



reasonable to conclude that most antiseptic cleansing agents are inactivated by body fluids.

### Long term use

Skin cells and granulation tissue in wound healing are the most susceptible to cytotoxic damage by antiseptics. This means that careful assessment of the benefits and risks of using povidone iodine must be made, especially if it is to be used frequently or for a prolonged period<sup>20</sup>. Lineweaver et al reported from their study that povidone iodine should not be used in concentrations greater than 0.001% and they caution clinicians against using it for prolonged periods<sup>20</sup>. In addition systemic absorption of iodine can occur with repeated use<sup>21</sup>. Many antiseptics are known to cause allergic contact dermatitis, although when compared with other antiseptics povidone iodine sensitivity is considered to be mild. In summary therefore, it is unwise to continue using povidone iodine for long periods. Povidone iodine can be absorbed systemically, wound healing can be impaired and in some cases skin allergy can occur.

### 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 not 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 cleansers. 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<sup>23</sup>. 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<sup>12</sup>. 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 reviewed regularly<sup>2</sup>. 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<sup>24</sup>. 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 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.

### References

1. Winter G. Formation of the scab and the rate of epithelialisation of superficial wounds in the skin of the young domestic pig. *Nature* 1962;193: 293-294
2. Flanagan M, Marks-Maran D. Editors. *Wound Management*. New York: Churchill Livingstone, 1997:52-65.
3. Brennan SS, Leaper DJ. The effect of antiseptics on the healing wound: a study using the rabbit ear chamber. *Br J Surg* 1985;72:780-2.
4. Carville K, Smith R. Silver Chain WA Wound Survey: Valuable Findings. *Health Link* 1996:2-3.
5. Morison M, Moffatt C, Bridel-Nixon J, Bale S. *Nursing management of chronic wounds*. 2nd ed. London: Mosby, 1997.
6. Lawrence JC. The use of iodine as an antiseptic agent. *J Wound Care* 1998;7(8):421-5.
7. Gogia PP, editor. *Clinical wound management*. Thorofare, NJ: SLACK Inc., 1995.
8. Oshlack B, Grundy RP, Chelle C, Ast TM, Goldenheim PD. Povidone iodine cream or topical antiseptics. *Prog First Asian/Pacific Cong Antiseptics*. Royal Society of Medicine Services International Congress and Symposium. Series No 129, 73-81.
9. Findlay D. Modern dressings: what to use. *Australian Family Physician* 1994;23(5):824-39.
10. Lawrence JC. Wound irrigation. *J Wound Care* 1997 Jan;6(1):23-6.
11. Pudner R. Wound cleansing. *Journal of Community Nursing* 1997 July;11(7): 30-36.
12. Young T. Common problems in wound care: wound cleansing. *British Journal of Nursing* 1995;4(5):286,288-9.
13. Rodeheaver G. Topical wound management. *Ostomy/Wound Management* 1988;4:59-68.
14. Morgan D. Is there still a role for antiseptics? *Journal of Tissue Viability* 1993;3(3):80-4.
15. Kucan JO, Robson MC, Heggors JP, Ko F. Comparison of silversulfadiazine, povidone iodine and physiologic saline in the treatment of chronic pressure ulcers. *J Am Geriatr Soc* 1981;29:232-5.
16. Robson MC, Schaerf RH, Krizek TJ. Evaluation of topical povidone iodine ointment in experimental burn wound sepsis. *Plast Reconstr Surg* 1974;54:328-34.
17. Tommey RC, Norberg HP, Guernsey JM. The use of povidone iodine in the treatment of burns: a literature review. *J Oakla State Med Assoc* 1980;73:406-8.
18. Thomas S. *Wound management and dressings*. London: The Pharmaceutical Press, 1990.
19. Gilchrist B. Should iodine be reconsidered in wound management? *J Wound Care* 1997;6(3):148-50.
20. Lineaweaver W, Richard H, Soucy D. Topical antimicrobial toxicity. *Arch Surg* 1985;120:267-70.
21. Aronoff TG, Friedman S, Doedens D, Lavelle K. Increased serum iodine concentration from iodine absorption through wounds treated topically with povidone iodine. *Am J Med Sci* 1980;279:173-6.
22. Bajaja AK, Gupta SC. Contact hypersensitivity to topical antibacterial agents. *Inter J Derm* 1986;25:103-5.
23. Hall Angeras MH, Brandberg A, Falk A, Seeman T. Comparison between sterile saline and tap water for the cleansing of acute traumatic soft tissue wounds. *Eur J Surg* 1992;158:347-50.
24. Mertz PM. Intervention: dressing effects on wound healing. In: Eaglstein WH, editor. *New directions in wound healing: wound care manual*. Princeton, NJ: ER Squibb and sons, 1990.