

## SECTION 12. 4

### WOUND CARE

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#### Appendix 12.4.1 Decision tree for aseptic/clean technique

<b>Developed by</b>	Máire Flynn, Liz Forde, Niamh Mc Donnell and Patricia Coughlan		
<b>In conjunction with</b>	Geraldine Missorici, ADPHN, Wound Care Specialist, Kerry Pat McCluskey, CNS Wound Care, Cork University Hospital Elizabeth Healy, ADPHN, South Lee		
<b>Date developed</b>	August 2012		
<b>Approved by</b>	Cork and Kerry Infection Prevention and Control Committee Kerry Infection Prevention and Control Committee		
<b>Reference number</b>	IPCG 12.4/ 2012	<b>Revision number</b>	0
<b>Revision date</b>	2015 or sooner if new evidence becomes available		
<b>Responsibility for review</b>	Infection Prevention and Control Nurses		

Despite major advances in techniques, wound infections are still a problem in terms of morbidity and mortality. In two prevalence studies, surgical site wound infections were identified as the second highest incidence of hospital acquired infection (HAI) accounting for 10-30% of all HAI's (Haley et al, 1985; Emmerson et al, 1996). In Ireland, surgical site infection in hospital patients was identified as one of the two most common healthcare associated infections (HCAI's) (HPSC, 2007).

The impact of wounds in particular chronic wounds, on client health and well being and the substantial burden wound care places on health care staff, organisations and resources provides an opportunity to improve prevention and management strategies (HSE, 2009).

Whether wounds are acute like surgical incisions, or chronic, like leg ulcers, every effort must be taken to prevent invasion of potentially pathogenic organisms. Healthcare professionals from all disciplines are involved in the prevention and management of wound infection, but despite appropriate patient care and advances in treatment and prevention strategies, some wounds will still become infected as there are many variables involved in wound healing (Kingsley, 2001; HSE 2009). Chronic wounds in particular are common across all healthcare settings and there is growing evidence that the burden of chronic wounds in Ireland is already high and likely to increase (HSE, 2009).

### **Wound Classification**

Wounds can be classified according to cause and stage of healing process:

- **Acute wounds** may be defined as the disruption in the integrity of the skin, including the epidermis and dermis (Kelly, 2007) and includes traumatic injuries such as burns, scalds, lacerations, abrasions (grazes) cuts and bites. Surgical wounds are intentional acute wounds.
- **Chronic Wounds** occur when acute wounds fail to heal within the expected time, and are usually associated with underlying pathologies which delay the healing process such as leg ulcers, pressure sores and malignant tumours (Scanlon, 2003). In chronic wounds, the orderly sequence of events seen in acute wounds becomes disrupted at one or more stages of wound healing (Kelly, 2007).

### **The Role of Infection Prevention and Control in Wound Care**

The role of infection prevention and control in wound care is advisory and provides a specialized service which enables others to prevent and control infection (Howard, 2003) by adopting reliable aseptic and clean techniques. For healthcare workers the main concern is to prevent wound contamination from extrinsic sources such as hands and non-sterile/dirty utensils contaminating vulnerable wound sites (Preston, 2005).

### **Minimising the Risk of Infection**

#### **Hand Hygiene**

Hand hygiene is the single most important measure in preventing and reducing cross infection. Wearing gloves to perform wound care procedures is not a substitute for hand hygiene and it is critical that hand hygiene is carried out according to the WHO Moments for Hand Hygiene.

Decontaminate hands

- Before touching a client.
- Before aseptic or clean procedure.
- After blood or body fluid exposure risk.
- After touching a client.
- After touching clients surroundings/environment.

An alcohol hand rub is recommended for use on visibly clean hands  
(WHO, 2009 and 2012).

### **Wound Assessment**

Wounds should be categorised according to cause, location (including size and dimensions of wound) and duration. Assessment of the wound should include tissue type, exudate -amount and type, odour, phase of healing, description of wound bed, presence of pain or signs of infection and state of surrounding skin (HSE, 2009).

Following a **risk assessment**, all interventions undertaken in relation to carrying out wound care should be performed using an **aseptic** or **clean** technique as appropriate (see appendix 11.4.1).

