Facilities for renal services. HBN 53, Volume 1: Satellite dialysis unit

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For Recipients Use
Facilities for renal services

HEALTH BUILDING NOTE 53: VOLUME 1

Satellite dialysis unit
PREAMBLE

This guidance document is the first volume of a three-volume Health Building Note series on ‘Facilities for renal services’ and provides guidance on the planning and design of satellite dialysis units. It supersedes HBN 53 – ‘Satellite dialysis units’ published in 1996. (Published separately, the second volume is a guide to the planning and design of a main-centre renal unit. The third volume focuses on transplant units.)

Main differences from the last edition

The 1996 edition generally accepted that most satellite dialysis units would be located on a hospital site. This volume points out that a satellite unit may not necessarily be a physically integral part of a main renal unit. Indeed, it recommends that 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.

Access to the unit is another priority. It suggests that there should be designated patient 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 costings given in this guidance are for a 12-, 18- and 24-station unit as opposed to 8-, 10- and 12-station modules considered in the 1996 edition.

Regulations and standards on water purity for dialysis have been updated (see below).

A PATIENT-CENTRED SERVICE

Renal services of the future should be centred on the needs of people with established renal failure and designed to facilitate their “journey of care”. Wherever possible, haemodialysis treatment should be delivered at a time and place convenient for patients, in an environment that is clean, comfortable and conducive to treating them with respect and dignity.

It is most strongly recommended that, from the outset of a new capital project, all parties (including infection control teams) – and especially patients – should be involved in a consultation process and that the conclusions of these consultations be translated into a written brief.

THE SATELLITE UNIT

For the purposes of this building note, a satellite unit is defined as a facility for haemodialysis which:

- is not within the main renal facilities of a main hospital site but is not in the patient’s home; and
- can be used by a defined group of renal patients, based on local renal-disease demographics, who may come from a variety of ethnic and cultural backgrounds, and who are less likely to require the resources available in the area’s main renal centre.

This guidance examines various options for the location and management of satellite units, and considers the role of private contractors in the provision of dialysis services.

Accommodation and spaces

The accommodation described in the document is suitable for providing maintenance dialysis for adult patients with established renal failure. Specific areas within the unit and their design should reflect the function of the unit and be decided upon following discussions among the contractors, the unit’s management team and patients. These areas vary from satellite to satellite, but are likely to include some or all of the following:

- reception office;
- patients’ waiting/refreshment area;
- patients’ changing area which promotes privacy and dignity;
- patients’ sanitary facilities, including a WC accessible to the disabled;
- wheelchair storage area;
• patients’ monitoring area – for monitoring and recording patients’ general health, weight and blood pressure before each treatment;

• multi-faith/quiet room which can be used, for example, as a religious/cultural-observance room;

• dialysis area (containing a number of treatment stations) – this area could be open-plan or could be divided into appropriately-sized bays according to design options and patients’ choice;

• isolation room – where medically stable patients may be dialysed in isolation if necessary;

• staff base;

• resuscitation trolley bay;

• consulting/examination room;

• treatment room – where staff may insert and change the lines and cannulae required by continuous ambulatory peritoneal dialysis (CAPD) and haemodialysis patients, and carry out a range of other clinical procedures;

• patient-training facilities where staff can teach patients how to perform tasks appropriate to their mode of dialysis. Exactly what these facilities should be will depend on the tasks being taught and may vary from satellite to satellite;

• manager’s office;

• multidisciplinary office/interview room;

• administration office;

• seminar room;

• water treatment plantroom – for the treatment of water for haemodialysis;

• maintenance room – for the maintenance and repair of dialysis machines;

• equipment room – for storing spare machines;

• separate store room for machines and equipment requiring repair or maintenance;

• clean utility;

• dirty utility;

• disposal room;

• staff rest room;

• pantries: patients and staff;

• staff change/locker room;

• equipment storeroom;

• fluid store;

• clean store;

• clean linen storage;

• cleaners’ room;

• electrical distribution cupboard;

• IT room.

Water quality and water treatment

As drinking-water standards are inadequate for haemodialysis, water for dialysis should reach at least the following standards:

• the higher European Pharmacopoeia (EP) XVI standard: ‘Water for diluting concentrated haemodialysis solutions’;

• ISO 13959: ‘Water for haemodialysis and related therapies’; or

• AAMI (Association for the Advancement of Medical Instrumentation) standards.

In preparing specifications for water treatment plant, project teams should seek the advice of the local water authority, a renal technologist, specialist water treatment companies and equipment manufacturers, particularly if haemofiltration or haemodiafiltration treatments are to be carried out, since it is essential that the highest standards for water treatment are routinely achieved or exceeded.

Future expansion

Project teams should ensure that the design of new-build satellite units is flexible enough to accommodate future expansion of the service.

UPGRADING OR ADAPTATIONS OF EXISTING BUILDINGS

The standards set out in this guidance essentially apply to the provision of accommodation by new building and it is not intended that they should be applied retrospectively to existing stock. However, the principles are equally valid and should be applied, so far as is reasonably practicable, when existing accommodation is being upgraded or new accommodation is being constructed within an existing building which may previously have been used for other purposes.

When comparing the cost of upgrading or adapting an existing building to that of constructing a new building, due allowance – in addition to the building cost – must be made for the costs of relocating people, demolition, salvage, disruption of services in a phased project, and
the temporary effects on running costs of any impaired functioning of areas of the building affected by the upgrading works.

DEPARTMENTAL COST ALLOWANCE GUIDES

Departmental Cost Allowance Guides (DCAGs) related to this HBN are officially notified in ‘Quarterly Briefing’, published by NHS Estates. A full listing of all DCAGs is published in the ‘Healthcare Capital Investment’ document, a hard copy of which can be obtained from NHS Estates; copies can also be downloaded from http://www.nhsestates.gov.uk. Further information on this can be obtained from NHS Estates; telephone 0113 254 7000.
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INTRODUCTION

1.1 This document provides guidance on how the built environment can be designed to improve the experience and outcome of renal patients.

1.2 It provides guidance on the planning and design of satellite dialysis units. It replaces and supersedes the original HBN 53 published in 1996.

Note: Care has been taken to ensure that the guidance and recommendations for the accommodation described in this HBN are economical and flexible without detriment to the standards required for the high-quality care and treatment of renal patients.

RANGE OF PROVISION

Inclusions

1.3 Volume 1 provides guidance on accommodation for maintenance dialysis, based in a satellite unit.

1.4 The unit described in this volume 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.

Exclusions

1.5 Volume 1 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 Volume 2;
- renal transplantation, as this will be covered in Volume 3;
- 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. (Project teams intending to provide such facilities are advised to refer to the Medical and Healthcare Products Regulatory Agency’s (MHRA) ‘Single-use medical devices: implications and consequences of reuse’ and Health Service Circular 1999/179: “Controls assurance in infection control: decontamination of medical devices”.)
INTRODUCTION

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.

2.2 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.

2.3 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

2.4 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.

2.5 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.

2.6 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

2.7 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 various dialysis techniques are described in the Glossary in Appendix 2.

The role of a satellite dialysis unit

2.8 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.

2.9 The options for the location of a satellite unit are discussed in paragraph 3.1.

2.10 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 document 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.

Organisation and patient flow

2.11 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). Many patients also choose to change into loose, comfortable clothes before going on the dialysis machine.
- 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.

FACTORS AFFECTING THE SIZE OF A SATELLITE RENAL SERVICE

Demand

2.12 Diabetes is the leading cause of chronic renal failure (Roderick et al., 2002). 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.

2.13 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 (see paragraph 4.43) and the need for networked links to the main renal unit (see paragraph 3.19).

2.14 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.

2.15 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 (Roderick et al., 2002).

Future developments

2.16 The resurgence in home haemodialysis. 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 of Clinical Excellence, 2002).

2.17 Potential for offering daily haemodialysis as an option. 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

2.18 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 costings given in this guidance are for 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.

2.19 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 (see paragraphs 6.67–6.72). 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 technicians;
- 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.
3 General functional and design requirements

INTRODUCTION

Location

3.1 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. 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

3.2 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.

3.3 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.

PLANNING AND DESIGN

Access to the unit

3.4 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

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**Figure 2: Access to the unit**

- Technical support facilities
- Workshops
- Plantroom
- Storage facilities
- Clinical and non-clinical waste
- Clinical and non-clinical supplies
- Satellite dialysis unit
- Public transport
- Taxi
- Ambulance
- Private car
- Patients
should be covered so that patients transferring from a vehicle into the unit are not exposed to the weather.

3.5 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 congestion might occur if only a shared entrance is available.

3.6 The entrance should be easily accessible to people using wheelchairs or walking aids.

3.7 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.

3.8 The satellite unit will require large volumes of clinical and non-clinical supplies to be delivered and off-loaded routinely (see paragraphs 4.94–4.97). This will lead to large volumes of clinical waste and non-clinical waste that will need to be removed daily (see paragraphs 4.82–4.85). Thus, the eventual location of the unit and plantroom must be considered carefully, as waste fluids in such volume require correct disposal.

3.9 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.

### Functional relationships

3.10 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 (see paragraph 3.11).
- **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.
- **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: see Appendix 1 for layout diagrams).

### Privacy and spatial arrangement in the dialysis area

3.11 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.

3.12 The use of non-fixed, partial barriers may offer flexibility in arrangements and give patients a greater
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.

3.13 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.
3.14 Noise levels can be reduced by the use of acoustically treated ceiling tiles and partitions (see also paragraphs 5.41–5.45 and 6.29–6.31).

**Infection control**

3.15 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 and transplantation units: prevention and control of blood-borne virus infection’ (Department of Health, 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 HFN 30 – ‘Infection control in the built environment’ (NHS Estates, 2002).

**Future expansion**

3.16 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**

3.17 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’ (Department of Health, 2001) and ‘Delivering 21st century IT support for the NHS’ (Department of Health, 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 (http://www.nhsia.nhs.uk/napps/pages/documents/downloads/300chap.pdf). 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).

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

3.19 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 Figure 4 overleaf.

3.20 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 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 IT server equipment or IT 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 (see paragraph 6.111);

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 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.
4 Specific functional and design requirements

Figure 5 Specific functional relationships between areas
RECEPTION AND WAITING SPACES

Reception office

4.1 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.

4.2 If the office has a welcoming, open-plan design which allows reception staff to see and receive patients entering the unit, it may not be necessary to provide a separate reception counter. It must be possible for patients, escorts and staff to communicate easily. It is important to ensure that the reception office is accessible to people in wheelchairs and that counters or reception desks are suitable for patients in wheelchairs to be able to communicate with staff at computer terminals.

4.3 Consideration should be given to routing all telephone calls to and from the unit through the reception office.

4.4 Workstations, computers and photocopying facilities will be required, as well as a fax machine for transmitting messages to the main renal unit, general practitioners and other personnel. Cupboards will be required for storing a working supply of stationery, information leaflets etc.

4.5 Confidential medical records will be stored in this office in lockable, fire-resistant filing cabinets or notes trolleys.

4.6 From the reception area, it should be possible to visually check persons entering the unit for security reasons.

Waiting/refreshment area

4.7 A waiting area should offer a comfortable and relaxing environment with domestic-type finishes and furnishings. Different types of seating are required, and should include those suitable for elderly people. The layout should be informal. There should be space for patients in wheelchairs and for people using walking aids. The waiting area can become very busy at changeover times and should be large enough to accommodate two shifts of patients.

