

Renal care

Health Building Note 07-01: Satellite dialysis unit



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**Health Building Note 07-01:
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Preface

About Health Building Notes

Health Building Notes give “best practice” guidance on the design and planning of new healthcare buildings and on the adaptation/extension of existing facilities.

They provide information to support the briefing and design processes for individual projects in the NHS building programme.

The Health Building Note suite

Healthcare delivery is constantly changing, and so too are the boundaries between primary, secondary and tertiary care. The focus now is on delivering healthcare closer to people’s homes.

The Health Building Note framework (shown below) is based on the patient’s experience across the spectrum of care from home to healthcare setting and back, using the national service frameworks (NSFs) as a model.

Health Building Note structure

The Health Building Notes have been organised into a suite of 17 core subjects.

Care-group-based Health Building Notes provide information about a specific care group or pathway but cross-refer to Health Building Notes on **generic (clinical) activities** or **support systems** as appropriate.

Core subjects are subdivided into specific topics and classified by a two-digit suffix (-01, -02 etc), and may be further subdivided into Supplements A, B etc.

All Health Building Notes are supported by the overarching Health Building Note 00 in which the key areas of design and building are dealt with.

Example

The Health Building Note on accommodation for adult in-patients is represented as follows:

“Health Building Note 04-01: Adult in-patient facilities”

The supplement to Health Building Note 04-01 on isolation facilities is represented as follows:

“Health Building Note 04-01: Supplement 1 – Isolation facilities for infectious patients in acute settings”

Health Building Note number and series title	Type of Health Building Note
Health Building Note 00 – Core elements	Support-system-based
Health Building Note 01 – Cardiac care	Care-group-based
Health Building Note 02 – Cancer care	Care-group-based
Health Building Note 03 – Mental health	Care-group-based
Health Building Note 04 – In-patient care	Generic-activity-based
Health Building Note 05 – Older people	Care-group-based
Health Building Note 06 – Diagnostics	Generic-activity-based
Health Building Note 07 – Renal care	Care-group-based
Health Building Note 08 – Long-term conditions/long-stay care	Care-group-based
Health Building Note 09 – Children, young people and maternity services	Care-group-based
Health Building Note 10 – Surgery	Generic-activity-based
Health Building Note 11 – Community care	Generic-activity-based
Health Building Note 12 – Out-patient care	Generic-activity-based
Health Building Note 13 – Decontamination	Support-system-based
Health Building Note 14 – Medicines management	Support-system-based
Health Building Note 15 – Emergency care	Care-group-based
Health Building Note 16 – Pathology	Support-system-based

Other resources in the DH Estates and Facilities knowledge series

Health Technical Memoranda

Health Technical Memoranda give comprehensive advice and guidance on the design, installation and operation of specialised building and engineering technology used in the delivery of healthcare (for example medical gas pipeline systems, and ventilation systems).

They are applicable to new and existing sites, and are for use at various stages during the inception, design, construction, refurbishment and maintenance of a building.

All Health Building Notes should be read in conjunction with the relevant parts of the Health Technical Memorandum series.

Activity DataBase (ADB)

The Activity DataBase (ADB) data and software assists project teams with the briefing and design of the healthcare environment. Data is based on guidance given in the Health Building Notes, Health Technical Memoranda and Health Technical Memorandum Building Component series.

1. Room data sheets provide an activity-based approach to building design and include data on personnel, planning relationships, environmental considerations, design character, space requirements and graphical layouts.
2. Schedules of equipment/components are included for each room, which may be grouped into ergonomically arranged assemblies.
3. Schedules of equipment can also be obtained at department and project level.
4. Fully loaded drawings may be produced from the database.
5. Reference data is supplied with ADB that may be adapted and modified to suit the users' project-specific needs.

Note

The sequence of numbering within each subject area does not necessarily indicate the order in which the Health Building Notes were or will be published/printed. However, the overall structure/number format will be maintained as described.

Executive summary

This Health Building Note (HBN) provides guidance on accommodation for maintenance dialysis, based in a satellite unit.

The unit described in this HBN includes accommodation suitable for:

- the treatment of adult patients requiring haemodialysis;
- teaching patients how to carry out appropriate tasks which, depending on local policies, may include continuous ambulatory peritoneal dialysis (CAPD), automated peritoneal dialysis (APD) and how to operate haemodialysis machines for home haemodialysis, and self-care.

This HBN excludes guidance on accommodation for:

- nephrological services provided by highly specialised centres such as university and teaching hospitals;
- nephrological services provided by main renal units in acute general hospitals, as this will be covered in the main renal unit guidance;
- renal transplantation, as this will be covered in the guidance on transplant units;
- children requiring renal services, as it is assumed that they will be treated in a paediatric nephrology department;
- the preparation of dialysers marked for re-use.

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 - Staff change/locker room
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 - Clean linen storage
 - Cleaners' room
 - Electrical distribution cupboard
 - IT room

1 Policy context

- 1.1 The physical environment affects the well-being of patients, particularly haemodialysis patients, for whom the dialysis unit is their living room for four hours per day, three times per week, for the remainder of their lives.
- 1.2 While medical equipment cannot easily be concealed, more can be done to humanise the surroundings where people with established renal failure are treated, to improve their experience and physical comfort.
- 1.3 Good practice suggests the following areas are the pivotal points for both the delivery of high-quality dialysis treatment and the best possible patient experience and well-being:
 - Careful attention should be given to both the siting and the design of dialysis units so that they meet modern requirements, provide patients with good access, including dedicated parking spaces, and have a positive impact on patients' well-being.
 - There is good evidence that for many patients satellite units are as effective as main renal units and often more acceptable and accessible. Therefore, the opportunity to locate a satellite dialysis unit within existing or planned community service buildings (for example shopping centres) should be considered, as this may enable patients, carers and the community to feel more integrated and may allow for other activities unrelated to the dialysis day to be incorporated with least effort.
 - Adequate transport is so important to people on haemodialysis that it plays a vital role in the formation of patient views and attitudes towards dialysis. Good transport systems can improve patient attendance, and shorter travel times can improve patient co-operation if the dialysis treatment frequency needs to be increased. Efficient transport facilities reduce interruption of patients' social life and may therefore improve their quality of life.

2 General service considerations

- 2.1 The main function of a satellite dialysis unit is to provide maintenance haemodialysis for adult patients with chronic established renal failure. Some satellite units also teach patients how to carry out continuous ambulatory peritoneal dialysis and train patients for home haemodialysis. Patients attending a satellite dialysis unit:
- are mainly ambulant;
 - may be of any age (but not children); and
 - may be physically and/or sensorily handicapped.
- 2.2 New established renal failure patients requiring maintenance dialysis may be referred to a satellite unit by consultant nephrologists working in main renal units.

The nephrological service

- 2.3 The function of a comprehensive nephrological service is the early detection, diagnosis and treatment of renal disease and the long-term management of its complications such as high blood pressure, anaemia, cardiovascular disease and bone disease.
- 2.4 Renal failure may be either acute or chronic. Acute renal failure occurs abruptly, often as a result of severe trauma, post-operative complications, and renal insults. Although it can be severe enough to influence patient morbidity and survival, it is often reversible. Dialysis is usually needed for only a few days or weeks before the renal function returns.
- 2.5 Chronic renal failure is the progressive loss of kidney function over months or years, and is irreversible. Established renal failure can be treated by renal replacement therapy (RRT), that is, dialysis and/or renal transplantation.

Dialysis

- 2.6 Renal dialysis involves the removal of waste products from the blood by allowing these products to diffuse across a thin membrane into dialysis fluid which is then discarded along with the toxic waste

products. The chemical composition of the fluid draws the waste products across the membrane without the blood coming into contact with the fluid.

