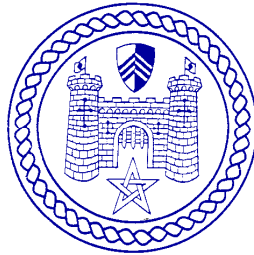


**SWANSEA BAY
PORT HEALTH AUTHORITY**



**AWDURDOD IECHYD PORTHLADD
BAE ABERTAWE**

INFECTION CONTROL GUIDE

CONTENTS

SECTION	CONTENT	PAGE No.
A	INTRODUCTION AND CONTACTS	1
B	THE CAUSE AND SPREAD OF INFECTION	1
	1 Causes of infection	
	2 Spread of infection	
C	STANDARD / UNIVERSAL PRECAUTIONS AND PROCEDURES	3
	1 Standard / Universal precautions	
	2 Hand hygiene and skin care	
	3 Protective clothing	5
	4 Safe handling of sharps	7
	5 Spillage management	7
D	MANAGEMENT OF SHARPS INJURIES	9
E	NOTIFICATIONS OF INFECTIOUS DISEASE	10
	1 Introduction	
	2 Reporting and documenting illness	
	3 Notifications	11
F	SOME INFECTIONS OF SIGNIFICANCE	12
	1 Sudden onset - Diarrhoea or vomiting	
	2 Gastro-enteritis	13
	3 Shingles	14
	4 Acute respiratory illness	
	5 Rabies	15
G	CLINICAL PRACTICE	15
	1 Aseptic technique	
	2 Care of patients with known infectious disease	16
	3 Decontamination	17
	4 Laundry management	25
	5 Management of non-infectious and infectious deceased clients	26
	6 Safe handling of specimens	27
	7 Waste management	
H	REFERENCES	31

SECTION A – INTRODUCTION AND CONTACTS

These guidelines, based upon those adopted by the Corporation of London, are written for the port health staff and for crew members on board passenger and other vessels under the jurisdiction of the Swansea Bay Port Health Authority.

Infection control is an important part of an effective risk management programme to improve the quality client experience and the occupational health of staff. Whilst trying to create a pleasant and comfortable environment for passengers and crew, it is important to remember that communal living in an enclosed space such as a ship does raise issues around infection / disease control.

The philosophy of this guideline is to encourage individual responsibility by every member of crew.

Cruise liners and passenger ferries, by reason of being communal places, are liable to have a disease / infection spread to significantly larger numbers of people than would occur in individual shoreside households, if the principles of good practice are not adhered to at all times. Smaller cargo vessels also carry larger numbers of people living in close proximity when compared to domestic households.

The contents of this document should be regarded as a guide to best practice, but cannot hope to cover all eventualities and may need to be modified in certain circumstances. Further advice should be sought where necessary.

Infection Control and communicable disease advice can be obtained from the Port Health Office, Kings Dock, Swansea SA1 8RU: Tel 01792 653523.

SECTION B – THE CAUSES AND SPREAD OF INFECTION

1. THE CAUSES OF INFECTION

Microorganisms that cause infections, known as pathogens, may be classified as follows:

Bacteria

Are minute organisms about one thousandth to five thousandth of a millimetre in diameter. They are susceptible to a greater or lesser extent to antibiotics.

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. Viruses are not susceptible to antibiotics, and a limited number of viruses are susceptible to a few anti-viral drugs. Vaccination is important in preventing viral infections.

Pathogenic Fungi

Can be either moulds or yeasts. For example, one mould that causes infections in humans is *Trichophyton rubrum* which is one cause of ringworm and which can also infect nails. A common yeast infection, thrush, caused by *Candida albicans*.

Protozoa

Are microscopic organisms, but larger than bacteria. Free-living and non-pathogenic protozoa include amoebae and paramecium. An example protozoa of medical importance is *Giardia lamblia* which causes enteritis (symptoms of diarrhoea).

Parasites

Worms are not always microscopic in size but pathogenic worms do cause infection and some can spread from person to person. Examples include: threadworm, tapeworm and Ectoparasites i.e. headlice and scabies.

Prions

Are infectious protein particles and are thought to be the causative agent for variant Creutzfeldt - Jakob disease (CJD).

2. THE SPREAD OF INFECTION

One feature that distinguishes infection from all other disease is that it can be spread, i.e. someone can 'catch' it from another person or via a vector (e.g. crawling or flying insects). It is convenient to classify the modes of spread of infection as follows:

Direct Contact.

Direct spread of infection occurs when one person infects the next by direct person-to-person contact (e.g. wound infections, sexually transmitted infections etc.).

The hands of health and social care workers are probably the most important vehicles of cross-infection. The hands of crew members and passengers can also carry microorganisms to other body sites, equipment and personnel.

Indirect.

Indirect spread of infection is said to occur when an intermediate carrier is involved in the spread of pathogens e.g. fomite or vector. A fomite is an object, which becomes contaminated with organisms and which subsequently transmits those organisms to another person. Examples of potential fomites are bed linen, bedpans, urinals, thermometers and oxygen masks. Crawling and flying insects are obvious examples of vectors which are implicated in the spread of infection and therefore need to be controlled.

Inhalation.

Inhalation spread occurs when pathogens exhaled or discharged into the atmosphere by an infected person are inhaled by and infect another person. The common cold and influenza are often cited as examples, but it is likely that hands and fomites are also important in the spread of respiratory viruses.

Ingestion.

Infection can occur when organisms capable of infecting the gastro-intestinal tract are ingested. When these organisms are excreted faecally by an infected person and then ingested by another, faecal-oral spread is said to occur. Organisms may be carried on fomites, hands or in food and drink e.g. Hepatitis A, salmonella, campylobacter.

Inoculation.

Inoculation infection can occur following a "sharps" injury when blood contaminated with, for example, Hepatitis B virus, is directly inoculated into the blood stream of the victim, thereby causing an infection. Human and animal bites can also spread infection by the inoculation mode.

SECTION C – STANDARD / UNIVERSAL PRECAUTIONS and PROCEDURES
--

1. STANDARD / UNIVERSAL PRECAUTIONS

It is not always possible to identify people who may spread infection to others. Precautions to prevent the spread of infection must therefore be followed at all times. These routine procedures are called standard/universal precautions and include:

- Handwashing and skin care
- Protective clothing
- Safe handling of sharps (including sharps injury management)
- Spillage management

All blood and body fluids are potentially infectious and precautions are necessary to prevent exposure to them. A disposable apron and disposable powder-free latex gloves should always be worn when dealing with excreta, blood and body fluids. Everyone should know and apply the standard principles of hand decontamination, the use of protective clothing, the safe disposal of sharps and body fluid spillages. Each crew member accountable for his/her actions and must follow appropriate safe practices

2. HAND HYGIENE AND SKIN CARE

Handwashing is the single most effective method of preventing cross-infection. Hands must be washed:

- Before and after each work shift or work break. Remove jewellery.
- Before and after physical contact with each patient.
- After handling contaminated items such as dressings, bedpans, urinals and urine drainage bags.
- Before putting on, and after removing protective clothing, including gloves.
- After using the toilet, blowing your nose or covering a sneeze.
- Whenever hands become visibly soiled.
- Before preparing or serving food.
- Before eating, drinking or handling food and before and after smoking.

How to wash your hands:

Hands that are visibly soiled, or contaminated with dirt or organic material, must be washed with liquid soap and water.

Method	Solution	Task
Social	Liquid soap (<i>Lever Fresh, Deb Cutan</i> or similar)	For all routine tasks
Hygienic hand disinfection (15-30 secs)	Antiseptics, e.g. chlorhexidine (<i>Hibiscrub</i>), povidone-iodine or alcohol hand-rub/gel (<i>Guest Medical alcohol rub, Deb alcohol gel</i> or similar) after social clean	During outbreaks

An effective handwashing technique involves three stages:

a. Preparation

Before washing hands, all wrist and ideally hand jewellery should be removed. Cuts and abrasions must be covered with waterproof dressings. Fingernails should be kept short, clean and free from nail polish or nail extensions. Hands should be wet under tepid running water before applying liquid soap or an anti-microbial preparation from a wall-mounted dispenser.

b. Washing and Rinsing

The handwash solution must come into contact with all of the surfaces of the hand (and forearm if there has been skin to skin contact in this area). The hands must be rubbed together vigorously for a minimum of 10-15 seconds, paying particular attention to the tips of the fingers, the thumbs and the areas between the fingers. Hands should be rinsed thoroughly.

When decontaminating hands using an alcohol handrub, hands should be free from dirt and organic material. The handrub solution must come into contact with all surfaces of the hand. The hands must be rubbed together vigorously, paying particular attention to the tips of the fingers, the thumbs and the areas between the fingers, until the solution has evaporated and the hands are dry.

Hygienic hand disinfection for outbreak control

This can either be achieved by using antiseptic liquid soap, or by routine handwashing followed by 5mls of an alcohol handrub.

Six-step hand decontamination technique:

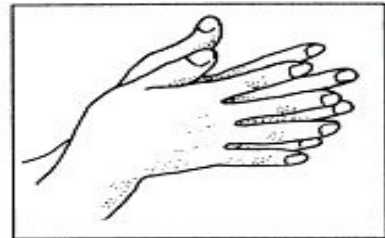
Handwashing



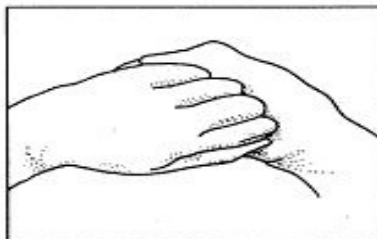
1. Rub palm to palm



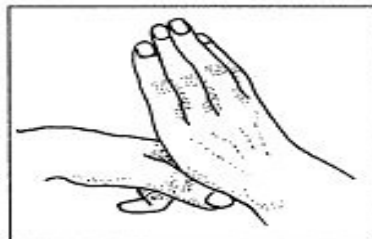
2. Palm to palm, fingers interlaced



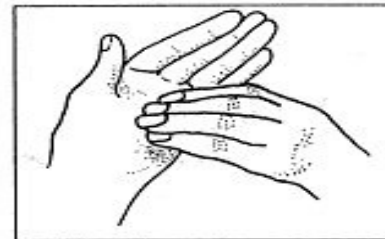
3. Right palm over left dorsum and left palm over right dorsum



4. Backs of fingers to opposing palms with fingers interlocked



5. Rotational rubbing of right thumb clasped in left palm and vice versa



6. Rotational rubbing back and forwards with clasped fingers of right hand in left palm and vice versa

c. Drying

This is an essential part of hand hygiene. Dry hands thoroughly using good quality paper towels. In clinical settings, disposable paper towels are the method of choice rather than communal towels that are a source of cross-contamination. Store paper towels in a wall-mounted dispenser next to the washbasin, and discard them away into a pedal operated domestic waste bin after use. Do not use your hands to lift the lid or they will become re-contaminated.

