SECTION 8
DECONTAMINATION

- Decontamination of Equipment
- Risk assessment for Decontaminating Equipment
- Methods of Decontamination
- Decontamination of Medical Devices
- A-Z Decontamination of Equipment
- Decontamination Agents
- Decontamination of Environment
- A-Z Environmental Decontamination
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<table>
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<tr>
<th>Developed by</th>
<th>Máire Flynn, Liz Forde, Niamh McDonnell, Patricia Coughlan</th>
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<tr>
<td>In conjunction with</td>
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<td>Approved by</td>
<td>Cork and Kerry Infection Prevention and Control Committee</td>
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</table>
The reprocessing of Reusable Invasive Medical Devices (RIMD) is not addressed in this document. Further policies and guidelines for the decontamination of dental equipment and podiatry equipment will be necessary.

For further advice in this area please contact your local infection prevention and control Nurse as HSE standards for decontamination in dental and podiatry are currently under development.

**Definitions Associated with Decontamination**

**Invasive Medical Devices** - is an object which is used for diagnostic or therapeutic purposes which penetrates or breaks the skin or body cavity for example urinary catheter, enteral feeding tube, dental handpiece (HIQA 2009).

**Medical and Non-Medical Equipment** - all products and consumables, except medicines, used in healthcare for the diagnosis, prevention, monitoring or treatment of illness or disability (HIQA 2009). For example medical equipment includes commode, nebuliser compressor, non-medical equipment includes bedside table, chair and cleaning equipment. Within this document medical and non-medical equipment will be referred to as equipment.

**Decontamination of Equipment**

The aim of decontaminating equipment is to prevent potentially harmful microorganisms reaching a susceptible host in sufficient numbers to cause infection.

Each healthcare worker is responsible for ensuring that only clean equipment is used during the delivery of care and that all equipment is appropriately decontaminated after each use. (Pratt et al, 2007).

Equipment is classified according to its perceived risk and should be cleaned and reprocessed according to the level of risk associated with their intended use. The Spaulding classification of infection risk is outlined in the HSE Standards and Recommended Practice for decontamination of RIMD (HSE 2011).

The **choice of method of decontamination**:

- Cleaning or
- Cleaning + Disinfection or
- Cleaning + Sterilisation

depends on many factors, but the initial choice can be based on the infection risks to the resident/client. These can be classified as high, intermediate and low risks.
### Table 1: RISK ASSESSMENT FOR DECONTAMINATION OF EQUIPMENT

<table>
<thead>
<tr>
<th>Category of Risk</th>
<th>Rational and Examples</th>
<th>Minimum Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low / Non-critical</td>
<td>• Items in contact with healthy, intact skin e.g. BP cuffs, examination couches, foot stools and hard surface toys, washing bowls, furniture and mattresses.</td>
<td>Cleaning Detergent &amp; warm water, rinse &amp; dry</td>
</tr>
<tr>
<td>Intermediate/Semi-critical</td>
<td>• Item in contact with intact mucous membranes and/or body fluids • Item contaminated with particularly virulent or readily transmissible organisms • Item used with highly susceptible clients or sites e.g. Dressing Trolleys, bedpans, jugs for emptying urinary catheters, auroscope nozzles &amp; respiratory/resuscitation equipment.</td>
<td>Clean &amp; Disinfect Heat e.g. washer disinfect or Chemical e.g. sodium hypochlorite, rinse &amp; dry or single use</td>
</tr>
<tr>
<td>High / Critical</td>
<td>• Item in contact with a break in the skin/mucous membrane • Item introduced into a sterile body area. e.g. urinary catheters and surgical instruments.</td>
<td>Single use or Clean &amp; Sterilise By returning to Hospital Sterile Services Department (Hoffman et al, 2004)</td>
</tr>
</tbody>
</table>

### Table 2: METHODS OF DECONTAMINATION

<table>
<thead>
<tr>
<th>PROCESS</th>
<th>DEFINITION</th>
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</table>
| Cleaning | A process which physically removes contamination but does not necessarily destroy germs. Cleaning using neutral detergent removes germs and the organic material from a surface on which they thrive.  

The first step for any decontamination procedure is adequate cleaning of the device or surface to ensure effective disinfection or sterilisation can subsequently be carried out. Organic residue may prevent the disinfectant from having contact with the item being processed and inactivate chemical disinfectants. |
| Disinfection | A process used to reduce the number of viable germs to a level where they are unlikely to be a danger to health but which may not necessarily inactive some agents, such as certain viruses and bacterial spores. |
| Sterilization | A validated process, that is used to render a product sterile by achieving the complete killing or removal of all types of germs, including viruses and spores. |

(Ayliffe et al, 2000)
Medical Equipment can be divided into:

1. Single Use
2. Reusable

1. **Single Use Devices**

   **Items labelled “Single Use” are for single use only.**
   
   Single Use devices must not be reprocessed

   - The processing and reuse of single use devices has risks such as safety, performance and effectiveness, thereby exposing residents/clients and staff to unnecessary risk, and represents a litigation risk to the HSE.
   - Check the integrity of the packaging before use.
   - Once the package is opened it can no longer be considered sterile. This also applies to dressings that have a section cut off.
   - Ensure that single use items are disposed of after use according to local waste policy.
   - Examples include vacutainer barrels, enteral feeding giving sets/bags, 500ml normal saline bottles, dressings and nebulisers.

