the dirty utility room to dispose of used items and linen. A disposal room will be provided on the external perimeter of the Unit to enable collection of used linen and waste.

MAINTENANCE

Haemodialysis machines require routine and ad-hoc maintenance. A service contract is usually in place and renal technicians will visit the Unit to undertake this work. A dedicated room will be provided. This workroom will also store spare machines. Refer to Non- Standard Components for further information.

02.04 Functional Areas

The Unit includes clusters of spaces for the following:

- reception / waiting;
- training, including outreach services (selected services only);
- treatment;
- staff areas; and
- support areas.

Outpatient clinics may be collocated with satellite Renal Dialysis Units but this depends on local service models and arrangements.

RECEPTION / WAITING

A dedicated reception, where provided, have oversight of the Unit entry and waiting areas.

Waiting areas should provide some separation between groups waiting for care. A beverage bay is usually provided in this area.

TRAINING AREA

Home training areas will only be provided at selected sites, as detailed in clinical services plans, space requirements may be dependent on the expected type and volume of training.

Where training requirements are infrequent, a treatment room may be used. In larger centres, dedicated training rooms for haemodialysis and peritoneal dialysis training may be provided. Training will usually be provided on a one-to-one basis or to two patients at one time.

Office space for training and outreach staff will usually be provided adjacent to training rooms.

A meeting room will also service for training and pre-dialysis and related education. This room may also be used for staff meetings.

TREATMENT AREAS

Staff bases will be designed so that patients and nursing staff can see each other, where possible. This will facilitate monitoring, patient wellbeing and interactions with staff. Many consumers report that these arrangements contribute to their satisfaction with Renal Dialysis Units.

As multi-resistant organisms (MRO) are common in renal dialysis units, treatment spaces should also be organised so those with the same MRO can be cohorted.

CLINICAL SUPPORT AREAS

Clinical support space will include broad groups of rooms including:

- access to a weigh bay, located in a central location, so that patients can weigh on the way in and out;
- utilities, both clean and dirty, should be located near treatment areas so staff travel is reduced;

- access to a treatment room for minor procedures or medical consultations;
- access to a beverage bay;
- storage for frequently used equipment and consumables (e.g. cannulation trolleys, WOW and other medical equipment) will be contained in equipment bays within the treatment areas; and
- bulk storage and workshop will be located on the periphery of the Unit to facilitate delivery etc of consumables and medical equipment.

STAFF AREAS – AMENITIES AND OFFICE AREAS

A range of space will be required to support the staff of the Unit and include:

- office space for selected staff;
- staff amenities which may include a staff room, toilets, lockers and a shower; and
- a meeting room for activities including education.

02.05 Functional Relationships

EXTERNAL

Requirements for the satellite unit will be dependent on location.

The in-centre Unit will ideally have easy access to:

- pathology unit. direct access is possible via pneumatic tube systems ;
- medical imaging unit;
- health information unit;
- inpatient units;
- pharmacy unit; and
- hospital dock.

INTERNAL

- Easy access from the Waiting Area to the Patient Treatment Area for ready movement of patients to and from treatment areas.
- Where training facilities are collocated, these should be separated from treatment areas and organised so that those visiting for education and/or training cannot readily access these areas. This maintains the focus on training as an option.
- Clinical support space should be in ready access of treatment areas so staff travel is reduced.

03 DESIGN

03.01 General

ACCESS - EXTERNAL

The Unit should be easily accessible to the public. Covered drop-off areas for persons close to the entry point must also be considered as well as easy access by ambulance.

ACCESS - INTERNAL

There will be a single public entry point to the Unit.

Separate access will be required for the delivery and collection of consumables, haemodialysis machines, food, linen and waste.

Access to the plant room that stores the reverse osmosis machine will also be needed.

03.02 Parking

The majority of patients requiring regular treatment will arrive at the Unit by vehicle. This may include private vehicle and transport bus. Access to nearby parking, including accessible parking is needed. A parking space/ loading will be needed for drop-off of machines where stand-alone units are provided.

For staff parking, refer to AusHFG Part C: Section 06, Safety and Security Precautions.

