

Decontaminating with Hydrogen Peroxide Vapour Technology (Fogging) – Standard Operating Procedure	Type: Policy Register No: 10078 Status: Public
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Developed in response to:	Support for staff involved in the use of HPV machines.
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Consulted With	Post/Committee/Group	Date
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Document Review History

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1.0	Ricky Cichon - update in accordance with site centralisation	18 October 2010
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- Appendix C HPM decontamination for side rooms and bathrooms checklist
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1. Purpose and Aim

- 1.1 This operational procedure will enable the Trust to comply with all relevant legislation and guidance, in particular the Health and Social Care Act (2008) and the National Specifications for Cleanliness in the NHS (2007).
- 1.2 Recognising that decontamination is everyone's responsibility, the aim of the Standard Operational Procedure is to:
- provide a final decontamination process within a clinical area following certain infections including but not limited to Clostridium Difficile (C Diff) and other multi resistant organisms prior to re-use of a clinical space.
 - provide guidance for the correct and safe method of HPV technology and equipment
 - increase patient confidence whilst using the hospital facilities in relation to environmental hygiene and the organisational commitment to reduce the incidence of healthcare associated infection; and
 - provide the opportunity to improve cleanliness standards in terms of the national specifications for cleanliness and patient environment action teams

2. Introduction

- 2.1 This operational procedure sets out the approach of the Trust to deliver a clean and safe environment by using the decontamination technology of Hydrogen Peroxide Vapour (HPV) and should be read in conjunction with the Trust's Cleaning, Decontamination, and Isolation Policies.
- 2.2 Several studies have shown that some micro-organisms, such as bacteria, viruses and fungi, are not killed effectively by standard cleaning. HPV technology consists of a mobile vapour generator which mists 30% w/w aqueous hydrogen peroxide to facilitate total disinfection of hospital areas and equipment. HPV is an oxidising agent. When it comes into contact with micro-organisms it oxidises the cells or spores, thus deactivating them. An HPV generator delivers hydrogen peroxide vapour at high speed, ensuring distribution to all parts of a room. A very fine layer of micro-condensation is formed on all exposed surfaces, deactivating micro-organisms. This Trust uses a system which mists at 6%.
- 2.3 HPV can be used to reach awkward inaccessible areas. However, areas not exposed to the vapour are not disinfected, so all surfaces have to be positioned for optimum exposure. Soiling reduces the efficacy of HPV, so surfaces to be disinfected must be cleaned prior to use. HPV is hazardous to human health, so it can only be used in areas that can be emptied of patients and staff and sealed during the disinfection process. HPV is particularly useful for disinfecting non-porous surfaces on furniture and on equipment that is difficult to disinfect manually.
- 2.4 HPV is an essential part of our cleaning systems and methods. The Trust uses an environmentally friendly, easy to use system that is beneficial in helping to lower health care associated infections.
- 2.5 This method of HPV decontamination, also known as 'fogging', is ideally suited for use in healthcare facilities due to its rapid, flexible and 'residue-free' nature. HPV has extensive, proven biological efficacy against a wide range of environmentally associated pathogens. This procedure must only be carried out by trained domestic staff only.
- 2.6 HPV decontamination can be applied safely even where expensive electronic equipment is situated. HPV decontamination has proven material compatibility so all equipment can be safely decontaminated in situ with no detrimental effect on performance or aesthetics. This is

critical during the "deep clean" process where these areas have traditionally been hard to reach or where the decontaminants are incompatible with sensitive electronics, particularly chlorine-based products (including bleach). This process is also used following clearance from Infection Prevention and Control Team over *Clostridium Difficile* (C Diff) patients.

- 2.7 Correct training in the use of HPV technology is particularly important and log of such training is maintained within the Domestic Services Department.

3. Scope

- 3.1 This operational procedure applies to all domestic staff that are required to use HPV technology and Infection Prevention staff in determining where HPV decontamination process is required.

4. Roles and Responsibilities

4.1 DIPC

It is the responsibility of the DIPC to provide input to policy decisions regarding the use of HPV technology.

4.2 Domestic Services Manager

It is the responsibility of the Domestic Services Manager to maintain HPV equipment and provide training for all staff that are required to use HPV technology.