### **Aseptic Technique**

Aseptic technique is a method used to prevent microbial contamination of wounds and other susceptible sites by ensuring that only sterile objects and fluids are used. Aseptic technique reduces the risk of contamination to vulnerable sites from organisms that could cause infection (Fraise and Bradley, 2009).

### **The Core Steps that must be taken during an Aseptic Technique include:**

- That all appropriate sterile items are available
- That the setting is prepared
- The correct number of personnel are available to assist in the process
- That the HCW has the relevant personal protective equipment ready for use
- That adequate hand hygiene is performed before commencing and facilities for hand hygiene are available for use during the procedure
- Using a non-touch technique so as not to contaminate key parts. (Key parts are those which come into direct contact with the residents/clients wound and if become contaminated with micro-organisms, increase the risk of infection (Fraise and Bradley, 2009)

**Asepsis** can only be achieved if every effort is taken to ensure that;

- Standard Precautions are employed
- All instruments, fluids and materials that come in contact with the wound are sterile.
- Single-Use items are only used once (See section 8- Signs & Symbols)
- Single Patient Use items are only used for one resident/client and are decontaminated appropriately in between use
- Re-usable items are decontaminated according to local policy
- Sterile equipment is stored in a clean, dry area, free from dust and off the floor to protect the integrity of the packaging and the equipment (See section 8- Storage and Maintenance of Sterile Supplies)

<b>Practicalities of Aseptic Technique</b>	
<b>Hand Hygiene</b>	<p>Carry out antiseptic hand hygiene prior to all wound care by using either</p> <ul style="list-style-type: none"> <li>• an antiseptic agent or</li> <li>• an alcohol handrub for a minimum of 30 seconds if hands are physically clean.</li> </ul> <p>Alcohol hand rub should be available for use during the procedure</p> <ul style="list-style-type: none"> <li>• In a healthcare setting -place alcohol hand rub on the lower shelf of all dressing trolleys</li> <li>• In the home setting, ensure an alcohol hand rub is available at the point of care.</li> </ul>
<b>Glove Wearing</b>	<p>Wear sterile gloves for aseptic procedures.</p> <p>The purpose of wearing gloves is:</p> <ol style="list-style-type: none"> <li>a) To protect the hands from becoming contaminated and</li> <li>b) To prevent the transfer of organisms from hands to the wound and to thereby minimise cross-infection.</li> </ol> <p>Carry out hand hygiene on removal of gloves.</p>
<b>The following is applicable to all wound care</b>	
<b>Environment</b>	<p>In Healthcare Settings, dressings can be carried out in treatment rooms of a suitable size with adequate hand hygiene facilities or by using a dressing trolley at the bedside.</p> <ul style="list-style-type: none"> <li>• Wounds should only be exposed for the minimum amount of time</li> <li>• In between each use decontaminate foot stool/couch /foot showers or sinks <ul style="list-style-type: none"> <li>• Clean with detergent and water and dry or detergent wipe.</li> <li>• If soiled with blood or body fluids: Following routine cleaning, disinfect using a chlorine releasing agent at 1,000 ppm concentration e.g. Milton or a combined cleaner/disinfectant e.g. Chlor-Clean, rinse and dry</li> </ul> </li> <li>• Schedule aseptic procedures 30min following bed-making and cleaning to minimise aerial spread of organisms (Creamer &amp; Humphries, 2008).</li> <li>• In the home a clean surface should be used to create an aseptic field where wound care is to be carried out e.g. dressing pack on a clean surface.</li> </ul>
<b>Equipment</b>	<ul style="list-style-type: none"> <li>• Use single use solutions e.g. saline sachets and dressings per resident/client.</li> <li>• If a sterile dressing to be applied directly to a wound is to be cut, use a sterile scissors. Single use sterile scissors to be disposed of after use.</li> <li>• Discard opened sterile dressings and packs after single use.</li> <li>• Dressing trolleys should be cleaned with warm water and detergent daily. Dry thoroughly using disposable paper. Wipe clean surface with 70% alcohol prior to each procedure</li> <li>• Trolleys used for aseptic technique must not be used for any other purpose (Dougherty &amp; Lister, 2004).</li> <li>• Trolleys should be cleared and not used for storage of dressing equipment</li> <li>• Lubricating oils or creams should be individual use only. Label with clients details and date when opened.</li> </ul>

As long as the principles of asepsis are maintained, variations are acceptable. It is important that techniques are based on good evidence rather than ritual procedures.