2. **Reusable**

   **Reusable medical devices (assessed as high/critical risk) required to be sterile must be reprocessed through a Local Decontamination Unit (LDU), Central Decontamination Unit (CDU) or Sterile Services Department (SSD). These units will have instrument tracking systems and use proper validated, automated cleansing and sterilisation procedures.**

   Where sterile equipment is required and access to such a unit is unavailable, single-use disposable devices must be sourced e.g. disposable podiatry instruments, disposable sterile scissors, disposable forceps, disposable ambubags and disposable dressing packs.

   **Medical devices labelled as “Single Patient Use” (assessed as non-critical/intermediate risk) maybe reprocessed and used for the same client.**

   It is necessary to have manufacturers instructions for reprocessing of single resident/client use reusable devices to include:
   - Decontamination level required
   - Number of times item can be used
   - Length of time item can be in use
   - Recommended storage of item in between uses
   - Recommended schedule for servicing and or validation.

   Examples include reusable enteral feeding syringes, some nebuliser masks, tubing and chamber.
For decontamination of reusable devices the following is required
- Decontamination is carried out in a clean utility/ treatment room
- A designated sink with drainer is used
- Hand hygiene facilities must be available in this area.
Where facilities are not available for decontamination single use items must be used.

**Storage and Maintenance of Sterile Supplies**

- Expiry dates provided by the manufacturers are only valid if the correct conditions of storage are maintained as follows
- All sterile equipment should remain in sealed packaging until required and stored appropriately.
- Medical devices should be stored in a designated clean area, off the floor and kept dust free. Where possible trolleys, shelves or cabinets used should be racked type.
- Storage area should be controlled and dedicated for that specific use.
- Storage area should be free from dust, insects and vermin.
- Storage areas should be easily cleaned and trolleys/shelving made of materials which are smooth, easily cleaned, suitably wear resistant and impervious to liquids.
- If open shelving is used items must be stored at least 250mm above floor level and 440mm from ceiling fixtures.
- Sterile goods should be protected from direct sunlight and moisture.
- Packaging should not be damaged due to overfilling of containers.
- Do not store excessive amounts of sterile stock in a client’s room /home, nursing bag or car, keep essential items only.
- Events that might compromise the sterility of a package may include but are not limited to:
  - Multiple handling that leads to seal breakage or loss of pack integrity.
  - Moisture penetration
  - Exposure to airborne contaminants – dust etc.
Decontamination of Equipment

- All equipment should be cleaned according to manufacturer instructions. Manufacturer’s instruction should be kept in a designated location so that all staff can access them for information.
- All items/equipment must be stored clean and dry following use.
- Storage areas should be kept clean and tidy.
- All items/equipment must be visibly clean prior to use.
- Ensure that equipment is not used for another resident/client until it has been cleaned and reprocessed appropriately.
- All appliances should be decontaminated before being sent to maintenance or engineering departments before repair or servicing.

A-Z Decontamination of Equipment

If items are soiled with blood or body fluids, two options are available

1. Clean thoroughly with detergent and water and disinfect with a chlorine releasing disinfectant/ hypochlorite at 1,000 parts per million (ppm) concentration, – e.g. Milton or Klorosept with a concentration of 1,000ppm available chlorine, rinse and dry

   OR

2. Use a combined cleaner/disinfectant e.g. Chlor-clean which is a one step process. Manufacturer’s instructions must be followed to ensure correct dilution and ensure to rinse and dry after use.

If there are any doubts or concerns about the advice outlined below, the advice of your Infection Control Nurse MUST be sought.

