

New Zealand Dialysis Standards and Audit

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**Developed by National Renal Advisory Board on behalf of
the New Zealand renal services**

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1 Access to Dialysis Treatment

1.1 Recommendations

1. All centres providing dialysis treatments must do so under the direct supervision of a vocationally registered and credentialed nephrologist.
2. All centres must provide access to both haemodialysis (HD) and peritoneal dialysis (PD).
3. All centres to provide access to both independent (home/self care) and dependent (in-centre/caregiver assisted) HD.
4. All centres must offer either directly, or indirectly, a conservative care program for those who decline an offer of dialysis.
5. All centres must ensure that patients have access to transplantation services.
6. All centres must offer at least a 3 times a week HD schedule for those with minimal residual renal clearance.
7. HD treatment duration, frequency and modality should be determined according to clinical need. These modalities may include, but are not necessarily limited to, daily or nocturnal schedules, and high flux dialysis.
8. HD services must be provided to patients by appropriately qualified medical, nursing, technical, and clerical personnel.
9. Clinical dialysis staff and technicians should be certified or credentialed by an appropriate professional body.

1.2 Audit standards¹

1. Dialysis modality for incident and prevalent patients (ANZDATA)

¹ Source of data in brackets e.g. ANZDATA

2. No HD patients dialysing for less than four hours per session or less than three times weekly and Kt/V less than 1.2 or urea reduction rate (URR) <65%. (ANZDATA)

2 Vascular Access for Haemodialysis (HD)

2.1 Recommendations

1. Renal units must have access to appropriate vascular surgical services.
2. An arteriovenous fistula (AVF) is the vascular access of choice.
3. Preference should be given to formation of an AVF before placement of an arteriovenous graft (AVG) or permanent central venous catheter (CVC) (preferred order of provision).
4. New (incident) HD patients should have a functioning AVF or AVG at commencement of dialysis.
5. Patients should be referred for vascular access formation when the estimated glomerular filtration rate (eGFR MDRD)² is <25mls/min or within 6 months of anticipated need for dialysis.
6. If it is anticipated that a CVC will be required for HD for more than 3 weeks a tunnelled cuffed catheter is preferable to a non-tunnelled line.
7. Placement of CVCs should ideally be with ultrasound or fluoroscopy guidance.

2.2 Audit standards

1. At least 70% of prevalent HD patients dialysing via AVF. (ANZDATA).

² MDRD equation. $GFR (ml/min/1.73m^2) = 0.021 \times \text{serum creatinine}^{-1.154} (\mu\text{mol/L}) \times \text{age}^{-0.203} (\times 0.742 \text{ if female})$

2. Less than 10% of HD patients dialysing using a central venous catheter (CVC) as their permanent access. (ANZDATA)
3. More than 50% of incident HD patients commencing dialysis with a functioning AVF or AVG. (ANZDATA)
4. More than 80% of non-late referrals³ commencing HD with a functioning arteriovenous fistula or graft. (ANZDATA)
5. Less than 20% of patients on vascular surgery waiting list greater than 2 months from date of referral. (Renal Units)
6. Estimated glomerular filtration rate (eGFR) by modified MDRD equation at time of referral for first vascular access formation. (Renal Units)
7. Incidence of <4 episodes of CVC blood stream infection per 1000 catheter days. (Renal Units)

Defined by the following:

- a) Use of central CVC for HD,
- b) blood stream infection (BSI) is considered to be associated with a central line if the line was in use during the 48-hour period before development of the BSI. If the time interval between onset of infection and device use is >48 hours, there should be compelling evidence that the infection is related to the central line.⁴

³ *Late referrals defined as referral to a nephrologist less than 3 months before 1st treatment. It is acknowledged that it is difficult to achieve late referral rates less than 30%*

⁴ *Centers for Disease Control and Prevention. Guidelines for the Prevention of Intravascular Catheter-Related Infections. MMWR 2002;51(No.RR-10):28.*

3 Peritoneal Dialysis (PD)

3.1 Recommendations

1. Automated Peritoneal Dialysis (APD) should be available as an alternative to Continuous Ambulatory Peritoneal Dialysis (CAPD) for patients with inadequate solute clearances or ultrafiltration failure (high transporter membrane type) on CAPD or for significant psychosocial reasons.
2. New PD patients should have a PD catheter placed 2-4 weeks prior to their requiring dialysis.
3. Renal units must have access to appropriate Surgical and/or Radiological services for PD catheter implantation.
4. Icodextrin peritoneal dialysate should be available for use when clinically indicated.
5. Units must have policies and procedures to minimise the rate of peritonitis on APD/CAPD.