4.8 The waiting area is an important social space. The provision of noticeboards and posters can help to lend a sense of identity to the unit. Project teams may wish to
consider the provision of low-level background music, a TV/video system, facilities for personal entertainment, and Internet connections for patients using their own laptop computers. These may help patients relax, alleviate the boredom of essential waiting, and mask confidential discussions. A supply of reading material should be available.

4.9 Refreshment facilities should be provided, as patients may spend long periods waiting to be connected to machines and waiting for transport.

4.10 A public telephone with an acoustic hood should be provided in accordance with hospital policy (see also paragraph 5.14). A freephone for taxis may also be considered.

4.11 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.

Patients' changing area/locker room

4.12 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.

4.13 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 included in the design brief. Lockers could be at the bedside.

4.14 A shower can be provided en-suite, but this is optional. The patient change/locker room door should be lockable.

Patients' sanitary facilities

4.15 Separate male and female sanitary facilities, including WCs with hand-wash basins, should be located adjacent to the patient changing/locker room.

4.16 Patient sanitary facilities should include an accessible toilet, and baby-changing facilities.

Wheelchair storage area

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

TREATMENT AREAS

Patient-monitoring area

4.18 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.

4.19 Facilities required include: chair weighing scales and wheelchair weighing scales; a desk and chair; storage for blood pressure equipment. A clinical hand-wash basin, accessible by wheelchair patients, will also be required, as patients will need to wash their fistula arms before treatment.

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

Multifaith/quiet room

4.21 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 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

4.22 The dialysis area should consist of dialysis stations in increments of three. The costings given in this guidance are for 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 paragraphs 3.11–3.14.

4.23 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.

4.24 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.

4.25 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.

4.26 There should be at least one hand-wash 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.

4.27 The floor should be slip-resistant, be easily cleanable (see NHS Estates’ HFN 30 – ‘Infection control in the built environment’) and have an impervious finish with coved skirting, as the risk of spillage of body fluids and other contaminants is high (see also paragraph 5.9).

4.28 Adequate adjustable lighting should be installed on walls and ceilings for use by staff carrying out procedures and by patients for reading, writing etc.
4.29 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.*

4.30 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.

4.31 The provision of medical gases, including oxygen and suction, at each station is for local consideration.

Isolation room

4.32 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.

4.33 There should be an allocation of one to two isolation rooms per 12 stations.

4.34 In this HBN it is assumed that, in the isolation room, a negative air pressure facility may be required. It is vital that the negative pressure can be monitored within the unit and that the door to the room is alarmed (see paragraphs 6.48–6.51).

4.35 An isolation room has the same equipment and spatial requirements as a standard treatment station, with the addition of hand-wash facilities, and should allow for either bed or chair provision. The room should be accessible from the main dialysis area, and a viewing window to that area should be provided. The door to the isolation room should be kept closed as much as possible so that the required direction of air movement is minimally disturbed.

4.36 An emergency call button is required with an audible and visual alarm.

4.37 The floor should be slip-resistant, easily cleanable (see NHS Estates’ HFN 30 – ‘Infection control in the built environment’) and have an impervious finish with coved skirting.

4.38 The room may also be used for “routine” dialysis, particularly when other treatment stations are fully utilised.

Staff base

4.39 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.

4.40 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.

4.41 All communication systems should have a terminal here, including computer, telephones, fax, call systems and alarms.

4.42 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.

Resuscitation trolley bay

4.43 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 2022 – ‘Medical gas pipeline systems’.

* 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.
Consulting/examination room

4.44 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.

4.45 The room should be large enough to accommodate a doctor, a nurse, a patient (who may be in a wheelchair), and an escort/carer. Space is needed for a desk and chairs, and an examination couch, screened by curtains. There should be enough space within the curtained area for a patient to undress/dress in privacy with assistance when required. Space is needed for storing small items of equipment, small quantities of supplies, a mobile adjustable inspection lamp, an X-ray viewer, blood-pressure monitoring equipment, a computer terminal and an alarm call system. Clinical hand-wash facilities are required (see NHS Estates’ HFN 30 – ‘Infection control in the built environment’). A telephone may also be required.

Treatment room

4.46 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.

4.47 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.

4.48 An examination luminaire should be provided over the treatment couch. It should be adjustable in pitch and rotation to allow the beam to be directed locally, and should provide reasonably shadow-free illumination with minimum heat gain to avoid injury to patients and staff. The examination luminaires should be manufactured and tested in accordance with the requirements specified in BS EN 60598-2-25.

4.49 A clinical hand-wash basin is required (see NHS Estates’ HFN 30 – ‘Infection control in the built environment’). The level of asepsis within this room should be commensurate with the procedures being carried out.
4.50 An emergency call system for the staff, and a nurse call system for the patient, should be provided.

4.51 The treatment room should be located adjacent to the dialysis area, dirty utility and clean utility.

**Training room**

4.52 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.

4.53 There should be enough space to accommodate a nurse, two patients and two escorts. Clinical hand-wash facilities are required (see also NHS Estates’ HFN 30 – ‘Infection control in the built environment’), as well as a separate sink for the disposal of saline solution and other waste products.

4.54 A bag warmer is required. Facilities to operate an automated peritoneal system should be provided.

4.55 A variety of cupboards and shelves for the storage of CAPD equipment, stationery and other office supplies should be provided.

4.56 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.

4.57 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 consultation/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**

4.58 This office is the administrative base for the unit manager. It should be sufficiently private for confidential discussions among staff. The office should accommodate a workstation with computer and keyboard, seating for up to three other persons, and storage for books and files, computer terminal keyboards and telephones.

**Multidisciplinary office/interview room**

4.59 This office space may be shared on a sessional basis by dietitians, social workers and other members of the renal team. It may also be used for counselling, interviews etc. The room should be comfortably furnished and include easy and upright chairs and an occasional table. A desk and chair should be provided to enable a member of staff to make notes while talking to a patient and/or escort. Space and the arrangement of seating should accommodate wheelchairs.

**Administration office**

4.60 Some units will have a dedicated person (or small team) who organises fluid deliveries, holiday arrangements etc on behalf of patients. The office should accommodate a workstation with computer and keyboard, seating for up to three other persons, and storage for books and files. This would depend on the size of the unit and number of patients.

4.61 Alternatively, this room could be optional if facilities and logistics allowed its functions to be carried out at the main renal centre.

**Seminar room**

4.62 A seminar room may be provided for teaching, tutorials, meetings, case conferences and clinical instruction. Furniture and equipment should include upright stacking chairs with writing arms, a wall-mounted whiteboard, a video/TV monitor and computer-projection facilities, a wall-mounted display panel, and facilities for storing valuable and fragile items. Air-conditioning should also be installed.

4.63 The seminar room is essential complementary accommodation.

**SUPPORT/UTILITY SPACES**

**Water treatment plantroom**

4.64 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. For normal haemodialysis, water purity must meet the minimum standards for regular water quoted by the European Pharmacopoeia (third edition, 1997 supplement 2001).1 For haemodiafiltration, the water quality must achieve ultra-pure standards (“European Best Practice Guidelines for Haemodialysis (Part 1)”, ERA-EDTA, 2002). To achieve ultra-pure water standards “double pass reverse osmosis (RO)” may be

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1 Renal care societies in many countries have similar endotoxin limits that apply locally. For example, France has a limit of 0.05 IU/ml for endotoxin levels (Nystrand, 2002)
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. (See also paragraphs 6.67–6.72.)

4.65 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.

4.66 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).

4.67 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 HTM 2023 – ‘Access and accommodation for engineering services’.

4.68 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.

4.69 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 (see also paragraphs 6.79–6.81 on “Drainage”).

4.70 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.

4.71 The plantroom should have provision for local and remote monitoring of the water treatment plant.

4.72 The water treatment plantroom should not house any other equipment (for example calorifiers) other than that which is specific to its function.

**Maintenance room**

4.73 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

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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.
cupboards. The floor should have an impervious finish with coved skirting.

4.74 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.

4.75 A clinical hand-wash basin, a sink for cleaning of components and disposal of non-toxic fluids, and also a hand-wash basin should be provided. Alternative disposal should also be made available for contaminated wastes.

4.76 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.

4.77 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.

4.78 There should be enough storage space for spare parts. There should also be suitable storage facilities for CMOS (complimentary metal oxide semi-conductor) boards and other sensitive electronic components.

4.79 The maintenance room is essential complementary accommodation.

**Maintenance room: equipment storeroom**

4.80 A separate equipment storeroom will be needed to store spare and isolated dialysis machines. (The maintenance room itself should not be used to store any spare machines.) A treated water supply, power and drainage facilities are required.

**Clean utility**

4.81 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.

**Dirty utility**

4.82 A dirty utility room should be provided, where items of equipment may be cleaned and for the disposal of liquid and solid waste. If a disposal room is not provided, the dirty utility should be large enough to temporarily hold materials for disposal and those items that need to be reprocessed.

4.83 The room should be fitted with a sluice sink, a sink-unit with drainer, a hand-wash basin, a worksurface, cupboards and shelves. Bed-pan disposal facilities are required. Space should be available to park trolleys and for temporarily holding bags of soiled linen etc. Pedal-operated sack-stands are also required. The floor should have an impervious finish.
4.84 A secure collection area for clinical waste and non-clinical waste should be provided. There should also be separate external access for clinical waste bins.

**Disposal room**

4.85 The disposal room is the temporary storage point for all items of supplies and equipment which have to be removed for cleaning, reprocessing or disposal, for example linen, waste disposal and sharps. The room should allow for cleaning of any spillage from the clinical waste bags. The floor should have an impervious finish.

**Staff rest room**

4.86 Rest room facilities are required where staff can relax and take beverages and snacks. This room is likely to be very busy at changeover periods and lunchtimes. An emergency call system should be located here.

4.87 Rest rooms should have windows with a pleasant outlook and be comfortably furnished. Direct access to the staff pantry (see paragraph 4.88) is required.

**Pantries: patients and staff**

4.88 Pantry facilities, for both patients and staff, are required for the safe handling of food including the preparation of beverages and light snacks, for washing and storing crockery and cutlery, for storing a limited quantity of dry goods, and for the refrigerated storage of milk etc. Equipment should include a stainless-steel sink and drainer, an electric water boiler, a microwave oven, a worktop with cupboards, a commercial automatic dishwasher and a hand-wash basin. It would also be beneficial to provide an ice machine for patient comfort, as dialysis units can become very hot.

**Staff change/locker room**

4.89 Separate male and female staff change/locker rooms should be provided where staff can change into a uniform and store outdoor clothing and other personal items.

4.90 Personal full-length lockers for the secure storage of dry outer and middle garments, footwear and small of 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 staff, bearing in mind any likely future expansion of the unit, and included in the design brief.

4.91 Separate male and female showers should be provided en-suite.

4.92 The staff change/locker room door should be lockable.

**Staff sanitary facilities**

4.93 Gender-specific sanitary facilities, including WCs with hand-wash basins and a WC accessible to the disabled, should be located adjacent to the staff change/locker room.
**Equipment storeroom**

4.94 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.

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

4.96 Additional storage space is required for the storage of equipment (chairs, drip-stands, etc) and of disposables. It is preferable to store these separately.

