To determine whether 2% chlorhexidine gluconate-70% isopropyl alcohol (CHX-IA) is superior to 10% aqueous povidone-iodine (PI) in preventing catheter-related blood stream infection (CR-BSI) when used to clean insertion sites before placing central venous catheters (CVCs) in preterm infants" Kieran et al (2017).

Abstract:

OBJECTIVE: To determine whether 2% chlorhexidine gluconate-70% isopropyl alcohol (CHX-IA) is superior to 10% aqueous povidone-iodine (PI) in preventing catheter-related blood stream infection (CR-BSI) when used to clean insertion sites before placing central venous catheters (CVCs) in preterm infants.

DESIGN: Randomised controlled trial.

SETTING: Two neonatal intensive care units (NICUs).

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PATIENTS: Infants <31 weeks' gestation who had a CVC inserted.

INTERVENTIONS: Insertion site was cleaned with CHX-IA or PI. Caregivers were not masked to group assignment.

MAIN OUTCOME MEASURES: Primary outcome was CR-BSI determined by one microbiologist who was masked to group assignment. Secondary outcomes included skin reactions to study solution and thyroid dysfunction.

RESULTS: We enrolled 304 infants (CHX-IA 148 vs PI 156) in whom 815 CVCs (CHX-IA 384 vs PI 431) were inserted and remained in situ for 3078 (CHX-IA 1465 vs PI 1613) days. We found no differences between the groups in the proportion of infants with CR-BSI (CHX-IA 7% vs PI 5%, p=0.631), the proportion of CVCs complicated by CR-BSI or the rate of CR-

BSI per 1000 catheter days. Skin reaction rates were low (<1% CVC insertion episodes) and not different between the groups. More infants in the PI group had raised thyroid-stimulating hormone levels and were treated with thyroxine (CHX-IA 0% vs PI 5%, p=0.003).

CONCLUSIONS: We did not find a difference in the rate of CR-BSI between preterm infants treated with CHX-IA and PI, and more infants treated with PI had thyroid dysfunction. However, our study was not adequately powered to detect a difference in our primary outcome and a larger trial is required to confirm our findings.

TRIAL REGISTRATION: This study was registered with the EU clinical trials register before the first patient was enrolled (Eudract 2011-002962-19). (https://www.clinicaltrialsregister.eu).

References:

Kieran, E.A., O'Sullivan, A., Miletin, J., Twomey, A.R., Knowles, S.J. and O'Donnell, C.P.F. (2017) 2% chlorhexidine-70% isopropyl alcohol versus 10% povidone-iodine for insertion site cleaning before central line insertion in preterm infants: a randomised trial. Archives of Disease in Childhood. Fetal and Neonatal Edition. October 26th. .

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