Table 3: A-Z of Decontamination

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acupuncture Needles</td>
<td>Single use only</td>
</tr>
<tr>
<td>Airways and Endotracheal Tubes</td>
<td>Single use only</td>
</tr>
<tr>
<td>Ambubag</td>
<td>Single use only</td>
</tr>
<tr>
<td>Auroscope Handle</td>
<td>Clean with detergent and warm water (do not immerse)</td>
</tr>
<tr>
<td>Auroscope Earpieces</td>
<td>Use a single use disposable sleeve or</td>
</tr>
<tr>
<td></td>
<td>Reusable – decontaminate in between each resident/client use, cleaning with detergent and water and disinfect by wiping with 70% isopropyl alcohol.</td>
</tr>
<tr>
<td>Equipment</td>
<td>Recommendation</td>
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</tr>
</tbody>
</table>
| Baths & Showers Bathing Trolleys Bath Mats | Clean with detergent and warm water in between each resident/client use or cream cleanser and rinse. For bathing aids ensure under seating and corners where pools of water can collect are washed and dried.  
**Following residents/clients with open wounds or if soiled with blood/body fluids:** following routine cleaning, disinfect using a chlorine releasing disinfectant/hypochlorite at 1,000 ppm concentration, or use combined cleaner/disinfectant, rinse and dry. |
| Baths - Specialised             | Whirlpool baths are not recommended for the healthcare facilities as the risk outweighs the benefit (HPSC 2009) Specialised mechanical baths must be regularly serviced and cleaned according to manufacturers’ instructions. Clear protocols are required to define any residents/clients for whom these baths are suitable.                                                                                   |
| Baby Scales                     | Protect from soiling with paper towel. Clean with detergent and water or use detergent wipe in between use.                                                                                                                                                                                                                                   |
| Bed frames and wheels           | As part of routine cleaning schedule and in between each resident/client use wash with warm water/detergent and allow to dry.  
**If soiled with blood or body fluids:** Following routine cleaning, disinfect using a chlorine releasing disinfectant/hypochlorite at 1,000 ppm concentration, or use combined cleaner/disinfectant, rinse and dry.                                      |
| Bed Linen                       | Refer to section on Laundry. All used linen in healthcare settings should be preferably heat disinfected at 65°C for 10 min or 71°C for 3 min.                                                                                                                                                                                                         |
| Bedpans/urinals/urine jug       | Place reusable/bedpan/commode pan/urinal and contents directly into the bedpan washer.  
1. Clean and heat disinfect in bedpan washer-disinfector. To be effective the disinfecter needs to reach 80°C for one minute  
2. **If machine is out of order.** Disposable bedpans/urinals are recommended. If disposable are unavailable then decontaminate reusable by emptying contents down sluice or toilet, avoid splashing, wash in warm water and detergent, and disinfect by immersing in chlorine releasing disinfectant/hypochlorite at 1,000 ppm concentration, or use combined cleaner/disinfectant, rinse and dry.  
3. Decontaminate carriers for disposable bedpans after use.  
4. Residents/Clients with diarrhoea: Designate a bedpan /commode for resident’s own use. In the home setting empty contents of urinal down toilet; wash with water and detergent and rinse. |
<p>| Bedpan Washers/Macerator        | Use, clean, service and validate according to HTM 2030 or according to manufacturers instructions.                                                                                                                                                                                                                                          |</p>
<table>
<thead>
<tr>
<th>Equipment</th>
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<tbody>
<tr>
<td><strong>Buckets for leg Ulcers</strong></td>
<td>Residents/clients should have their own individual buckets, if used line with disposable plastic bag. Following routine cleaning, disinfect using a chlorine releasing disinfectant/hypochlorite at 1,000 ppm concentration, or use combined cleaner/disinfectant, rinse and dry.</td>
</tr>
<tr>
<td><strong>Blood Pressure Cuff</strong></td>
<td>Check manufacturer’s instruction. Clean with detergent Inclue in routine cleaning schedules.</td>
</tr>
<tr>
<td><strong>Bowls Washing</strong></td>
<td>Each resident should have his/her own washing bowl. Clean with detergent after each use, rinse and dry. Store bowls separately and inverted to reduce contamination.</td>
</tr>
</tbody>
</table>
| **Brushes**                | **Nail**: Resident/Client personal use only. Use only if essential.  
                            | **Shaving**: Resident/Client personal use only.  
                            | **Tooth**: Resident/Client personal use only, store separately.  
<pre><code>                        | **Hair**: Resident's/Client's personal use only. Clean with warm water and detergent. Rinse &amp; dry |
</code></pre>
<p>| <strong>Catheters (Urinary)</strong>    | Use pre-sterilised, single - use, catheters. Ensure packaging is not damaged and in date. |
| <strong>Catheter stand/bracket</strong> | Clean after use, immediately and as part of routine cleaning with detergent <strong>If soiled with blood or body fluids</strong>: Following routine cleaning, disinfect using a chlorine releasing disinfectant/hypochlorite at 1,000 ppm concentration, or use combined cleaner/disinfectant, rinse and dry. |
| <strong>Chair</strong>                  | Clean fully weekly with detergent and <strong>If soiled with blood or body fluids</strong>: Following routine cleaning, disinfect using a chlorine releasing disinfectant/hypochlorite at 1,000 ppm concentration, or use combined cleaner/disinfectant, rinse and dry. |
| <strong>Commodes</strong>               | Ensure armrests, seat, underside &amp; pan is clean before resident use. Wash with warm water and detergent daily and use detergent wipe between use. <strong>If soiled with blood or body fluids</strong>: Following routine cleaning, disinfect using a chlorine releasing disinfectant/hypochlorite at 1,000 ppm concentration, or use combined cleaner/disinfectant, rinse and dry. |
| <strong>Creams, Sprays and Canisters</strong> | All items must be for individual resident/client use. Labelled with the individuals name and stored at the bedside or individually. |
| <strong>Crockery &amp; Cutlery</strong>     | Machine wash and heat disinfect with rinse temperature above 80°C and dry. |
| <strong>Dressing Trolleys</strong>      | Clean with warm water and detergent daily. Dry thoroughly using disposable paper. Wipe clean surface with 70% alcohol prior to each procedure. |</p>
<table>
<thead>
<tr>
<th>Equipment</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Duvets</strong></td>
<td><strong>Duvet with water impermeable cover:</strong> clean with warm water and detergent and dry as part of routine cleaning schedule and in between different resident. If disinfection is required, follow manufacturer instructions. Do not soak or disinfect unnecessarily as this may damage the fabric. <strong>Launderable duvets</strong> should be laundered as necessary and on discharge of the resident. Replace as appropriate.</td>
</tr>
<tr>
<td><strong>ECG equipment and other electronic medical devices</strong></td>
<td>Follow manufacture’s instructions. Generally unplug from electricity and wipe with damp cloth with detergent and water or detergent wipe. Allow to dry.</td>
</tr>
<tr>
<td><strong>Emesis Bowls</strong></td>
<td>Clean and heat disinfect by placing emesis bowl and contents directly into the bedpan washer. If bedpan washer not available, empty contents into sluice or toilet wash with warm water and detergent, and disinfect by immersing in a hypochlorite solution/chlorine based disinfectant at 1000ppm, then rinse and dry. Preferable option is to use disposable bowls or “sic sac” and dispose of as per waste segregation policy immediately after use.</td>
</tr>
<tr>
<td><strong>Examinations Couch</strong></td>
<td>Clean with warm water and detergent and dry between each use or use a detergent wipe between each use. <strong>If soiled with blood or body fluids:</strong> Following routine cleaning, disinfect using a chlorine releasing disinfectant/hypochlorite at 1,000 ppm concentration, or use combined cleaner/disinfectant, rinse and dry.</td>
</tr>
<tr>
<td><strong>Fridges</strong></td>
