

LTHT Infection Control Guidelines

Infection control planning information. Issue 2 - March 2006

This is intended as general guidance, and is also intended to be used with the *Infection Control checklist for the planning of refurbishment/reconfiguration projects*. Because there is an increasing number of official guidance documents containing infection control advice on the built environment, this information will be regularly updated to reflect current guidance.

Alcohol gel dispensers should be provided at each point of care delivery, including assisted toilets/bathrooms, unless risk assessment indicates a potential danger to patients. An alcohol gel dispenser should be provided at the entrance to/exit from a ward or clinical area.

Antimicrobials. An increasing number of products containing antimicrobials are being produced for the health care sector. Some are necessary, such as anti-fungals in bath sealants etc. However, claims are made that curtains, tiles etc containing antibacterial products contribute to the reduction of hospital-acquired infection. There does not seem to be any scientific evidence to support these claims, and since there may be the possibility of resistance developing to these products, the Infection Control Team (ICT) does not support their use.

Baths/bathrooms. Bathrooms should have a wash basin suitable for patient use i.e. have a plug, and able to be used for staff hand washing e.g. with short lever-handled taps. The design of assisted baths should not compromise cleaning and infection control principles. No raw wood or cork bath mats should be used. Hairdressers' basins for hair washing are sometimes proposed; they have flexible hoses and spray heads which may present a legionella risk because of infrequent use. They are also usually fitted with a tap which is unsuitable for hand washing. The use of hairdressers' basins should be discouraged, and other arrangements for washing hair (e.g. shower) provided. See also **Showers** and **Bidets**.

Bed bays should have the smallest possible number of beds, preferably no more than four. Bays should have doors for privacy and to facilitate "cohort" nursing in outbreaks of infection. A dedicated (en-suite) bath/shower room per bay is preferred. There should be at least one easily-accessible hand wash basin (HWB) per four patients.

Bed spacing. There is no consistency in Health Building Notes (HBNs) on the advised distance between bed centres, spacing varying from 2.5m to 3.6m. There is good ergonomic evidence that 3.6m is the preferred dimension. This is the recommended spacing in Health Facilities Note (HFN) 30, and should be the recommendation of the ICT. However, 2.9m is widely regarded as a reasonable compromise.

Bidets may present infection control problems, depending on design and patient group. They are most frequently found in maternity units. If used, they should not have flushing rims or spray attachments, and should have a smooth, easily cleanable bowl. As it is not possible for bidets to be cleaned by Ward Housekeepers between each use, it is important that the patients for whom they are intended are physically able to clean the bidet themselves if they wish to use it, and that appropriate cleaning materials are available.

Carpets should not be used in clinical areas. There is good evidence that they are difficult to clean and disinfect adequately and quickly become aesthetically unacceptable. There is limited (although increasing) evidence that they may be an infection control hazard. They should also not be used in areas where food is stored, handled or eaten. Carpets are sometimes requested in staff rest rooms; hard flooring is preferred. If planners or users insist on carpet against infection control advice, it should be stressed that appropriate methods and materials for cleaning must be available. There is evidence that carpets in areas for elderly patients may significantly reduce the number of slips, trips and falls.

Catering/beverage facilities. Facilities suitable to the type of meal/beverage provision, speciality and number of patients should be provided. Out patients departments providing beverages to patients must have suitable facilities, which may include hot beverage/canned drink dispensers.

In order to ensure that these facilities conform to legislation including the Food Safety Act 1990, Trust Codes of Practice and HBN 10 – Catering Department, The Food Safety Manager and the Trust's contracted Environmental Health Officer, not Infection Control staff, should comment on the plans.

Clean utility rooms should be suitably sited. They should be designed with adequate and appropriate storage, with sufficient work surfaces and a HWB placed to avoid splashing of clean items/surfaces. The room and contents should be designed to facilitate cleaning.

Cleaning facilities/cleaners rooms. Enough suitably sited, sized and equipped cleaning rooms should be provided, with as a minimum storage facilities sufficient to separate clean and dirty items, a bucket sink and hand wash basin. Appropriate Facilities staff should comment on the plans.

Consumerism is an attempt by NHS Estates to incorporate the views of patients in design. Some of the initiatives may be in line with infection control thinking, for example increased patient space and privacy. Others such as use of planting, soft furnishings and access to fresh air may present a challenge to ICTs.

Decant of facilities. A facility may have to be moved for the duration of works. If so, the area where services are re-provided must have adequate facilities. It must also be thoroughly cleaned both prior to transfer and after vacation.

Dirty utility Rooms should be suitably sited for their function. Their contents will vary according to the specialty, but must include a HWB. If commodes are used, there must be sufficient space for their storage and cleaning. There should also be sufficient storage for re-usable or single-use bedpans/urinals etc. No other clean or sterile items should be stored in the dirty utility room.