03.03 Disaster Planning

Environmental factors may influence demand for services. For example, where services are affected within a community following a natural disaster, those on home dialysis may not have access to power and/or water and will need to visit their nearest Renal Dialysis Unit to continue treatments.

A failure in the RO plant may require the temporary use of portable RO units while the equipment is replaced. Some access to normal tap water will be needed (e.g. hand basins. There is no suggestion that this is provided at each patient space.

These and other matters should be considered as part of a business continuity plan.

03.04 Infection Prevention and Control

Infection prevention and control involves identification of transmissible agents and intervention to minimise the spread of these infections. The design of all aspects of the Unit should take into account the need to ensure a high level of infection control in all aspects of practice.

Key factors that should be taken into consideration are:

- the design should support high levels of hand washing by staff and other persons by the convenient and adequate placement of suitable hand wash basins at a rate of one per three treatment bays as well as in all separate treatment areas, utility areas, toilets and showers;
- alcohol based hand-rub dispensers and personal protective equipment (PPE) should be at the entrance of each single bed room and within each treatment bay/ bed room for easy access by staff;

- class S isolation rooms should be provided at the rate of one isolation room to every five treatment bays for in-centre facilities) giving a cluster of six treatment spaces. In satellite units, multi-resistant organisms are common and patients are cohorted rather than managed in isolation rooms. While some access to isolation rooms is needed, a rate of one in ten is usually adequate. In satellite dialysis environments, this approach is better for patients as they do not feel isolated; and
- minimise storage of consumables close to patients.

Further reference should be made to:

- jurisdictional policies and guidelines;
- AusHFG, Part D - Infection Prevention and Control, Health Facility Guidelines, 2015. Section 880 Surfaces and Finishes describes requirements in terms of ceilings, walls and floors and other related surfaces;
- Queensland Government (2013) Guideline – Prevention and Control of Infections in Dialysis Settings; and
- Australian Guidelines for prevention and control of infection in healthcare (Australian commission on safety and quality in healthcare). Commonwealth of Australia NHMRC 2010.

03.05 Environmental Considerations

ACOUSTIC

Many functions undertaken in the Unit require consideration of acoustic privacy including:

- discussions/interviews with people and families;
- providing earphones so that noise from patient entertainment centres is contained;
- isolation of noisy areas such as waiting rooms from treatment areas; and
- staff discussions regarding confidential matters.

NATURAL LIGHT AND VIEWS

The use of natural light should be maximised throughout the Unit.

Natural light and a view to pleasant and interesting outdoor areas is of particular importance for people who spend long periods of time sitting in dialysis chairs. Every effort should be made to provide a view to all treatment areas either by locating treatment bays adjacent to a window or enabling unobstructed sight lines through areas to an outdoor view.

PRIVACY

Confidentiality will be facilitated through the provision of interview/ consult rooms.

As many Units operated an evening shift, lighting systems and window coverings should provide a level of privacy so patients are not easily observed.

Many Units choose not to have patient curtains between each patient treatment bay. Where privacy is needed, a portable screen is used.

Many consumers of renal dialysis service report that social interaction is important, both with nursing staff and other patients. The design should seek to balance privacy/ confidentiality and promotion of patient to patient interaction so that wellbeing is optimised.

INTERIOR DECOR

This includes style of design, furnishings, colour, textures, ambience, perceptions and taste. The décor of the Unit should reduce an institutional atmosphere where possible. This is very difficult with the high degree of equipment, services and infection control conditions that are required to deliver the service.

Suggestions to achieve this balance include:

- use of design features such as colours and artworks to distract the sight from clinical areas;
- inclusion of soft furnishings that act as a design feature such as screening, lounges in waiting areas and window treatments; that can withstand required cleaning / disinfection regimes; and
- inclusion of corridors at the minimum required widths to meet the service need.

