

HSE Dublin North East

Community Infection Prevention & Control Manual

November 2011



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Introduction	4
1.0 Management of Infection Prevention and Control in community care	5
2.0 Causes and spread of infection	11
2.1 Introduction	11
2.2 General Principles of Microbial Transmission	11
2.3 Susceptible host	13
2.4 The Chain of Infection	14
3.0 Standard Precautions	17
4.0 Transmission based precautions	35
5.0 Managing infectious disease in the healthcare setting	39
5.1 Clostridium difficile associated disease (CDAD)	39
5.2 Meticillin Resistant Staphylococcus aureus (MRSA)	46
5.3 Scabies	53
5.4 Hepatitis A Infection	55
5.5 Hepatitis B virus (HBV)	57
5.6 Hepatitis C	60
5.7 Human Immunodeficiency virus (HIV)	62
5.8 Seasonal Influenza/pandemic (H1N1) 2009	64
5.9 Norovirus (winter vomiting illness)	68
5.10 Rotavirus	71
5.11 Varicella Zoster Virus (Chicken pox and Shingles)	73
5.12 Extended Spectrum Beta Lactamase (ESBL) producing bacteria	77
5.13 Vancomycin Resistant Enterococci (VRE) or Glycopeptide Resistant Enterococci (GRE)	79
6.0 Invasive Procedures and Devices	82
6.1. Central Venous Access	82
6.2 Peripheral Intravascular catheter (PVC) management	85
6.3 Percutaneous Endoscopic Gastrostomy (PEG) feeding management	87
6.4 Oropharyngeal suctioning	91
6.5 Management of Urethral and Suprapubic Catheters	91
6.6 Capillary (Finger stick) glucose testing	95
7.0 Other Issues	98
7.1 Notification of infectious disease/s and outbreaks	98
7.2 Visiting clients in their own home	100
7.3 Food Hygiene	101

Appendix A: Handwashing technique	105
Appendix B: Alcohol Gel Technique	106
Appendix D: Donning PPE	108
Appendix E: Removing PPE	109
Appendix F: Antiseptic and Cleaning Agents.....	110
Appendix G: A-Z of Equipment and Recommended Decontamination	112

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Scope of this document

This document is for HSE health care workers (HCWs) in counties Dublin, Louth, Meath, Cavan and Monaghan and outlines recommendations for the prevention and control of infection in community care settings, primary care and in the client's home. These are guidelines and should not supersede existing local policies and procedures. While this guideline has been developed by staff in the Health Service Executive (HSE), it may be a useful resource for HCWs in the private and voluntary sector.

Section 1: Overview of Infection Prevention and Control in the Community

- **Introduction**
- **Management of Infection Prevention and Control in community care**

Introduction

Care is increasingly being delivered in community care settings, primary care and in the client's home. The implementation of the National Primary Care strategy (Department of Health and Children 2001) ensures this trend will continue and increase in the future.

The prevention and control of infection is an essential component of care in all settings. The standards against which all facilities' infection prevention and control services will be measured are outlined in the Health Information and Quality Authority (HIQA) documents:

- 1 Standards for Residential Care Settings for Older People in Ireland 2008
- 2 National standards for the prevention and control of healthcare associated infections 2009

The Health Service Executive and the Department of Health and Children should be informed where there are local difficulties in implementing these guidelines due to lack of facilities, or insufficient personnel. In private facilities the most senior manager should be informed

- In this document facility refers to any service that provides health or social care

For Advice regarding Infection Prevention and Control

Please contact the Community Infection Control Nurse for your facility/area or the appropriate Department of Public Health

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HSE-NE Dept of Public Health, Navan: Tel: 046 9076412
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References

1. *National Quality Standards for Residential Care Settings for Older People in Ireland (2008)* Health Information and Quality Authority, Dublin
http://www.hiqa.ie/system/files/HIQA_Residential_Care_Standards_2008.pdf
2. *National Standards for the Prevention and Control of Healthcare Associated Infections (2009)* Health Information and Quality Authority, Dublin.
http://www.hiqa.ie/system/files/National_Standards_Prevention_Control_Infections.pdf

1.0 Management of Infection Prevention and Control in community care

1.1 Definition

The HSE describes community care services as including the following: the public health nursing service, home help service, physiotherapy, occupational therapy, chiropody service, day care, respite care service, residential services etc. Community care services may also be provided by voluntary organisations in conjunction with, or on behalf of the HSE.

Primary care is described as the first point of contact that people have with the health and personal social services. In Ireland this is the local General Practitioner or Primary Care Team (PCT)

1.2 Organisation and Management

1.2.1 The organisational structure for the facility should outline clear roles and responsibilities for infection prevention and control at all levels.

1.2.2 A senior manager/clinician in each facility should be designated as having overall responsibility for infection prevention and control and this role is defined in their job description.

1.2.3 Each facility or a number of facilities should have an Infection Prevention and Control Committee (IPCC) which meets on a regular basis.

1.2.4 Each facility should have an annual infection prevention and control service plan that is approved by the IPCC.

1.2.5 Each facility should have an outbreak management plan in place that is approved by the IPCC.

1.2.6 There should be structures in place to support and provide infection prevention and control services including:

- Infection prevention and control advice
- Risk management
- Occupational health
- Quality and safety department
- Waste management
- Hygiene services

1.3 Roles and Responsibilities

1.3.1 The senior manager/clinician in each facility responsible for infection prevention and control should ensure that:

- All staff receive mandatory infection control training on induction and at least annually regularly thereafter
- Regular risk assessment of the infection risks in the facility is undertaken and an action plan is in place to manage those risks identified
- A mechanism is in place to ensure early identification of risks
- Appropriate personal protective equipment (PPE) is available and easily accessible to staff

1.3.2 Healthcare workers are responsible for:

- Attending induction and ongoing annual training on infection prevention and control
- Practising appropriate infection prevention and control precautions at all times
- Reporting any deficits in knowledge or resources to line managers
- Reporting any illness as a result of occupational exposure
- Not attending for duty with known or suspected infection without first informing the occupational health department or line manager
- Advising visitors of infection prevention and control requirements such as hand hygiene and cough etiquette

1.3.3 Community Infection Prevention and Control nurses are responsible for:

- Providing education on infection prevention and control to all staff
- Ensuring local guidelines and policies on infection prevention and control are in place and regularly reviewed
- Providing advice to staff on infection prevention and control issues
- Auditing implementation of local guidelines and policies on infection prevention and control in department/ward areas and feedback results to department/ward managers and healthcare managers

1.3.4 Public Health Departments are responsible for:

- Management of notifications of infectious disease and outbreaks of infection
- Surveillance and control of infectious diseases (such as meningitis, tuberculosis, measles and food poisoning)
- Planning, organisation and implementation of public health programmes such as vaccinations and screening programmes
- Promotion of the health of the population and strategies dealing with heart disease, cancer, tobacco, drug misuse and HIV
- Assessments of applications for various allowances and payments

1.3.5 Environmental Health Officers (EHO's) are responsible for:

- Food control including hygiene, additives, labelling etc
- Education of workers in the food industry on hygiene etc
- Water monitoring
- Implementation of tobacco control legislation
- Inspection of rental housing standards
- Noise and air pollution monitoring
- Pest control
- Infectious disease monitoring
- Inspections of crèches, day care and play groups

1.4 Occupational Health

All staff should be assessed prior to employment by the occupational health team for vaccinations requirements and screening for blood borne viruses if undertaking exposure prone procedures (DOHC 2005).

1.5 Inoculation injuries, (needles stick, bites, splashes etc)

Each facility should have a local guideline on the management of inoculation injuries.

1.6 Vaccination for clients/residents

Each facility should have a vaccination programme for residents, which is in line with national guidelines and is regularly monitored for effectiveness (HPSC 2008). The vaccination programme (for appropriate risk groups) should include the following:

- Influenza
- Pneumococcus
- Hepatitis B

1.7 Physical infrastructure and services management

1.7.1 Each facility's infrastructure should be assessed for compliance with best practice recommendations and an action plan developed to address deficits. Particular attention should be paid to the following where applicable;

Infrastructure	National document for reference for best practice
Bed space between beds in multiple bed wards	The control and prevention of MRSA in hospitals and in the community.
Clinical hand wash sinks	Guidelines for hand hygiene in Irish healthcare settings
Isolation and single rooms	Infection prevention and control building guidelines for acute hospitals in Ireland.
Number of toilets	Infection prevention and control building guidelines for acute hospitals in Ireland.
Management of Waste and Linen	Healthcare risk waste management. Segregation packing and storage guidelines for healthcare risk waste. Linen guidelines
Floor and wall coverings	National Hospitals Office – Cleaning manual acute hospitals
Furniture (beds, chairs etc)	
Water system	National Guidelines for the Control of Legionnaires Disease in Ireland
Use and decontamination of reusable medical devices (RIMD)	HSE Code of Practice for Decontamination of Reusable Invasive Medical Devices. Health Service Executive.
Decontamination of equipment not classified as RIMD	National Hospitals Office – Cleaning manual acute hospitals

1.7.2 Infection Prevention and Control staff should be consulted during the planning and design phase for all new building and refurbishment projects.

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2. SARI Infection Control Subcommittee (2005). *Guidelines for hand hygiene in Irish healthcare settings*. Health Protection Surveillance Centre, Dublin <http://www.hpsc.ie/hpsc/A-Z/Gastroenteric/Handwashing/Publications/File,1047,en.pdf>

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Section 2: Causes and spread of infection

- **Introduction**
- **General Principles of microbial transmission**

2.0 Causes and spread of infection

2.1 Introduction

2.1.1 Micro-organisms that cause infection are known as pathogens. They may be classified as follows:

2.1.1.2 Bacteria are minute organisms about one-thousandth to five thousandth of a millimetre in diameter. Most bacterial infections can be treated with antibiotics. Examples include *Staphylococcus aureus*, *Streptococcus pneumoniae* and *Neisseria meningitidis*.

2.1.1.3 Viruses are much smaller than bacteria and although they may survive outside the body for a time, they can only grow inside cells of the body. Antiviral drugs such as acyclovir are used to treat some viral infections as antibiotics are not effective for viral infection. Examples include influenza, chicken pox, hepatitis B and HIV.

2.1.1.4 Fungi can be either moulds or yeasts. A common yeast infection is thrush, caused by *Candida albicans*. Common fungal skin infections include ringworm (caused by dermatophytes). *Aspergillus* species are fungi that can cause serious infection in severely immunocompromised clients for example people undergoing bone marrow transplant.

2.1.1.5 Protozoa are microscopic organisms larger than bacteria. Free-living and non-pathogenic protozoa include amoebae and paramecium. Examples of protozoa of medical importance include *Giardia lamblia*, which can cause diarrhoea.

2.1.1.6 Parasites: Worms are not always microscopic in size but may cause infection and some can spread from person to person. Examples include the threadworm and tapeworm.

2.1.1.7 Ectoparasites include scabies and lice
See section on scabies

2.1.1.8 Prions are infectious protein particles. Example: the prion causing new variant Creutzfeldt-Jakob disease (nvCJD)

2.2 General Principles of Microbial Transmission

The five main routes of transmission are contact, droplet, airborne, common vehicle and vector-borne transmission. Some organisms may be transmitted by more than one route e.g. *Varicella* (Chicken pox) –**contact and airborne**.

2.2.1 Contact transmission

Contact transmission is the most important and frequent mode of transmission of pathogenic micro-organisms. It can be sub-divided into **direct contact transmission** and **indirect contact transmission**.

- a) **Direct contact transmission** requires direct body surface to body surface contact and physical transfer of micro-organisms from an infected or colonised person to a susceptible host. This may occur between a HCW and client during care activities that require direct physical contact e.g. touch, or between any two persons in the healthcare setting e.g. two clients, a parent and child. It occurs when an infectious agent is transferred directly from one infected person to another without the involvement of other people, objects or equipment (e.g. transfer of an infectious agent (perhaps MRSA) from an open wound of an infected person to the broken skin (cut/sore) of another person. Example; a care giver has skin to skin contact with a client with scabies or ringworm and does not wear gloves or a HCW develops a herpetic whitlow on their finger because they did not wear gloves when performing oral hygiene on a client with herpes.
- b) **Indirect contact transmission** involves the contamination of an inanimate object (client care equipment, dressings, furniture, environmental surfaces etc) by an infected or colonised person. It occurs when an infectious agent is transferred to an individual through a contaminated object and or other person e.g. client care devices such as a glucose monitoring device or electronic thermometers or endoscopes may transmit infectious agents (e.g. Hepatitis B or C) if the devices are contaminated with blood or body fluids and are shared between clients without having been properly decontaminated (cleaned /disinfected and or sterilised) between clients. Communal toys are also an effective means of spreading respiratory viruses e.g. influenza, respiratory syncytial virus (RSV) and bacteria like pseudomonas (especially bath toys) among children.

2.2.2 Droplet transmission occurs when an infected or colonised person produces large droplets (greater than 5µm in diameter) containing micro-organisms which are propelled a relatively short distance (e.g. ≤3 feet around the client) through the air and deposited on the conjunctivae of the eyes, nasal mucosa or mouth of a host. Droplets do not stay suspended in the air and do not remain infective over long distances so special air handling and ventilation are not required to prevent droplet transmission. Activities that generate large droplets include coughing, sneezing, singing and talking. Additionally, certain diagnostic procedures are likely to produce droplets e.g. suctioning, endotracheal intubation, cough induction by chest physiotherapy, cardiopulmonary resuscitation and bronchoscopy.

2.2.3 Airborne transmission occurs when either airborne *droplet nuclei* or dust particles disseminate infectious agents that remain infective over time and distance. *Droplet nuclei* are $\leq 5\mu\text{m}$ in size and remain suspended in air in occupied areas e.g. rooms/cubicles. Air currents can widely disperse such micro-organisms, which a susceptible host can then inhale. Special air handling and ventilation (e.g. negative pressure ventilation) is required to prevent airborne transmission of micro-organisms spread in this manner such as measles, *Varicella* (chicken pox) and *mycobacterium tuberculosis*. In addition respiratory protection may be required by HCWs entering the rooms of clients with certain airborne infectious diseases e.g. *M. tuberculosis*.

The control of dust borne particles is frequently overlooked. Dust may become contaminated when dried sputum and other infectious secretions that are suspended in air as dust particles, mix with environmental dust (e.g. skin scales from a burns client colonised with MRSA). Particles contaminated with organisms may enter the air from the respiratory tract (during sneezing & coughing) and from the skin, clothing, dressings and body fluids. Some organisms may survive for extended periods in the environment, again becoming suspended in the air when contaminated dust is disturbed.

2.2.4 Common Vehicle Transmission applies to infectious agents transmitted by contaminated items such as food, water, devices, equipment and medications. These items are referred to as “Fomites”.

2.2.5 Vector-borne Transmission occurs when vectors such as vermin (rats, mice) or insects (mosquitoes, flies) transmit micro-organisms. Rarely significant in the healthcare setting

2.3 Susceptible host

Certain groups of people are considered more susceptible to infection than others. They include neonates, the elderly, individuals with underlying diseases e.g. diabetics and people who are immunocompromised. It may also include people who are not vaccinated against certain vaccine preventable diseases e.g. measles, mumps, influenza.

In addition the **fecal-oral route**, or alternatively, the **oral-fecal route** or **orofecal route** is a route of spread of infection, in which infection is spread when pathogens in faecal particles from one host (person or animal) are introduced into the mouth of another potential host.

There are usually intermediate steps, sometimes many of them. Among the more common causes are:

- poor or absent cleaning after handling feces or anything that has been in contact with it
- Items or surfaces that have come in contact with animal faeces
- water that has come in contact with feces and is then inadequately treated before drinking;

- food that has been handled with feces present;
- poor sewage treatment along with disease vectors like houseflies;
- some sexual practices

2.4 The Chain of Infection

For an infection to spread from person to person, the following factors must be present.

Figure 1 shows how they link together

1. **Infectious agent/organism**- e.g. virus, bacterium, fungus or protozoan
2. **Reservoir**- source of infection e.g. an infected or colonised person, contaminated food, water or equipment.
3. **Portal of Exit**-Secretions and excretions discharged from the body carry the micro-organisms into the environment e.g. blood, faeces, respiratory droplets and skin scales.
4. **Mode of transmission**- the means by which micro-organisms reach other individuals e.g. droplets in the air from a sneeze.
5. **Portal of entry**-micro-organisms enter the person through the respiratory, gastrointestinal and urinary tracts of the body
6. **Susceptible host**- Factors such as age, previous exposure and immune status, and nutrition will influence whether the micro-organism acquired, will result in disease

Chain of Infection

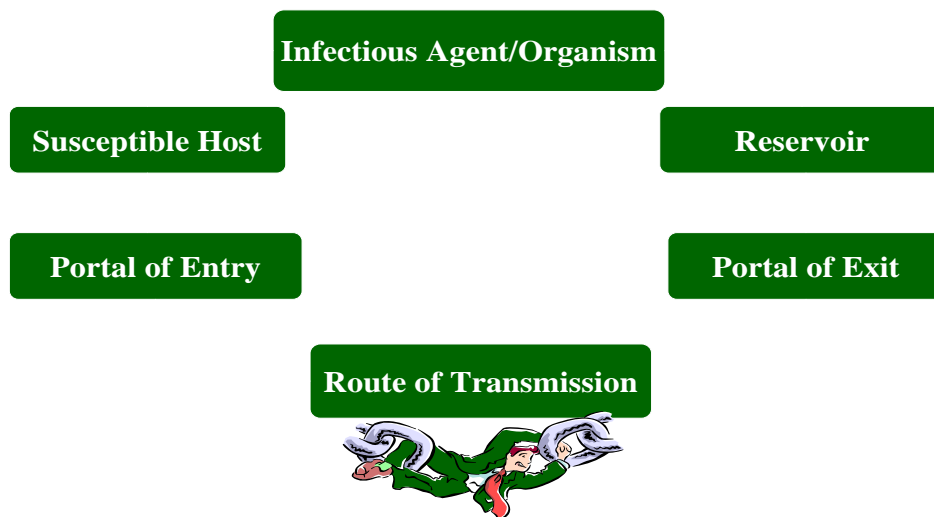


Diagram1. Breaking any link in the chain will help prevent the spread of micro-organisms.

Example

- Micro-organism = MRSA
- Reservoir = client with MRSA in a peg site
- Escape= wound exudates
- Transmission=hands
- Entry =another open wound
- Host susceptibility = other client with broken skin e.g. peg site or leg ulcer

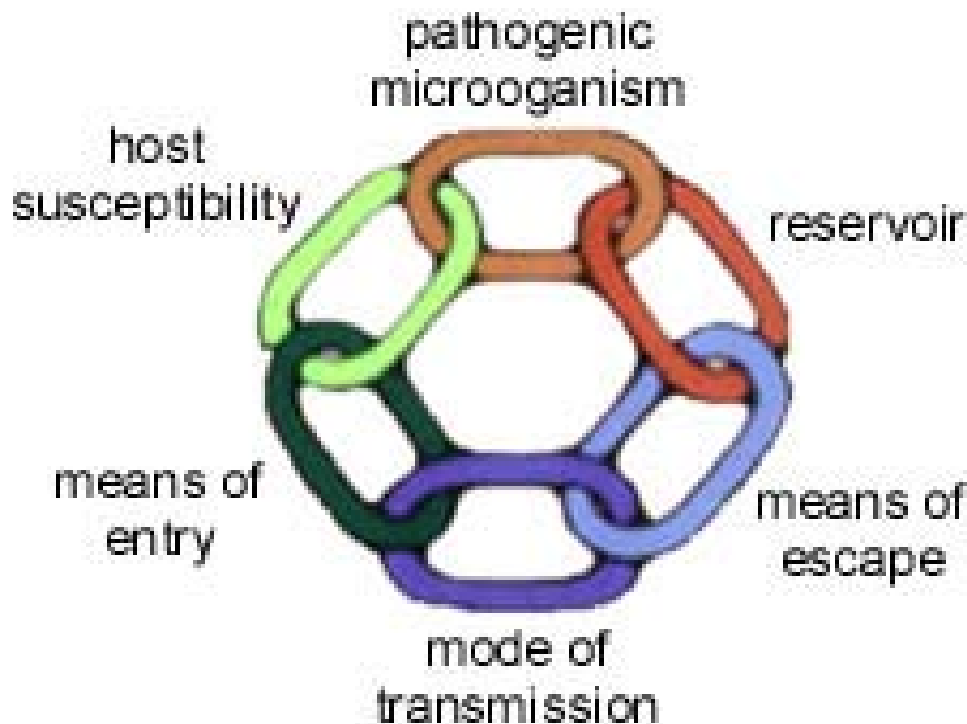


Diagram 2: Infection can only occur if the six components shown here are present. Removing any one link breaks the chain of infection

Breaking the chain of infection

- Micro-organism: MRSA
- Reservoir: client with MRSA in an open wound e.g. peg site
- Escape: drainage from the wound; Break in the chain: nurse uses correct hand washing technique, wears protective gloves and handles equipment/rubbish appropriately
- Transmission: MRSA transferred on to hands by indirect contact; Break in the chain: teacher/assistant/nurse performs correct hand washing technique, handles equipment, linen and rubbish correctly
- Entry: Break in the chain: nurse uses appropriate technique for wound dressing

The susceptible client is protected because the chain of infection has been broken.

Section 3: Standard Precautions

3.0 Standard Precautions

3.1 What are Standard Precautions?

Standard Precautions are a group of routine infection prevention and control practices and measures that should be used for all clients at all times regardless of suspected, confirmed or presumed infectious status, in any setting in which healthcare is delivered. When Standard Precautions are consistently implemented, the risk of spread of infection to HCWs and clients is minimised. All HCWs and others providing client care should be educated about standard precautions.

Standard Precautions are based on the principle that all blood, body fluids, secretions, excretions (except sweat), non-intact skin and mucous membranes may contain transmissible infectious agents

The Key elements of Standard Precautions are:

1. Occupational Health Programme
2. Client Placement
3. Hand Hygiene
4. Personal Protective Equipment (PPE) for HCWs
5. Client-Care Equipment/Instruments/Devices
6. Environmental Decontamination
7. Dishes and Eating Utensils
8. Management of Spillages of Blood and Body Fluids
9. Management of Needle Stick/Sharps Injuries and Blood and Body Fluid Exposure
10. Management of Healthcare Waste (Non-Risk or Risk Waste) and Sharps
11. Management of Laundry and Linen
12. Respiratory Hygiene and Cough Etiquette
13. Safe Injection Practices
14. Infection control practices for special lumbar puncture procedures**

** Lumbar punctures are usually carried out only in a hospital setting – see reference if further information required

3.1.1 Occupational Health Programme

All HCWs should be assessed by an occupational health doctor or nurse prior to commencing work. This assessment should include:

- Immunisations as recommended in the national guidelines. (Immunisation Guidelines for Ireland 2010).
- Screening for blood borne viruses in HCWs who perform exposure prone procedures* as recommended in the national guidelines. (The Prevention of Transmission of Blood Borne Diseases in the Healthcare Setting 2006).

Healthcare facilities must implement safe work practices to prevent exposure to infectious agents for HCWs, clients, visitors and general public by educating staff in relation to:

- The safe use and disposal of sharps to prevent needle stick and other sharps-related injuries
- The use of personal protective equipment (PPE) to prevent contamination of skin, mucous membrane and clothing
- The management of needle stick injuries/blood & body fluid exposures.
- The importance of covering all cuts, grazes and skin lesions with a waterproof dressing.
- Skin care (hands)

**Exposure-prone procedures are procedures which involve surgical entry into tissues, cavities or organs or repair of major traumatic injuries, vaginal or Caesarean deliveries or other obstetric procedures during which sharp instruments are used; the manipulation, cutting or removal of any oral or perioral tissues including tooth structure, during which bleeding may occur.*

Further information can be sourced from:

- Immunisation guidelines for Ireland. Immunisation Advisory Committee. 2010.
- The Prevention of Transmission of Blood Borne Diseases in the Healthcare Setting. Department of Health and Children 2006

3.1.2 Client Placement

HCWs should consider the potential for spread of infection in client placement decisions. Clients who pose a risk of infection spread to others (e.g. uncontained excretions or wound drainage; suspected viral respiratory or gastrointestinal infections, undiagnosed rash) should be isolated in a single room with an ensuite bathroom. The client's suitability for single room placement should be assessed and any safety issues addressed.

Clients with a wound or an invasive device should not be placed in the same room as clients colonised/infected with antibiotic resistant organisms such as MRSA.

Client placement should be based on the following considerations:

- Is the client likely to contaminate the environment or unable to maintain appropriate hygiene?
- How is the microorganism or infection spread i.e. contact, droplet or airborne?
- Any risk factors for spread in the infected/colonised client (e.g., shingles lesions on the face)?
- Availability of single rooms?

- Options for room-sharing (e.g. cohort clients with the same infection/colonised with same organism such as MRSA). Of note it is generally not recommended to cohort patients with active *Clostridium difficile* infection.
- Is the client at an increased risk of acquiring a HCAI or developing a serious outcome following infection?

