

**[4458.1] Effect of Chlorhexidine Gluconate on the Skin Integrity at PICC Line Sites**

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**BACKGROUND:** To reduce PICC line associated infections, the skin is treated with chlorhexidine gluconate (ChloroPrep®, 2% CHG, 70% alcohol, water) before insertion and application of tapes (steri-strips) and dressings (semi-permeable, e.g., Tegaderm™). The site is assessed hourly and at dressing changes for skin breakdown and infection. While CHG is commonly used with central lines, there is no published information regarding the effects on skin, i.e., irritation, inflammation, and barrier integrity. CHG (0.5%) was more effective than 10% povidone-iodine against colonization, but effects on skin integrity were not reported. Severe contact dermatitis was seen in 5.7% of preterm infants treated with a CHG dressing (Biopatch). Barrier compromise increases infection risk.

**OBJECTIVE:** To test the hypothesis that CHG treatment does not alter normal skin barrier development in the high risk neonate, i.e., the condition of skin treated with CHG and a semipermeable dressing (Tegaderm™) will not differ from skin with the dressing alone (no CHG).

**DESIGN/METHODS:** NICU patients with arm or leg PICCs were eligible (n=24, GA 32.3 ± 4.3). Measures of stratum corneum barrier integrity (TEWL), erythema, rash, and dryness/scaling were made at the PICC site (CHG + dressing, P), a contralateral dressing site (Tegaderm™, D) and an untreated control (C) at insertion and dressing changes. Statistical evaluations were made using ANOVA.

**RESULTS:** At week 1, the PICC site had the highest erythema score (P 1.8 ± 0.2, D 0.9 ± 0.2, C 0.0 ± 0.0, p < 0.05, ANOVA). Dryness was higher for the PICC site (2.4 ± 0.2) than D (1.1 ± 0.2) and C (0.7 ± 0.2), as was TEWL (P 22.5 ± 2.9, D 15.6 ± 1.9, C 12.5 ± 1.4). At week 2, the PICC and Teg sites were each significantly higher than the control for erythema (P 1.5 ± 0.3, D 1.1 ± 0.3, C 0.0 ± 0.0) and dryness (P 2.2 ± 0.4, D 2.2 ± 0.4, C 0.9 ± 0.4) but not different from each other. TEWL was higher for P (P 34.4 ± 18.6, D 14.4 ± 2.0, C 12.0 ± 2.2).

**CONCLUSIONS:** The dressings applied to PICC sites, rather than CHG, contribute to the observed skin breakdown and thereby alter the normal barrier development in neonates.

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