

# [Principles of wound management in the clinical environment](https://assignbuster.com/principles-of-wound-management-in-the-clinical-environment/)

Case Study – Short Answer Questions

Case Study Scenario:

John Jones, age 32, is admitted to your ward after post-surgical lancing of a cutaneous abscess located on his perineum. The abscess was caused by MRSA bacteria. The abscess required excision and drainage to remove pus and debris.

Mr. Jones is under police guard as he has been on remand at the nearby Correctional Centre for the past 2 days awaiting trial related to holding an illegal drug. Mr. Jones has a history of IV heroin use and homelessness. He states that he last used heroin “ about 4 days ago”. Mr. Jones’s medical history reveals that he has previously been admitted to hospital for depression and a suicide attempt. His blood tests returned positive for Hepatitis C. Insulin levels are within the normal range and chest X ray returned clear. His BMI is 20kg/m2, weight is 65kg and height 180cm.

You read the surgeon’s post-operative instructions:

Wound cavity to be dressed daily with Betadine-soaked gauze packing

Mr. Jones is visited by the wound management nurse who documented the following in his notes:

Wound to heal by secondary intention.

Wound cavity measures 12mm long x 11mm wide and 10mm deep, extending to the subcutaneous tissue layer.

Wound bed consists of 100% granulation tissue; is malodorous and is oozing large amounts of haem serous exudate.

Based on this assessment, the wound management nurse disagreed with the surgeon’s post-operative wound management strategy.

Short Answer Questions:

Each question must have no less than 150 words and be referenced.

Read each question carefully and ensure you answer each part.

Answer the following questions in relation to the information provided in this case study:

1. Define MRSA? Why is it antibiotic resistant? Discuss the complications this organism may have on wound healing and other body systems.

Methicillin-resistant Staphylococcus aureus (MSRA) is a bacterium that causes infections in different parts of the body. It tougher to treat than most strain of Staphylococcus Aureus or Staph because it’s resistant to some commonly used antibiotics. Because MRSA is antibiotic resistant it is known as a super bug. MRSA is antibiotic resistant because the bacteria has change to protect themselves from antibiotics. MRSA is no longer sensitive to that antibiotic. The antibiotics that previously would have killed MRSA or stop them from multiplying, no longer working on the bacteria. Most often cause mild infections on the skin, like sores, boils or blisters. But it can also cause more serious infections or infect surgical wounds. It can affect the blood stream causing fatigue and fever. MRSA can cause Endocarditis which is an infection of the lining heart, which usually affect the heart values. MRSA affects the lungs it can affect the amount of oxygen that your body is able to acquire and utilize (Crisp, Douglas, Rebeiro, & Waters, 2016 p 631). .

1. What special infection control considerations would you implement for Mr Jones? In your answer include the following

a) The chain of infection

b) Standard/additional precaution

c) Education required for Mr. Jones and the police guard.

A carrier is a person who harbours a specific pathogen (germ) without observable signs or symptoms of the disease, and has the potential to spread organism to others. The easiest way to describe how diseases are spread is by using the Chain of Infection. There are six links to the chain and all must be linked together for infections to spread.

1. Causative agent (those things which make you sick, that is, the germs) bacterial, viruses, fungi, and parasites.
2. Reservoir (storage site where the germs hangs out or lives) people, animals, plants, animals, plants, water, food, soil clothing, floors, countertops, bed linens, etc.
3. Modes of escape ( ways the germ leaves the reservoir ) saliva, faces, and urine, mucus from nose and throat, skin lesions, animal faeces and urine, pus or discharge from anybody opening, sweat and tears, semen, and blood.
4. Mode of Transfer ( way the germ moves by direct contact ) hands , environmental surfaces, polluted water and food, coughing, sneezing, kissing, sexual intercourse, bites, scratches, and flies.
5. Mode of Entry (ways the germs enters a new host) breathing in droplets, spray or contaminated air; eating contaminated food; drinking contaminated water: absorption through the skin; body opening – mouth, ear, nose, rectum and vagina; touching hands to mouth and breaks in the skin.
6. Susceptible Host (a person for example, who has low resistance) people, animals, plants, birds, and insect.

If any one of the six links is broken the spread of infection will end for example, if you get plenty of rest, exercise and eat well the likelihood of becoming a susceptible host is decreased. Another example is if you use good hand washing techniques. The change can be broken at the mode of transfer (Crisp et al., 2016 pp623-629). Standard and additional precautions would include washing hands, wearing gloves, putting waste in yellow bag, wearing apron and mask, sterile all equipment and avoid bodily fluid contact. Education required for Mr. Jones, wound care handing washing, toileting, avoid wound and make sure dressing intact. Education required for the police guard wash hands and wear gloves when having contact with Mr Jones.