Screening of new clients

Ask the person transferring the client the following questions (the client should also be asked these questions at the time of admission);

- Is the patient known to be colonised/infected with a resistant organism e.g. MRSA/ESBL/etc?
- Does the client have a new cough or shortness of breath, If 'yes' – any new fever or chills in the past 24 hours?
- Does the client have new onset diarrhoea?
- Does the client have an undiagnosed rash?
- Does the client have any drainage or leakage and is it contained?
- Is the client continent?
- Does the client have non intact skin or an invasive device (such as a wound or a urinary catheter)?
- How susceptible is the client to infection?

In addition all new clients should have a skin assessment performed on admission to assess skin integrity and condition.

Based on the initial admission assessment an informed decision can be made with regard to client placement

Further information can be sourced from:

- National guidelines on the management of specific infections (e.g., *Clostridium difficile*, Norovirus, MRSA, Tuberculosis) available at www.hpsc.ie

3.1.3 Hand Hygiene

Hand hygiene is the single most important procedure for preventing infection. Each healthcare setting should have adequate hand hygiene facilities including designated clinical hand wash sinks, wall mounted soap dispensers (with disposable cartridges) and paper towel dispensers, foot pedal-operated waste bins and alcohol hand gel/rub dispensers. In clinical areas taps should be hands-free: elbow, knee or foot pedal operated or automatic. Hand wash sinks should have mixer taps that allow mixing of hot and cold water and delivery through a single tap.

Alcohol hand gels are available in various containers and can be carried by staff in smaller sized bottles or can be made available in wall mounted dispensers in the healthcare facility.

A local risk assessment should be carried out to determine if there are any safety issues regarding the placement of alcohol gel dispensers in residential or healthcare facilities. It may not be advisable to place alcohol gel dispensers within reach of small children or clients with alcohol dependency.

All cuts and abrasions on the hands of the HCW should be covered with a waterproof dressing.

Hand and wrist jewellery should not be worn while on duty (with the exception of one plain gold or silver band). Wrist watches should not be worn. Nails should be kept clean and short. Nail polish, acrylic/gel or false nails should not be worn by HCWs while on duty. Sleeves should be short.

Hands can be decontaminated by adhering to the correct technique and using:

- Plain or antiseptic* liquid soap and water or
- An alcohol based hand rub/gel if hands are physically clean.

Plain soap should be without antiseptic and ideally non-perfumed with added emollients

See Appendix A: Handwashing Technique and Appendix B: Alcohol gel Technique or go to the following weblinks:

<http://www.hpsc.ie/hpsc/A-Z/Gastroenteric/Handwashing/Posters/File,1383,en.pdf>
<http://www.hpsc.ie/hpsc/A-Z/Gastroenteric/Handwashing/Posters/File,1384,en.pdf>

*Antiseptic hand hygiene is required before any non-surgical procedure that requires aseptic technique. Also for entering and leaving isolation rooms and for cleaning hands contaminated with blood, bodily fluids. Antiseptic soap (chlorhexidine or povidone iodine based) and water or an alcohol hand rub/gel can be used for aseptic technique and entering/leaving isolation rooms. Antiseptic soap and water should be used for cleaning visibly contaminated hands as alcohol gels are not suitable for this purpose.

HCWs should perform hand hygiene with soap and water or an alcohol gel:

- Before providing care to a client.
- Between dirty and clean activities
- Before aseptic/clean procedures.
- Before touching an invasive device or its attachments e.g. urinary catheter, peg tube.
- After removing PPE
- After cleaning and handling contaminated items and equipment
- After touching a client
- After using the toilet, coughing/sneezing
- After touching client surroundings/environment
- Before preparing or serving food and before feeding or assisting clients with meals

HCWs should wash their hands with soap and water when hands are:

- visibly dirty (use soap and water)

- visibly soiled with blood or body fluids (use an antiseptic soap and water)

Choosing the appropriate method of hand hygiene in a client's home depends on what is available (e.g., access to a sink with warm running water). HCWs should bring paper towel, liquid soap and alcohol hand gel/rub to use in the client's home and select the most appropriate hand hygiene method for an episode of care.

Clients in residential facilities should wash their hands after toileting and before meals. HCWs should assist those clients unable to perform hand hygiene independently. Hand hygiene also includes caring for the hands to maintain intact skin. Regular use of hand lotion is recommended. The use of nail brushes (unless doing a surgical scrub); cloth towels or bar soap is not recommended for health and social care staff while on duty. Electric hand dryers are not recommended for use in clinical areas.

Hand hygiene education and audit of practice

- All staff should receive regular education regarding hand hygiene.
- Healthcare facilities should audit their hand hygiene facilities and compliance with the national hand hygiene guidelines on a regular basis.

Further information can be sourced from:

- Guidelines for Hand Hygiene in Irish Healthcare Settings. Strategy for Antimicrobial Resistance in Ireland Subcommittee 2005.
- Guidelines on Hand Hygiene in Healthcare: World Health Organisation 2009.

3.1.4 Personal Protective Equipment (PPE)

PPE is specialised clothing/equipment which should be worn by HCWs in situations where there is a risk of contact with blood, body fluids or infectious materials. PPE consists of: gloves, aprons/gowns, eye, nose and mouth protection. The aim of wearing PPE is to protect the HCW from contact with potentially harmful bacteria or viruses which could be harmful to the HCW or could be passed on to a client. HCWs should select the appropriate PPE based on a risk assessment of the task to be carried out considering:

- the risk of exposure to blood, body fluids, secretions, excretions and infectious agents;
- the risk of contamination of the skin, eyes/nose/mouth or clothing.

Inappropriate use of PPE may lead to cross infection for example failure to change gloves and perform hand hygiene between clients.

Employers are responsible for providing PPE that complies with relevant European standards to all staff that require it for daily client interaction.

Appendices D & E outline methods to put on and remove PPE appropriately in order to minimise the risk of contamination to the HCW.

PPE should be discarded as healthcare risk waste if contaminated with blood or body fluids

Gloves

Gloves should be worn to reduce the risk of exposure to infectious agents and/or material that may be carried on the hands for both the HCW and the client. Gloves are made of a variety of materials (e.g., latex, vinyl, nitrile and rubber). Alternatives to latex should be available for HCWs or clients with a latex allergy. **Hand hygiene should always be performed following glove removal.** No attempt should be made to wash gloves in water or clean them with alcohol gel.

Gloves are recommended;

- For all activities that carry a risk of contact with blood, body fluids, secretions or excretions or contaminated items or surfaces for example:
 - Washing a client who has been incontinent
 - Blood sugar testing
 - Invasive procedures e.g. taking blood
 - Obtaining and handling laboratory specimens,
- When in contact with mucous membranes (lining of the eyes, nose, mouth, anus and vagina) and non-intact skin (example= wound, skin rash),
- When handling contaminated equipment and the environment
- When handling chemicals including household cleaning products and disinfectants

See **Appendix C:** Glove Selection Tool

Gloves are generally not required if there is no risk of exposure to blood, body fluids, secretions, excretions, contaminated items or surfaces for example:

- feeding a client
- assisting a client to mobilize
- contact with intact skin
- pushing a wheelchair
- delivering meals, mail, laundry
- providing care to residents with intact skin such as taking temperatures

Gloves should not be worn for administrative tasks such as using a telephone or a computer keyboard or writing in a client's case/nursing notes.

Gloves used for client care should;

- Be single use only.
- Conform to European Union standards.
- **Be sterile** if contact with a sterile body site anticipated and for aseptic procedures.
- Fit the wearer and be appropriate to the task.

- Be removed in a manner to prevent contamination (**Appendix E**).
- Be changed between procedures on the same client (e.g., upon moving from a contaminated body site to a clean body site)
- Removed after the task or episode of client care
- Removed if punctured, soiled with bodily fluid or after contact with contaminated environmental surfaces.
- Not be worn unless required and not for longer than necessary

Glove type

- Latex gloves (non- powdered) are recommended for sterile invasive procedures and potential exposure to blood.
- Nitrile gloves should be worn by HCWs with latex allergy on the advice of occupational health. Nitrile gloves are usually coloured so care should be taken not to mistake nitrile with latex gloves.
- Vinyl gloves may be used for personal care but are not recommended for blood contact.
- Non-sterile disposable or reusable (single person use) household gloves can be used to clean the environment.
- Polythene gloves are not suitable for clinical care use

Further information can be sourced from:

- Guidelines on Hand Hygiene in Healthcare: World Health Organisation 2009.
- Guidelines for Hand Hygiene in Irish Healthcare Settings. Strategy for Antimicrobial Resistance in Ireland Subcommittee 2005.

Face Protection for Eyes, Nose and Mouth

Face and eye protection should be worn by HCWs during any procedure or activity where there is a risk of blood, body fluids, secretions or excretions splashing into the face and eyes.

Face protection consists of one of the following:

- Fluid repellent surgical mask with separate goggles/eye shield
- Face shield
- Fluid repellent surgical mask with integrated eye shield
- Respirator (FFP2/3) masks with separate goggles or eye shield
- FFP2/3 masks are not required for Standard Precautions. Their use is addressed in detail in Airborne Precautions, however when worn, they do provide protection from sprays/splashes of blood and body fluids in addition to their primary function of air filtration.

Face protection should be:

- Selected according to the anticipated risk of the procedure.

- Worn over the nose and mouth and fitted snugly to the face.
- Single-use or if reusable, single person use.

The user of reusable face shields and goggles must ensure that the manufacturer's instructions on cleaning and disinfection are followed after each use.

Hand hygiene should be performed immediately after removal of PPE.

Refer to **Appendix D** for further information on donning face protection.

Aprons or Gowns

An apron or gown should be worn when close contact with the client may lead to contamination of the skin, uniform or other clothing with infectious agents, blood, body fluids, secretions or excretions. The type of apron or gown required depends on the degree of risk of contact with infectious material and the potential for blood or body fluids to penetrate through to clothes or skin

- **A clean non sterile disposable plastic apron is generally adequate** where there is a risk that the front of uniform/clothing may become contaminated with blood, body fluids, excretions or secretions (except sweat).
- Long-sleeved disposable fluid repellent gowns should be worn if spraying/splattering of blood, body fluids, excretions or secretions (except sweat) is anticipated or there is a risk of extensive contamination of skin and/or uniform/clothing by blood or body fluids.

Aprons/Gowns should be:

- suitable for the task to be performed
- single use –used for one procedure or episode of client care and then discarded and removed before leaving the client care area.

Removing aprons and gowns

Aprons and gowns should be removed in a way that prevents contamination of clothing or skin.

- The ties at the neck and back should be broken
- The outer 'contaminated' side should be turned inward and rolled into a bundle and then discarded into an appropriate waste container.

Removal technique to prevent contamination of skin and clothing is outlined in **Appendix E**. Hand hygiene should be performed immediately after removal of PPE.

3.1.5 Client care equipment/instruments/devices

All healthcare facilities should have policies and procedures for transporting, handling and decontamination of all reusable client care equipment, instruments and devices. Medical and client care equipment should be kept clean and dry at all times.

Single use devices

A single use device (SUD) is a medical device that is intended to be used on an individual client during a single procedure and then discarded. The term 'Single Use' means that the manufacturer intends the device to be used once and then discarded and considers that the device is not suitable for use on more than one occasion. It is not intended to be reprocessed and used again or used on another client.

In circumstances where a medical device intended by the manufacturer for single-use is reprocessed, the person/s responsible for putting the reprocessed device into service assumes the legal responsibility of a device manufacturer and must have supporting technical and clinical documentation to demonstrate that the reprocessed device conforms to all the Essential Requirements of the Medical Devices Directives.

Medical devices designated as 'Single Use Only' should not be reprocessed or reused under any circumstances (MDA DB 2000), (MDD) 93/42/EEC.

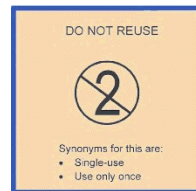


Figure 1: Symbol for single use

Single client use

A medical device that is intended for single-client use means that the device may be used for more than one episode of use on one client only. The device may be reprocessed between each use as per manufacturer's instructions. Examples include nebuliser tubing / masks and some infusion equipment. Medical devices designated as 'Single client use' should be used for one client only and not reused on a different client under any circumstances. These devices should be cleaned and used in accordance with manufacturers instructions.

Reusable devices

Reusable equipment should be decontaminated after every client use and before use on another client in accordance with the manufacturer's instructions.

Non Critical equipment

Non critical equipment refers to equipment that is either not in contact with a client or in contact with healthy skin. Such equipment:

- Should be nonporous and in a state of good repair in order to facilitate effective cleaning.

- Must be thoroughly cleaned prior to use on another client. If soiled with blood or body fluids, clean first using detergent and water and then disinfect using a chlorine-releasing solution of 1000ppm or equivalent, and according to the manufacturers' instructions.

Bedpan/urinals

- Place reusable bedpan/urinal and contents into a bedpan washer or use a disposal unit (e.g. macerator) to discard disposable bedpans/urinals and contents.
- Use a washer-disinfector cycle that achieves a minimum temperature of 80°C with a holding time of one minute.
- Ensure bedpan washer-disinfector complies with and is serviced according to HTM 2030 or equivalent best practice guideline.
- Clean commodes with detergent and water after each use and clean and disinfect with a chlorine-releasing agent at 1000ppm, or 1:10 dilution of 5.25% sodium hydrochloride or equivalent after each client use if soiled with faeces, blood or body fluids or for clients with transmissible gastrointestinal infection such as Norovirus or Clostridium difficile.

Reusable Invasive Medical Devices (RIMDs)

RIMD refers to equipment that is classified as semi-critical or critical. RIMDs are items of equipment that come into contact with sterile body sites, mucous membranes or non intact skin. HCWs **must** ensure that RIMDs are **never** used on another client until cleaned and reprocessed appropriately. Relevant national guidelines should be implemented in all settings where healthcare is delivered.

HCWs must wear PPE when transporting and handling client care equipment/instruments/devices that are visibly soiled or which may have been in contact with blood or body fluids.

Further information can be sourced from:

- Irish Medicines Board Safety Notice: SN2010(14)
- Code of Practice for Decontamination of Reusable Invasive Medical Devices. Health Services Executive: 2007.
- Cleaning Manual for Acute Hospitals. Health Service Executive: 2006.
- Guidelines on Minimising the Risk of Transmission of Transmissible Spongiform Encephalopathies in Healthcare Settings in Ireland. Department of Health and Children: 2004.

3.1.6 Environmental Decontamination

Routine environmental cleaning is essential to minimise the risk of infectious agents contaminating the environment.

The frequency or intensity of cleaning should be based on:

- How often an item/area is used
- How often it gets dirty
- The degree of soil on the item or surface

Cleaning (with a neutral detergent) and water is the first step in environmental cleaning, followed if necessary by disinfection.

Routinely clean surfaces that are in close proximity to the client (e.g., bed surfaces, bedside furniture, frequently–touched surfaces, furniture in the client’s environment, commodes, computer/monitoring equipment).

Routinely clean and disinfect surfaces that are contaminated with infectious agents, blood, body fluids, secretions and excretions in areas such as toilets and bathrooms.

- **To clean:** Use a neutral detergent, warm water and clean cloths. Follow manufacturer’s instructions for dilution. Cloths should be colour coded.
- **To disinfect:** Clean first and then use a disinfectant that has microbiocidal activity against the infectious agent most likely to contaminate the client care environment (e.g., Chlorine releasing agent 1000ppm or 1:10 dilution of 5.25% hypochlorite or equivalent). Follow manufacturer’s instructions for dilutions and contact time.

Antiseptic and Cleaning agents are outlined in **Appendix F**.

Commonly used items of equipment and their recommended method of decontamination are outlined in **Appendix G**.

Disinfectants should be freshly prepared and accurately diluted using a graduated measuring jug. Chlorine releasing tablets, granules and powders are stable but solutions are not and so should be discarded on completion of the task or at the end of each day. Bottles of liquid hypochlorite should be stored safely in a cool dark place with the lid on. Cloths and mop heads should be laundered at the end of each day.

Further information can be sourced from:

- Cleaning Manual for Acute Hospitals. Health Service Executive: 2006.

3.1.7 Dishes and eating utensils

Crockery and cutlery used in residential health care facilities should preferably be washed after use in a dishwasher. Machine washing at high temperatures is a form of thermal disinfection. Disposable crockery/cutlery is not required nor is there a need to use disinfectants on items that have been used by a client with infection. Where a dishwasher is temporarily unavailable items should be washed in hot water (using household rubber gloves) and detergent residue should be rinsed off. Items should be allowed to air dry on a draining rack or dried with paper towels.

In a client's own home particular care should be taken of potentially contaminated items especially chopping boards used for raw meat and poultry. These items need to be thoroughly cleaned with hot water and washing up liquid and should be kept separate from foods that will be eaten without further cooking.

3.1.8 Management of Spillages of Blood and Body Fluids

Healthcare facilities should ensure that all staff is appropriately trained to manage spillages of blood and body fluids.

Spillages of blood, urine, faeces or vomit should be dealt with immediately. HCWs should wear appropriate PPE. Healthcare facilities should have equipment for dealing with spillages or use appropriate spillage kits.

Body fluid spillages except urine (e.g., faeces or vomit):

- 1 If available, use the appropriate spillage kit.
- 2 Don appropriate PPE
- 3 Cover & soak up the spill much as possible with disposable paper towels.
- 4 Clean the area using warm water and general purpose neutral detergent.
- 5 Disinfect using a chlorine-releasing disinfectant of 1000ppm, or 1:10 dilution of 5.25% sodium hydrochloride or equivalent, rinse and dry surface area.
- 6 Dispose of soiled paper towels and PPE contaminated with:
 - Blood as healthcare risk waste
 - Body fluids other than blood as healthcare non-risk waste, unless client is suspected or known to have an infection.
- 7 Perform hand hygiene after discarding PPE.

Blood spillages:

1. If available, use the appropriate spillage kit.
2. Don appropriate PPE (Section 3.5).
3. Decontaminate large-volume blood spills with a chlorine-based disinfectant (e.g., powder, granules or liquid containing 10,000ppm available chlorine).
4. Wipe up the spillage with disposable paper towels or scoop and discard into a healthcare risk bag or rigid container.
5. Wash the area with a general purpose neutral detergent and water.
6. Discard gloves and apron into healthcare risk waste.

7. Perform hand hygiene after discarding PPE.

Urine spillage

1. Don appropriate PPE
2. Cover & soak up the spill much as possible with disposable paper towels.
3. Clean the area using warm water and general purpose neutral detergent.

Do not apply chlorine-based disinfectants directly onto spillages of urine as it may result in the release of chlorine vapour. Always use chlorine-based disinfectants in a well-ventilated area. Chlorine based disinfectant are not suitable for use on carpet or fabric. If used on metal the solution should be rinsed off after the required contact time to prevent metal corrosion.

Examples of Chlorine based disinfectants are in **Appendix F**

3.1.9 Management of Needle Stick/Sharps Injuries and Blood and Body Fluid Exposure

All healthcare facilities should have a local policy on the management of needle stick and other sharps-related injuries and blood and body fluid exposure. This guideline should include;

- First aid procedure:
- Immediately reporting to the relevant line manager and/or occupational health team.
- Medical Risk assessment and screening of the source client (if known).
- Medical Risk assessment for post-exposure chemoprophylaxis.
- Counselling and follow-up testing.

A needle stick injury or contamination incident includes

- Accidental inoculation of blood by a needle or other sharp
- Contamination of broken skin with blood
- Splashes of blood/body fluids onto mucous membranes (e.g. mouth, eyes).
- Human **scratches**/bites (where blood is drawn)

When a sharp injury/contamination incident occurs:

1. Encourage bleeding from the wound
2. Wash the wound in running water, do not scrub
3. Cover the wound with a dressing
4. Skin, eyes, mouth – wash in plenty of water
5. Ensure the sharp is disposed of safely
6. Report the incident immediately to supervisor. Prompt medical attention is required (same day) so that treatment if required can be given as soon as possible.
7. Complete an incident form in accordance with local policy
8. The person who sustained the wound should visit the occupational health doctor/department (if applicable). Alternatively they should attend the local Emergency Department for risk assessment as soon as possible.

9. Attempt to identify the source client, as it may be necessary for follow up care

Further information can be sourced from:

- The Prevention of Transmission of Blood Borne Diseases in the Healthcare Setting. Department of Health and Children 2006.
- Immunisation Guidelines for Ireland. National Immunisation Advisory Committee. 2010.

3.1.10 Management of waste including Sharps

Waste

The definition, packaging, storage and transport of healthcare risk waste should be in accordance with national guidance.

Where healthcare risk waste is generated in the community arrangements should be made to have this collected and disposal.

Sharps

HCWs **must** be personally responsible for the safe use and disposal of sharps, needles, scalpels and other sharp instruments/devices they use. Sharps **must never** be passed from person-to-person by hand.

Disposal of sharps:

- Sharps bins should be assembled correctly before use.
- Sharps bins should be securely stored at working height out of reach of clients, visitors and children.
- Sharps should be discarded into a designated sharps bin at the point of use. Sharps trays with integral sharps bins are available and these can be taken to the client.
- Syringes and needles should be disposed of as a single unit.
- Needles must never be re-capped, bent, broken or disassembled.
- Sharps bins should only be filled to the fill line ($\frac{3}{4}$ full) and then securely sealed
- Sharps bins should be disposed of as healthcare risk waste.

Further information can be sourced from:

- *Healthcare risk waste management. Segregation, packaging and storage guidelines for healthcare risk waste.* 4th edition, November 2010. HSE and the Department of Health and Children.
- *The Prevention of Transmission of Blood Borne Diseases in the Healthcare Setting.* Department of Health and Children. 2006.

3.1.11 Management of Laundry and Linen

Laundry should be handled, transported and processed in a manner that prevents transmission of infectious agents.

Segregation and transportation of used laundry should be in accordance with the Society of Linen Services and Laundry Managers guidelines.

- Laundry should be handled carefully to avoid contaminating the environment (i.e. used laundry should not be shaken or placed on the floor or any clean surface).
- HCWs should wear appropriate PPE (i.e., gloves/apron) when handling linen soiled with blood, body fluids, secretions and excretions to prevent skin and clothing contamination.
- Laundry contaminated with blood or body fluids should be carefully placed in an alginate stitched or water soluble bag, which should be tied and placed into a laundry bag clearly identified with labels, colour-coding or other methods prior to transport to an approved laundry capable of dealing with contaminated linen.
- Staff should not manually sluice or soak soiled or infected linen/clothing.

Further information can be sourced from:

- Hospital Laundry Arrangements for Used, Foul and Infected Linen. Society of Linen Services and Laundry Managers: 2008.
- National Health Service Executive, UK (1995) Health Service Guideline (95) 18. Hospital arrangements for used and infected linen.

3.1.12 Respiratory Hygiene and Cough Etiquette

Healthcare facilities should promote respiratory hygiene/cough etiquette for all HCWs, clients and visitors.

Measures (such as provision of tissues, hand hygiene facilities, educational materials) to contain respiratory secretions in clients and accompanying individuals who have signs/symptoms of respiratory infection, should begin at the point of initial encounter in a healthcare setting (e.g. Health Centre, GP surgery).

Information for clients/visitors/public

Clients/visitors/carers should be educated about respiratory hygiene and cough etiquette using the following:

- Client information leaflets.
- Welcome packs.
- Posters in all departments, especially points of entry and waiting areas.

Additional precautions during times of increased prevalence of respiratory infections for example influenza

During periods of increased prevalence of respiratory infections in the community, face masks should be offered to coughing clients and other symptomatic persons (e.g., persons who accompany ill clients) upon entry into the healthcare facility. Spatial separation, ideally a distance of at least one meter, from others in common waiting areas should be maintained. Some facilities may find it logistically easier to institute this recommendation year-round as a standard of practice.

- HCWs are advised to observe Droplet Precautions during routine care.

A respiratory etiquette poster is available at the following weblink:

<http://www.hpsc.ie/hpsc/A-Z/MicrobiologyAntimicrobialResistance/InfectionControlandHAI/Posters/File,3599,en.pdf>

3.1.13 Safe Injection Practices

Preparation of Injections

- An aseptic technique must be used to avoid contamination of sterile injection equipment.
- All injections should be prepared in a clean area. This area must not be used for disposal of used needles and syringes, handling blood samples or any material contaminated with blood or body fluids. Needles used to draw up medications can be disposed of in a sharps bin in the clean area.
- Needle, syringes and cannulae are sterile, single-use items and must not be reused for another client or to access a medication or solution that might be used for a subsequent client.
- Single-dose vials should be used wherever possible.
- Single-dose vials must not be used for multiple clients.
- Residual products must not be combined for later use.