03.07 Safety and Security

SAFETY

The acuity of patients presenting to the Unit will vary depending on whether the service is in-centre or a satellite. Issues that may need to be considered include:

- systems of work should be designed so that staff are located close to patients so observation is facilitated;
- fail-safe connection systems where machines are attached to RO water outlets. This will prevent attachment to standard water outlets;
- specialised equipment (e.g. chairs, lifters etc) to manage weak and bariatric patients;
- pallet lifters will be used to deliver supplies to the bulk store. Receipt and movement of these pallets will affect receiving points, circulation routes and door clearances;
- consumable storage should be arranged so that regular access items are easily accessible. Some of the equipment is heavy and slide-out shelving units may be of use; and
- large pieces of equipment (e.g. haemodialysis machines) and furniture (e.g. patient chairs) must be selected for their ease of movement by staff as well as appropriate design features.

SECURITY

Depending on the location and hours of operation, renal dialysis services may need to consider a range of security issues including:

- the use of access control systems to all entries and staff-only areas;
- provide video-intercom systems to ensure those visiting the service out-of-hours can be identified before access to the facility is provided;
- minimisation of entry and exit doors. Where possible, locate receptions and staff bases so entry/exit points can be observed;
- providing staff with duress points at receptions and staff stations;
- providing lockers for staff so personal effects can be secured;
- consideration of CCTV to provide an adequate view of external areas;
- adequate lighting so that staff and patients can exit the facility at night safely; and
- nearby parking for stand-alone facilities operating at night.

Refer to AusHFG Part C: Section 06, Safety and Security Precautions.

03.08 Finishes

WALL FINISHES

Major pieces of equipment and consumables are moved throughout a Renal Dialysis Unit. The use of wall, door and corner protection will be extensive in patient care and clinical support areas. Wall finished in treatment areas should be impervious easily clean.

For further information relating to wall protection, refer to AusHFG Part C Section 03 Space Standards and Dimensions.

FLOOR FINISHES

Floor finishes should suit the function of the space. In all clinical areas, vinyl flooring with coved skirtings will be used.

Flooring in areas where pallets are delivered should be sturdy to resist damage.

For further information relating to floor finishes, refer to AusHFG Part C Section 03 Space Standards and Dimensions.

CEILING FINISHES

Ceiling finishes should be selected with regard to appearance, cleaning, acoustics and access to building services. In most cases, acoustic ceiling tiles will be used.

For further information relating to ceiling finishes, refer to AusHFG Part C Section 03 Space Standards and Dimensions.

03.09 Fixtures, Fittings & Equipment

Room Data and Room Layout Sheets in the AusHFGs define fixtures, fittings and equipment (FFE).

The FFE specified for each clinical space should consider:

- generic approaches where possible to increase utilisation and flexibility; and
- specialist requirements that will influence fixed equipment and minimum dimensions of particular rooms.

Refer to the Room Data Sheets (RDS) and Room Layout Sheets (RLS) and:

- AusHFG Part C: Section 03, Space Standards and Dimensions; and
- AusHFG Part F: Section 680 Furniture Fittings and Equipment

Dialysis chairs that convert to beds are now available. This type of chair is a good option if nocturnal dialysis is provided.

03.10 Building Service Requirements

INFORMATION TECHNOLOGY & COMMUNICATIONS

The following communications systems will be included in the Renal Dialysis Unit:

- telephone (fixed and cordless for use by persons on dialysis);
- computers to access electronic medical record (eMR) systems and other related information. Solutions may vary and include both fixed and mobile computers. New dialysis machines may be networked and link to the eMR to record a range of patient data (e.g. fluid balance, weight, vitals)

- wireless internet access to support equipment (e.g. workstations on wheels) and patients who choose to bring their own devices;
- systems for hospital-based Units if part of the campus-wide communications system such as paging and intranet;
- teleconferencing and and/ or videoconferencing capability if there is an identified need as part of the jurisdictional strategy or network;
- some other Telemedicine modalities may also be required especially in remote and rural sites. Remote monitoring and use of clinical care cameras or Skype-type can be used to troubleshoot or monitor patient status remotely;
- patient/nurse call system;
- patient entertainment system, which may include features such as internet etc depending on jurisdictional approaches); and
- emergency and duress systems capability in accordance with jurisdictional policies.

ELECTRICAL SERVICES

Emergency power will need to be considered in patient areas and RO plant.

WATER TREATMENT SERVICES

Renal Dialysis Units should treat the water that will be used in the haemodialysis process to remove contaminants.

