"These results demonstrate that the biofilm-forming capability of the skin microflora reduces the bactericidal efficiency of blood donor skin disinfectants." Taha et al (2014).

Reference:

Taha, M., Kalab, M., Yi, Q-L., Landry, C., Greco-Stewart, V., Brassinga, A.K., Sifri, C.D. and Ramirez-Arcos, S. (2014) Biofilm-forming skin microflora bacteria are resistant to the bactericidal action of disinfectants used during blood donation. Transfusion. May 29th. .

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Abstract:

Background: A one-step skin disinfection method containing 2% chlorhexidine-gluconate (CHG) and 70% isopropyl alcohol (IPA) is currently used by blood suppliers worldwide. Reports of bacterially contaminated platelet concentrates (PCs) indicate that skin disinfection is not fully effective. Approximately 20% of skin microflora exist as surface-attached aggregates (biofilms), known for displaying increased resistance to disinfectants. This study was aimed at determining whether skin microflora biofilm-positive Staphylococcus epidermidis and Staphylococcus capitis are resistant to CHG and/or IPA.

Study Design and Methods: Free-floating cells and mono or dual (1 : 1 ratio) biofilms of S. epidermidis and S. capitis were exposed to CHG, IPA, or CHG/IPA for 30 seconds, simulating skin disinfection practices. Residual viable cells were quantified by colony counting. Morphology of disinfectant-treated S. epidermidis biofilms was examined by scanning electron microscopy. Treated S. epidermidis and S. capitis biofilms were inoculated into PCs and bacterial concentrations were determined on Days 0 and 5 of storage.

Results: Treatment of staphylococcal biofilm cells with all disinfectants caused cell damage and significant reduction in viability, with CHG/IPA being the most effective. However, biofilms were significantly more resistant to treatment than free-floating cells. Disinfectant-treated S. epidermidis proliferated better in PCs than S. capitis, especially when grown as monospecies biofilms.

Conclusion: Although CHG/IPA is effective in reducing the viability of S. epidermidis and S. capitis biofilms, these organisms are not completely eliminated. Furthermore, disinfectant-treated staphylococcal biofilms multiply well in PCs. These results demonstrate that the biofilm-forming capability of the skin microflora reduces the bactericidal efficiency of blood donor skin disinfectants.

Other intravenous and vascular access resources that may be of interest (External links – IVTEAM has no responsibility for content).

Guide for intravenous chemotherapy and associated vascular access devices from Macmillan.
CancerUK IV chemotherapy information.