4.3 Infection Prevention Team (IPT)

It is the responsibility of the IPT to provide professional guidance with the purchase and use of HVV technologies and agree any changes to method practices. The DIPC is responsible for confirmation as to when HPV technology should be used.

4.4 Domestic staff required to use HPV equipment

It is the responsibility of the Domestic staff member using the HPV technology to ensure they have received the appropriate training and follow correct procedures. In addition, any issues that occur as a result of using HPV technology must be reported via the risk event form process in accordance with the Trust's Incident Policy and Health and Safety Policy. Domestic staff must report any maintenance issues immediately so that these can be rectified quickly.

4.5 Estates Team

It is the responsibility of the Estates team to shut off and restart any air flow systems prior to, and after fogging takes place, and to confirm with the Domestic and ward staff that they systems have been shut off and restarted.

5. Decontaminating with HPV Technology

- 5.1 The HPV technology user guide can be seen in Appendix A which must be followed by Domestic staff at all times. Checklists must be used by Nursing and Domestic staff to ensure that the area to be decontaminated has been appropriately prepared.

- 5.2 The decontamination procedure can be performed in the following areas:

- Empty single rooms;

- whole or part of an empty ward;
- empty bays on an occupied ward (provided that bay can be securely enclosed)
- sluice rooms;
- Toilets / bathrooms;
- empty Theatres.

It is to be performed on:

- Routine – a single room that has accommodated a patient with Clostridium difficile, diarrhoea, or VRE in Haematology;
- Burns Theatres following a confirmed, or suspected case of PVL, or other multi-resistant organism, as directed by the DIPC or IPC team;
- Other – on the advice of the Infection Prevention and Control Team, e.g. an occupied bay.

5.3 Equipment and materials required

- HPV Unit and power lead
- HPV Disinfecting Canisters
- Warning signs / no entry notice
- PPE appropriate to task (rubber gloves, apron)
- Masking Tape
- Smoke detector cap
- Step ladder
- Vent covers (for Theatre areas)

5.4 Areas of Use

- 5.4.1 The HPV technology is to be used after the discharge of patients with an infection control alert from side rooms or following theatre procedures including but not limited to Clostridium Difficile and multi resistant organisms.
- 5.4.2 The IPC Team will provide guidance as to when it is appropriate to use the HPV technology and the request will be made via the bed office.
- 5.4.3 Burns wards use fogging as standard practice to disinfect areas due to higher risks of PVL outbreaks.
- 5.4.4 HPV technology should only be used sealed environment and not occupied by patients such as empty side rooms, theatres and wards. Ward bays with occupied adjacent bays cannot be fogged. Wards must be decanted when fogging bay areas unless the bay can be securely enclosed (i.e. has doors).

5.5 Method

- 5.5.1 Before proceeding the following measures must be in place:
- Ensure that the personnel operating the HPV technology has received certificated training;
 - Ensure that the ward staff have given authority to protect the area;
 - Ensure that Estates have deactivated the ventilation system and fire/smoke detector and that all other vents are appropriately closed/covered.
- 5.5.2 Use the appropriate check list for HPV Decontamination Procedures (Appendix C and D).

