**Abstract:**

Background: Chlorhexidine-gluconate (CHG) impregnated dressings may prevent catheter-related bloodstream infections (CRBSI). Chlorhexidine-impregnated sponge dressings (sponge-dress) and gel dressings (gel-dress) have never been directly compared. We used the data collected for two randomized-controlled trials to perform a comparison between sponge-dress and gel-dress.

Methods: Adult critically ill patients who required short-term central venous or arterial catheter insertion were recruited. Our main analysis included only patients with CHG-impregnated dressings. The effect of gel-dress (versus sponge-dress) on major catheter-related infections (MCRI) and CRBSI was estimated using multivariate marginal Cox models. The comparative risks of dressing disruption and contact dermatitis were evaluated using logistic mix models for clustered data. An explanatory analysis compared gel-dress with standard dressings using either CHG skin disinfection or povidone iodine skin disinfection.

Results: A total of 3483 patients and 7941 catheters were observed in 16 intensive care units. Sponge-dress and gel-dress were utilized for 1953 and 2108 catheters, respectively. After adjustment for confounders, gel-dress showed similar risk for MCRI compared to sponge-dress (HR 0.80, 95% CI 0.28-2.31, p = 0.68) and CRBSI (HR 1.13, 95% CI 0.34-3.70, p = 0.85), less dressing disruptions (OR 0.72, 95% CI 0.60-0.86, p < 0.001), and more contact dermatitis (OR 3.60, 95% CI 2.51-5.15, p < 0.01). However, gel-dress increased the risk of contact dermatitis only if CHG was used for skin antisepsis (OR 1.94, 95% CI 1.38-2.71, p < 0.01).

Conclusions: We described a similar infection risk for gel-dress and sponge-dress. Gel-dress showed fewer dressing disruptions. Concomitant use of CHG for skin disinfection and CHG-impregnated dressing may significantly increase contact dermatitis.

Trials registration: These studies were registered within ClinicalTrials.gov (numbers NCT01189682 and NCT00417235).

**Reference:**