Hot air dryers are not recommended for use in kitchens or other food preparation areas. However if they are used in other areas, they must be regularly serviced and users must dry hands completely before moving away.

Hand Creams

An emollient hand cream should be applied regularly to protect skin from the drying effects of regular hand decontamination. Only individual tubes or pump-dispensed cream should be used to prevent cross-contamination. If a particular soap, anti-microbial hand wash or alcohol product causes skin irritation, an occupational health team or doctor should be consulted.

Hand Washing Facilities

Facilities should be adequate and conveniently located. Hand washbasins must be placed in areas where needed e.g. bathrooms, toilets, laundry and kitchen areas. Facilities in kitchens should have elbow or foot-operated mixer taps. In laundry and kitchen areas the handwashing sink must be designated for this purpose. A separate sink should be available for other cleaning purposes.

- Use wall-mounted liquid soap dispensers with disposable soap cartridges. Keep them clean and replenished.
- Place disposable paper towels in wall-mounted dispensers next to the basins. Soft towels will help to avoid skin abrasions.
- Position foot-operated domestic waste bins of, correct size, near the hand washbasin.
- Washbasins should be cleaned daily. Keep them free of clutter to ease the cleaning.
- Do **not** use nailbrushes. They are ideal for transferring organisms between users and can have a negative effect on the condition of the skin.

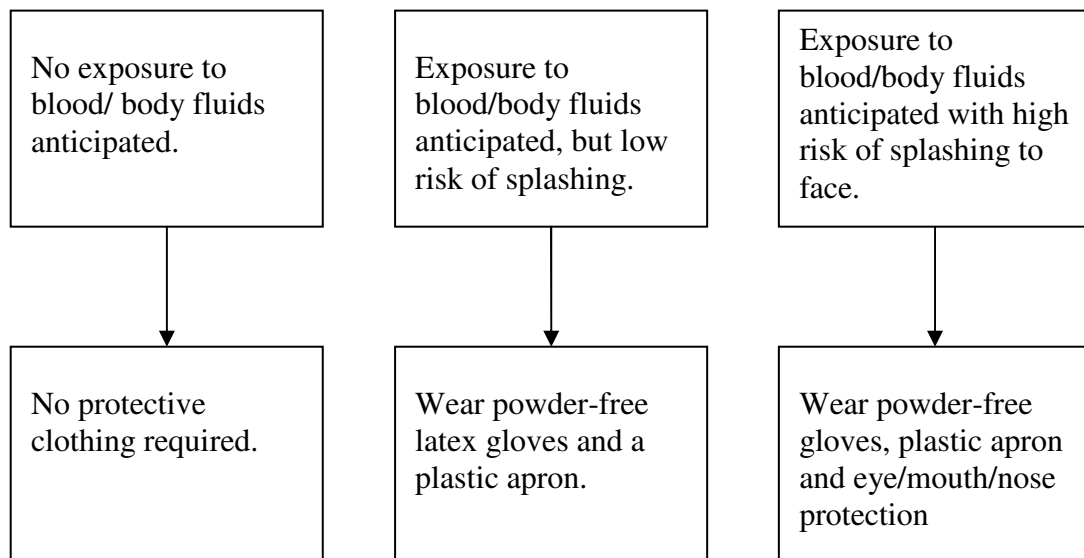
3. PROTECTIVE CLOTHING

Selection of protective equipment must be based on a risk assessment of the potential for transmission of infection between people **NOT** on the person's diagnosis.

It is important that protective clothing is available for crew who are expected to clean spillages.

ASSESSMENT OF RISK:

What to wear and when



TYPES OF PROTECTIVE CLOTHING

a) DISPOSABLE GLOVES

Gloves must be worn all activities that have been assessed as carrying a risk of exposure to blood, body fluids, secretions or excretions, or to sharp or contaminated instruments. Among these are all activities that have been assessed as carrying a risk of exposure to blood, body fluids, secretions or excretions, or to sharp or contaminated instruments.

Gloves that are acceptable to healthcare personnel and that conform to European Community (CE) standards must be available.

DO NOT USE powdered gloves or polythene gloves if contact with any body fluids is expected.

Gloves must be worn as single-use items. They must be put on immediately before beginning a task and removed as soon as the activity is completed.

Gloves must be changed between different tasks. The wearing of gloves is not a substitute for hand washing.

Gloves must be disposed of as clinical waste and hands decontaminated after the gloves have been removed.

Sensitivity to natural rubber latex in staff must be documented. Alternatives to natural rubber latex gloves such as nitrile gloves must be available. If any crew members have concerns about their hands and latex sensitivity is suspected, advice should be sought from the person's doctor.

To prevent transmission of infection, gloves must be discarded after each procedure. Gloves are **not** to be washed between tasks as they may be damaged by the soap solution and, if punctured unknowingly, may cause body fluid to remain in direct contact with skin for prolonged periods.

TYPES OF GLOVES

i. Non Sterile Disposable Gloves

Should be used when hands may come into contact with body fluids or equipment contaminated with body fluids.

ii. Sterile Gloves

Should be used when the hand is likely to come into contact with normally sterile areas i.e. during surgery or during aseptic procedures such as catheterisation. These should be available in the medical areas.

iii. General Purpose Utility Gloves

General-purpose utility gloves e.g. rubber household gloves, can be used for general cleaning, decontamination of instruments prior to sterilisation, or when coming into contact with possible contaminated surfaces or items. Ideally, colour coding of such gloves should be used e.g. blue for the galley and other food areas, yellow for general environmental cleaning, and red for 'dirty' duties such as cleaning toilets. This will help prevent cross-infection from one area of work to another.

The gloves should be washed with general-purpose detergent and hot water, and dried between uses. They should be discarded weekly or more frequently if the gloves become damaged.

iv. Polyurethane/polythene Gloves (Non Sterile and Sterile)

Polyurethane/polythene gloves do not act as a barrier to infection. They do not meet the Health and Safety Commission regulations and they do not have a place in clinical application or when handling body fluids. They can only be used for catering activities.

b) DISPOSABLE PLASTIC APRONS

Should be worn when there is a risk that clothing may be exposed to blood, body fluids, secretions or excretions, with the exception of sweat. Plastic aprons should be worn as single -use items, for one procedure or episode of patient care, and then discarded and disposed of as clinical waste.

c) FACE MASKS AND EYE PROTECTION

Must be worn where there is a risk of blood, body fluids, secretions or excretions splashing into the face and eyes for example when cleaning large spillages of blood or when pre-cleaning instruments to be sterilised. Masks are not recommended for routine use and advice should be sought about their use.

d) UNIFORMS

Uniforms are not protective clothing. Where appropriate, disposable aprons should be worn to protect the uniform as described above. Uniforms should be changed daily or immediately if contaminated.

4. SAFE HANDLING OF SHARPS

All crew should be fully immunised. In addition, all those handling sharps, specimens or clinical waste should have had a course of Hepatitis B vaccine. This is particularly important for those working in the medical services. A record of Hepatitis B antibody response should be kept for all clinical crew involved in 'exposure prone procedures' or where regular exposure to blood/blood stained body fluids occurs. Care should be taken to avoid accidental needlestick injury, as exposure to contaminated blood may be associated with transmission of Blood Borne Viruses. Sharps include needles, scalpels, stitch cutters, glass ampoules, sharp instruments and broken crockery and glass. Sharps must be handled and disposed of safely to reduce the risk of exposure to blood borne viruses. Always take extreme care when using and disposing of sharps. Avoid using sharps whenever possible.

- All clinical sharps should be single use only
- Do **not** re-sheath a used needle
- Discard sharps directly into a sharps container immediately after use and at the point of use
- Dispose of needle and syringe as one unit
- Use only one type of sharpsbin and ensure staff are trained in their correct use
- Sharpsbins should only be used for their intended purpose.
- Sharps containers should be available at each location where sharps are used
- Sharps containers must comply with UN 3921 and BS7320 standards
- Close the aperture to the sharps container when carrying or if left unsupervised to prevent spillage or tampering
- Do not place sharps containers on the floor, window sills or above shoulder height
– use work surface, wall or trolley brackets
- Assemble sharps containers by following the manufacturer's instructions
- Carry sharps containers by the handle - do not hold them close to the body
- **Never** leave sharps lying around
- Do not try to retrieve items from a sharps container
- Do not try to press sharps down to make more room
- Lock the container when it is three-quarters full using the closure mechanism
- Label sharps containers with the source details prior to disposal
- Label all sharps containers clearly as containing "pharmaceuticals *and sharps*".
- Place damaged sharps containers inside a larger container - lock and label prior to disposal.
Do **not** place inside yellow clinical waste bag.

Giving Injections

Always wash hands thoroughly prior to giving an injection. If visibly dirty, the recipient's skin should be cleaned with an individually packed swab soaked in 70% isopropyl alcohol and left to dry. If skin is clean, this step is not necessary. Only adequately trained and experienced staff should carry out venepuncture and injections. For occupationally acquired sharps injuries see section D.

5. SPILLAGE MANAGEMENT

Spillages of blood / body fluids should be dealt with as quickly as possible, following the guidance outlined below:

Persons unsure of how to deal with spills of blood and body fluids should seek advice **BEFORE** attempting to deal with the spill.

