Safety guideline: skin antisepsis for central neuraxial blockade – response to AAGBI members’ comments


1. Obstetric Anaesthetists’ Association
2. Regional Anaesthesia UK
3. Association of Paediatric Anaesthetists of Great Britain and Ireland

The Working Party would like to thank the AAGBI members for their comments on the draft guideline on skin antisepsis for central neuraxial blockade (CNB). Such a large number of comments were received during the consultation period that it is not practical to respond to them individually. Instead, the Working Party has collated the comments and has issued a response to each one.

Concentration of chlorhexidine: 0.5% vs. 2%

Many comments expressed concern that the draft guideline recommends the use of 0.5% chlorhexidine in alcohol for skin antisepsis for CNB, because it is commonly believed that 2% chlorhexidine in alcohol is a better antiseptic than the 0.5% solution.

The evidence for the superior antiseptic efficacy of 2% chlorhexidine over the 0.5% solution is limited to one study [1]. In this study, Adams et al compared the efficacy of 2% chlorhexidine in alcohol with several other antiseptics including 0.5% chlorhexidine in alcohol against growth of a single strain of Staphylococcus epidermidis in vitro. In three out of four tests, no difference in efficacy could be demonstrated. In the fourth test (including a biofilm with added human serum), all the antiseptics failed the test of efficacy (log10 reduction factor in colony-forming units per ml of > 5), although the failure of 2% chlorhexidine in alcohol was less than for the 0.5% solution. The authors recommended in vivo studies to assess the clinical efficacy of 2% chlorhexidine in alcohol. Crowley et al [2] subsequently found no difference in bacterial colony counts from skin and epidural catheter tips after skin preparation with 0.5% and 2% chlorhexidine in alcohol.

The Working Party is mindful of several cases of chronic adhesive arachnoiditis following central neuraxial procedures in which chlorhexidine was alleged to have been responsible. Although it was not possible to prove that chlorhexidine was responsible in these cases, there is evidence that chlorhexidine is neurotoxic in vitro and in animal models. Recently, Doan et al [3] found that chlorhexidine was neurotoxic at a concentration of 0.01% (the lowest concentration tested) when applied directly to neurones.

The Working Party is aware that many anaesthetists choose to use 2% chlorhexidine in alcohol because they consider it decreases the risk of infectious complications compared with the 0.5% solution. Since neuraxial infections are rare, and cases of chronic adhesive arachnoiditis even rarer, the Working Party accepts that there is a shortage of data to support the use of one concentration of chlorhexidine over another for CNB. However, evidence for the greater efficacy of 2% chlorhexidine compared with 0.5% is lacking, whilst the neurotoxicity of chlorhexidine is well established. It is
consequently the opinion of the Working Party that skin antisepsis using 0.5% chlorhexidine in alcohol currently provides the safest compromise between the risk of infection and the risk of neurotoxicity.

The Working Party acknowledges that meticulous attention to the method of application of the antiseptic and to other infection control procedures are likely to be more important factors in reducing the risks of infection and neurotoxicity than the choice of concentration of chlorhexidine.

**Method of application: use of pre-soaked antiseptic sponge applicators (‘swabsticks’)**

Several respondents expressed concern that by recommending 0.5% chlorhexidine for skin antisepsis for CNB, anaesthetists would no longer be able to use ‘swabstick’ applicators for skin preparation, as these devices are currently only manufactured with a 2% solution of chlorhexidine in alcohol. The manufacturer has advised that a 0.5% version is unlikely to come onto the market in the near future (personal communication, CareFusion).

The Working Party acknowledges some of the potential advantages of applying antiseptic using these devices: the antiseptic is contained within the hollow of the handle so crossover errors are impossible, and fluid spillage should be minimised. The Working Party is aware that some anaesthetists prefer to use these devices for skin preparation for CNB, and would encourage the development of applicators containing 0.5% chlorhexidine in alcohol.

**Extension of guideline to cover skin antisepsis for all central neuraxial procedures**

It was suggested that the guideline should be extended to include all central neuraxial procedures (e.g. lumbar punctures) rather than just neuraxial blocks performed for anaesthesia/analgesia.

The Working Party and the AAGBI felt that it was beyond the remit of the guideline to comment on lumbar punctures (most of which are performed by non-anaesthetists) without further consultation, e.g. with the Royal College of Physicians. The guideline will therefore be limited to skin antisepsis for central neuraxial blockade for the purposes of anaesthesia and analgesia.

**References**