
Device for Disinfecting Needleless Connectors Solves Problem of Inconsistent Swabbing Technique

SwabCap® Helps Safety-Conscious
Hospital Further Reduce CRBSIs

A Case Study

St. Francis Hospital
Columbus, Georgia

FACILITY

St. Francis Hospital (Columbus, GA). 376 beds.

LEAD CLINICIANS

Pamela Stokes, R.N.

Bruce Carr, M.D.

THE PROBLEM

According to the CDC, some 30,000 patients per year die from catheter-related bloodstream infections (CRBSIs). This high rate of fatalities nationally continues despite a years-long national campaign.

One of the most important steps clinicians can take to prevent CRBSI is to disinfect the IV needleless connectors (also known as injection ports). The disinfection method recommended by infection control experts involves scrubbing the ports for 15 seconds with downward pressure as if juicing an orange and then waiting for the connector to dry, which could take an additional 30 seconds (total = 45 seconds). The recommendation is based on the results of published *in vitro* studies.

St. Francis Hospital had adopted the recommended disinfection method as part of its catheter care protocol. In recent years, the hospital had also implemented several other measures to reduce CRBSI. In January 2009, it implemented a “bundle” of preventive practices promoted by the Institute for Healthcare Improvement (IHI).

Later that year, the hospital joined two preventive programs coordinated by Johns Hopkins Hospital: the Culture of Safety initiative and the Stop BSI Project. It also adopted the practice of bathing critically ill patients with the antibacterial agent chlorhexidine gluconate (CHG) in 2009. Finally, it performed root cause analyses of CRBSIs that had occurred at the hospital.

Partly as a result of these steps, the CRBSI rate at St. Francis was low compared to the national average. But the facility’s infection control team was still concerned there was a weak link in their prevention efforts: inconsistency in disinfection of needleless connectors.

The team felt that nurses dealing with emergency patients or under other time pressures were not adequately scrubbing ports. St. Francis was also concerned about other variability in technique leading to incomplete disinfection.

SOLUTION

St. Francis learned of a device that effectively disinfected injection ports while eliminating the issue of technique variability. The device, called SwabCap[®], is an orange plastic cap with a foam pad inside. The pad is saturated with 70% isopropyl alcohol. When the female-threaded cap is twisted onto the male threads of the

injection port, the pad is compressed, releasing the alcohol to bathe the port and its threads. Just five minutes of attachment to the port achieves full disinfection. Because the cap is normally left in place between line accesses after the last flush, it also provides a barrier against touch and airborne contamination.

The cap's bright orange color helps ensure compliance with the adopting institution's port disinfection policy. That is, when a supervisor observes the cap in place on the port, she knows compliance has occurred. There is no question of variability because the only technique required is threading the cap onto the port.

IMPLEMENTATION

St. Francis evaluated SwabCap by trialing it for two weeks in its coronary care unit (CCU) and intensive care unit (ICU). The trial was successful, so the device was implemented hospital-wide in April 2010.

RESULTS

In the six-month period from January 2010 to September 2010 (latest data currently available), there were zero CRBSIs in St. Francis' CCU. Hospital-wide, St. Francis' CRBSIs decreased by about 56% after SwabCap was implemented, comparing April-September 2010 (post-implementation) to the time period from January 2009-March 2010 (pre-implementation).

DISCUSSION

SwabCap was the only significant preventative step added to St. Francis policy after March 2010, so the large reduction in CRBSI is attributable to the device. Thorough disinfection and protection from contamination are achieved by simply attaching the cap to the injection port and leaving it in place until the next time the line is accessed. There is no variability issue with the cap, so every usage achieves the desired effect. Before implementing SwabCap, St. Francis had no assurance that proper disinfection was occurring.

The cap may also contribute a level of prevention beyond what is possible from implementing organizational initiatives such as the IHI bundle and the Johns Hopkins Stop BSI Project. Those initiatives are largely concerned with the catheter insertion phase of catheter care, including the use of sterile technique. Yet CRBSI can occur well after insertion, during the so-called maintenance phase, when full sterile technique is rarely used.

The disinfection cap protects the needleless connector after line access and last saline flush, and may mitigate the increased CRBSI risk that can occur during catheter maintenance.