Endoscope reprocessing. Current advice from NHS Estates is to avoid local reprocessing of any instruments, and capacity for central reprocessing of all suitable instruments, including autoclavable rigid scopes, should be built into appropriate schemes. If local flexible scope reprocessing is unavoidable, it is essential that the design principles of decontamination in HBN 13 –Sterile Services Departments, and Health Technical Memorandum (HTM) 2030 – Washer-disinfectors, are followed. For new or re-provided reprocessing facilities this must include physical separation of dirty and clean areas.

Equipment cleaning. Sufficient space must be allowed for the cleaning of equipment such as drip stands. However, there should be no local reprocessing of instruments (HBN 13), and no facilities should be included for this purpose (but see **Endoscope reprocessing**).

Finishes

- a) **Walls.** Should be impervious and easily cleanable, and be free from fissures, open joints or crevices and have as few protrusions as possible.. In clinical areas should be able to withstand any products used for decontamination of blood and body fluid splashes.
- b) **Floors.** Should be impervious and easily cleanable (see **Carpets**). In clinical areas should have a curved, integral skirting to aid cleaning.
- c) **Ceilings.** Modern building techniques often require the use of suspended, tiled ceilings. Where these are used in health care facilities, the tiles should have a smooth, easily cleanable finish. Such false ceilings can harbour dust and fungi and should be checked at the end of the construction period, also that there is no ingress for pests. Smooth, hard impervious surfaces are needed in theatres, isolation rooms and other critical areas; these are usually painted plaster. Access for services should be provided adjacent to the critical area.

Furnishings, fixtures and fittings should be chosen to be easily cleanable, i.e. with smooth, impervious finishes. Hinges on cupboards should be recessed. Upholstery in clinical areas (including waiting areas) should be wipeable and not fabric. Modular furniture or other difficult to move items (including fridges in patient rooms) should be wall-mounted to facilitate floor cleaning. Radiators should be easily cleanable and wall-mounted to enable cleaning underneath, and associated pipework should be boxed in.

Hand washing facilities (clinical hand wash).

Number of basins. Intensive care/HDU = 1 per bed
Acute, elderly, long term care etc = 1 per 4 beds minimum
Low dependency (e.g. mental health) = 1 per 6 beds minimum

Each single room should have a hand wash basin. En-suite single rooms should have a basin in the en-suite facility that is suitable for patient use and staff hand washing in addition to the clinical HWB the patient's room.

If an isolation room has a lobby, this should contain an additional HWB.

All toilets must have a HWB.

Any room for patient examination/treatment takes place must have a HWB. In an examination room/consulting room suite where there is a connecting door between the rooms, there must be a HWB in the exam room and alcohol hand-rub may be provided in the consulting room.

Any room where dirty equipment is handled/reprocessed must have a HWB. Two sinks are required for reprocessing (one wash, one rinse). Food handling/preparation rooms (including staff rest rooms) must have hand washing facilities.

Accessibility of HWBs. HWBs should be easily visible and accessible and should not be obscured by curtain rails, doors etc.

Design of HWBs. HWBs must be designed for purpose i.e.

- have no overflow
- have no plug and be incapable of taking a plug
- have taps that are aligned so as not to run directly into the drain aperture
- have curved sides to discourage splashing
- be large enough to enable good hand wash technique (preferably at least 500mm wide)
- be sealed to the wall or far enough away from the wall to allow effective cleaning of all services
- have a waterproof splashback
- have suitable non-hand-touch taps (see **Taps**)
- taps to deliver water at a suitable temperature to allow hand washing under running water
- spray taps must not be used.

HWBs should be of hard, easily cleanable, non-scratchable material (usually porcelain). Polycarbonate or other moulded plastic materials are not suitable.

Sufficient space must be provided at the HWB for soap, paper towel and alcohol gel dispensers, and waste bin/s. Hot air hand dryers are not suitable for use at clinical HWBs, but may be considered in public toilets where discarded paper towels may be a fire hazard or cause untidiness.

Ice for consumption must be made by a method that avoids microbial contamination. Ice dispensers (as seen in hotels/motels) with no-touch nozzles could be used, but it is usually not possible to ensure the regular maintenance that these require. Therefore, ice is usually made in freezers, using single-use ice cube bags. It is recommended that any unused ice is disposed of weekly. Commercial ice machines are not suitable for making ice for patient consumption.

Isolation Rooms

HBN 4 Supplement 1 ('Isolation facilities in acute settings 2005')

- applies to new build and may be used for the conversion of existing facilities (re-provision);
- does not apply to ID units or wards for severely immunocompromised patients.