The disinfectant of choice is a hypochlorite solution such as bleach or NaDCC (see Preparation and Use of Hypochlorite Solutions - page 8).

Hypochlorite solution will damage fabrics and soft furnishings (e.g. carpets). Spillages on these should be dealt with as below but General Purpose Detergent (GPD) and hot water used instead of hypochlorite.

After washing with GDP & water, the soft furnishing or carpets are to be steam cleaned to prevent/remove staining and prevent further spread of infection. Steam cleaner used should reach 70°C for 5 minutes to achieve thermal disinfection. The steam cleaner should be well maintained.

How to deal with spillages using hypochlorite solution

1. Put on disposable gloves and apron. Use eye protection (goggles/visor) if there is likely to be splashing. Open a window to improve ventilation if possible.
2. Prepare the hypochlorite solution.
3. Cover spillage with disposable paper towels to limit the spillage and hypochlorite solution spread.
4. Pour the hypochlorite solution carefully onto the covered spillage.
5. Carefully wipe up the spillage with more disposable paper towels soaked in hypochlorite solution.
6. Place disposable paper towels, gloves and apron in a yellow clinical waste sack.
7. Wash hands with soap and water. Dry with disposable towel.

If fogging is used as a disinfection method, it should be only used in addition to the methods described above. The creation of a 'spillage kit' stored at a central (locked) point of which all relevant staff are aware is recommended:

Spillage kits should contain:

- * disposable plastic aprons and gloves
- * face protection
- * yellow plastic bags
- * NaDCC Tablets (e.g. Actichlor/Presept/Haz Tabs)
- * disposable paper towels
- * plastic bucket/jug for making up bleach solution

Preparation and Use of Hypochlorite Solutions

- Don't mix hypochlorite solutions with other cleaning agents, as dangerous fumes may be released.
- Hypochlorite can damage skin. Gloves and aprons should be worn when preparing and/or using it. Immediately wash any skin splashes with plenty of running water thoroughly.
- When diluting hypochlorite, always add hypochlorite to water and not vice versa - any splashes less likely to burn.
- The right concentration is essential; otherwise effective disinfection will not be achieved.
- It is preferable to use the tablets rather than the liquid bleach or Milton – the tablets have a longer shelf life, are easier to store and dilute correctly.

Hypochlorite solutions

Strength	Uses
10,000 ppm	Decontamination of blood and bloody body fluid spills.
1,000 ppm	Decontamination of body fluid spills that are <u>not</u> visibly bloodstained. Can also be used for surface disinfection during outbreaks of infection.

Hypochlorite preparations

Type of Hypochlorite	To make concentrated solution (10,000 ppm)	To make dilute solution (1,000 ppm)
Household Bleach (e.g. Domestos)	Dilute 1:10 in water	Dilute 1:100 in Water
Milton solution	Neat	Dilute 1:10 in water
Haz-Tabs, Presept or Actichlor tablet 2.5g	7 tablets in 1 litre of water	4 tablets in 5 litres of water

SECTION D – MANAGEMENT OF SHARPS INJURIES

These are incidents such as bites, needlestick injuries and splashes that involve contamination of skin (intact/broken), mucous membranes, eyes or mouth with blood or bloodstained body fluids.

FIRST AID AND IMMEDIATE HELP - ACTION TO BE TAKEN BY AN INJURED MEMBER OF STAFF FOLLOWING AN INCIDENT:

1. Encourage bleeding where skin is punctured.
2. Wash thoroughly with soap under running warm water. Do **not** use a scrubbing brush.
3. If eyes are involved, wash immediately with water for 5-10 minutes (use tap water or sterile water if available). If the mouth is contaminated rinse with plenty of water.
4. Where massive contamination of unbroken skin has occurred, remove contaminated clothing and wash all affected areas with copious amounts of water.
5. Remember to seek advice **as soon as possible** as prophylactic treatment (if required) should ideally be given within **ONE HOUR**. However, even after this time some treatment is beneficial so ensure that advice is **ALWAYS** sought. Ensure that your manager or immediate senior is informed promptly of the incident. Out of hours inform the duty manager on call for your work site. The person who has received the injury should complete an incident form (N.B the priority is to seek advice immediately).
Contact the local Medical Service through the agent, or go to the nearest A&E for advice and assessment.

6. **BE REASSURED** your case will be dealt with confidentially. All blood samples will be coded.

These injuries must **ALWAYS** be reported and there should be no delay in doing this as some prophylactic treatment (if required) may only be beneficial if started early - ie within one hour of the injury being sustained.

SECTION E – NOTIFICATION OF INFECTIOUS DISEASES
1. INTRODUCTION

All staff:

- a) have an important role in the prevention and control of infection which is an integral quality issue in the care and management of patients and the health and safety of staff.
- b) must follow the guidelines and participate in their audit.
- c) have a duty to bring infection control issues to the attention of Senior Managers and to maintain a high standard of infection control as a matter of good practice.

This guideline sets out the procedures for staff to follow in respect of communicable disease control.

2. REPORTING & DOCUMENTATION OF ILLNESS
Suspected / confirmed outbreak:

When considering what to report and when, it is best to err on the side of caution.

Always seek professional advice early if you suspect an outbreak of infection. The following should be reported promptly to the Port Medical Officer:

- i. An increased incidence of vomiting and / or diarrhoea occurring either over a short or an extended period amongst crew and / or passengers.
- ii. Several cases of a similar infection (based on clinical diagnosis) in passengers / crew who have had close contact with each other.
- iii. An unusually large number of absences due to illness amongst crew, whether or not the cause is known.

The Master of any ship approaching the ports within the jurisdiction of the Swansea Bay Port Health Authority from a foreign port:

1 Should ascertain the state of health of all persons on board

2 Must report:

- a. the occurrence on board during the 28 days before arrival of:
 - i) death, other than by accident, or
 - ii) illness, where the patient has or had a temperature of 38°C or greater which was accompanied by a rash, glandular swelling or jaundice, in the case where such temperature persisted for more than 48 hours, or
 - iii) illness where the patient has or had diarrhoea severe enough to interfere with work or normal activities.
- b. the presence on board of:
 - i) a person suffering from an infectious disease or who has symptoms which may indicate the presence of an infectious disease.
 - ii) Any animal or captive bird of any species including rodents and poultry or mortality or illness among such animals or birds.
- c. any other circumstances which are likely to cause spread of infectious disease.

The Port Medical Officer can be contacted on ☎ 01792 458 066

3. NOTIFICATION OF INFECTIOUS DISEASES

The registered medical practitioner attending the patient is legally responsible for the notification of infectious disease to the Consultant in Communicable Disease Control (Port Medical Officer). Notifiable Diseases are:-

Acute Encephalitis	Measles	Scarlet Fever
Acute Poliomyelitis	Meningitis (Bacterial, viral, other)	Smallpox
Anthrax	Meningococcal Septicaemia	Tetanus
Cholera	Mumps	Tuberculosis
Diphtheria	Ophthalmia Neonatorum	Typhoid Fever
Dysentery	Paratyphoid Fever	Typhus
Food Poisoning	Plague	Viral Haemorrhagic Fever
Leprosy	Rabies	Viral Hepatitis (A,B,C etc.)
Leptospirosis (Weils' Disease)	Relapsing Fever	Whooping Cough
Malaria	Rubella	Yellow Fever

Notifications of the incidence of any of the above should be sent to the Port Health Office at Swansea. The diseases listed below require **prompt telephone communication** to the Port Health Office at Swansea on ☎ 01792-653523

Acute Poliomyelitis	Anthrax	Paratyphoid Fever
Cholera	Diphtheria	Plague
Dysentery (amoebic or bacillary - if more than one case)		Rabies
Food Poisoning (if more than one case)		Smallpox
Meningitis (Meningococcal or H.influenzae)		Typhoid Fever
Meningococcal Septicaemia (without Meningitis)		Viral Haemorrhagic Fever

In the event of any doubt concerning an infectious disease please do not hesitate to contact the Port Health Authority as above.

SECTION F – SOME INFECTIONS OF SIGNIFICANCE

1. DIARRHOEA OR VOMITING OF SUDDEN ONSET

Diarrhoea and/or vomiting of sudden onset can have a number of causes, including bacterial and viral infections. While the cause of the illness is being established it is important to implement the precautions outlined below so as to prevent further spread. Brief descriptions of the commonest bacteria and viruses causing gastro-enteritis are listed on page 13.

Management Plan

Passenger or crew member has sudden onset of diarrhoea / vomiting



Exclude reasons such as laxative and/or antibiotic therapy for symptoms



Contact doctor as appropriate



If the patient vomited near open food (such as buffet), the food should be disposed of as it could have been contaminated by aerosols.



Reinforce importance of handwashing (and drying) to all staff and clients



Cleaners should wear plastic aprons and disposable gloves whilst dealing with faecal matter/vomit



Clothes/linen soiled with faeces and / or vomit should be laundered as infected linen (see Laundry). Advise passengers and crew only to wear clothes that can be easily laundered during the outbreak.



If possible the affected client staff member/client should be isolated in their own room until 24hr symptom-free.



In addition to normal cleaning toilets, door handles and light switches of the affected clients/staff should be wiped with a 1000 ppm hypochlorite solution at least daily (see Preparation and Use of Hypochlorite Solutions) using a disposable cloth. Steam clean carpets and soft furnishings



Affected crew should be promptly excluded from any food preparation duties



If 2 or more cases of diarrhoea/vomiting of sudden onset occur within 10 days, contact the Port Health Authority on ☎ 01792 653523

2. GASTRO-ENTERITIS

This takes many forms, but the main symptoms are nausea, vomiting, diarrhoea and abdominal pain, which may occur in combination or singly.

The causes are varied but strict attention to the personal hygiene of both residents and carers is important to reduce the spread of the disease. (See also 'Reporting Outbreaks of Infection on pages 10 - 11 and 'Diarrhoea and Vomiting of Sudden Onset', page 12). Common micro-organisms that cause gastro-enteritis are:-

Salmonella

This is a bacterium (germ) causing diarrhoea of sudden onset. It is usually caught from contaminated food, particularly chicken, raw meats and raw eggs. Prevention is by careful handling and preparation of food, and by close attention to handwashing by food handlers, affected people and those looking after them.