While commercial water treatment systems may undertake the water treatment activities in slightly different ways, in general, the main phases of water treatment occur in the following sequence:

- Phase 1 - particle filtration to 20 microns.
- Phase 2 - water softening to remove calcium and magnesium carbonate.
- Phase 3 - carbon filtration to remove chlorine. Chlorine is taken out as late as possible in the process so that its disinfection properties are utilised.
- Phase 4 - particle filtration to five and one micron.
- Phase 5 – the reverse osmosis process.

Reverse osmosis (RO) is a process where water is demineralised using a semipermeable membrane to encourage mineral salts to pass out of the water to be used in dialysis. Industrial RO uses spiral wound membranes mounted in high pressure containers to activate this process.

Booster pumps may also be required to ensure a certain speed of water (at least 10 metres/second) and a certain pressure of water (varies dependent on the concentration of the salt solution on the reject side of the membrane) to enable these processes and to limit the ability of tubing contamination by bacteria and moulds. These contamination processes are also reduced by the application of heat (85-90°C), eliminating any right angle bends, ensuring the internal surfaces of tubing have a high level of smoothness and by keeping tubing runs as short as possible. The distribution loop should be cross linked polyethylene.

The Plant Room for water treatment is ideally located as part of the Renal Dialysis Unit to keep tubing runs short and to make it easy for staff to monitor and service the water treatment systems.

Water treatment equipment shall be located in an enclosed room. At each Treatment Bay – Renal Dialysis, keyed quick connect/ disconnect fittings will be required for machine drains and the RO water supply.

The design team should gain local expert input early in the design process to ensure that all requirements are identified as early as possible in the planning process.

For additional information refer to:

- Government of South Australia (2013) Routine Water Testing and Reverse Osmosis Monitoring, South Australian Haemodialysis Guidelines; and

- NSW Renal Services Network (2008) Dialysis Water Pre-treatment for In-Centre and Satellite Haemodialysis Units in NSW: A Set of Guidelines.

DRAINAGE SYSTEM

Services that facilitate the drainage of waste fluids from the haemodialysis machines must be ventilated to prevent condensation and the subsequent growth of mould. This fact should be kept in mind when designing covers or screens for the drainage systems. Commercial models which comply with the relevant Australian Standards are available.

Drainage should be constructed of a chemically resistant material such as high density polyethylene.

Tundish dish and mounting height.

All treatment and maintenance areas should have sufficient floor waste drainage as disconnected systems can generate huge volumes of water in a short period of time.

LIGHTING

An examination light is provided at each treatment bay so clinical activities such as cannulation, are facilitated.

Lighting systems should facilitate patient care but patients may also need to adjust light for selected activities such as reading or computer work.

Refer to the Room Data Sheets for the detailed lighting requirements of each specific space.

MEDICAL GASES

Patient treatment spaces and treatment rooms require access to oxygen and suction. Refer to the RDS for Treatment Bay – Renal Dialysis for the detailed requirements.

ENVIRONMENTAL SUSTAINABILITY CONSIDERATIONS

Renal Dialysis Units use large volumes of water and there is an opportunity to collect reject water from reverse osmosis and reuse. Water recycling systems, where supported, will need to be incorporated into the design of the facility.

For further information refer to Green Dialysis.

<http://www.greendialysis.org/>

04 COMPONENTS OF THE UNIT

04.01 Standard Components

Standard Components must comply with details in Standard Components described in these Guidelines; refer also to Standard Components Room Data and Room Layout Sheets.

Standard Components used in the Renal Dialysis Unit are identified in the Schedule of Accommodation.

Rooms / spaces are defined as:

- standard components (SC) which refer to rooms / spaces for which room data sheets, room layout sheets (drawings) and textual description have been developed;
- standard components – derived rooms are rooms, based on a SC but they vary in size. In these instances, the standard component will form the broad room 'brief' and room size and contents will be scaled to meet the service requirement; and
- non-standard components which are unique rooms that are usually service-specific and not common.

The standard component types are listed in the attached Schedule of Accommodation.

The current Standard Components can be found at: www.healthfacilityguidelines.com.au/standardcomponents

04.02 Non-Standard Components

Information relating to Non-Standard Components is detailed below.