Multiple dose vials

- All facilities should have a policy on the use of multiple dose vials.
- Multiple dose vials should only be used when absolutely necessary following consultation with pharmacy and infection prevention and control team.
- The use of a multiple dose vial should be restricted to a single client and the vial should be labelled with client's name and date opened (e.g. insulin).
- Multiple dose vials should only be accessed on a clean work area
- A multiple dose vial should be discarded if accessed at the client's bedside or if sterility is compromised or questionable.
- Vials should be stored in accordance with the manufacturer's recommendations.
- A sterile syringe and needle or safety assess device should be used every time a medication vial is accessed

Infusions and intravenous sets

- Bags or bottles of intravenous fluids should not be used as a common source of supply for multiple clients.
- Fluid infusion and administration sets, tubing and connectors are sterile for single client use.
- A syringe or needle/cannula is considered contaminated once it has been used to enter or connect to a client's intravenous infusion bag or administration set.

Insulin pens

- Insulin pens are single client use items

3.1.14 Practices for Special Lumbar Puncture Procedures*

These procedures involve placement of a catheter or injection of material into the spinal or epidural space such as lumbar puncture or spinal.

When performing such procedures, HCWs must:

- Wear a surgical mask to prevent droplet transmission of the oropharyngeal flora of the operator to the client.
- Adhere to aseptic technique.

***These procedures are normally performed in a hospital rather than community health care settings.**

References

1. Siegel JD, Rhinehart E, Jackson M, Chiarello L, and the Healthcare Infection Control Practices Advisory Committee, 2007 *Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings*
<http://www.cdc.gov/ncidod/dhqp/pdf/isolation2007.pdf>

See also *Standard precautions* on the Health Protection Surveillance Centre website:
<http://www.hpsc.ie/hpsc/A-Z/Respiratory/Influenza/SeasonalInfluenza/Infectioncontrolavice/File,3600,en.pdf>

Section 4: Transmission based precautions

- **Contact precautions**
- **Droplet precautions**
- **Airborne precautions**

4.0 Transmission based precautions

Transmission-based precautions are additional measures that are recommended when Standard Precautions alone may not be enough to prevent the spread of infection/disease such as *Clostridium difficile*, chicken pox, tuberculosis etc. These additional measures include

- Airborne precautions
- Droplet precautions
- Contact precautions

Unlike Standard Precautions that apply to all patients, transmission-based precautions only apply to particular patients based on either a suspected or confirmed infection/disease (e.g. chicken pox).

Important note:

In general in the community Standard Precautions are sufficient so for the purposes of this document transmission precautions will not be covered in detail.

Section 5 of this manual addresses the common types of infection likely to be encountered in the community and where measures other than standard precautions are required this will be dealt with under each individual infection heading.

Some infections are spread by more than one route and require a combination of precautions (e.g. influenza – contact and droplet precautions are required).

Before implementing transmission- based precautions, it is important to first consider; the individual patient/client, the setting, the infectious agent, the presence of other vulnerable patients/residents and the type of procedures/activities being undertaken.

Contact precautions are recommended in addition to Standard Precautions when a client is known or suspected to have an infection or disease spread by direct or indirect contact.

In community settings contact precautions are recommended for infections such as Norovirus and *Clostridium Difficile* associated disease (CDAD).

Example

For a client with CDAD in addition to standard precautions the following measures are required:

- **Client placement** – Single room with en-suite bathroom
- **Client movement** – Limit client movement and transfer to essential purposes only. Avoid contaminating equipment/environment during transfer.

- **Hand hygiene** – Wash hands with soap and water rather than with alcohol gel
- **PPE** - Wear gloves and an apron when entering the clients room
- **Client care equipment**- Dedicated client equipment required, essential items only in client room, avoid taking charts/records into client's room
- **Environment and equipment decontamination** – Clean environment and equipment daily with detergent and water and then disinfect with chlorine releasing agent at 1000ppm. Following client discharge or transfer do terminal cleaning which involves cleaning all surfaces/items with detergent and water and then disinfecting as above. Discard all disposable items, launder curtains and steam clean soft furnishings and carpets.

Droplet Precautions are recommended in addition to Standard Precautions for patients/clients with infectious agents transmitted by large droplets ($\geq 5 \mu\text{m}$ in size). Droplet transmission occurs when large droplets from the respiratory tract of an infected person are spread directly on to a mucosal surface (e.g. eyes, nose, mouth) of another person. Respiratory droplets are shed when a person is coughing, sneezing or talking, and during certain healthcare procedures such as suctioning and endotracheal intubation. Transmission from large particle droplets requires relatively close contact - less than 3 feet (1 metre) - between the infected person and another. Some examples include:

Influenza, Meningococcal meningitis/septicaemia, Streptococcus Group A, Mumps and Diphtheria

Example

For a client with influenza in addition to standard precautions the following measures are required:

- **Client placement** – Single room or cohort with others with influenza
- **Hand hygiene** – essential and can be performed using soap and water or alcohol gel on clean hands
- **Patient movement** – Limit client movement and transfer to essential purposes only. The client should wear a surgical mask during transfer or movement to another area
- **PPE** - Wear a surgical mask when in direct contact or within three feet of the client. Wear gloves and an apron when in direct contact with the client.
- **Client care equipment**- Dedicated client equipment required, essential items only in client room, avoid taking charts/records into clients room
- **Environment and equipment decontamination** – Clean environment and equipment daily with detergent and water and then disinfect with chlorine releasing agent at 1000ppm. Following client discharge or transfer do terminal cleaning i.e. clean all surfaces/items with detergent and water and then disinfect as above. Discard all disposable items, launder curtains and steam clean soft furnishings and carpet.

Note:

Additional infection control measures are required for certain respiratory infections that are spread by droplets e.g. Severe Acute Respiratory Syndrome (SARS), Pandemic Influenza.

Airborne precautions are recommended to prevent infection in addition to standard precautions for patients/clients with infectious agents spread by small particles (i.e. $\leq 5\mu\text{m}$ in size). These small particles can remain infectious over long distances when suspended in the air, and are able to enter the respiratory tract of individuals without having close contact or sharing a room. Small respiratory particles are expelled during activities like coughing, sneezing or talking and during particular healthcare procedures such as suctioning, endotracheal intubation and bronchoscopy.

Examples of infections requiring airborne precautions include rubella, measles, chicken pox, infectious pulmonary or laryngeal Tuberculosis

For a client with influenza in addition to standard precautions the following measures are required:

- **Client placement** – Negative pressure en-suite single room
- **Hand hygiene** – essential and can be performed using soap and water or alcohol gel on clean hands
- **Patient movement** – Limit client movement and transfer to essential purposes only. The client should wear a surgical mask during transfer or movement to another area
- **PPE** - Wear FFP2 or FFP3 (these offer greater protection than a surgical mask) mask on entering the clients room. Wear gloves and an apron when in direct contact with the client.
- **Client care equipment**- Dedicated client equipment required, essential items only in client room, avoid taking charts/records into clients room
- **Environment and equipment decontamination** – Clean environment and equipment daily with detergent and water and then disinfect with chlorine releasing agent at 1000ppm. Following client discharge or transfer do terminal cleaning i.e. clean all surfaces/items with detergent and water and then disinfect as above. Discard all disposable items, launder curtains and steam clean soft furnishings and carpet.

In this document any additional infection control measures required will be dealt with under individual infection headings.

References

1. From the Public Health Service, US Department of Health and Human Services Centers for Disease Control and Prevention Atlanta Georgia. Siegel JD Rhinehart E Jackson M Chiarello L and the Healthcare Infection Control Practices Advisory Committee. *Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings* 2007.

Section 5: Managing infectious disease in the healthcare setting

- **Clostridium difficile associated disease (CDAD)**
- **Meticillin resistant Staphylococcus aureus (MRSA)**
- **Scabies**
- **Hepatitis A virus**
- **Hepatitis B virus**
- **Human immunodeficiency virus**
- **Influenza**
- **Norovirus**
- **Rotavirus**
- **Chicken Pox and Shingles**

5.0 Managing infectious disease in the healthcare setting

5.1 Clostridium difficile associated disease (CDAD)

Key points

1. Clients with CDAD who are likely to be infectious should be isolated in a single room with en-suite toilet or an allocated commode.
2. The client's antibiotic prescription should be reviewed and inappropriate antibiotics should be stopped.
3. HCWs should remove PPE (gloves and aprons) immediately after each CDAD client care activity.
4. The client's immediate environment should be cleaned and then disinfected with a chlorine-releasing agent at 1000ppm, or 1:10 dilution of 5.25% sodium hydrochloride or equivalent, daily.
5. HCWs should perform hand hygiene with liquid soap and water (rather than alcohol gel) immediately after removal of PPE.

5.1.1 Introduction

Clostridium difficile infection is a major cause of antibiotic associated diarrhoea and mostly affects elderly patients with underlying disease. *Clostridium difficile* is a bacterium usually found in the large intestine (bowel). A small proportion of healthy adults carry a small amount of *Clostridium difficile* but it is kept in check by the normal, "good" bacteria in the intestine.

Clostridium difficile can form spores which allow it to survive in the environment outside the body. These spores protect it against heat and chemical disinfectants. The bacterium is also commonly found in the gut of babies and children but rarely gives rise to symptoms.

Clostridium difficile produces toxins which can cause diarrhoea, ranging from mild to severe illness with severe ulceration and bleeding in the colon (colitis) to at worst, perforation of the intestine, peritonitis and death. Severe diarrhoea may result in fluid and electrolyte imbalance. An overgrowth of *Clostridium difficile* occurs in the gut when the normal gut bacteria have been destroyed following a course of antibiotics (broad spectrum).

The bacterium generally produces two toxins (toxin A & toxin B) that damage the cells lining the intestine and cause diarrhoea. Typically, diarrhoea starts 5 -10 days after commencing the antibiotic but it can occur as early as one day after starting and up to 10 weeks following a course of antibiotics. In general, *Clostridium difficile* associated disease (CDAD) is seen almost exclusively in patients who have been treated with antibiotics. Although CDAD is

mainly a hospital infection approximately 10% of cases are community acquired so cases are now being diagnosed in clients in long term care.

Type O27 is a newer strain of *Clostridium difficile*. It was predominantly associated with three major outbreaks of *Clostridium difficile* infection in the UK (Stoke Mandeville, Exeter and Royal Devon hospitals) in 2004-2005. It was also identified in large outbreaks in Canada (Quebec) and in the USA since 2000. Type O27 produces more toxin than other strains due to a genetic mutation, causes more severe disease and appears to be associated with a higher mortality rate.

5.1.2 Symptoms

- Diarrhoea – sudden onset, may be explosive and have a characteristic odour
- Fever
- Crampy abdominal pain
- Loss of appetite
- Nausea

5.1.3 Spread of infection

People in good health do not normally get *Clostridium difficile* infection. *Clostridium difficile* associated disease (CDAD) is seen almost exclusively in clients who have been treated with antibiotics. *Clostridium difficile* is shed in faeces. Clients may become infected by coming into contact with *Clostridium difficile* spores - usually in a hospital, spores can be picked up on the hands through contact with contaminated equipment e.g. commodes, bedpans. If a client touches their mouth with contaminated hands, the spores may travel to the clients' gut where they can grow and multiply.

- Alcohol-based hand rubs do not have reliable sporicidal activity and are not recommended as the only hand hygiene measure when caring for confirmed or suspected CDAD clients.

5.1.4 Risk groups

Clients are most at risk of developing CDAD if they:

- are taking or have recently finished taking antibiotics
- have spent a long time in hospital or other healthcare settings (e.g. nursing homes)
- are older
- have a serious illness
- have a weakened immune system (e.g., receiving cancer treatment)
- have had bowel surgery

5.1.5 Diagnosis

Clostridium difficile is diagnosed in the microbiology laboratory by the detection of *Clostridium difficile* toxin in the faeces of clients. All clients (excluding children under 2 years of age) with suspected gastrointestinal infection should be tested for *Clostridium difficile*. Stool specimens should be taken while the client is symptomatic (i.e. has

diarrhoea*) the stool specimen should be loose/liquid (type 6 or 7 on the Bristol Stool Chart) and should take on the shape of the specimen container. Specimens should ideally be fresh, and sent to the laboratory on the day obtained. If the specimen cannot be examined that day, specimens for transportation should be refrigerated at 4°C in a designated specimen refrigerator. In cases where the laboratory toxin test is negative but there is a strong suspicion of CDAD, the consultant microbiologist should be contacted for advice. Diagnosis may also be made based on clinical findings during colonoscopy or surgery.

*Diarrhoea is defined as three or more loose/watery bowel movements (which are unusual or different for the client) in a 24 hour period and there is no other recognised cause for the diarrhoea (e.g. laxative use).

5.1.6 Treatment

- Current antibiotic therapy should be discontinued if possible; otherwise, antibiotic(s) with a lower risk of causing CDAD should be substituted.
- Initial treatment of non-severe CDAD: Metronidazole is the recommended first line agent at a dose of 400mgs orally three times a day for 10 days.
- Where treatment is indicated it should be started without delay
- Treatment for CDAD should be in accordance with national guidelines. Where advice regarding treatment is required GPs should contact the microbiologist in the hospital processing the stool specimen.
- Severe CDAD infection should be treated with Vancomycin in line with the latest national guidelines.
- If the client has severe infection, they will require admission to a hospital. The hospital should be informed of the *C. difficile* diagnosis prior to transfer. Symptoms can return (recurrence) in 8-50% of cases and further courses of treatment may be needed.
- Dehydration should be treated and/or prevented.
- Antidiarrheal agents e.g. Kaolin, Loperamide should be avoided.
- If the client has more than one recurrence of CDAD, a tapered pulsed regimen of oral vancomycin may be required – a consultant microbiologist should be contacted for advice.

Relapsed patients should be managed according to the national CDAD guidelines.

5.1.7 Prevention

Prudent antibiotic prescribing is recommended to reduce the use of broad spectrum antibiotics. (Refer to GP Prescribing Guidelines)

5.1.8 Control measures for symptomatic clients in residential facilities

Clients that test positive for *Clostridium difficile* and who are symptomatic (e.g. have diarrhoea) require additional precautions (**Contact Precautions**) in addition to Standard Precautions.

5.1.9 Client Placement

- A client with symptomatic infection (diarrhoea) should be placed in a single room with en-suite toilet. This is particularly important for clients who are incontinent of faeces or unable to practice good hand washing. If ensuite facilities are not available, clients with CDAD should be allocated a designated toilet or commode and not permitted to use the general toilet facilities on the ward. Symptomatic clients should be isolated as soon as possible as there is a significant risk of environmental contamination and cross infection.

5.1.10 Monitoring of clients with diarrhoea

- Diarrhoea in residential clients should be monitored and recorded. A Bristol stool chart is recommended.

5.1.11 Hand hygiene

- Hand washing with soap (plain non-antimicrobial or antimicrobial) and water should be performed before and after all client and equipment contact and after glove removal. Alcohol-based hand rubs are not recommended as the only hand hygiene measure when caring for confirmed or suspected CDAD clients
- Clients who are unable to perform hand hygiene independently should be supervised or assisted to do so.

5.1.12 Personal protective equipment

- Aprons and gloves should be worn when entering clients' rooms and during client care.
- Aprons and gloves should be removed after each care activity and hand hygiene should be performed.

5.1.13 Equipment

- Dedicated equipment should be used while the client requires contact Precautions.
- Reusable equipment must be decontaminated prior to reuse on another client

5.1.14 Laundry and waste

- Linen should be placed in an alginate bag
- Waste generated should be placed in a healthcare risk waste bag

5.1.15 Environmental cleaning and disinfection

There should be adequate cleaning and disinfection of environmental surfaces and reusable devices, especially items likely to be contaminated with faeces and surfaces that are touched frequently.

- A chlorine-releasing agent at 1000 ppm, or 1:10 dilution of 5.25% sodium hydrochloride or equivalent, should be used for environmental surface disinfection following initial cleaning with detergent and water. The disinfectant used should be in accordance with current national guidelines i.e. a chlorine releasing agent. Special

attention should be given to frequently touched sites e.g. bedrails, over bed table, toilets, commodes etc

- Items likely to get faecally contaminated should be cleaned and disinfected immediately after use e.g., the under surfaces and hand contact surfaces of commodes
- All equipment used for clients should be in a state of good repair in order to facilitate effective cleaning.
- Medical devices (e.g., thermometers, sphygmomanometers, stethoscopes) should be dedicated to a single client and disposable materials used whenever possible
- No additional measures are required for cutlery and crockery. The combination of hot water and detergents used in dishwashers is sufficient to decontaminate dishware and eating utensils
- Bedpans and commode pans should be decontaminated after each use in a bedpan washer-disinfector. Bedpan washers should reach a temperature of 80°C for a minimum of 1 minute. Bedpan washers should be serviced and validated on a regular basis in accordance with appropriate standards to ensure appropriate cleaning and disinfection.
- Commode frames should be kept scrupulously clean at all times. Commodes should be taken to the sluice room for cleaning. All surfaces of the frame should first be thoroughly cleaned using detergent, warm water and disposable cloths. If the commode is faecally soiled or if used by a client with symptomatic CDAD cleaning should be followed by disinfection with a chlorine releasing agent at a concentration of 1000ppm. A system for labeling decontaminated commodes is recommended. Clean commodes should be stored in a designated storage area when not in use.
- Faecal soiling of the environment should be cleaned and disinfected immediately

5.1.16 Terminal cleaning of a client's bedroom

In addition to daily cleaning of a clients room terminal client of a clients bedroom and ensuite bathroom should be performed when the client is moved to another room, is discharged or is 48 hours symptoms free.

All surfaces in the room except walls (unless soiled) should be thoroughly cleaned with detergent and warm water. Cleaning should be followed by disinfection with 1000ppm solution of Chlorine releasing agent. Particular attention should be paid to any surface soiled with faecal matter and hand contact areas including light switches, hand rails, pull cords, call bells, remote controls, door handles, taps etc. Damp cleaning methods should be used for electrical or moisture sensitive items.

All reusable patient equipment should be thoroughly cleaned with detergent and warm water. Cleaning should be followed by disinfection with 1000ppm solution of Chlorine releasing agent.

Disposable items should be removed and discarded into a healthcare risk waste bag

Slings used for moving and handling should be laundered in a washing machine at a temperature no less than 60 degrees Celsius

Beds, furnishing and equipment should be cleaned and disinfected before removal from the room.

Curtains should be removed and washed or dry cleaned in line with manufacturers instructions

Soft furnishings such as upholstery, carpets, and cloth items should be steam cleaned.

Non washable furnishings and carpets that are likely to become contaminated with blood or bodily fluids are not recommended for use in client care areas.

5.1.17 Discontinuation of contact precaution

Isolation with Contact Precautions may be discontinued when the client has had at least 48 hours without diarrhoea and has had a formed or normal stool for that client

5.1.18 Follow up screening

After treatment, repeat *Clostridium difficile* testing is **not** recommended if the clients' symptoms have resolved. Clients should be retested if they redevelop diarrhoea. Once a client has no diarrhoea, they should be allowed to socialise as usual and participate in therapeutic and group activities.

5.1.19 Transfer of clients

- The movement and transport of the isolated client with CDAD should be limited to essential purposes only.
- A client with a history of *Clostridium difficile* infection who is no longer symptomatic may be transferred from a hospital to a long term care facility.
- Communication regarding the client's status prior to discharge from hospital is essential in order to facilitate appropriate ongoing medical management and infection control measures.

5.1.20 Management of clients with a history of CDAD in their own home

Health care workers in the community may be involved in the care of people who have/recently had *Clostridium difficile* infection.

- Clients who test positive for *Clostridium difficile* toxin but who do not have symptoms should be allowed to socialise as usual and participate in normal activities and family life.
- Standard Precautions should be used for all clients
- Family members and HCWs should wash their hands with soap and water after assisting with personal care.
- Disposable gloves and aprons should be worn by a carer when attending to a client who has diarrhoea.

- Clients should wash their hands with soap and water and dry them after using the lavatory, before preparing food and before eating.
- The client should be facilitated and encouraged to maintain good personal hygiene standards
 - Personal items such as face cloths and towels should not be shared
 - If possible, clients should avoid using the same toilet as other family members.
 - If this is not feasible, after an episode of diarrhoea, the bathroom should be cleaned first with detergent and water and then disinfected with a mixture of bleach and water as instructed on the container. Special attention should be paid to sink taps, flush handle, toilet seats and lastly the toilet bowl.
 - The client's room or areas of the house occupied by the client should be cleaned regularly with detergent and water. Particular care should be paid to hand contact areas. Surfaces soiled by diarrhoea should be cleaned first and then disinfected as above. Care should be taken to avoid damaging soft furnishings, carpet and fabrics with bleach.
- Waste soiled with diarrhoea e.g. incontinence wear, should be disposed of in a safe manner i.e. seal waste bag so that there is no possibility that there the bag could leak or that the outside of the bag would become contaminated (it should be disposed of as health care risk waste (yellow bag).
- Soiled laundry should be machine washed separately from other washing on the hottest wash cycle suitable for linen and clothing. Check manufacturer's instructions.
- Clients and their families should receive the client information leaflet (Appendix 10).

5.1.21 Notification of Infectious disease

***Clostridium difficile* – associated disease (CDAD)** is a notifiable disease under the infectious disease regulations 2003. A medical practitioner and a clinical director of a diagnostic laboratory on suspecting or identifying a case of CDAD are obliged to notify the Medical Officer of Health in the Department of Public Health. Outbreaks of infection should be notified to the Medical Officer of Health in the Department of Public Health.

An outbreak is defined as the occurrence of two or more epidemiologically linked CDAD cases over a defined period agreed locally, taking account of the background rate or where the observed number of CDAD cases exceeds the expected number.

References

1. Health Protection Surveillance Centre (2008). *Surveillance, Diagnosis and Management of Clostridium difficile- associated disease in Ireland*. *Clostridium difficile* Sub – Committee. Health Protection Surveillance Centre.

5.2 Meticillin Resistant *Staphylococcus aureus* (MRSA)

5.2.1 Introduction

Approximately 30% of the population carry the organism *Staphylococcus aureus* (*S. aureus*). This is a bacterium, which is normally found in the nose and on skin. Most healthy people are unaffected by it, however it does have the potential to cause infection in those with weakened or compromised immune systems. *Staphylococcus aureus* may cause skin infection (impetigo and folliculitis) or more serious infections such as abscesses, pneumonia, osteomyelitis, sepsis, endocarditis and meningitis. Like many bacteria, MRSA can cause infection in almost any part of the body.

MRSA (Meticillin Resistant *Staphylococcus aureus*) is a resistant strain of *S. aureus*. It is transmitted in the same way, and causes the same range of infections as other strains of *S. aureus*, however it has developed resistance to the more commonly used antibiotics such as penicillin's. Infections caused by MRSA can be treated with antibiotics but the range of effective antibiotics available to treat MRSA infection is limited.

Increasingly there are a number of individuals in the community who have acquired MRSA. However, MRSA poses a greater risk to clients undergoing care in acute hospitals than to people cared for in the community or in long term care facilities. This is because clients undergoing care in acute hospitals may be more susceptible to infection because they have a wound or undergo invasive procedures and/or surgery.

When a person's natural infection defence mechanisms are breached, the risk of infection with bacteria such as MRSA increases. This can occur where there is a break in the skin (e.g. through a surgical wound, gastric feeding tube, tracheostomy, urinary catheter or wound drain). When the skin is broken, MRSA may be introduced into normally sterile areas of the body and may cause infection in susceptible individuals. For that reason, additional precautions such as isolation, barrier nursing, and screening and eradication regimens may be used in acute hospitals. Similar measures are not usually indicated in community care settings where the risk of MRSA infection is substantially lower.

People affected by MRSA do not present a risk to the community at large and should continue their normal lives without restriction. Many individuals are discharged into long term care facilities or use day care facilities - this should not pose a problem to their ongoing care or that of the other residents as long as standard infection control precautions are implemented.

5.2.2 MRSA Colonisation and infection: The majority of people with MRSA are 'colonised' which is when the organism lives harmlessly on the body with no ill effects as opposed to 'infected' which is when the organism enters tissue and causes disease.

5.2.3 Colonisation: MRSA may be present in the nose and/or on the skin, skin folds, perineum and umbilicus. It may survive in these areas but does not cause infection. MRSA may colonise chronic wounds e.g. leg ulcers without causing infection.

5.2.4 Infection: MRSA enters the body and may multiply in the tissues. Clinical signs and symptoms will be present and may include inflammation, redness, swelling, pain and fever. Pus may be present at the affected site.

5.2.5 Transmission: MRSA is spread from person to person mainly via by the hands of healthcare workers. The bacterium can easily be picked up on the hands after direct client contact or contact with contaminated equipment

5.2.6 Risk Groups: MRSA is more likely to cause infection in acute care facilities such as hospitals. Generally, people in the community are at lower risk of infection. MRSA is more likely to cause infection in people with impaired immunity and where the normal infection defence mechanisms are breached (e.g. people with invasive devices such as central venous access devices, urethral catheters, tracheostomy tubes and wounds) Residents of long term care facilities can be at risk of becoming colonised with MRSA and may become a source of MRSA when transferred to an acute hospital

5.2.7 Prevention of spread: Standard infection control precautions are recommended for preventing the spread of MRSA in the community. Additional precautions are generally not required with the exception of client placement (see below).