Campylobacter

Spread from animals via food and causes diarrhoea and abdominal cramps, which can be severe. Prevention is by careful handling and preparation of food, and close attention to handwashing. Campylobacter is the most common cause of food poisoning in the UK.

Shigella

Bacillary dysentery is caused by Shigella bacteria (germs). Epidemics may occur during the winter. The bacteria (germs) are excreted in the faeces and may be spread to food or inanimate objects (toilet and door handles etc.) by dirty hands. Prevention is by handwashing and at least daily cleaning of equipment like toilet handles with a hypochlorite based solution.

E.coli

Some strains of E.coli are normal gut bacteria of people and animals; however some can cause very serious illness. Most well known of these is E.coli O157. The symptoms include diarrhoea, which can be bloody, abdominal pain and fever. The most serious complications are haemolytic uraemic syndrome and death. The elderly, children and those immunocompromised are most at risk. Transmission of E.coli O157 has been commonly associated with undercooked beef burgers.

The best way to prevent transmission is by maintaining high levels of hygiene in the kitchen.

- Cook a burgers until juices run clear
- Separate raw and cooked foods in the kitchen
- Always use clean kitchen utensils
- Encourage handwashing after touching animals

Viruses

Most common cause for outbreaks of diarrhoea and vomiting in institutions, hotels and cruise liners are *noroviruses*. They used be known as Norwalk-like virus or Small Round Structured Virus (SRSV). These viruses have long been recognised as a cause of many outbreaks of gastroenteritis (inflammation of the stomach and the large intestine) and are sometimes referred to as "winter vomiting disease". They are very infectious and only few viral particles can cause infection.

Abdominal cramps and nausea of sudden onset are usually the first symptoms, followed by vomiting and/or diarrhoea. Projectile vomiting is particularly characteristic. Other symptoms may include anorexia, lethargy, myalgia, headache and fever. Up to 30% of those infected remain asymptomatic.

The illness is usually self-limiting with mild to moderate symptoms that last between 24 and 48 hours.

The best way to prevent transmission is by good hand hygiene; environmental cleaning and prompt cleaning of spillages (see pages 3 - 7). When stool specimens are sent during outbreaks of gastroenteritis, viral testing for norovirus should be requested on the form as well as bacterial MC&S.3. *SHINGLES*

Shingles (also known as Herpes zoster) is an infection caused by the virus that also causes chickenpox. It produces a localised blistering rash which can be very painful. Shingles occurs when the chickenpox virus is reactivated many years later. So only a person who has had chickenpox can get shingles because the virus can lay dormant in the body. People who have had chickenpox will not catch either chickenpox or shingles from another person with the disease. People who have not had chickenpox should not look after a person who has shingles, since they may develop chickenpox. Staff who are unsure of their immunity should have a blood test at the beginning of their employment and immunised if found not to be immune.

Management Plan for Shingles and Chickenpox

Shingles/chickenpox in a passenger or crew member

↓

Ask the doctor to confirm diagnosis and prescribe treatment.

↓

Any pregnant staff members who have not had chickenpox or are unsure should see their doctor and possibly obtain immunoglobulin.

↓

Isolation is not necessary if the lesions can be easily covered. If the client cannot cover the lesions, they should ideally stay in their room until the lesions are dry/crusted over. Crew should stay off work for 1 week after appearance of rash or until the lesions are dry/crusted over.

↓

Disposable gloves and aprons should be worn for direct skin-to-skin contact and for handling articles such as linen soiled by discharge from blisters.

4. ACUTE RESPIRATORY ILLNESS

ARI is one of the most common infectious diseases affecting the wider community. Elderly and vulnerable clients are more at risk of serious infection that could potentially be fatal. ARI can be defined as illness that presents with:

- fever $\geq 37.8^{\circ}\text{C}$ OR an acute deterioration in physical or mental ability *and*
- new onset or acute worsening of one or more respiratory symptoms: cough, nasal discharge or congestion, sore throat, sneezing, shortness of breath, wheezing, chest pain.

The illness can be caused by several organisms, including influenza virus, respiratory syncytial viruses, rhinoviruses, Streptococcus pneumoniae etc, some of which are seasonal and more common during winter.

Inform the doctor if acute respiratory illness is suspected. If an outbreak, i.e. three or more cases arises within 72-hour period, the Port Health Authority should also be informed without delay.

Elderly people and those in risk groups should be offered annual Influenza vaccination.

In addition those 65 and over are offered pneumococcal vaccination.

General control measures include:

- exclude symptomatic crew members – agency staff not to work anywhere else until recovered
- symptomatic clients should ideally stay in their rooms as much as possible until recovered
- discourage symptomatic visitors from attending
- encourage staff and residents to effectively wash their hands - good hand hygiene is essential in preventing outbreaks and further transmission
- pay particular attention to cleaning of horizontal surfaces – during outbreaks steam cleaning of carpets and other soft furnishings and daily disinfection of surfaces with 1000ppm hypochlorite solution is recommended

5. Rabies

Rabies is an acute viral infection of the central nervous system. Although post-exposure treatment is available, once symptoms develop the condition is invariably fatal. The infection is transmitted to people primarily via the bite, lick or scratch of an infected animal. Great Britain has been free from rabies for almost 100 years, but disease still exists in parts of Continental Europe and is endemic in many parts of the world. Rabies could present a potential risk for Port Health when animals are brought to the UK illegally from endemic areas. Immunisation is offered to those whose work may expose them to animal bites such as people working in animal quarantine centres, veterinary services or as dog wardens.

Post-exposure treatment is very effective in preventing human cases and deaths. Therefore most people do not require pre-exposure vaccination. Those who have received pre-exposure vaccine must still seek post-exposure medical advice and vaccination. Post exposure treatment includes treatment of the wound, specific treatment with rabies vaccine and sometimes rabies immunoglobulin.

Any items that are potentially contaminated with infected material can be autoclaved, boiled or disinfected using a 10,000ppm hypochlorite solution (see section on spillages page 9). Rabies virus is not particularly resistant and is readily inactivated by sunlight, heat or disinfectants.

Any contaminated material should be disposed of as clinical waste.

The risk of infection from someone who has died of rabies is thought to be low. However, the body should be placed in a body bag and labelled as infected. The bag should not be opened for viewing.

If there is / are on board any animal or captive bird of any species, including rodents and poultry; or mortality or illness among such animals or birds, the Port Health Authority MUST be notified not less than 4 hours or not more than 12 hours before arrival. Such animals or birds shall be kept securely confined whilst the vessel is in port.

SECTION G – CLINICAL PRACTICE

Parts of this section would be mainly applicable for any medical/nursing crew employed on cruise liners. However, sections on decontamination, laundry and waste are applicable for all crew groups.

Clinical practices included in the section are:

1. Aseptic Technique
2. Barrier Nursing / Isolation
3. Decontamination of Equipment
4. Laundry Management
5. Management of Infectious Deceased Clients
6. Safe Handling of Specimens
7. Waste Management

1. ASEPTIC TECHNIQUE

The aim of the aseptic technique is to minimise the risk of introducing pathogenic organisms into a wound or other susceptible site and to prevent the transfer of potential pathogens from the wound to other patients, passengers or crew (Wilson, 2000).

An aseptic technique should be implemented during any invasive procedure that bypasses the body's natural defences and should also be adopted when undertaking the following procedures:

Dressing wounds
 Removal of sutures or clips
 Dressing peripheral or centrally sited intravenous lines
 Removal of drains
 Endotracheal suction
 Dressing tracheostomy site

Forceps have traditionally been used for the procedure. However, forceps are cumbersome to use and do not prevent the transfer of bacteria from the wound to the hands.

The procedure can be performed more easily holding sterile swabs in the gloved hands. Gloves used should be sterile or non-sterile depending of the type of procedure. For example, clean gloves are usually sufficient for chronic wound dressings, but sterile gloves would be necessary for catheterisation or surgical wound dressings. Hands should be washed before and after the procedure.

Many aseptic techniques include a ritualistic practice of cleaning trolleys with alcohol between patients. This serves no useful purpose as dry and clean surfaces are unlikely to transmit and that cleaning by detergent and hot water is therefore sufficient. The sterile towel contained within the dressing pack will create the sterile field. Bacteria acquired on the clothing during the procedure may be transferred into the wound of another patient; therefore a clean disposable apron should be used for each dressing procedure.

Chronic Wound Management

Most chronic wounds are colonised with a variety of organisms and this does not prevent healing. However, it is still possible to infect these wounds if aseptic technique is not used. If dressings are removed by soaking, a plastic impermeable liner/bag should be placed in the bucket/bowl before filling with water.

After the wound has been washed the water should be disposed of in a sluice, toilet or a sink, which is separate from the handwash sink. The plastic liner should be disposed of and the bath or bowl should be thoroughly cleaned with detergent solution, then disinfected with 1000 ppm hypochlorite solution (page 9) and then dried to ensure that pathogens are removed.

2. CARE OF PATIENTS WITH KNOWN INFECTIOUS DISEASES

Barrier Nursing

Within the cruise liner setting, traditional strict barrier nursing is **not** recommended. A modified version may be recommended for clients who develop acute symptoms of possible infectious disease. It is important for crew and passengers to appreciate that when they are caring for someone with a known or suspected infectious disease, there is the potential for cross-infection if basic infection control principles are not followed.