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**Fluid store**

4.97 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**

4.98 There must be segregation of clean and dirty linen. Dirty linen should be temporarily held in the disposal room (see paragraph 4.85).

4.99 There should be sufficient space within the clean linen store for the storage of towels, pillows, blankets etc and access for linen trolleys to be loaded/unloaded.
Cleaners’ room

4.100 Space and facilities must be sufficient for parking and manoeuvring cleaning machines and a cleaners’ trolley, cleansing of cleaning equipment, and disposal of fluids and used cleaning materials. Hand-washing facilities are also required. Shelving and vertical storage should not encroach on the working space or restrict access to the cleaners’ sink.

Electrical distribution cupboard

4.101 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.

4.102 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

4.103 The IT room will contain network servers and communications equipment.

4.104 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.

4.105 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.

4.106 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.

4.107 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.

4.108 A secure storage area should be provided for storing back-up media.
5 Other functional and design requirements

INTRODUCTION

5.1 This chapter contains additional guidance on aspects of function and design which are common to all health buildings.

STATUTORY AND OTHER REQUIREMENTS

5.2 The guidance takes account, as far as possible, of all statutory and other requirements in force at the time of publication. However, health authorities and trusts are reminded of their responsibility for ensuring compliance with all relevant statutes, regulations, codes and standards – in particular the Construction, Design and Management (CDM) Regulations 1994.

5.3 Satellite dialysis units operating in a community setting should comply with the National Care Standards Commission (NCSC) National Minimum Standards. Section 22 of the Care Standards Act 2000 sets out a broad range of regulation-making powers covering the conduct of services to be regulated by the NCSC. An important new requirement is that providers must have a system for assuring quality that includes seeking the views of patients. This approach is consistent with all National Service Frameworks. Regulation will be through the Commission for Healthcare Audit and Inspection (CHAI) from 2004.

BUILDING COMPONENTS

5.4 The Building Components Database consists of a series of Health Technical Memoranda (HTMs); HTMs 54–70 provide specification and design guidance on building components for health buildings which are not adequately covered by current British Standards. No firms or products are listed. The numbers and titles of the various HTMs in the series are listed in the “References” section at the end of this Note.

UPGRADING OR ADAPTATIONS OF EXISTING BUILDINGS

5.5 The standards set out in this guidance essentially apply to the provision of accommodation by new building, and it is not intended that they should be applied retrospectively to existing stock. However, the principles are equally valid and should be applied, so far as is reasonably practicable, when existing accommodation is being upgraded or new accommodation is being constructed within an existing building which may previously have been used for other purposes.

5.6 Before any decision is made to carry out an upgrading project, consideration must be given to the long-term strategy for the service, the space required for the new service, and the size of the existing building. Regard must also be paid to the orientation and aspect of the building, and the adequacy and location of all necessary support services.

5.7 If a prima facie case for upgrading emerges, the functional and physical condition of the existing building should be thoroughly examined. The check of physical and other aspects of existing buildings should include:

- availability of space for alterations and additions;
- type of construction;
- insulation;
- age of the buildings and condition of building fabric – for example external and internal walls, floors, roofs, doors and windows – which may be determined by a condition survey;
- life expectancy and adequacy of engineering services, adequate water pressure, ease of access and facility for installation of new wiring, pipework and ducts, and suitable drainage systems, if required;
- the height of ceilings. High ceilings do not necessarily call for the installation of false ceilings, which are costly and often impair natural ventilation;
- changes of floor level, to obviate any hazards to disabled people;
- fire precautions;
- physical constraints to adaptation, such as load-bearing walls and columns.

5.8 When comparing the cost of upgrading or adapting an existing building to that of constructing a new building, due allowance – in addition to the building cost – must be made for the costs of relocating people, demolition, salvage, disruption of services in a phased
5.9 When designing and equipping health buildings, the likely occurrence and effects of accidental damage should be considered. Damage to health buildings has increased over the years through the use of heavier mechanical equipment for the movement of patients and supplies and, to some extent, as a result of lightweight, often less robust, building materials. Most damage to doors, and to floor and wall surfaces, is caused by wheeled traffic. Measures to minimise damage should be taken in the form of protective corners, buffers and plates, and of proper continuation of floor coverings, that is, strong screeds and fully-bonded floor coverings. Protective devices should be capable of being renewed as the need arises. Reference should be made to the relevant British Standards and to the guidance contained in HBN 40 – ‘Common activity spaces’ (NHS Estates, 1995). Further information is provided in HTMs 56, 58 and 61.

SIGNPOSTING

5.10 NHS Estates’ ‘Wayfinding’ (1999) should be consulted for general guidance.

DISABLED PEOPLE

5.11 It is a legal requirement to ensure that suitable access and facilities are provided for people who have problems of mobility or orientation. This includes those who have difficulty walking, and may use sticks, crutches or other assistive devices; those who have a visual or hearing impairment; and those who use a wheelchair. Authorities are reminded of the need to comply with the provisions of:

- the Disability Discrimination Act 1995 (updated 2001);
- BS 8300: 2001 ‘Design of buildings and their approaches to meet the needs of disabled people. Code of practice’;
- the Building Regulations, Approved Document M: Access and facilities for disabled people, 1999;
- the Disabled Persons (Services, Consultation and Representation) Act 1986 (updated 2000).

5.12 Project teams are encouraged to refer to HFN 14 – ‘Disability access’ (NHS Estates, 1996) and HBN 40 – ‘Common activity spaces’ which gives guidance and a set of ergonomic data sheets on access, space and equipment relating to disabled people in health buildings.

5.13 It is recommended that project teams consult local representatives of disabled people, or the Centre for Accessible Environments, with regard to the planning of spaces used by patients and escorts.

5.14 In locations where public telephones are provided, one should be mounted at a height suitable for use by a person in a wheelchair and the handset fitted with an inductive coupler to assist any person using a hearing aid.

SMOKING

5.15 In recent years many NHS trusts have implemented a total ban on smoking anywhere on the premises. There is evidence, however, that some trusts have revised this decision and re-introduced designated smoking areas. The reasons for this are twofold, the first being that patients, relatives and staff who smoke continued to do so in areas that could present a danger through the increased risk of fire. The second and perhaps more significant reason is that as long as tobacco remains a legal substance, a complete ban in all areas may constitute a breach of the Human Rights Act 2000. Smoking policy should therefore be decided locally.

5.16 No provision has been made in this Note for staff or patients who wish to smoke.

ENVIRONMENT AND DESIGN

5.17 Designers should create an environment that will help patients feel at ease, be conducive to efficient working, and contribute to staff morale. This is particularly important in the dialysis area where patients spend so much time, but also in the reception and waiting areas.

5.18 Particular note should be taken of ‘Improving the patient experience – evaluation of the King’s Fund’s Enhancing the Healing Environment programme’ (2003), ‘Better by design’ (1994), ‘Environments for quality care: health buildings in the community’ (1994), ‘Better health buildings’, the Achieving Excellence Design Evaluation Toolkit (AEDET) and the ‘Improving the patient experience’ series, all by NHS Estates (see “References”). It is recommended that patients be consulted about the design, and any agreed suggestions included in the written design brief.

5.19 External landscaping is often of special value. The design process should also include the choice of well-designed furniture and fittings and co-ordination of carpets (only in non-clinical areas) and colour. External views and natural light are also very important issues in design (see ‘Lighting and colour design for hospital environments’, 2003), and it is recommended that patients be consulted about the design and any agreed suggestions included in the written design brief.
ART IN HEALTH BUILDINGS

5.20 Works of art and craft can make a significant contribution towards the required standard of the interior of centres; this need not be limited to the conventional hanging of pictures on a wall. Every opportunity should be taken to include works by artists and craftspeople in appropriate spaces in centres. These may include paintings, murals, prints, photographs, sculptures, decorative tiles, ceramics, textile hangings and furniture.

5.21 Often it is works of art and craft which lend special identity to a waiting area and which help give a sense of locality. Again, it is recommended that patients be consulted about this aspect of the aesthetics of the unit and any agreed suggestions included in the written design brief.

5.22 Advice should be sought from experts on:

a. obtaining grants. In some cases, Regional Arts Boards or charitable trusts with a local interest may offer grants to add money within a capital scheme which is set aside for art or craft works. The Royal Society of Arts offers bursaries for collaborations between architects and artists;

b. obtaining sponsorship. Local industries may see an advantage in supporting an arts project as a way of reaching a wide, or particular, audience;

c. lottery funding.

5.23 NHS Estates has published guidance to help trusts implement their own arts programmes. ‘The art of good health – using the visual arts in healthcare’ (NHS Estates, 2002) sets out the history and the benefits of the arts in healthcare and provides case studies and examples of its successful implementation. Its complementary publication ‘The art of good health – a practical handbook’ (NHS Estates, 2002) provides hands-on guidance to help trusts set up their own arts programme. It includes information on fundraising, commissioning, exhibitions, and general management.

COURTYARDS

5.24 Courtyards may be a feature of the design of a satellite unit located in an extension to an existing building. Courtyards enable more rooms to receive natural daylight and ventilation, and provide an outlook which can compensate patients for the lack of a longer view. Suitable layout and planting can help to preserve privacy in surrounding rooms. Ground-cover planting is preferred to grass as it is often more successful and is easier to maintain.

5.25 Access for maintenance should be from a corridor so that patients and staff are not disturbed. Staff should take care to ensure that they do not intrude on patient privacy when entering a courtyard.

5.26 Reference should be made to HBN 45 – ‘External works for health buildings’ for more detailed guidance on this subject.

NATURAL AND ARTIFICIAL LIGHTING

5.27 Sunlight enhances colour and shape, and helps to make a room bright and cheerful. The harmful effects of solar glare can be dealt with by architectural detailing of window shape and depth of reveals, as well as by installing external and internal blinds and curtains (see also paragraphs 6.7–6.10).

5.28 Wherever possible, spaces to be occupied by patients, escorts or staff should have natural daylight with an outside view. Natural lighting is important to
human well-being. However, the need for privacy should also be taken into account; thus, if a unit is on the ground floor, the glass may need to be one-way.

5.29 Artificial lighting, as well as providing levels of illumination to suit 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 in as many spaces as possible. Uplighting, the level of which can be varied by patients, has been found to be very beneficial. (Levels of artificial light can easily be varied by the use of dimmer switches.) See also paragraphs 6.108–6.111.

5.30 Artificial lighting provided in spaces occupied by patients should enable any changes to skin tone and colour to be clearly defined and easily identified (see also paragraph 5.48). A huge impact on the environment can be created by the use of colour and lighting – by coordinating new paint colours and different lighting.

5.31 Fixed luminaires should not be sited immediately above positions where patients lie on a couch or reclined chair. This applies to all spaces where patients are consulted, examined and treated.

TELEPHONES

5.32 Telephones should be provided in accordance with the needs of the unit. Ringing telephones in and adjacent to consultation/examination/treatment spaces are a particular nuisance at any time, and consideration should be given to the installation of a telephone system which will enable any incoming calls to be intercepted at an appropriate location – for example the reception desk.

5.33 Public telephones will be required for the use of patients, their escorts and visitors, preferably in a convenient and accessible location in, or near to, the main entrance and/or waiting area. Reference should be made to paragraph 5.14 above with regard to the provision of public telephones for disabled people.

5.34 Consideration should also be given to providing patients with access to telephones while they are on the dialysis machines, especially if hospital/unit policy proscribes the use of mobile phones.

