

guidelines for best practice in cross-infection control



a reference guide for G.P.'s & Practice Nurses

introduction

With the continuing debate regarding cross infection control, there has never been a better time to ensure that you are providing a service that promotes best practice.

As practice sizes grow and the number of patients increase, it is important that cross infection control standards are not compromised between patients for both the benefit of the patient and the surgery team.

Enough time should be allocated between patients in order to implement standards precautions to reduce the risk of micro organisms from known and unknown sources of infection (blood, body fluids excretions, secretions etc.)

The implementation of a cross infection control policy and standard surgery procedure require thorough knowledge of the risks and the practical measures that must be taken using best practice and recommendations.

The following list of references can be used to access a full range of information on infection control.

- (a) www.mrha.co.uk Medical Device Authority
- (b) www.icna.co.uk Community Infection Control Nurses Network
(A full document entitled "Infection Control Guidance for General Practice" can be purchased from this association)
- (c) www.ndsc.ie Health Protection Surveillance Centre (A copy of SARI hand hygiene report and recommendations can be obtained from this site)
- (d) www.nice.org.uk National Institute for Health and Clinical Excellence
- (e) www.euro.who.int World Health Organisation European Offices

areas of focus



hand hygiene

page 3

general surgery cleaning

page 5

nurses uniforms & protective barriers

page 7

disposal of healthcare waste & sharps

page 8

cleaning and washing of instruments

page 9

packing and loading instruments for sterilisation

page 12

sterilisation

page 14

achieving optimum hand hygiene



Hand hygiene is now recognised as the single most important procedure undertaken by healthcare professionals to counter the spread of infection. Looking at NICE and SARI recommendations we have put together a quick reference for correct hand hygiene technique.

It is accepted that hands should be decontaminated

- (i) **Before and after every episode of direct patient contact**
- (ii) **Between different activities for the same patient**
- (iii) **After any other contact that could contaminate the hands**

Patient treatment areas should always have adequate hand washing facilities. Ideally there should be a hand basin with lever operated mixer taps, liquid soap from a dispenser, a good supply of paper towels and a foot pedal bin for disposal of paper towels.

Prior to hand washing/decontamination all hand jewellery should be removed, cuts should be covered with a waterproof dressing and nails should be short, clean and nail varnish free.

If hands are visibly clean they may be decontaminated immediately using an alcohol based hand gel or rub. The user must ensure that the gel/rub is applied for the correct length of time and must come into contact with all surfaces of the hand. Prior to commencing patient care or other activity the hands must be completely dry. **(Please page 4 for correct alcohol gel/rub technique)**

Prior to hand decontamination, if hands are visibly soiled or grossly contaminated (e.g. post using the lavatory) they must be washed with warm water and liquid soap. **(Please page 6 for recommended hand wash chart)**

A good quality liquid soap should be used and hands must be dried thoroughly with paper towels. (Please note that Terry Towels and warm hand dryers are not recommended for health care facilities) If hands are left slightly moist they become an excellent vector for bacteria and microorganisms.

Once hands have been washed correctly it is now possible for them to be decontaminated effectively using the alcohol gel/rub technique.

Finally as a result of rigorous hand hygiene the hands may suffer drying and chapping. It is recommended that an emollient hand cream is used regularly to prevent these conditions.

recommended alcohol hand rub technique



1st step:

Palm to palm. Attention: including wrists

2nd step:

Palm of right hand over back of left hand and palm of left hand over back of right hand.

3rd step:

Palm to palm with fingers interlaced.



4th step:

Back of fingers to opposing palms with fingers interlocked

5th step:

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

6th step:

Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa

- Apply the disinfectant to the dry hands
- Following the procedure shown above, vigorously rub the product into the hands up to the wrist for 30 seconds
- Carry out the movements of each step five times

- After the end of step six, individual steps are repeated for the duration of the contact time
- Ensure that the hands remain moist with product throughout the rub-in time. If necessary, add more hand disinfectant

Standard rub method according to EN 1500

general surgery cleaning



recommended hand washing technique

PREPARATION



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



Wet hands thoroughly under running water.



Apply 5ml 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



Wash hands and rub palm to palm 5 times



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



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



Rub palm to palm with the fingers in interfaced.



Wash thumbs of each hand separately using a rotating movement



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



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



Turn off taps using elbows.



Dry hands completely using a disposable paper towel.