TRAINING ROOM – OPTIONAL

Description and Function

Likely future requirements for services such as Peritoneal Dialysis training and Home Haemodialysis training for people and their family and/or carers should be considered. For larger units where significant numbers of people will require training and support in the Unit on a regular basis that cannot be undertaken in a spare treatment space or room, the inclusion of training rooms should be considered.

WATER TREATMENT PLANT ROOM

Description and Function

This room contains the reverse osmosis machine and associated equipment. Newer reverse osmosis plant may not use chemicals and instead use heat for disinfection.

Location and Relationships

This room must be located with easy access to the external perimeter of the Unit while being adjacent to the treatment area. This will prevent microbiological contamination.

Considerations

Requirements will include:

- space for water treatment components which may include water booster pumps (usually two which alternate), pre- treatment filtration for multimedia and softener, carbon filters (two) and possibly an ultraviolet irradiator which will be placed on the wall adjacent to the filters;
- space for a pallet to store 10kg bags of salt;
- there must be workable space around all sides of the units (at least one metre) to enable routine calibration, servicing and maintenance to be conducted in a safe and easy manner. Media inside

the vessels will be removed and exchanged twice a year and the spent media is wet and heavy and wheelbarrows are typically used to move this product;

- sufficient space to have soft curving of tubing to prevent right angle bends;
- a suitable water supply, device drainage and a floor waste;
- adequate ventilation, air-conditioning and/or exhausting to remove the heat load generated by the equipment;
- access for maintenance vehicles transporting dry/wet media;
- general power will be sufficient to power the backwash timer controller heads on the filters. A single phase power supply will be needed for the pump set and UV irradiator. Phase 3 power is needed for the reverse osmosis plant. A data outlet may be needed if remote monitoring is planned;
- lighting to assist maintenance activities which are typically carried out after hours;
- noise attenuation is important to prevent any sound disturbance to treatment and other areas; and
- if heat disinfection is used, a hot water tanks will need to be included in the room.

MAINTENANCE / EQUIPMENT CLEAN UP ROOM

Description and Function

This room will be used to clean and maintain haemodialysis machines and other equipment and store spare machines. The number of machines that need to be stored as back-up will be dependent on the Unit size. It is expected that a service of 12 chairs may require two spare machines and a 30 chair unit approximately six spare machines.

Location and Relationships

The room should be located so it is accessible to clinical areas of the Unit and close to an exit so that machines can be moved in and out of the Unit. Access to water treatment plant also needed.

Considerations

The workroom will have vinyl, nonslip flooring with coved skirting. Floor waste will be needed in case of large spills.

Dialysis station set-ups will be needed (i.e. an RO outlet, tundish and power) to support maintenance activities.

Power and data to support a laptop. This will be located on a standing height work bench that will also accommodate a tool kit.

Lockable storage will be needed for spare parts and chemicals.

A wash-up area will be needed.

A hand basin will also be provided.

There is an increasing use of haemodiafiltration and the current machines are large and heavy. While servicing, clear access is needed around the machine as panels hinge outwards.

AX APPENDICES

AX.01 Schedule of Accommodation

The following schedules of accommodation provides as indicative range of space associated with Units ranging from six to 30 chairs. These scenarios are indicative only and chair numbers and the inclusion of training facilities will be based on outcomes of clinical services planning.

The 'Room/ Space' column describes each room or space within the Unit. Some rooms are identified as 'Standard Components' (SC) or a corresponding room which can be derived from a SC. These rooms are known as 'Standard Components - Derived' (SC-D). The SC/

ENTRY/ RECEPTION/ WAITING

Note 1: Training/Treatment room OPTIONAL. Where there is a developed program of training for home based dialysis as approved in the Service Plan a dedicated space is to be provided. This space as described is instead a multifunction space that can be used for some training and/or selected procedural work such as the insertion of catheters etc.