- 5.5.3 Terminal clean must be undertaken prior to HPV technology being used in accordance with the Cleaning, Decontamination and Isolation policies. The area must be completely dry to the touch.
- 5.5.4 All staff must wear the appropriate uniform and PPE whilst performing the HPV technology process.
- 5.5.5 The Domestic will ensure that the layout of the area is understood, any risks have been identified and the method of deployment agreed.
- 5.5.6 The Domestic will also ensure that the area to be decontaminated is free from staff, patients or others likely to be in the area e.g., contractors or visitors and check that items agreed for removal have been taken prior to the decontamination process beginning.
- 5.5.7 All windows must be checked for closure and any access points to adjacent area which are not to be decontaminated must be suitably sealed with tape if necessary. Only one unsealed exit is to be left for evacuation of the area when the cycle commences.
- 5.5.8 All equipment that is to remain in the area to be decontaminated must be checked to ensure free circulation of vapour is possible. Equipment that incorporates cooling fans to draw air in can be left running to allow penetration internally.
- 5.5.9 A final check is made of the HPV robot location and programme selection by the Domestic before starting the cycle. Once this has been done the equipment is set for delayed start and the area must be evacuated. The exit doors are to be sealed with tape as required.
- 5.5.10 Restriction access signs must be erected at all entry points to prevent anyone entering the area being decontaminated (as seen in Appendix B).
- 5.5.11 In the event of a power failure the decontamination of any specific area must be repeated unless the entire disinfectant dispersal phase has been confirmed to have finished before the power went off.
- 5.5.12 At the end of the decontamination cycle, there must be a period of at least 30 minutes allowed prior to giving safe access to the area. Windows that open to atmosphere with no nearby buildings can be opened to accelerate the final phase of aeration but only where suitable PPE is worn to ensure no harm from the peroxide level at that time e.g. air fed mask
- 5.5.13 After the whole area has been decontaminated the Domestic must inform the Ward / Departmental manager to confirm that the disinfection has been completed successfully in the allocated area.
- 5.5.14 Any ventilation or fire/smoke detectors that were deactivated can now be reactivated. Any coverings used on other vents can be removed.
- 5.5.15 The Domestic must check that all equipment is returned to the designated domestic store once they have confirmed the completion of the disinfection process. Empty canisters should be disposed of via domestic waste in accordance with the Waste Management Policy.
- 5.6 Summary - the following actions must be taken prior to decontamination:
- Ensure terminal clean is completed;
 - Ensure ventilation is deactivated;
 - Ensure the Ward Sister/Department Head are informed about the start, duration and completion time of the HPV process;

- Ensure the Restriction Sign is erected and minimum access time included on sign;
- Ensure all smoke detectors are covered correctly or deactivated;
- Ensure all windows are closed and doors sealed fitted with masking tape;
- Ensure all unnecessary and incompatible equipment is removed from the area before disinfection and disposed accordingly;

6. Fire

- 6.1 If there is a fire in the area where the HPV equipment and consumables are stored, the Fire Brigade must be informed of its location prior to entering the area.
- 6.2 The HPV will activate the fire sensor heads. Before using the machine the fire detector sensors must be covered to prevent setting off the fire sensor heads. On completion of dispersal time, the cover must be removed to reactivate the fire sensor heads.

7. Training

- 7.1 Domestic staff must be fully trained prior to using the HPV technology. Only those persons who have been trained and are judged to be competent will operate the HPV equipment.
- 7.2 Training will be provided to key domestic personnel in the department who will be passed as competent to train others.
- 7.3 Records of staff training in the use of the HPV technology are maintained by the Domestic department.
- 7.4 Competency will be measured annually or when a training need is identified.

8. Contacts

- 8.1 If you experience any difficulties or concerns regarding the use of HPV technology, the numbers below may be able to help.

Senior Domestic Team Leader Ext. 4047/4515 or Bleep #6555 2800

Domestic Services Manager Ext. 4495

9. Auditing

- 9.1 Records of HPV decontamination are held within relevant Cleaning Folders which can be referred to in case of incidents reported via Datix.
- 9.2 Swab testing can be undertaken by Microbiology on an ad hoc basis to verify effectiveness of the HPV decontamination process and findings analysed by Infection Prevention & Control.

10. References

- Department of Health: Clean Safe Care, Reducing Infections and Savings Lives, January 2008
- Department of Health, HCAI Technology Innovation Programme, Showcase Hospitals report number 3, Aug 2009