1. What is a secondary intention wound? Include in your answer a description of primary and tertiary intention wounds.

Secondary intention occurs when there is a greater degree of tissue loss, or with surgical wound whose edges cannot easily be brought back together. With secondary intention wound edges are not approximated, granulation tissues must be built. There is a greater degree of tissue loss. Also with secondary intention there is a higher risk of infection, longer healing times, and visible scarring (Crisp et al., 2016 p693). The simplest and fastest type of wound closure is referred to have primary intention. Primary intention involve re-epithelialization only, is use on superficial wounds, deeper wounds with well approximated edges. Primary intention lower risk of infection, minimal tissue loss, and minimal scarring. Primary intention wounds can be help together with sutures, staples, steri strips, etc. (Crisp et al., 2016 p693). Tertiary intention wounds also known as delayed primary wound closure is a combination of healing by secondary and primary intention used with contaminated wounds to decrease the risk of infections. The wound is clean and will be watched closely for serval days. When the wound is on its way to healing and appears to be clean, the wound is closed surgically (Crisp et al., 2016 p693).

1. There are three overlapping phases in wound healing known as the inflammatory, proliferative and maturation phases. Explain each of these physiological processes.

Inflammation (0-3 days)

The inflammation phase of wound healing is a vascular and cellular response that removes microbes, foreign bodies and dying tissue in preparation for wound healing. The inflammatory phase is characterised by vasodilation, increased capillary permeability, complement activation and polymorphonuclear leucocytes (PMN) and macrophage migration to the wound. The increase in blood flow into the wounded area produces erythema, oedema, heat and discomfort such as a throbbing sensation (Crisp et al., 2016 p691).

Proliferation (2-24 days)

The proliferation phase is characterised by extensive growth of epithelial cells, deposition by fibroblasts of collagen fibres in random patterns to form the extracellular matrix molecules and ground substance and continued growth of blood vessels (Crisp et al., 2016 p692).

Maturation (24 days to 1 year)

The combination of fibronectin and collagen forms the essential extracellular matrix molecules for the development of granulation tissue that eventually fills the wound. The endothelial buds increase in vascularity in response to the large metabolic demand of the repair tissue. The arrangement of collagen fibres in the wound is random, disorganised, and has a gel-like consistency that gradually matures to form cross-links which provide tensile strength to the wound (Crisp et al., 2016 p692).

1. Wound Bed Preparation uses four principles in the acronym T. I. M. E which provides a systematic approach to the management of wounds. Discuss what is meant by:
2. Wound bed preparation

Wound-bed preparation is the management of the wound to promote wound healing or to facilitate the effectiveness of other therapeutic measures. Wound-bed preparation involves four fundamental principles which provide a systematic approach to the management of wounds by focusing on each stage of wound healing – TIME:

* Tissue management -tissue removal of non-viable tissue or replacement of deficient tissue.
* Inflammation and infection- control of infection or inflammation.
* Moisture balance- correction of excessive moisture and prevention of desiccation.
* Epithelial (edge) advancement-revision of the edge of the wound to stimulate healing.

The TIME framework is a dynamic concept that can be translated into the practical management of different wound types by utilising a standardised framework (Crisp et al., 2016 p692).

1. T. I. M. E

Tissue management

The first step in wound assessment is to check the level of tissue viability in the wound. If the tissue is (red) or pink (epithelializing) which means the environment is conducive to normal wound healing. Neurotic (black) or slough (yellow) non-viable tissue will create the right conditions, for bacteria growth and infection in the wound. Non-viable tissue can be remove by surgical debridement (Crisp et al., 2016 p704).

Inflammation and infection

If there is bacteria in the wound it can cause infection or inflammation which can delay the process of wound healing. In some cases, the infection may be life threating. The bacteria may delay wound healing causing it to releases toxins that damage tissue and increase exudate levels in the wound (Crisp et al., 2016 p704).

Moisture balance

Wounds will heal better in a moist environment. When the wound is moist the nerve endings become protect reducing the pain. The skin layers will repair at a faster rate which will produce less scarring than dry wounds. It is important to manage the moisture levels of a wound. If the wound has too much exudate or too little exudate it will interfere with the process of wound healing (Crisp et al., 2016 p705).

Epithelial (edge)

When a wound normally heals new skin cells will form which are to edges and to the base until the wound the close up. In Epithelial (edge) chronic wounds this will not happen and the wound will not close. For the wound to close tissue viability, inflammation and infection, and moisture levels in the wound needs to be address (Crisp et al., 2016 p706).