DISEASE	DURATION of BARRIER NURSING PRECAUTIONS
Beta-haemolytic Group A Streptococci Erysipelas (Bacterial infection of skin caused by <i>Streptococcus pyogenes</i>)	} Until 24 hours after the commencement of appropriate antibiotic therapy.
Chickenpox Shingles	} Until vesicles are dry or can be easily covered

Diarrhoea due to: Shigella, Salmonella, Clostridium difficile. (Pseudomembraneous Colitis)	}	Until diarrhoea has ceased for 24 hours.
Gastro-enteritis (Vomiting and/or diarrhoea – cause unknown)		
Impetigo	}	24 hours after the commencement of appropriate Antibiotic therapy. If lesions are wet and cannot be covered, exclusion up to 5 days might be required

Precautions should also be taken with clients suffering from the following symptoms, until a diagnosis is confirmed:

- Diarrhoea of unexplained origin
- Pyrexia of unknown origin
- Excessive bleeding
- Rashes of unknown aetiology
- Vomiting

PROCEDURES FOR BARRIER NURSING

Standard Contact Precautions should be strictly adhered to at all times - Also refer to Section C. Once a diagnosis has been made, the client and co-passengers must have the infectious disease explained to them including the mode of spread and its significance, if any, for any underlying condition.

Hand Hygiene

Alcohol hand rub should be used after normal handwashing.

Disposal of Potentially Infected Items

Contaminated dressings and all disposable items should be disposed of as clinical waste (see section on Waste Management at the end of this section).

Linen

Linen should be washed on as hot a wash as the fabric will tolerate, as promptly as possible. Soiled linen should be contained within an alginate bag to minimise the risk of contamination to the environment or to personnel (see Laundry Management section).

Crockery and Cutlery

Disposable items are **not** required. Crockery and cutlery can be washed as usual in a dishwasher.

Deceased clients

If the client had, or was suspected of having, an infectious disease when s/he died, the body may need to be placed in a “body bag”. The mortuary / funeral director staff should be informed of the potential infectious risk.

3. DECONTAMINATION

The aim of decontaminating equipment is to prevent potentially pathogenic organisms reaching a susceptible host in sufficient numbers to cause infection. Certain items are classified as single-use only. These items must never be re-used. If in doubt, refer to the manufacturer’s recommendations.

Single use devices can be easily recognised by the symbol on the wrapping. These devices should only be used once and then discarded. This type of equipment would be most practical in a cruise liner and similar setting as decontamination is not necessary.

The reuse of a single-use device exposes both patient and crew to an unacceptable risk, which outweigh the perceived benefits of using such devices.

- Reprocessing a single-use device can compromise its performance.
- If a manufacturer has not declared the device as being suitable for reuse, the user must be able to demonstrate that their actions are consistent with their duties of care to patients, passengers and crew.
- Healthcare workers, who reuse 'single-use' devices, transfer the legal liability for the safe performance of the product from the manufacturer to themselves

Single-patient use devices can be reused on the same patient. Manufacturer's guidance regarding the maximum length of time for use and cleaning must always be followed. If single-patient use items are used on more than one patient or for a longer period than the manufacturer advises, the legal responsibility for the device could be transferred to the user.

Re-usable equipment must be appropriately decontaminated between each patient. Use only the method advised by the manufacturer - using any other process might invalidate warranties and transfer liability from the manufacturer to the person using or authorising the process. If you have any doubts about the manufacturer's recommendations, seek further advice.

The Medical and Healthcare products Regulations Agency (MHRA) defines the following terms:

- **Cleaning** 'is a process which physically removes contamination but does not necessarily destroy microorganisms'. The reduction of microbial contamination cannot be defined and will depend upon many factors including the efficiency of the cleaning process and the initial bio-burden.
- Cleaning is an essential prerequisite of equipment decontamination to ensure effective Disinfection or sterilisation can subsequently be carried out.
- **Disinfection** 'is a process used to reduce the number of viable microorganisms, which may not necessarily inactivate some viruses and bacterial spores'.
- Disinfection will not achieve the same reduction in microbial contamination levels as sterilisation.
- **Sterilisation** 'is a process used to render the object free from viable microorganisms, including spores and viruses'.

Risk Assessment

To choose the appropriate method of decontamination, a risk assessment must be done to ensure that the decontamination method will render the device safe for subsequent handling or use. All medical devices can be categorised according to its potential infection risk to the patient and the following method of risk assessment and selection of appropriate decontamination method can be applied across all care settings and situations.

High Risk	Definition	Items which come into contact with a break in the skin or mucous membrane, or enter a sterile body area
	Examples	Surgical instruments, Dressings, Vaginal speculae, Intrauterine devices.
	Method of decontamination	Cleaning followed by Sterilisation
Intermediate Risk	Definition	These are items that come into contact with intact skin, mucous membranes or body fluids
	Examples	Re-usable bedpans/urinals, re-usable facemasks, oral / rectal thermometers, auroscope earpieces, respiratory equipment
	Method of decontamination	Cleaning followed by Disinfection
Low Risk	Definition	These are items that do not come into direct contact with the patient or only come into contact with intact skin
	Examples	Examination couches, washbowls Commodes, Floors
	Method of decontamination	Cleaning

Adapted from Medical Devices Agency, Part 2 (1996) now MHRA

Cleaning methods

Cleaning is the first and the most important step in the decontamination process. It must be carried out before disinfection and sterilisation to make these processes effective. Thorough cleaning is extremely important in reducing the possible transmission of all microorganisms, including the abnormal prion proteins that are thought to cause vCJD. Thorough cleaning with a general-purpose detergent and warm water - maximum temperature ca. 35°C will remove many microorganisms. Hot water should not be used, as it will coagulate protein making it more difficult to remove from the equipment. For some medical devices, using an automated process such a washer-disinfector or ultrasonic cleaner is preferable to manual cleaning. Manufacturer's instructions must be followed when decontaminating equipment. The washer-disinfector should be maintained in accordance with guidance detailed in HTM (Health Technical Memorandum) 2030.

Manual cleaning must be undertaken in a designated sink, which is deep enough to completely immerse the items to be cleaned. Scrubbing can generate aerosols which may convey infective agents. Therefore if scrubbing is necessary it must be carried out with the brush and item beneath the surface of the water. Personal protective equipment, including aprons, heavy-duty gloves and goggles or visors, must be readily available for crew. Cleaning equipment - such as brushes, cloths and ultrasonic washers must be stored clean and dry between uses. Use single use, non-shredding cloths rather than re-usable cloths. Do not store brushes in disinfectant solutions.

After cleaning and thorough rinsing, the items should be dried using a disposable non-shredding absorbent cloth.

Disinfection

Disinfection methods apply to handwashing, skin preparation and equipment. Disinfection of equipment should be limited and, where possible, disposable or autoclavable equipment used instead. If disinfection is required, use the method recommended by the manufacturer.

CHEMICAL	ADVANTAGES	DISADVANTAGES	USES
Chlorine-based (1) Hypochlorites (e.g. Domestos, Milton)	<ul style="list-style-type: none"> - wide range of bacterial virucidal, sporicidal and fungicidal activity - rapid action - non-toxic in low concentrations - can be used in food preparation - cheap 	<ul style="list-style-type: none"> - inactivated by organic matter - corrosive to metals - diluted solutions can be unstable - need to be freshly prepared - does not penetrate organic matter - bleaches fabrics - short shelf life - need ventilation - difficult to get correct concentration 	can be used on surfaces and for body fluid spills
Chlorine-based (2) Sodium Dichloroisocyanurates (NaDCC) e.g. Presept, Haz-Tab, Sanichlor	As above <i>plus</i> <ul style="list-style-type: none"> - slightly more resistant than bleach to inactivation by organic matter - slightly less corrosive - more convenient, easier to dilute correctly - long shelf life 	as above	as above
Alcohol 70% e.g. isopropanol	<ul style="list-style-type: none"> - good bactericidal, fungicidal - some virucidal activity - not sporicidal - rapid action - leaves surfaces dry - non-corrosive 	<ul style="list-style-type: none"> - non-sporicidal - flammable - does not penetrate organic matter - requires evaporation time - not suitable for use on mattresses or treatment tables 	can be used on clean surfaces (cl release soln preferable) or for skin and hand decontam
Chlorhexidine e.g. Hibiscrub	<ul style="list-style-type: none"> - most useful as disinfectants for skin - good fungicidal activity - low toxicity and irritancy 	<ul style="list-style-type: none"> - limited activity against viruses - no activity against bacterial spores - inactivated by organic matter 	<ul style="list-style-type: none"> - For skin and hand decontam mainly before surgical procedures

Sterilisation - Sterile instruments can be obtained by:

Purchasing pre-sterilised single use items

These avoid the need for re-sterilisation and are a practical and safe method. Items must be stored using a stock rotation system and according to manufacturer's instructions.

This is the preferred option for care homes requiring sterile items of equipment. It is usual practice for community nursing or medical staff to provide their own sterile items of equipment for use in this setting.

Using a sterile supplies department (SSD)

SSDs provide a cost effective and efficient service. There should be a contract specifying the responsibilities of both parties. Since June 1998 SSDs have been bound by the Medical Devices Directive 93/42/EEC, which requires the department to have a quality system of audit and to have been assessed and validated as CE compliant. The LHB or GP practice should seek legal and risk management advice if the contracted SSD has not been assessed as being CE compliant.

Using a bench top steam steriliser

The following guidance is intended to promote the safe and effective use of bench-top steam sterilisers and complies with HTM2010, HTM2031, and MDA DB 9605. . All practitioners using bench-top autoclaves should comply with this guidance. Health Technical Memorandum (HTM 2010) 'Sterilisation' outlines the test methods for steam sterilisers including daily checks by the user, commissioning checks and tests and routine periodic testing to ensure the steriliser performs correctly. Health Technical Memorandum (HTM 2031) 'Clean steam for sterilisation' is designed to supplement the above guidance. It gives advice on steam quality as the possibility of pyrogens (bacterial endotoxins) accumulating is of particular concern.