HPV ROBOT USER GUIDE



OXY'PHARM®

3

...then to the mains socket



OPERATION

OXY'PHARM®

4

Position the device in a corner of the room for optimum efficiency

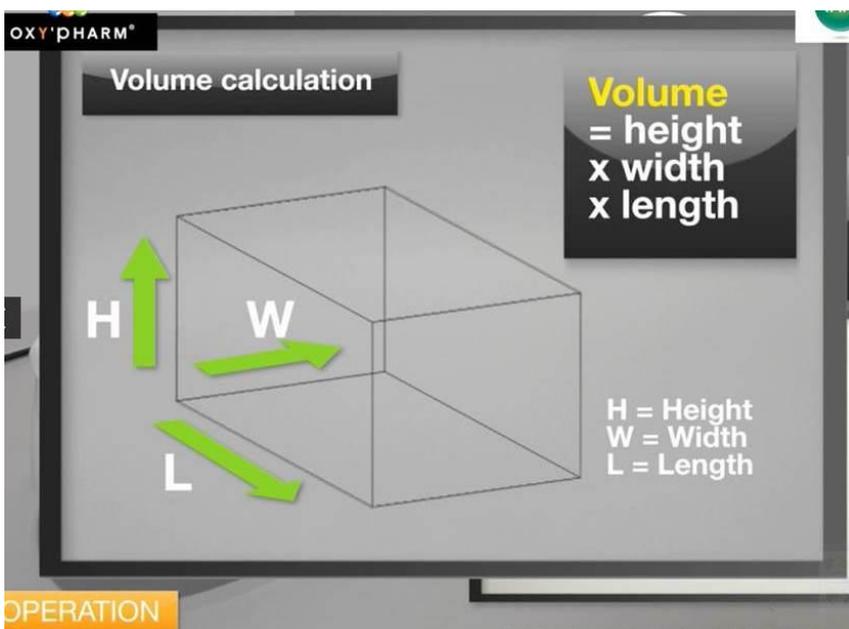


OPERATION

OXY'PHARM®

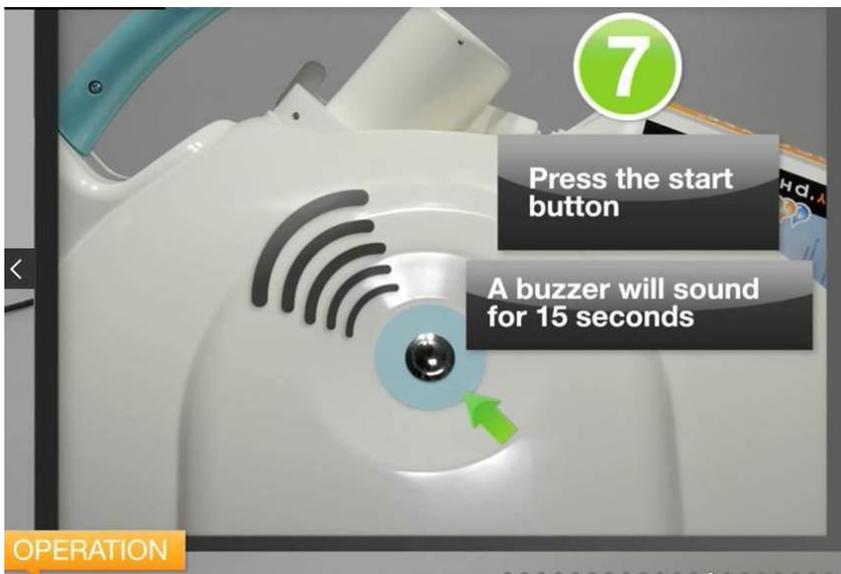
Volume calculation

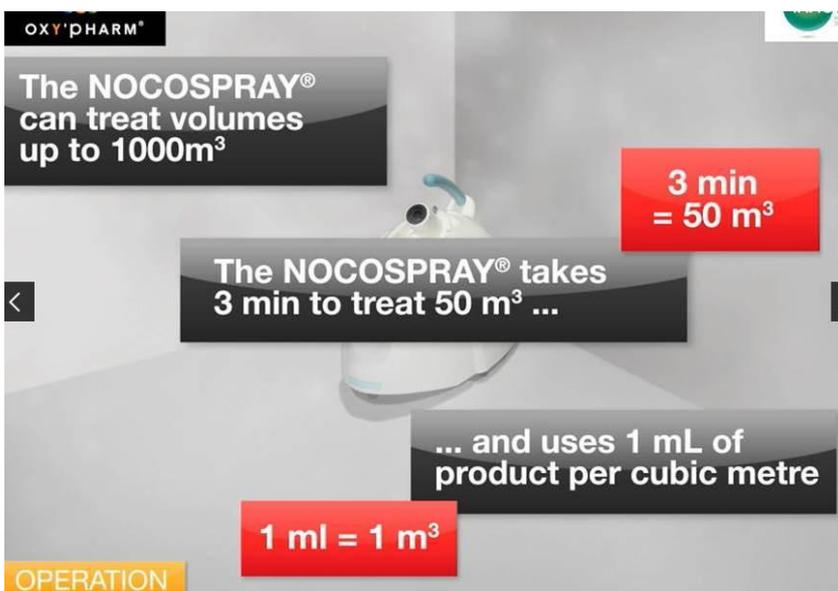
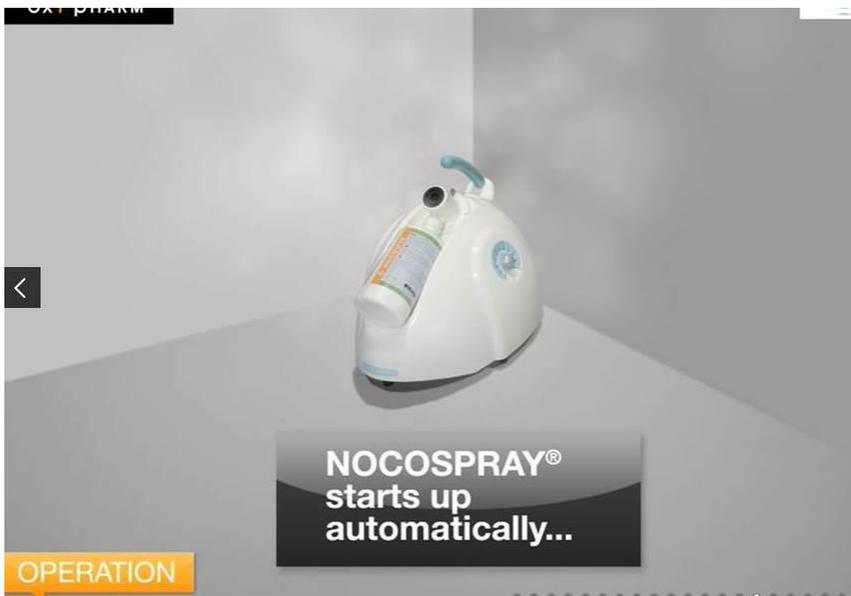
Volume = height x width x length