3.2 Audit standards

1. Percentage of total PD patients on APD. (ANZDATA)
2. Less than 20% of incident patients requiring interim HD via a temporary CVC before starting PD. (ANZDATA)
3. Peritonitis rate of > 18 patient months/episode.
4. More than 80% of catheters functioning at 1 year. (NZPD Registry)
5. Percentage of total PD patients using Icodextrin. (Renal Units)

4 Dialysis facilities standards⁵

(These standards apply primarily to hospital and satellite HD centres. It should be noted that for training facilities involving home based therapies, an environment equivalent to a domestic situation would be acceptable.)

4.1 Lighting

1. 500 lux shadowless light positioned to cater for individuals or focussed activity such as cannulation (NZ Building code).
2. Less than 100 Lux for general purpose unit lighting (NZ Building code).
3. Wherever possible ceiling and wall light fittings should be recessed so that they are flush with the surrounding surface to prevent dust collection and minimise cleaning needs (Design considerations for Infection Control 9.6)
4. Emergency lighting of 3 lux for at least 10 minutes duration must be available to enable evacuation of building. This can be separate lighting or part of existing lighting but attached to battery back up (NZ Building code).
5. Battery torches should be kept on the premises (NZ Building code).
6. Systems to deal with power failure should be available.

4.2 Controlled environment

1. Either open windows or mechanical ventilation to be used (NZ building code).
The ability to adjust environment locally can be advantageous and should enable staff to function and carry out their duties.
2. The air change rate should be capable of removal of odours.

⁵ *Design consideration for Infection Control: the Technical Advisory Centre for Health Facilities, New South Wales Hospital Planning Advisory Centre, Australia, April 1989*

Guidelines for Satellite Dialysis Units, Victoria, Australia, May 1999

Hospital and Healthcare facilities: guidelines for design and construction, The American Institute of Architects Academy of Architecture for Health, 2001
New Zealand Building Code

3. Mechanical ventilation air intake should be filtered.

4.3 Oxygen and suctioning

1. Availability, type and location will depend on number of patients, and location of unit (Victorian satellite guidelines).

4.4 Security

1. Requires individual assessment for both staff and patient safety particularly if the area is used in the evening or is isolated (Victorian satellite guidelines).

4.5 Vinyl floors

1. A hard-wearing surface that is durable, has a floor waste hole and 15 – 30 cm coving.

4.6 Telephones

1. Telephones should be linked to other areas and /or Emergency Services.
2. Public phone access for patients is desirable but subject to local policy (Victorian satellite guidelines).

4.7 Dialysis and emergency service access

1. Disabled and ambulance access to the unit is necessary.

4.8 Toilets

1. A designated toilet and hand basin for staff and separate wheelchair accessible facilities for patients should be adjacent to or within the treatment area. The number of toilets to be provided per person is indicated in the NZ Building code.

4.9 Emergency spills

1. A shower and eye bath for staff or patients affected by blood or chemical spills subject to OSH guidelines.

4.10 Clean and dirty utility

1. A clean workroom should be provided and used for preparing patient care items. This should contain a work counter, a hand washing station and storage facilities for clean and sterile supplies. If the room is only used for storage and holding as part of a system for distribution of clean and sterile materials, the work counter and hand washing station may be omitted.
2. A dirty utility room should be provided that contains a sluice with face guard, appropriate pan sanitiser or pan disposal facilities, hand washing station, work counter, storage cabinets and storage of contaminated waste bins. Sharps containers and dirty linen skips can also be kept there (Hospital & Health Care facilities 7.14.B11) (Victorian satellite guidelines).
3. Wheelie bins or separate containers for contaminated and general waste as required (Victorian satellite guidelines).
4. The dirty utility and clean utility should have no direct connection (Hospital & Health Care facilities 7.14.B10).

4.11 Ancillary facilities

1. A waiting room ideally with toilet and hand washing facilities and seating with cleanable surfaces for waiting periods be provided or accessible to the dialysis unit (Hospital & Health Care facilities 7.14.C3).
2. An office area should be available for administrative services (Hospital & Health Care facilities 7.14.C4). This should be separate from the treatment areas.
3. There should be a dedicated staff room for meal breaks separate from treatment areas.