General recommendations follow in relation to:

- MRSA in nursing and residential homes
- Advice for clients with MRSA living in their own home
- Advice for healthcare workers and carers looking after clients with MRSA living in their own home
- Wound management
- Day care facilities and Healthcare Centres
- Advice for Healthcare workers

5.2.8 Notification of infectious disease: *Staphylococcus aureus* bacteraemia (*Staphylococcus aureus* in a blood culture) is a notifiable disease under the infectious disease regulations 2003. A medical practitioner and a clinical director of a diagnostic laboratory on suspecting or identifying a case of *Staphylococcus aureus* bacteraemia are obliged to notify the Medical Officer of Health in the Department of Public Health. Outbreaks of infection should be notified to the Medical Officer of Health in the Department of Public Health.

5.2.9 MRSA in nursing and residential homes

5.2.9.1 Admission and accommodation

- Isolation rooms with isolation signs are not required. There is no need to isolate residents in their own room if they have MRSA. It is preferable although not essential for

residents who have MRSA to have a single room or be cohort nursed with other affected residents.

- Barrier nursing is not required
- MRSA is not a contraindication to admission to a long-term care facility
- Residents with MRSA and with open lesions should be in a single room if available and if this will not adversely affect the residents rehabilitation
- Residents with MRSA should not be placed in rooms with debilitated, non-ambulatory residents with wounds/invasive devices if single rooms are available or if cohorting is possible.
- Staff of the receiving community facility should be informed in advance that a resident has MRSA
- Residents may share a room with another resident with MRSA.
- Residents with MRSA should be allowed to join other residents in communal areas for group or therapeutic activities, any wounds should be covered.

5.2.9.2 Hand hygiene

- As per standard precautions.
- Appropriate hand hygiene facilities should be accessible i.e. clinical wash hand basins , liquid soap dispensers, paper towels etc
- Hand hygiene may be performed using liquid soap and water or alcohol hand rub (if hands not visibly dirty)

5.2.9.3 Personal protective equipment

- Gloves and aprons are not routinely required when caring for people with MRSA. Gloves should be worn for anticipated contact with blood, body fluids, invasive devices, non-intact skin, mucous membranes, and contaminated waste/linen/equipment in line with standard precautions
- Aprons should be worn where there is a risk of splashing the clothing with blood or body fluids in line with standard precautions
- Facemasks are not required for routine care of a person with MRSA

5.2.9.4 Transportation, transfer and discharge of clients

- Ambulance personnel and general transport staff should use standard precautions for all clients. Additional measures are not required in the community for MRSA cases.
- If a client is to be re-admitted to hospital the receiving ward/unit should be made aware that the client has had MRSA in the past. This will ensure that the hospital can implement appropriate infection control precautions.
- If a client is being transferred the receiving care facility should be made aware of the residents MRSA status if known.

5.2.9.5 Education

- Clients found to be colonised or infected with MRSA should be informed of this. The client and their visitors should have MRSA explained to them.

5.2.9.6 Environmental hygiene

- Damp dusting and vacuuming should be carried out daily as normal.
- Baths should be cleaned after use (between residents) as normal.
- Cleaning should be carried out using warm water and detergent, disinfection of surfaces is generally not required. If disinfection is carried out, surfaces must always be thoroughly cleaned first.

5.2.9.7 Respiratory hygiene

- As per standard precautions

5.2.9.8 Linen

- Individuals with MRSA do not need to have their laundry washed separately. If possible a biological pre-wash or detergent should be used with the hottest temperature suitable for the fabric.
- Clothing or bedding unsuitable for machine washing can be dry cleaned
- The process of washing, tumble-drying and ironing will generally be sufficient to destroy MRSA.

5.2.9.9 Cutlery and crockery

- Cutlery, crockery should be washed in a dishwasher – this is a form of thermal disinfection. Additional measures are not required. If a dishwasher is temporarily unavailable these items may be washed with hot water and washing up liquid.
- Disposable crockery/cutlery is not required.
- Chemical disinfection with bleach is not required. .

5.2.9.10 Waste

- Healthcare risk waste should be dealt in line with national waste segregation guidelines. Additional measures are not required.

5.2.9.11 Client care equipment

- Equipment should be cleaned between residents and when soiled with detergent and hot water. Chemical disinfection is generally not required.
- Residents requiring hoists or slings for moving and handling should have designated equipment for the duration of their stay. Fabric hoists should be laundered when soiled and prior to reuse on another resident.
- There should be an adequate supply of slings/hoists to enable staff to comply with infection control guidelines.

5.2.9.12 Clinical Practice

- Residents may be carriers of MRSA and not be identified as such. Standard infection control precautions should be implemented for all residents.
- Personnel should be educated regarding the appropriate management of invasive devices e.g. urinary catheters, tracheostomies, feeding tubes etc.

- Residents should be encouraged to practice good personal hygiene and be assisted as required.

5.2.9.13 Screening for MRSA

- Routine screening for MRSA is not indicated
- Screening of hospitalised clients prior to discharge to a long-term care facility is not indicated.
- Routine screening of healthcare workers/carers is not recommended
- Normal microbiological testing should be performed on clients in whom infection is suspected

5.2.9.14 Visitors

- Visitor restrictions are not required

5.2.9.15 Eradication (decolonisation) of MRSA carriage

MRSA decolonisation refers to the use of topical agents such as nasal ointment and body wash/shampoo, to eradicate nasal and skin carriage of MRSA or the use of systemic antibiotics to clear persistent carriage.

- Eradication of MRSA in the community is generally not required. However, if a person is discharged from hospital with a prescribed MRSA eradication regimen, this treatment should be completed.
- When clients are discharged from hospital back into the community (including care homes) they may still be undergoing treatment for MRSA infection. This should be continued in line with the decolonisation protocol of the discharge hospital.
- Repeat treatments should not be attempted without prior consultation with the discharging hospital. Repeat treatments may be indicated if a person is awaiting elective surgery or if frequent readmissions to hospital are anticipated.
- Indiscriminate use of MRSA eradication treatment (e.g. Antimicrobial Nasal ointments) may contribute to the development of antimicrobial resistance. Prolonged use of skin antiseptics may cause skin irritation and discomfort.
- Manufacturers instructions should be followed in relation to the use of topical antimicrobial creams

5.2.9.16 Treatment of infection

- If a resident/client exhibits clinical signs of infection, medical advice should be sought and appropriate laboratory specimens should be obtained.
- Clients who demonstrate clinical signs of infection will require treatment with the appropriate antibiotics. The agent used will depend on the site of infection.
- Advice can be obtained from a Clinical Microbiologist.
- Specific antibiotics are available to treat clinical infection with MRSA.

5.2.9.17 Advice for Clients with MRSA living in their own home

People with MRSA do not present a risk to the community and should continue their normal lives without restriction.

- Isolation is not required
- Normal social interaction with relatives and friends both inside and outside the home is recommended.
- The use of specific disinfectants for environmental surfaces is not required. Household cleaning should be performed in the usual manner.
- Clothing and linen should be dealt with in the usual manner, there are no specific measures required.
- Persons with a history of MRSA should inform their hospital if they are being admitted.

5.2.9.18 Advice for healthcare workers and carers looking after clients with MRSA living in their own home

- Standard infection control precautions should be followed for client care activities
- Cuts or breaks in the skin of carers should be covered with an impermeable dressing
- Clients should be informed that there is little risk of transmitting MRSA to healthy people who are at low risk of developing infection.
- Eradication of MRSA carriage in the community is generally not required.
- Good hand hygiene practice is the most important infection control measure. Hand hygiene should be performed after physical contact with the client and before leaving the home.
- Linens should be changed and washed if they are soiled and on a routine basis.
- The client's environment should be cleaned, using standard detergents, routinely and when soiled with body fluids.
- Clients may attend local health care centres for wound dressings.
- Clients with MRSA do not need to be scheduled last on a visiting or dressing list.

5.2.9.19 Wound management

- Routine microbiological screening of wounds is not recommended
- Wound swabs for bacterial culture and susceptibility should be obtained if there are clinical signs of infection. On receipt of the specimen result it is important to remember that the result should not be interpreted in isolation, but used in conjunction with other clinical findings. If in doubt, clinical advice should be sought from the laboratory that processed the specimen.
- Wound assessment should be performed to differentiate between colonisation and infection. Most chronic wounds are colonised with bacteria, the identification of MRSA in a wound swab does not necessarily indicate that the wound is infected.
- Antibiotic treatment is generally not recommended for colonised wounds
- Wound management should be carried out as per standard procedures to promote wound healing. There are no specifically recommended dressings or topical solutions for MRSA colonised/infected wounds
- Expert wound management advice should be sought if a wound remains infected or if healing is delayed.

5.2.9.20 Day care facilities and Healthcare Centres

- People with MRSA should not be excluded from local day care facilities or community health care centres.

5.2.9.21 Advice for Healthcare workers

- There is very little risk of infection for normal healthy members of staff
- Standard Infection Control Precautions should be implemented with all clients
- Staff members should cover any cuts or abrasions on their skin.
- Screening of staff for MRSA carriage is generally not recommended.

References

1. SARI Infection Control Subcommittee (2005). *The control and prevention of MRSA in hospitals and in the community*.

5.3 Scabies

5.3.1 Description: Scabies is a parasitic infestation of the skin caused by the *Sarcoptes scabiei* mite. Scabies is more prevalent in children and young adults but any age group can be affected. It has been associated with outbreaks of infection in hospitals, residential and nursing homes.

5.3.2 Symptoms: The female scabies mite tunnels in the skin and lays eggs. The eggs hatch into mites after a few days. Mites can infect the face, neck and scalp in young children, the elderly and the immunocompromised. There may be no signs of infection for 2-4 weeks after exposure when an allergy to mite saliva and faeces develops. Symptoms of infection include:

Itchy rash: A symmetrical rash associated with intense itching, particularly at night. The rash consists of small red papules which can appear on any part of the body.

Burrows: Burrows may be visible in the webs of the fingers and on the wrists and elbows.

5.3.3 Secondary infection: Scratching sometimes causes skin damage. In some cases the damaged skin becomes infected by bacteria causing a secondary skin infection.

In classical scabies about twelve mites are present on the body at any given time but where there is impaired immunity larger numbers of mites may be present and skin scaling can occur. This condition is known as 'Norwegian', 'atypical', or 'crusted' scabies. The usual severe itching may be reduced or absent in Norwegian scabies.

5.3.4 Incubation period and infectivity: Usually symptoms develop 2-4 weeks post exposure to a case. People who have been previously infested develop symptoms 1-4 days after re-exposure. Spread of infection stops after the first application of treatment for scabies.

5.3.5 Spread of Infection: Classical scabies is transmitted by direct skin to skin contact. Norwegian scabies is more infectious and transmission can occur via skin scales on bedding, clothing and upholstery.

5.3.6 Diagnosis: Scabies is frequently misdiagnosed but skin scrapings can be examined under the microscope for mites, eggs or faeces. A clinical diagnosis of scabies (e.g. by a GP or dermatologist) should be made before treatment is started. This is particularly important where treatment of contacts is to be undertaken

5.3.7 Prevention: Prevention of scabies depends on early detection and prompt treatment.

5.3.8 Notification of Infectious Diseases: Individual cases of scabies are not notifiable however outbreaks of infection should be notified to the Medical Officer of Health in the Department of Public Health.

5.3.9 Treatment: The usual treatment is a scabicide topical agent containing permethrin or malathion. This may be purchased over the counter in pharmacies or by prescription. The manufacturer's instructions should be followed. Children should stay off school until the first application of treatment has been completed.

All the skin of the body (including the back, soles of the feet, between fingers and toes, under fingernails, scalp, neck, face, ears, and genitals) should be treated.

An adult needs *at least* 30 g of cream or 100 ml of lotion to cover the whole body.

Cream or lotion should be applied to cool dry skin (not after a hot bath).

The cream or lotion should be left on for the recommended time. This may be between 8 and 24 hours.

The cream or lotion should be reapplied to areas of the body that have been washed during the treatment period e.g. the hands.

Clothes, towels, and bed linen should be machine washed (at 50 degree Celsius or above) after the first application of treatment. This is to prevent re-infestation and transmission to others. Items that cannot be washed can be set aside and not used for 7 days.

It is normal to take up to 2-3 weeks for the itch to resolve after treatment. A soothing antipruritic cream may help until the itch eases.

Medical advice should be sought if the itch persists longer than 2-3 weeks after treatment. It may be necessary to consult a dermatologist in some cases, e.g. where the diagnosis is uncertain or the problem persists.

5.3.10 Management of contacts: All household members and sleeping / sexual partners of the affected person should be treated even if they have no symptoms. Cases and contacts should be treated at the same time.

5.3.11 Infection Control measures: Standard and contact precautions are recommended for clients who have scabies

Clients with scabies should be accommodated in a single room. Aprons and gloves should be used for client contact.

Control measures should be maintained until the client has been treated with a recommended scabicide preparation.

5.4 Hepatitis A Infection

5.4.1 Description: Hepatitis A infection is an acute viral infection of the liver.

5.4.2 Symptoms: Infection usually occurs in children either without symptoms or as a mild illness. Onset of illness in adults (in non-endemic countries) is abrupt with fever, malaise, anorexia, nausea, abdominal discomfort followed in a few days by jaundice. Illness may be mild lasting 1-2 weeks or more severe lasting several months. Illness severity increases with age. In general most people recover without recurrence or long term sequelae. Unlike the other hepatitis viruses (B & C), chronic infection does not occur.

5.4.3 Incubation period and infectivity: The incubation period is 28-30 days (range 15-50 days). The infectious period is from 2 weeks before the onset of symptoms until one week after. Children may excrete the virus for longer. Immunity to previous infection is life long. Chronic shedding of the virus in faeces does not occur.

5.4.4 Spread of infection: Spread is person to person by the faecal oral route*****, and less frequently through food and water contaminated by human faecal material. Infected food handlers may contaminate food. Rare cases of transmission through blood or blood products have been documented. Healthcare associated transmission rarely occurs however the risks are higher for staff caring for children who may be asymptomatic. The spread of Hepatitis A is different to that of Hepatitis B & C (blood borne) so that different precautions are required.

*****Faecal oral route (contact route): contaminated faeces from an infected person is ingested by another person, this usually occurs when the infected person does not wash their hands properly after going to the toilet and they touch the environment, equipment or food with their contaminated hands

5.4.5 Diagnosis: Confirmation of acute infection: detection of Hepatitis A IgM antibodies in the blood which are usually present at the onset of symptoms and persist for around three months.

IgG antibodies persist for life and so in the absence of IgM, a fourfold rise in titres in paired samples is required for diagnosis although clients seldom present in time for this to be demonstrable.

Persistent IgG may be taken as evidence of immunity due to past infection (or vaccination)

5.4.6 Prevention

- Standard infection control precautions should be used for caring for all clients.
- Good personal hygiene, including hand washing; particularly after nappy changing (and all contact with faecal material). Supervised hand hygiene for children.
- Care with food and water when travelling in less developed countries
- Sanitary disposal of sewage
- Active immunisation with Hepatitis A vaccine for at risk groups (see recommendations in 'Immunisation Guidelines for Ireland 2010')

5.4.7 Control measures

- Standard and contact precautions are recommended for clients during the infectious period
- Clients with suspected or confirmed Hepatitis A should be isolated in a single room with ensuite toilet facilities until one week after the onset of jaundice. Isolation is essential for clients who are faecally incontinent or have an altered mental state or are unable to implement good hygiene. These clients should have a single room with toilet and hand hygiene facilities that are not shared with others.
- Cases should be educated regarding the importance of hand hygiene following toilet use. Supervision and or assistance should be offered as required.
- Bedpans/commode pans should be decontaminated in a bedpan washer after each use.
- Commode chairs and faecally soiled surfaces should be cleaned with detergent and water and then disinfected with a chlorine releasing agent at a concentration of 1000ppm.
- Healthcare workers and food handlers with acute Hepatitis A infection should be excluded from client care or food handling. Staff should notify a manager of their illness. GP advice should be sought in relation to work resumption. Generally staff can resume work 7 days from the onset of jaundice and/or symptoms. Microbiological clearance is not required for food handlers.

5.4.8 Notification of Infectious disease: Hepatitis A infection is a notifiable disease under the infectious disease regulations 2003. A medical practitioner and a clinical director of a diagnostic laboratory on suspecting or identifying a case of Hepatitis A are obliged to notify the Medical Officer of Health in the Department of Public Health. Outbreaks of infection should be notified to the Medical Officer of Health in the Department of Public Health.

References

1. Heymann, DL (2004) *Control of Communicable Disease Manual*. 18th Edition. American Public Health Association.
2. *Immunisation Advisory Committee (2010) for Ireland*. Royal College of Physicians of Ireland.

5.5 Hepatitis B virus (HBV)

5.5.1 Description: Hepatitis means inflammation of the liver. There are many viruses that can cause hepatitis, including hepatitis B (HBV). The majority of people (over 90%), if infected with HBV in adolescence or adulthood will recover completely. In some, HBV can cause chronic infection in which the client never gets rid of the virus and becomes a chronic carrier. Carriers are at greater risk of developing cirrhosis of the liver or liver cancer later in life. HBV is the most serious type of viral hepatitis and the only type for which a vaccine is available.

5.5.1 Symptoms: HBV can cause an acute disease with symptoms lasting several weeks including yellowing of the skin and eyes (jaundice); dark urine; extreme fatigue; nausea; vomiting and abdominal pain. It can take several months to a year to feel fit again. Severity ranges from no/few symptoms (cases detected only by blood testing) to life threatening acute hepatitis.

5.5.2 Incubation period and infectivity: The incubation period is 45-180 days (average 60-90 days). Some individuals are more infectious than others (as determined by serological markers). People who do not become carriers and develop natural immunity are immune for life.

5.5.3 Spread of infection: Hepatitis B virus is transmitted by contact with blood or body fluids of an infected person in the same way as other blood borne viruses e.g. HIV and Hepatitis C. However, HBV is 50 to 100 times more infectious than HIV.

HBV can be transmitted in the following ways

- unprotected sexual intercourse,
- transfusion of contaminated blood,
- contact of abraded skin or mucosa with blood/body fluids,
- sharing of contaminated medical or household equipment e.g. needles, razors, toothbrushes
- mother to baby during pregnancy, childbirth and breastfeeding.

Body substances capable of transmitting HBV include; blood and blood products; cerebrospinal, peritoneal, pleural, pericardial, synovial and amniotic fluid; semen and vaginal secretions and other body fluids containing blood and unfixed tissues and organs. Transmission occurs by percutaneous (intravenous, intramuscular, subcutaneous and/or intradermal) and per mucosal exposure to infective body fluids. HBV is **not** transmitted through normal social contact e.g. hugging, kissing, sharing cups, crockery etc.

Outbreaks of HBV infection have been associated with poor practice in healthcare settings and have been linked to procedures such as haemodialysis, the use of blood glucose monitoring devices and multi dose vials.

5.5.4 Diagnosis: Hepatitis B can be diagnosed by a blood test. The diagnosis and stage of infection may be determined from the antigen and antibody profile in the blood. Clients with detectable Hepatitis B antigen at 6 months (surface antigen (HBsAg) and/or e antigen) are considered to be chronic carriers. Specialist advice should be sought in relation to interpreting Hepatitis B serology results.

5.5.5 Prevention

Vaccination: Healthcare workers: HBV is preventable. Hepatitis B vaccination is recommended for health care workers, children (as part of the revised childhood vaccination schedule) and anyone at risk through contact with blood or body fluids (see recommendations in 'Immunisation Guidelines for Ireland 2010'). Antibody levels should be measured 2-4 months after the third vaccine dose to establish immune status. All healthcare workers who perform exposure prone procedures* must be immunised against HBV unless immunity to HBV as a result of natural infection or previous vaccination has been established or unless the vaccine is contraindicated.

The following groups at high risk of HBV infection should also receive HBV vaccine if non-immune

- Family and households contacts of acute cases and individuals with chronic infection
- Injecting drug users and their contacts
- Individuals at high risk due to medical conditions e.g. Clients in centres for persons with intellectual disability)
- Members of other high risk groups e.g. homeless people

(See recommendations in 'Immunisation Guidelines for Ireland 2010')

5.5.7 Control measures

- Standard infection control precautions should be used for all clients at all times.
- Sterile **single use** syringes/needles/lancets must be used for performing finger puncture and discarded after use. A sterile syringe and needle are essential for each person receiving skin tests, injections or venepuncture.
- Equipment likely to become contaminated with blood must be single use or decontaminated appropriately prior to reuse
- Environmental surfaces contaminated with blood should be disinfected appropriately
- Infected healthcare workers should not perform exposure prone procedures*
- Clients infected with HBV can be cared for safely in a healthcare facility by using standard infection control precautions – an isolation room is not required.

- In the event of excessive bleeding, contact precautions in addition to standard precautions are required a single room and a higher level of PPE is recommended i.e. goggles/face shield , gloves, water repellent gown
- Health care workers should be aware of first aid procedures and appropriate medical follow up for inoculation injuries involving potentially contaminated needles and/or sharps.

*An exposure prone procedure is defined as 'a procedure where there is risk that injury to the healthcare worker may result in exposure of the clients open tissues to the blood of the worker'.

5.5.8 Notification of Infectious disease

Hepatitis B (acute and chronic) is a notifiable disease under the infectious disease regulations 2003. A medical practitioner and a clinical director of a diagnostic laboratory on suspecting or identifying a case of Hepatitis B are obliged to notify the Medical Officer of Health in the Department of Public Health. Outbreaks of infection should be notified to the Medical Officer of Health in the Department of Public Health.

References

1. Heymann, DL (2004) *Control of Communicable Disease Manual*. 18th Edition. American Public Health Association.
2. Department of Health and Children (2005): *The prevention of transmission of Blood-Borne Diseases in the healthcare setting*.
http://www.dohc.ie/publications/pdf/transmission_of_blood_borne_diseases_2006.pdf
3. Immunisation Advisory Committee (2010) *Immunisation guidelines for Ireland*. Royal College of Physicians of Ireland. <http://www.dohc.ie/publications/pdf/immuguid.pdf>

5.6 Hepatitis C

5.6.1 Description: Hepatitis means inflammation of the liver. There are many viruses that can cause hepatitis, including hepatitis C (HCV). Currently there is no vaccine available for HCV.

5.6.2 Symptoms: Most people show no signs or symptoms of infection in the acute setting. Common symptoms if they occur include; nausea and vomiting, fatigue, weight loss, mild jaundice is uncommon. Approximately 80% of people infected with Hepatitis C will develop chronic infection and of these around 15-30% will develop liver cancer or cirrhosis.

5.6.3 Incubation period and infectivity: The incubation period ranges from 2 weeks to 6 months (commonly 6-9 weeks). People are infectious for one or more weeks prior to symptom onset and may persist indefinitely.

5.6.4 Spread of infection: Hepatitis C virus is transmitted by contact with blood or body fluids of an infected person in the same way as other blood borne viruses such as human immunodeficiency virus (HIV), the virus that causes AIDS. HCV virus can be spread by:

- sharing or use of contaminated equipment during injecting drug use
- receipt of infectious blood (via transfusion) or infectious blood products (for example clotting factors)
- needle stick or other sharps injuries (in particular those sustained by hospital personnel)

Less common methods of spread include sexual transmission from an infected person or an infected mother to baby at the time of birth (rare).

5.6.5 Diagnosis: Hepatitis C is diagnosed by detecting antibody to the Hepatitis C virus in the client's blood.

5.6.6 Prevention

- Standard infections control precautions should be used at all times.
- Healthcare workers who are HCV PCR positive should not perform exposure prone procedures* until they have been comprehensively assessed from an occupational, public health and medical virological perspective which should include a determination of viral load.

5.6.7 Control measures

- Clients infected with HCV can be cared for safely in a healthcare facility by using standard infection control precautions – an isolation room is not required.

- In the event of excessive bleeding, contact precautions in addition to standard precautions are required a single room and a higher level of PPE is recommended i.e. goggles/face shield , gloves, water repellent gown
- Health care workers should be aware of first aid procedures and appropriate medical follow up for inoculation injuries involving potentially contaminated needles and/or sharps.

*An exposure prone procedure is defined as 'a procedure where there is risk that injury to the healthcare worker may result in exposure of the clients open tissues to the blood of the worker'.

5.6.8 Notification of Infectious disease: Hepatitis C is a notifiable disease under the infectious disease regulations 2003. A medical practitioner and a clinical director of a diagnostic laboratory on suspecting or identifying a case of CJD or new variant CJD are obliged to notify the Medical Officer of Health in the Department of Public Health. Outbreaks of infection should be notified to the Medical Officer of Health in the Department of Public Health.