H = Height
W = Width
L = Length

OPERATION







HPV (FOGGING) DECONTAMINATION IN PROGRESS



NO ENTRY UNTIL AT
LEAST: _____

**HPV Decontamination Procedure for Isolation Bed and Bed Space
(between Admissions)**

HPV Decontamination checklists must be followed, signed by Nursing and Domestic staff and kept within the Cleaning Folder.

Ward:	Room/Bay:	Date:
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	Description/Task	Duty	Tick Box
1	Replace Isolation Sign on door with "DO NOT ENTER - Isolation Cleaning in Progress"	N	
2	Use yellow colour coded equipment as per national colour coding scheme. Put on disposable gloves and yellow apron.	N	
3	Discard all disposable equipment (including patient entertainment headsets) via clinical waste.	N	
4	Strip Bed. Bed linen is placed in a pink soluble liner, double knotted, ensuring the bag is no more than two thirds full. Linen must be bagged inside the room and then placed in a plum outer bag outside the room. MATRESSES NOTE: The mattress must be unzipped and checked. If a mattress is found to be stained, torn, the foam core is visibly soiled or heavily indented then the mattress must be deemed unfit for purpose and condemned. Any replacement mattress should be fitted following domestic clean. Static Foam Mattress: replace via porters Air Mattresses: clean, bag and use yellow tag to declare as decontaminated and return to Medical Equipment Library.	N	
5	Clean all reusable clinical equipment according to manufacturers guidelines and refer to Decontamination Policy. Tristel Fuse may be suitable for some equipment i.e. commode chairs, drip stands.	N	
6	Move cleaned equipment outside the room to allow for curtain change and domestic clean. (Note: do not remove equipment from room following the clean if the room is to be fogged after clean).	N	
7	Empty bowl into the sluice and clean bowl with Tristel Fuse and dry thoroughly and store inverted.	N	
8	Remove or seal any open containers containing liquids or chemicals.	N	
9	Dispose of apron and gloves as clinical waste. Hands must be washed and dried thoroughly.	N	
10	Request ventilation and fire/smoke detectors are deactivated via Estates ext. 6000.	N	
11	Once confirmation of deactivation of ventilation and fire/smoke detectors has been received, request Terminal clean with fogging via bed office ext. 4074 or 4666. Contact On-Call Hotel Services Manager via switchboard for terminal cleans when no response.	N	
12	Use yellow colour coded equipment as per national colour coding scheme. Put on disposable gloves and yellow apron.	D	
13	Take down curtains and place in pink soluble liner, double knotted, ensuring the bag is no more than two thirds full. Curtains must be bagged inside the room and then placed in a purple outer bag outside the room. Complete a personal bundle tag to accompany each bag. This needs to be done prior to any cleaning.	D	
14	Clean mattress (both sides) and plastic pillowcases, whole bed-frame, locker, bed table and patient chair, with Tristel Fuse. Mattresses must be thoroughly dried prior to remaking bed.	D	
15	Clean ALL horizontal surfaces including the patient entertainment screen, box and arm, light fitting and grey sill behind the bed and all ledges with Tristel Fuse and allow to air dry. Pay particular attention to door handles and light switches, patient call bell.	D	