Room Code	Room / Space	SC / SC-D	Qty x m2	Qty x m2	Qty x m2	Qty x m2	Qty x m2	Remarks
	Chairs No.s		6	12	18	24	30	
WAIT-30	Waiting	Yes	1 x 12	1 x 24	1 x 36	1 x 48	1 x 60	Small beverage bay to be located here.
RECL-10	Reception, Clerical	Yes	1 x 6	1 x 8	1 x 10	1 x 10	1 x 10	
STPS-8	Store - Photocopier/ Stationary	Yes	1 x 6	1 x 8	1 x 8	1 x 8	1 x 8	Adjacent to the reception/clerical area. Accessible to other staff as well.
OFF-S9	Office - Single Person, 9m2	Yes	1 x 9	1 x 9	1 x 9	1 x 9	1 x 9	Nursing manager
MEET-L-30	Meeting Room	Yes	1 x 12	1 x 20	1 x 30	1 x 40	1 x 40	For staff meetings, community training and other functions. Should be fitted with teleconferencing. May also be used by families for private conversations.
CONS	Consult Room	Yes	-	1 x 12	1 x 12	1 x 12	2 x 12	
	Training/ Treatment Room		1 x 14	1 x 14	1 x 14	1 x 14	1 x 14	Refer Note 1

WCPU-4	Toilet - Public, 3m2	Yes	-	1 x 3	2 x 3	2 x 3	2 x 3	Directly access from the waiting room. Door location should not permit a view into the toilet.
WCAC	Toilet - Accessible, 6m2	Yes	1 x 6	1 x 6	2 x 6	3 x 6	4 x 6	Directly access from the waiting room. Door location should not permit a view into the toilet.
	Discounted Circulation		30%	30%	30%	30%	30%	

TREATMENT AREA

Note 2: Treatment Bays - spaces of 12m² may need to be considered where more than 25% of patients receiving dialysis are in beds rather than chairs or trolleys. This relates mainly to in-centre units provided in tertiary facilities. Services considering nocturnal dialysis may also need to accommodate beds.

Note 3: The provision of isolation rooms reflects an in-centre unit. Satellite facilities will generally provide a ratio of 1 room: 10 treatment spaces.

Room Code	Room / Space	SC / SC-D	Qty x m ²	Qty x m ²	Qty x m ²	Qty x m ²	Qty x m ²	Remarks
	Chairs No.s		6	12	18	24	30	
SSTN-10	Staff Station	Yes	1 x 10	1 x 12	1 x 14	2 x 10	2 x 12	May need to be subdivided in larger units.
TRMT-RD-A	Treatment Bay - Renal Dialysis	Yes	5 x 9	10 x 9	15 x 9	20 x 9	25 x 9	Refer Note 2
WCPT	Toilet - Patient, 3m ²	Yes	1 x 4	1 x 4	2 x 4	2 x 4	2 x 4	For use by persons in open treatment bays.
SHD	Shower - Accessible, 4m ²	Yes	-	-	-	1 x 4	1 x 4	Optional and only included where nocturnal services are provided.
1BR-H-12	1 Bed Room - Holding, 12m ²	Yes	1 x 12	2 x 12	3 x 12	4 x 12	5 x 12	Refer Note 3
BPPE	Bay - PPE	Yes	1 x 1.5	1 x 1.5	2 x 1.5	2 x 1.5	3 x 1.5	A Personal Protective Equipment Bay (one shared between two rooms) outside the isolation.
ENS-ST-A1	Ensuite, 5m ²	Yes	1 x 5	2 x 5	3 x 5	4 x 5	5 x 5	One toilet/shower for the dedicated use of each isolation room. A toilet without a shower may also be sufficient.

BHWS-B	Bay - Handwashing, Type B	Yes	2 x 1	3 x 1	4 x 1	6 x 1	8 x 1	One hand washing basin per 3 bays or part thereof is required.
BBEV-OP	Bay - Beverage, Open Plan, 4m ²	Yes	1 x 4	1 x 4	1 x 5	1 x 5	1 x 5	To receive and issue meals and beverages to persons receiving treatment.
	Discounted		35%	35%	35%	35%	35%	

SUPPORT AREAS

Note 4: Main Store Room - to hold general stores fluids and equipment, Must be placed on perimeter of the Unit and be accessible by a pallette lifter. Shelving must have 100kg weight capacity and shelves need to be at least 400mm apart of adjustable. A benchmark of 1m² per treatment space has been used.

