Central Line Associated Blood Stream Infections

Is the use of chlorhexidine gluconate in ICU patients with a peripherally inserted central catheter or central venous line effective at reducing central line associated blood stream infections?

Joanne Rush

Central Line Associated Blood Stream Infections (CLABSI):

- Can cause death.
- Can cost up to a whopping $50,000 PER CASE in New Zealand to correct.
- IS AN INFECTION THAT CAN BE PREVENTED.

(Health Quality & Safety Commission New Zealand, 2015).

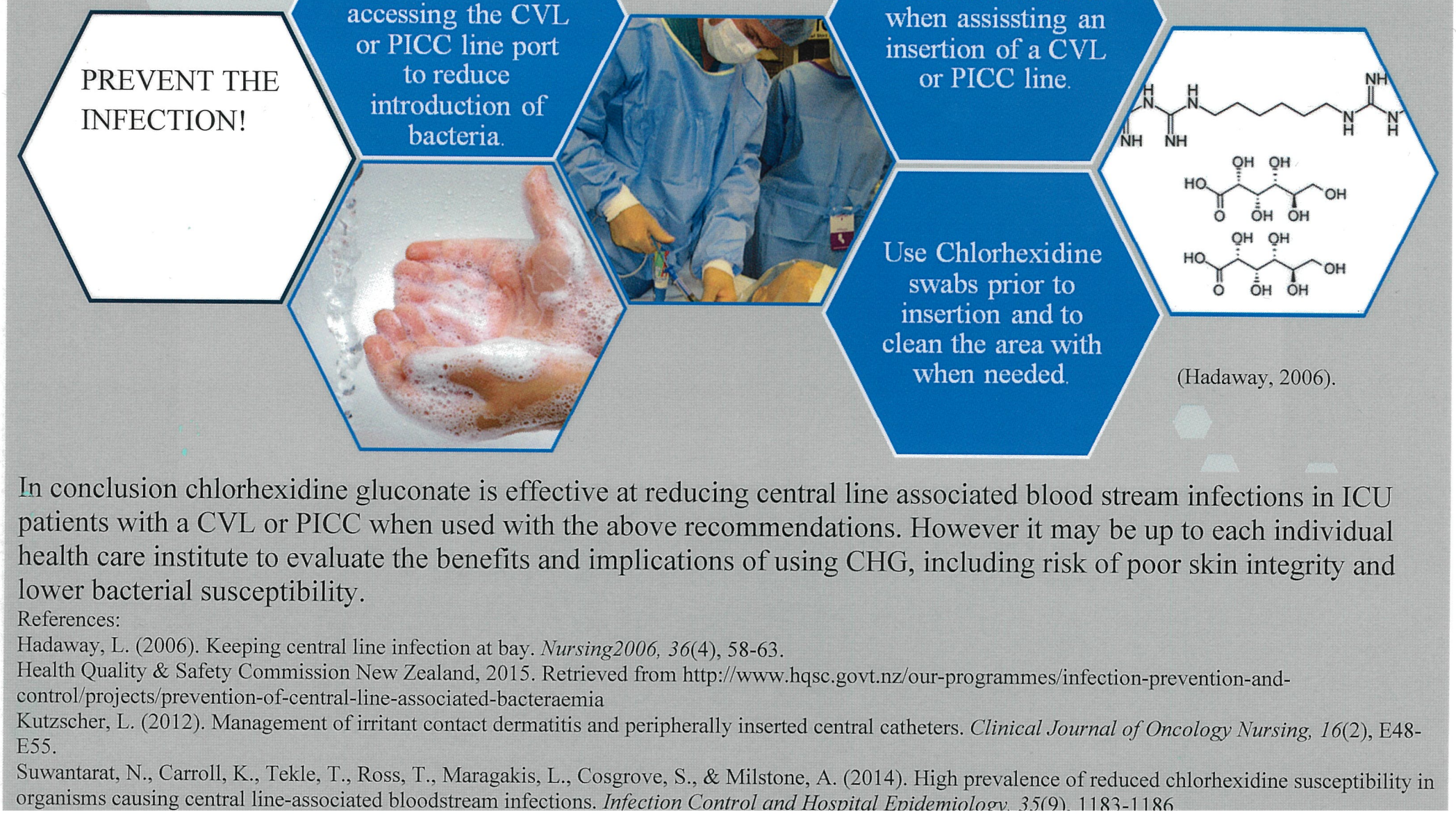
Through my research I found that using Chlorhexidine gluconate (CHG) is effective at reducing CLABSI rates. CHG is a broad spectrum antimicrobial that causes bacterial cells walls to burst. Having effective antimicrobials is essential when working in intensive care units because often patients in these areas are immunocompromised and so it is vital that any intrusive lines are kept free of infection.

