

# Antimicrobial dressings for CLABSI prevention

BY JOAN WEBSTER RN, BA: PROFESSOR AND NURSING DIRECTOR (RESEARCH), EMILY LARSEN RN, BN, GDIP HLTH RES: PROJECT MANAGER, NICOLE MARSH RN M ADV PRAC (HLTH RES), PHD (CAND): NURSE RESEARCHER.

THE ALLIANCE FOR VASCULAR ACCESS TEACHING AND RESEARCH GROUP, NATIONAL CENTRE OF RESEARCH EXCELLENCE IN NURSING, GRIFFITH UNIVERSITY AND ROYAL BRISBANE AND WOMEN'S HOSPITAL.

**NURSES** and midwives play a central role in the care and maintenance of central lines. But despite all efforts, sometimes central-line associated blood stream infections (CLABSI) do occur.

These infections may be devastating for patients in terms of morbidity and mortality.

For example, in the United States, CLABSIs result in thousands of deaths each year and cost health care systems billions of dollars (CDC, 2016).

Similar data is unavailable in Australia but, even so, an effort to reduce the incidents of CLABSI is a priority of the Australian Commission on Safety and Quality (ANZICS, 2014).

One approach to the problem has been to place an antimicrobial dressing around the insertion site of central lines.

This intervention was based on a systematic review that demonstrated a 40% reduction in CLABSI when a chlorhexidine impregnated disc (CHD) is applied to the catheter entry site.

Although use of the disc has become commonplace, most of the studies included in the review were conducted in intensive care units where the catheter dwell time is comparatively short.

Fewer trials have been done in other populations – such as those receiving long term antibiotics or chemotherapy.

In addition, reactions to chlorhexidine are not uncommon and resistant genes to chlorhexidine have been demonstrated.

A cheaper disc, impregnated with polyhexamethylene biguanide (PHMB) is now marketed for the same purpose.

PHMB has never been tested to prevent CLABSI nor has the effectiveness of the CHD disc been compared to another antimicrobial disc for CLABSI prevention.

## The study

The aim of this study was two-fold.

Firstly, we wanted to make sure the PHMB disc was safe for use to prevent CLABSI. Secondly, we wanted to test our study processes to ensure a larger trial would be feasible.

To do this we randomised patients to have their PICC site covered with either a CHD or a PHMB disc.

All other catheter-related treatment remained the same.

Depending on the group allocation, a new CHD or PHMB disc was applied every seven days, unless there was an indication to change the dressing earlier.

Any complications were recorded when the insertion site was inspected. This occurred 24 hours after insertion and then every second day until hospital discharge or until the device was removed, whichever was sooner.

## Results

Among the 101 participants, three (3%) blood stream infections occurred. Two (2%) were confirmed CLABSIs (one in each group) and one was a mucosal barrier injury-related BSI.

1217 device days were studied, resulting in 1.64 CLABSI/1000 catheter days.

One (1%) disc-related adverse event occurred in the CHD group.

## Implications for practice:

Disc dressings containing PHMB are safe to use for infection prevention at catheter insertion sites.

## Implications for research:

An adequately powered trial is needed to compare the clinical and cost effectiveness of the two products.

The current trial indicates that it is feasible to do so. ■



## REFLECTIVE QUESTION

Use of an antimicrobial disc is just one intervention that can reduce the risk of CLABSI. Consider what other interventions can be utilised to reduce the risk, both before and after the antimicrobial disc is in situ.

**Remember to record your reflections for registration purposes using the template on page 65 or by using the QNMU Record of CPD available at [www.qnmu.org.au/cpdrecord](http://www.qnmu.org.au/cpdrecord)**

## References

ANZICS, Central Line Associated Blood Stream Infection (CLABSI) Prevention, <http://www.anzics.com.au/Pages/CLABSI.aspx>, 2014.

Centres for Disease Control and Prevention (CDC), Central Line-associated Bloodstream Infection (CLABSI), <https://www.cdc.gov/hai/bsi/bsi.html>, March 2016.

Safdar N, O'Horo JC, Ghufuran A, et al. Chlorhexidine-impregnated dressing for prevention of catheter-related bloodstream infection: a meta-analysis. *Crit Care Med* 2014;42:1703-13.

Webster J, Larsen E, Marsh N, Choudhury A, Harris P, Rickard CM. Chlorhexidine gluconate or polyhexamethylene biguanide disc dressing to reduce the incidence of Central-Line-Associated Blood Stream Infection: a feasibility randomized controlled trial (the CLABSI trial) *Journal of Hospital Infection* 2017;96:223-228.