Newsletter

Best Practices in Blood Culture Collection

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2% CHLORHEXIDINE or NOT?

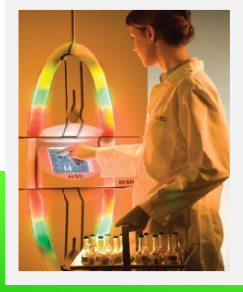
The sepsis syndrome is one of the leading causes of death in hospitalized patients. The mortality rate of septicaemia patients varies between 30% - 70%.[1] Septicaemia has been ranked the top 3 principal causes of death in Malaysian Ministry of Health Hospitals for the last 5 years or more.[2]

Up until today, blood cultures remain the gold standard in the microbiological diagnosis of sepsis. However, the incidences of a "contamination" can cause deleterious consequences. Therefore it is important that blood cultures be collected by using a procedure that minimizes contamination.[3]

The current gold standard in skin preparation is Iodine tincture. Iodine-containing preparations require sufficient time to disinfect surfaces (30 seconds for iodine tincture and 1.5 to 2 minutes for iodophors). Chlorhexidne gluconate requires the same amount of time as iodine tincture or lesser[4], but is not associated with allergic reactions and does not need to be cleaned off the skin after the venepuncture is completed.[5] However, Barenfanger and team has successfully established that Chlorhexidine has comparable effectiveness and is safer, cheaper and preferred by staff so it is an alternative to iodine tincture.[4]

Chlorhexidine significantly reduced the rate of blood culture contamination when compared with povidone iodine.[6] In spite of this, it has also been concluded that 2% Chlorhexidine, rather than 10% povidone-iodine or 70% alcohol, for cutaneous disinfection before insertion of an intravascular device and for post-insertion site care can substantially reduce the incidence of device-related infection.[7]

The primary disadvantage to Chlorhexidine gluconate is that it cannot be used to disinfect skin of infants less than two months of age; however, it is the recommended skin disinfectant for older infants, children and adults.[5] On the other hand, Mullany *et al* has proven that Chlorhexidine-based antisepsis interventions have the potential for significant reduction of the burden of neonatal morbidity and mortality in developing countries, yet further information is needed before policy recommendations can be made.[8]



Stop Sepsis - Start with Best Practices in Blood Culturing.

Comparison of Skin Antiseptics:

	Chlorhexidine Gluconate (CHG)	Iodine Tincture (IT)	Povidone-Iodine (PI)
i) Efficacy	• Highly effective for skin preparations • Superior to PI preparations	• Highly effective for skin preparations • Superior to PI preparations	• Less effective
ii) Contact time for maximum antiseptic effect	• 30 seconds	• 30 seconds	• 1.5 - 2 minutes
iii) Blood culture contamination rates	• Lower contamination rates	• Lower contamination rates	• No significant difference in contamination rates
iv) Advantages	• Colourless • Less irritating to skin • Does not need to be cleaned off the skin after the venepuncture is completed	• NA	• NA
v) Disadvantages	• Not recommended for infants less than 2 months of age	• Not recommended for patients with iodine-sensitivity	• Not recommended for patients with iodine-sensitivity
vi) Recommendations of the journals	• CHG is more effective than aqueous PI in reducing the incidence of blood culture contamination.[9] • 2% alcoholic chlorhexidine is superior to 10% aqueous PI for venepuncture site disinfection before obtaining blood cultures.[10] • Alcoholic chlorhexidine solutions reduced blood culture false positives compared with aqueous PI.[11] • Skin antisepsis with chlorhexidine significantly reduces the blood culture contamination rate among young children, as compared with PI.[12]	• Lowers blood culture contamination in ICU settings if compared to the other skin antiseptic.[3] • IT is superior to PI for venepuncture site antisepsis before blood culture sampling.[13]	

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