	Description/Task	Duty	Tick Box
16	Where bed space is a side room with en-suite the toilet and hand basin must be cleaned with Tristel Fuse and allowed to air dry The shower curtain must be removed, placed in clear plastic bag and return to the domestic laundry. A clean shower curtain must then be fitted. Particular attention to be given to taps, handrails, toilet roll holders, door handles, toilet flush and light switch. Discard all rubbish appropriately.	D	
17	Do not vacuum any area within the bay, the bed space or side room. Dust control and damp mop the floor with Tristel Fuse.	D	
18	Wall washing is only necessary if there is visible soiling with bodily fluids and as part of a pre-planned maintenance programme.	D	
19	Open windows to allow room to dry if appropriate.	D	
20	Empty the bucket into the sluice sink in the cleaning room, clean it with Tristel Fuse, dry thoroughly and store inverted.	D	
21	Remove mop head, place in clear plastic bag and return to the domestic laundry. Any disposal mops used must be disposed of via clinical waste.	D	
22	Clean the mop handle with Tristel Fuse and dry thoroughly. Return to Sluice Room for storage.	D	
23	Remove or seal any open containers containing liquids or chemicals (Detergents, bleach etc).	D	
24	Remove gloves and aprons and dispose of via clinical waste. Hands must be washed and dried thoroughly	D	
25	Obtain authorisation from ward staff that HPV decontamination can proceed, including confirmation of deactivation of ventilation and fire/smoke detectors.	D	
26	Close all windows and access doors. Ensure that any open gaps are sealed using masking tape.	D	
27	Ensure all surfaces are dry to the touch following cleaning process.	D	
28	Display NO ENTRY signs on all access points detailing cycle start and finish times.	D	
29	Position HPV technology appropriately in room according to manufacturers guidance.	D	
30	Select correct cycle according to room being fogged.	D	
31	Commence decontamination cycle and leave the area, sealing any gaps on the exit route with masking tape.		
32	Allow decontamination cycle and contact time to complete.	ALL	
33	When cycle and contact time is complete open windows where possible.	D	
34	Restart ventilation systems and reconnect or remove covers for fire/smoke detectors.	N	
35	Remove NO ENTRY signs.	D	
36	Remove and store HPV technology.	D	
37	Complete entries in Cleaning Folder on Fogging and Terminal Clean sheets	D	
38	Hang clean curtains.	D	
39	Release room for use.	D	
40	Complete entries in Fogging and Terminal Clean folders in Domestic Services Office.	D	
41	Fit replacement mattress (if required), make bed.	N	
42	Remove Cleaning In Progress Sign and clean with Tristel Fuse.	N	
43	Replace patient entertainment headphones from ward stock. Certificate of cleaning to be placed across the bed (green tape system) once bed linen is in place. The name of the nurse in charge cleaning the bed space must print their name and date at point of fitting tape across the bed.	N	

COMPLETION SIGN OFF

DATE _____

NURSING **Print Name** _____

Signature _____

DOMESTICS **Print Name** _____

Signature _____

**HPV Decontamination Procedure for Theatres
(between Admissions)**

HPV Decontamination checklists must be followed, signed by Nursing and Domestic staff and kept within the Cleaning Folder.

