University Hospitals of Leicester NHS
NHS Trust

Infection Prevention During Building and Refurbishment Projects including Aspergillus Risk Assessment

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REVIEW DATES AND DETAILS OF CHANGES MADE DURING THE REVIEW

February 2024 – Rewrite of Aspergillus policy to include wider infection prevention aspects of building works.

KEY WORDS

Refurbishment

Building

Aspergillus

Aspergillosis

1 INTRODUCTION AND OVERVIEW

1.1 This document sets out the University Hospitals of Leicester (UHL) NHS Trusts Policy and Procedures for the infection prevention input required in new builds and refurbishments.

1.2 A clean safe environment for delivery of healthcare is vital and it is important that infection prevention is designed in at the planning and design stages of any new build or refurbishment project.

1.3 Building works by their nature can also create dust and debris and it is vital to ensure that patients, visitors and staff are protected.

1.4 Common moulds such as Aspergillus can cause severe lung infections in people with weakened immune systems and precautions must be taken to reduce this risk during building works

1.5 The Health and Social Care Act 2008 code of practice on the prevention and control of infections and related guidance provides guidance on requirements for cleanliness and infection control including appropriate environments.

1.6 Health Building note 00-09 Infection control in the built environment provides guidance on designing in infection prevention into buildings.

2 POLICY SCOPE

2.1 This policy applies to all UHL staff including contractors working on behalf of the Trust

3 DEFINITIONS AND ABBREVIATIONS

HBN – Health Building Notes. These are Department of Health guidance on healthcare buildings

HTM – Health Technical Memoranda. These are Department of Health Guidance on procedures and processes specific to the NHS estate.

4 ROLES

4.1 Director of Estates, Facilities and Sustainability

4.1.1 The Director of Estates, Facilities and sustainability is responsible for the coordination of all new builds and refurbishments within UHL.

4.2 Head and Deputy Director Infection Prevention

4.2.1 The Head and Deputy Director Infection Prevention is responsible with the lead infection prevention doctor for signing off all plans from an infection prevention point of view.

4.3 Lead Infection Prevention Doctor

4.3.1 The Lead Infection Prevention Doctor in conjunction with the lead nurse infection prevention for signing off plans from an infection prevention point of view.

4.4 Senior Nurse Estates and Facilities

4.4.1 The Senior Nurse Estates and Facilities will support the capital projects team along with the estates teams on all infection prevention aspects of new builds, refurbishments and minor works.

4.4.2 The senior nurse estates and facilities will ensure that aspergillus risk assessments are completed where required for each scheme.

4.4.3 The senior nurse estates and facilities will ensure this policy is reviewed as and when required.

4.5 Head of Capital projects

4.5.1 The Head of Capital Projects will ensure that all the capital project managers follow this policy.

4.5.2 The Head of Capital Projects will ensure that Capital team standard operating procedures and checklists reflect the content of this policy.

4.6 Associate Director of Estates Operations and Engineering

4.6.1 The Associate Director of Estates will ensure that all estates manager comply with the policy when carrying out maintenance or refurbishment projects.

4.6.2 The Associate Director of Estates Operations and Engineering will ensure that standard operating procedures within the Operational Estates teams reflect the content of this policy

4.7 All Staff

4.7.1 Any staff member involved in refurbishment or building works must ensure they follow this policy.

5. POLICY IMPLEMENTATION AND ASSOCIATED DOCUMENTS

5.1 Planning

5.1.1 Within new builds standards set out in HBN 00-09 and any other relevant HTM and HBN must be followed. For all refurbishments the standards set out within HBN and HTM should be followed wherever possible.

5.1.2 The infection prevention team must be involved in all stages of the planning process and review scheme plans and drawings to ensure that appropriate infection prevention measures have been designed into the plans.

5.1.3 All plans and drawings must be signed off by the Lead infection Prevention nurse and Lead Infection Prevention Doctor. Failure to do this may expose patients, visitors and healthcare staff to unnecessary infection risks and may lead to expensive redesign or remedial works.

