Abstract
The increased focus on research and evidence for practice has seen changes in wound management practice. In the community district nurses want more than ever to control and own their wound management practice. The increased awareness of evidence-based wound management practice has however caused conflict with some medical colleagues. Some district nurses have been asked to defend their wound management practice. The evidence from this review highlights considerations that need to be taken into account when using antiseptics, particularly povidone iodine. Povidone iodine has use as a skin prep and for the management of burns, however it is ineffective in the presence of bodily fluids, is toxic to fibroblasts and not recommended for prolonged use. Effective use of povidone iodine requires frequent dressing changes and in the community setting this is not best wound management practice. Other cleansing options are briefly discussed. This paper highlights the considerable debate regarding the effectiveness and safety of antiseptics.

Introduction
In 1997 a survey of wound management within a large metropolitan Community Nursing organisation in South Australia was undertaken, as wound management constituted 35 per cent of district nursing practice. During the survey week, questionnaires were sent out and 1046 wounds were surveyed. The findings and recommendations from the survey have been acted on within the organisation. The emphasis has been on clinical practice and moving towards evidence based practice.

Increased knowledge as a result of these strategies has meant that district nurses are increasingly keen to have more autonomy and ownership of their wound management practice. This trend as well as an increased awareness of the use of evidence-based wound management practice has caused some conflict with medical colleagues. Some district nurses have been asked by medical colleagues to defend their wound management practices. For example, a request was made by a surgeon for a district nurse to use Betadine® solution (povidone iodine) to clean a wound. The nurse was able to argue the case for not using Betadine® in this particular wound, and the evidence provided in this review assisted in her discussions. In this paper, the author will review some of the issues surrounding current thoughts on antiseptic use in wound management.

Antiseptics
The advent of moist wound healing demonstrated by Winter’s theory which demonstrated that epidermal migration takes place more rapidly in a moist environment and the modern wound dressing has changed the way practitioners perform wound management. Various modern wound dressings are designed to be applied depending on the different phases of wound healing. However this literature review focuses on another evolving area of wound management, namely the use of antiseptics, and particularly the use of Betadine®/povidone iodine in the management of wounds.

In 1867 Joseph Lister first described the use of antiseptics. He claimed that the use of carbolic spray, handwashing and clean dressings all reduced the risk of surgical wound infection. Initially his ideas were opposed until the First World War when cleansing agents such as carbolic, phenol, iodine and chloride (later known as Eusol) were used to reduce the mortality rate from gas gangrene. These antiseptics continued to be used until the discovery and use of antibiotics during and at the end of the Second World War. Antiseptics continued to be used in conjunction with antibiotics, most commonly to combat infection in wounds, up until Brennan and Leaper published their pivotal paper that questioned the routine use of antiseptics.

Antiseptics that have been used in wound management include hyperchlorite solutions (eg Eusol), hydrogen peroxide, acetic acid, povidone iodine, chlorhexidine gluconate and chlorhexidine gluconate with cetrimide (eg Savlon). These solutions have different properties and actions and yet most nursing texts refer to them under the umbrella term antiseptics. Increasingly in the last twenty five years debate continues over their safety and efficacy. Although the term antiseptics will be used throughout this literature review the focus of this paper is povidone iodine. Povidone iodine is available in several forms including an aqueous solution, an ointment, a cream and a surgical scrub that includes detergent. The form of povidone iodine most commonly used is a polyvinylpyrrolidone-iodine complex. It is a brown, amorphous, water soluble powder containing 9-12% available iodine.

USES OF Povidone Iodine
Skin prep and burns
A search of the electronic databases and a subsequent review of the literature has shown that the most effective uses for povidone iodine are as a pre surgical scrub and as a skin preparation for clients prior to surgery or before the insertion of a foreign object, for example before the insertion of a central venous catheter. Povidone iodine is appropriate for acute and superficial wound care use, including simple burns and abrasions. It is useful because it destroys viruses, yeast, fungi and bacteria. The literature suggests that povidone iodine is widely used for clients with open wounds. Preparations that allow for slow release of the iodine are more suitable to reduce bacterial colonisation as this avoids high local concentrations of iodine. Van Der Mewe found that with the use of Betadine® cream there were fewer allergies and reduced microbial concentrations. Research indicates that povidone iodine in a cream base is beneficial in wound healing. However this may only be because the cream base is consistent with moist wound healing principles and not because there is povidone iodine present.