<td>Designate solely for medicines/vaccines. Temperature should be recorded on a daily basis optimum temperature 2-8°C. Clean every 2 months with detergent and warm water and immediately if spill occurs. For fridge’s used to store vaccinations refer to Immunisation Guidelines for Ireland 2008</td>
</tr>
</tbody>
</table>
| **Glucometer (Blood glucose monitoring device)** | See Blood Glucose Monitoring Section 12.5 Glucometer’s must be decontaminated according to manufacturer’s instructions in between each resident/client use
Blood glucose Monitoring pen
Blood Sampling Lancets
Hand Grab Rail
Hoists
Hoist Slings/Sliding sheets
Humidifiers
Intravenous/Infusion stand |
| **Fridges**                         | Designate solely for medicines/vaccines. Temperature should be recorded on a daily basis optimum temperature 2-8°C. Clean every 2 months with detergent and warm water and immediately if spill occurs. For fridge’s used to store vaccinations refer to Immunisation Guidelines for Ireland 2008 |
| **Glucometer (Blood glucose monitoring device)** | See Blood Glucose Monitoring Section 12.5 Glucometer’s must be decontaminated according to manufacturer’s instructions in between each resident/client use
Blood glucose Monitoring pen
Blood Sampling Lancets
Hand Grab Rail
Hoists
Hoist Slings/Sliding sheets
Humidifiers
Intravenous/Infusion stand |
<p>| <strong>BLOOD GLUCOSE MONITORING PEN</strong>    | Clean with detergent and water as part of regular cleaning schedule and <strong>If soiled with blood or body fluids:</strong> Following routine cleaning, disinfect using a chlorine releasing disinfectant/hypochlorite at 1,000 ppm concentration, or use combined cleaner/disinfectant, rinse and dry. |
| <strong>BLOOD SAMPLING LANCETS</strong>          | Single use retracting needle device e.g. unistik and disposed of immediately into a sharps bin after use. |
| <strong>Hand Grab Rail</strong>                  | Clean with detergent and water as part of regular cleaning schedule and <strong>If soiled with blood or body fluids:</strong> Following routine cleaning, disinfect using a chlorine releasing disinfectant/hypochlorite at 1,000 ppm concentration, or use combined cleaner/disinfectant, rinse and dry. |
| <strong>Hoists</strong>                          | Each resident should have his or her own hoist sling/sliding sheet. Launder regularly, immediately if visibly soiled and on discharge. |
| <strong>Humidifiers</strong>                     | Store in sealed packaging until required. Use only sterile water in humidifier. Single-resident/client use. |
| <strong>Intravenous/Infusion stand</strong>      | Clean after use with detergent and as part of routine cleaning. |</p>
<table>
<thead>
<tr>
<th>Equipment</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locker</td>
<td>Clean with detergent and water as part of regular cleaning schedule</td>
</tr>
<tr>
<td>Mattresses</td>
<td>Clean as part of routine cleaning and in between each resident/client use in accordance with manufacturer’s instructions. Clean the cover with detergent and warm water, rinse and dry. <strong>If soiled with blood or body fluids:</strong> Following routine cleaning, disinfect using a chlorine releasing disinfectant/hypochlorite at 1,000 ppm concentration, or use combined cleaner/disinfectant, rinse and dry. Do not disinfect unnecessarily as this damages the mattress cover. Routinely inspect for damage including opening the cover and inspect foam. If either the cover is torn or the foam of the mattress becomes contaminated, the mattress should be condemned and replaced.</td>
</tr>
<tr>
<td>Medicine Cups</td>
<td>Single use or if reusable, clean according to manufacturer’s instructions in an appropriate sink</td>
</tr>
<tr>
<td>Medical equipment (equipment not in routine use)</td>
<td>Include in routine cleaning schedules. Follow manufacturer’s instructions.</td>
</tr>
<tr>
<td>Nebuliser</td>
<td><strong>Single use</strong> - Dispose of immediately after each use. <strong>Single patient use</strong> - Cleaned &amp; changed according to manufacturers instructions or immediately if damaged (HPSC, 2009). Designate for individual resident/client use, change filters and service according to manufacturer’s instructions. Refer to Guidelines on the use of nebuliser administration equipment in long term care settings (2010).</td>
</tr>
<tr>
<td>Compressor for Nebuliser</td>
<td></td>
</tr>
<tr>
<td>Oxygen Masks/prongs</td>
<td>Single resident/client use only. Dispose according to manufacturer’s instructions and immediately when soiled.</td>
</tr>
<tr>
<td>Peak Flow Mouthpiece</td>
<td>Single use only. Individual use if possible. If the manufacturer provides instruction re cleaning between uses, then the equipment can be cleaned and reused once instructions are adhered to. Mouthpiece must be disposed of after each use.</td>
</tr>
<tr>
<td>Peak Flow Meters</td>
<td></td>
</tr>
<tr>
<td>Pillows</td>
<td>Covers should be impervious. Clean/disinfect as per mattress cleaning advice above</td>
</tr>
<tr>
<td>Razors Electric Safety</td>
<td>Resident/Client’s personal use only. Clean after use Disposable – in the healthcare setting dispose of as per waste segregation policy into sharps bin.</td>
</tr>
<tr>
<td>Rescue Sheets</td>
<td>For long term residents/clients launder routinely every three months. If soiled with blood or body fluids and in between each residents/clients use send to the laundry for heat disinfection immediately.</td>
</tr>
<tr>
<td>Sheepskins</td>
<td>Clean according to manufacturers instructions as part of routine cleaning, between each resident/client use and immediately when soiled</td>
</tr>
<tr>
<td>Sputum Container</td>
<td>Use disposable only.</td>
</tr>
<tr>
<td>Equipment</td>
<td>Recommendation</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Scissors</strong></td>
<td>Use a <strong>sterile</strong> scissors for <strong>aseptic</strong> procedures. For clean procedures, in between uses if visibly soiled first wash in warm water and detergent and dry then wipe with 70% isopropyl alcohol (Alco-wipes). If visibly clean wipe with 70% isopropyl alcohol (Alco-wipes).</td>
</tr>
<tr>
<td><strong>Syringes Enteral</strong></td>
<td>Reusable enteral syringes (purple) are available and should be cleaned according to manufacturers’ instructions. Enteral feeding syringes may be disposed of as healthcare non risk waste. Refer to section on enteral feeding.</td>
</tr>
<tr>
<td><strong>Stethoscopes</strong></td>
<td>If visibly soiled-clean with a detergent wipe. Disinfect ear piece &amp; bulb using 70% isopropyl alcohol wipes in between each use.</td>
</tr>
<tr>
<td><strong>Suction Equipment</strong></td>
<td>Use, clean, service and validate according to manufacturer instructions. (a) Single use only (b) Single resident/client use – flush through after each use, change according to manufacturers instruction. (c) Disposable suction liners are the preferred option and should be disposed of as healthcare risk waste into leak proof containers. If a solidifying agent is in the liner it may be disposed of in a yellow health care risk waste bag. Dispose of after use and/or at 24hrs. Liner holder should be cleaned between residents and as part of routine cleaning. (d) Collection container should be decontaminated between each resident/client by sterilisation. In the home setting empty contents into the toilet, wash with warm water and detergent, and disinfect by immersing in a hypochlorite solution/chlorine based disinfectant at 1000ppm, then rinse and dry. (e) Suction apparatus should be fitted with a filter to protect the machine from contamination. Change filter if it becomes wet or discoloured, according to manufacturer instructions and prior to storage</td>
</tr>
</tbody>
</table>
| **Thermometers**              | **Electronic clinical:**  
1. Use disposable probe/sleeve  
2. Clean/disinfect probe as per manufacturers’ instructions  
**NB.** Do not use without probe/sleeve. |
| **Tourniquet**                | Disposable after use. (HSE 2010)                                                                                                                  |
| **Urinals/ Urine jugs**       | See bedpans                                                                                                                                 |
| **Urine Drainage bags**       | Single use only.                                                                                                                                  |
| **Vacutainer needle holder**   | Single use only- discard of needle and holder as a single unit into a sharps bin.                                                                 |
| **Walking Frames**            | Clean as part or routine cleaning with water and neutral detergent or clean with detergent wipe in between client use.                           |
| **Wheelchairs**               | Clean as part of routine cleaning with water and neutral detergent.                                                                                |