5.1.4 During sign off of the drawings and plans the following need to be agreed, Storage, flooring, dirty utilities, cleaners rooms, hand hygiene facilities, furnishings and fittings, appropriate finishes, types and numbers of isolation facilities and any specific products with infection prevention implications e.g. water fittings, specialised ventilation.

5.1.5 Following sign off by the Lead infection prevention nurse and doctor any changes to the plans must be resubmitted for additional sign off.

5.2 Construction phase

5.2.1 During the construction phase there is likely to be significant amounts of dust and debris created.

5.2.2 Prior to any construction commencing an Aspergillus risk assessment must be completed and signed off detailing the risk to patients, staff and visitors (Appendix 3).

5.2.3 The risk assessment as well as contractors risk and method statements will detail risk reduction measures that are required during the construction works. These risk measures will be determined according to the risks identified.

5.2.4 General measures to be taken will include

- Sealing windows and door
- Removing debris in sealed bins
- Use of tack mats
- Using dust proof hoardings

5.2.5 Inspections of construction sites will be carried out by the infection prevention team and the health and safety team where appropriate. Daily inspections of hoardings and other dust control measures will be carried out by the clinical teams in the areas.

5.2.6 Any issues identified will be fed back immediately to the site foreman and project manager.

5.2.7 Where water systems are closed down a Legionella risk assessment must be undertaken and water samples taken.

5.3 Pre-handover Inspection

5.3.1 The infection prevention team will conduct a pre handover inspection along with the ward or department team and the project manager to ensure that the construction has been according to plan and identify any snagging issues that may have an implication on infection prevention.

5.3.2 Prior to commissioning of the area a full builders clean will be carried out. In addition a clinical clean will be carried out by the Trust cleaning team. The project manager will ring 17888 to request the clean and speak to the domestic management team at the relevant site..

5.4 Layouts

5.4.1 In all schemes the workflow of the environment needs to be considered.

5.4.2 Bed spacing has a direct implication on the prevention of infections. Sufficient space for activities to be undertaken is required. The recommended bed spacing for general inpatient areas is 3.6m. This requirement may be bigger for other areas e.g. critical care.

5.4.3 Multi bed bays should be restricted to 4 beds. Each multi bed bay should have door to facilitate cohort nursing if required.

5.4.4 Each multi bed area should have its own toilet and shower area.

5.4.5 Single rooms should have their own en-suite toilet and shower facilities.

5.4.6 The number of single rooms required will be agreed at the beginning of the scheme following a risk assessment.

5.5 Cleaners cupboards

5.5.1 A separate room must be provided for storage of cleaning equipment. The size and number of rooms required will depend on activity and type of service provided within the area.

5.5.2 All cleaning cupboards should have space for a slop hopper for disposal of dirty water and a hand wash basin. There should be sufficient storage space for cleaning equipment for the area once in operation.

5.6 Dirty Utility/Sluices

5.6.1 The exact requirement for a dirty utility will depend on the activity and type of service provided within the area.

5.6.2 A clinical hand wash basin must be provided.

5.6.3 Where pulp products such as urinals and bed pans are used a macerator will be provided. A separate slop hopper will also be provided for disposal of body fluids.

5.6.4 Where there is a need to clean equipment a double sink drainer will be provided.

5.6.5 Adequate space must be provided for storage of commodes, linen bag holders and equipment awaiting return to sterile services.

5.7 Clean Utility

5.7.1 The function of a clean utility will vary according to the activity and type of service provided in the area.

5.7.2 Hand hygiene facilities must be provided

5.7.3 Adequate storage facilities will be provided for storage of consumables and equipment.

5.8 Treatment room

5.8.1 A treatment room may be required for in-patient examinations. There must be a hand wash basin provides along with adequate storage for equipment and consumables.