References

1. Heymann, DL (2004): *Control of Communicable Disease Manual*. 18th Edition. American Public Health Association.
2. Department of Health and Children (2005): *The prevention of transmission of blood-borne diseases in the healthcare setting*.
<http://www.dohc.ie/publications/pdf/transmissionofbloodborediseases2006.pdf>

5.7 Human Immunodeficiency virus (HIV)

5.7.1 Description: Human immunodeficiency virus (HIV) is a retrovirus that infects cells of the human immune system, destroying or impairing their function. When a person's immune system has been damaged, he or she becomes susceptible to other illnesses, particularly infections (e.g. tuberculosis and pneumonia) and cancers, many of which are not normally a threat to a healthy person. Recent advances in treatment by combination anti-*retroviral therapy* (sometimes called *Highly Active Anti-Retroviral Therapy* or *HAART*) have enormously improved survival rates.

5.7.2 Symptoms: Some people develop a 'flu like' illness lasting a week or two in the weeks/months following initial infection. The person may then remain symptom free for months or years.

The most advanced stage of HIV infection is acquired immunodeficiency syndrome (AIDS) where, due to the infection, the case has one or more of a list of otherwise usually rare illnesses. It can take 10-15 years for an HIV-infected person to develop AIDS; antiretroviral drugs can slow down the process even further.

5.7.3 Spread of infection: HIV can be transmitted in the following ways:

- unprotected sexual intercourse,
- transfusion of contaminated blood,
- contact of abraded skin or mucosa with blood/body fluids,
- sharing of contaminated needles,
- mother to baby during pregnancy, childbirth and breastfeeding.

Body substances capable of transmitting HIV infection include; blood and blood products; cerebrospinal, peritoneal, pleural, pericardial, synovial and amniotic fluid; semen and vaginal secretions and other body fluids containing blood and unfixed tissues and organs. Transmission occurs by percutaneous (intravenous, intramuscular, subcutaneous and/or intradermal) and per mucosal exposure to infective body fluids. HIV is **not** transmitted through normal social contact e.g. hugging, kissing, sharing cups, crockery etc.

5.7.4 Diagnosis: Laboratory testing for HIV consists of blood tests for HIV antibodies and HIV antigen. The majority of infected persons will develop antibodies 2-8 weeks after infection, with almost all developing antibody by 3 months. A person with HIV antibodies is infected with the virus (but transfer of mother's antibodies to new-born babies occurs even though the baby may not be infected).

5.7.5 Prevention

- Standard infections control precautions should be used for all clients at all times.
- Infected healthcare workers should not perform exposure prone

5.7.6 Control measures

- Clients infected with HIV can be cared for safely in a healthcare facility by using standard infection control precautions – an isolation room is not required.
- In the event of excessive bleeding, contact precautions in addition to standard precautions are required - a single room and a higher level of PPE is recommended i.e. goggles/face shield , gloves, water repellent gown
- Health care workers should be aware of first aid procedures and appropriate medical for inoculation injuries involving potentially contaminated needles and/or sharps.

*An exposure prone procedure is defined as ‘a procedure where there is risk that injury to the healthcare worker may result in exposure of the clients open tissues to the blood of the worker’

References

1. Heymann, DL (2004): *Control of Communicable Disease Manual, 18th Edition*. American Public Health Association.
2. Department of Health and Children (2005): *The prevention of transmission of Blood-Borne Diseases in the healthcare setting*.
http://www.dohc.ie/publications/pdf/transmission_of_blood_borne_diseases_2006.pdf

5.8 Seasonal Influenza/pandemic (H1N1) 2009

5.8.1 Description: Influenza is an acute viral illness of the respiratory system caused by the influenza virus. There are three types of Influenza virus: types A, B and C. Most illness is caused by types A and B. There is a vaccine available that changes each year depending on the most recent circulating strains of influenza virus. All healthcare workers and certain categories of clients should receive this vaccine every year.

5.8.2 Pandemic (H1N1) 2009: Pandemic (H1N1) 2009, formerly known as swine flu or influenza A (H1N1) is a new type of flu virus that contains genes from pig, bird and human influenza viruses in a combination that has not been seen before. The virus was first recognised in April 2009 in Mexico and then spread to all parts of the world. An Influenza Pandemic was declared by the World Health Organization (WHO) on June 11th 2009. The Pandemic was declared over on August 10th 2010. This new strain appears to be more infectious than seasonal influenza and affects all age groups particularly young children and those aged 10-45 years.

5.8.3 Symptoms: Clinical symptoms may include fever, headache, aches and pains, sore throat and cough. Cough may be severe and protracted. Influenza is a self-limiting illness, with recovery in 2-7 days but it can be severe particularly in immunocompromised individuals, those with a pre-existing lung condition e.g. asthma and pregnant females. The most common complication of influenza is pneumonia.

5.8.4 Incubation Period and infectivity: Influenza is highly infectious particularly in close contact environments like facilities for the elderly. The incubation period is usually two days with a range of one to four days. Cases are infectious 24 hours prior to the development of symptoms and during the symptomatic period, usually 3-5 days from the onset of symptoms in adults and up to seven days or longer in young children. Peak virus shedding occurs during the first 24-48 hours of illness and then declines. The period of viral shedding may be shortened with the use of antiviral drugs.

5.8.5 Occurrence: Influenza is an acute viral respiratory illness that occurs throughout the community. The disease may occur as isolated cases, localised outbreaks, epidemics or pandemics. It is a seasonal illness with most cases of disease reported from the middle of autumn to the end of winter each year.

5.8.6 Spread of infection: Virus laden large respiratory droplets generated by coughing and sneezing are the main source of transmission. Transmission may also occur via contaminated hands, other surfaces and via airborne transmission.

5.8.7 Risk groups: Influenza outbreaks cause significant illness in the general population. Most influenza related deaths occur among older people. Pandemic (H1N1) more commonly affects children and adults aged <45 years. Anyone in contact with influenza is

at risk of infection unless they have been vaccinated with the current vaccine formulation. Those at particular risk from the complications of influenza include:

- The elderly
- Adults with chronic debilitating disease
- Children with congenital heart disease
- People receiving immunosuppressive therapy
- Residents of long term care establishments

5.8.8 Prevention: Influenza vaccine has an efficacy rate of 70-90% in people less than 65 years. Efficacy of the vaccine is lower in the elderly (30-40%); however vaccination of elderly people is associated with a reduction in hospital admissions, serious illness and deaths. Vaccination (as per 2010 Immunisation Guidelines) is recommended for:

1. Those older than 6 months of age who are at increased risk of influenza related complications including the following groups:
 - a. Persons aged 50 and older
 - b. Those with chronic illness requiring regular medical follow-up (e.g. chronic respiratory disease including cystic fibrosis, moderate or severe asthma, chronic heart disease, bronchopulmonary dysplasia, diabetes mellitus, haemoglobinopathies, chronic renal failure etc.)
 - c. Immunosuppression due to disease or treatment, including asplenia or splenic dysfunction
 - d. Children on long-term aspirin therapy (because of risk of Reyes syndrome)
 - e. Children with any condition (cognitive dysfunction, spinal cord injury, seizure disorder or other neuromuscular disorder that can compromise respiratory function.
 - f. Residents of nursing homes, old peoples homes and other long stay facilities where rapid spread is likely to follow introduction of infection
2. Those likely to transmit influenza to a person at high risk for influenza complications (including household contacts and out –of-home care givers)
3. Healthcare workers (including those working in long term care establishments and providers of home care to people at high risk) for their own protection and the protection of their clients as they are likely to come in contact with the illness.
4. Poultry workers, veterinary inspectors, agricultural workers, park rangers and those with likely contact with water fowl
5. Pregnant women in the risk groups 1b and 1c should be vaccinated before the influenza season, regardless of the stage of pregnancy.

5.8.9 Treatment: Antiviral drugs such as neuraminidase inhibitors can be used for treatment and prophylaxis during influenza epidemics. The use of these drugs is recommended when influenza is circulating in the community. Prescribers who are considering the use of antivirals should first check with the Health Protection Surveillance Centre whether or not influenza is known to be circulating in the community.

5.8.10 Control measures

5.8.10.1 Clients: Standard infection control precautions and droplet precautions are recommended for patients with suspected influenza infection. Cases in residential facilities should be **isolated or segregated** from others until at least 7 days after onset of symptoms. If there are no single rooms, affected residents can be placed in the same room/area (cohort) so long as they are separated from each other by a distance of at least 1 metre.

Cases in residential units should be isolated from other susceptible residents. Residents with known or suspected influenza like illness (ILI) should be taught about respiratory hygiene and cough etiquette (when appropriate).

Visitors should: be kept to a minimum, wear a surgical mask while in clients room, be educated on hand hygiene, putting on and taking off PPE, respiratory hygiene and cough etiquette.

5.8.10.2 Personal Protective equipment (PPE): Staff should wear a fluid repellent surgical mask and other PPE as recommended for Standard precautions when they are within 1 metre of the resident.

Higher protection respirator masks (FFP2/FFP3), goggles, long sleeved disposable gown and gloves should be worn by staff when they are performing **aerosol generating procedures (AGPs)** e.g. intubation, airway suctioning (including tracheostomy care).

5.8.10.3 Client care equipment/Instruments/devices: Dedicate client care medical devices e.g. thermometers, sphygmomanometers, stethoscopes to single client use. Use disposable equipment whenever possible otherwise ensure routine reprocessing of instruments and equipment as per standard precautions

5.8.10.4 Environmental hygiene: Only take essential equipment and supplies into the room. Thoroughly clean the environment and all client care equipment daily with a neutral detergent and a chlorine-releasing agent at 1000ppm, or 1:10 dilution of 5.25% sodium hydrochloride or equivalent.

5.8.10.5 Healthcare workers: HCWs should receive influenza vaccination annually (the trivalent seasonal influenza vaccine contains the pandemic virus strain and will provide protection against the Pandemic (H1N1) 2009 virus. HCWs with influenza symptoms should contact their occupational health department or GP for advice. Ill staff should be excluded from work, in order to prevent spread to other staff and clients.

5.8.10.6 Notification of infectious disease: Influenza is a notifiable disease under the infectious disease regulations 2003. A medical practitioner and a clinical director of a diagnostic laboratory on suspecting or identifying a case of Influenza are obliged to notify

the Medical Officer of Health in the Department of Public Health. Outbreaks of infection should be notified to the Medical Officer of Health in the Department of Public Health.

References/resources

1. Heymann, DL (2004) *Control of Communicable Disease Manual*. 18th Edition. American Public Health Association.
2. Immunisation Advisory Committee (2010): *Immunisation guidelines for Ireland*. Royal College of Physicians of Ireland. <http://www.dohc.ie/publications/pdf/immuguid.pdf>
3. Health Protection Surveillance Centre. Information on Seasonal Influenza. <http://www.ndsc.ie/hpsc/A-Z/Respiratory/Influenza/SeasonalInfluenza/>
4. Health Protection Surveillance Centre. Infection prevention and control of suspected or confirmed pandemic (H1N1) 2009/seasonal influenza in healthcare settings. <http://www.hpsc.ie/hpsc/AZ/Respiratory/Influenza/SeasonalInfluenza/Infectioncontroladvice/File,3628,en.pdf>

5.9 Norovirus (winter vomiting illness)

5.9.1 Description: Winter vomiting illness is caused by Norovirus, previously known as Small Round Structured Virus (SRSV) or Norwalk-like Virus (NLV).

5.9.2 Symptoms: Illness is usually mild to moderate with clinical symptoms of nausea, vomiting and/or diarrhoea, abdominal cramps, muscle aches, headache and low grade fever. Vomiting may be sudden onset and forceful. Symptoms resolve spontaneously after 24-48 hours. Severe vomiting may lead to dehydration, particularly in the elderly and very young.

5.9.3 Incubation period and infectivity: The incubation period is generally about 24-48 hours but ranges from 10-50 hours. Cases may be infectious for up to 48 hrs after symptoms resolve.

5.9.4 Spread of infection: Noroviruses are spread primarily through the faecal –oral route, either by;

- Consuming contaminated food or water.
- Direct contact with an infected person and/or their environment

Vomiting can lead to a contaminated environment or aerosol spread. In a healthcare facility, healthcare workers and visitors who have the illness or are recovering from it can spread the virus to clients or contaminate surfaces through unwashed hand contact. Infected food handlers can contaminate food that is eaten raw (e.g. salads) or post cooking via unwashed hands contaminated by faeces.

5.9.5 Diagnosis: Diagnosis is confirmed by stool testing in a laboratory – Polymerase Chain Reaction (PCR) testing or ELISA testing. Faecal specimens should be collected as soon as possible following symptom onset and should be unformed (the specimen should take on the shape of the container). Other possible causes of diarrhoea should be ruled out so viral screening (e.g. for Norovirus), bacterial culture and susceptibility (C&S) and *Clostridium difficile* toxin testing should be requested.

5.9.6 Risk groups : Norovirus infection affects people of all ages. There are many different strains of Norovirus, and immunity is short-lived. Therefore people can get Norovirus infection more than once. Norovirus is highly infectious and spreads easily within hospitals and other residential settings. Outbreaks of Norovirus infection are frequently reported from healthcare settings, cruise ships, hotels and schools.

5.9.7 Prevention:

- Good standards of personal and food hygiene
- Good standards of infection control in healthcare facilities including adequate cleaning arrangements

- Residential clients who develop or are admitted with symptoms suggestive of Norovirus should be isolated in a single room.
- Shellfish should be cooked before consumption and fruit should be washed before eating.

5.9.8 Treatment: There is no specific treatment for Norovirus. It is important to drink plenty of fluids to prevent dehydration. Older patients may require additional fluid supplementation if they are unable to maintain an adequate oral intake e.g. subcutaneous fluid therapy. The illness is normally self-limiting lasting 24-48hrs.

5.9.9 Control measures

- Standard and contact precautions are recommended for clients in residential institutions with norovirus infection until they are 48 hours free of symptoms
- Good general standards of personal, food and environmental hygiene are recommended
- Cases in residential facilities should be isolated or segregated from others for 48 hours after their symptoms have ceased. 72 hours is used in the hospital setting. Isolation in a single room is recommended or cohorting with other clients with norovirus infection
- Hand washing, particularly after using the toilet, after dealing with someone who has been ill, after nappy changing and before eating or preparing food.
- Cleaning with detergent and water followed by disinfection (using a chlorine-releasing agent at 1000ppm, or 1:10 dilution of 5.25% sodium hydrochloride or equivalent) of contaminated surfaces immediately after an episode of illness.
- Increased frequency of cleaning, particularly of frequently touched surfaces. Surfaces should then be wiped over with disinfectant*.
- Immediately removing and washing clothing or linens that may be contaminated with virus after an episode of illness.
- Cases should avoid food preparation until 3 days after symptoms have gone
- Health/social/child care workers and food handlers should be excluded from work until 48 hours after symptoms resolve.

*Disinfectant: examples include Milton (1 in 10 dilution) or Sodium dichloroisocyanurate (NADCC) products including Acticlor, Presept or Klorsept reconstituted to a concentration of 1000 parts per million.

5.9.10 Notification of Infectious disease: Norovirus infection is a notifiable disease under the infectious disease regulations 2003. A medical practitioner and a clinical director of a diagnostic laboratory on suspecting or identifying a case of Norovirus are obliged to notify the Medical Officer of Health in the Department of Public Health. Outbreaks of infection should be notified to the Medical Officer of Health in the Department of Public Health.

References

1. National Disease Surveillance Centre (2003) National Guidelines on the management of outbreaks of Norovirus infection in healthcare settings. Health Protection Surveillance Centre, Dublin.
<http://www.hpsc.ie/hpsc/A-Z/Gastroenteric/Norovirus/Publications/File.2109.en.pdf>

5.10 Rotavirus

5.10.1 Description: Rotaviruses are the commonest cause of childhood diarrhoea. Infection usually occurs during the winter months. All age groups are susceptible to rotavirus infection, but children aged six months to 2 years, premature infants, the elderly, and the immunocompromised are particularly prone to more severe symptoms. Outbreaks of rotavirus diarrhoea are common among hospitalised infants, young children attending day care centres and elderly persons in nursing homes.

5.10.2 Symptoms: Symptoms include vomiting, fever and watery diarrhoea. Symptoms persist on average for 4-6 days. In severe cases, dehydration and electrolyte imbalance may occur. Persistent infection may develop in immunocompromised children. Infections that occur in the first 3 months of life or re-infection in older children are likely to be asymptomatic.

5.10.3 Incubation period and infectivity: The incubation period ranges from 24-72 hours. Cases are infectious during the acute phase when symptomatic and later while viral shedding continues. Rotavirus is not usually detectable in stool specimens after about the eighth day of infection.

5.10.4 Spread of Infection: Person to person spread via the faecal oral spread is the primary mode of spread with possible contact or respiratory spread.

- Rotavirus may be found in respiratory secretions.
- Rotavirus may be present in contaminated water.

The virus can survive for a long time on the hands, on hard surfaces and in water; it is relatively resistant to commonly used disinfectants but is inactivated by chlorine.

Spread within families and in institutions is common. Outbreaks are mostly associated with residential institutions, nurseries or hospitals.

5.10.5 Diagnosis: Rotavirus can be detected in stool specimens by electron microscopy in a microbiology laboratory. Other possible causes of gastroenteritis e.g. bacteria should be ruled out.

5.10.6 Risk groups: Rotavirus mainly affects babies and young children; however outbreaks have occurred in residential settings for older people.

5.10.7 Prevention: Rotavirus vaccine is now available however is not presently included in the Irish national immunisation schedule (2008).

5.10.8 Control measures

- Standard and contact precautions are recommended for clients in residential institutions with norovirus infection until they are 48 hours free of symptoms
- Good general standards of personal, food and environmental hygiene are recommended

- Cases in residential facilities should be **isolated or segregated** from others for 48 hours after their symptoms have ceased. 72 hours is used in the hospital setting.
- Enteric precautions may help limit spread in households and childcare and residential settings.
- In childcare settings children should have clothing to cover their nappies.
- Symptomatic children aged less than 5 years should be excluded from nurseries, nursery schools, playgroups or other similar groups.
- People in risk occupations* should be excluded from work until 48 hours after the diarrhoea and vomiting have settled.
- Assistance with personal hygiene should be given to people who may find it difficult to implement good standards of personal hygiene.

***Risk occupations include:**

- Food handlers whose work involves touching unwrapped foods to be consumed raw or without further cooking.
- Staff of healthcare facilities who have direct contact or contact through serving food, with susceptible clients or persons in whom an intestinal illness would have serious consequences.

5.10.9 Treatment: No specific antiviral therapy is available. Dehydration should be corrected and prevented.

5.10.10 Notification of infectious disease: Acute infectious gastroenteritis is a notifiable disease under the infectious disease regulations 2003. A medical practitioner and a clinical director of a diagnostic laboratory on suspecting or identifying a case of acute infectious gastroenteritis are obliged to notify the Medical Officer of Health in the Department of Public Health. Outbreaks of infection should be notified to the Medical Officer of Health in the Department of Public Health.

References

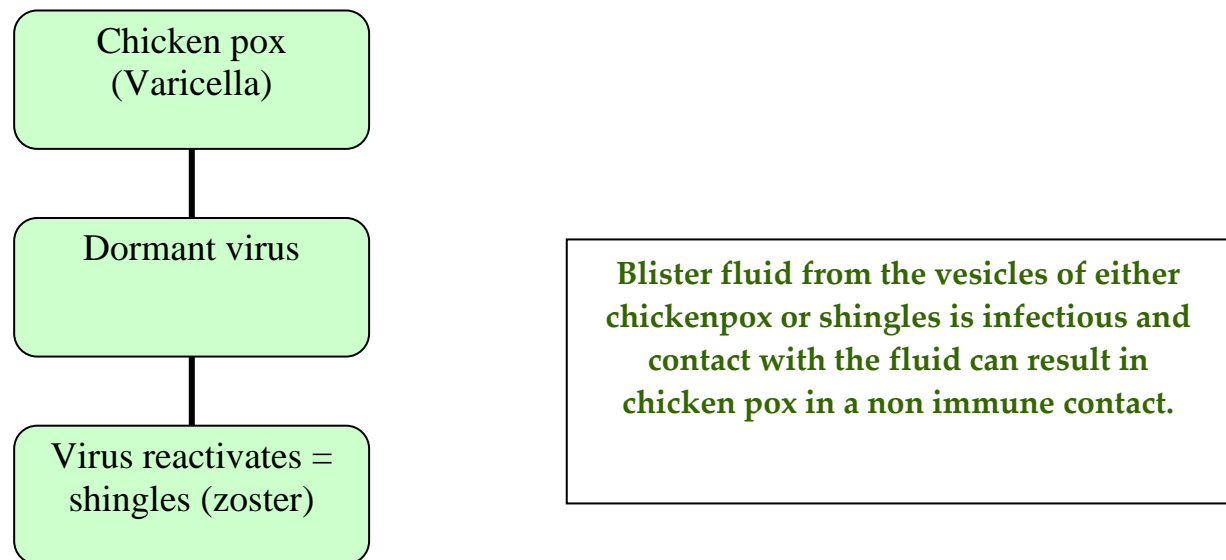
1. Heymann, DL (2004) Control of Communicable Disease Manual. 18th Edition. American Public Health Association.

5.11 Varicella Zoster Virus (Chicken pox and Shingles)

5.11.1 Description: Varicella zoster virus (VZV) causes two distinct clinical diseases:

Chicken pox (*Varicella*) is the primary infection and results from exposure of a person susceptible to the virus. This is normally a mild illness in children. Adults tend to suffer with more severe disease than children. Rarely, the disease may be fatal.

Shingles (zoster or Herpes zoster) after infection with chickenpox the virus remains dormant in the body causing no harm but can reactivate at a later stage (may be several years). Reactivation of VZV infection results in shingles. Reactivation is often associated with impaired immunity for example in old age, pregnancy, illness and/or stress. Shingles is most commonly seen in the elderly.



5.11.2 Symptoms

Chicken pox is an acute viral disease with sudden onset of slight fever, mild headache and myalgia. A rash appears which later develops into clear vesicles which finally dry into crusts. The vesicles have been referred to as 'dew-drop like' during the early stages of formation. Successive crops of vesicles develop over several days and typically spare the hands and feet. Some cases (about 5%) are sub clinical or exceedingly mild in nature. A more serious illness can develop in people who are immunocompromised, neonates, pregnant women and occasionally healthy adults.

Shingles The first sign of shingles is commonly pain in the affected area (usually the trunk), a rash of fluid filled blisters appear which may last for up to seven days or longer. A post herpetic neuralgia may develop resulting in persistent pain.

5.11.3 Incubation period and infectivity: The incubation period is 10-21 days, commonly 14-16 days. Susceptible individuals who have been in contact with a client with either chickenpox or shingles should be regarded as potentially infectious from the 10th to the 21st day after an exposure. Clients are infectious for up to two days before the period of vesicle formation and generally for 4-5 days thereafter until all vesicles are crusted. A person with a shingles rash can pass the virus to someone who has never had chickenpox, but that person will develop chickenpox, not shingles. A person with chickenpox cannot spread shingles to someone else. Shingles comes from the dormant virus inside the person's body (from their primary chicken pox infection), not from an outside source.

5.11.4 Occurrence: Acute VZV infection occurs worldwide with about 95% of people having been infected in early childhood. Chicken pox occurs seasonally (late winter and early spring) during which time outbreaks of infection are common.

5.11.5 Spread of infection: Chicken pox is readily transmissible, shingles less so. Chickenpox transmission is mainly person to person by airborne respiratory droplets but also by direct contact with vesicle fluid of chickenpox cases, or contact with the vesicle fluid of clients with shingles. Indirect contact occurs through articles freshly soiled by discharges from vesicles of infected persons. Scabs are not infective. VZV is one of the most infectious communicable diseases. In the household setting, secondary attack rates range up to 90% among siblings.

5.11.6 Diagnosis: Chicken pox or shingles may be diagnosed based on clinical signs and symptoms. Microbiological confirmation may be obtained by sending a microscopy slide with lesion fluid to the National Virus Reference Laboratory (the slide should be pressed onto the base of a Varicella lesion, allowed to dry and then placed in a plastic slide carrier).

5.11.7 Risk groups: Susceptible people are those without immunity to the virus, i.e. no history of having had the disease and no history of vaccination for the disease. Those at higher risk for severe disease and complications include:

- infants less than one month old
- pregnant women
- immunosuppressed individuals including those with haematological malignancies, on chemotherapy, high dose steroids or with HIV infection.

5.11.8 Prevention – Healthcare workers

- Health care workers should be aware of their immunity to VZV. People with a known history of chicken pox or shingles are highly likely to be immune. Where there is any doubt about previous infection or immunisation an antibody level should be

determined. This consists of a blood test to detect serum antibodies to VZV after natural infection (not immunisation).

- Immunisation for VZV is recommended for non immune HCWs, particularly for non immune women before pregnancy and for non immune carers of immunosuppressed people.
- HCWs (particularly pregnant women) who are unsure of their immune status should seek prompt medical advice if they have been exposed to VZV.
- Healthcare workers (especially pregnant women) should not have direct contact with clients infected with VZV unless they have a definite history of chicken pox or serological evidence of previous infection.
- HCWs with chicken pox/shingles should be excluded from work until deemed non infectious.