**Indications where aseptic technique is always employed include:**

- Acute wounds – recent surgery or traumatic injury (burns)
- Immunocompromised patients e.g. receiving immunosuppressant therapy, leukaemic, post transplant
- Patient’s with compromised circulation e.g. diabetic patients, peripheral ischaemia

**Clean Technique-The Process**

This method is a modified aseptic technique and aims to avoid introducing micro-organisms to a susceptible site and also to prevent cross-infection to patients and staff. A clean technique adopts the same control of infection principles but clean (rather than sterile) single use gloves and/or tap water that is safe to drink may be used (Hollingworth et al, 1998)

However, a sterile dressing must always be applied to the wound. If the dressing needs to be cut, a single use sterile scissors must be used and the rest of the dressing must be discarded as it is no longer sterile once opened.

- A risk assessment must first be undertaken by a trained HCW to ensure the appropriate technique is employed (See appendix 11.4.1).

The process also includes a no or non-touch technique being employed i.e.

- not handling the ends of sterile items that will come in contact with the site being cared for, and
- clean, single use rather than sterile gloves are advocated.
- if there is a risk that sterile items may have to be handled, sterile gloves are recommended as in aseptic procedures.

A clean wound management technique i.e. cleaning or showering of wounds, may be implemented when the criterion for aseptic technique is not demonstrated or when policies and procedures dictate (HSE, 2009).

**Procedures that are appropriate for a clean technique include:**

- Applying dressings to wounds that are healing by secondary intention e.g. dehisced wounds, leg ulcers, pressure sores or dressings covering tracheostomy sites
- Removing drains or sutures

**Wound Cleansing**

The primary objective of wound cleansing is to remove foreign materials and reduce the bioburden in the hope of treating or preventing wound infection, preparing the wound for grafting and removing exudate and odour (HSE, 2009).

Cleansing has two main components:

1. Washing to remove loose wound and dressing debris.
2. Debridement to remove adherent necrotic or sloughly material.

- Consider 1) when to clean?  
2) what do I use to clean? and  
3) how to clean?

### **When to Clean?**

Research has shown that

- It is not necessary to cleanse wounds at each dressing change and the rationale for doing so should be carefully considered. If the wound is clean and has minimal exudate, little benefit is derived from routine cleansing which may traumatise delicate new tissue (Kelly, 2007).
- Exudate is required on the wound surface to maintain phagocyte levels as well as other wound healing hormones and chemical stimuli. Irrigation would remove these and is therefore best avoided.
- However, it may be necessary to cleanse the surrounding skin to prevent excoriation from excess exudate. This may be achieved by irrigation or wiping **AROUND** the wound.
- If there is excessive exudate the wound should also be cleansed.

### **What do I Use to Clean?**

- Sodium chloride 0.9% sterile solution for wound cleansing is favoured - isotonic sodium chloride is one of the best agents for cleaning open wounds because it removes debris and bacteria without cell destruction (Kelly 2007). However it is vital to use single use saline sachets (Miguens 2007).
- Water can be used for cleansing wounds to prevent infection – drinkable tap water may be as effective as sterile water or sterile saline. Review of trials showed no difference in infection rates between wounds using tap water or saline. The decision to use tap water should take into account the quality of the tap water, any compromise of immune function of the patient and the extent and nature of the wound (HSE 2009).

### **How to Clean?**

- Saline should be warmed and applied to the wound with a syringe. (If there is a risk of splash back, a splashguard should be used).
- Cotton wool balls are not recommended as fibres may be left in the wound, act as a foreign body and can delay healing.
- Bathing/showering is a very effective way of cleansing wounds, i.e. perineal wounds, abdominal wounds, etc. (Kelly, 2007).
- Leg Ulcers are best cleaned by foot showers or washing in a bucket of water.
  - Patients should have their own individual buckets; these should be brought in by the client when coming into the clinic. Inform the patient that these buckets cannot be used for any other use. Buckets must be lined with disposable plastic bag.
  - Foot showers and buckets - clean after each use and disinfect using a chlorine-based disinfectant/hypochlorite at 1,000 ppm concentration, or use combined cleaner/disinfectant, rinse and dry. Alternatively a one step product combined detergent and disinfectant can be used.