5.9 Hand Hygiene facilities

5.9.1 Designated hand hygiene facilities must be available in all clinical areas, sluices, decontamination rooms, public and staff toilets, cleaners cupboards and kitchens (including staff rest rooms)

5.9.2 Within general inpatient areas there is a requirement for 2 sinks per 4 beds. In critical care areas the requirement is 1 sink per bed-space.

5.9.3 All hand wash basins must have either elbow operated or hands free taps.

5.9.4 A soap and towel dispenser must be available.

5.9.5 A hand wash basin must not have an overflow, no plug, the waste must be offset so water does not flow directly into waste.

5.9.6 A sealed waterproof splashback must be provided.

5.9.7 Hand wash basins must not be used for disposal of contaminated fluids such as patient wash water, body fluids or for cleaning equipment. Disposal facilities must be provided for disposal of fluids and cleaning of equipment.

5.9.8 Alcohol hand sanitisers must be available throughout the department.

5.10 Linen Storage

5.10.1 Adequate linen storage should be provided. This can be in a dedicated linen cupboard or covered linen trolley. Where a covered linen trolley is used there should be identified space for storage of trolley.

5.10.2 Sufficient space for the separation of clean and soiled linen is required.

5.11 Kitchens and Beverage Areas

5.11.1 Where kitchens are provided consult guidance found in the Trust Food Hygiene for Ward Kitchens Policy B27/2004. New kitchen areas or refurbishments must be signed off by the Trust environmental health advisor.

5.12 Storage

5.12.1 Adequate provision of storage cupboards and space should be provided. Space is required for storage of hoists and other larger pieces of equipment.

5.12.2 Storage cupboards placed on walls should be built up to the ceiling or have sloping surfaces to prevent items being put on top of cupboards and also to prevent a reservoir for dust to collect.

5.13 Finishes

5.13.1 Carpets must not be used in clinical areas. Carpets are difficult to clean and can harbour microorganisms.

5.13.2 Flooring should be seamless and smooth, slip resistant, easily cleaned and appropriately wear resistant.

5.13.3 Hard flooring must be able to withstand cleaning chemicals used within the Trust.

5.13.4 Flooring that is subject to heavy traffic when wet should have a slip resistant surface. This surface however must be easily cleaned.

5.13.5 Doors and walls must be smooth, hard impervious surfaces. They must be able to withstand cleaning processes used within the Trust.

5.13.6 Suspended ceilings must be made of a material that is cleanable. These types of ceilings have been associated with accumulation of dust and fungal spores. Where ceiling tiles are removed a risk assessment must be carried out (Appendix 3)

5.14 Water systems

5.14.1 Hot and cold water systems must comply with all parts of HTM 04-01 including the addendum on *Pseudomonas*.

5.14.2 Water coolers must be fed from a mains water supply and the drainage system attached to a main waste system. They must have filtration and UV-C.

5.14.3 All new water coolers must be purchased with a 5 year maintenance contract

5.15 Waste

5.15.1 There is stringent legislation and guidelines for the management of all healthcare waste.

5.15.2 Any new capital developments should have enough space for waste receptacles to be located close to the point of waste production to avoid unnecessary handling of waste.

5.15.3 There must be adequate secure storage space for waste awaiting collection. This is best located at entrances to the ward.

5.15.4 Used linen should be stored separately from waste to prevent used linen accidentally being taken for disposal as waste.

5.16 Ventilation Systems

5.16.1 In certain instances specialised ventilation will be required. Details can be found in HTM 03-01 on specific details.

5.16.2 All other areas should be well ventilated to ensure comfort for patients and staff.

5.17 Heating

5.17.1 Where radiators are installed they need to be easily cleanable.

5.18 Aspergillus risk assessments

5.18.1 Dust and debris released during building works can contain Aspergillus and other mould spores.

5.18.2 Risk and method statements must be provided by the contractor carrying out building or refurbishment works that identify mitigations taken to minimise the risk from dust and debris.