What the Trust must do

NHS Trust Chief Executives will ensure, over time, that there is appropriate provision of isolation facilities within their healthcare facilities (DH 2003, Winning Ways).

Background

There are often insufficient single en-suite rooms and isolation suites (22% failure to isolate in LTHT). Isolation in single rooms without en-suites is not best practice (isolation in any en-suite room is better than nothing, but use of an enhanced room is best practice). Therefore, all new build single rooms must be en-suite.

For isolation of non-airborne infections, HBN 4 Supplement 1 describes:
standard en-suite rooms i.e. any single room with en-suite facilities, and
enhanced en-suite rooms {general specification as per HBN 4 (1997)} plus

- clinical hand wash basin (HWB) with non-touch, fixed temperature mixer tap, adjacent to door
- wall-mounted soap, disinfectant hand-rub and paper towel dispensers
- bin for disposal of paper towels and non-clinical items
- suitable extract to the en-suite bathroom
- transfer grille in en-suite door
- en-suite WC to be non-touch flush
- en-suite HWB to have single tap and temperature control
- windows should be openable, with fixed opening for safety, and should be lockable
- observation window in corridor with integral privacy blinds controllable by patients and staff
- all windows, including observation windows, low enough to provide view for patients in beds

For isolation of airborne infections, HBN 4 Supplement 1 describes:

isolation suite – an en-suite single room with ventilated lobby, where clean air enters the isolation room from the lobby, protecting the patient from air from the corridor, and potentially contaminated air from the bedroom is prevented from escaping into the corridor by the lobby. This arrangement enables the isolation suite to be used by both infectious patients and those at risk of infection. ‘Switchable’ positive/negative pressure isolation rooms are not now recommended.

Modifications for the bedroom and bathroom of an isolation suite are as for and enhanced single room, plus

- a clinical waste bin for used PPE in the bedroom
- a pressure stabiliser above the bedroom door

The lobby should have:

- a clinical HWB with non-touch, fixed temperature mixer tap
- wall mounted soap, disinfectant hand rub and paper towel dispensers
- wall-mounted storage for clean PPE items
- clinical waste bin for used PPE
- bin for paper towels and other non-clinical waste
- storage for room cleaning equipment
- a suitable air supply

For the suite as a whole:

- a sealed, solid ceiling
- windows to the exterior to be locked shut and sealed
- heating and cooling provided via the ventilation system

Infection Control recommends that:

- 1. Only enhanced single en-suite rooms should be provided in new and upgrade schemes. The cost implications are appreciated, but to distinguish between ‘standard’ and ‘enhanced’ rooms is potentially confusing, and will result in some sub-standard re-provision of isolation rooms.**

2. **A minimum of 30% of enhanced single en-suite rooms should be aimed for in new/refurbishment schemes; this proportion is based on current Infection Control requirements only. The provision of enhanced single en-suite rooms provision in refurbishment schemes is subject to risk assessment. New build schemes should aim for as a high a proportion (above 30%) of enhanced single en-suite rooms as is practicable/affordable.**
3. **Isolation suites will most likely be required in Paediatrics and Respiratory Medicine. Re-provision/new build schemes in Paediatrics and Respiratory Medicine should include isolation suites.**
4. **Non-touch taps fitted in en-suite rooms must be mains- and not battery-operated, and they should be programmable to automatically purge for Legionella control. This ability to programme can recoup the costs of manual purging infrequently used outlets, and so offset the increased cost of non-touch taps.**

Linen services/storage. Enough space should be allowed for in-use linen billies and bags awaiting disposal. Linen cupboards should be large enough to avoid linen storage on open trolleys and suitably sited for clean deliveries and the service. Shelves should be impervious and cleanable, not raw wood.

Luminaires should be designed so that they do not provide harbourage for dust and are easily cleanable.

Published guidance. An increasing number of guidance documents with infection control recommendations are published, many by NHS Estates. These include

- a) **Health Building Notes (HBNs).** These are really only applicable to new build, but provide guidance for refurbishment/reconfiguration projects: the appropriate HBN should be consulted prior to starting a scheme. Many are up to ten years old, and the guidance is therefore rather outdated. There is also sometimes conflicting advice in different publications (e.g. see **Bed Spacing**).
- b) **Health Technical Memoranda (HTMs).** Again applicable to new build, but refurbishment/reconfiguration projects should conform where possible. Many are outdated.
- c) **Infection Control in the Built Environment (HFN 30 NHS Estates, 2002).** Written with specialist infection control input, this covers most issues and must be read and used as reference by ICNs involved in the planning process. Most recently published HBNs refer to HFN 30, and it is increasingly being seen as the standard reference document for infection control guidance in the planning process.
- d) **Other guidance.** Several documents are available, e.g. from US Centres for Disease Control and Prevention Healthcare Infection Control Practices Advisory Committee (HICPAC). Are useful background reading and reference sources.