The role of a satellite dialysis unit

- 2.7 The majority of dialysis patients are stable and, although requiring long-term care, do not need the highly specialised treatment provided in a main renal centre. In addition, according to the recommendations of the Kidney Alliance (2001) report 'End stage renal failure: a framework for planning and service delivery', patients should ideally have to travel no more than 30 minutes for their treatment. This principle to ensure equitable access for all may be met by locating satellite units in the community, allowing the provision of renal services close to patients' homes.
- 2.8 A satellite unit may be managed in a variety of ways. There are advantages and disadvantages to each one, but it is outside the scope of this manual to detail these. Choice will be based on local factors:
- a. **managed by a main renal centre:** these satellite units operate under the aegis of the specialist nephrological service at its parent hospital, usually located on another site. Patient care and management policy in the satellite unit are determined by staff in the main renal unit. Some satellite units may develop into sub-regional units. These units are autonomous, usually in everything but renal transplantation, and require at least one or two nephrologists permanently based on site.
 - b. **contracted out to the private sector:** in such units, the private contractor provides a dialysis service which usually includes the building equipment, consumables and all the staff except the consultant medical staff. The contractor is paid an agreed fee for each episode of dialysis treatment. When located on an NHS site, all mains services are generally provided by the

hospital, with the contractor being charged for consumption. The contractor may buy in support services from the hospital, for example cleaning, catering, portering, linen, laundry, pathology, maintenance etc.

- c. **self-managed option:** in such units, the building, equipment and consumables are provided by the private sector. The contract may be on a “number of sessions” basis or for a number of patients over a number of years. This type of facility may be shared by two or more trusts.

Location

- 2.9 A satellite unit is not a physically integral part of a main renal unit. The appropriate location for a satellite dialysis unit will depend on a number of factors, including demography, transport links, case mix etc.
- 2.10 Satellite dialysis units may serve populations that do not have easy access to a main renal unit. The opportunity to locate a satellite dialysis unit within existing or planned community service buildings should be considered, as this may enable patients, carers and the community to feel more integrated and may allow for other activities unrelated to the dialysis day to be incorporated with least effort. Patients usually require treatment at least three times a week, every week – a community-centre setting would go a long way to providing a less clinical environment.

Opening hours/shifts

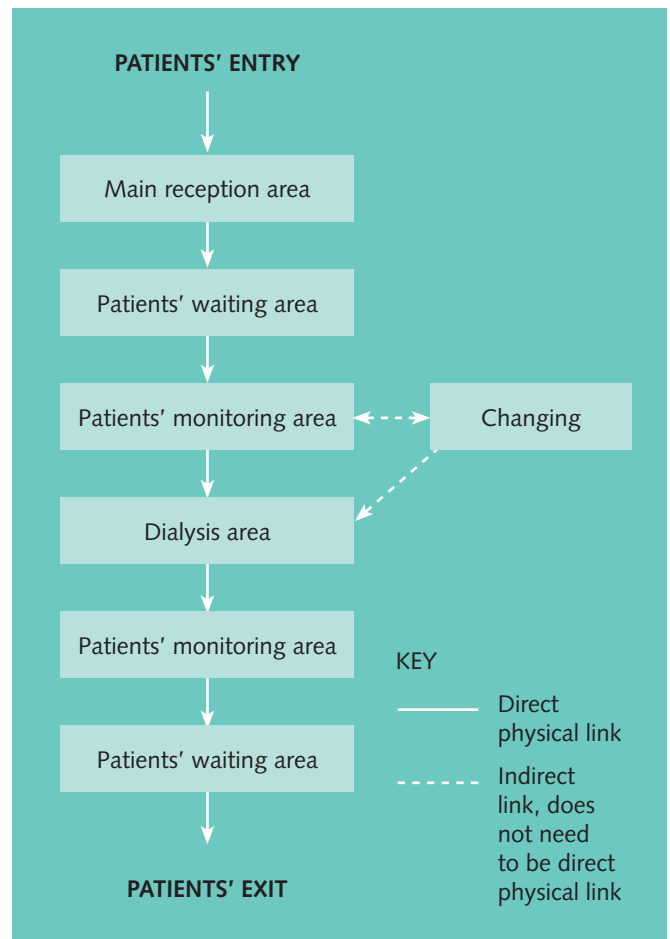
- 2.11 Flexibility to accommodate patient choice is likely to be key to the opening hours and shift patterns of satellite dialysis units in the future. Most are likely to operate at least a two-shift system. Running a third shift in the evenings may appeal to some patients, for example those in full-time employment, and this is likely also to prove more economically viable since more patients can be treated without having to increase the number of treatment stations. Dialysis duration makes it possible to run a fourth shift if other factors allow, and there is increasing interest among patients and clinicians for daily dialysis. However, the provision of a third or fourth shift may not always be possible due to the practical problems associated with operating very late at night, such as the availability of transport, shortage of staff, and safety for patients and staff travelling home.

- 2.12 With one dialysis treatment usually taking between four and five hours, two to three patients can be dialysed per station per day (including the time taken for cleaning between sessions). Patients should receive three treatments per week unless the clinician prescribes fewer hours or less frequency on medical grounds.

Organisation and patient flow

- 2.13 Patients normally undertake the following “journey” during a dialysis session at a satellite unit:
- On arrival at the unit, a patient will wait in the waiting area until the dialysis machine has been prepared for use.
 - Patients transfer to the monitoring area, where they either take their own blood pressure and weigh themselves or ask for assistance to do so (renal data management systems are now also available which electronically transfer data, that is, blood pressure and weight, to the dialysis machines via smart cards). Many patients also choose to change into loose, comfortable clothes before going on the dialysis machine.

Figure 1 Patient flow



- At the treatment station, patients themselves may prepare supply trolleys or these will be already prepared, depending on the practice of the unit and patients' requirements. Patients are then either linked to the machine or link themselves with the necessary supervision. Dialysis generally takes about four hours, but varies according to individual prescriptions.
- The patients' temperature and blood pressure may be monitored during the treatment.
- After treatment, either the patients monitor their own blood pressure and weight or these are monitored for them. They then retrieve their possessions and either leave the unit or remain in the waiting area until their transport arrives.

3 Factors affecting the size of a satellite renal service

Demand

- 3.1 Diabetes is the leading cause of chronic renal failure. If survival rates in Type II diabetes improve but nephropathy progresses, the number of people with diabetes needing dialysis will increase. The size and projected increase in the numbers of people with diabetes is the context for the National Service Framework (NSF) for Diabetes, which will set standards for care and service provision.
- 3.2 The dialysis population is becoming increasingly elderly, with a greater prevalence of comorbid illness. This will have a consequence for support activities, for example appropriately equipped emergency resuscitation facilities in the event of cardiac arrest and the need for networked links to the main renal unit.
- 3.3 It is recognised that haemodialysis services are under considerable pressure in some areas, and project teams need to carry out a proper needs assessment to estimate how many patients will require treatment over the coming years. This will enable them, together with clinicians working in this area, to plan what services will be needed and the most appropriate configuration of those services, taking account of local priorities.
- 3.4 Current predictions are that there is likely to be a substantial growth in the overall number of patients receiving dialysis treatment by 2010. It is likely that a steady state, where the number of new patients is equal to the number of patients who are transplanted or who die, will not be reached for another 10 to 20 years (source: Predicting future demand in England; a simulation model of renal replacement therapy. In: D Ansell and T Feest (eds), *The Fifth Annual Report, The UK Renal Registry*. Bristol: pp 65–83, Roderick et al, 2002).