- Some patients may present with more complex wound management needs including those who are specifically vulnerable e.g. patient with diabetes or are suffering from conditions or are undergoing treatments that leads to immunosuppression. In such circumstances, it is advisable to seek advice from nurse specialists or relevant medical staff.

## **Wound Infection**

Every wound has the potential to become contaminated or infected. Therefore, it is necessary to be aware and to observe for the signs and symptoms of infection, both local and systemic:

### **Signs and Symptoms of Infection**

<b>Local</b>	<b>Systemic</b>
Inflammation and/or redness. Cellulitis or heat Presence of pus or exudate. Pyrexia. Unexplained/change in pain Friable granulation tissue that easily bleeds. Malodour, pocketing or bridging Increase in exudates Unhealthy colour of wound bed Over-granulation of tissue.	Pyrexia Tachypnoea Tachycardia Confusion Hypoxia

Patients at increased risk of developing a wound infection are those whose immune response is sub-optimal e.g. the elderly, poorly controlled diabetics, patients receiving therapies that affect immuno-competency e.g. steroids and patients who have had a transplant (European Wound Management Association (EWMA), 2005).

Document signs of infection to facilitate informed review of treatment. The presence of infection can have a negative impact on the individual's quality of life, contributing to increased morbidity and mortality thus early detection is vital (Moore and Cowman, 2007).

In cases where a wound infection appears to be complex or unresponsive to standard management, consultation with Infection Control Team. Advice on dressing for the more complex infected wound may also be sought from a Wound Care Nurse Specialist and/or Podiatrist as appropriate.

### **Criteria for Taking a Wound Swab**

Every wound has the potential to become contaminated or infected and diagnosis of wound infection is not simple. A wide range of bacteria can be isolated from a wound swab, but many may colonise the wound and not cause infection. Diagnosis of wound sepsis is based on clinical criteria.

**In the absence of clinical signs of infection, there is no requirement for routine swabbing for microbiology.**

The following should be considered as indicators to take a wound swab:

- Cellulitis - Record duration, measure extent and temperature of area

- Discharge - serous exudate with inflammation  
Seropurulent  
Haemopurulent  
Pus
- Delayed normal healing
- Discolouration-beefy red / dull purplish wound bed
- Unexpected pain/tenderness/change in type of pain & duration
- Over-granulation of tissue that bleeds easily
- Sudden increase in the amount of exudate from wound
- Abnormal smell
- Wound breakdown
- Bridging/ pocketing at base of wound
- Friable granulation tissue (Cutting and Harding, 1994)

### **Collection of Specimens for Microbiological Examination**

The objectives are: -

1. To collect an adequate amount of tissue or fluid uncontaminated by organisms from any outside source e.g. surrounding skin, but preserving any organisms which may be present at the wound site.
2. To ensure that the specimen is correctly identified by labelling, and sent to the laboratory with an accurately completed request form, stating clearly the test required. See Section 12 Specimens Appendix 12.1.
3. To transport the specimen from the patient to the laboratory safely and without delay. (Dougherty & Lister, 2004)

### **How to Take a Wound Swab?**

As a general rule the more relevant material sent for examination, the greater chance of isolating a causative organism. For example, it is preferable to send a few millimetres in a sterile universal container of pus that has been aspirated with a sterile syringe and needle than to send a swab dipped in the pus.

Specimens are readily contaminated by poor techniques or by the use of unsterile equipment. There is no clear evidence to support one particular technique when taking a wound swab, the following method is recommended by (Kingsley & Winfield-Davies, 2003 cited by Kelly, 2007) as the most practical for clinical practice:

- If topical agents have been used or if gross visible faecal soiling is present pre-clean wound with tap water or sterile normal saline.
- Prepare to sample the whole surface of the wound.
- If the wound is dry moisten swab in sterile normal saline.
- Use a zig-zag motion while rotating the swab between the finger and thumb across the wound. This will allow the entire wound area to be covered.
- Place the swab straight into sterile transport medium.