5.35 The Independent Expert Group on Mobile Phones (2000) produced a report advising that mobile phones should be switched off within healthcare premises and signage should be prominently displayed.

INTERNAL ENVIRONMENTAL ENGINEERING CONSIDERATIONS

Internal rooms

5.36 Internal rooms may contribute to economy in planning. If, however, additional artificial lighting and ventilation are required, both capital and running costs need to be evaluated and accepted.

5.37 Use of internal rooms should be limited to activities which:

a. need a controlled environment (excluding the dialysis area); or

b. are carried out intermittently by different individuals – for example, in circulation areas and some storage areas.

5.38 Rooms that are likely to be occupied for any length of time by a patient, an escort or a member of staff should have natural light.

Ventilation

5.39 Natural ventilation is preferred unless there are internal spaces or clinical reasons that call for mechanical ventilation (for example an isolation room) or air-conditioning (see also paragraphs 6.11 and 6.42–6.51).

5.40 Mechanical ventilation and air-conditioning systems are expensive in terms of capital and running costs; planning solutions should be sought which take maximum advantage of natural ventilation. Mechanical ventilation costs can be minimised by ensuring that, wherever practicable, core areas are reserved for rooms whose function requires mechanical ventilation irrespective of whether their location is internal or peripheral (for example sanitary facilities and dirty utility rooms).

Noise and sound attenuation

5.41 Any unwanted sound is a noise and may disturb patients and staff. Noise-sensitive areas should be located as remotely as possible from internal and external sources of unavoidable noise.

5.42 Speech privacy is essential in spaces where personal and confidential discussions are held, such as interview rooms and consulting/examination spaces; it should not be possible to overhear any discussions taking place in adjoining spaces. Particular care should be taken where the adjoining spaces are in waiting areas.

5.43 Sound transmission can be reduced by use of sound-attenuating partitions and doors. Use of soft floor-coverings, provision of curtains, and acoustic
treatment of walls and ceilings (where hygienically acceptable) will improve sound absorption in a space.

5.44 Provision of earphones for patient access to individual and communal television sets should be provided as part of dialysis-station bedhead services.

5.45 For guidance on speech privacy in the dialysis area, refer to paragraphs 3.11–3.14. See also paragraphs 6.29–6.31.

FINISHES

5.46 The quality of finishes in all areas should be of a high standard; the cost allowance makes due recognition of this need. Guidance on the selection of finishes is provided in the relevant Health Technical Memoranda (HTMs).

5.47 Finishes should be robust enough to withstand accidental impact, and additional protection should be provided at likely points of contact. They should also be able to withstand constant cleaning with occasional use of chlorine-releasing agents (for dealing with blood or body fluid spillage or infection). Trolleys and items of mobile equipment which may cause damage should be appropriately buffered (refer to HTM 69 – ‘Protection’).

COLOUR

5.48 The colours of surfaces in spaces occupied by patients should not distort the colour rendering of light sources. It must be possible to clearly define and easily identify any changes to a patient’s skin tone and colour (see also paragraphs 5.27–5.31). Decor colours should be light and pleasant (see ‘Lighting and colour design in hospital environments’, 2003).

FLOORS

5.49 Floor coverings and skirtings should contribute to the provision of a non-clinical environment, yet at the same time be hardwearing. They must not present a hazard to disabled people, nor should they restrict the movement of wheeled equipment. Floors should not be (nor appear to be) slippery, and the floor patterning should not induce disorientation. Changes of floor level should be avoided wherever possible. Surface drag, static electricity, flammability, infection hazards and impermeability to fluids have also to be considered. HTM 61 – ‘Flooring’ should be consulted for advice on user requirements and performance selection.

5.50 Finishes should be appropriate for the activities to be carried out, restricted in variety for ease of cleaning, and compatible with agreed cleaning routines.
DOORS AND FRAMES

5.51 Doors and frames are particularly liable to damage from mobile equipment, and materials which will withstand this should be used. All double swing-doors should incorporate clear glass vision panels, but privacy, safety or other considerations may require that the panels should be capable of being obscured. Where necessary, doors should be capable of being fastened in the “open” position. Magnetic door retainers should not restrict the movement of traffic. Refer to HTM 58 – ‘Internal doorsets’.

WINDOWS

5.52 In addition to the various statutory requirements, the following aspects require consideration: illumination and ventilation; insulation against noise; user comfort; energy conservation; the prevention of glare; the provision of a visual link with the outside world. Adding windows to the dialysis area can provide an important diversion for patients during an otherwise stressful period. Windows should have a pleasant and stimulating outlook, and patients should be able to easily look out of the window while on dialysis. In certain circumstances one-way glass should be considered (see paragraph 5.28).

5.53 Design should ensure that it is possible for cleaners to have easy access to the inside and outside of windows. Guidance on types of windows and on safety aspects is available in HTM 55 – ‘Windows’.

MAINTENANCE AND CLEANING

5.54 Materials and finishes should be selected to minimise maintenance and be compatible with their intended function. Building elements that require frequent redecoration or are difficult to service or clean should be avoided. Special design consideration should be given to corners, partitions, counters and other elements which may be subjected to heavy use. Wall coverings should be chosen with cleaning in mind. Guidance on these aspects is given in HTM 56: ‘Partitions’; HTM 58: ‘Internal doorsets’; and HTM 61: ‘Flooring’.

5.55 In liaison with local authorities, consideration may need to be given to the provision of a dedicated, secure, waste disposal area for both clinical and non-clinical waste.
6 Engineering services

INTRODUCTION

6.1 This section describes the engineering services required within a satellite renal unit. The department will be a stand-alone facility and will need to be provided with a suitable infrastructure including utilities connections and heating, cooling, emergency power etc that are beyond the scope of this building note.

6.2 Consequently this guidance neither attempts to be definitive nor is it geared to a particular solution, but it is intended to acquaint project and design team members with a basis from which project-specific solutions can be developed. Further guidance can be sought from the current versions of the relevant HTMs.

ECONOMY AND VALUE ENGINEERING

6.3 Engineering services are a significant part of the capital cost and a continuing charge on revenue budgets. The project design engineer should therefore ensure economy in provision, consistent with the meeting of functional requirements and the maintenance of clinical standards through effective risk management.

6.4 The identification of lifetime cost (including energy) should be undertaken as part of the cost-benefit analysis.

ENERGY CONSERVATION AND SUSTAINABILITY

6.5 To support the NHS in improving its environmental performance, NHS Estates has produced ‘NEAT – the NHS Environmental Assessment Toolkit’, a software tool, along with the guidance documents ‘New environmental strategy for the NHS’ and ‘Sustainable development in the NHS’.

6.6 Whilst this guidance covers a wide range of sustainability and environmental issues, one area identified as having a major impact on the environment is the use of energy. The minimising of environmental impact by ensuring that energy is only used necessarily and efficiently is considered in this section with respect to:

- natural daylighting;
- natural ventilation;
- energy recovery;
- water recovery.

Natural daylighting

6.7 Efforts should be made to maximise the use of natural lighting (see also paragraph 5.27). Passive solar design (PSD) should be employed to ensure, as far as possible, that treatment areas are located where they can benefit from natural daylight whilst areas that do not benefit, for example stores and toilets, are located towards the core of the facility.

6.8 To minimise solar gain and to control glare, solar protection should be provided. This may include:

- external shading – brise soleil;
- solar-reduction glazing;
- internal or mid-pane blinds.

6.9 Areas where glare may be a problem, for example rooms where visual display units (VDUs) are routinely used, should similarly be located away from direct natural daylight.

6.10 Glazing solutions should be such that an average daylight factor of 2% is achieved, which should result in the optimum control of glare and solar gain consistent with adequate daylight. Where solar performance glasses are used, they should be of a neutral colour to ensure good colour rendering.

Natural ventilation

6.11 Some rooms in the dialysis unit may need mechanical ventilation (for example isolation rooms); however, natural ventilation of rooms should be employed wherever this is possible and appropriate. The design should incorporate measures for minimising solar heat gains which, if uncontrolled, will precipitate a need for mechanical ventilation. Measures to minimise the need for cooling should include locating temperature-sensitive accommodation away from south-facing fascias, shading windows with brise soleil, and using solar-reflecting glass where this is cost-effective.
Energy recovery

6.12 Where operational policies permit, energy-using systems including heating, ventilation, cooling and lighting should be automatically controlled to reduce energy input to the facility, or sections of it, when it is not in use, for example at night or at weekends.

6.13 Where it is essential for ventilation systems to use 100% fresh air, the practicalities of heat recovery should be investigated for each ventilation system, having regard to the following potential hazards:
- leakage/recirculation between intake and exhaust air streams;
- biohazards to maintenance staff;
- chemical reaction on plant.

6.14 The selection of chilling plant offering low ambient free cooling should be considered in applications requiring year-round cooling, for example chilled water circuits serving fan coil units in equipment rooms.

Water recovery

6.15 Waste water from the reverse osmosis water plant (which discharges about 50% of input water to waste) may be utilised to provide toilet flushing, for example to the unit or other parts of the hospital.

SPACE REQUIRED FOR PLANT AND DISTRIBUTION SYSTEMS

6.16 Sufficient space should be provided in suitable locations for all plant:
- the plant areas should provide convenient and safe access, but arranged to prevent unauthorised entry;
- plant and equipment should be spaced to permit access for routine inspection and maintenance;
- the arrangement of plant areas should be such that plant and components can be removed or replaced without disruption to other services.

6.17 In the design of infrastructure to support specialist systems and equipment, designers should avoid solutions that do not enable the users to select alternative items of equipment in the future without extensive cost and disruption to the associated engineering services infrastructure.

6.18 Recommended spatial requirements for mechanical, electrical and public health engineering services are contained in NHS Estates guidance HTM 2023 – ‘Accommodation for plant and services’. Reference is also made in HTM 2023 to the Construction (Design and Management) Regulations 1994. The information given in this HTM is specifically intended for use during the initial planning stages where precise dimensional details of plant are not available. Further information is provided in the following BSRIA technical notes:
- TN 9/92: ‘Space and weight allowances for building services plant – inception stage design’; and
- TN10/92: ‘Space allowances for building services distribution systems’.

6.19 The distribution of mechanical and electrical services to final points of use should, wherever possible, be concealed in wall voids/casings and above false ceilings. Services contained in the space above the false ceiling, with the exception of drainage, should be confined to those required for the department. To maximise flexibility and to free up wall space, thought should be given to installing ceiling-mounted radiant panel heaters in place of perimeter radiators requiring a 200 mm perimeter zone. Consequently, any remaining services located on the window wall will require a nominal service zone.

6.20 For economy, plant should be located as close as possible to the areas served. When choosing locations for plant, thought should be given to the risks of noise and vibration, flooding and fire imposed by the plant on the accommodation. Methods of minimising these risks may be achieved by effective separation of the plant from the accommodation or by the introduction of additional measures, for example active fire suppression systems or additional acoustic treatment. A risk analysis should be undertaken to explore the most appropriate solution.

MAINTENANCE OF PLANT AND SERVICES DISTRIBUTION

6.21 To facilitate effective maintenance (with the exception of heat-rejection plant and certain ventilation extract plant), all plant should be located within plantrooms. Main service distributions should wherever possible be routed above corridors and other circulation spaces so that access is not required from user accommodation. This applies principally to main cabling and pipework routes where, in addition to routine inspection and maintenance, modifications, additions and renewals will periodically be required.