**Please note:** The above is not intended to be an exhaustive list of all items or equipment used. The manufacturers’ instructions must always be followed for decontamination. Where manufacturer’s instructions are unclear or alternative cleaning and disinfectant agents to those described in this document are recommended, the infection control team should be contacted for advice.
Decontamination Agents

Table 4: A BRIEF GUIDE TO ENVIRONMENTAL CLEANING AGENTS AND DISINFECTANTS

<table>
<thead>
<tr>
<th>PRODUCTS TO BE USED FOR CLEANING</th>
<th>Preparation</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Agents</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General purpose Detergent</td>
<td>Detergent with a neutral pH e.g. Goclean follow manufacturers instruction to make up e.g. 1 pump of Goclean to 9 litres of water</td>
<td>Routine &amp; environmental cleaning of hard surfaces and equipment, including furniture, fixtures &amp; fittings, sinks etc.</td>
</tr>
<tr>
<td>Disposable Detergent Wipes</td>
<td>Disposable wipes impregnated with neutral pH detergent e.g. multi-surface wipes.</td>
<td>Used for cleaning surfaces/items in between client use e.g. examination couch and foot stool. These should not replace routine cleaning methods.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PRODUCTS USED FOR DISINFECTION</th>
<th>Preparation</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Agents</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chlorine-releasing Sodium Hypochlorite e.g. Milton 1% solution 100mls in 1000mls cold water</td>
<td>Chlorine releasing tablets or liquid made up to 1,000 ppm available chlorine in solution with cold water. Follow manufacturer’s instructions.</td>
<td>Disinfection as indicated e.g. Following cleaning, if item soiled with blood or body fluids.</td>
</tr>
<tr>
<td>Sodium Dichloroisocyanurates (NaDCC) e.g. Presept &amp; Klorsept</td>
<td>70% Isopropyl alcohol Wipes eg. Sterets or Alco wipes</td>
<td>For rapid disinfection of smooth clean surfaces eg. dressing trolley. Should only be used on clean surfaces compatible with alcohol.</td>
</tr>
</tbody>
</table>

Combination Products for Cleaning and Disinfection

<table>
<thead>
<tr>
<th>Agent</th>
<th>Preparation</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleaner/Disinfectant e.g. Chlor-clean</td>
<td>One tablet to 1 litre of cold water or 2 tablets to 2 litres etc.</td>
<td>This is a one step process for cleaning and disinfection. Not to be used as a routine product for cleaning, e.g. use in outbreaks, or when disinfection is required.</td>
</tr>
</tbody>
</table>
**General Principles for the use of disinfectants**