5.18.3 The risk to patients must be recorded on a Trust Aspergillus risk assessment before commencing work – See Appendix 3

6 EDUCATION AND TRAINING REQUIREMENTS

6.1 Specialised education and training on specific elements such as ventilation and water systems will be provided to those who are identified via Ventilation and Water safety groups. The training due to its specialised nature will be provided by external providers.

6.2 Education, training and support for Aspergillus risk assessments will be provided by Senior nurse estates and facilities.

6.3 Estates and Facilities will deliver Toolbox talks to all relevant staff to ensure they are aware of the contents of this policy.

7 PROCESS FOR MONITORING COMPLIANCE

7.1 Compliance with Aspergillus risk assessments will be monitored via the Infection prevention board assurance framework which is reported quarterly to Trust Infection Prevention Committee.

8 EQUALITY IMPACT ASSESSMENT

8.1 The Trust recognises the diversity of the local community it serves. Our aim therefore is to provide a safe environment free from discrimination and treat all individuals fairly with dignity and appropriately according to their needs.

8.2 As part of its development, this policy and its impact on equality have been reviewed and no detriment was identified.

9 SUPPORTING REFERENCES, EVIDENCE BASE AND RELATED POLICIES

HBN 00-09 Infection control in the built environment

HTM 03-01 Ventilation in Healthcare

HTM 04-01 Safe water in Healthcare

10 PROCESS FOR VERSION CONTROL, DOCUMENT ARCHIVING AND REVIEW

The policy will be reviewed every three years or sooner if there are changes in national guidance. The updated version of the Policy will then be uploaded and available through INsite Documents and the Trust's externally-accessible Freedom of Information publication scheme. It will be archived through the Trusts PAGL system

POLICY MONITORING TABLE

Element to be monitored	Lead	Tool	Frequency	Reporting arrangements Who or what committee will the completed report go to.
Aspergillus Risk Assessment Compliance	Senior Nurse Estates and Facilities	Infection Prevention Board Assurance Framework	Quarterly	TIPAC
Compliance with HTM 04-01 Safe water in healthcare	Capital Project Manager	Authorising Engineer Audit Tool	As Required	Report to Water Safety Committee
Compliance with HTM 03-01 Healthcare Ventilation	Capital Project manager	Authorising Engineer Audit	As Required	Report to Ventilation Safety Committee

1. Introduction

This guidance provides a summary of principles and measures to be incorporated into new building developments and refurbishments

	Design to facilitate cleanliness and cleaning
1	Use finishes that are impervious, smooth and seamless as far as practicable
2	Run hard flooring up the walls for a short distance to provide an easy to clean coving
3	Eliminate or minimise dead-legs and blind ends in water systems, both in the original design and as the systems are modified
4	Consider hands free operation of utilities e.g. sensor taps, automatic lights, movement sensors for toilets flushes.
5	Consider hands free operation of other facilities e.g. automatic doors, proximity sensors
6	Consider integral blinds as an alternative to curtains at internal windows

	Encourage Desired Behaviour
7	Provide sufficient space for activities to take place and to avoid cross contamination between adjacent bed spaces. The current recommendation for new builds is 3.6m from centre of bed to centre of next bed.
8	Provide sufficient storage for patients possessions and for all supplies to discourage clutter
9	Ensure proper segregation and management of waste including clinical waste and linen
10	Provide sufficient domestic waste receptacles
11	Provide bedside waste disposal facilities for patient use
12	Design out unnecessary horizontal surfaces in order to discourage clutter
13	Provide enough wash hand basins and antimicrobial hand rub dispensers. Currently this would be two hand wash basins in multi bed rooms, one in a single room and one per bed space in intensive care areas. There should be alcohol available at every bed space
14	Plan for and deliver good separation of clean and dirty activities
15	Provide sufficient space for storage and preparation of cleaning equipment and materials
16	Provide suitable facilities for cleaning equipment