- Ideally samples should be collected before the commencement of antibiotic therapy. When it is necessary to test during a course of antibiotic treatment, the specimen should be collected just before the dose is given. This should be noted on the request form.
- Similarly, if an antiseptic is used for cleaning or packing a wound or body cavity i.e. iodine based dressings, honey, PHMB, silver and chlorhexidine, collect specimen at the commencement of the procedure.
  - Irrigate wound bed with sterile normal saline or water prior to taking a swab to get rid of any traces of antiseptic antimicrobial topical dressings that may have been used in treatment of wound prior to swabbing.
  - The presence of antibiotic or antiseptic in the specimen container may destroy organisms, which are in fact active in the patient, and this will affect laboratory tests. Such treatment should be noted on the request form accompanying the specimen.
- Ensure that every specimen is clearly identified by a label giving the name and location of the patient and the date. Unique identification is essential for sample to be accepted in the laboratory. All details must be legible (Scanlon, 2003).

### **Specimen Transport (Swabs):**

The sooner specimens reach the laboratory after collection the better, as surviving organisms will be identified.

- Refrigerate swab in a specimen refrigerator at 4 °C if transport to lab is greater than 4 hours and less than 24 hours i.e. do not take a swab on a Friday as it will not be processed until Monday.
- Central Sterile Supplies Department (CSSD), CUH issue charcoal transport medium into which the swab is inserted for bacteriological investigation.
- Virology and Chlamydia transport mediums are available from the microbiology department on request

The purpose of transport medium is to preserve the organisms in the same condition and numbers as when present in the patient.

Please refer to Section 12 on Specimen Collection for further information.

### **Interpreting Wound Swab Results.**

Different levels of bacterial involvement have been categorised in wounds and are outlined in the following table (EWMA, 2005).

<b>Contamination</b>	<b>The presence of bacteria with little active growth.</b>
<b>Colonisation</b>	The presence of multiplying bacteria but do not cause damage to the host or initiate wound infection.
<b>Infection</b>	Presence and multiplication of bacteria in tissue, with an associated reaction with wound healing being interrupted.

A positive wound result from a patient does not, by itself, signify infection.

### **Colonisation V Infection**

Distinguishing between colonisation and infection is important but may be difficult, therefore ensure:

- That a sample is collected carefully and transported rapidly to the laboratory. If this is not possible, refrigerate sample until immediately prior to transportation.
- To Review positive lab report in conjunction with signs and symptoms to diagnose wound infection before commencing antibiotics (EWMA, 2005).

Clinical signs of infection determine the need for antibiotic therapy; the lab result will guide the choice of the most appropriate agent.

The routine use of antibiotic is not recommended unnecessary unless there are signs of infection (HSE 2009).

### **Principles of Tetanus Prevention**

Tetanus Immunoglobulin (TIG)

In situations where the risk is very significant and the underlying level of immunity is poor, TIG may be required. This is a preparation of specific anti-tetanus antibody, which is commercially produced. Unlike anti-serum that was used in the past which was extracted from horses and therefore a highly antigenic foreign protein, modern TIG is much safer and much more specific.

Scheme for tetanus prophylaxis

For practical purposes wounds can be divided into 2 groups.

- (a) 'normal' wounds
- (b) tetanus prone wounds

### **Normal/Clean Wounds**

These are regular wounds that turn up in Accident and Emergency Departments including simple lacerations, clean abrasions etc.

### **Tetanus Prone Wounds**

These essentially are wounds in which likelihood of contracting tetanus is significantly greater. These include-

1. Wounds contaminated with obvious dirt, faeces, soil or saliva, NB human and animal bites.
2. Wounds with a significant amount of devitalized tissue i.e. where there is significant crushing component.
3. Deep puncture wounds or wounds which have involved avulsion of a significant amount of tissue.