5.11.9 Control measures - Clients

Chickenpox: Standard infection control precautions **and droplet precautions** should be used for all clients during the infectious period

- Clients with chickenpox should be **isolated** (in a single room with the door kept closed) **or segregated** from other non-immune clients until the vesicles are dry and crusted.
- Masks are not completely effective in preventing transmission, so susceptible persons (staff and visitors) should avoid contact with clients with chicken pox or shingles while they are infectious.
- In the event that non-immune staff must enter the room, they should wear a fluid repellent surgical mask and other PPE as recommended for Standard precautions

Shingles: Clients with shingles generally do not require a single room as long as skin lesions are covered by their clothing. Clients who have shingles with facial lesions should ideally be cared for in a single room until considered non infectious.

- People with shingles and chicken pox should be advised to:
 - Avoid pregnant women (if they cannot recall having had chickenpox), immunocompromised people, and babies younger than 1 month of age (unless it is their own baby, who will have maternally-derived antibodies against the virus).
 - Keep the rash clean and dry to reduce the risk of bacterial super infection.
 - Avoid use of topical antibiotics and adhesive dressings, as they may cause irritation and delay rash healing.
 - Seek medical advice if there is an increase in temperature, as this may indicate bacterial infection.
 - Avoid work, school, or day care if the rash is weeping and cannot be covered. If the lesions have dried/crusted or the rash is covered (for shingles), avoidance of these activities is not necessary.

- Routine reprocessing of instruments and equipment and routine cleaning of the environment should be carried out.

5.11.10 Varicella vaccine: Varicella vaccine is a live attenuated vaccine. Two doses are required 4 weeks apart. The vaccine is recommended for the following risk groups:

- Non immune healthcare workers
- Laboratory staff exposed to Varicella virus through their work
- Health susceptible close contacts of immunosuppressed clients
- Children with asymptomatic/mildly symptomatic HIV infection should be considered
- Certain categories of immunosuppressed clients (under hospital supervision)
- Children in residential units for severe physical disability
- Women of children bearing age without a history of varicella infection

5.11.11 Varicella-zoster immunoglobulin (VZIG)

VZIG contains specific antibodies against varicella zoster virus. It can be given to at risk non immune individuals ideally within 96 hours of exposure to varicella infection. VZIG does not always prevent the infection developing but it will diminish the severity of illness.

See **2010 Immunisation Guidelines** for further information

Table: Chicken pox and Shingles overview

	Chicken pox (Varicella)	Shingles (Zoster)
Infection type Seen in	Primary Children	Recurrent Elderly people

5.11.11 Notification of infectious disease: Individual cases of chicken pox or shingles are not notifiable but all outbreaks of infection should be notified to the Medical Officer of Health in the Department of Public Health.

References

1. Heymann, DL (2004) *Control of Communicable Disease Manual*, 18th Edition. American Public Health Association.
2. Immunisation Advisory Committee (2010) *Immunisation guidelines for Ireland*. Royal College of Physicians of Ireland:
<http://www.hpsc.ie/hpsc/A-Z/VaccinePreventable/Vaccination/Guidance/File,3066,en.pdf>

5.12 Extended Spectrum Beta Lactamase (ESBL) producing bacteria

5.12.1 Description: *Extended Spectrum Beta Lactamase* (ESBL) producing bacteria are of importance because they can cause infections that are difficult to treat. These bacteria have become resistant to certain antibiotics and can cause infections that can only be treated by a limited number of antibiotics. These bacteria have become resistant to beta-lactam antibiotics, by their ability to produce an enzyme (*beta-lactamase*) which can break down antibiotics such as penicillin's and cephalosporin's. ESBL producing bacteria are also able to transfer these resistance enzymes to other bacteria. The bacteria may also be resistant to other antibiotics such as amino glycosides (e.g. gentamicin and tobramycin) and quinolones (e.g. ciprofloxacin). The most common ESBL producing organisms include *Klebsiella species*, *Enterobacter species*, *Acinetobacter species* and *Escherichia coli*.

5.12.2 Spread of infection: People colonised or infected with ESBL-producing bacteria are usually in hospital, particularly in intensive care units, and are likely to have underlying medical conditions (for example, a chronic illness such as diabetes) or have taken a lot of antibiotics. ESBL-producing bacteria can be spread from patient to patient on the hands of healthcare workers, on equipment or from the hospital environment.

5.12.3 Risk groups: Most infections occur in people with other underlying medical conditions who are already very sick, and in elderly people. Patients who have been taking antibiotics or who have been previously hospitalised are mainly affected.

5.12.4 Illness caused by ESBL-producing *E. coli*: ESBL-producing bacteria cause the same types of infections as other strains of bacteria. Any of these bacteria can cause wound infection, urinary tract infection, bloodstream infection and so forth. *E. coli* commonly cause urinary tract infections (UTI's) in hospitalised patients as well as those treated in the community.

5.12.5 Treatment: Infections caused by ESBL-producing bacteria can be treated with antibiotics, but the choice of antibiotics is limited because these bacteria are resistant to many commonly-used antibiotics.

5.12.6 Control measures

- Standard infection control precautions should be used for all patients - gloves and gowns should be used for contact with uncontrolled secretions, pressure sores, draining wounds, stool incontinence, and ostomy tubes/bags.
- Good hand hygiene and regular environmental cleaning reduce the risk of ESBL-producing *E. coli* being spread from patient to patient.
- Patients should be allocated their own specific equipment e.g. commode (only if required), moving and handling sling and wash bowl.
- Antibiotics should be prescribed only when needed, in the right dose, for the right duration, to reduce the chances of bacteria becoming resistant. Use of the ICGP antibiotic prescribing guidelines is recommended (see references)

- Urinary catheters should be removed as soon as they are no longer required. Indwelling urinary catheters should be managed in accordance with infection control guidelines.
- Urinary tract infection should be treated with appropriate antibiotic therapy. Ideally a midstream specimen of urine should be obtained before treatment is commenced. Laboratory results should be obtained as soon as available to ensure that the resident is on appropriate antibiotic therapy.
- In long-term care facilities in the community patients known to be colonised or infected with ESBL producing bacteria should not share a bedroom with residents with invasive devices or wounds.
- Hospitalised patients with ESBL infection may require isolation in a single room.

References

1. Health Protection Agency (2005). *Investigations into multi drug resistant ESBL- producing Escherichia coli strains causing infections in England*: http://www.hpa.org.uk/static/publications/2005/esbl_report_05
2. Health Protection Surveillance Centre: *ESBL producing E coli fact sheet*: <http://www.ndsc.ie/hpsc/A-Z/Other/ESBL/Factsheet/>

5.13 Vancomycin Resistant Enterococci (VRE) or Glycopeptide Resistant Enterococci (GRE)

5.13.1 Description: VRE stands for *Vancomycin resistant Enterococci* (also referred to as GRE – *Glycopeptide Resistant Enterococci*). *Enterococci* are bacteria that may be found in the gastrointestinal tract of healthy individuals. VRE are strains of *Enterococci* that have developed resistance to some antibiotics. These antibiotics may include glycopeptides (*vancomycin* and *teicoplanin*), aminoglycosides, and ampicillin.

VRE can affect people in two different ways, colonisation or infection. When a person carries VRE as part of their body's normally present bacteria (also known as their normal flora) without symptoms, the person is said to be colonised. If a person has an infection that is caused by VRE (such as a blood stream infection), the person is said to be infected. Most patients with VRE are colonised rather than infected.

5.13.2 Clinical manifestations: *Enterococci* colonise the bowel of most people. There are several species of *Enterococci* but *Enterococcus faecalis* and *Enterococcus faecium* are the most common. Most people who carry *Enterococci* don't suffer any ill effects. *Enterococci* can cause a range of different infections including:

- Wound infections
- Urinary tract infections
- Infections of the abdomen and pelvis
- Infections in the bile duct (Cholangitis)
- Heart valve infection (endocarditis)
- Bacteraemia (infection of the blood)

5.13.4 Spread of infection: Because *Enterococci* are part of the normal flora of the gastrointestinal and female genital tracts, most infections with these microorganisms have been attributed to the patient's own flora. People who have been previously treated with glycopeptide antibiotics (*vancomycin* or *teicoplanin*) are at greater risk for developing VRE. VRE can also be spread from person-to-person by direct patient-to-patient contact, or indirectly on health care workers' hands, or on contaminated environmental surfaces and patient-care equipment. VRE does not cause diarrhoea but colonised or infected patients who have diarrhoea (for whatever reason) are likely to contaminate their immediate environment with VRE.

5.13.5 Risk groups: Hospitalised patients are most at risk of infection with VRE, especially patients who have:

- recently taken vancomycin or other antibiotics (including cephalosporin's, ciprofloxacin, aminoglycosides, clindamycin and metronidazole) for an extended period
- impaired immune systems (e.g. due to cancer or chemotherapy)
- spent long periods in hospital
- undergone surgical procedures particularly abdominal or chest surgery

- a long-term indwelling catheter (e.g. intravenous or urinary catheters)
- stayed in intensive care, renal and/or haematology/oncology units.

VRE has been associated with outbreaks of infection in hospital settings.

5.13.6 Control measures

- Standard Precautions should be applied for all patients. Hand hygiene should be performed between each patient contact, and after removal of gloves.
- Patients in acute hospitals may require additional precautions, including isolation in a single room, depending on individual risk factors and the ward/unit in which they are accommodated.
- Additional precautions are generally not indicated for patients in long term care facilities or in the community. Standard infection control precautions should be used at all times.
- If a patient is transferred to another hospital or healthcare institution, the receiving clinical staff should be informed of the patients VRE carriage status.

5.13.7 Treatment: Patients who are colonised with VRE do not generally require antibiotic treatment. Patients who develop clinical signs and symptoms of infection should be medically assessed and treated appropriately.

References

1. Cookson BD, Macrae MB, Barrett SP, Brown DFJ, Chadwick C, French GKL, Hatley P, Hosein IK, Wade JJ. (2006) *Working Party Report: Guidelines for the control of glycopeptide-resistant Enterococci in hospitals*. Journal of Hospital Infection Vol. 62 p.p. 6-21.

Section 6: Invasive procedures and devices

- **Central venous access device management**
- **Peripheral intravenous cannula management and insertion**
- **PEG feeding system management**
- **Oropharyngeal suctioning: process and equipment**
- **Management of urethral and suprapubic catheters**
- **Fingerstick blood glucose testing**

6.0 Invasive Procedures and Devices

6.1. Central Venous Access

Key points

- Antiseptic hand hygiene before all maintenance and access procedures
- Review need for the CVAD daily
- Change dressings every 7 days or sooner if moist or non intact
- Disinfect hub with Chlorhexidine gluconate 2% in 70% alcohol before each use
- Use 2% Chlorhexidine gluconate in 70% isopropyl alcohol for skin disinfection prior to CVAD insertion and during dressing changes.

Central Venous Access Devices (CVCs) include catheters which provide direct access to the central venous blood vessels for the administration of medication, fluids, and nutrition and blood components or for therapeutic procedures such as haemodialysis.

Device types include:

- Non-tunnelled catheters, which are designed for short or intermediate term access. These include standard single and multilumen lumen central lines and peripherally inserted central catheters (PICC lines).
- Externally tunnelled catheters that are designed for long-term or at-home use. These devices may be used when continuous or frequent access is required, when high flow rates are needed, as for chemotherapy, haemodialysis, and when patients are particularly adverse to frequent needle sticks.
- Totally implantable devices, or subcutaneous ports, which are implanted in the chest wall or upper extremity for long-term, intermittent use e.g. for clotting factor administration in haemophiliacs

These guidelines apply to care in the community of all adults and children with CVCs that are being used for the administration of fluids, medication, blood components and/or total parenteral nutrition. They should be used in conjunction with Standard Precautions.

Individual hospitals have different policies for CVC management and ongoing care. Guidance on specific CVC care should be sought from the hospital where the CVC was inserted.

6.1.1 Education of healthcare workers and patients

- Only trained and competent healthcare staff or those under appropriate supervision should be allowed to manipulate a patients' CVC in the community.
- Healthcare staff should receive training on all aspects of CVC care and management
- Prior to discharge from hospital, patients and their carers should be taught any techniques they may need to use to prevent infection and safely manage a CVC.
- All patients with a CVC should have a patient record that documents the reason for CVC placement, type of device, insertion site, care and condition of the site.

6.1.2 General asepsis

- An aseptic technique must be used for catheter site care and for accessing the system
- Hand hygiene must be performed before any handling or manipulation of a CVC - Wash using antiseptic soap and water or use an alcohol based gel.
- Hands that are visibly soiled or contaminated with dirt or organic material must be washed with soap and water before using an alcohol based gel
- Sterile gloves and aseptic technique should be used for changing insertion site dressings.

6.1.3 CVC site care

Types of dressings and frequency of changes

- The catheter site should be covered with a sterile transparent semi permeable dressing
- The CVC should be secured appropriately to minimise traction and trauma at the insertion site.
- Transparent dressings should be changed every 7 days or sooner if they are no longer intact or moisture collects under the dressing
- If a patient has profuse perspiration or if the site is bleeding or oozing, a sterile gauze dressing should be used instead of a transparent dressing
- Gauze dressings should be changed when inspection of the site is necessary or if they become damp, loosened or soiled. A gauze dressing should be replaced by a transparent dressing as soon as possible.
- Dressings used on tunnelled or implanted CVC sites should be changed every 7 days until the site has healed or unless there is an indication to change them sooner. A dressing is not required on a healed tunnelled or implanted device insertion site.

Cleaning the catheter site

- In adults and children (>2months) a single patient use application of alcoholic chlorhexidine gluconate solution (preferably 2% chlorhexidine gluconate in 70% isopropyl alcohol) should be used to clean the CVC site prior to insertion and during dressing changes and allowed to air dry. An aqueous solution of chlorhexidine

gluconate should be used where the use of an alcohol based solution is contraindicated by the product manufacturer.

- Individual single use sachets of antiseptic or single use sterile packaged antiseptic impregnated swabs/wipes/sprays should be used to clean the catheter site. Skin must be allowed to air dry before further manipulation

Antimicrobial ointments

- Antimicrobial ointments should **not** be applied to catheter sites as part of routine catheter care.

6.1.4 CVC use and maintenance

- The injection port or catheter hub should be disinfected with 2% chlorhexidine gluconate in 70% isopropyl alcohol and allowed to dry before it is used to access the system (unless contraindicated by the manufacturer)
- Preferably, 0.9% Sodium chloride should be used to flush and lock the lumens of the CVC (unless the manufacturer specifically recommends heparin sodium for some devices)
- If a multilumen CVC is used, one port should be identified and designated exclusively for total parenteral nutrition (TPN) - if TPN is required.

6.1.5 Administration sets

- Administration sets in continuous use need not be replaced more frequently than at 72 hour intervals unless they become disconnected or if a catheter related bloodstream infection is suspected or diagnosed.
- Administration sets for blood and blood components should be changed every 12 hours or according to the manufacturers instructions
- Administration sets for parenteral nutrition should be changed every 24 hours.
- Administration sets should be replaced if the CVC is changed

6.1.6 CVC removal

- The need for a CVC should be reviewed regularly and the CVC should be removed as soon as it no longer required

6.1.7 CVC associated infection

The insertion site should be inspected regularly for signs of:

- Local infection which may include redness, tenderness, induration (hardness) or discharge (pus).
- CVC related bloodstream infection which may include: fever ($>38^{\circ}\text{C}$), chills, and/or hypotension

Findings should be documented in the patient's notes.

If infection is suspected the hospital team that inserted the device should be contacted immediately for advice.

6.1.8 Care bundles

A locally adapted care bundle should be used for the management of indwelling CVCs.

6.1.9 Surveillance

- Surveillance of CVC associated infection should be carried out in healthcare facilities in line with current national guidance (see reference 1)

References

1. *A Strategy for the Control of Antimicrobial Resistance in Ireland (SARI) (2009) Prevention of Intravascular Catheter-related Infection in Ireland.* Health Protection Surveillance Centre, Dublin.
2. Pellowe CM, Pratt RJ, Harper PJ, Loveday HP, Robinson N, Jones, S, MacRae ED and the guideline development group. (2003) *Infection Control. Prevention of healthcare associated infection in primary and community care.* Journal of Hospital Infection 55 (Supplement 2) S1-127.
3. Pratt, RJ, Pellowe CM, Wilson JA, Loveday HP, Harper PJ, Jones SRLJ, McDougall C, Wilcox MH. (2007) *EPIC 2: National Evidence-Based Guidelines for Preventing Healthcare-Associated infections in NHS Hospitals in England.* Journal of Hospital Infection 655 (Supplement) S1-64.

6.2 Peripheral Intravascular catheter (PVC) management

PVC insertion has an associated risk of infection because bacteria may be introduced into the bloodstream. Intravascular catheters may be contaminated by microorganisms from the patients own skin at the insertion site. In addition, microorganisms from the hands of healthcare workers (HCWs) may be introduced via the insertion site, catheter hub or **injection port.**

6.2.1 Staff education

- Healthcare workers should be educated regarding all aspects of PVC insertion, management and infection prevention
- Only competent, trained staff (or training staff supervised by competent staff) should insert PVCs

6.2.2 PVC insertion

- Hand hygiene must be performed before any handling or manipulation of a PVC and both before and after palpating the PVC insertion site). Hands may be washed using soap and water or decontaminated using an alcohol based gel.
- Hands that are visibly soiled or contaminated with dirt or organic material must be washed with soap and water before using an alcohol based gel
- Hand hygiene should be performed prior to inserting a PVC and prior to any PVC manipulation.

- Following hand hygiene clean gloves and an aseptic technique should be used for PVC insertion. Hand hygiene should follow glove removal and sharps must be disposed of into an approved container.
- In adults and children >2 months a single patient use application of 2% chlorhexidine gluconate in 70% alcohol should be used to disinfect the skin prior to insertion. Skin which is visibly soiled should be first cleaned with soap and water prior to disinfection.
- The antiseptic should be allowed to air dry before insertion.
- Palpation of the insertion site should not be performed after the skin disinfectant has been applied.
- Following insertion the PVC should be covered with a sterile semi-permeable transparent dressing.
- The date and site of insertion should be documented in the patient's notes.

6.2.3 Care of the insertion site and hub

- Hand hygiene should be performed prior to each and every manipulation and dressing change, and prior to the preparation of intravenous medication/fluid.
- Routine dressing change is not recommended unless the dressing is no longer intact or if moisture collects under the dressing.
- The insertion site should be inspected regularly for signs of infection (redness, tenderness, induration (hardness) or exudate). Findings should be documented in the patient's notes. The PVC should be removed if infection is suspected.
- The hub/injection port should be disinfected with 2% chlorhexidine gluconate in 70% alcohol (preferred) and allowed to dry prior to accessing the cannula to administer medications or fluids.
- Patients should be advised to report any changes in their catheter site or any new discomfort to their nurse or doctor.

6.2.4 PVC and administration set changes

- PVC need should be reviewed daily and the PVC should be removed when no longer required.
- In adults PVC replacement should be considered every 72-96 to prevent phlebitis. Where peripheral venous access is limited the decision to leave the device in for longer should depend on assessment of the PVC, skin integrity, length and type of prescribed therapy.
- PVCs inserted on an emergency basis should be removed and a new PVC should be inserted in a new site if access is required.
- In paediatric patients PVCs should not be replaced unless clinically indicated (if phlebitis occurs)
- Patients transferring from other healthcare facilities with a PVC in situ should have this device removed upon arrival and preferably replaced if venous access is still required

- Administration sets should be changed immediately after administering blood or blood products. Continuous intravenous fluid administration sets should be changed every 72 hours. Administration sets should be labelled with date of due change.
- The following products should be infused within a prescribed period of time:
 - Blood products –4 hours
 - lipid emulsion only– 12 hours
 - Lipid containing parenteral nutrition fluid – 24 hours

6.2.5 PVC associated infection: The insertion site should be inspected regularly for signs of:

- Local infection which may include redness, tenderness, induration (hardness) or discharge (pus).
 - PVC related bloodstream infection which may include: fever ($>38^{\circ}\text{C}$), chills, and/or hypotension
- Findings should be documented in the patient's notes and PVC removed immediately

6.2.6 Care bundles

- A locally adapted care bundle should be used for the management of indwelling PVCs

References

1. SARI Prevention of Intravascular Catheter-related Infection in Ireland (2009) Prevention of intravascular catheter-related infection in Ireland. Health Protection Surveillance Centre, Dublin.
2. O' Grady N, Alexander M, Dellinger E et al (2002) Guidelines for the prevention of intravascular catheter-related infections. American Journal of Infection Control. Vol. 30, No. 8, pages 476-89.
3. Royal College of Nursing (2003). Standards for Infusion Therapy. Royal College of Nursing, London.

6.3 Percutaneous Endoscopic Gastrostomy (PEG) feeding management

6.3.1 Introduction


PEG feeding has become an increasingly common means of nutritional support in the community. The nutritional content of PEG feed makes it an excellent growth medium for bacteria. Contamination of the feeding system during assembly and manipulation can occur and may predispose the patient to food poisoning. Contamination of a PEG tube insertion site may result in localised infection. It is essential that contamination of the feed is avoided and that tube insertion sites are managed appropriately. These guidelines apply to adults and children and should be used in conjunction with Standard Precautions.

Individual hospitals have different policies for PEG management and ongoing care. Guidance on specific PEG tube/site care should be sought from the hospital where the PEG tube was inserted.

6.3.2 Education of patients, carers and healthcare workers (HCWs)

- Patients and carers should be educated and trained in hand hygiene and in the management of the PEG feeding system before discharge from hospital
- HCWs should be trained in PEG feeding management
- Additional training and support should be available to patients and carers for the duration of home PEG tube feeding

6.3.3 Selection of Equipment

- The system selected should require minimal handling to assemble and connections should be compatible with the patients' PEG feeding tube
- The use of three-way taps and extension tubing should be avoided where possible
- Connections that cannot be inadvertently contaminated are preferable to a system with exposed connections
- Wide bore 50ml syringes should be used to flush PEG tubes as pressure from smaller syringes may rupture the tube
- Reusable or single patient use syringes are available – these must be used in accordance with manufacturers instructions
- Items carrying the manufacturers label 'single use' or  should be used once only and then discarded
- Items marked for 'single patient use' can be used more than once on the same patient in line with the manufacturers recommendations

6.3.4 Preparation of Feeds

- Hand hygiene should be performed before feed assembly or any manipulation of the feeding system or PEG tube site.
- Sterile pre-packaged, ready-to-use feeds should be used in preference to feeds requiring decanting, reconstitution or dilution.
- The expiry date of the product should be checked prior to opening.
- If decanting or diluting feeds is necessary a designated clean area should be used to prepare the feed. Equipment dedicated for PEG feeding should be used.
- Freshly opened sterile water should be used to dilute feeds using a non-touch technique.

6.3.5 Storage of feeds

- Feeds should be stored according to the manufacturers instructions and, where applicable, food hygiene legislation.
- A stock rotation system should be used to ensure that products with earlier expiry dates are used first

- Feeds that have been manually made up or diluted (not pre packaged) should be covered, refrigerated and used within 24 hours.

6.3.6 Administration of Feed

- Refrigerated formula should be allowed to stand at room temperature for 30 minutes before administration
- Minimal handling and a non-touch technique should be used when connecting the administration set to the PEG tube.
- Ready-to-use feeds may be given for a whole administration session up to a maximum of 24 hours if sterile. Reconstituted feeds should be given over a maximum of 4 hours.
- The feeding system should be labelled with the patients' name, date and time the feed was commenced.
- Administration sets are for single use and should be discarded after each feeding session and in accordance with manufacturer's instructions. Administration sets should not be used for more than 24 hours.
- The set should be discarded if it is inadvertently contaminated or if it has to be disconnected for a period of time.

6.3.7 Quality of water in PEG feeding

- Sterile water is preferable for the purposes of flushing the feeding tube, hydration or for making up feed. Sterile water is recommended for PEG feeding uses
 - In the acute healthcare setting
 - For infants under 12 months of age
 - For all immunocompromised patients
 - For all patients fed via the jejunum
- Sterile water should be a commercially prepared product
- In the clients home cooled boiled water can be used unless the client is deemed to be immunocompromised in which case sterile water should be used
- Bottles should not be 'topped up' or reused. Once the seal on the bottle is broken the bottle should be labelled with patient name and time of opening – stored as per manufacturer's instructions and discarded after 24 hours
- Water must be patient specific and not shared

6.3.8 Care of the insertion site immediately after insertion

First 48 hours

- Obtain care and management instructions from the person who inserted the tube particularly in relation to release of fixation devices (if any)
- Treat the entry site as a surgical wound
- Keep the site clean and dry. Apply dressing if required to absorb exudate
- Use an aseptic technique for dressings – clean site with sterile normal saline (0.9% Sodium chloride)

- Observe for signs of swelling, bleeding or infection and report findings

After 48 hours

- The insertion site should be monitored for signs of infection which may include redness, swelling, soreness and discharge. Symptoms should be documented and medical advice sought if infection is suspected.
- If infection is suspected a swab should be taken from the site and sent to the laboratory for culture and susceptibility testing.
- Use clean technique after 48 hours until the tract is healed (this takes approximately three weeks)
- Follow the manufacturers of local guidelines in relation to tube type (with regard to the fixation device and tube rotation)
- The healed insertion sites should be inspected daily, cleaned with warm water and dried with clean towel.
- A dry dressing may be necessary where there is discharge from the insertion site.
- Tubes should be flushed with sterile water before and after feeding and /or administration of medication. Patients who are managing their feed in their own home may use tap water of potable (drinking) quality to flush the tube. Immunocompromised patients should flush the tube with freshly opened sterile water or freshly cooled boiled water.