1. Why do you think the wound management nurse disagrees with betadine-soaked gauze packing as a dressing choice for Mr Jones’s cavity wound? Support your answer with evidence-based research. (Check the journal article in “ additional resources” on Healing by Secondary Intention).

Betadine-soaked gauze packing cannot cope with large amounts exudate by a wound cavity and this can lead to surrounding peri- wound skin becoming macerated. When the gauze dries out it will adhere to the new granulation tissue this will cause pain and tissue damage when the gauze is remove, which may require an analgesia prior to it being remove. Gauze dressing will create a dry environment this may affect the proliferation phase of the wound healing by not allowing the migration of fibroblasts across the wound bed which will delay the closure of the wound. A wound bed that is dry may lead to scab forming which will inhibit the migration of epithelial cells across the wound bed this will force the cells to find another way of migrating underneath the scab which will delay the wound to heal. With gauze dressings there can be a risk of fibres being left embedded in the wound and the dressing change taking longer to perform. Gauze type dressing need to be remoistened 3-hourly so the wound bed site has the correct level of moisture (Cartlidge-Gann, 2017).

1. Discuss one (1) contemporary wound management strategy for any wound patient. Support your answer with evidence-based research. This could be a new dressing, vac systems, maggot or honey therapy or ANY new wound strategy. Give both the advantages and disadvantages of your chosen therapy.

Maggot therapy or larval therapy has been around for serval hundred years. Larval therapy can be used for debridement of wounds. Larval therapy encompasses three process: debridement, disinfection and promotion of healing. The benefits of larval therapy are a reduction in wound pain and odour and promotes the healing process with relatively few side effects. Larval therapy is cost effective compare to congenital wound dressing. Another advantage of larval therapy is larvae are normally applied for three days, which means wounds are disturbed less often than normal dressing that should be change every one to two days. Larval therapy can be carried out in an outpatient and community setting which is a further advantage. A study was done at an outpatient wound clinic which reported that using larval therapy on chronic wounds resulted in 62% decrease in need for amputation. Larval therapy is used to treat chronic wounds that are resistant to the use of antibiotics. Larvae can eliminate bacteria from the wound through ingestion and subsequent degradation within their intestinal tract. The most common disadvantage of larval therapy is patients and practitioners have a negative perception of larval therapy due to it yuk factor. Patients with ischaemic wounds have occasionally report pain this may be cause the larvae have sharp mouths hooks and spicules which they anchor themselves onto tissues (Abassi, 2017).

1. What impact will Mr Jones’s previous circumstances have on wound healing? Consider lifestyle factors such as nutrition, IV drug use, and potential/current co-morbidities.

Mr Jones has poor nutrition which will affect his wound healing. Mr jones require protein cause protein that is require will increase when a wound is presence due to synthesis of protein and to replace protein lost through wound exudate. Carbohydrates should be consume by Mr Jones this will ensure this will ensure there is enough carbohydrates calories are being provide to spare protein from being oxidized for energy. Fluids are important and Mr Jones must ensure he stay hydrated at all time to help with wound healing. Vitamins and minerals are also important, Vitamin C will help with synthesis of collagen and in maintaining immunise function. Vitamins A increase fibroblast differentiation, collagen synthesis, wound strength and reducing infection which means Vitamin A promotes wound healing (Crisp et al., 2016 p698). Mr Jones is an IV drug user, Mr Jones wound may not heal because the drug he is taking may affect his immune system, his wound may not close and he will be more susceptibility to infection (Cook, 2017). Homeless will be a factor in Mr Jones healing cause he will not shower regularly and he will not change is wound dressing as he should which will cause his wound to become infected.

1. What nursing interventions could you put into place to assist Mr. Jones with the location of his wound, mobility and elimination?

Nursing interventions that should be put in place explain to Mr Jones good skin hygiene e. g. wash thoroughly and pat dry. Maintaining clean dry skin provides a barrier to infection, patting skin dry instead of rubbing reduces risk of dermal trauma to fragile skin. Emphasized to Mr Jones the importance of adequate nutrition and fluids will help with wound healing. Make sure Mr Jones is not lying in the supine position and he moves every two hours. When Mr Jones goes to toilet explain to him he must wipe front to back. Encourage Mr Jones to ambulate this will help to simulate normal mobility. Teach Mr Jones how to identify an infection and how to take any preliminary action against that problem. Properly dress Mr Jones wound to help contain the infection ( Twomey, 2013).

## References

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