Design for Easy Cleaning	
17	Use finishes that are easy to clean. They must be able to withstand chlorine based disinfectants, steam and hydrogen peroxide vapour
18	In clinical areas flooring should be seamless and smooth, slip resistant, easily cleaned and appropriately water resistant
19	Use threshold matting on all external entrances
20	Use bumper rails or wall protection to prevent damage to walls
21	Supply pipework should always be concealed

1. First Identify construction activity type from the table below	
Type A	Inspection and non-invasive activities, includes but not limited to • Removal of ceiling tiles for visual inspection in corridors and non clinical areas • Painting and minimum preparation in corridors and non-clinical areas • Electrical trim work (all plugs, switches, light fixtures. Smoke detectors, ventilation fans) • Minor plumbing and activities that do not generate dust or require cutting of walls or access to ceilings other than for visual inspection
Type B	Small scale, short duration activities that create minimal dust. Includes: • Removal of a limited number of ceiling tiles in low risk clinical areas for inspection only (1m^2). • Installation of telephone and computer cabling • Cutting of walls or ceiling where dust migration can be controlled in non-clinical areas
Type C	Any work of long/short duration which generates a moderate to high level of dust or requires minor building works, demolition or removal of any fixed building components or assemblies. Includes but not limited to. • Sanding of walls for painting or wall covering • Removal of floor coverings, ceiling tiles, panelling and wall mounted shelving and cabinets • New wall construction • Minor duct work or electrical work above ceilings • Major cabling activities
Type D	Major demolition and construction projects. Includes but is not limited to new construction/machinery and equipment installations.

2. Then identify the infection prevention risk group by area		
Group1(Low Risk)	Group 2 (Medium Risk)	Group 3 (High Risk)
Office areas/corridors Plant Rooms/Service ducts	A+E Clinical rooms Radiology/magnetic resonance imaging General surgery recovery units Wards Nuclear medicine Admission/discharge units Echocardiography Other departmental clinical areas Out-patient departments Pharmacy (general) Laboratories Hydrotherapy pools Endoscopy Examination rooms	Day surgery rooms All intensive care units including neonatal All operating suites All high dependency units Dialysis and transplant units Oncology and Haematology Bone Marrow Transplant Cardiology Cardiac Catheterisation suite Pharmacy clean rooms Sterile service departments.

3. Now identify the risk class by correlating construction type with risk type				
Construction Activity type				
Risk Group	Type A	Type B	Type C	Type D
Group 1	Class1	Class 2	Class 2	Class 3
Group 2	Class 1	Class 2	Class 3	Class 3
Group 3	Class 2	Class 3	Class 3	Class 4

4. After identifying the risk class from 3 above, follow the risk measures advised for each class	
Class 1	• Execute work by methods to minimise dust from construction • Immediately replace any ceiling tile displaced for visual inspection
Class 2	• Where appropriate isolate HVAC (Heating, ventilation and air conditioning) system in areas where work is being carried out • Provide means to prevent airborne dust from dispersing into atmosphere e.g. Hepa filtered vacuum cleaner • Water mist work surfaces to control dust while cutting • Avoid poling of water which may be prolonged • Seal unused doors with duct tape • Block and seal air vents • Contain construction waste before transport in tightly covered containers • Wet mop and vacuum (hepa filtered) before leaving work area • Place dust attracting mats at entrance/exit to work area
Class 3	• Where appropriate isolate HVAC system in area where work is being done to prevent contamination of duct work. • Complete all critical barriers and implement dust control methods before construction begins. Hoardings must be dust proof • Maintain negative air pressure within the work site. Use HEPA equipped air filtration unit if there is a risk the air will enter the building.