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

We have outlined some basic recommendations for surgery cleaning that should be undertaken by the person in charge of this activity. If this work is done after surgery hours it should be checked by the appropriate health care professional to ensure the correct standards are being met.

- (i) Cleaning should be done with disposable cloths or disinfectant wipes
- (ii) Cloths and mops should not be steeped as this can lead to breeding of gram negative bacilli. Ideally cloths should be disposed of straight away and a mop with a disposable floor wipe should be used
- (iii) For dry cleaning floors a brush should not be used as this raises the dust. Instead a dust attracting dry mop or vacuum cleaner is recommended. There should not be any carpets in clinical areas
- (iv) Multi-touch equipment (e.g. phones, light switches, keyboards) should be cleaned thoroughly by damp dusting with a detergent solution
- (v) Surgery toys should be cleaned daily with a detergent solution. It is advisable to have toys that can easily be cleaned. Soft toys are not recommended

- (vi) Ensure patient seating and other furniture within the waiting room is damp dusted with a detergent solution daily. It would be advisable to invest in furniture that can withstand daily cleaning
- (vii) Patient couches should be cleaned daily or if visibly soiled. The couch may be washed with hot soapy water or with disinfectant wipes. Disposable paper couch roll should be used as bed linen and changed between every patient
- (viii) Clinical surfaces and trolleys should be disinfected thoroughly at the start and end of each procedure
- (ix) Blood stained equipment must first be cleaned with a disinfectant such as Milton before then being cleaned with detergent and hot water
- (x) All recently cleaned surfaces and equipment should be allowed to dry thoroughly before being used again as drying helps in the elimination of bacteria. If the area or equipment is required before fully dry then paper towels can be used to complete drying

nurses uniforms & protective barriers



Hospitals throughout Ireland have a standard uniform policy. This is usually written up by a policy team to reflect the practices within that particular hospital. However there appears to be a general consensus between most hospitals and the principles can also work within a general practice setting.

Uniforms can often become contaminated by disease-causing bacteria and research shows that the areas on a uniform where maximum contamination occurs is where greatest hand contact occurs e.g. pockets, cuffs and apron areas. Contact with these areas allows washed hands to become re-contaminated.

The general minimum standards for uniform care are:

The nurse should change out of the uniform at the end of each shift.

A uniform should not be worn on consecutive days without being laundered.

Uniforms should be transported separately from other items.

The uniform should not be worn outside the place of work and not worn into any commercial premises.

Uniforms should be machine washed, separate from other items at 65-71 degrees. Hand washing of uniforms is ineffective

It is advisable to have a spare uniform available at work in case the one being worn becomes contaminated.

It should be noted that uniforms alone would not protect both the patient and the healthcare worker from the risk of



cross infection. Staff should assess each procedure that they undertake to see if there is a requirement to wear protective barriers.

Such barriers would include:

- (a) **Gloves**
- (b) **Plastic Aprons: Should be worn when uniform is at risk of contamination with body fluids e.g. while manually washing instruments or dressing wounds etc. Aprons are disposable single use items and should be removed and disposed of once the specific task has been completed**
- (c) **Goggles: Should be worn if there is any risk to the eyes from body fluids or chemicals e.g. manually washing instruments**
- (d) **Masks: Should be worn when there is a risk of blood, bodily fluids or secretions coming in contact with mucous membranes or if the patient is suspected of carrying an airborne infectious illness e.g. T.B.**

Masks should be:

- (a) Worn close fitting
- (b) Changed between patients
- (c) Changed if wet
- (d) One use only never re-use

disposal of healthcare waste and sharps



Disposal of health care waste and sharps

Health Care Waste is defined as the solid or liquid waste arising from health care or health related facilities. Categories include:

Health Care Non-Risk Waste: Waste not contaminated with body fluids

Health Care Risk Waste: Waste contaminated with body fluids and hazardous to others

All waste generated in medical practice must be segregated into one or other of these categories and disposed of appropriately. All producers of waste have a duty to ensure that the necessary precautions are taken when disposing of health care waste.

- (i) **Waste should be carefully labelled, secured and stored safely**
- (ii) **Protective clothing should always be worn when handling waste, e.g. apron, mask and gloves**
- (iii) **Waste should be disposed of in appropriate coloured bags**
- (iv) **Bags should not be overfilled as this can lead to spillage and bag splitting. It is recommended to fill bags to two thirds full**

Black Bags are used for Health Care Non Risk waste and can be disposed of to a landfill site.