6.22 In clean areas and other areas requiring non-accessible ceiling voids, engineering services should be designed to ensure that access for terminal filters etc is from below. Items such as ceiling-void smoke detectors (if required) can be accessed via lighting fittings to avoid the need for sealed access panels. Where suspended drainage above clean areas cannot be avoided, the
Drainage system should be designed with extended cleaning eyes remote from the user space.

6.23 Devices for the control and safe isolation of engineering services should be:

- located in circulation rather than working areas to avoid disruption;
- protected against unauthorised operation, with switchgear and distribution equipment housed in secure cupboards;
- in a separate secured room, with regard to the protection of the RO water treatment plant;
- clearly visible at all times and accessible to the facilities staff.

FLEXIBILITY OF DESIGN

6.24 The engineering installations should be designed to provide an organised and systematic arrangement of piped services, HVAC, local exhaust ducts, electrical power and controls which can be modified to facilitate changes in planning and services requirements at a later stage.

DESIGN FOR SAFETY

6.25 Everybody who designs, manufactures, imports, supplies, installs or erects “articles for use at work” must comply with a range of co-ordinated health and safety regulations enacted under the Health and Safety at Work etc Act 1974.

6.26 Key regulations and guidance relating to premises and work equipment are:

- the Control of Substances Hazardous to Health Regulations 1994 (COSHH);
- the Construction (Design and Management) Regulations 1994;
- the Electricity at Work Regulations 1989;
- the Management of Health and Safety at Work Regulations 1999;
- the Workplace (Health, Safety and Welfare) Regulations 1992;
- the Provision and Use of Work Equipment Regulations 1998;
- the Health and Safety (Safety Signs and Signals) Regulations 1996;
- the Noise at Work Regulations 1989;
- the Pressure Systems Safety Regulations 2000;
- the Gas Safety (Installation and Use) Regulations 1998;
- the Environmental Protection Act 1990;
- the Health & Safety Commission’s Health Services Advisory Committee’s ‘The safe disposal of clinical waste’.

6.27 Designers should be aware of the role of engineering design in the control of infection, particularly in respect of water services (see HTM 2027 – ‘Hot and cold water supply, storage and mains services’ (NHS Estates, 1995) and HTM 2040 – ‘The control of legionellae in healthcare premises – a code of practice’ (NHS Estates, 1994)) and ventilation systems (see HTM 2025 – ‘Ventilation in healthcare premises’ (NHS Estates, 1994)).

6.28 Devices for the control and isolation of primary engineering services should be located in areas where they can be protected against unauthorised interference, ideally in plantrooms, engineering service spaces or circulation areas. They should not be located in user working areas.

NOISE

6.29 Excessive noise in individual areas, whether internally or externally generated and transmitted, can adversely affect the operational efficiency of the department and cause discomfort. The limits and means of control are described in HTM 2045 – ‘Acoustics’ (NHS Estates, 1996).

6.30 There will also be a need to ensure auditory privacy in certain rooms. This is typically, but not exclusively, required in the dialysis treatment stations, consulting/examination rooms and isolation room(s); it should not be possible to overhear any discussions taking place in adjoining spaces. Particular care should also be taken where the adjoining spaces are waiting areas. Efforts to ensure auditory privacy should not compromise patient safety during dialysis treatment (by interfering with clinical observation) and should not result in any requirement to increase nursing staffing levels.

6.31 Acceptable noise levels and, where applicable, any requirement for auditory privacy in individual rooms are shown on the Activity DataBase (ADB) “room environment data” sheets.

FIRE SAFETY

6.32 The policy in respect of fire safety is set out in the ‘Firecode’ series of documents. Additionally the ‘Fire Practice Notes’ series provides further guidance on specialist aspects of fire precautions.
6.33 It is important to establish during the design stage those aspects of fire strategy that may affect the planning of a project. At appropriate stages of the design process, the architect and engineer should discuss and verify their proposals with the relevant fire authority, and ensure that the project team and all other planning staff are fully acquainted with the fire safety strategy for the design. This will include operational aspects (staff responsibilities etc), equipment provision, and building and engineering layouts. HTMs 57–60 provide detailed information for the selection of fire-resistant building components and materials.

ENGINEERING SERVICES – MECHANICAL

General scope

6.34 The mechanical services installation includes the distribution of the following services:

- heating systems;
- ventilation systems (general and for isolation rooms);
- cooling systems;
- environmental control and building management systems;
- hot and cold water systems;
- water services for haemodialysis;
- water treatment plant;
- drainage;
- fire precautions.

6.35 For the purposes of this document the installation is deemed to include each system from the facility entry point to the final connection to service outlets or specific equipment.

Heating systems

6.36 Spaces heated by low-pressure, hot-water systems should use either radiators of the low surface temperature type or overhead radiant ceiling panels.

6.37 The surface temperature of wall-mounted radiators should not exceed 43°C. Ceiling-mounted radiant panels can exceed this surface temperature, making them more beneficial in terms of space saving and freeing up valuable workspace.

6.38 Where radiators are used, they should normally be located under windows or against exposed walls, with sufficient clear space between the top of the radiator and the window-sill to prevent curtains reducing output. There should be adequate space underneath the radiator to allow for cleaning. Where a radiator is located on an external wall, insulation should be provided behind it to reduce the rate of heat transmission through the building fabric.

6.39 All radiators should be fitted with thermostatic control valves, which should be of robust construction and selected to match the system characteristic in terms of temperature and pressure. The thermostatic head, incorporating a tamper-proof facility for presetting the maximum room temperature, should be controlled via a sensor located integrally or remotely as appropriate. To provide frost protection at its minimum setting, the valve should not remain closed below a fixed temperature.

6.40 Radiators or radiant panels should normally be designed to offset only building-fabric heat loss in mechanically ventilated rooms.

6.41 All rooms should have local heating controls, but overall control of the mechanical services would be from the building management system (BMS).

Ventilation systems (general)

6.42 Guidance in respect of ventilation design for healthcare facilities may be found in HTM 2025 – ‘Ventilation in healthcare premises’ (NHS Estates, 1994).

6.43 This guidance is not intended to be prescriptive or comprehensive in respect of design solutions, but to provide a point of reference from which individual designs can be developed. Designers may be required to provide engineering solutions not covered by existing guidance, but in so doing should remain aware that the solutions proposed must continue to be entirely compatible with the primary objective of maintaining infection control in the satellite unit.

6.44 Mechanical ventilation costs can be minimised by ensuring that, wherever practicable, internal areas are reserved for rooms that require mechanical ventilation irrespective of whether their location is internal or peripheral. Examples of this are sanitary facilities and rooms that have specific environmental needs and where windowless accommodation is acceptable. Other spaces appropriate to core areas are those that have only transient occupation and therefore require little or no mechanical ventilation; examples are circulation and some storage areas. Where natural ventilation can be used, that is, in perimeter support rooms, staff rooms etc, the designer should consider it.

6.45 The unit should use 100% fresh-air, low-velocity ventilation systems. Where it is viable to do so, heat should be reclaimed from all extract systems using either recuperators or heat-recovery air-to-water coils.

6.46 Cooling should be considered for the dialysis/treatment areas and isolation room(s) to achieve good
comfort levels. Vents should not be positioned directly above patient-occupied areas, that is, directly over beds or chair positions. Grilles and diffusers should be located to provide even air distribution (see HTM 2025 – ‘Ventilation in healthcare premises – design considerations’).

6.47 Air-handling plants should be designed in accordance with HTM 2025: ‘Ventilation in healthcare premises – design considerations’.

**Ventilation system for isolation rooms**

6.48 To reduce the risk of infection, the isolation room’s mechanical ventilation system must be kept completely separate from any other ventilation plants.

6.49 The ventilation plant must be capable of maintaining a negative air pressure in the isolation room in relation to adjacent rooms or corridors. The air supply and extract fans must be interlocked to ensure one cannot operate without the other.

6.50 The ventilation plant should have a dedicated control system, which will maintain the correct air pressure in the room(s) at all times. Should a plant failure occur, audible and visual alarms must be activated immediately to warn staff.

6.51 The control of infection officer must be consulted during the design stage of the project.

**Cooling systems**

6.52 A chilled water cooling system should be considered in preference to a direct expansion type.

6.53 Evaporative-type heat-rejection plant should not be used. Air-cooled chiller plant should be considered, using environmentally friendly refrigerants.

6.54 Design of ventilation systems for summer conditions should be in accordance with CIBSE Guide A: ‘Environmental criteria for design’.

6.55 Should there be a need to maintain temperatures within specified limits to prevent equipment failure, the temperature limits should be obtained from the equipment manufacturers.

**Environmental control and building management systems**

6.56 The BMS (building management system) should be designed in accordance with the recommendations in HTM 2005 – ‘Building management systems’ (NHS Estates, 1996).

6.57 The engineering services should be controlled by a dedicated stand-alone BMS. The system should also have the flexibility to be interfaced with other BMSs serving a whole hospital.

6.58 The designer should consider control systems for temperature, pressure and time-switching functions. The selection of this equipment should also take account of the ease with which it could be adjusted to meet future changes to the facility.

6.59 The control system should incorporate energy-efficient equipment including:

- thermostatic control equipment to ensure the most efficient use of energy in the building;
- optimum start equipment with plant set-back condition;
- high-efficiency motors on all equipment where practical;
- suitable air-to-air heat-recovery systems;
- suitable air-to-water energy-recovery systems.

6.60 The control system should also provide the following minimal safety responses to abnormal situations:

- detection of equipment failure and automatic initiation of standby equipment;
- the correct levels of negative air pressurisation in the isolation room must be maintained at all times (see paragraphs 6.48–6.51);
- the isolation room’s ventilation system must have early-warning visual and audible alarms to alert the user in the event of plant failure (see paragraphs 6.48–6.51);
- with regard to the water treatment plant, detection of any equipment failure with associated visual and audible alarm systems.

**Hot and cold water systems**

6.61 All hot and cold water supply systems should be designed in accordance with the following guidance and regulations:

- HTM 2027 – ‘Hot and cold water supply, storage and mains services’ (NHS Estates, 1995);
- HTM 2040 – ‘The control of legionellae in healthcare premises – a code of practice’ (NHS Estates, 1994);
- BS 6700: 1997. ‘Specification for design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages’;
6.62 To limit the risk of Legionella bacteria, the water services should be designed, installed and commissioned in accordance with the recommendations in HTM 2040 – ‘The control of legionellae in healthcare premises – a code of practice’.

6.63 The hot water supply temperature should be 60ºC ± 2.5ºC at the storage vessel outflow and distributed to all outlets so that the return temperature at the calorifier is not less than 50ºC.

6.64 Outlet temperatures and fittings for wash-basins, sinks and showers are shown on ADB sheets relating to the satellite unit.

6.65 All hot water to hand-wash basins, sinks, showers etc should be fitted with thermostatic mixer valves to prevent the possibility of scalding.

6.66 All hot and cold water services pipework, valves and flanges should be insulated and vapour-sealed.

**Water services for haemodialysis**

6.67 Developing technology and the specialised nature of dialysis equipment will necessitate advice being sought from specialist water treatment companies, and a renal technologist with specialist knowledge of treated water for dialysis and equipment manufacturers.