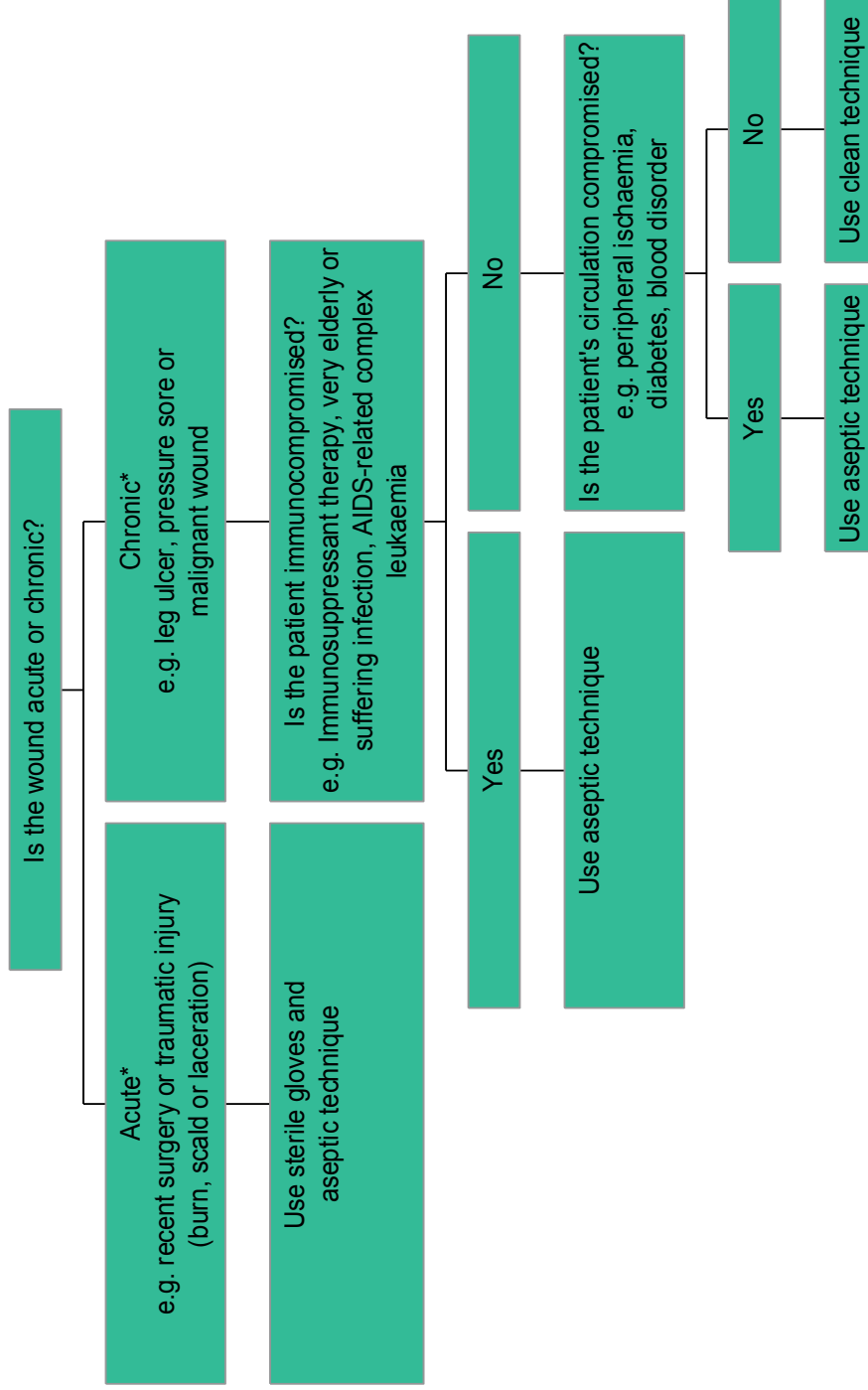
Please refer to "Immunisation Guidelines for Ireland" 2008 (For the most recent immunisation guidelines, please check [www.hpsc.ie](http://www.hpsc.ie), click on "Topics A to Z", then click on "I" for Immunisations and then on "Guidance").

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Appendix 12.4.1

Wound Management:  
Decision tree for aseptic/clean technique



\* - See glossary of terms

(Scanlon, E., 2003 in Infection Control in the Community)