6.3.9 Feed infusion pumps

Infusion pumps used to deliver PEG feed should be maintained in a clean and dry condition. Pumps should be cleaned daily and whenever visibly soiled. Pumps should be cleaned prior to reuse on another patient or before servicing or repair. Pumps can be cleaned using a damp cleaning method with warm water, general purpose detergent and clean cloths.

6.3.10 Replacement of PEG feeding tubes

PEG feeding tubes should be changed according to the manufacturer's recommendations.

6.3.11 Healthcare worker/carer health

Healthcare workers and carers should not handle Peg feeds if they have skin infections, diarrhoea or vomiting and should seek medical advice in such situations

References

1. Pellowe CM, Pratt RJ, Harper PJ, Loveday HP, Robinson N, Jones, S, MacRae ED and the guideline development group. (2003) *Infection Control. Prevention of healthcare associated infection in primary and community care*. Journal of Hospital Infection. Vol: 55 (Supplement 2) S1-127.
2. Infection Control Nurses Organisation: *PEG Feeding Infection Control Guidelines*.

3. Clinical Resource Efficiency Support Team (CREST) (2004): *Guidelines for the management of enteral tube feeding in adults*.

6.4 Oropharyngeal suctioning

6.4.1 Process

- Hand hygiene should be performed prior to performing suctioning
- Appropriate PPE should be worn for the procedure e.g. non sterile gloves and an apron +/- eye/mouth protection if splashing is anticipated
- Equipment should be discarded appropriately after use
- Hand hygiene should be performed following task completion and glove removal

6.4.2 Equipment

- Filters should be changed between patients and in accordance with manufacturers instructions
- Suction catheters and rigid oral suction tubes (yankeur) should be used in accordance with manufacturers instructions e.g. if single use – use once and discard.
- Disposable suctioning equipment is recommended for community facilities where appropriate decontamination facilities may not be available. Disposable suction jars/containers are recommended.
- If reusable suction jars are used these should be thoroughly washed and then sterilised in an autoclave after use.
- Disposable suction containers – the liner holder should be cleaned between patients and on a regular basis for long stay patients
- Used liners containing fluid should be sealed securely and disposed of in a spill proof healthcare risk waste container (see section on waste management)

6.5 Management of Urethral and Suprapubic Catheters

Key points

1. Hand hygiene before all maintenance and access procedures
2. Review need for catheter daily – is it still required?
3. Keep catheter connected to a closed drainage system.
4. Inform patients about their role in preventing urinary tract infection. Ensure meatal hygiene is performed daily.
5. Empty urinary drainage bags into a clean container when almost full – separate procedure for each catheterised patient.
6. Perform hand hygiene and wear gloves and an apron before each catheter care procedure. On procedure completion remove gloves and apron and perform hand hygiene again.

6.5.1 Introduction

Indwelling urethral and suprapubic catheters bypass the body's normal defence mechanisms and provide a route for microorganisms to enter the urinary tract and bladder. Patients with indwelling urinary catheters are at increased risk of development of urinary tract infection. The risk of infection is directly related to the length of time the catheter is in place and may be reduced by:

- only using a catheter when necessary
- using an aseptic technique at the time of catheter insertion
- appropriate catheter maintenance and drainage

Individual hospitals have different policies for - guidance should be sought from the hospital where the suprapubic catheter was inserted particularly in relation to scheduled catheter changes.

6.5.2 Assessing the need for catheterisation

- The use of urinary catheters should be limited to selected patients and left in place only as long as required.
- Urethral catheters should only be used when other methods of management have been considered.
- Intermittent catheterisation should be used in preference to an indwelling catheter if possible
- Daily reassessment of the patients need for catheterisation should be performed and the catheter should be removed as soon as possible.
- Catheter need, insertion and care should be recorded

6.5.3 Catheter insertion

- Urethral and suprapubic catheterisation should only be carried out using an aseptic technique by trained and competent healthcare workers (HCWs) or by HCWs under appropriate supervision
- Standard precautions must be used for catheter insertion and management. Antiseptic hand hygiene should be performed prior to catheterisation. An aseptic technique should be used for the procedure.
- The indication for the catheter should be recorded in the patient's records.
- Intermittent self-catheterisation should be performed using a clean procedure when performed by the client (sterile procedure if performed by HCW). A sterile lubricant for single-patient use is recommended for non-lubricated catheters.
- The smallest gauge catheter consistent with good drainage should be used. The catheter should be the appropriate length for the sex/build of the patient. The type of catheter should be appropriate for the anticipated duration of catheterisation.
- The urethral meatus should be cleansed prior to the insertion of the catheter with sterile water or saline.

- An appropriate sterile water soluble lubricant from a single use container should be used to minimise friction and trauma.
- The catheter should be changed in accordance with clinical need and in line with manufacturers recommendations
- Indwelling urethral catheters are manufactured for single use only and should not be reused.

6.5.4 Catheter maintenance

- HCWs should perform hand hygiene and wear a clean pair of non sterile gloves prior to any manipulation of the catheter. Gloves should be removed and hand hygiene performed following completion of the task.
- Carers and patients managing their own catheters should wash their hands before and after manipulation of the catheter.
- The connection between the catheter and the urinary drainage system should not be broken unnecessarily.
- Oral fluid intake should be increased (unless contraindicated).
- The meatal area and suprapubic insertion site (once healed) should be cleaned daily using soap and water. The patient should be instructed to wipe from front to back following defaecation to avoid contaminating the catheter with faecal organisms.
- Each patient should have an individual care regimen aimed to minimise the problems of blockage and encrustation. The tendency for catheter blockage should be documented in each newly catheterised patient.
- Catheter irrigation, catheter changes and/or bladder wash outs are not recommended as a means of preventing infection.
- Reusable intermittent catheters should be cleaned in accordance with manufacturer's recommendations.

6.5.6 Catheter drainage

- Indwelling urethral catheters should be connected to a sterile, closed urinary drainage/collection system or catheter valve.
- Indwelling catheters should be secured to minimise trauma
- The system of urinary drainage should be sterile and continuously closed, with an outlet designed to avoid contamination and a sampling port.
- The drainage system should be suitable for the patient's individual requirements. Care should be taken that leg bags do not cause friction or trauma to the patient's skin.
- In patients for whom it is appropriate, a catheter valve may be used as an alternative to a drainage bag.

- A link drainage system may be used to facilitate overnight drainage, to keep the original system intact (e.g. for patients using leg bags). A sterile single use night drainage bag should be used with leg bags.
- Urinary drainage bags should always be positioned below the level of the bladder. A catheter stand should be used to prevent contact of the drainage tap with the floor.
- Urinary drainage bags should be emptied when two thirds full. A separate clean receptacle should be used for each patient and contact between the drainage tap and the receptacle should be avoided. HCWs should perform hand hygiene before and after the procedure and gloves and an apron should be worn for the task. Apron and gloves should always be removed and hand hygiene performed between patients.
- In residential facilities jugs used to empty catheter bags should be decontaminated in a bedpan washer.
- In home care settings a designated jug should be used by one client only and should be washed with detergent and water and stored dry after each use. This jug should not be used for any other purpose.

6.5.7 Urine specimen taking: Catheter specimens of urine should only be taken from the designated sampling port using an aseptic technique. The sampling port should be disinfected with 70% alcohol and allowed to dry before obtaining the sample with sterile equipment. Urine samples for bacterial culture should not be obtained via the drainage port or by disconnecting the catheter from the drainage collection system.

6.5.8 Patient education: Patients should be educated about the indwelling device and the need for its insertion. The importance of not interfering with the device or the collection system should be stressed and that care should only be given by trained persons. The patient should be aware of possible signs of urinary tract infection e.g. suprapubic pain, burning, discomfort, fever, sweats and should report these to the HCW.

6.5.9 Antibiotics prophylaxis

- Routine prophylaxis with antibiotics prior to catheterisation is not recommended.
- A single dose of an appropriate antibiotic pre catheter insertion should be given to the following patients prior to catheter change or instrumentation
 1. patients at high risk of endocarditis
 2. neutropenic patients
 3. patients that developed bacteraemia following previous catheter changes

6.5.10 Removal and changing of catheters

- Catheters should be removed when no longer required
- Catheters used for long term catheterisation should be changed in accordance with manufacturers instructions

6.5.11 Surveillance

Infection control programmes should include surveillance of catheter associated infection depending on the risk profile of patients and local resources

6.5.12 Care bundles

A locally adapted care bundle should be used for the management of indwelling urinary catheters

References

1. A Strategy for the Control of Antimicrobial Resistance in Ireland (SARI) (2010) *Guidelines for the prevention of catheter associated urinary tract infection in Irish Healthcare settings - Draft for Consultation*. Health Protection Surveillance Centre.
2. Pellowe CM, Pratt RJ, Harper PJ, Loveday HP, Robinson N, Jones, S, MacRae ED and the guideline development group. (2003) *Infection Control. Prevention of healthcare associated infection in primary and community care*: Journal of Hospital Infection 55 (Supplement 2) S1-127.
3. Pratt, RJ, Pellowe CM, Wilson JA, Loveday HP, Harper PJ, Jones SRLJ, McDougall C, Wilcox MH. (2007) EPIC2: *National Evidence-Based Guidelines for Preventing Healthcare-Associated infections in NHS Hospitals in England*. Journal of Hospital Infection 655 (Supplement) S1-64.
4. Healthcare Infection Control Practices Advisory Committee (2009): *Guideline for the Prevention of catheter-associated urinary tract infections*.

6.6 Capillary (Finger stick) glucose testing

Capillary (Finger stick) testing for glucose is a procedure that may involve contact with blood or serous fluid. Patients with diabetes and HCWs can be exposed to blood borne viruses such as Hepatitis B, Hepatitis C and Human immunodeficiency virus (HIV) if precautions are not taken when dealing with blood and contaminated equipment. Outbreaks of Hepatitis B and C have been documented following exposure to contaminated blood glucose monitoring equipment.

6.6.1 Capillary glucose testing procedure

- Hand hygiene should be performed before and after client contact
- Gloves should be worn for fingerstick blood glucose testing.
- Needles, and lancets are single use items and must not be reused.
- Cotton wool and gauze used to wipe blood from a patients finger must never be reused.
- Blood stained cotton wool balls or gauze should be discarded immediately into an appropriate waste receptacle.
- Used lancets should be disposed of at point of use into an approved sharps container. Lancets should not be placed in the procedure tray.
- On completion the test strip should be discarded directly into the waste receptacle.

Hand hygiene should be performed following task completion and after removal of gloves.

- Multiple use lancet holding fingerstick devices must not be used on more than one client (these devices are intended for single patient use only) Single use devices are recommended (preferably those that retract the lancet upon puncture).
- Glucometers should be assigned to individual patients
- Where a glucometer is used for more than one person it should ;
 1. be brought to the bedside with supplies (lancets/gauze swabs) for one patient only.
 2. be cleaned and disinfected before reuse on another patient.
- Trays used to hold glucometers should be easy to clean and disinfect and should be kept clean at all times.

References

1. Morbidity and Mortality weekly Report (2005): *Transmission of Hepatitis B among persons undergoing blood monitoring in long-term care facilities* – Mississippi, North Carolina, Los Angeles County, California, 2003-2004. Vol 54(09);220-3.
2. Morbidity and Mortality weekly Report (1997): *Nosocomial Hepatitis B infection associated with reusable fingerstick blood sampling devices* – Ohio and New York City, 1996. Vol 46 (10); 217-21
3. Cornstock RD, Mallonee S, Fox JL et al (2004) *A large nosocomial outbreak of Hepatitis C and Hepatitis B among patients receiving pain remediation treatments. Infection Control and Hospital Epidemiology*. Vol 25 (7); 576-83.
4. Hoffman P, Bradley C, Ayliffe, G (2004) *Disinfection in Healthcare*. Third edition. Health Protection Agency. Blackwell Publishing, UK.
5. Lawrence J, May D. / (2003) *Infection Control in the Community*. Churchill Livingstone, UK.

Section 7: Other issues

- **Notification of infectious disease/s and outbreaks**
- **Visiting clients in their own home**
- **Food hygiene**

7.0 Other Issues

7.1 Notification of infectious disease/s and outbreaks

Some (see list below) infectious diseases are required by law to be notified to the Department of Public Health. All outbreaks of infection should be notified to the Department of Public Health regardless of whether or not the illness causing the outbreak is notifiable.

A registered medical practitioner who becomes aware or suspects that a client (s) he is attending is suffering from a notifiable disease has a legal obligation to notify the Medical Officer of Health (MOH). Similarly clinical directors of diagnostic laboratories are required to notify certain infectious diseases (see list). The Medical Officer of Health is usually the Director of Public Health or other designated Public health Doctor in the local Department of Public Health. Timely notification is important to allow appropriate action to be taken. The notifier should refer to the case definitions, including case classification, circulated by the Health Protection Surveillance Centre. Notification forms should be legible and completed in full.

In addition the MOH should be informed as soon as possible of any unusual clusters (e.g. outbreaks of infection) or changing pattern of illness that may be of public health concern.

Further information on notifiable infectious diseases can be found on the following website: The Health Protection Surveillance Centre www.hpsc.ie.

The aim of notification is to ensure prompt public health action so notifications should be submitted as soon as possible.

Notifications may be telephoned, posted or faxed to:

For Dublin North City and North Dublin:

The Director of Public Health (MOH),
Room G29,
Department of Public Health,
Dr. Steevens Hospital,
Dublin 8.

Telephone: 01 6352178 or 6352145

Fax: 01 6352103

For Cavan Monaghan and Louth Meath Areas:

The Director of Public Health (MOH),
Department of Public Health, HSE-NE,
Railway Street,
Navan,
Co. Meath,

Telephone: 046 9076412

Fax: 046 9072325

Notification forms may be requested by telephoning 01 6352145.

List of Notifiable Diseases

Infectious disease (Amendment) (No.3) Regulations 2003 (SI No. 707)

Acute anterior poliomyelitis	Leptospirosis
Acute infectious gastroenteritis*	Listeriosis
Ano-genital warts	Lyme Disease
Anthrax	Lymphogranuloma venereum
Bacillus cereus food-borne infection	Malaria
Bacterial meningitis (not otherwise stated)	Measles
Botulism	Mumps
Brucellosis	Non-specific urethritis
Campylobacter infection	Noroviral infection
Carbapenem-resistant enterobacteriaceae infection (invasive)	Paratyphoid
Chancroid	Pertussis
Chickenpox-hospitalised cases	Plague
Chikungunya disease	Pseudomonas aeruginosa infection (invasive)
Chlamydia trachomatis infection (genital)	Q Fever
Cholera	Rabies
Clostridium perfringens (type A) foodborne disease	Respiratory Syncytial virus infection (invasive)
Clostridium difficile infection	Rotavirus
Creutzfeldt Jakob Disease	Rubella
Nv Creutzfeldt Jakob Disease	Salmonellosis
Cryptosporidiosis	Severe Acute Respiratory Distress Syndrome
Cytomegalovirus infection (congenital)	Shigellosis
Dengue fever	Smallpox
Diphtheria	Staphylococcal food poisoning
Echinococcus	Staphylococcus aureus bacteraemia
Enterococcal bacteraemia	Streptococcus group A infection (invasive)
Enterohaemorrhagic Escherichia coli	Streptococcus group B infection (invasive)
Escherichia coli infection (invasive)	Syphilis
Giardiasis	Tetanus
Gonorrhoea	Toxoplasmosis
Granuloma inguinale	Trichinosis
Haemophilus influenzae disease (invasive)	Trichomoniasis
Hepatitis A (acute)	Tuberculosis
Hepatitis B (acute and chronic)	Tularaemia
Hepatitis C	Typhoid
Herpes simplex (genital)	Typhus
Human immunodeficiency virus infection	Verotoxigenic Escherichia coli infection
Influenza	Viral encephalitis
Klebsiella pneumoniae infection (invasive)	Viral meningitis
Legionellosis	Viral haemorrhagic fevers
Leprosy	West Nile Fever
	Yellow Fever
	Yersiniosis

*Clostridium difficile became notifiable under acute infectious gastroenteritis (AIG) from 4th May 2008. From 8th September, 2011, *C. difficile* was included in the list of notifiable diseases (acute infectious gastroenteritis was removed for the notifiable disease list).

References

1. Infectious Diseases (Amendment) (No. 3) Regulations 2003 9S.I. No. 707 of 2003). Irish Statute Book. Website: www.irishstatutebook.ie

Individual forms available from local department of public health or www.hpsc.ie website

7.2 Visiting clients in their own home

7.2.1 Hand hygiene

- Community healthcare workers (HCWs) should perform hand hygiene before and after contact with clients.
- HCWs should have access to a supply of disposable paper hand towels and liquid soap (in a dispenser) for use in client homes.
- HCWs should carry alcohol hand gel for use as required. Alcohol gel can be used as an alternative to hand washing with soap and water if the hands are visibly clean and free from dirt or organic matter.
- Hands that are visibly dirty should be washed with liquid soap and water.
- In situations where clean running water is not available an alcohol gel may be used to decontaminate the hands (if they are visibly clean). If the hands are soiled or visibly dirty they should first be cleaned with detergent wipes and dried prior to the application of the alcohol gel.
- Any cuts or abrasions on the hands of the HCW should be covered with waterproof dressing.

7.2.3 Personal Protective Equipment

- Community HCWs should carry an appropriate supply of personal protective equipment in anticipation of exposure to blood and body fluids.
- These should be carried in a work equipment case and should include disposable plastic aprons, non sterile disposable gloves, and eye/mouth protection (e.g. goggles and mask or fluid shield mask/visor).
- Care should be taken to perform hand hygiene before removing items or returning clean items to the work case.
- The work case should be cleaned regularly or if soiled

7.2.4 Waste disposal

- Waste segregation and disposal should be carried out in accordance with waste management regulations.
- Healthcare risk waste collection should be arranged where healthcare risk waste is generated in the clients home for example vacuum assisted and other large wound dressings

7.2.5 Equipment and supplies

- Medical supplies and client equipment should be stored in a dry area out of reach of children and pets and away from high traffic areas of the home.
- Equipment should be cleaned with detergent and water and dried thoroughly before it is transported into or out of the home. All parts of the equipment should be dismantled, where possible, to allow physical removal of all particulate and biological matter.

7.3 Food Hygiene

Unsafe practice when handling, reheating, cooking and storing food can result in food poisoning for those who consume it. Food poisoning is always unpleasant and can result in very serious illness and even death. Symptoms vary from mild diarrhoea and vomiting to life threatening illness requiring hospitalisation. Infants, pregnant women, the sick and the elderly are more susceptible to food poisoning. Food poisoning can be caused by unsafe practice when handling food or by a food handler who is ill or a carrier of a food poisoning illness.

A high standard of hygienic practices in the preparation and storage of food, together with the use and maintenance of clean kitchen areas and equipment are essential for ensuring the safety of food in private houses, community hospitals, nursing homes and residential centres.

Food and water borne illness may be caused by a number of organisms including: Salmonella, E coli, Cryptosporidium, Shigella, Campylobacter, Typhoid, Giardia, and some viruses e.g. Hepatitis A.

The spread of these organisms may occur through poor food handling and personal hygiene procedures (e.g. poor hand hygiene) or through the ingestion of contaminated food or water.

7.3.1 Legislation

By law, all food handling staff must be supervised, and trained in food hygiene in line with their responsibilities. Staff responsible for food preparation and handling should be fully aware of and comply with, regulations relating to food safety and hygiene.

Relevant legislation includes:

- The Food Safety Act 1990 and its related regulations
- General Food Hygiene Regulations (1995)
- Food Safety (Temperature Control) Regulations (1995).
- Nursing Homes Act & Regulations (which contain specific requirements in relation to Food Hygiene)
- Food Hygiene Regulations 1950 – 1989
- EC (Control of Foodstuffs) Regulations 1998
- EC (Hygiene of Foodstuffs) Regulation 1998

7.3.2 Basic Requirements for Food Safety

The following basic principles should be observed:

- All cooking utensils, eating utensils should be clean before use
- Food preparation surfaces should be cleaned with a food grade sanitiser
- All work surfaces and hand contact surfaces such as taps, handles, door handles and refrigerator handles should be cleaned regularly
- Hands should be washed after using the toilet, before touching food and after handling any raw meat or poultry. Antibacterial soap is recommended for use in food preparation areas
- Food purchased should be of good quality and should be stored, prepared, cooked and served in hygienic conditions
- Salads, raw fruit and vegetables should be washed thoroughly under running water before use
- All perishable foods should be kept refrigerated
- Foods stored in the fridge should be kept covered, if not already packaged
- Contact between ready to eat foods and raw foods should be avoided. Ideally, a separate colour coded chopping board should be used for each type of food (e.g. raw meat, cooked meat, salad/fruit, vegetables, fish, and dairy/bakery products).
- Raw meat and poultry stored in the fridge should not be allowed to drip onto salads and other ready to eat foods
- All fridges should be defrosted and cleaned on a scheduled basis. Spillages should be dealt with immediately
- Food should be stored at the correct temperature. The fridge temperature should be kept between 0 - 5° Celsius
- The freezer temperature should be kept at or below minus 18° Celsius
- Fridges and freezers should be equipped with a temperature recording mechanism. A record of daily temperature recordings should be maintained
- Only pasteurised milk and milk products should be offered to clients

7.3.3 Eggs & poultry

- Food containing uncooked or lightly cooked eggs should not be served. Eggs should be cooked or pasteurised egg products may be used as a substitute
- Eggs should be refrigerated after purchase
- Cracked or dirty eggs should not be used
- Hands should be washed before and after handling eggs and raw poultry
- Poultry should always be cooked thoroughly

7.3.4 Storage

- Raw meat and fish should be stored at the bottom of the fridge; ensuring juices do not drip on to salads and vegetables
- All sealed dry foods should be stored off the floor on shelves or in cupboards
- Open packs of food should be stored in pest proof containers

- The “use-by” dates on food packages should be checked regularly
- Once opened, foodstuffs in bottles, jars or cartons should be consumed within the time frame recommended by the manufacturer
- Every effort should be made to prevent the ingress of pests into food storage and preparation areas (See section on Pests)

7.3.5 Defrosting

- Frozen foods should be defrosted in the fridge or microwave and not at room temperature (unless specified on the packaging)
- Once food is defrosted it should not be refrozen again until it is first cooked
- Raw meat and defrosting foods should be stored in covered containers

7.3.6 Cooking

- All meat should be evenly and thoroughly cooked (until juices run clear)
- Foods must be cooked to a centre temperature of 75° Celsius for 2 minutes

7.3.7 Serving and holding food after cooking

- Food should be served immediately after cooking. If food is not served immediately, it may be kept hot at a temperature of at least 63° Celsius. Alternatively, the food should be cooled quickly and refrigerated within 90 minutes of cooking. Cooling should ideally take place in a rapid chill cabinet.
- Ready to eat foods should never be handled directly. Clean serving tongs and utensils should be used.
- The practice of reheating food should be avoided. If food is to be reheated, all parts of the food should be brought to a temperature of at least 70° Celsius. The temperature should be verified using a probe thermometer (inserted into the centre of the food). Food should not be reheated more than once.

7.3.8 Crockery and cutlery

- An automatic dishwasher incorporating a hot drying cycle is recommended. If the dishwasher is broken, crockery and cutlery should be washed in a double bowl sink. Washing with hot water and detergent should be carried out in the first bowl followed by rinsing in very hot water in the second bowl. Crockery and cutlery should be dried with disposable heavy-duty paper towel.

7.3.9 Cleaning cloths

- Disposable cleaning cloths or paper towels should be used to clean kitchen and food contact surfaces.
- If cloths are reused they should be washed after each use and laundered at least once a day at a minimum temperature of 60° Celsius and then dried. Reusable cloths should be colour coded for use in the kitchen area only.
- Cloths in contact with a raw food surfaces should not be reused

7.3.10 Staff training

Staff engaged in food preparation or handling should attend a recognised food hygiene course.

Managers or head cooks/chefs or persons in charge should undertake food hygiene training in the following areas.

- Basic food microbiology.
- Food preparation and storage.
- Personal Hygiene.
- Cleaning and disinfection.
- Pest Control.
- HACCP and Legal Requirements.

7.3.11 Food Handlers, illness and exclusions

Food handlers are obliged under the Food Hygiene Regulations 1950 Article 33 (3) to notify their line manager if they are suffering from any illness or condition that may lead to the spread of food borne illness.