The resurgence in home haemodialysis

- 3.5 The benefits of carrying out haemodialysis in the home include not having to travel to a satellite or main renal unit and more choice about when the

dialysis is carried out, so there may be less disruption to normal life. On the other hand, some patients and their carers find it a strain to have the responsibility of carrying out the procedure, which can be time-consuming, and of dealing with any problems. Home haemodialysis has been the subject of a NICE review which recommends that it be available as an option for all suitable patients ('Guidance on home compared with hospital haemodialysis for patients with end-stage renal failure', National Institute for Health and Clinical Excellence 2002).

Potential for offering daily haemodialysis as an option

- 3.6 If the purported advantages of daily haemodialysis are confirmed, the proportion of patients on home haemodialysis may increase, as may the number of shifts offered by a satellite or main renal unit.

Value for money

- 3.7 The size of a dialysis unit will depend on local circumstances, such as the dialysis population, shift patterns and location (that is, whether rural, urban or inner-city). The dialysis area should consist of dialysis stations in increments of three. The schedules of accommodation for this guidance are based on a 12-, 18- and 24-station unit. The final number should take into account the provision of a spare station for routine maintenance, breakdowns and expansion.
- 3.8 Project teams will need to consider the number of treatment stations needed to ensure the economic viability of a central water treatment plant. The use of individual bedside water treatment units is a matter for local decision; however, required standards of water purity must still be monitored and achieved. In general, these individual units are not advised for the following reasons:

- overall lifetime costs are generally higher compared with a central water-treatment plant;

- they take up more maintenance time for technician;
- water purity tests need to be undertaken at regular intervals on each unit;
- the quality of water that can be achieved with a central water-treatment plant is generally far higher than that which can be obtained from individual units. This may stop the unit from undertaking haemodiafiltration.



The quality of water that can be achieved with a central water-treatment plant is generally far higher than that which can be obtained from individual units. Courtesy of Esler Crawford Photography; reproduced by kind permission of Belfast City Hospitals Trust

4 Planning and design considerations

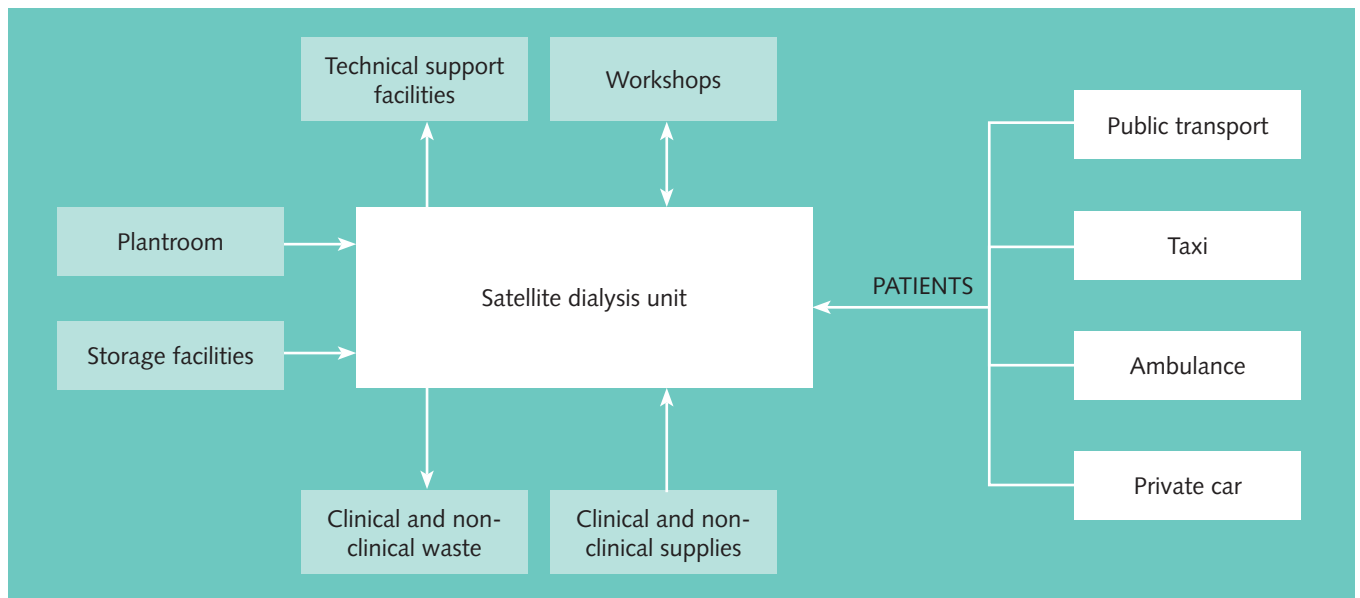
Access to the unit

4.1 Many patients attending a satellite unit are likely to arrive by their own transport. However, they may also travel to the unit by public transport or by NHS patient-transport services including taxis or ambulance. Where possible, therefore, satellite units should be located near public transport routes. It is also important to provide dropping-off points for ambulances and designated patients' car-parking spaces immediately adjacent to the unit. Based on a 12-station dialysis unit, it is recommended that there is one dedicated space for



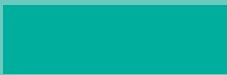




every three dialysis stations, of which one of the four should be a disabled-width bay. The entrance to the unit should be covered so that patients transferring from a vehicle into the unit are not exposed to the weather.

4.2 The unit should preferably be located on the ground floor and, ideally, have its own dedicated entrance. (Units based away from hospital sites are likely to have dedicated entrances by nature of their location.) Where the unit is based on a hospital site, this is to facilitate the comfort and passage of patients, especially at shift changes, during which

Figure 2 Access to the unit



Key to colours and rules used in all coloured figures

	Areas where patients and staff will have access		Indirect link, does not need to be direct physical link
	Areas where staff only will have access		Direct physical link
	Support areas where staff only will have access, or input from elsewhere is required		Output
			Input

congestion might occur if only a shared entrance is available.

- 4.3 The entrance should be easily accessible to people using wheelchairs or walking aids.
- 4.4 There should be access for large vehicles so that they can off-load at the various storage facilities without disturbing the unit's operation or traversing through patient or treatment areas.
- 4.5 The satellite unit will require large volumes of clinical and non-clinical supplies to be delivered and off-loaded routinely (see also 'Support/utility'). This will lead to large volumes of clinical waste and non-clinical waste that will need to be removed daily. Thus, the eventual location of the unit and plantroom must be considered carefully, as waste fluids in such volume require correct disposal.
- 4.6 Access to storage facilities, technical support facilities, workshops and the plantroom must be considered and adequate provision must be made:
 - access from the outside of the building should be via separate, lockable double doors, and security camera surveillance should be considered;
 - attention should be paid to access to allow removal or replacement of the units and for delivery of heavy goods such as salt for the water softeners;

- for the deliveries of goods and supplies (particularly as renal goods are delivered in bulk), a separate – possibly remote – entrance is required, as some deliveries are impromptu and noisy. As some deliveries arrive very early in the day, this area needs to be well lit.