Yellow Bags are used for Health Care Risk Waste, and must be disposed of in compliance with the law and the regulation/policies of the Department of Health and Children and the Department of the Environment.

Pharmaceutical waste should be returned to the nearest pharmacy. Disposal of controlled drugs should be recorded in the controlled drugs book by 2 medical or nursing staff also listing method of disposal.

Disposal of Sharps

It is always the responsibility of the person using the sharp to dispose of it correctly

Sharps within medical practice include anything that has the ability to puncture the skin e.g. needles, surgical instruments and IV sets.

All sharps should be disposed of in a rigid safe container specifically designed for the purpose and conforming to EU standards.

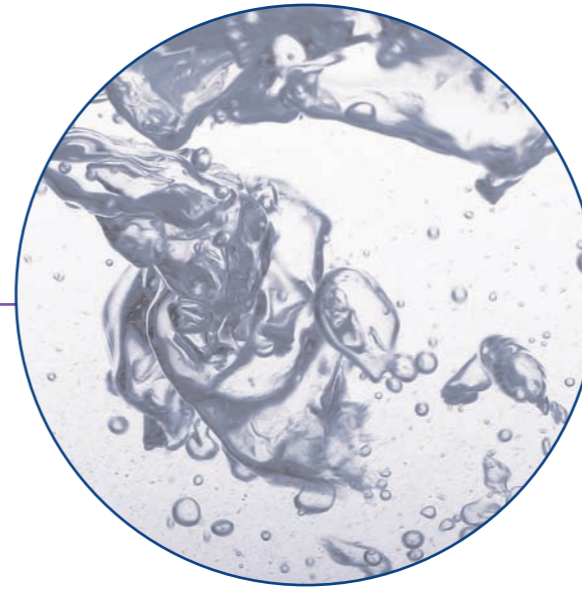
It is important that the containers are assembled correctly and are fully sealed once two thirds full.

Other precautions to note in order to prevent injury are:

- (i) **Never re-sheath a needle as this is the most common cause of needle stick injury**
- (ii) **Never pass sharps directly from hand to hand**
- (iii) **Use a tray to carry sharps**
- (iv) **Do not dismantle needles and syringes by hand prior to disposal**
- (v) **The sharps container should be kept as close as is practicable to the work station and ideally should be wall mounted or on a trolley**
- (vi) **Sharps containers should be sealed and sent for disposal once they are two thirds full**
- (vii) **The general public especially children should never have access to the sharps container**

The practice should have a written policy in place in the event of a staff member or patient receiving a needle stick injury.

cleaning and washing of instruments



Prior to sterilising instruments in an autoclave it is important to clean them thoroughly to remove all blood, mucous and tissue deposits from the equipment. Cleaning removes only visible contamination. Failure to clean instruments correctly can mean that the steam is unable to penetrate to all surfaces of the instruments and therefore makes effective sterilisation impossible.

Ideally an ultrasonic cleaner or washer/disinfector should be used to wash instruments. These devices involve less handling of contaminated instruments and are more effective.

The ultrasonic cleaner uses high frequency radio waves to generate air bubbles in the detergent, which implode when the pressure changes from positive to negative. The process known as cavitation releases the debris. Once ultrasonic cleaning has taken place instruments should be washed in hot water and dried with a lint free cloth. On a daily basis the ultrasonic bath should be emptied, cleaned and left to dry.

Washer-disinfectors which are especially designed for cleaning instruments are now widely available. Featuring pre-programmed, reproducible cycles they offer the most comprehensive means of automatic instrument cleaning.

- (i) **They should be used with a suitable detergent**
- (ii) **Most washer-disinfectors have a rinse cycle and drying cycle, if they don't then instruments must be thoroughly rinsed and dried by hand**
- (iii) **Items should be checked for cleanliness and damage post washing**
- (iv) **Machine should be emptied and cleaned after use**

Washer-disinfectors must **NOT** be used as a substitute for instrument sterilisation. We would recommend that you buy a washer-disinfector with a printer to ensure traceability.