6.68 The designer should obtain a chemical water analysis from the local water authority before selection of the water treatment plant is made. If on a hospital site, hospitals should conduct their water analysis as close to the proposed point of use as possible, as local pipework and results may have an effect on the results.

6.69 Water for dialysis should reach at least the following standards:

- the higher European Pharmacopoeia (EP) XVI standard: ‘Water for diluting concentrated haemodialysis solutions’;
- ISO 13959: ‘Water for haemodialysis and related therapies’; or
- AAMI (Association for the Advancement of Medical Instrumentation) standards;

6.70 These standards apply to both central water treatment plant and bedside water treatment units.

6.71 In very small satellite dialysis units, it may be more economical initially to use individual bedside treatment units. However, maintenance, chemical handling and quality monitoring tasks will be much more onerous and expensive than those required for a central plant (see also paragraph 2.19).

6.72 To avoid rescheduling of patients in the event of equipment failure, it is essential that the appropriate levels of redundancy be provided. In the case of individual bedside units, a spare should be available. Central water treatment plants should be duplicated to facilitate maintenance work being carried out on them when the department is being used.

**Water supply and pipework**

6.73 In centralised installations, the water for dialysis should be distributed through a recirculation pipework ring. The design of this ring should minimise the number of direction changes and dead-legs so that the risks from bacteriological infection are reduced, and should also minimise sharp bends and shoulders in joints. The rings should be installed above the floor in the dialysis area and the maintenance room. Installations that utilise ceiling or floor voids are not advised, as these introduce unnecessary dead-legs within the ring.

- The pipework should be constructed from rigid ABS, food-quality PEX tubing, hardwearing PVC or stainless steel, depending on the disinfection process to be used.
- The pipework should be capable of being cleaned and/or disinfected by either chemical or heat treatment to maintain hygiene:
  - PEX can support both chemical and heat treatment;
  - it will be possible to use only chemical decontamination with ABS and PVC pipework (not heat).
- All treated water connections to dialysis machines should not have any spaces within the design and should have an automated facility to disinfect the tubing connecting to the dialysis machine on a regular basis.

6.74 Flexible hoses connecting the dialysis machine to the water supply and drainage outlet points should be provided with quick-release couplings. To avoid the risk of accidentally dislodging the drainage hoses from
dialysis machines, it is recommended that the quick-release coupling be of a different size to the water-supply coupling to avoid confusion and cross-connection.

6.75 The water-supply outlet point for each dialysis station and, as appropriate, in the maintenance room should be kept as short as possible. This outlet point should also incorporate a means of isolation and a quick-release coupling.

**Water treatment plant**

6.76 In centralised installations (depending on the water supply), the water treatment plant may consist of the following water treatment stages (other equipment may be required for particular problems, high iron, nitrate, etc):

- raw water break tank (to water supply regulation standards);
- water-softening plant;
- inorganic and organic scavengers;
- pre-filters;
- two granular-activated carbon (GAC) filters for chlorine and chloramine removal;
- final fine filtration just before RO;
- a final treatment reverse osmosis (RO-RO) unit.

6.77 The water treatment plant conditions should be monitored by the BMS and a plant status alarm panel providing visual or audible signals. The plant conditions should be capable of being transmitted to remote alarm panels.

6.78 The water treatment plant should provide for total redundancy, with dual softeners, circulating pumps, RO equipment and carbon filters. Carbon filters should be selected to achieve sufficient contact time to remove all chlorine and chloramines. Connection to the supply must conform to water regulations (the Water Supply (Water Fittings) Regulations 1999).

**Drainage**

6.79 The used dialysis solution should be discharged to a drainage outlet point and drainage system for each dialysis station and, as appropriate, in the maintenance room. This outlet point should incorporate a suitable air

The water treatment plant should provide for total redundancy with dual softeners, circulating pumps, RO equipment and carbon filters
break, means of isolation, and a quick-release coupling of a different size to that of the water supply outlet point. Drainage pipework materials should be suitable for high temperature waste at times of automatic cleaning and disinfection (and also a range of disinfecting chemicals).

6.80 It is possible to build up a protein-type residue in the dialysis (solution) drainage pipework. It is therefore recommended that the pipework gradient from the discharge outlet point to the drainage system is greater than the usual 1 in 50.

6.81 Designers should familiarise themselves with the types of discharge produced and check with the client what effect the mixing of various chemical discharges may have upon the drainage system.

Fire precautions

6.82 The project team should familiarise themselves with the guidance notes given in the ‘Firecode’ series of documents, which are specific to healthcare buildings. In particular, the need for structural fire precautions and means of escape from the whole accommodation should be taken into account at the early project planning stage.

6.83 All relevant statutory requirements, regulations, and fire codes are:
- the Fire Precautions (Workplace) (Amendment) Regulations 1999;
- HTM 81 – ‘Fire precautions in new hospitals’;
- Fire Practice Note (FPN) 10 – ‘Laboratories on hospital premises’.

6.84 General policy, principles and key management guidance are contained in Firecode: ‘Policy and principles’. Guidance on fire safety in existing hospitals (designed and built before 1978) is available in HTM 85 – ‘Fire precautions in existing hospitals’.

6.85 It is important to establish during the design stage those aspects of fire safety strategy that affect the design, configuration, and structure of a project. At appropriate stages of the design process, the architect and engineer should discuss and verify their proposals with the local fire authority. They should also ensure that the project team and all other planning staff are acquainted with the fire safety strategy for the design in terms of:
- operation (staff responsibilities etc);
- equipment provision;
- buildings and engineering layouts.

6.86 The principles of fire safety apply equally to new projects and to alterations and upgrading of existing buildings.

ENGINEERING SERVICES – ELECTRICAL

General scope

6.87 This section will cover:
- incoming supply and distribution board;
- emergency electrical supplies;
- electrical installation;
- electrical interference;
- line conditioning;
- electromagnetic interference;
- lighting;
- Information Technology;
- telephone systems;
- security systems;
- fire detection and alarm systems;
- lightning protection;
- radio and TV aerial system.

6.88 Electrical installations should comply with:
- BS 7671: ‘Requirements for electrical installations’;
- ‘Guidance note 3 to IEE Wiring Regulations BS 7671: Special locations’ (IEE, 2002); and

6.89 Care should be taken to avoid mains-borne interference and electrical radio frequency interference affecting diagnostic and monitoring equipment, computers or other sensitive electronic equipment. Guidance on the avoidance and abatement of electrical interference is given in HTM 2014 – ‘Abatement of electrical interference’ (NHS Estates, 1993).

Incoming supply and distribution board

6.90 The point of entry for the electrical supply will be an electrical distribution cupboard housing the main isolators and distribution equipment. This space will also be the distribution centre for subsidiary electrical services.
6.91 Wherever possible, all equipment should be mounted at a height to give easy access from a standing position.

Emergency electrical supplies

6.92 Emergency electrical provision should comply with the requirements of HTM 2011 – ‘Emergency electrical services’ (NHS Estates, 1993), with automatic changeover to generator supply in the event of mains failure.

6.93 The emergency generator providing electricity in the event of a main supply failure should be capable of 100% back-up, to the exclusion of refrigeration plant serving air-conditioning and comfort-cooling plant.

6.94 Should an existing generator be used, back-up will be dependent on the spare capacity available. If 100% back-up cannot be achieved, it will be necessary to either replace the generator with a larger set or provide separate essential and non-essential distribution systems as detailed in HTM 2011.

6.95 Equipment and systems that cannot tolerate the delay inherent in bringing an emergency generator on-line (particularly computer equipment associated with automated analytical systems) should be further protected by the provision of uninterruptible power supplies.

6.96 In the event of a main supply or local final circuit failure, escape routes should be illuminated – in accordance with HTM 2011 and BS 5266 – by self-contained, battery-powered luminaires charged continuously from the main supply and capable of providing illumination for a period of three hours.

Electrical installation

6.97 Sufficient 13-amp, switched, shuttered socket-outlets, connected to ring circuits or spurs, should be provided to allow all portable appliances likely to be used simultaneously to be individually supplied. The installation of twin outlets should be considered where these activities occur next to each other. A socket-outlet trunking system can provide flexibility and minimise disturbance when repositioning or adding outlets.


6.99 Domestic cleaning appliance flexible leads are assumed to be 9 metres long. Socket-outlets, usually in corridors, should be provided to enable such machines to operate over the whole area of the unit.

6.100 Fixed appliances rated up to 13 amps should be permanently connected to double-pole, switched spur boxes, and fused as required. Appliances rated in excess of this load, or those requiring a three-phase supply, should be permanently connected to separate final circuits from fuse-boards and independently switched at a local isolator of appropriate rating. Allowance should be made for the maximum current drawn when all dialysis machines are performing heat disinfection.

6.101 Local switches or other means of electrical isolation should be provided next to plant and equipment, suitably labelled to ensure the safety of operators and maintenance staff.

6.102 Ventilation equipment and automatically operated equipment should be provided with indicator lights to show when the equipment is energised. Indicators should be incorporated in the equipment control panel, in the control switch, or in the outlet from which the apparatus derives its supply.

6.103 The electrical supply connections to electro-medical equipment should comply with BS EN 60601-1-2: 2002 to avoid corruption of input data; some equipment may require automatic disconnection, with manual reset, following mains failure. Computer-controlled analytical equipment may require an uninterruptible power supply from a static inverter of appropriate capacity.

Electrical interference

6.104 Guidance concerning the avoidance and abatement of electrical interference is given in HTM 2014 – ‘Abatement of electrical interference’. Fluorescent luminaires should comply with BS EN 55015: 2001 (see also paragraph 6.89).

6.105 Care should be taken to avoid mains-borne interference, harmonics and electrical radio frequency interference affecting computers and other electronic equipment used in the satellite unit.

Line conditioning

6.106 Transient over-voltage and “noise” protection should be provided if needed on the supply incomer and on panel-boards throughout the facility, since they are all likely to serve computer equipment. High-energy, transient voltage surge-suppression devices should be provided, with high-frequency line-noise filtering, suitable for application in category A, B, and C3 environments as required, in accordance with IEEE C62.41-1991.

Electromagnetic interference

6.107 Electromagnetic interference is a potential problem requiring solutions to minimise the effect between power and data systems. Primary power
service should be located as far as possible from treatment areas.

**Lighting**

6.108 Practical methods of lighting the various functional spaces are contained in CIBSE Lighting Guide LG2 – ‘Hospitals and health care buildings’. Luminaires should be manufactured and tested in accordance with the requirements specified in the relevant sections of BS 4533. Their location should afford ready access for lamp-changing and maintenance, but with the overriding requirement that the recommended standard of illuminance is provided to the task areas.

6.109 Fluorescent lighting in consulting/examination rooms and treatment rooms should be derived from one of the recommended types of lamp having a suitable colour-rendering index 1a with colour temperature 3000–4000K.

6.110 Control of lighting is normally by local switches, and these should be provided in sufficient numbers to allow variation in lighting options. Such a facility is particularly important in large spaces where the level of daylight is not uniform, and where artificial lighting is likely to be needed for long periods in some areas remote from windows. Consideration should be given to photocell control of perimeter lighting zones and the use of PIR control of lighting in intermittently occupied areas to conserve energy.

6.111 In areas where computer terminals are used, the lighting should be designed to avoid bright reflections on the screen and to ensure that the contents of the screen are legible. Further guidance can be found in CIBSE Lighting Guide LG3 – ‘Areas for visual display terminals’.