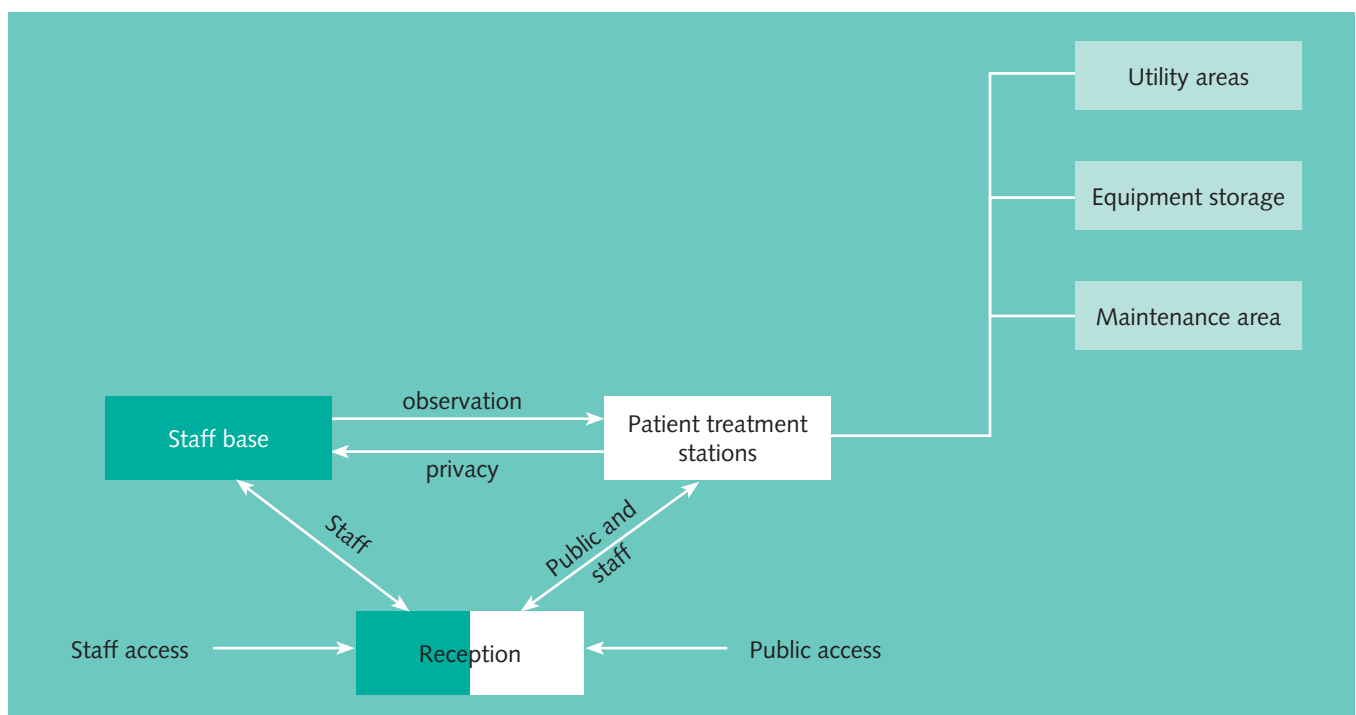
4.7 See also paragraph 5.xx, 'Support/utility'.

Functional relationships

4.8 A satellite dialysis unit contains three zones: patient-treatment stations, associated support facilities, and staff areas. There are key functional relationships both within and between these zones which should be taken into account when designing accommodation. Details of these relationships are described below.

- **Staff-base/patient-treatment stations:** staff at the staff base must be able to see and hear patients in the dialysis area. A balance should be struck between providing adequate observation for staff and privacy for patients.
- **Patient-treatment stations/utilities and equipment storage:** utility areas and equipment storage and maintenance areas should be located to provide ease of access to patient-treatment stations.

Figure 3 Functional relationships within the unit



Treatment stations could be arranged in modules, with demountable partitions. However, a balance must be maintained between privacy and the ability for staff to maintain eye contact with other patients and staff



- **Patient-treatment stations/staff areas:** staff rest rooms and offices should be separate from, but close to, patient-treatment stations.
 - **Treatment station/treatment station:** the layout of the multi-station dialysis area should enable patients to talk to one another, and nurses to call for assistance from one station to another, but care must be taken to allow sufficient space between dialysis stations to prevent the risk of cross-infection and for a degree of privacy (a preferred minimum of 900 mm between stations is required in this guidance).
- 4.10 The use of non-fixed, partial barriers may offer flexibility in arrangements and give patients a greater sense of personal space. Treatment stations could be arranged in modules, with demountable partitions. However, a balance must be maintained between privacy and the ability for staff to maintain eye contact with other patients and staff. For further guidance on the use of partitions, reference should be made to HTM 56 – ‘Partitions’.
- 4.11 The module configuration must allow for staff to communicate with groups of patients, yet stay within the constraints of plumbing and electrical needs, as well as provide for an easy renovation or expansion of the facility.
- 4.12 Noise levels can be reduced by the use of acoustically treated ceiling tiles and partitions.

Privacy and spatial arrangement in the dialysis area

4.9 Project teams should be aware that patient privacy can be compromised by the open-plan design of the dialysis area. A balance should be struck between patient privacy; patient/patient social interaction; need for blood-borne virus control; and the need for staff and patients to be able to observe one another. The ideal balance is likely to arise from local consultations among all parties, including patients, with their views being encompassed in a written design brief.

Infection control

4.13 The Public Health Laboratory Service (now subsumed under the Health Protection Agency) set up a working group to assess the risks of cross-infection from blood-borne viruses and how they may best be managed. Project teams should consider the working group’s recommendations: ‘Good practice guidelines for renal dialysis/transplantation units: prevention and control of

blood-borne virus infection’ (DH 2002). See also the standard principles of infection control in ‘Infection control: Prevention of healthcare-associated infection in primary and community care’ (NICE 2003), and guidance on “designing-in” infection control in ‘Infection control in the built environment’.

Future expansion

4.14 Project teams should allow for the future expansion of the dialysis service. Expansion may be achieved by developing existing internal spaces or by extending the building. Locating the dialysis area on an external wall will facilitate future expansion.

Information management and technology

4.15 Information management and technology (IM&T) is fundamental to the successful operation of a dialysis unit. The system selected should offer a wide range of facilities and be consistent with local and NHS IM&T strategies (see ‘Building the information core’ (DH 2001) and ‘Delivering 21st century IT support for the NHS’ (DH 2002)). More detailed guidance on local area networks (LANs) is contained in the NHS IT Standards Handbook (chapter 300), which may be downloaded from the NHS Information Authority web page. The system should also reflect the requirements of the Renal Information Strategy published with the Renal NSF. Several national action programmes are already established or under development:

- Integrated Care Record Services (ICRS);
- Datasets Development programme;
- National electronic Library for Health (NeLH);
- NHS Direct and Online (telephone advice and website);
- National Health Informatics Development Programme (NHID).

4.16 The IM&T facilities provided for a satellite dialysis unit should be the same as those available at a hospital-based dialysis unit.

4.17 Choice of systems and matters such as the location of computer terminals, which functions to include on the system, and access levels to information, should be determined locally. Examples of data