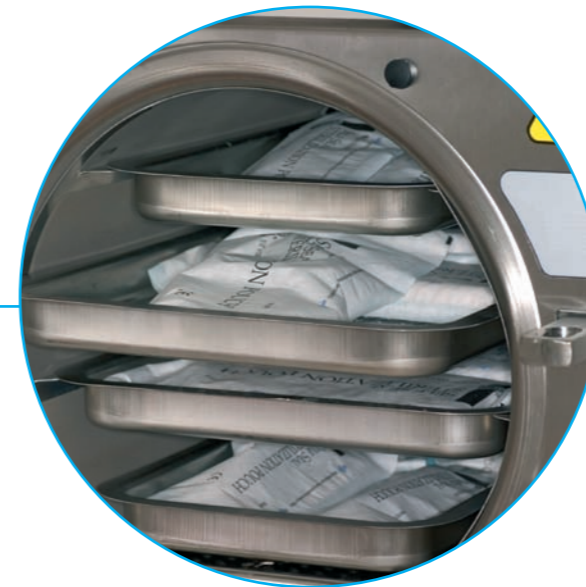
If hand washing of instruments is unavoidable then the following should be taken into consideration.

- (i) **There should be a designated area within the practice for this purpose with a deep sink for cleaning instruments and another sink for rinsing the instrument**
- (ii) **The person responsible for the washing should wear gloves, a plastic apron and eye protection (in case of splashes). Masks should also be worn as there is a risk of inhalation of tiny water droplets created by using brushes on the instruments**
- (iii) **Instruments should be cleaned in warm water and detergent**
- (iv) **Firstly the debris should be loosened with a nylon brush whilst keeping the instruments under water to minimise splashing**

- (v) **After ensuring that the instruments have been washed thoroughly, they should be rinsed well in clean water and dried individually on a clean, lint free cloth**

Following cleaning by any of the above methods all instruments should be checked to ensure that they are thoroughly dry and that any joints move freely but are not loose. Scissors and knives should be inspected to make sure they are sharp. If dealing with a small or delicate item, a magnifying glass can be used to help in their examination. When sterilising forceps they should be closed on the first ratchet and any sharp points should be protected from potential damage by other instruments in the same load. Defective instruments should be discarded immediately and replaced.

packing and loading instruments for sterilisation



Packing Instruments for Sterilisation

1. If the instruments are to be used immediately after sterilisation they can be placed directly onto the appropriate autoclave tray without any form of packaging being necessary.
2. Note that these instruments must be used immediately and once the autoclave door has been opened it has become a non-sterile environment thus instruments stored within it are now not sterile!
3. It is not advisable to sterilise instruments and to then put them into pouches and re-sterilise them in a non-vacuum autoclave for the purpose of storing them. The moment you place a sterile instrument into a pouch which has a non-sterile interior you immediately contaminate the instrument. In a non-vacuum autoclave the steam cannot penetrate the pouch thus the interior of the pouch plus the instrument inside remain non-sterile and unfit for use.
4. If instruments are going to be stored for use at a future time the use of appropriate packaging will help to

maintain the integrity of the sterilised items. Please note that pouched instruments can only be processed in a vacuum autoclave.

- (i) Only sterilisation packaging such as pouches that are suitable for use within an autoclave should be used
- (ii) These normally come with a process indicator, which advises the user that the instruments have been through a successful sterilisation process
- (iii) Clear fronted pouches are available in a wide range of sizes or they can be purchased on a reel allowing the user to cut off appropriate lengths prior to use
- (iv) Sterilisation pouches can be used utilising different closure methods such as plain and heat and self-seal. The packaging technique for both is the same

- (v) The pouches being used should be folded around the contents as tightly as possible to remove any trapped air
- (vi) Clear fronted pouches are available with heat-sealing bands and require a heat sealer to seal them
- (vii) Self-seal pouches require no apparatus and are secured by pressing a coated flap at the top of the pouch to the opposite face of the pouch
- (viii) Once sealed the pouch should be labelled appropriately listing the contents as well as the date it was packed

Loading Instruments for Sterilisation

Once instruments have been packed correctly it is simply a case of placing the prepared load into the autoclave.

- (i) Individual wrapped loads should be placed on their own tray, not stacked directly onto other wrapped loads
- (ii) Pouched instruments should be placed in the approved pouch rack
- (iii) Unpacked instruments that are placed directly onto the instrument tray should be loaded in such a way so they not touch each other and the height of the load does not interfere with the tray or the chamber above
- (iv) If instruments are stacked on top of each other or are touching steam cannot come into contact with all instrument surfaces and sterilisation could be impeded
- (v) No items should be placed on the floor of the autoclave chamber

sterilisation



All instruments likely to be contaminated must be sterilised after use

Sterilisation procedures must be effective against all known pathogens

The highest temperature compatible with the equipment to be sterilised should be used

Packs should be dry when removed from autoclave

Types of autoclave and suitable loads

Non-vacuum 'Type N' autoclaves: Are steam sterilisers without a vacuum phase. These autoclaves should only be used for solid instruments, which are placed directly onto the instrument tray (unwrapped and un-pouched).