OPERATION OF BENCH-TOP STEAM STERILISERS (HTM2010, HTM2031)

Bench-top steam sterilisers should be positioned so as to facilitate the movement of instruments from a 'dirty' to clean area after autoclaving. Bench-top steam sterilisers must not be situated in staff rest areas, and ideally not in rooms where staff are working during their operation. Designated personnel, who have an understanding of the principles involved, should only operate bench-top steam sterilisers. Bench-top steam sterilisers are only suitable for **unwrapped** instruments and equipment of a non-porous nature. Hollow instruments will not be effectively sterilised in bench-top steam sterilisers (MDA DB 9605). Users of this type of equipment should consider the use of sterile services or the purchase of a bench-top vacuum steriliser (MDA DB 9804). The basket/tray should not be overloaded. Instruments should be autoclaved for 15 minutes at 121⁰C or 10 minutes at 126⁰C or 3 minutes at 134⁰C. *Please note that these temperatures must be reached before timing commences.*

MAINTENANCE OF BENCH-TOP STEAM STERILISERS

To ensure effective sterilisation the following guidance must be followed in accordance with HTM 2010 and HTM 2031.

Daily

The steriliser pressure, temperature and cycle time should be checked daily and these details recorded in a logbook, by designated personnel. The logbook should be kept next to the steriliser in a protective folder. These records must be kept for 11 years.

For each production cycle you should:

- Note whether the steriliser controller indicated a passed or failed cycle.
- Examine printouts from the steriliser's recorder to ensure that they are within the prescribed limits.
- Note the action you took if a failed cycle was indicated
- Note any fault or malfunction of the steriliser
- Every production cycle must be fully documented and the records kept.

Medicines and Healthcare Products Regulatory Agency (MHRA) recommends that benchtop sterilisers should be equipped with a printer.

- ❑ Rinse all internal surfaces of the bench-top steam steriliser with sterile water for irrigation. Use a disposable cloth.
- ❑ Fill the reservoir with sterile water for irrigation.
- ❑ At the end of the day / session: drain the reservoir. Rinse all internal surfaces twice with sterile water for irrigation. Leave dry.
- ❑ Part used containers of sterile water for irrigation should be discarded at end of the working day.
- ❑ Sterile water for irrigation should be used for validation, periodic and revalidation tests.

Weekly

- ❑ Observe the door seal and patency.
- ❑ Examine security and performance of door safety devices.

Quarterly

- ❑ A qualified technician should carry out a quarterly service (most manufacturers will provide this service).

Annually

- ❑ A qualified technician should carry out a yearly validation service.

Maintenance records for all the above tests should be kept at the Healthcare Premises, with the logbook and should be retained for 11 years.

NB. The requirements for the servicing of bench-top autoclaves are set out by the Department of Health in Health Technical Memorandum (HTM) 2010. They should not be confused with the insurer's requirement for the steriliser to be serviced every 14 months as a pressure vessel.

BENCH-TOP VACUUM STEAM STERILISERS: Bench-top steam sterilisers with vacuum extraction must conform to BS 3970 and EN610: Part 2-041 and are designed to sterilise:-

- ❑ Hollow devices, either wrapped or unwrapped
- ❑ Wrapped solid devices
- ❑ Porous loads

Detailed guidance on the safe use of this type of steriliser has been published by the Medical Devices Agency (now Medicines and Healthcare Products Regulatory Agency (MHRA) (1997, 1998) and in addition to the above tests, a daily chemical indicator test (Bowie Dick) must be carried out on all bench-top vacuum steam sterilisers to confirm that the air removal stage of the sterilisation process is effective.

STORAGE OF INSTRUMENTS AFTER STERILISATION: Instruments should be stored dry and covered to protect them from dust. Instruments, which are required to be sterile at the time of use (e.g. those used in minor surgery, coil insertion), must be used within 3 hours of removal from the steriliser.

PURCHASE AND USE OF BENCH-TOP STEAM STERILISERS: Bench-top autoclaves should comply with the most recent British Standard for transportable steam sterilisers for unwrapped instruments and utensils. Those planning to buy a bench-top autoclave are strongly advised to seek independent advice (i.e. not from the manufacturer) re the bench-top autoclave's compliance with British Standard and Department of Health guidance prior to purchase. Independent advice can be obtained from the relevant publications, Department of Health Medicines and Healthcare Products Regulatory Agency (MHRA).

A-Z OF EQUIPMENT AND THE DECONTAMINATION METHOD

EQUIPMENT	CLEANING METHOD
Curtains	These should be laundered in a washing machine every three months or immediately if visibly soiled.
Ear pieces from auroscopes	Use single-use pieces
Ear syringe 'Propulse'	Before first use of the day and after each patient use – clean earpieces in GPD and warm water solution. Fill tank with sodium hypochlorite solution 1000ppm. Run this solution through the tubing ensuring the absence of any air bubbles. Allow at least 5 minutes in order for disinfection to take place. Empty tank and tubing, rinse with sterile water for irrigation, dry with disposable, non-shredding paper towel and try to ensure that tubing is as dry as possible.
ECG Equipment:	
- Electrodes	- Use disposable electrodes
- Straps	- Wash well with hot water
- Machine	- Wipe over with damp cloth, keep covered when not in use
Examination couches	Surface must be intact and in good repair. Clean with warm water and GPD at start and finish of each session or if becomes soiled. If soiled disinfect the surface after cleaning with 1000ppm hypochlorite. Cover with disposable paper roll and change between each client use.
Nail brushes	Single use only. Use not recommended.
Nebuliser masks and tubing	Single patient use. Clients must have their own mask and tubing, which should be washed with hot water and GPD between uses. Store dry. On completion of treatment, dispose of the mask and tubing. Ensure that manufacturer's guidelines regarding the recommended length of use and cleaning is followed. Staff must maintain a register of use (giving patient details and date of use) for each nebuliser including a record of the decontamination process detailing the date, time, cleaning method used, items replaced, and the signature and name of the member of staff responsible.
Nebulising machine	Follow manufacturer's guidelines. Clean thoroughly between patients.
Raised toilet seat	Wash with GPD. Wipe with 1000 ppm hypochlorite solution paying particular attention to grooves and fixing clips. Excessive scratches, cracks etc. will make adequate cleaning difficult. In this instance seats should be discarded.
Suction equipment	All suction machines should be fitted with a closed disposable liner system. Used suction liners and tubing should be disposed of as clinical waste after each use (or 24 hours if in frequent use). Machines should be wiped over with alcohol wipes. Filters - These should be replaced when wet and at appropriate intervals in keeping with the Manufacturer's instructions.
Thermometers	Use disposable sheaths for single patient use: After each use, wash with GPD and water and store dry. The alternative is to use disposable 'tempadots'.
Trolleys (dressing trolleys)	Clean top and all surfaces with hot water and GPD daily. Dry thoroughly. If trolley becomes contaminated between patient uses, wash with GPD and hot water again.
Wheelchairs	Wash with GPD and hot water. Pay particular attention to grooves/crevices where dust etc. may collect. If visibly soiled treat as a spillage (see Spillages of Blood or Body Fluids).
Work surfaces	General Cleaning - use GPD and hot water. Contaminated Surfaces - clean with GPD and hot water and then wipe with 1000 ppm sodium hypochlorite solution.

Environmental cleaning

The environment plays a relatively minor role in transmitting infection, but dust, dirt and liquid residues will increase the risk. They should be kept to a minimum by regular cleaning and by good design features in buildings, fittings and fixtures. A written cleaning schedule should be devised specifying the persons responsible for cleaning, the frequency of cleaning and methods to be used and the expected outcomes:

- Work surfaces and floors should be smooth-finished, intact, durable of good quality, washable and should not allow pooling of liquids and be impervious to fluids
- Carpets are not recommended in treatment rooms or areas where clinical procedures will take place because of the risk of body fluid spills
- Where carpets are in place, there should be procedures or contracts for regular steam cleaning and dealing with spills
- Keep mops and buckets clean, dry and store inverted. Mop heads should be removable for frequent laundering, or single use if this is not possible
- Provide single use, non-shedding cloths or paper roll for cleaning
- Separate general cleaning equipment / materials from those used for cleaning up body fluids
- Colour-code cleaning equipment, such as mop heads, gloves and cloths for toilets, kitchens and clinical areas. Use different colours for each area
- Ensure cleaning proceeds from clean to dirty areas
- Use General Purpose Detergent (GPD) for all environmental cleaning
- follow the manufacturer's instructions

Domestic cleaning practice

Bucket (plastic)	Empty contents down the toilet or slop hopper. Clean with General Purpose Detergent (GPD), rinse and dry. Store inverted.
Mop (wet)	Rinse, dry and store head up after each use; heat disinfect in a washing machine and dry thoroughly weekly.
Mop (dry)	Vacuum after each use.
Lavatory Brushes	Rinse in flushing water and store dry. Change regularly.
Suggested colour coding of cleaning equipment	Red – Toilet/bathroom, sluice Blue – Kitchen, pantry Yellow – All other areas.
Floors	Dust control – dry mop Wet cleaning – wet mop, wash with hot water and GPD If known contamination – do not use mop directly on body fluids. Clean are with disposable cloths/towels (see section on spillages) Carpeted area – steam clean regularly. After spillage clean with water and GPD before steam cleaning.
Furniture and fittings	Damp dust with hot water and detergent If known contamination – follow with 1000ppm hypochlorite solution
Lavatory seat and handle	Clean with hot water and GPD During outbreaks or if toilet visibly soiled, follow with 1000ppm hypochlorite
Showers	Clean with cream cleanser between uses. Launder curtains every three months.
Walls and ceilings	Wash with GPD and water. Clean spillages of body fluids promptly and disinfect with hypochlorite solution.

Decontamination equipment prior to inspection, service, repair or loan

Do not send contaminated equipment elsewhere without decontaminating first. Before dispatch, complete and attach a certificate stating the method of decontamination used, or the reason why it was not possible (NHS Management Executive 1993). Equipment that is impossible to decontaminate is likely to be complex, high-technology and heat-sensitive. Often it cannot be decontaminated without being dismantled by an engineer - in this case, attach a biohazard label to the item. Complete the clearance certificate and advise staff on protective measures.

4. LAUNDRY MANAGEMENT**Laundry facilities**

The laundry must be sited so that soiled articles are not carried through areas where food is stored, prepared, cooked or eaten. The laundry floor must be of a smooth, impermeable and easily cleanable material. Staff should have a clear programme for cleaning the laundry environment. All horizontal surfaces should be damp-dusted on a daily basis.