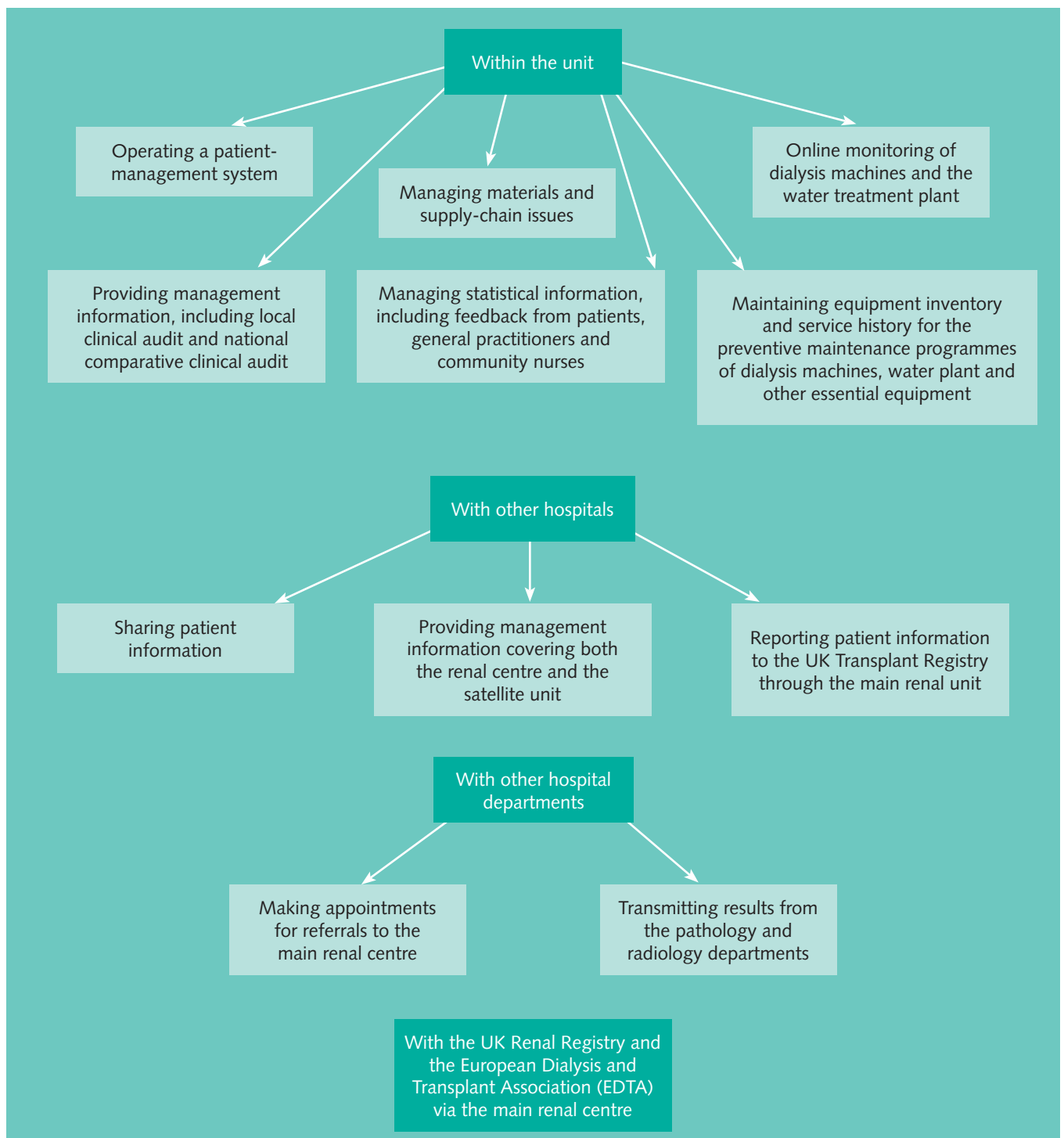
handling needs which can be met by installation of a network are shown in the figure below.

4.18 Project teams should pay particular attention to the following:

- a. They should consider the IM&T needs of the unit at an early stage, taking account of the Renal Information Strategy published with the Renal NSF and future expansion of the unit (for example, the introduction of individual patient care plans and the provision of integrated electronic patient records).
- b. They should review current IM&T developments nationally and at both the renal centre and any satellite units.
- c. They should check that proposals conform with local IM&T policies at both the renal centre and the satellite unit, which may or may not be within the same trust.
- d. They should ensure that sufficient space is provided at the design stage to meet the anticipated initial needs for special power supplies, modems, monitors, printers and associated software, stationery, and conduits for cables and for future expansion.
- e. It is likely that an area will be needed to contain either IM&T server equipment or IM&T communications equipment, or both. The room should be large enough to contain not only the equipment to be installed initially, but also any expansion of facilities at a later date. The team should also take into account that replacement equipment may need to be installed before existing equipment is removed.
- f. Ideally, the room should be separate from other equipment rooms in the unit and should be able to be secured separately. The equipment in the room should not be visible from outside the room.
- g. Arrangements should be made to ensure that the environment in the room is suitable for the equipment that may be kept in the room. This could include controlling the temperature, humidity, and levels of dust in the air. Space requirements and temperature limits should be obtained from the equipment manufacturers.
- h. There must be adequate space for maintenance staff to access the equipment and carry out their work without inconveniencing the normal operation of the satellite unit.

- j. They should ensure that monitors are sited so that the displayed text is not visible to members of the public (although it may be considered an advantage to be able to turn the screen to enable the patient to check the accuracy of the information entered).
- k. They should ensure that the contents of the monitor screen are legible.
- m. They should ensure that equipment noise is controlled within acceptable limits and, where necessary, fit acoustic hoods or locate the equipment in a separate room.
- n. They should ensure that adequate provision is made for the security of data and devices. If operational data is to be stored on equipment in the unit, arrangements need to be made to

Figure 4 Examples of the data handling needs of a satellite dialysis unit

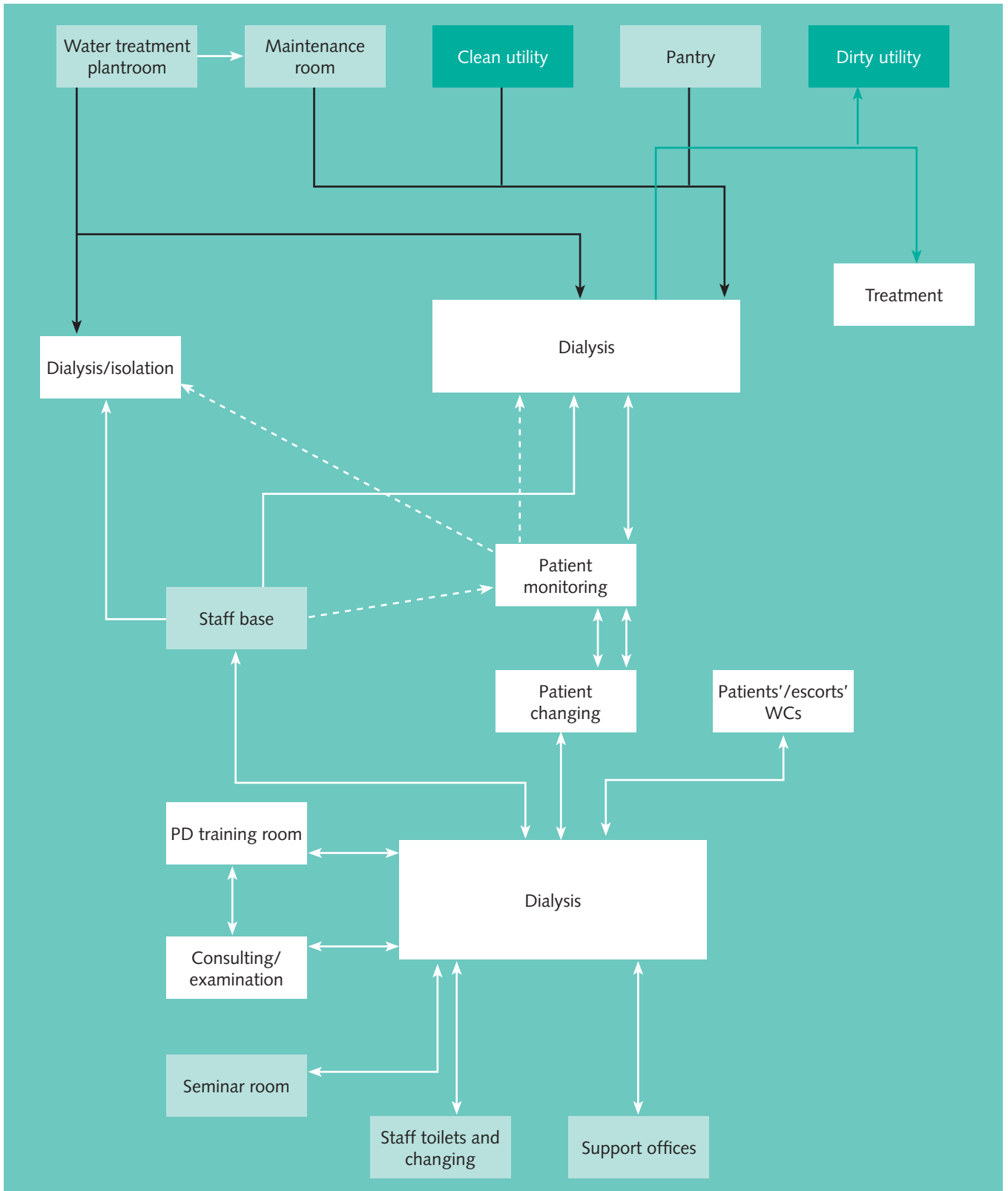


ensure that the data is copied onto separate storage media. These backups should be stored in a fire-proof safe in a secure, waterproof storage area off-site.