DISADVANTAGES OF Povidone Iodine
Ineffective in the presence of body fluids
The literature suggests that antiseptics should not generally be used for the cleansing of clean granulating wounds. There is little evidence to support their use in cleansing and they can damage tissues. Evidence also suggests that antiseptics are also ineffective for cleansing infected wounds because many are deactivated in the presence of organic material such as pus, slough, and necrotic tissue within wounds. Although antiseptics significantly alter the bacteriological content of wounds, as Lawrence states, wounds do not need to be sterile to heal. Kucan et al reported that the application of 10% povidone iodine every 6 hours to pressure ulcers was no more effective in reducing bacteria counts than using normal saline. In fact studies show that povidone iodine is ineffective if a wound is colonised with greater than five organisms per gram of tissue. At high concentrations they can reduce bacterial counts but can also damage tissues.

Glichiest asserts that the debate regarding iodine use in wound management is far from being resolved. Paradoxically he noted that the published research relating to the effects of iodine could be criticised on methodological grounds, but then proceeds to say that they suggest efficacy of iodine products. Animal studies involving antiseptics have shown chlorhexidine, hydrogen peroxide and povidone iodine are toxic to fibroblasts. It is therefore
Research undertaken by Mertz showed that autolytic debridement (maggots). All of these methods have been found to be effective. This can be either mechanical autolytic or myiasis. But as with any dressing containing an antiseptic it should not be released slowly to assist in reducing bacterial loads of wounds. Dimensional starch lattice that contains 0.9% povidone iodine that one of the slow release cadexomer iodine dressings on the dimension impairs wound healing. There is still much controversy surrounding povidone iodine usage in wound healing. Long term use of antiseptics should be avoided and consideration should be given whether to use in conjunction with an antibiotic. Cadexomer iodine dressings are slow release, and although more research is needed in this area it seems that they are effective in reducing the bacterial load of a wound. When prescribing povidone iodine dressings the practitioner needs to ensure that it is the most effective and economical dressing available for the particular wound and client lifestyle. Most importantly, one needs to remember that no one solution or dressing material will be applied to a wound throughout its life. As the status of the wound changes the management approach must also be changed.

Community Nursing Considerations
Based on the findings summarised above, it would seem that there is more to consider than simply whether povidone iodine or antiseptics in general are safe to use. Effective use of povidone iodine relies on frequent dressing changes. In the community this is the most cost effective and adds to client pain, discomfort and inconvenience. In addition, as stated earlier the way practitioners perform wound management has changed with the advent of moist wound healing therefore, frequent dressing changes are not generally part of evidence based wound management. There are other more effective cleansing agents and dressings available. Warmed normal saline is reported to be one of the safest cleaners. Research has found that both tap water and saline are effective cleansing agents, but that incidence of sepsis was higher in the saline cleansing group. Unfortunately this study had a methodological flaw because it used warmed tap water and cold saline. The incidence of sepsis was higher when the solution was cold because this caused local vasoconstriction and impaired the wound’s resistance. The drop in temperature that occurs when a cold solution is poured on the wound hinders the ability of macrophages to work effectively. This implies that, in cleansing a wound, the most important consideration is to have the solution warmed.

Povidone iodine should only be used for the short term and as an adjunct to systemic antibiotic therapy and its use should be restricted regularly. In the community, it may be beneficial to use one of the slow release cadexomer iodine dressings on the market. Cadexomer iodine dressings are a polysaccharide, three dimensional starch lattice that contains 0.9% povidone iodine that is released slowly to assist in reducing bacterial loads of wounds. But as with any dressing containing an antiseptic it should not be used for prolonged periods.

Removal of slough from wounds can be undertaken by debridement. This can be either mechanical autolytic or myiasis (maggots). All of these methods have been found to be effective. Research undertaken by Mertz showed that autolytic debridement may take place in chronic wounds between 7-10 days. Autolytic debridement does not damage new cells forming unlike antiseptics and therefore should not hinder the healing process.

Conclusion
There is still considerable debate regarding the effectiveness and safety of antiseptics. Current evidence and consensus of opinion would suggest that overall they are unnecessary in the day to day management of clean wounds. Showering and irrigating with normal saline or tap water are the most commonly accepted methods used to cleanse wounds to assist healing. In particular, chlorhexidine is considered to be damaging to the wound and in fact impairs wound healing. There is still much controversy surrounding this issue.

References