Any body fluid contamination must be cleaned immediately according to the spillage policy.

Walls must be in good condition, and easily cleaned as necessary.

All machinery must be maintained in a clean dust free condition, and must be covered by a service agreement, which supports prompt repair or replacement of the machine in case of break down.

Soiled laundry must be stored in a designated area within the laundry, separate from the area where clean laundry is handled and stored.

Staff must have use of a designated handwashing facility within the laundry.

Washing machines should have programming ability to meet disinfection standards - a 'sluice' cycle to prewash heavily contaminated laundry. It is advisable to use industrial washing machines on board rather than domestic ones particularly if soiled linen is handled on site. Machine should reach 65°C for a minimum of 10 minutes or 71°C for 3 minutes in order to achieve disinfection. They should incorporate temperature recording equipment, which is regularly monitored and calibrated.

Washing powders and other substances must be kept in a locked storage cupboard.

Material Safety Data Sheets for any potentially hazardous substances must be obtained and be available for reference.

Laundry practices

Staff should always wear gloves and a disposable apron whilst handling laundry. Hands must be washed after removal of protective clothing.

Soiled laundry must be removed to the designated laundry area for processing as soon as possible after it has been produced.

Soiled laundry must only be transported around the vessel whilst contained within designated linen bags.

Laundry contaminated with blood or body fluids must be contained within a water-soluble or soluble-stitched bag prior to being placed in a normal linen bag. This enables contaminated laundry to be placed into the machine (on a 'sluice' cycle) within the soluble protective bag thereby reducing the risks of body-fluid contamination and potential infection risk to the staff member.

If water soluble bags are not available, the bag used for transportation should be washed with its contents.

Hand sluicing of soiled laundry is not acceptable.

Heat labile clothing must be washed at the highest temperature possible according to the item's fabric care instructions.

There is no need to segregate laundry from clients who are colonised with MRSA or who have any other infection unless advised by the Health Protection Team. Good hygiene practices as detailed above will suffice. Tumble -drying and ironing are also heat disinfection processes.

Sending laundry to a commercial laundry

A commercial laundry service may stipulate a colour coding system for the management of soiled linen. All staff must be aware of these instructions and comply fully with them.

Staff uniform / work clothes

Uniforms or work clothes should be washed as soon as possible on as hot a wash as the fabric will tolerate. Uniforms/tabards/work clothes must be changed daily. Cardigans/jumpers should be washed at least weekly or immediately if visibly soiled. Shoes should be cleaned immediately if contaminated with body fluids, using general purpose detergent and hot water - disposable gloves should be worn.

5. MANAGEMENT OF NON-INFECTIOUS AND INFECTIOUS DECEASED CLIENTS

This guideline sets out the procedures for staff to follow for the management of non-infectious and infectious deceased clients.

Management of deceased clients

The deceased should be treated with the due respect and dignity appropriate to their religious and cultural background. Last Offices, which vary according to religious and cultural practices, may be compromised by the need for specific measures if an infectious disease was associated with the death, or co-existed at the time of death. Most bodies are not infectious, however blood and body fluid precautions should be observed.

- a) Disposable gloves and apron should be worn by the person preparing the body.
- b) Washing the body with soap and water is adequate.
- c) Dressings, drainage tubes, etc. should not be removed unless the death occurred within 24 hours of an operation or was unexpected, in which case the advice of the coroner's office should be sought.
- d) Clean dressings should be applied to any wounds.
- e) Profusely leaking orifices may be packed with gauze.

The body of a person who has been suffering from an infectious disease may remain infectious to those who handle it. If the deceased has died from one of the following infectious diseases listed below, the body will need to be placed in a cadaver bag.

Anthrax	Brucellosis	Chickenpox / shingles
Cholera	Diphtheria	Food Poisoning (if faeces present)
Hepatitis B	Hepatitis C	HIV/AIDS
Leprosy	Meningococcal Septicaemia (with or without meningitis)	
Plague	Acute poliomyelitis	Psittacosis
Pyrexia of unknown origin	Q fever	Rabies
Tuberculosis (infective)	Viral Haemorrhagic fever	Yellow fever

or if there are large quantities of body fluids present. Body bags are available from the undertaker.

A 'Notification of Death' label and a 'Danger of Infection' label should be attached discreetly to the outside of the bag. Neither label should state the diagnosis, which is confidential information. It is the responsibility of the certifying clinician to ensure the funeral directors have sufficient information about the level of risk of infection and stating the type of precautions required.

Once the body is sealed in the body bag, protective clothing will no longer be necessary. Relatives and friends who wish to view the body should do so as soon after death as possible. A member of staff wearing gloves and plastic apron can open the bag, but relatives should be told that there is a risk of infection and should be advised to refrain from kissing or hugging the body. In some rare instances the bag could not be opened e.g. if the patient suffered from Anthrax, Plague, Rabies and Viral Haemorrhagic Fever.

Further advice on specific infectious diseases can be found in the Infection Control Guidelines for Funeral Directors or advice can be sought from the Port Health Authority.

6. SAFE HANDLING OF SPECIMENS

Clinical specimens include any substance, solid or liquid, removed from the patient for the purpose of analysis. Staff should be trained to handle specimens safely and receive regularly updated immunisation cover.

General Principles

- All specimens should be collected using 'Standard Contact Precautions' (i.e. wearing of appropriate gloves, disposable plastic apron and washing and drying of hands before and after the procedure).
- When a patient is asked to provide a specimen, they should be provided with the appropriate container and given instructions as to how to collect the specimen.
- Laboratory approved containers must be labelled with patient identification details, date of specimen and specimen details. The lids should be screwed on tightly. The container with the specimen must be placed in an individual transparent plastic transport bag as soon as it has been labelled.
- The transport bag must be sealed. The request form must always accompany the specimen but should not be put inside the bag with the specimen. If a wound swab, state type of wound, where on the body, whether deep or superficial and if antibiotics have been used either topical or systemic.
- Specimens must be sent to the laboratory as soon as possible after collection. This will mean planning workload carefully. Whilst awaiting transport, specimens should be stored securely, for as short a time as possible i.e. not overnight and away from food and medicines.
- If specimens have to be stored awaiting transport for more than 4 hours, specimens should be stored in an airtight container in a designated fridge - **not a food fridge**. (blood cultures should not be stored in a fridge)
- Sputum specimens must be received by the laboratory within 24 hours.
- If specimens are to be analysed on board a separate area should be available for this purpose. All surfaces must be impermeable and easy to clean.

NB. In the event of a suspected outbreak of infection it is important for specimens to be collected promptly and for the request form to be marked as 'Possible Outbreak'. Stool specimens should be sent as soon as an outbreak is suspected e.g. the second loose stool.

7. WASTE MANAGEMENT

7.1 Responsibility

All organisations have a **legal responsibility** to dispose of waste safely, ensuring no harm is caused either to staff, members of the public or the environment. This responsibility begins when waste is generated and ends with its final disposal; even where properly authorised agents are used. It is

essential that persons handling waste exercise care to prevent injury or transmission of infection to themselves or others - this fulfils their responsibilities under the current legislation (see 7.5.7).

7.2 Clinical waste

i) any waste which consists wholly or partly of human or animal tissue, blood or other body fluids, excretions, drugs or other pharmaceutical products, soiled swabs or dressings, or syringes, needles or other sharp instruments, being waste which, unless rendered safe, may prove to be hazardous to any person coming into contact with it; and

ii) any other waste arising from medical, nursing, dental, veterinary, pharmaceutical or similar practice, investigation, treatment care, teaching or research, or the collection of blood for transfusion, being waste which may cause infection to any other person coming into contact with it. (Controlled Waste Regulations 1992)

Clinical waste is categorised by the Health and Safety Executive as follows:

Group A: Soiled surgical dressings, swabs and all other contaminated waste from treatment areas;

materials other than re-usable linen from cases of infectious disease; all human tissue from hospitals or laboratories; and all related swabs and dressings.

Group B: Discarded syringes, needles, cartridges, broken glass and any other contaminated disposable sharp instrument or items. (ONLY if not contaminated with prescription-only medicines).

Group C: Microbiological cultures and potentially infected waste from Pathology Department, Laboratories, post-mortem rooms and other Clinical or Research Laboratories.

Group D: Certain pharmaceutical and chemical wastes (*those falling within the definition of clinical waste*). Special care should be taken with any waste that contains mercury or its compounds. Mercury should be recovered whenever possible. In particular, laboratories should remove mercury from aqueous solutions, specimens and the like before these are discharged to sewers.

Group E: Items used to dispose of urine, faeces and other bodily secretions or excretions not found in Group A. This is to include used disposable bedpans or bedpan liners, incontinence pads, stoma bags and urine containers.

7.3 Segregation of waste

The key to the safe disposal of waste is for all staff to conform to the system of segregation shown in the table on the next page. This system enables clear identification of the different types of waste encountered and indicates the disposal procedures that apply to each category.

TYPE OF WASTE	RECEPTACLE
Clinical waste	Yellow clinical waste Sacks
Sharps - needles, blades etc	BS 7320/UN 3291 Approved sharps container. If the sharps are contaminated with Prescription Only Medicines (PoMs) they must be disposed of as Special Waste.
General (domestic type) waste	Black Plastic Bags
Glass and aerosol cans	Plastic bag lined cardboard boxes that are clearly labelled 'Glass and aerosol cans: not to be incinerated'

7.4 Handling of waste

- Waste should be segregated at the point of origin
- Personal protective clothing should be worn when handling waste
- Clinical waste should be:
 - correctly bagged in yellow clinical waste sacks to prevent spillage
 - double bagged where:
 - the exterior of the bag is contaminated
 - the original bag is split, damaged or leaking
 - kept in a rigid-sided holder or container with a foot operated lid that completely encloses the sack
 - only filled to $\frac{3}{4}$ full
 - securely sealed and labelled with coded tags at the point of use to identify their source.
- Clinical waste should not be:
 - decanted into other bags, regardless of volume
 - contaminated on the outside
 - re-used
- Sharps must be disposed of into approved sharps containers that meet BS7320/UN3291
- Sharps containers must NEVER be placed into a yellow clinical waste bag

7.5 Disposal of waste

Clinical waste should be placed in a yellow clinical waste sack (minimum gauge 225mm). The bag should be removed and securely fastened at least once a day or when $\frac{3}{4}$ full, labelled with its place of origin and placed in the designated clinical waste storage/collection point. Any staff member handling clinical waste should be offered hepatitis B immunisation. If any waste is incinerated on board, the incinerator must comply with all environmental standards and legislation governing their use.