In no instance should hollow, pouched or wrapped items be sterilised in non-vacuum autoclaves. There is no guarantee that steam will penetrate to all instrument surfaces, to effect sterilisation of the instrument.

'Type S' vacuum autoclaves: Employ a single pulse pre-vacuum phase and are suitable for sterilising pouched solid or un-pouched hollow instruments (where the diameter to length ratio is no greater than 110:1)

A 'Type B' vacuum autoclave: Employs a triple pulse, pre-vacuum phase and is suitable for sterilising a wide

variety of loads including complex hollow instruments, sets of instruments, porous items and loads which are pouched or wrapped in the appropriate materials.

Because microorganisms will not be destroyed unless they come into direct contact with steam, any air that remains trapped within the instrument or load will act as a barrier to the steam and prevent parts of the load from being sterilised. The triple pulse, pre-vacuum phase of a 'Type B' vacuum autoclave utilises a powerful vacuum pump to forcibly remove all the residual air from within the chamber and load, enabling steam to circulate freely and rapidly, and allowing good penetration of the steam into the load, thus ensuring fully effective sterilisation.

Vacuum autoclaves feature vacuum assisted drying at the end of the sterilisation phase. The rapid removal of steam and the creation of a vacuum within the chamber and load help to ensure all contents are thoroughly dry when removed from the autoclave.

This offers the user significant advantages that bring a practical benefit, as equipment such as single solid or hollow instruments, sets for surgical procedures and porous items can be wrapped in approved packing materials that will then maintain the contents in a sterile condition ready for use at a later time.

Choosing The Correct Autoclave

Case Size

Before you buy establish where you intend to keep your autoclave. If you have a space restriction determine if the autoclave has a smaller case that will fit confined spaces, If space is severely restricted, it maybe worth considering the purchase of a smaller autoclave that is specifically designed for sterilising small instruments

Chamber Size

Choose an autoclave with the appropriate chamber diameter for your needs - the bigger the chamber the greater the capacity for instruments, although a smaller chamber will usually mean faster overall cycle times and may be more appropriate for your needs.

Cycle time

The quicker the cycle, the quicker the turnaround of instruments. Ensure the autoclave has the appropriate choice of cycles to meet your sterilising requirements.

Heater Design

Choose one that heats the water outside the chamber. This ensures that the load will be completely dry and minimises the amount of sterilised water lost between cycles - which costs you money.

Single Use Water

Autoclaves that use fresh sterile/distilled water for each cycle offer superior performance as there are no contaminates from previous cycles being used in the sterilising process. The reservoir and chamber of the autoclave should be drained at the end of every working day and left to dry

Aesthetic Design

Make your life easier. Choose an autoclave that looks good and one that can be easily maintained with minimum effort. Consider a plastic-bodied autoclave rather than metal. Plastic removes the risk of rust and upholds maximum good looks with minimum of effort. A good looking, modern autoclave will be in keeping with

today's modern practices and, will present a good image to patients, reassuring them that they're in safe, caring hands.

Printer Facility

Printers make permanent recording easy but do cost extra. If you do not invest in a printer initially, ensure that you can refit one at a later date.

Guarantees/Warranties

Check the period of warranty offered with the autoclave. Ensure that your autoclave can be set up and demonstrated by an engineer from the company you buy from. It would be advisable to set up a service contract with your supplier to ensure proper upkeep with quarterly and annual checks.

Quality Assurances

Quality standards are there for a reason. Check with the manufacturer whether their sterilisers conform to the Medical Devices Directive (93/42 EEC) and are CE marked.

It is the responsibility of the operator to ensure that daily checks are carried out on your autoclave.

Daily checks should include:

- (i) The 'steam penetration test' using a Bowie Dick. If the Bowie dick test should fail a second one should be done. If this should also fail then the autoclave should be put out of commission and serviced. The Bowie dick packet should be placed on its own in the autoclave when the cycle is run.
- (ii) The 'vacuum leak test' which is usually a pre-programmed cycle in the autoclave.
- (iii) Examine the door sealing gaskets
- (iv) Always ensure there is sufficient water in the reservoir.

Records of every sterilisation cycle should be kept by use of the attached printer or the use of chemical indicator strips.

The printout and strip should be stored along with the list of specific instruments sterilised in that cycle.