Note 5: Dialysis Fluid Bay - to hold dialysis fluid in a convenient location close to treatment bays. May be subdivided to enhance staff access.

Room Code	Room / Space	SC / SC-D	Qty x m ²	Qty x m ²	Qty x m ²	Qty x m ²	Qty x m ²	Remarks
	Chairs No.s		6	12	18	24	30	
CLUR-14	Clean Utility/ Medication Room	Yes	1 x 12	1 x 12	1 x 14	1 x 14	1 x 14	
	Maintenance/ Equipment Clean-up	Yes	1 x 6	1 x 8	1 x 10	1 x 12	1 x 14	For the cleaning and servicing of haemodialysis and other machinery.
DTUR-12	Dirty Utility	Yes	1 x 10	1 x 10	1 x 10	1 x 12	1 x 12	
WTPL	Water Treatment Plant Room	Yes	1 x 15	1 x 18	1 x 18	1 x 20	1 x 24	Close to treatment areas to reduce piping runs.
BRES	Bay - Resuscitation Trolley	Yes	1 x 1.5	1 x 1.5	1 x 1.5	1 x 1.5	1 x 1.5	Adjacent to staff station.
STBK-40	Store - Bulk	Yes	1 x 7	1 x 21	1 x 32	1 x 42	1 x 53	Refer Note 4
BLIN	Bay - Linen	Yes	1 x 2	1 x 2	1 x 2	2 x 2	2 x 2	Cupboard or trolley bay to hold clean laundry.
DISP-10	Disposal Room	Yes	1 x 2	1 x 3	1 x 8	1 x 8	1 x 10	Or bay
BMEQ-4	Bay - Mobile Equipment	Yes	1 x 2	1 x 4	2 x 4	3 x 4	3 x 4	These space will also be used to park WOW when not in use.
CLRM-5	Cleaner's Room	Yes	1 x 5	1 x 5	1 x 5	1 x 5	1 x 5	
BS-4	Bay - Storage	Yes	1 x 1	1 x 1	1 x 2	1 x 3	1 x 4	Refer Note 5
	Dialysate Preparation Area							Space adjacent to Dialysis Fluid Bay. May be subdivided to enhance staff access.
	Discounted Circulation		25%	25%	25%	25%	25%	