4.12 Other facilities

1. If a kitchen is provided for patients it should contain a sink, a work counter, a refrigerator, storage cupboards and equipment for serving nourishment as required (Hospital & Health Care facilities 7.14.B13).
2. An environmental services closet should be provided adjacent to and for the exclusive use of the unit. The closet should contain a sink and storage space for housekeeping supplies and equipment (Hospital & Health Care facilities 7.14.B14).
3. A storage space should be provided for wheelchairs out of direct line of traffic (Hospital & Health Care facilities 7.14.B17).
4. A clean linen storage area should be provided. This may be within the clean workroom, a separate closet, or an approved distribution system. It must be out of the path of normal traffic and under staff control (Hospital & Health Care facilities 7.14.B18).

5 Specific Haemodialysis Facility Standards

5.1 Haemodialysis chairs

1. Purpose built HD chairs are desirable. Chairs for HD areas should be assessed on their comfort for patients, ease of transfer and appropriateness & safety for staff in carrying out the dialysis and emergency procedures.
2. Other considerations include suitability for surface cleaning, durability and mobility.

5.2 Dialysis Machines

1. Machines should be surface cleanable between patient treatments.

5.3 Dialyser Re-Use

1. Dialyser re-use not recommended for Hepatitis B,C, D or HIV infected patients

5.4 Hand basins

1. Hand basins should be of sufficient size to allow patients to wash their arms without touching the basin or taps.
2. The height of the basin from the floor should be 910mm.
3. There should be a ratio of at least one hand basin to every four patients (Victorian satellite guidelines).
4. Soap dispensers should be smooth surfaced and easy to refill and clean.

5.5 Treatment areas

1. Treatment areas may be an open area and shall be separate from administrative and waiting areas (Hospital & Health Care facilities 7.14.B1).
2. The facility should have an adequate layout with sufficient space, light and temperature control to allow best practice infection control by staff.
3. The staff station should be located within the dialysis treatment area and designed to provide visual observation of all patient stations (Hospital & Health Care facilities 7.14.B2).
4. The minimum working area for HD is 1 metre out from each point of the HD chair or 9 square metres per dialysis station.
5. An open unit should be designed to provide privacy for each patient (Hospital & Health Care facilities 7.14.B5).
6. If a medication dispensing station is required then a work counter and a hand-washing area should be included in this area. If required, provision should be

made for controlled drug storage, preparation and refrigeration of medications (Hospital & Health Care facilities 7.14.B7).

7. An examination room of at least 9.29 square metres with hand-washing and writing surface should be provided (Hospital & Health Care facilities 7.14.B9).

5.6 Isolation Facilities

1. There should be at least one dialysis station in an isolation room in each Dialysis Unit

6 Specific Peritoneal Dialysis Facility Standards

6.1 Peritoneal Dialysis Training Room

1. There should be at least one room available for training patients in PD which provides visual and auditory privacy.
2. Minimum size 3m x 3m.
3. Hand basin and bench accessible.

6.2 Peritoneal Dialysis Clinic room / Interview room

1. A private room available for clinic reviews and interviews.
2. Minimum size 3m x 3m.
3. This room may be combined with the training room dependent on patient numbers and location of the unit.

6.3 Storage

1. There must be sufficient clean storage area available to hold dialysis supplies for expected unit use over a 4 week period.

7 Technical standards for dialysis

7.1 General

All work required to provide for the point of installation for dialysis equipment shall comply with:

1. The Building Act and Building Controls, 1991 (modified in 2004)
2. The New Zealand Building Code, 1992
3. Any specific Local Body requirements

7.2 Electrical

The installation and use of dialysis equipment shall comply with:

1. AS/NZS 2500:1995, Amendment A, June 2003; Guide to the safe use of electricity in patient care
2. AS/NZS 3003:1999; Electrical installations – Patient treatment areas of hospitals and medical and dental practices
3. AS/NZS 3551:1996, Amendment A, June 2003; Technical management programs for medical devices
4. AS/NZS 3200.2.16; Medical electrical equipment – Particular requirements for safety – HD, haemodiafiltration and haemofiltration equipment

7.3 Dialysate

Haemodialysis solutions (dialysate) shall comply with:

ANSI/AAMI RD52:2004; Dialysate for Haemodialysis

However this, and other currently available standards, relates specifically to facility-based HD and do not address home-based HD. Whilst the end quality of the dialysate should be the same in either location the standard raises significant technical and logistical issues for home HD installations, especially relating to testing frequency. It

is therefore the responsibility of individual home HD services to develop a testing protocol which ensures maximum compliance with the standard.