Conditions which should be reported include; diarrhoea, vomiting, jaundice, fever, sore throat with fever, infected skin lesions, pus containing discharges from the eyes, ears, nose or mouth/gums.

Infections of particular relevance which should be reported are; Typhoid, Paratyphoid, Verocytotoxin-producing *E. coli* (VTEC), *Shigella*, *Salmonella*, *Staphylococcal* food poisoning and Hepatitis A

References

1. *Hygiene in the catering sector* (2007). I.S. 340:2007. National Standards Authority of Ireland.
2. Report of the Food Handlers with Potentially Foodborne Diseases Subcommittee of the NDSCs Scientific Advisory Committee: *Preventing Food borne Disease: A Focus on the Infected Food Handler*. April 2004
3. HPSC Preventing Food borne Disease: *A Focus on the Infected Food Handler* 2003).
4. *Food Hygiene for Food Handlers: A Primary Course in Food Hygiene for Food Workers* (2001) Environmental Health Officers' Association.

Appendix A: Handwashing technique

Handwashing Technique

Preparation



1. Remove one hand and wrist jewellery (wedding band allowed) N.B. Keep nails short



2. Wet hands thoroughly under warm running water



3. Apply 5mls of soap/antiseptic soap to cupped hand by pressing dispenser with heel of hand (do not use finger tips on the dispenser)

Handwashing – (process takes at least 15 seconds)



A. Rub palm to palm 5 times



B. Rub right palm over the back of left hand up to wrist level 5 times. Do the same with the other hand



C. With right hand over back of left hand rub fingers 5 times. Do same with the other hand



D. Rub palm to palm with the fingers interlaced



E. Wash thumb of each hand separately using a rotating movement



F. Rub the tips of the fingers against the opposite palm using a circular motion. Also ensure nail beds are washed



G. Rinse hands thoroughly under running water to remove all traces of soap



H. Turn off taps using elbows



I. Dry hands completely using a disposable paper towel



J. Discard paper towel in waste bin. Open bin using foot pedal only to avoid contaminating clean hands

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A Strategy for the Control of
Antimicrobial Resistance in Ireland

SARI

Clean your hands
Say no to infection

Appendix B: Alcohol Gel Technique

Alcohol Handrub Technique



1. Remove hand and wrist jewellery (wedding band allowed) N.B. Keep nails short.



2. Apply about 3mls of alcohol and rub into palm of hand.



3. Rub palm to palm to spread alcohol over entire hands and fingers.



4. Rub the back of your left hand with the palm of right hand. Reverse and repeat action.



5. Open fingers and rub the finger webs. Reverse and repeat action.



6. Rub palm to palm with fingers interlocked.



7. Rub thumb of each hand using a rotating movement.



8. Rub the tips of the fingers against the opposite palm using circular movements.



9. Rub wrists of both hands.



10. Allow hands to dry completely.

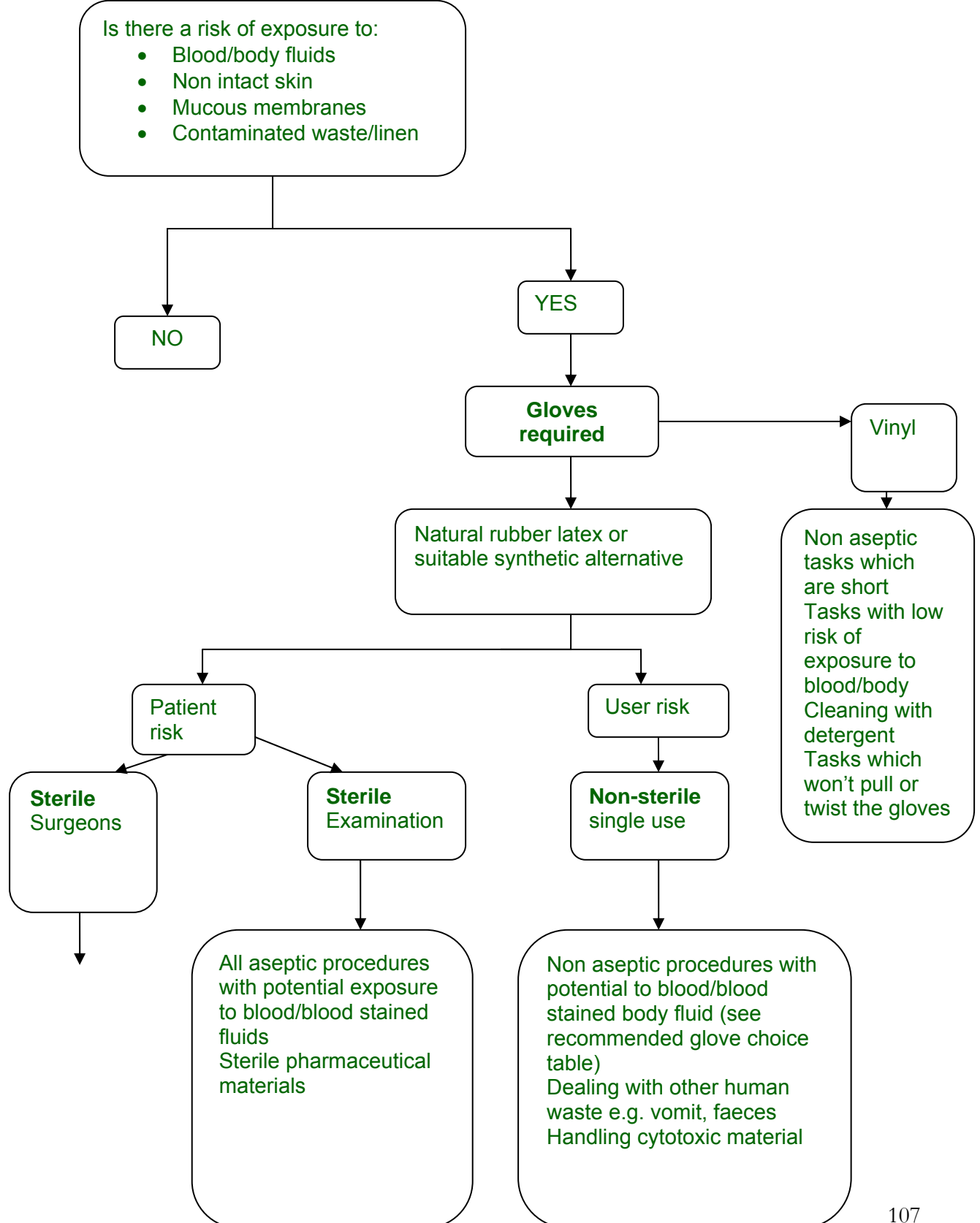


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Clean your hands

Say no to infection

Appendix C: Glove Selection Tool



Appendix D: Donning PPE

Putting on Personal Protective Equipment (PPE)

Select the type of PPE depending on the procedure and risk of exposure to blood/body fluids/non-intact skin/mucous membranes and/or potential exposure to infectious pathogens

1. Decontaminate hands using soap and water or alcohol gel/rub



2. Put on disposable apron/gown

- ♦ Apron:
 - ⇒ Insert head into the opening and tie to the back
- ♦ Gown:
 - ⇒ Insert arms into sleeves
 - ⇒ Tie at neck and waist



3. Put on Face Protection

- ♦ Fluid repellent facemask:
 - ⇒ Place over nose, mouth and chin
 - ⇒ Fit flexible nose piece over nose bridge
 - ⇒ Secure on head with ties or elastic
 - ⇒ Adjust to fit
- ♦ FFP2/3 mask:
 - Fit check {
 1. Place mask over nose, mouth and chin
 2. Fit flexible nose piece over nose bridge
 3. Secure on head with elastic
 4. Adjust to fit
 5. Inhale – mask should collapse
 6. Exhale – check for leakage around face

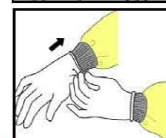


4. Put on goggles/eye shield

- ♦ Goggles
 - ⇒ Position over eyes and secure to the head using the ear pieces
- ♦ Face shield
 - ⇒ Position over face and secure on forehead with headband

5. Put on gloves

- ⇒ Put on gloves
- ⇒ Insert hands into gloves and adjust to fit
- ⇒ If wearing a gown extend gloves over cuffs



Appendix E: Removing PPE

Removing Personal Protective Equipment (PPE)

Correct sequence for removing PPE to minimise contamination

1. Gloves:

- ⇒ Avoid touching the outside of the gloves with bare hands.
- ⇒ Grasp the outside of the glove with the other gloved hand.
- ⇒ Peel off and hold the removed glove in the gloves hand.
- ⇒ Slide a finger of the ungloved hand under the remaining glove.
- ⇒ Peel the glove over the first glove.
- ⇒ Discard in an appropriate waste bin.



2. Goggles or face shield:

- ⇒ Ensuring not to touch the face, grasp ear or head pieces with bare hands.
- ⇒ Lift away from face and dispose into appropriate bin, or if reusable place into a receptacle for appropriate decontamination.



3. Apron/gown:

♦ **Apron**

- ⇒ Break ties at neck and back.
- ⇒ Touching the insides only, pull apron away from body, roll up and discard into appropriate bin.

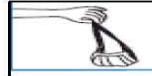
♦ **Gown**

- ⇒ Unfasten ties.
- ⇒ Ensuring not to touch the outside of the gown, peel away from neck and shoulder.
- ⇒ Fold or roll into a bundle.
- ⇒ Discard into appropriate bin



4. Mask:

- ⇒ Avoid touching the front of the mask, break the ties or grasp elastic ties lift from behind the head and pull mask away from the face
- ⇒ Use ties to discard into an appropriate bin



5. Decontaminate your hands

6. Waste disposal: Discard PPE as healthcare risk waste if contaminated with:

- ⇒ Blood
- ⇒ Body fluids from patients with suspected or known infection



7. Where should PPE be removed?

- ⇒ Gloves/aprons/gowns/goggles and mask (standard precautions) before leaving patient's room
- ⇒ Respirator (FFP2/3 (Airborne precautions) and surgical mask (droplet precautions) in ante room or outside the room with the doors closed.

Ensure hand hygiene facilities are available where PPE is removed

Appendix F: Antiseptic and Cleaning Agents

Agent	Preparation	Use
General purpose detergent Detergent wipes	Detergent with a neutral pH. i.e. a neutral detergent	Routine & environmental cleaning of hard surfaces and equipment, especially seats, wheelchairs, floor etc. Suitable for cleaning areas between clients
1. Liquid Hypochlorite e.g. Milton 1% solution 100mls in 1000mls H ₂ O or 2. Sodium dichloroisocyanurate (NaDCC) tablets or granules or powders e.g. Presept or Klorsept or Acticlor	Chlorine tablets, granules, or liquid bleach made up to 1,000 ppm in a solution with water. It is important to follow manufacturer's instructions. Chlorine tablets or granules, or liquid bleach, made up to 10,000 ppm in water (follow manufacturer's instructions). Hypochlorite solution or chlorine tablets diluted to 125ppm (0.0125% Hypochlorite)	Disinfection as indicated e.g. following cleaning, if soiled with blood and body fluids. Blood and body fluid spillages Commercial spillage kits are available Both suitable for areas with residents with CDAD Suitable for infant feeding utensils, catering surfaces and equipment.
70% Isopropyl alcohol	Wipes e.g. Alco wipes, cliniwipes	For rapid disinfection of smooth clean surfaces e.g. scissors, pre-injection skin disinfection. Should only be used on clean surfaces.

Remember:

- Always clean the area first, then, apply the disinfectant.
- Always follow the manufacturer's instructions
- Hypochlorites are inactivated by the presence of dirt.
- Non abrasive cream cleansers are suitable for removing stubborn marks or ceramics.

COMMONLY USED CHLORINE BASED DISINFECTANTS

Sodium Hypochlorite (Liquid)

Examples: Domestos and Milton

Sodium Dichloroisocyanurate (NaDCC) (Tablets or Granules)

Examples: Presept, Sanichlor, Haz-Tab, Titan, Actichlor, Klorsept

USE	% Hypochlorite*	Parts per million available chlorine (ppm available chlorine)
Blood spills	1	10, 000 ppm
Environmental disinfection	0.1	1, 000 ppm
Infant feeding utensils, catering surfaces and equipment	0.0125	125 ppm

EXAMPLES

Milton 1 (1% original strength)

(1) For blood spillages: use neat (gives 10, 000 ppm available chlorine)

(2) For environmental disinfection: 1: 10 dilution (gives 1000 ppm available chlorine)

Undiluted commercial hypochlorite (bleach) solutions like. Domestos contain approximately 10% (100 000ppm) available chlorine

Domestos (10% original strength)

(1) For blood spillages: 1:10 Dilution (gives 10,000 ppm available chlorine)

(2) For environmental disinfection: 1:100 Dilution (gives 1000 ppm available chlorine)

NB: Remember to check the bottle-Milton also comes as a 2% (Milton 2) which is a different strength, different dilution

Appendix G: A-Z of Equipment and Recommended Decontamination

EQUIPMENT	Recommended method
Acupuncture needles	Single use only
Airways	Single use only
Ambu bags- disposable	Single client use
Ambu bags- reusable	As per manufacturer's instructions
Ambu-lift	Clean with warm water and detergent.
Anaesthetic machine	Use a bacterial filter for each case
▪ Filters	Change filter between cases
▪ External surfaces	Damp clean with warm water and detergent
Auroscopes	
▪ Handle	Clean with warm water and detergent (do not immerse)
▪ Earpieces	Use disposable or if reusable clean with warm water and detergent and wipe with a 70% alcohol wipe between clients
Baby weighing scales	Line the scales with disposable paper towel before each use. Change the paper towel between babies. If the scales becomes contaminated with urine, clean with warm water and detergent
Baths/bathing trolleys/bathing aids/showers	<p><i>Daily and between clients</i> Clean with warm water and detergent or cream cleanser.</p> <p><i>Visible contamination with blood/body fluids or clients with broken skin</i> Clean in usual manner and then apply a chlorine releasing agent 1000ppm available chlorine</p>
Baby feeding equipment	<p>Use of pre-packed single use equipment is preferable. For reusable equipment, after each use clean all bottles and related equipment with warm water and detergent to remove all traces of debris and milk. Use a clean bottle and teat brush to scrub the inside and outside of bottles and teats ensuring that any leftover milk is removed. Rinse well in clean running water.</p> <p>(a) Make up a batch of sterilising solution e.g. Milton as per instructions on bottle</p> <ul style="list-style-type: none"> ▪ Submerge the equipment in the solution ▪ Make sure there is no trapped air in the equipment ▪ Leave the equipment in the sterilising solution for the length of time stated on the instructions. ▪ Prepare fresh solution every 24 hours or according to the manufacturer's instruction. <p>or</p> <p>(b) Use a steam bottle steriliser in accordance with the</p>

manufacturer's instructions

Bath Mats

If required, use disposable

If Reusable

Wash with warm water and detergent and allow to air dry.

Beds and Cots

▪ **Bed frames**

Clean with warm water and detergent. Remove stubborn marks/grime/stains with cream cleanser.

Infected clients as above and apply a solution of chlorine releasing agent 1000ppm. Leave for recommended contact time and then rinse with plain water.

▪ **Mattresses/ pillows**

Clean with warm water and detergent. Replace the mattress/pillow cover if cracks or tears appear.

Infected clients as above and apply a solution of chlorine releasing agent 1000ppm. N.B. Check manufacturers instructions for compatibility

▪ **Bed cradles**

Same as bed frames

▪ **Bed linen**

See laundry guidelines

Bedpans

▪ **Disposable**

Dispose of single use bedpans in a macerator

▪ **Reusable**

Process in an automated washer- disinfectant after each use

If the washer-disinfectant breaks down – repair arrangements should be prioritised as urgent.

Bedpan carrier

Clean with warm water and detergent

Infected clients as above and apply a solution of chlorine releasing agent 1000ppm.

Bed tables and lockers

Clean with warm water and detergent

Blood Glucose Monitors

See Glucometers

Blood pressure cuffs

Hand wash with detergent and warm water and allow to dry (check instructions) – alcohol wipes are not recommended. Discard if contaminated with blood/body fluid.

Bougies

Use single use only disposable or see manufacturer's instructions

Bowls (washing)

Clean with warm water and detergent, use a cream cleanser to remove soap residue. Store bowls clean, dry and inverted. In residential facilities, each client should have a dedicated washbowl.

Breast pump

▪ **Machine**

Use a filter to protect the machine. Clean the surface of the machine with warm and detergent and store dry.

▪ **Parts**

As per manufacturer's instructions

Catheter Stands	Clean with warm water and detergent water. Replace when damaged or rusty.
Changing Mat	Protect the changing mat with disposable paper towel prior to each use. After use discard the paper towel and clean the mat with warm water and detergent.
Chairs	Clean with warm water and detergent Fabric-covered chairs are not recommended for use in clinical areas.
Chiropody/Podiatry Instruments	<i>Single use only</i> or sterilise reusable instruments
Combs	Single client use
Commode Chair	Clean contact areas with warm water and detergent after each use. Check undercarriage for stains/splashes after each use and clean. Infected clients Clean as above and then disinfect with chlorine releasing agent 1000ppm, leave for recommended contact time and rinse off metal surfaces with plain water.
Commode pan/insert	Decontaminate in a bedpan washer after each use
Couches -examination/treatment	Cover couch with clean disposable paper towel and change after each client. Clean the couch with warm water detergent.
Curtains	Launder if visibly soiled and at regular intervals as per local arrangements
Cutlery, Crockery	Wash in a dishwasher or manually wash in very hot water >55°C with detergent. Rinse and dry with disposable paper towel. Disposables are not required for clients with infection.
Denture pots	Use disposable. Reusable: Clean with warm water and detergent
Dressing trolley	Daily clean with warm water and detergent at start of day. Between clients wipe with 70% Alcohol wipes
Drip stands	Clean with warm water and detergent. If contaminated with blood, disinfect with chlorine releasing agent 1000ppm, leave for recommended contact time and rinse off metal surfaces with plain water.
Electrocardiograph (ECG) equipment	Routine cleaning Unplug machine and clean all surfaces including leads with warm water and detergent, using a damp cleaning method. Remove any sticky residue from machine/leads. Between clients Wipe leads and hand contact areas with 70% Alcohol wipes. Use disposable ECG dots and discard immediately after use
Facemasks (black rubber/anaesthetic)	Wash in a washer disinfectant after each use

Flower vases	Change water twice a week. Clean vases with warm water and detergent. Store clean and dry.
Glucometer (Blood sugar monitor)	Ideally each client should have their own glucometer. If reused on more than one client wipe over all surfaces of Glucometer and tray between clients using 70% Alcohol wipes. Ensure that no traces of blood are left on machine or tray (see Glucometer guidelines)
Glucometer lancets	Single use only (see Glucometer guidelines)
Headphones	Damp clean with warm water and detergent. Wipe with 70% alcohol wipe. Change foam ear protectors between clients
Ice machine	Clean on a scheduled basis as per manufacturer's instructions. Use designated ice scoop to handle ice. Wash scoop daily in dishwasher. Never handle ice by hand
Infusion pump	Unplug from mains and damp clean with detergent and water.
Insulin pen	Single client use
Jugs (measuring)	For emptying catheter bags and colostomy bags: Process in bedpan washer disinfectant after each use (between clients)
Kidney dishes/receivers/emesis bowls	For emptying wound drains or other drainage from a normally sterile body site – use a sterile jug.
Laryngoscope	Clean after each use with warm water and detergent.
▪ Blades	In high use areas use disposable bags/dishes
▪ Barrel	Use disposable blades or sheaths or Clean with warm water and detergent and sterilise in an autoclave
Medicine Pots	Damp clean with warm water and detergent
Moving and handling Slings/slides/transfer boards	Single use only Fabric type slings/slides should be washed in a washing machine as per manufacturer's instructions. These should be dedicated to a client for as long as required and laundered between clients or if soiled with blood or body fluids. Smooth surfaced rigid slides and transfer boards should be cleaned with warm water and detergent and stored clean and dry. Infected clients As above and disinfect with Chlorine releasing agent 1000ppm for required contact time.
Nailbrushes	Not recommended in clinical areas.
Nebuliser compressor	Single client use or decontaminate between clients in line with manufacturer's instructions
Oxygen masks	Single client use. Replace if contaminated with secretions

Oxygen tubing	Single client use
Patella Hammer	Clean regularly with warm water and detergent. Disinfect with 70% Alcohol wipes after each use.
Peak flow meter	Use disposable mouth pieces and change between clients
Podiatry/Chiropody instruments	Single use disposable or sterilise reusable instruments
Pulse oximeter	Unplug and damp clean surfaces of machine with detergent and water Use disposable skin sensors. If sensors reusable, damp clean with warm water and detergent. Wipe clean with 70% alcohol wipe between uses (check manufacturers instructions)
Shaving brushes	Not recommended for communal use
Scissors	Clean with warm water and detergent, dry and wipe with 70% Alcohol. Use sterile disposable scissors for aseptic procedures
Spillages	See standard infection control precautions.
Speculum (vaginal)	<i>Disposable - Single use only</i> Or Sterilise in an autoclave (preferable) or High level disinfect in a washer disinfectant
Stethoscope	Wipe with 70% Alcohol swab between clients Remove ear pieces regularly, wash with warm water and detergent to remove any ear wax, dry and wipe with 70% alcohol wipe
Suction tubing	Flush with sterile water after each use Single client use
Suction bottles	Disposable liners recommended – wash liner holders with warm water and detergent
Suction filter	Change as per manufacturers instruction and at least every 3 months or if visibly discoloured/wet
Suction catheters including yankeur rigid suction tube	<i>Single use only</i>
Shaving equipment - Razors	Single client use – disposable
- Clippers rechargeable	Single client use .Remove the blade after use and clean any hairs from the clipper, wipe with 70% Alcohol wipe.
Electric razors	Single client use. Remove all hairs after use and wipe with 70% Alcohol wipe.

Surgical Instruments

Sterilise

Thermometers Electronic

Use a new disposable sheath for each use
Wipe over surfaces of device with 70% Alcohol between clients
Damp clean regularly with warm water and detergent

Toenail clippers

Single client use

Urinals

Decontaminate after each use in a bedpan washer/disinfector

Walking aids

Clean with warm water and detergent

Wheelchairs

Clean with warm water and detergent

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Appendix H: Glossary of terms

Antibodies: Complex proteins made by the body's immune system against 'foreign' substances such as bacteria and viruses.

Antibiotic or Antimicrobial agent: a product that kills or suppresses the growth of microorganisms.

Antiseptics: chemicals that kill microorganisms on living skin or mucous membranes. Antiseptics should not be used in housekeeping.

Aseptic technique: Methods which prevent contamination of wounds and other susceptible sites

Carrier: a person who harbours a microorganism in the absence of signs or symptoms or obvious disease. Carriers may shed organisms into the environment and act as a potential source of infection.

Case: a person with symptoms

Cleaning: the removal of visible soil, organic and inorganic contamination from a device or surface, using either the physical action of scrubbing with a surfactant or detergent and water or an energy-based process (e.g., ultrasonic cleaners) with appropriate chemical agents usually a detergent or other cleaning agent. Cleaning must be carried out prior to disinfection or sterilisation.

Cohort: a group of patients infected or colonized with the same microorganism grouped together in a designated area of a unit or ward

Colonisation: The presence and multiplication of microorganisms without tissue invasion or damage. The infected individual demonstrates no signs or symptoms of infection, while the potential to infect others still exists.

Decontamination: Cleaning, disinfection or sterilising reusable patient equipment depending on the risk of the equipment transmitting infection or acting as a source of infection.

Disinfection: the inactivation of disease-producing microorganisms. Disinfection does not destroy bacterial spores. Disinfectants are used on inanimate objects; antiseptics are used on living tissue. Disinfection usually involves chemicals, heat or ultraviolet light. Cleaning must be carried out before disinfection.

Hand wash(ing): a process for the removal of soil and transient microorganisms from the hands.

Immunocompromised: Impaired immune response that renders a person particularly susceptible to infection

Incidence: the number of new events or episode of disease (e.g. an infection) that occur in a population in a given period

Incubation period: The time interval between initial exposure to the infectious agent and the appearance of the first sign or symptoms of the disease in the susceptible person.

Infectious agent: A microbial organism with the ability to cause disease. The greater the organism's virulence (ability to grow and multiply), invasiveness (ability to enter tissue), and pathogenicity (ability to cause disease), the greater the possibility that the organism will cause an infection. Infectious agents are bacteria, viruses, fungi, and parasites

Invasive device: Devices inserted through the skin or orifice that bypass the body's normal defence mechanisms e.g. urinary catheter, central venous access device, peg tube.

Isolation: Techniques used to prevent or limit the spread of infection. Clients diagnosed with an infectious disease are placed on isolation to prevent the spread of infection to others.

Microorganism: Any organism too small to see with the naked eye, requiring a microscope to become visible includes bacteria, viruses, fungi.

Pathogen: any disease producing microorganism

Pathogenic: able to cause disease or symptoms of illness

Septicaemia: A serious and often life threatening condition arising from the presence and persistence of bacteria (or their toxins) in the bloodstream.