**Disinfectants** are potentially hazardous and must be used with caution.
- Disinfectant should not be used as cleaning agents or deodorants.
- Organic debris (e.g. faeces, secretions) may inactivate some disinfectants. Items must be cleaned prior to chemical disinfection.
- Disinfectants must be used at the recommended dilutions.
- Staff shall observe any specified health and safety precautions.
- Disinfectants must be stored and discarded in accordance with the manufacturers’ instructions and product material safety data sheets (MSDS) must be available.
- Advice should be sought regarding appropriate disinfectants from occupational health, health and safety departments and infection control teams. Disinfectants that are approved should only be used.
- Where surface disinfection is required the manufacturers’ instructions of, the item to be disinfected and, the product to be used should be followed to ensure compatibility e.g. hypochlorite can corrode metals and bleach fabrics.
- Disinfectants must not be mixed with cleaning products.
- Disinfectants must not be mixed with warm or hot water

**If disinfection is required**
- Use a freshly prepared solution of chlorine releasing agent e.g Milton or Klorosept with a concentration of 1,000ppm available chlorine i.e. 100mls of Milton 1% in 1 litre of cold water. A one step process of detergent and combined hypochlorite e.g. Chlor-Clean may also be used one tablet to 1 litre of cold water.
- Rinse and dry equipment after disinfecting.
- **Note:** Manufacturer cleaning instructions should be noted with regard to using disinfectants to ensure disinfection does not damage the equipment. (See Table 4)

**Please note:** Chlorhexidine based products i.e hibiscrub or hydrex must **never** be used for environmental or equipment cleaning. Chlorhexidine is only to be used for skin disinfection i.e handwashing prior to aseptic procedures.
DECONTAMINATION OF THE ENVIRONMENT

The environment plays a relatively minor role in transmitting infection. Some microorganisms can survive on environmental surfaces in healthcare settings for weeks which can cause staff to contaminate their hands or gloves from these surfaces. Pathogens may also be transferred to susceptible clients/residents from environmental surfaces via staff hands (Boyce, 2007; Al-Hamad and Maxwell, 2008).

Therefore an environment that can be readily cleaned and is included in a regular schedule of cleaning is an important element in the fight against healthcare associated infections. (Boyce, 2007; Dancer, 2009; HIQA, 2009).

The following is a summary of principles and key considerations that would assist in achieving, designed-in infection prevention and control in the environment.

Furniture, fixtures and fittings
- All surfaces, fittings, fixtures and furniture should be durable and easily cleanable.
- All furniture, fixtures and fittings should be in a good state of repair and maintained in a clean and hygienic condition.
- Regularly check for defects/faults, repair or replace as necessary.

Physical environment
- Flooring should be smooth, durable, easily cleanable and non-absorbent.
  - All joints and crevices should be welded /sealed.
  - Skirting boards should be sealed.
  - In clinical areas coving is recommended between the floor and walls to prevent accumulation of dust and dirt in corners and crevices.
- Carpets must not be used in a clinical environment.
- Smooth, hard, impervious surfaces should be used for walls and ceilings.
- All piping should be encased to facilitate easy cleaning.

Dust, soil and liquid residues may increase the risk of cross infection and can be kept to a minimum by regular cleaning and by good design features in buildings, fittings and fixtures.

Hence, a cleaning standard acceptable for infection prevention is that;

The environment must be visibly clean, free from dust and soilage, and acceptable to residents/clients, their visitors and staff (Pratt et al, 2007).

Routine cleaning with detergents and warm water is considered sufficient to maintain the appearance of a building, and to reduce the number of germs in the environment to a safe level.

The routine use of disinfectants for general environmental cleaning is unnecessary. However, disinfection following cleaning is needed if there is a known risk, i.e. items which are contaminated with blood/body fluids or during an outbreak of infection as advised by Infection Prevention & Control (See table 4).
Routine environmental cleaning

- A **written cleaning schedule** should be devised specifying
  - the area/equipment to be cleaned,
  - the frequency of cleaning,
  - the methods and products to be used and
  - the persons responsible for cleaning.
- The **schedule** must take into account high, medium and low risk items of equipment, and areas in the healthcare setting.
  - Toilet, sinks, wash basins, shower areas, examination couches and surrounding areas should be cleaned daily and as required.
  - The near resident/client, hand-touch sites such as bedrails, bedside lockers, infusion pumps, door handles and switches such as the nurse call bells are those identified as more likely to pose an infection risk to the resident/client and should be prioritised for daily cleaning.
- **Flexibility** must exist in cleaning schedules to take account of changing cleaning needs and outbreaks.
- All supervising personnel must understand the basic theory underlying each practice and product, and all staff should be trained to achieve a **high standard of cleanliness**.
- **Standard precautions** should be implemented when cleaning surfaces and facilities.
- Staff responsible for cleaning should wear suitable **general-purpose gloves** and other **protective clothing** appropriate for the task.
- All staff involved in hygiene activities must be included in **education and training** related to the prevention and control of infection minimum 2 yearly.

The following basic principles should be adhered to:

- Cleaning is not all in the solution but also with the use of “elbow grease”. The actual physical removal of micro-organisms is often as important as the effect of the agent used.
- The neutral detergent used should also be measured out correctly as per manufacturer’s instructions.
- Change water frequently as dirty water is ineffective for cleaning
- Buckets should be emptied after use, washed with detergent and warm water and stored dry.
- Mops should be laundered daily. Where a laundry is not available clean in detergent and warm water, rinse and store dry in a free hanging position.
- Fresh solutions of cleaning agents should be made up as required, as these solutions rapidly become inactive.

