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A randomized trial of 2% chlorhexidine tincture compared with 10% aqueous povidone-iodine for venipuncture site disinfection: Effects on blood culture contamination rates.

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Abstract

BACKGROUND: Contaminated blood cultures have been recognized as a bothersome issue, and continue to cause frustration for clinicians. Skin antiseptics can prevent blood culture contamination. To our knowledge, there have been no randomized studies to compare 2% alcoholic chlorhexidine and 10% aqueous povidone-iodine for venipuncture site disinfection.

OBJECTIVE: This study aimed to evaluate the efficacy of venipuncture site disinfection with 2% chlorhexidine in 70% alcohol and 10% aqueous povidone-iodine in preventing blood culture contamination.

PATIENTS AND METHODS: A prospectively randomized investigator-blinded trial was conducted in all patients in the medical wards and emergency room (ER) at King Chulalongkorn Memorial Hospital, Bangkok, Thailand, from August to October, 2006. Venipuncture sites were disinfected with 2% chlorhexidine in 70% alcohol or 10% aqueous povidone-iodine, and blood cultures were taken by students, residents, or nurses.

RESULTS: Of 2146 blood cultures, 108 (5.03%) were contaminated with skin flora. The blood culture contamination rate with 2% alcoholic chlorhexidine was 3.2% (34 of 1068), compared with a rate of 6.9% (74 of 1078) (P<0.001) with 10% aqueous povidone-iodine. In medical wards, the contamination rates were 2.6% and 3.9% with 2% alcoholic chlorhexidine and 10% aqueous povidone-iodine (P=0.2). In ER, the contamination rates were 4.3% and 12.5% with 2% alcoholic chlorhexidine and 10% aqueous povidone-iodine (P<0.001). The most common contaminant was coagulase-negative Staphylococcus (80.6%), followed by Corynebacterium (7.4%), Micrococcus (6.5%), and Bacillus (5.5%).

CONCLUSION: Two percent alcoholic chlorhexidine is superior to 10% aqueous povidone-iodine for venipuncture site disinfection before obtaining blood cultures.

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