Ward:	Theatre:	Date:
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	Description/Task	Duty	Tick Box
1	Replace Isolation Sign on door with "DO NOT ENTER - Isolation Cleaning in Progress"	N	
2	Use yellow colour coded equipment as per national colour coding scheme. Put on disposable gloves and yellow apron.	N	
3	Discard all disposable equipment via clinical waste.	N	
4	Strip linen. All linen is placed in a pink soluble liner, double knotted, ensuring the bag is no more than two thirds full. Linen must be bagged inside the room and then placed in a plum outer bag outside the room. MATRESSES NOTE: The mattress must be unzipped and checked. If a mattress is found to be stained, torn, the foam core is visibly soiled or heavily indented then the mattress must be deemed unfit for purpose and condemned. Any replacement mattress should be fitted following domestic clean. Static Foam Mattress: replace via porters Air Mattresses: clean, bag and use yellow tag to declare as decontaminated and return to Medical Equipment Library.	N	
5	Clean all reusable clinical equipment according to manufacturers guidelines and refer to Decontamination Policy. Tristel Fuse may be suitable for some equipment i.e.drip stands.	N	
6	Move cleaned equipment outside the room to allow for domestic clean. (Note: do not remove equipment from room following the clean if the room is to be fogged after clean).	N	
7	Empty bowl into the sluice and clean bowl with Tristel Fuse and dry thoroughly and store inverted.	N	
8	Remove or seal any open containers containing liquids or chemicals.	N	
9	Dispose of apron and gloves as clinical waste. Hands must be washed and dried thoroughly.	N	
10	Request ventilation and fire/smoke detectors are deactivated via Estates ext. 6000.	N	
11	Ensure that all other ventilation outlets are appropriately covered.	N	
12	Once confirmation of deactivation of ventilation and fire/smoke detectors has been received, request Terminal clean with fogging via bed office ext. 4074 or 4666. Contact On-Call Hotel Services Manager via switchboard for terminal cleans when no response.	N	
13	Use yellow colour coded equipment as per national colour coding scheme. Put on disposable gloves and yellow apron.	D	
14	Clean trolley (both sides) and plastic pillowcases, whole trolley-frame with Tristel Fuse.	D	
15	Clean ALL horizontal surfaces including light fitting and all ledges with Tristel Fuse and allow to air dry. Pay particular attention to door handles and light switches.	D	
16	Do not vacuum any area within the theatre. Dust control and damp mop the floor with Tristel Fuse.	D	
17	Wall washing is only necessary if there is visible soiling with bodily fluids and as part of a pre-planned maintenance programme.	D	
18	Open windows to allow room to dry if appropriate.	D	

	Description/Task	Duty	Tick Box
19	Empty the bucket into the sluice sink in the cleaning room, clean it with Tristel Fuse, dry thoroughly and store inverted.	D	
20	Remove mop head, place in clear plastic bag and return to the domestic laundry. Any disposal mops used must be disposed of via clinical waste.	D	
21	Clean the mop handle with Tristel Fuse and dry thoroughly. Return to Sluice Room for storage.	D	
22	Remove or seal any open containers containing liquids or chemicals (Detergents, bleach etc).	D	
23	Remove gloves and aprons and dispose of via clinical waste. Hands must be washed and dried thoroughly	D	
24	Obtain authorisation from ward staff that HPV decontamination can proceed, including confirmation of deactivation of ventilation and fire/smoke detectors.	D	
25	Close all windows and access doors. Ensure that any open gaps are sealed using masking tape.	D	
26	Ensure all surfaces are dry to the touch following cleaning process.	D	
27	Display NO ENTRY signs on all access points detailing cycle start and finish times.	D	
28	Position HPV technology appropriately in room according to manufacturers guidance.	D	
29	Select correct cycle according to room being fogged.	D	
30	Commence decontamination cycle and leave the area, sealing any gaps on the exit route with masking tape.		
31	Allow decontamination cycle and contact time to complete.	ALL	
32	When cycle and contact time is complete open windows where possible.	D	
33	Restart ventilation systems and reconnect or remove covers for fire/smoke detectors.	N	
34	Remove coverings from other ventilation outlets.	N	
35	Remove NO ENTRY signs.	D	
36	Remove and store HPV technology.	D	
37	Complete entries in Cleaning Folder on Fogging and Terminal Clean sheets	D	
38	Hang clean curtains.	D	
39	Release room for use.	D	
40	Complete entries in Fogging and Terminal Clean folders in Domestic Services Office.	D	
41	Fit replacement mattress (if required), make bed.	N	
42	Replace any equipment. The name of the nurse in charge cleaning the area must print their name and date at point of fitting tape across the equipment.	N	

COMPLETION SIGN OFF

DATE _____

NURSING Print Name _____

Signature _____

DOMESTICS Print Name _____

Signature _____