Please refer to “General Principles for use of cleaning and disinfecting agents” and “Cleaning and requirements”
Read and follow the manufacturer’s label directions concerning the recommended disinfectant concentration, contact time and method of application. The disinfectant must be approved by the infection control team
A-Z of Environmental Decontamination

If items are soiled with blood or body fluids, two options are available:

1. Clean thoroughly with detergent and water and disinfect with a chlorine releasing disinfectant/hypochlorite at 1,000 ppm concentration, e.g. Milton or Klorosept with a concentration of 1,000ppm available chlorine, rinse and dry.

   OR

2. Use a combined cleaner/disinfectant which is a one step process. Manufacturer’s instructions must be followed to ensure correct dilution e.g. Chlor-clean. This product should not be used routinely but if used rinse and dry.

If there are any doubts or concerns about the advice outlined below, the advice of your Infection Prevention & Control Nurse MUST be sought.

Table 5: A-Z Environmental Decontamination

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bucket (plastic)</td>
<td>Empty down slop hopper. Wash with warm water and detergent. Store dry.</td>
</tr>
<tr>
<td>Colour Coding of Cleaning Equipment, Mops &amp; Cloths</td>
<td>Disposable cloths should be disposed of each day. Do not leave to soak.</td>
</tr>
<tr>
<td>Blue</td>
<td>Blue - for cleaning rooms, corridors and general areas.</td>
</tr>
<tr>
<td>Red</td>
<td>Red/Pink - for cleaning bathroom/sluice/toilet</td>
</tr>
<tr>
<td>Green</td>
<td>Green - for cleaning in kitchens and kitchenettes only (stored separate from toilet cleaning equipment).</td>
</tr>
<tr>
<td>Baths and Showers</td>
<td>Clean bath after each use. As part of routine cleaning baths/showers should be cleaned at least daily. Detergent is adequate for routine cleaning or a cream cleanser may occasionally be required to remove scum. <strong>Following clients with open wounds or if soiled with blood/body fluids:</strong> Following routine cleaning, disinfect bath or shower using a chlorine releasing disinfectant/hypochlorite at 1,000 ppm concentration, or use combined cleaner/disinfectant, rinse and dry (See manufacturers instructions for specialised baths).</td>
</tr>
<tr>
<td>Basins/Taps</td>
<td>Use detergent and warm water as part of routine daily cleaning. Cream cleanser may occasionally be required to remove scum.</td>
</tr>
<tr>
<td>Blinds on windows</td>
<td>Blinds that are vertical and have smooth cleanable material should only be purchased. These should be damp dusted with neutral detergent as part of routine cleaning</td>
</tr>
<tr>
<td>Carpets</td>
<td>Not recommended for clinical areas. Vacuum according to agreed frequencies, normally daily Clean periodically by warm water extraction. For blood/body fluid spillage, clean and disinfect with suitable agent according to manufacturer's instructions.</td>
</tr>
<tr>
<td>Curtains</td>
<td>Launder or dry clean - minimum six monthly, immediately if soiled with blood or body fluids.</td>
</tr>
<tr>
<td>Dispensers</td>
<td>Include in routine cleaning schedule, wipe with detergent and water including nozzle.</td>
</tr>
<tr>
<td><strong>Equipment</strong></td>
<td><strong>Recommendation</strong></td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Microfibre Flat mopping System/cleaning cloths</strong></td>
<td>Launder daily after use as per manufacturer’s instructions.</td>
</tr>
<tr>
<td><strong>Mops</strong></td>
<td>All mop heads should be detachable and laundered daily. Wash in warm soapy water. Rinse and wring out as much as possible. Invert mop to dry completely. If used in clinical setting, launder daily.</td>
</tr>
<tr>
<td><strong>Mop (Dust attracting)</strong></td>
<td>Vacuum after each use</td>
</tr>
<tr>
<td><strong>Flower vases</strong></td>
<td>Change water twice weekly and wash vase in warm water and detergent. Flower water must not be emptied into wash hand basins (Gould et al, 2005)</td>
</tr>
<tr>
<td><strong>Floors</strong></td>
<td>Vacuum clean or use dust-attracting dry mop. The use of a sweeping brush is not recommended in clinical areas. Floors should be vacuumed whether carpeted or not. Wet cleaning – wash with warm water and detergent and leave dry. Disinfection not usually required. Manufacturers instructions will need to be referred to for cleaning &amp; maintenance of different types of flooring e.g. safety flooring, marmoleum etc</td>
</tr>
<tr>
<td><strong>Furniture and Fittings</strong></td>
<td>Clean and damp dust with warm water and detergent. If soiled with blood or body fluids – following routine cleaning, disinfect with hypochlorite solutions according to manufacturers instructions</td>
</tr>
<tr>
<td><strong>Toilet Bowl</strong></td>
<td>Clean the toilet bowl using lavatory cleaner and brush.</td>
</tr>
<tr>
<td><strong>Toilet/Lavatory Brush</strong></td>
<td>Rinse in flushing water and store dry. Do not soak in disinfectant.</td>
</tr>
<tr>
<td><strong>Toilet seat, handle &amp; raised toilet seat</strong></td>
<td>Clean seat and underneath and handle with warm water and detergent. If visibly soiled with body fluids following routine cleaning, wipe with a hypochlorite solution.</td>
</tr>
<tr>
<td><strong>Toilet compartment</strong></td>
<td>Clean door handles, flush handles and rails with warm water and detergent</td>
</tr>
<tr>
<td><strong>Shower</strong></td>
<td>An unused showerhead may be a potential source for Legionella. Water should be allowed to run through for at least six minutes weekly 3 minutes cold flush and when water hot flush for 3 minutes with hot water. HPSC 2009.</td>
</tr>
<tr>
<td><strong>Shower curtains</strong></td>
<td>Launder shower curtain minimum monthly or immediately when visibly soiled</td>
</tr>
<tr>
<td><strong>Vacuum Cleaner</strong></td>
<td>Suction vacuum cleaners used in clinical treatment areas must conform to standards. Filters to be changed as per manufacturers instructions</td>
</tr>
<tr>
<td><strong>Walls &amp; Ceilings</strong></td>
<td>When visibly soiled, use warm water and detergent.</td>
</tr>
<tr>
<td><strong>Work Surfaces</strong></td>
<td>Limit amount of items stored on work surfaces to facilitate routine cleaning. Clean with neutral detergent and water or detergent wipe. If soiled with blood or body fluids wipe with a hypochlorite solution of 1000 parts per million or use combined cleaner/disinfectant, rinse and dry.</td>
</tr>
</tbody>
</table>
CLEANING OF SENSORY AND RECREATIONAL EQUIPMENT