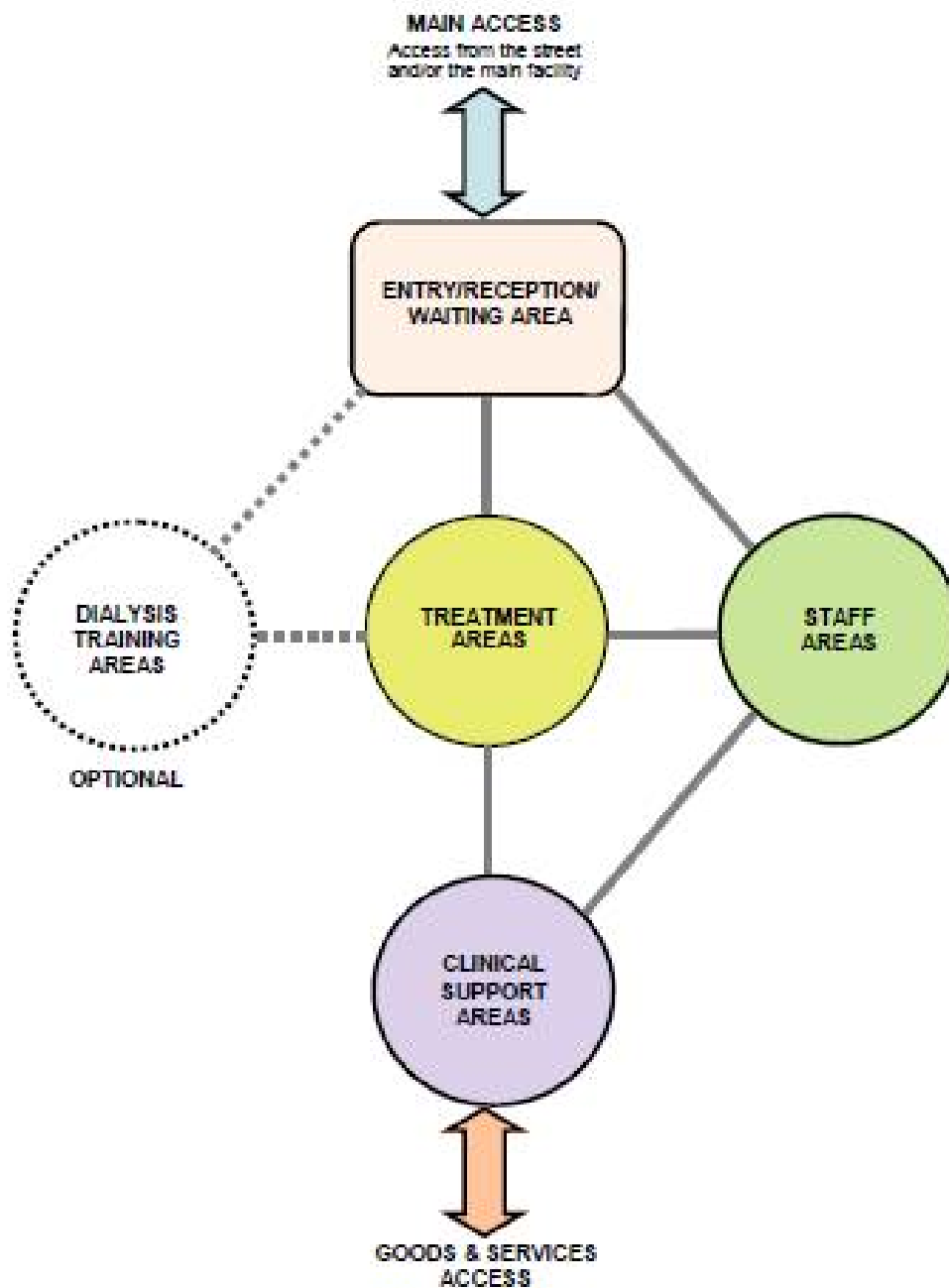
STAFF AREAS

Room Code	Room / Space	SC / SC-D	Qty x m2	Qty x m2	Qty x m2	Qty x m2	Qty x m2	Remarks
	Chairs No.s		6	12	18	24	30	
OFF-S9	Office – Single Person, 9m2	Yes	1 x 9	1 x 9	1 x 9	1 x 9	1 x 9	Allocation dependent on staffing profile and local office policies. May accommodate nurse educator, social worker, clinical nurse consultants etc.
	Office – Workstation	Yes	4.4	4.4	4.4	4.4	4.4	Discreet section of the Unit. May be shared if an easily accessible facility is available.
SRM-15	Staff Room	Yes	1 x 12	1 x 12	1 x 15	1 x 15	1 x 15	Discreet location. Adjacent to Staff Room if provided in the Unit. Access to a shower may also be needed if one is not provided nearby.
WCST	Toilet – Staff, 3m2	Yes	1 x 3	1 x 3	1 x 3	2 x 3	2 x 3	Discreet and secure location. Adjacent to Staff
PROP-2	Property Bay - Staff, 2m2	Yes	1 x 2	1 x 2	1 x 2	1 x 20	1 x 2	
	Discounted Circulation		25%	25%	25%	25%	25%	

AX.02 Functional Relationships / Diagrams

The following diagram sets out the relationships between zones in a Renal Dialysis Unit. Other considerations include:

- a dialysis training area would not be provided when planning an in-centre Renal Dialysis Unit; and
- collocation of renal medicine clinics. Where this arrangement is the service model, these clinics will need to be shown. Ideally clinics will be located near the main entrance/ waiting areas and staff offices.



AX.04 References

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- Queensland Government (2013) Guideline – Prevention and Control of Infections in Dialysis Settings
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FURTHER READING

- ACT Health (May 2010), Renal Health Services Plan 2010 – 2015
- Government of South Australia (2014) Guidelines for Vancomycin-resistant enterococci (VRE) and Methicillin-resistant *Staphylococcus aureus* (MRSA) screening and management in the adult renal patient population, Statewide Renal Clinical Network
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