- p. Allowance should be made for the downloading of information from other medical devices including dialysis machines and physiological monitors.

5 Spaces

Figure 5 Specific functional relationships between areas



Reception and waiting

Reception office

- 5.1 An office is required at the entrance to the unit and adjacent to the waiting area for receiving and registering patients upon arrival and to provide the administrative and communication centre of the unit.
- 5.2 See also 'Reception desk: Design manual' and 'Offices' in Health Building Note 00-03 – 'Clinical and clinical support spaces'.

Waiting/refreshment area

- 5.3 The waiting area can become very busy at changeover times and should be large enough to accommodate two shifts of patients. Refreshment facilities should be provided, as patients may spend

long periods waiting to be connected to machines and waiting for transport.

- 5.4 If pre-dialysis or routine clinics are to be held in the satellite unit (this will be a local decision), the waiting area will need to be larger to accommodate the additional numbers of patients who will be in the unit on these days.
- 5.5 See 'Waiting area: Design manual' in Health Building Note 00-03 – 'Clinical and clinical support spaces'.

Patients' changing area/locker room

- 5.6 Separate male and female patient change/locker rooms should be provided where patients can change into comfortable clothing before dialysis and can store their outdoor clothing and other personal items while they are on the machines.

Reception and waiting area Courtesy of Esler Crawford Photography; reproduced by kind permission of Belfast City Hospitals Trust



- 5.7 Full-length lockers for the secure storage of dry outer and middle garments, footwear and small personal belongings are required. Hanging rails, with security, for the storage of wet outer garments, and lockers for large personal belongings should be provided. The number of lockers provided should be arrived at following consultation with patients, bearing in mind any likely future expansion of the unit, and should be included in the design brief. Lockers could be at the bedside.
- 5.8 A shower can be provided en-suite, but this is optional. The patient change/locker room door should be lockable.
- 5.9 See 'Changing facilities' in Health Building Note 00-02 – 'Sanitary spaces'.

Patients' sanitary facilities

- 5.10 Separate male and female sanitary facilities, including WCs with hand-wash basins, should be located adjacent to the patient changing/locker room.
- 5.11 Patient sanitary facilities should include an accessible toilet, and baby-changing facilities. See WCs for further information.
- 5.12 See 'WCs' in Health Building Note 00-02 – 'Sanitary spaces'.

Wheelchair storage area

- 5.13 A wheelchair storage area should be included for patients who, while being dialysed, have to leave their chairs.

Treatment

Patient-monitoring area

- 5.14 This space is used to monitor and record patients' weight, blood pressure and general health before each dialysis treatment. This area should be either within the dialysis area or adjacent to the dialysis area and/or the patient waiting area, depending on operational policy. Data may be recorded either on computer or on paper, depending on local policy.
- 5.15 Facilities required include: chair weighing scales and wheelchair weighing scales; a desk and chair; storage for blood pressure equipment. A clinical wash-hand basin, accessible by wheelchair patients, will also be required, as patients will need to wash their fistula arms before treatment.

- 5.16 There should be sufficient space to accommodate a nurse, one patient, a helper and wheelchair scales.

Multifaith/quiet room

- 5.17 This room will be used as a quiet room for worship, meditation, reflection and counselling. If provided, it should be available to everyone who attends the unit. The project team should give careful consideration to local needs, including the range of denominations and faiths wishing to use the accommodation, as this will vary according to the population served. The room should be comfortably furnished and include easy and upright chairs and an occasional table. Space and the arrangement of seating should accommodate 15 wheelchairs. Accessories of worship vary in accordance with denomination or faith, and therefore suitable storage cupboards should be provided. Appropriate washing facilities should be provided. This room is optional accommodation dependent on the needs of the population served.

Dialysis area

- 5.18 The dialysis area should consist of dialysis stations in increments of three. The schedules of accommodation for this guidance are based on a 12-, 18- and 24-station unit. The final number should take into account the provision of a spare station for routine maintenance, breakdowns and expansion. For guidance on spatial arrangement and patient privacy in the dialysis area, refer to [paragraph 4.9, 'Privacy and spatial arrangement in the dialysis area'](#).
- 5.19 Project teams should involve patients in the choice of chairs, and any conclusions should be included in the design brief (for example, this may include considering modified chairs that can be used by patients as cycle machines for exercise while on dialysis). Sufficient space must be allowed for the chair to be fully reclined, and for nurses to carry out procedures. Treatment stations will need to be arranged so that patients can be attached to the machine by either arm or by cannulae in their neck or groin. If beds are to be used instead of reclining chairs, floor areas for each station will need to be reviewed, as area allowance is slightly larger for bed provision. One emergency call button (with an audible and visual alarm) per station should be provided.
- 5.20 Facilities are required at the station for the storage of frequently-used medical items, and for patients

to carry out seated activities, including watching television, while undergoing dialysis. Storage shelves should be located so that items can be seen and reached easily by staff and patients. A mobile table may also be used by the patient for storing books, newspapers and other personal belongings, and by staff for recording the patient's notes.

5.21 Project teams should consider providing a computer outlet, telephone point and a network connection point at each station. Computer data points for staff use are likely to become increasingly important as remote electronic data access becomes more widespread.

5.22 There should be at least one wash-hand basin between two stations. The basin should be located as near to the station as possible without causing risk of splashing and cross-infection. At each station, there needs to be:

- an alcohol hand-rub dispenser;
- a wall-mounted soap dispenser;
- a towel dispenser;

- a clinical and non-clinical waste bin;
- a sharps container.

5.23 The floor should be slip-resistant, easily cleanable and have an impervious finish with coved skirting, as the risk of spillage of body fluids and other contaminants is high.

5.24 Adequate adjustable lighting should be installed on walls and ceilings for use by staff carrying out procedures and by patients for reading, writing etc. Lighting controls should be within easy reach of patients and staff.

5.25 Consideration should be given to the provision of a communication and entertainment system with individual TV, radio, video and stereo headphone systems, and a telephone handset that allows patients to both make and receive calls. Televisions may be suspended from the ceiling, mounted on walls, placed on mobile units, or, if flat-screen, on a swing-out arm for each patient. To avoid disturbance to other patients, sound outputs from radios, televisions and other auditory equipment



should be via headphones only. Consideration should also be given to providing access to the internet through a data point or wireless connection for patients who have laptop computers.¹

- 5.26 It is important to ensure the comfort of patients and staff in all weather conditions. The ability to keep the room temperature low is important for patient well-being and stability during dialysis and for staff working conditions. The extent of ventilation required will depend on the total heat gain within the dialysis area, but project teams should be aware that it is usually more cost-effective to install air-conditioning from the outset than to provide it after the facility has been completed.
- 5.27 The provision of medical gases, including oxygen and suction, at each station is for local consideration.
- 5.28 The dialysis area should have plenty of natural daylight with an outside view. Natural lighting is important to human well-being. Artificial lighting, as well as providing levels of illumination to suit

- 1 If a bedside communication and entertainment system is to be procured for the satellite unit, the system supplier/contractor may offer discounts or reach an agreement with the NHS trust about providing the service to patients free or for a nominal amount. These issues are best addressed locally.

activities, can make an important contribution to interior design. Designers should develop a lighting scheme that will help to promote a high-quality image of the services being offered and a non-clinical, soft environment. Uplighting, the level of which can be varied by patients, has been found to be very beneficial – see the Chartered Institution of Building Services Engineers (CIBSE) SLL Guide LG2 – ‘Hospitals and healthcare buildings’; and Guide F – ‘Energy efficiency in buildings’.