	• Do not remove barriers from work area until complete project is clinically clean • Vacuum with HEPA filtered vacuum cleaner • Wet mop area during works • Remove barrier materials carefully to minimise spreading of dust and debris associated with construction • Contain construction waste before transport in tightly lidded containers
Class 4	• Isolate HVAC system in work area where work is being done to prevent • Complete all critical barriers and implement dust control methods before construction begins. Hoardings must be dust proof. Construct airlock and require all personnel to remove dirty apparel and clean down before leaving the work site. Disposable coveralls must be used where appropriate. • Maintain negative air pressure within the work site. Use HEPA equipped air filtration unit • Do not remove barriers from work area until complete project is clinically clean • Vacuum with HEPA filtered vacuum cleaner • Wet mop area during works • Remove barrier materials carefully to minimise spreading of dust and debris associated with construction • Contain construction waste before transport in tightly lidded containers

Appendix 3 – Aspergillus Risk Assessment

ASPERGILLUS RISK ASSESSMENT TOOL
Construction / Building Task / Activity **1. 1** List areas which may be affected by dust / disturbance to the building and the tasks to be carried out
1.2 Actions to minimise dust – attach proposed schedule of work and method statement

2. Initial Risk Rating

Construction Activity Type **A** **B** **C** **D**

Infection Prevention Risk Group **1** **2** **3**

Risk Rating: with all control measures in place	**Patient**	**Staff**	**Visitors**
a) Likelihood of exposure/contamination =			
b) Severity of Harm likely to result: =			
c) Total Rating =			
(* Use Trust Risk Matrix for scoring)			
Signed by Project Manager :		Date:	

3. Clinical Review of Risk Rating

List additional and / or alternative controls to protect patients

Authorisation to proceed with works/activity as submitted by UHL project manager

Signature: **Title:** **Date: (Insert Date)**
Senior clinical representative

Signature: **Title:** **Date: (Insert Date)**
(Infection Prevention representative)

4. - Form A2 Aspergillus pre-project checklist tool (for completion by UHL Project Manager)

UHL PROJECT MANAGER Name:

PRINCIPAL CONTRACTOR Name:

1. Proposed date of commencement of building work (including daily start/finish times):

2. Aspergillus Risk assessment completed and 'signed off' YES / NO

3. Control measures agreed with Clinical Managers and infection Control YES / NO

4. Construction Design Management (CDM) notification (F10) Yes / N/A

5. Access agreed with Facilities YES / NO

6. Work programme and schedule agreed with all affected parties? YES / NO

7. Suitable cleaning and decontamination programmed into schedule YES / NO

8. Contact details of UHL Project Manager (or deputy)

Name:

Signature of UHL Project Manager Date **(Insert Date)**

Telephone (daytime):
Telephone (out of hours):
E-mail:

1. Introduction

This guidance provides a summary of principles and measures to be considered where there are building or refurbishment works

1	Prior to any building or refurbishment works being undertaken in your area ensure you are familiar with what is being proposed and how this might affect your area e.g. dust, noise, power outages.
2	Always familiarise yourself with the Aspergillus risk assessment. This will detail the mitigations the contractor will take to minimise the risk from dust to patients, visitors and staff, This will include how they will access the site, how they remove waste and the hoarding they will use.
3	Make sure the ward or department knows who the project manager is for the works and who the main contact is for the contractor carrying out the works. These will be detailed on the Aspergillus risk assessment.
4	If there are any concerns around the building works contact the project manager who will liaise with the contractor.
5	The contractor if working in a live ward or department will normally liaise with the person in charge daily to ensure they are aware of upcoming works that might impact on the department.
6	Ensure on a daily basis that the mitigations identified in the Aspergillus risk assessment are being carried out. If you have any concerns speak to the Project manager or Infection Prevention. This could be anything from damaged hoardings to dust coming from the site.
7	Prior to completion of the works there will be opportunity to inspect the area to ensure that works have been completed to the agreed specification
8	The builders will carry out their own clean prior to leaving the site. This will be followed by the Trusts cleaning team who will carry out a clinical clean. This will be arranged by the project manager who will request the clean on 17888 and liaise with the cleaning teams on site. If you have any concerns speak to the project manager or Infection prevention.
9	Infection Prevention will carry out an inspection prior to re-occupation of the area with the ward or department team.