**Information technology**

6.112 The approach to provision of IT and telephone infrastructure within the satellite unit may be conditioned by an existing system (located in the main hospital); however, where possible, a structured wiring system as described in NHS Estates’ Health Guidance Note ‘Structured cabling for IT systems’ should be provided. This will permit a unified approach to the provision of cabling for:

- voice systems;
- data systems;
- CCTV;
- alarm systems.

6.113 Whilst this universal cabling system is initially more expensive than separate voice and data systems, the long-term cost of ownership is less.

6.114 In determining the nature of the IT system to be provided, it is necessary to identify:

- rooms to be served;
- whether structured cabling will be used;
- what density of outlets is to be provided (no fewer than two per workstation);
- whether wiring will be on a “flood” or “as required” basis, having due regard to the potential expansion of the unit in the future;
- whether any wireless computer networking will be required.

**Telephone systems**

6.115 As stated in the IT section, it may be beneficial to integrate voice cabling with the structured wiring system for IT if provided.

6.116 A cabling system supporting voice/data should be provided.

6.117 Telephones will normally be of the standard desk type, but wall-mounted instruments and instruments to provide a “hands-off” loudspeaker facility may be required in some areas. Wiring should terminate at each extension point in a standard line jack unit.

**Security systems**

6.118 A closed-circuit television system should be provided or extended as necessary from existing site-wide systems. This should be provided with a video-recording facility and arranged to cover external, entrance and reception areas. The entry of the public into the unit should be controlled from the reception area. Staff access should be by means of secure door entry (for example swipe cards, digilocks etc), with a second level to sensitive areas. This should be supported by appropriate intercom systems. All external doors and doors to sensitive areas should be monitored, and local alarms provided for high-risk areas.

**Fire detection and alarm systems**

6.119 A system should be provided with automatic detectors conforming to BS 5839-1: 2002 system type L2 and to the requirements of the appropriate authorities.

6.120 The system should be a fully addressable monitored type: mains powered with battery back-up. Generally, detectors should be of the dual heat/smoke type and the system provided with break-glass, push-button call points and sounders.

6.121 The system should be suitably zoned, and incorporate a main fire alarm panel located at the main
entrance/reception. The fire alarm should interface with the BMS, mechanical plant, generators, lifts, security and access control systems to control or shut down plant and release doors in case of a fire.

Lightning protection

6.122 A risk assessment should be carried out for the building in accordance with BS 6651, and a lightning protection system provided, linking all roof-mounted equipment and structural steel. Where possible, the building structure should be used for the main lightning protection conductors.

6.123 Transient over-voltage protection should be provided on the main LV switchboards and on distribution boards supplying sensitive equipment.

Radio and TV aerial system

6.124 A system of terrestrial aerials, boosters and cabling should be provided to outlets detailed on the ADB room activity data A-sheets.
7 Cost information

INTRODUCTION

7.1 For all types of health building, it is important that building costs and revenue expenditure are kept as low as possible and consistent with acceptable standards. In applying the guidance in this document to determine a detailed design, the need for economy should always be of prime concern, and the activities should be carefully considered so that, where appropriate, space can be shared for similar activities which are programmed to take place at different times. The solution should not be detrimental to the proper functioning of the spaces involved nor to the needs of the users. Within this general context, this series of documents provides a synopsis of accommodation for health buildings which the Department of Health recommends for the provision of a given service.

DEPARTMENTAL COST ALLOWANCE GUIDES

7.2 Departmental Cost Allowance Guides (DCAGs) related to this HBN are officially notified in ‘Quarterly Briefing’, published by NHS Estates. A full listing of all DCAGs is published in the Healthcare Capital Investment document – a hard copy of which can be obtained from NHS Estates; copies can also be downloaded from http://www.nhsestates.gov.uk. Further information on this can be obtained from NHS Estates, telephone 0113 254 7000.

7.3 The attention of the project team is drawn to guidance given in the Capital Investment Manual (Business Case Guide) published by The Stationery Office (Department of Health, 1994). This publication seeks to reflect the important changes that have taken place over recent years, both with the introduction of the NHS reforms and with the changing patterns of healthcare delivery. This new process is intended to reduce unnecessary and often expensive planning work that may subsequently prove to be abortive, and emphasises the necessity for a sound business case in support of both the capital and the revenue expenditure involved. The Capital Investment Manual also states that the capital works estimate of the intended scheme must be based, wherever applicable, on industry norms such as the DCAGs plus a percentage to cover for on-costs.

7.4 The DCAGs for this HBN reflect the total building and engineering requirements and accommodation that the satellite dialysis unit will require when incorporated into an acute general hospital where the common use of services will be available. Costs are based on a typical two-storey new-build unit, on a greenfield site with no planning constraints.

7.5 DCAGs are exclusive of VAT, building and planning fees and all local authority charges, and are based on a Location Factor of 1.

ON-COSTS

7.6 It is important to bear in mind that an allowance for on-costs should be added to the DCAGs for all units, this element being for external works, external engineering services and abnormals etc. The abnormals will largely be determined by the characteristics of the site, such as an inner-city location or poor ground conditions, or the condition and type of the existing building if refurbishment is the only option.

7.7 It is important that project teams should assess at the earliest opportunity all the likely on-cost implications of individual sites and schemes.

LOCATIONAL FACTORS

7.8 Locational factor adjustments may be applied to the works costs (that is, the total of the DCAGs plus established on-costs) to take into account the local market conditions. For further information regarding these, please refer to the latest regional location factors in ‘Quarterly Briefing’, published by NHS Estates.

FUNCTIONAL UNITS

7.9 The schedules of accommodation listed at the end of this document have adopted a modular approach to the planning of appropriate units to enable project teams to “pick and mix” those facilities that are required.

7.10 Using this modular approach, examples have been built up for 12-station, 18-station and 24-station units. The areas given are for guide purposes only and will alter depending on the design solution. DCAGs have been calculated using the example units as a cost base.
SCHEDULES OF ACCOMMODATION

7.11 The schedules are split into three distinct elements as follows.

The schedule of room/space types

7.12 This lists all room/space types and major options covered by the document, giving a range of provision, when appropriate, together with a nominal area. These are grouped by the functional use of the spaces.

The schedule of suites/modules

7.13 This lists functional groupings of spaces. These form complete suites/modules of accommodation and can be provided either separately or as grouped accommodation with shared supporting accommodation. Suites/modules are functional associations and not physical groupings.

7.14 Accommodation solely related to any suite/module is listed under the core requirement for that suite/module, whilst accommodation that can either be provided for a particular suite/module or shared between two or more suites/modules is listed under essential complementary/shared accommodation (ECA). The area allowance given may form part of a larger activity area. Where there is an option to include accommodation within a suite/module or a major option on how that accommodation is provided, it is listed under optional accommodation.

7.15 These schedules include the appropriate nominal area taken from the schedule of room/space types above, together with a suggestion for the number of spaces required.

7.16 Percentage allowances covering planning, engineering and circulation are also included in the totals.

7.17 The functional groups used for this document are as follows:

- 12-station renal dialysis clinical support facilities;
- additional six-station renal dialysis clinical and support facilities;
- renal dialysis equipment maintenance facilities.

Departmental examples

7.18 These schedules show example notional whole-department accommodation to highlight the scope for sharing accommodation. The examples are not to be taken as ideal provision for any particular project.

7.19 The examples included are as follows:

- satellite dialysis: 12 dialysis stations;
- satellite dialysis: 18 dialysis stations;
- satellite dialysis: 24 dialysis stations.

DIMENSIONS AND AREAS

7.20 In determining spatial requirements, the essential factor is not the total area provided but the critical dimensions – that is, those dimensions critical to the efficient functioning of the activities which are to be carried out. To assist project teams in preparing detailed design solutions for the rooms and spaces, studies have been carried out to establish dimensional requirements in the form of critical dimensions. The results of these studies appear as ergonomic diagrams in Health Building Note 40 Volumes 1–4.

7.21 For development planning and at the earliest stage of a design, it may be convenient for designers to have data available which will enable them to make an approximate assessment of the sizes involved. For this reason, the areas prepared for the purpose of establishing the cost allowances are listed in the schedules of accommodation found at the end of this chapter.

7.22 It is emphasised that the areas published do not represent recommended sizes, nor are they to be regarded in any way as specific individual entitlements.

7.23 Planning of the building efficiently may also necessitate variation of areas, for instance, in the refurbishment or conversion of older property:

a. rooms tend to be larger than the recommended area;

b. some rooms may be too small or in the wrong location for efficient use;

c. circulation space tends to form a larger than normal proportion of the total area.

CIRCULATION

7.24 Space for circulation, that is, all internal corridors, small vertical ducts and spaces occupied by partitions and walls, is included.

7.25 Provision is also made for a 5% planning zone and a 3% addition for an engineering zone adjacent to the external walls. These areas are all included and therefore costed in the DCAGs.

7.26 It is also important to remember that the circulation figures included in the DCAGs for this type of accommodation are those anticipated for new purpose-built premises with no constraints. Where constraints are encountered, for example in refurbishment or conversion of older types of property, this circulation figure would be likely to increase accordingly, and
therefore some adjustment may be necessary to the circulation figure.

COMMUNICATIONS

7.27 Staircases and lifts are not included in the DCAGs relevant to this department. Costs related to these elements, along with a suitable space allowance, should be made in the on-costs.

LAND COSTS

7.28 As is the norm for DCAGs, costs are exclusive of all land costs and associated fees. However, the project team’s attention is drawn to the fact that costs associated with these should be included in the Business Case submission, all as detailed in the Capital Investment Manual, and could therefore be an important part of the overall cost viability of the scheme.

ENGINEERING SERVICES

7.29 The following engineering services, as described in Chapter 6 and exemplified in the Activity Data, are included in the cost allowances. Primary engineering services are assumed to be conveniently available at the boundary of the department.

Mechanical services

- Heating – low pressure hot water system.
- Ventilation – mechanical supply and extract to all clinical areas and areas requiring extract due to type of room, for example WCs, showers etc. Ventilation plant, for example air handling units/extract fans, are not included in the cost allowances.
- Cold water service – centrally supplied to service points including drinking water; storage tanks are excluded.
- Hot water service – supplied from a central system; storage and generation is excluded.
- Piped medical gases oxygen, medical compressed air and vacuum. An emergency 2 x 1 oxygen manifold is included in the cost allowances; medical compressed air and vacuum plant are excluded.

Electrical services

- Departmental distribution boards.
- General lighting as required by task.
- Examination lighting (examination lamps).
- Emergency luminaires as appropriate.
- Socket-outlets and other power outlets for fixed and portable equipment.
- Supplementary equipotential earth bonding.
- UPS supplies and equipment.
- Fire alarm system.
- TV/radio wireways only.
- Telephone internal cabling distribution and outlets – handsets are excluded.
- Data wireways only included.