Resuscitation trolley bay

- 5.29 A resuscitation trolley bay, with space for parking a resuscitation trolley (with defibrillator), a mobile suction unit and a cylinder of oxygen on a trolley (if these are not piped to the bed or chair side), should be located with easy access to all spaces used by patients. Guidance on gas storage is contained in HTM 02-01 – ‘Medical gas pipeline systems’.

Consulting/examination room

- 5.30 One or more (depending on the use to which the satellite unit is put, for example if the unit were to support a pre-dialysis clinic) combined consulting/examination rooms are required for consultation and examination.
- 5.31 The consulting/examination room with desk, chairs and an examination couch, screened by curtains. Space is needed for a mobile adjustable inspection



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lamp, an X-ray viewer, blood-pressure monitoring equipment, a computer terminal, an alarm call system and clinical wash-hand facilities.

- 5.32 See 'Consulting, examination and interview spaces' in Health Building Note 00-03 – 'Clinical and clinical support spaces'.

Isolation room

- 5.33 There is a strong and increasing body of opinion that an isolation room is essential and that it should not be necessary to transfer patients to a main renal centre if they are medically stable. Some stable patients may need to be dialysed in isolation from other patients either temporarily or on every occasion. This would usually be for infection control purposes, and the control measures taken would depend on the mode of spread of the particular pathogenic organism. There is a need to agree cross-infection/isolation requirements (including those for hepatitis B, hepatitis C, HIV and MRSA) with the local infection control team to allow maximum flexibility of the facility, taking into account local and national guidelines.
- 5.34 There should be an allocation of one to two isolation rooms per 12 stations.
- 5.35 It should be accessible from the main dialysis area, and a viewing window to that area should be provided.
- 5.36 The room may also be used for "routine" dialysis, particularly when other treatment stations are fully utilised.
- 5.37 See also Health Building Note 04-01 Supplement A – 'Isolation facilities in acute settings'.

Staff base

- 5.38 The staff base/bases should be located so that staff sitting at the base can observe the patients in the dialysis area. If separating screens are used, they will need to be of a height to allow direct vision from a staff base, but allow privacy to patients. The number and location of the bases will depend on local policies and will be arrived at after consultation, the conclusions of which should be translated into the design brief. Staff bases must not be a source of disturbance to patients.
- 5.39 The likely numbers of nursing staff, the choice and location of monitoring and computing equipment, storage policies and requirements for notes, forms and other stationery must be considered.

- 5.40 It is recommended that a separate room be provided for staff handovers to promote privacy. The manager's office or the seminar room can be used for this function.

Treatment room

- 5.41 A treatment room is required for medical and nursing staff to perform minor diagnostic and treatment procedures requiring a clinical environment, for example inserting and changing the lines and cannulae required by CAPD and haemodialysis patients. This will require enclosed storage areas for equipment and disposable items. Ultimately, the kind of treatment room needed will depend on the procedures to be carried out, and these should be clarified at an early stage of planning.
- 5.42 An island couch should be provided, with space for staff to work from all sides. Facilities for recording patient data, and for storage and disposal of dressings and other disposables, should be supplied.
- 5.43 The treatment room should be located adjacent to the dialysis area, dirty utility and clean utility.
- 5.44 See 'Treatment rooms' in Health Building Note 00-03 – 'Clinical and clinical support spaces'.

Training room

- 5.45 There should be facilities for teaching patients how to perform a variety of tasks including continuous ambulatory peritoneal dialysis (CAPD) and automated peritoneal dialysis, and how to operate haemodialysis machines for home haemodialysis and self-care, and for carrying out administrative duties. Project teams should be aware that home haemodialysis patients and CAPD patients are trained differently and therefore need different facilities/environments. Training should take place in an informal, non-clinical environment that relates more to a patient's home environment.
- 5.46 There should be enough space to accommodate a nurse, two patients and two escorts. Clinical hand-wash facilities are required as well as a separate sink for the disposal of saline solution and other waste products.
- 5.47 A bag warmer is required. Facilities to operate an automated peritoneal system should be provided.
- 5.48 A variety of cupboards and shelves for the storage of CAPD equipment, stationery and other office supplies should be provided.

- 5.49 The peritoneal dialysis nurse will need a workstation and computer terminal. In units with a large number of CAPD patients, a separate administration office for CAPD staff may be required.
- 5.50 The training room is optional accommodation. However, where project teams do decide to include an area for PD training, a separate room for patients who come into the unit on a “drop-in” basis for advice and information should be considered. Alternatively, one of the consulting/examination rooms could be used for this purpose if the number of “drop-in” patients is likely to be few.

Office accommodation

Manager’s office

- 5.51 This office is the administrative base for the unit manager. It should be sufficiently private for confidential discussions among staff. See ‘Office: 1-person: Design manual’ in Health Building Note 00-03 – ‘Clinical and clinical support spaces’.

Multidisciplinary office/interview room

- 5.52 This office space may be shared on a sessional basis by dieticians, social workers and other members of the renal team. It may also be used for counselling,

interviews etc. See ‘Offices’ in Health Building Note 00-03 – ‘Clinical and clinical support spaces’.

Administration office

- 5.53 Some units will have a dedicated person (or small team) who organises fluid deliveries, holiday arrangements etc on behalf of patients.
- 5.54 Alternatively, this room could be optional if facilities and logistics allowed its functions to be carried out at the main renal centre. See ‘Offices’ in Health Building Note 00-03 – ‘Clinical and clinical support spaces’.

Seminar room

- 5.55 A seminar room may be provided for teaching, tutorials, meetings, case conferences and clinical instruction. See ‘Seminar room’ in Health Building Note 00-03 – ‘Clinical and clinical support spaces’.

Support/utility

Water treatment plantroom

- 5.56 Drinking water standards are inadequate for haemodialysis since patients are exposed to many thousands of litres of dialysis fluid annually. Water to be used for dialysis needs to be treated appropriately to remove impurities.



Seminar room

- 5.57 For normal haemodialysis, water purity must meet the minimum standards for regular water quoted in ERA-EDTA's (2002) 'European Best Practice Guidelines for Haemodialysis (Part 1)'.
- 5.58 To achieve ultra-pure water standards "double pass reverse osmosis (RO)" may be required, and this will have an effect on the space allocated to the water treatment room. It is also recommended that project teams refer to the Association for the Advancement of Medical Instrumentation's (AAMI) standards.
- 5.59 The specification for the water treatment plant will be determined by the composition of the water supply; project teams should seek the advice of the local water authority, a renal technologist, the specialist water treatment plant supplier and the medical physics department.
- 5.60 It is important that the plant be close to the dialysis area (although not adjacent to it because of noise considerations), as this will shorten the distance covered by the distribution ring. It should also be located close to vehicle access to enable deliveries of chemicals and salt (if softening is required).
- 5.61 There should be sufficient space to accommodate a maximum of two people to monitor, adjust, service and repair the water treatment plant. For further guidance on accommodation for plant and services, refer to 'Best practice guidance for healthcare engineering'.
- 5.62 The plantroom should be sized to accommodate the plant and storage of chemicals. Areas within the plantroom providing bulk storage of any corrosive liquids should be suitably sealed and bonded.
- 5.63 The plantroom floor should be sloped to a drain and treated with a chemical-resistant sealant, and the door accesses should have a lip and ramp to prevent water seeping to the rest of the unit in the event of a large water leak. The floor should also be "bunded" to contain any major water leakage. The door should be lockable for security. The plantroom should be adequately lit and ventilated. Mechanical ventilation may be necessary if the heat gain from the water treatment plant cannot be controlled by natural ventilation.
- 5.64 The plantroom should have provision for local and remote monitoring of the water treatment plant.
- 5.65 The water treatment plantroom should not house any other equipment (for example calorifiers) other than that which is specific to its function.
- 5.66 See Health Technical Memorandum 00 – 'Best practice guidance for healthcare engineering'.