7.5.1 Disposal of sharps

Syringes, needles, razors, ampoules and other sharps should always be placed in a sharps container. These items should never be placed in a waste bag of any kind. Any sharps contaminated with PoMs i.e. ampoules, syringes (even fully discharged ones) must be disposed as Special Waste to comply with legislation. In practical terms this means that sharps bins must be labelled clearly with “pharmaceuticals & sharps” or a pharmaceutical bin used. The person responsible must ensure that waste is transported to an incineration plant that is licensed to deal with special waste. A new contract may need to be agreed with the waste contractor, as all special waste collections must have a consignment note.

Private persons are exempt of the above legislation, however they must still correctly label any sharps bins, for example those used for disposal of insulin syringes, as containing pharmaceuticals and sharps.

Care should be taken to ensure that sharps containers are correctly assembled according to the manufacturer’s instructions.

Use appropriately sized sharps container to prevent used sharps being stored for long periods of time.

It is the responsibility of the person who uses a sharp to dispose of it safely at the point of use.

Sharps containers must be sealed, labelled with the point of origin and placed in the designated clinical waste collection point when $\frac{2}{3}$ full.

Sharps containers should conform to BS 7230/UN 3291 and only one type/brand used.

Sharps containers should be kept in a safe location (on a flat surface, below eye level but not on the floor). This will reduce the risk of injury to clients, visitors and staff.

More advice on safe sharps management can be found on page 6.

7.5.2 Diabetic Sharps

All diabetic sharps should go into a pharmaceutical sharps container.

7.5.3 Disposal of Aerosol Cans/Glass/Bottles/Broken Crockery/Dry Cell Batteries

These must never be placed in any waste bag, especially a yellow clinical waste bag which is destined to be incinerated. These items should always be placed in a designated cardboard box, lined with a plastic bag to render it leak-proof. The box should be labelled to indicate its contents and method of disposal.

7.5.4 Disposal of Pharmaceutical Waste - Special Waste

As well as sharps contaminated with POMs pharmaceutical waste includes all part used and out of date medicines, cream and ointment tubes and aerosols. Other associated waste e.g. empty blister packs and alcohol wipe containers can be disposed of in the domestic waste stream (black bag).

All pharmaceutical waste i.e. unused medicines, ointments etc. should be placed directly into the pharmaceutical waste container. Some pharmaceutical waste from private households can be returned to the local chemist for them to place into their pharmaceutical waste container. This is not appropriate for used sharps; the appropriate arrangements must be in place for disposal.

When 2/3 full, the container must be sealed, labelled to identify its source with contact details and placed in the designated collection point.

The container must be clearly labelled, and all associated documentation signed off at the time of collection.

7.5.6 STORAGE OF CLINICAL WASTE

Clinical waste should be removed from point of generation as frequently as circumstances demand, and at least weekly. Between collections, waste should be:

- stored in correctly coded bags, with bags of each colour code kept separate
- situated in a centrally designated area of adequate size related to the frequency of collection
- sited on a well-drained, impervious hard standing floor, provided with wash down facilities
- kept secure from unauthorised persons, entry by animals and free from infestations
- Accessible to collection vehicles.

7.5.7 CURRENT LEGISLATION

Health & Safety at Work etc Act 1974

Control of Pollution Act 1974

Collection and Disposal of Waste Regulations 1988

Control of Pollution (Amendment) Act 1989

Controlled Waste Regulations 1992

Environmental Protection Act 1990

Environmental Protection (Duty of Care) Regulations 1991

Health Care Waste Management and Minimisation 2000

Public Health (Ships) Regulations 1979

The Safe Disposal of Clinical Waste 1999

The Special Waste Regulations 1996

SECTION H – REFERENCES

Decontamination

- Babb J., (1994) Methods of Cleaning and Disinfection. British Journal of Theatre Nursing 3(10) Jan 12-29.
 Bassett WH (1992) Clay's Handbook of Environmental Health. 16th Edition. London.
 MDA (2002) Benchtop Steam Sterilises – Guidance on Purchase, Operation and Maintenance. MDA DB 2002(06).
 MDA (2000) guidance on the Purchase, Operation and Maintenance of Vacuum benchtop steam sterilisers MDA DB 2000(05)
 NHS Estates (1994) Health Technical Memorandum 2010. London
 PHLS (1993) Chemical Disinfection in Hospitals. London.

Exclusion of Food Handlers

- DoH (1994). Management of Outbreaks of Foodborne Illness. HMSO. London.
 DoH (1995) Food Handlers: Fitness to work. Guidance for Food Businesses, Enforcement Officers and Health Professionals.

Handwashing

- Gould et al 2000. *Improving hand hygiene in community health settings*. Journal of Clinical Nursing 9-95-102
 ICNA (1999) Guidelines for Hand Hygiene. London.

Health and Safety

- Health and Safety Commission (1974). Health and Safety at Work Act. HMSO. London.
 Health and Safety Executive (1994). Control of Substances Hazardous to Health Regulations. HMSO. London.

Infection Control

- Ayliffe G, Fraiese A, Geddes A, Mitchell K, (2000) Control of Hospital Infection – A Practical Handbook. Fourth edition.
 Hawker J, Begg N, Blair I, Reintjes R, Weinberg J (2001) Communicable Disease Control Handbook. London.
 Lawrence, J., May, D., (2003) Infection Control in the Community. Churchill Livingstone. London.
 McCulloch, J. (2000) Infection Control - Science, management and practice. London.
 MEERS P, McPherson M, SEDGWICK J (1997) Infection Control in Health Care. 2 nd edition. Thomas Cheltenham.
 NATIONAL INSTITUTE FOR CLINICAL EXCELLENCE (2003) Infection Control – Prevention of healthcare-associated infection in primary and community care.
 Pritchard, A.P., Mallet, J. (Eds) (1992). The Royal Marsden Hospital Manual and Clinical Nursing Procedures, Blackwell,
 Wilson J. 2000 Infection Control in Clinical Practice. Bailliere Tindall London

Infectious Diseases

- British Society for Antimicrobial Chemotherapy (1995) Guidelines on the control of methicillin-resistant Staphylococcus aureus in the community. Journal of Hospital Infection, 31, 1-12.
 BTS (2000) Control and prevention of tuberculosis in the United Kingdom. Code of Practice 2000. Thorax 2000; 55: 887-901.
 Burgess, I. (1995) Management guidelines for lice and scabies. Prescribers. 5 May 87-107.
 Chin J., (2000) Control of Communicable Diseases Manual. 17 th Edition. Washington
 DoH (1998) Guidance for Clinical Health Care Workers: Protection against infection with blood-borne viruses. London.
 DoH (2000) Memorandum on Rabies. Prevention and Control. February 2000.
 DoH (2004) HIV Post-Exposure Prophylaxis: Guidance from the UK Chief Medical Officers' Expert Advisory Group on AIDS. London
 DoH (2000) Recommendations for the prevention and control of Tuberculosis at local level.
 Greenwood D, Slack R, Peutherer J. (1992) Medical Microbiology a guide to Microbial Infections: Pathogenesis, Immunity, Laboratory Diagnosis and Control. 14th edition. Churchill Livingstone, London
 Healing TD, Hoffman PN, young SEJ, (1995). The Infection Hazards of Human Cadavers. Communicable Disease Report. Vol5:No5.
 McDonald, P. (2000) Diagnosis and treatment of headlice in children. Prescribers. 5 Feb. 71-74
 NHS Executive (1999) Reducing mother to baby transmission of HIV. HSC 1999/183. London.
 NHS Executive (1998) Screening of pregnant women for Hepatitis B and immunisation of babies at risk. HSC 1998/127.
 PHLS (1995) Control of meningococcal disease: guidance for consultants in communicable disease control. CDR Review Vol. 5, Number 13, 8 December 1995.
 PHLS (1999) Guidance for the control of Parvovirus B19 infection in healthcare settings and the community.
 PHLS. (2000) Guidelines for the control of infection with Vero cytotoxin producing Escherichia coli (VTEC)

Ramsey, M.E. (1999) Guidance on the investigation and management of occupational exposure to hepatitis C. *Communicable Disease and Public Health*. Vol. 2. No. 4. 258-262.

RCN (2000) *Methicillin Resistant Staphylococcus Aureus (MRSA) -Guidance for Nurses*. London.

Laundry

NHS Executive (1995). *Hospital Laundry Arrangements for Used and Infected Linen HSG (95) 18*.

DoH 2003. *Care Homes for Older People; National Minimum Standards*. HMSO.

NHS Estates (2002) *Infection Control in the Built Environment*. The Stationery Office.

Protective Clothing

ICNA (1999) *Glove Usage Guidelines*. London.

ICNA (2002) *A Comprehensive Glove Choice*. London

ICNA (2002) *Protective Clothing – Principles and Guidance*

Public Health

DoE (1990) *Environmental Protection Act 1990*. HMSO. London.

DoH (1961) *Public Health Act 1961*. HMSO. London.

DoH (1988) *The Public Health (Infectious Diseases) Regulations 1988*. HMSO. London

Sharps

ICNA (2003) *Reducing Sharps Injury – Prevention and risk management*. London

Single-use

MDA (2000) *Single-use Medical Devices: Implications and Consequences of Reuse*. London.

Waste

HSC (1999) *Safe Disposal of Clinical Waste*. London

IWM (2000) *Healthcare Waste Management and Minimisation*. London

Phillips G (1999) *Microbiological Aspects of Clinical Waste*. *Journal of Hospital Infection* 41:1-6.