Equipment (Group 1)

- Water boiler in staff room and pantry.
- Drugs cupboards.
## ROOM/SPACE TYPE SCHEDULE

<table>
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<th>Area (m²)</th>
<th>Para Ref</th>
<th>Notes</th>
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<td>Entrance canopy area</td>
<td>–</td>
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<tr>
<td>Entrance draught lobby</td>
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<tr>
<td>Secondary entrance</td>
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<td>Foyer/concourse area</td>
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<tr>
<td>Public telephone facility</td>
<td>1.5</td>
<td>Para 4.10, 5.33</td>
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<td>Public telephone facility (wheelchair accessible)</td>
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<tr>
<td>Waiting area: 15 places incl. 2 wheelchair places</td>
<td>25.5</td>
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<td>Waiting area: 20 places incl. 2 wheelchair places</td>
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<td>Waiting area: 25 places incl. 2 wheelchair places</td>
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<tr>
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<td><strong>Clinical support facilities</strong></td>
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<td>Dirty utility room</td>
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<tr>
<td>Dirty utility room</td>
<td>12.0</td>
<td>Para 4.82</td>
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<tr>
<td>Dirty utility &amp; disposal room</td>
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<td>Para 4.82</td>
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<td>Activity Space</td>
<td>Area (m²)</td>
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<tr>
<td>Patients’ changing facility: 5 places</td>
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<td>Patients’ changing facility: 10 places</td>
<td>12.0</td>
<td>Para 4.12</td>
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<td>Patients’ changing facility: 15 places</td>
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<td>Drinking water dispenser facility</td>
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<td>Refreshment vending machine bay</td>
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<tr>
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### Support facilities: Holding/storage

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### Support facilities: Miscellaneous

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### Support facilities: Engineering

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*External allowance*
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## Activity Space

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### Essential complementary/shared accommodation

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### Optional accommodation

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<th>Gross Area (m²)</th>
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### Additional 6 station renal dialysis clinical and support facilities

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#### Essential complementary/shared accommodation

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<th>Gross Area (m²)</th>
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### Renal dialysis equipment maintenance facilities

#### Core Requirement

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Net Allowance: 30.0

5% Planning Allowance: 1.5

Total: 31.5

3% Engineering Allowance: 1.0

25% Circulation Allowance: 8.0

Total Allowance: 40.5

#### Essential complementary/shared accommodation

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#### Optional accommodation

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## Example Schedules

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### Activity Space

#### Visitors’ & patients’ support facilities

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#### Staff support facilities: Offices

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#### Staff support facilities: Staff rooms

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#### Staff support facilities: Educational

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**Appendix 1: Ergonomic drawings**

(Dimensions in all drawings are given in millimetres unless otherwise indicated)

### RECLINING CHAIR

**Activities**

Facilities for maintenance dialysis. Space required for the dialysis chair in the sitting and reclined positions and for nurse/s to carry out procedures. The patient uses the same chair and dialysis machine on each visit to reduce the risk of cross infection. Facilities for storage of frequently used items, waste disposal and for patients to carry out seated activities whilst undergoing dialysis, including watching television.

Component user data sheet, not to scale

<table>
<thead>
<tr>
<th>Satellite Dialysis</th>
<th>Individual dialysis stations</th>
</tr>
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<tbody>
<tr>
<td>Users</td>
<td>Patient and one or two nurses</td>
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#### Preferred Minimum

<table>
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<th>2500(3000)</th>
<th>Restricted minimum</th>
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<tbody>
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<td>(not recommended for general use, see explanatory notes)</td>
<td></td>
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</tbody>
</table>

**Notes**

1. Sufficient space must be allowed for the dialysis chair to be fully reclined.

2. The layout of some stations should be mirrored so that patients can be attached to the dialysis machine by either arm.

3. Where the layout of the station results in a Dialysis chair being close to a wall, a clearance of 900 mm preferred or 600 mm minimum should be allowed between wall and chair to allow a nurse to assist at the side of the chair. If an adjacent station is mirrored this working space should be allowed between chairs and this may help to reduce the risk of cross contamination. A hand wash basin could be sited in this space.

4. Hand wash basin/s can be shared between stations and must be proximate to all.

5. A minimum of a 900 mm wide "corridor" should be provided between the rows of dialysis stations to permit the movement of staff, patients and equipment.

6. Storage shelves should not be fixed lower than 700 mm or higher than 1400 mm above the floor so that items can be reached easily.

7. Televisions can be suspended from the ceiling or wall. Clearance of 2000 mm should be allowed between underside of unit and floor. Alternatively TVs can be on a mobile unit; trailing wires must not be a danger.

8. The facility to write patient notes or input them into a computer should be provided, possibly in the form of a shared staff base.
APPENDIX 1: ERGONOMIC DRAWINGS

BED

Activities
Facilities for maintenance dialysis. Space required for the dialysis chair bed and for nurse/s to carry out procedures. The patient uses the same chair and dialysis machine on each visit to reduce the risk of cross infection. Facilities for storage of frequently used items, waste disposal and for patients to carry out seated activities whilst undergoing dialysis, including watching television.

Component user data sheet, not to scale

Satellite Dialysis
Individual dialysis stations
Users
Patient and one or two nurses

Preferred Minimum
Restricted minimum
(not recommended for general use, see explanatory notes)

Notes
1. The layout of some stations should be mirrored so that patients can be attached to the dialysis machine by either arm.
2. Where the layout of the station results in a dialysis bed being close to a wall a clearance of 900 mm preferred or 600 mm minimum should be allowed between wall and bed to allow a nurse to assist at the side of the bed. If an adjacent station is mirrored this working space should be allowed between beds and this may help to reduce the risk of cross contamination. A hand wash basin could be sited in this space.
4. Hand wash basin/s can be shared between stations and must be proximate to all.
5. A minimum of a 900 mm wide ‘corridor’ should be provided between the rows of dialysis stations to permit the movement of staff, patients and equipment.
6. Storage shelves should not be fixed lower than 700 mm or higher than 1400 mm above the floor so that items can be reached easily.
7. Televisions can be suspended from the ceiling or wall. Clearance of 2000 mm should be allowed between underside of unit and floor. Alternatively TVs can be on a mobile unit; trailing wires must not be a danger.
8. The facility to write patient notes or input them into a computer should be provided, possibly in the form of a shared staff base.
**Fistula:** A surgically enlarged vein (usually located in the wrist or elbow) that provides access to the bloodstream for haemodialysis.

**Haemodialysis:** This is dialysis via an artificial kidney. The patient's blood is treated by the transfer of electrolytes and other dissolved substances across a semi-permeable membrane. Permanent access to the patient's circulation is necessary, and three dialysis sessions per week are usually required, each lasting four to five hours.

**Haemofiltration:** A technique similar to haemodialysis where waste products are removed from the patient's blood using convective solute transfer through a high hydraulic permeable membrane.

**Haemodiafiltration:** This is simultaneous haemodialysis and haemofiltration.

**Peritoneal dialysis:** This is normally carried out as continuous ambulatory peritoneal dialysis (CAPD) and involves a sterile “washing” fluid being introduced into and withdrawn from the peritoneal cavity. The technique takes 30 to 40 minutes and is generally repeated three to four times a day.

Automated peritoneal dialysis involves the use of a machine, to which the patient is attached (usually overnight), to perform peritoneal dialysis.

**Reverse osmosis:** A technique for the purification of water. Impurities are separated from water molecules using a semi-permeable membrane under pressure.

**Type II diabetes:** Type II diabetes makes up about 90% of all cases of diabetes. It usually occurs in adulthood. The pancreas does not make enough insulin to keep blood glucose levels normal. Type II diabetes is becoming more common due to the ageing population, increasing obesity levels, and widespread failure to exercise. Without proper management, long-term health risks such as kidney failure can occur.
References

ACTS AND REGULATIONS

http://www.hmso.gov.uk/si/si2000/20002531.htm


http://www.hmso.gov.uk/si/si2002/20022677.htm


http://www.hmso.gov.uk/si/si1989/Uksi_19890635_en_1.htm


http://www.hmso.gov.uk/si/si1999/19991877.htm


http://www.hmso.gov.uk/si/si1996/Uksi_19960341_en_1.htm


http://www.hmso.gov.uk/si/si1999/19993242.htm


http://www.hmso.gov.uk/si/si1989/Uksi_19891790_en_1.htm

http://www.hmso.gov.uk/si/si2000/20000128.htm


http://www.hmso.gov.uk/si/si1999/19991148.htm


NHS ESTATES AND NORTHERN IRELAND HEALTH ESTATES PUBLICATIONS

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Better health buildings. Available to download from:
http://195.92.246.148/nhsestates/chad/chad_content/publications_guidance/introduction.asp#sub_2

Better by design. NHS Estates, HMSO, 1994


NHS Environmental Assessment Tool (NEAT) CD-ROM. Available as an electronic publication and from NHS Estates (0113 254 7418).


Health Building Notes (HBN)

HBN 40: Common activity spaces:


Health Technical Memoranda (HTMs)


REFERENCES

- **HTM 62:** Demountable storage systems. NHS Estates, HMSO, 1998.
- **HTM 64:** Sanitary assemblies. NHS Estates, HMSO, 1995.
- **HTM 67:** Laboratory fitting-out systems. NHS Estates, HMSO, 1993.
- **HTM 68:** Duct and panel assemblies. NHS Estates, HMSO, 1993.
- **HTM 69:** Protection. NHS Estates, HMSO, 1993.
- **HTM 70:** Fixings. NHS Estates, HMSO, 1993.
- **HTM 81:** Fire precautions in new hospitals. NHS Estates, HMSO, 1996.
- **HTM 82:** Alarm and detection systems. NHS Estates, HMSO, 1996.
- **HTM 85:** Fire precautions in existing hospitals. NHS Estates, HMSO, 1994.
- **HTM 87:** Textiles and furniture fire precautions. NHS Estates, HMSO, 1999.
- **HTM 2005:** Building management systems. NHS Estates, HMSO, 1996.
- **HTM 2022:** Medical gas pipeline systems. NHS Estates, HMSO, 1997.
- **HTM 2023:** Access and accommodation for engineering services. NHS Estates, HMSO, 1995.
- **HTM 2027:** Hot and cold water supply storage and mains services. NHS Estates, HMSO, 1995.
- **HTM 2040:** The control of legionella in healthcare premises – a code of practice. NHS Estates, HMSO, 1994.
- **HTM 2045:** Acoustics. NHS Estates, HMSO, 1996.

**Firecode publications**


**Fire Practice Notes**

- **FPN 10:** Laboratories on hospital premises. NHS Estates, HMSO, 1996.

**Health Guidance Notes**

- **Structured cabling for IT systems.** NHS Estates, HMSO, 1996.

**DEPARTMENT OF HEALTH PUBLICATIONS AND CIRCULARS**

- **Health Service Circular 1999/179:** Controls assurance in infection control – the decontamination of medical devices. The Stationery Office, 1999.

**BRITISH STANDARDS**


RESEARCH AND DEVELOPMENT

Lighting and colour design for hospital environments. A report on an NHS Estates-funded research project carried out jointly by the Building Research Establishment and South Bank University, 2003.

OTHER PUBLICATIONS


CIBSE, Environmental design, CIBSE Guide A. Chartered Institution of Building Services Engineers (CIBSE), London, 1999.


CIBSE, Lighting guide – areas for visual display terminals (LG3). Chartered Institution of Building Services Engineers (CIBSE), London, 1996.


IEEE C62.41-1991: Recommended practice on surge voltages in low-voltage AC power circuits. Institute of Electrical and Electronics Engineers, Inc.


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- HTM 2010, Sterilization: operational management with testing and validation protocols
- HTM 2040, The control of legionellae in healthcare premises – a code of practice
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