Water to be used for dialysis needs to be treated appropriately to remove impurities. For normal haemodialysis, water purity must meet the minimum standards for regular water quoted by the European Pharmacopoeia

Maintenance room

- 5.67 A workshop is required for the maintenance and repair of dialysis machines. The space provision should be sufficient to park and manoeuvre equipment and accommodate a workbench with integral lockable cupboards. The floor should have an impervious finish with coved skirting.
- 5.68 A computer terminal should be provided to record all services and repairs on a central database. It is recommended that manufacturers' user manuals are kept in this room.
- 5.69 A clinical wash-hand basin, a sink for cleaning of components and disposal of non-toxic fluids, and also a wash-hand basin should be provided. Alternative disposal should also be made available for contaminated wastes.
- 5.70 A lobby associated with the equipment service room will provide space for holding equipment awaiting repair and/or calibration. A separate area should also be provided for machines that are already repaired and ready to go back into use.
- 5.71 The maintenance room requires a suitable electricity supply and a treated-water supply to the same specification as that being supplied to the dialysis area. A water supply and drainage facilities are also required.
- 5.72 There should be enough storage space for spare parts. There should also be suitable storage facilities for CMOS (complimentary metal oxide semiconductor) boards and other sensitive electronic components.
- 5.73 The maintenance room is essential complementary accommodation.

Maintenance room: equipment storeroom

- 5.74 A separate equipment storeroom will be needed to store spare and isolated dialysis machines. (The



Maintenance room: equipment storeroom

maintenance room itself should not be used to store any spare machines.) A treated water supply, power and drainage facilities are required.

Clean utility

- 5.75 A clean utility room is required for storing and preparing drugs, medicines and lotions, and for holding a working supply of clean and sterile supplies. A controlled drugs cupboard – attached to a load-bearing wall and alarmed – may be located here. A refrigerator will be required to store specialist drugs. The clean utility should be adjacent to the treatment room. Clinical hand-wash facilities are required. The floor should have an impervious finish. See 'Utility' in Health Building Note 00-03 – 'Clinical and clinical support spaces'.



Clean utility

Dirty utility

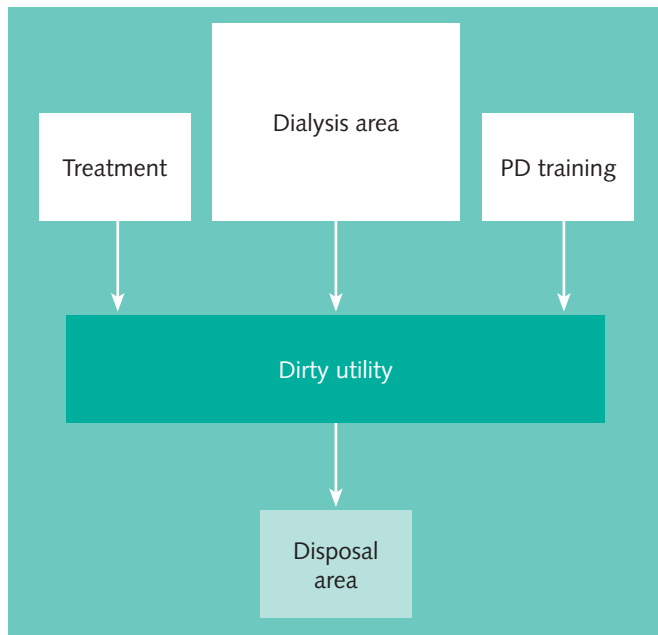
- 5.76 See 'Utility' in Health Building Note 00-03 – 'Clinical and clinical support spaces'.



A dirty utility should have work surfaces, cupboards and shelves

Disposal room

Figure 6 Disposal flow



5.77 See ‘Facilities management’ in Health Building Note 00-03 – ‘Clinical and clinical support spaces’.

Staff rest room

5.78 The staff rest room should have windows with a pleasant outlook and be comfortably furnished. See ‘Refreshments and rest’ in Health Building Note 00-03 – ‘Clinical and clinical support spaces’.



Staff rest room

Pantries: patients and staff

5.79 See ‘Refreshments and rest’ in Health Building Note 00-03 – ‘Clinical and clinical support spaces’.



Pantry facilities

Staff change/locker room

5.80 See ‘Changing facilities’ in Health Building Note 00-03 – ‘Clinical and clinical support spaces’.

Staff sanitary facilities

5.81 See ‘WCs’ in Health Building Note 00-02 – ‘Sanitary spaces’.

Equipment storeroom

5.82 Renal consumables should have a dedicated storeroom. This store should be large, with plenty of racking. The exact size of the store will depend upon how frequently supplies are delivered. However, it is worth pointing out that storage space is frequently understated. There should be provision for a bottled gas rack within this room.

5.83 The store will require lockable and alarmed double doors to the exterior for receiving delivered goods.

5.84 Additional storage space is required for the storage of equipment (chairs, drip-stands, etc) and of



Equipment storeroom



Equipment storeroom: renal consumables should have a dedicated storeroom

disposables. It is preferable to store these separately. The equipment store will require lockable and alarmed double doors to the exterior for receiving delivered goods.

Fluid store

5.85 A storeroom for “bulk fluid” deliveries should be considered. This is a different way of providing dialysis fluid and requires one or more tanks to be installed for storing the fluid. The size of this room will depend on the number of stations and the frequency of delivery. This room is optional accommodation as not every unit will use this system.

Clean linen storage

5.86 For infection control purposes, clean linen should be kept in a closed store rather than on open trolleys. Local policy will determine whether linen is stored in single-bed rooms or in a central store.

Cleaners’ room

5.87 See ‘Utility’ in Health Building Note 00-03 – ‘Clinical and clinical support spaces’.

Electrical distribution cupboard

5.88 An electrical distribution cupboard, with lockable doors, housing the main isolators and distribution fuse switchgear, should be:

- accessible directly from a circulation area (access space may be part of the circulation area);
- sited away from water services; and
- lockable.

5.89 The electrical distribution cupboard, where possible, should be sited within the unit. There should be clear and safe access for maintenance staff, and care should be taken to ensure that safety is not compromised, during maintenance, from passing traffic or the opening of adjacent doors. All equipment should be mounted at a height to give easy access from a standing position.

IT room

- 5.90 The IT room will contain network servers and communications equipment.
- 5.91 The room should be large enough, not only to contain the equipment intended to be installed initially, but also to allow for expansion of facilities at a later date. There may be a need at some time to install replacement equipment before existing equipment is removed.
- 5.92 The room should ideally be separate from other equipment rooms in the unit and should be separately securable. The equipment in the room should not be visible from outside the room.
- 5.93 Arrangements should be made to ensure that the environment in the room is suitable for the equipment that may be kept in the room. This could include controlling the temperature, humidity, and levels of dust etc in the air.
- 5.94 There must be adequate space for staff to be able to access the equipment for maintenance purposes. It should be ensured that this maintenance can be done without inconveniencing the normal operation of the unit.
- 5.95 A secure storage area should be provided for storing back-up media.

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