In healthcare settings such as day care, childcare or clinic waiting areas items used for recreational, therapeutic or educational purposes may be used by more than one person. Where such equipment - toys, soft play equipment, sensory equipment, physiotherapy and occupational therapy equipment - is frequently shared it may become a means of transmission of infection. Equipment may become contaminated with microorganisms from unwashed hands or body fluids or children putting items in their mouth. Therefore, to reduce the risk of cross infection, cleaning of these items will be necessary both:

- on a regular basis by inclusion in a regular cleaning schedule
- and between uses by different residents/clients based on an assessment of risk of infection (See table 1)

Hand hygiene for staff and residents/clients before commencing activities will reduce the risks of infection.

In order to reduce the risk of cross infection the following guidelines should be followed

- Choose durable equipment that can be easily cleaned and dried.
- Cloth or soft toys are unsuitable for shared use and should be discouraged. If used cloth or soft toys must be machine washable.
- Books/jigsaws/puzzles/toys that cannot be wiped clean are unsuitable where people may put them in their mouths.
- Regularly check equipment for damage i.e. breaks or cracks. If items are un-repairable or cannot be cleaned, they should be discarded.
- Store clean toys/equipment in a clean container or clean cupboard.
- Do not allow shared books/jigsaws/puzzles/toys to be taken to the toilet area.
- Ensure manufacturer’s instructions for all cleaning are available.
- Always wash hands after handling contaminated equipment.

Cleaning of Toys/Equipment

- All toys/equipment including those items not in use should be cleaned on a regular basis i.e. weekly. This will remove dust and dirt that can harbour germs.
- Toys/equipment should be cleaned daily if used by very young children or if they place them in their mouth.
- Toys/equipment that are visibly dirty or contaminated with body fluids (e.g. blood, nasal/eye discharge, saliva, urine and faeces) should be taken out of use immediately for cleaning and disinfection.
- Contaminated solid toys may be wiped with a chlorine releasing agent 1000 parts per million and rinsed or wiped with 70 per cent alcohol.
- Soft toys should be allocated for individual use only, and need to be laundered prior to use by another individual.
Cleaning Procedure

- Wash the toy/equipment in warm soapy water, using a brush to get into crevices.
- Rinse the toy/equipment in clean water.
- Thoroughly dry the toy/equipment.
- Hard plastic toys/equipment may be suitable for cleaning in the dishwasher.
- Toys/equipment that cannot be immersed in water i.e. electronic or wind up should be wiped with a damp cloth and dried.

Disinfecting of Toys/Equipment

In some situations toys may need to be disinfected following cleaning. For example

- Toys/equipment that clients will place in their mouths.
- Toys/equipment that have been soiled with body fluids.
- During an outbreak of infection.

If disinfection is required

- Use a freshly prepared solution of chlorine releasing agent e.g. Milton or Klorosept with a concentration of 1,000ppm available chlorine i.e. 100mls of Milton 1% in 1 litre of water or.
- Use a combined cleaner/disinfectant which is a one step process. Manufacturer’s instructions must be followed to ensure correct dilution e.g. Chlor-clean. This product should not be used routinely.
- Rinse and dry toys/equipment after disinfecting

Note: Manufacturer cleaning instructions should be noted with regard to using disinfectants to ensure disinfection does not damage the equipment. (See Table 4)

Sensory Equipment /Ball Pool/Soft Play areas/Water Play/Sand Pits

- Equipment used in the above areas needs to be cleaned routinely i.e. weekly or more frequently if usage is high.
- Equipment should be cleaned according to manufacturers’ instructions, written cleaning schedules and the agent used should be documented.
- Generally a neutral detergent can be used; abrasive-cleaning agents should be avoided as they may damage the material.
- All crevices should be cleaned and dried properly.
- If equipment becomes soiled with blood/body fluids it should be taken out of use for cleaning and then disinfected as above.
- Water play equipment should be drained, cleaned and dried at the end of the session and stored dry until next session.
- Sandpits should be covered for protection and the sand pit regularly sieved.
- Sand should be changed regularly i.e. monthly.
- Ensure people wash their hands before and after activities in soft play area, ball play area etc.
- The use of communal play areas may need to be suspended at certain times i.e. increase in or outbreak of infection.
References


Boyce, J.M (2007) Environmental contamination makes an important contribution to hospital infection. The Journal of Hospital Infection. 65(Supplement 2)...


Medical Devices Agency. Bench-top steam sterilisers: guidance on purchase, operation and maintenance. MDA DB 2002(06); 2002