Room adjacencies. Wards and departments should be planned to be ergonomically sensible and with the patient pathway in mind, but also to aid good infection control practice. Obvious clashes e.g. between the routes of dirty bedpans and food should be avoided.

Showers are sometimes preferred to baths by patients. They require less space than a bath, therefore enabling a higher proportion of en-suite rooms. As wheelchair access is usually required for patients, pre-formed shower trays are usually only used in staff facilities. Instead, a sloping floor with inset drain is used in patient facilities. Unless there is sufficient slope, flooding can be a problem. In any case there may be splashing on the floor surrounding the shower, so it is important that the design of the shower/bath room is such that people do not have to walk on wet floor to access other sanitary fittings. It is preferable to have a screen between the toilet and shower, sealed at floor level, to prevent cross contamination between the potentially soiled floor around the toilet and the shower floor.

Shower screens are often difficult to clean, but patients may prefer them to shower curtains, preferred by planners because of the difficulty of fitting screens to sloping floors. Shower curtains must be single-use or launderable and changed/washed at intervals agreed with Facilities. They should be long enough to prevent excess splashing, but not touch the floor. Tiles should not be used for shower walls.

Single rooms. See **Isolation Rooms**

Staff change facilities. To discourage the wearing of uniforms out of work, staff change facilities should be provided. Space constraints often mean that there is a central facility. Toilets, hand wash facilities, showers and outdoor clothes storage should be provided. Finishes should be designed with cleaning in mind. Theatres or other areas where surgical procedures are performed should have dedicated and suitably-sited change facilities.

Storage. Sufficient and suitable storage for equipment, including large items, should be allowed.

Taps. Newer HBNs are specifying the installation of electronically-operated taps at HWBs for infection control and water saving reasons. Where used, electronic taps must be mains-operated rather than battery-operated (see **Hand Washing Facilities**), and should be programmable to flush automatically in periods of low usage for legionella control.

Conventional taps in clinical areas must be well-designed non-hand touch types, and must not have manually-adjusted thermostats.

Toilets should preferably be separate from bathrooms/showers, but space constraints usually do not allow this. There must be easy access to hand washing facilities. Toilet pans should be the rimless, washdown type to enable easy cleaning. If padded backrests are required (e.g. disabled toilets) these should be seamless and easy to clean. Toilet paper should be covered by the dispenser, which should preferably dispense single sheets.

Treatment rooms. The function of treatment rooms will vary with specialty. It is important to design in the appropriate infection control facilities and finishes including a HWB, and to avoid the treatment room becoming a “dumping ground” for unsuitable items of equipment such as centrifuges.

Ventilation. HTM 2025 – Ventilation in Healthcare Premises is currently being rewritten. Ventilation in general areas is often governed by strict energy consumption requirements and the need to provide cooling in modern buildings with high-tech, heat-producing equipment. **Consumerism** demands access to fresh air wherever possible for patients. Because of all these issues, new heating/cooling/ventilation

systems such as the chilled beam system are being proposed. Ventilation in critical areas such as operating theatres, angiography suites, intensive care and high dependency units, units for immunocompromised patients, biotherapy units, isolation rooms, catering areas and others may have specialised air change, direction and quality requirements as specified in the relevant HBN/HTM.. Specialist technical advice is usually required to achieve the standards required by infection control.

Waste handling/storage. Appropriately sized facilities must be provided for the storage of waste. Such facilities should be suitably located for the Trust's waste disposal routes and the service. Facilities staff should comment on the plans.

Water. Hot and cold water supplies must conform to HTM 2027 – Hot and Cold Water Supply, Storage and Mains Services and HTM 2040 – The Control of legionellae in Health Care Premises, a Code of Practice. During works, it is important to ensure that there is no contamination of the water supply, and steps taken to ensure water quality is not compromised. Appropriate Estates personnel must comment on the plans. If chilled drinking water is required for patients (except immunocompromised patients) it may be provided by plumbed-in water dispensers. Bottled water dispensers should not be used.

Drinking water and water for ice making for immunocompromised patients should be provided by terminal filtration at the drinking water tap.

Window treatments should be chosen to provide shade and preserve patient privacy and dignity. Suitable cleaning regimes must exist for whatever system is chosen. For high-risk areas, interstitial blinds (between the panes of double glazing) are preferred for cleanliness. In other clinical areas curtains generally provide the easiest to clean solution. Vertical binds with a wipeable finish may be suitable e.g. for outpatients/consulting rooms, but only if an in-situ cleaning facility is available. Venetian blinds collect dust, are difficult to clean and generally are not suitable for use in health care facilities.

Guideline date: 2002

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