FINDINGS

Chlorhexidine Gluconate is very effective at reducing the rates of CLABSI because it targets all of the common bacteria in the staphylococcus and enterococcus species. However over-use of CHG has caused reduced susceptibility of organisms and skin integrity complications. This is an issue because the skin barrier is disrupted and the bacteria become more resilient (Kutzcher, 2010; Suwantarat et al., 2014).

RECOMMENDATIONS

Chlorhexidine gluconate is most effective when used as part of other infection prevention measures. Anyone conducting or assisting in the insertion of the catheter should use techniques like good hand hygiene , the use of sterile fields and maximal barrier precautions. This reduces cross infections from health professional to patient and therefore decreases the chance of a CLABSI developing (Hadaway, 2006).



(Hadaway, 2006).

In conclusion chlorhexidine gluconate is effective at reducing central line associated blood stream infections in ICU patients with a CVL or PICC when used with the above recommendations. However it may be up to each individual health care institute to evaluate the benefits and implications of using CHG, including risk of poor skin integrity and lower bacterial susceptibility.

References:

Hadaway, L. (2006). Keeping central line infection at bay. *Nursing2006, 36*(4), 58-63.

Health Quality & Safety Commission New Zealand, 2015. Retrieved from http://www.hqsc.govt.nz/our-programmes/infection-prevention-and-control/projects/prevention-of-central-line-associated-bacteraemia

Kutzscher, L. (2012). Management of irritant contact dermatitis and peripherally inserted central catheters. *Clinical Journal of Oncology Nursing, 16*(2), E48-E55.

Suwantarat, N., Carroll, K., Tekle, T., Ross, T., Maragakis, L., Cosgrove, S., & Milstone, A. (2014). High prevalence of reduced chlorhexidine susceptibility in organisms causing central line-associated bloodstream infections. *Infection Control and Hospital Epidemiology, 35*(9), 1183-1186.

Rational:

I have chosen to present my research findings in a poster rather than in a submission because I am not calling for change, I am aiming to help educate others. Specifically, nurses who may end up helping to care for a patient who is outside of the ICU who has a PICC or CVL as these nurses are less likely to have a great understanding of how to care for these lines. Helping to educate the nursing community is important for all nurses because it is a way that we can increase each-others learning, stir ethical debate and ultimately increase the nursing education standard. Posters are a great way to share information because they are clear, concise and are easily spread around the community. I believe posters can be used as a form of intra-professional education which comes under competency 4.3; Participates in quality improvement activities to monitor and improve standards of nursing (Nursing Council of New Zealand, 2007).

PECOT model:

Population	Patients in Intensive Care Units with a peripherally inserted central catheter or a central venous line.
Exposure	Patients who had chlorhexidine gluconate used on the wound site
Comparison/control	Patients who did not have chlorhexidine gluconate used on wound site
Outcome	Peripherally inserted central catheter and central venous line associated blood stream infections
Time	Not Applicable

Reference:
Nursing Council of New Zealand. (2007). *Competencies of Registered Nurses.* Wellington, New Zealand. Author.