Assessing the Efficacy of Recommended Antiseptics for Killing Bacterial Growth in Neonatal Blue Bulb Syringes: Addressing a Clinical Issue

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Overview
Blue Bulb Syringes (BBSs)
• Used to remove oral and nasal secretions from newborns
• Provided to parents at home for use during times of respiratory illness
• Multi-use device
• Current recommendation for cleaning: rinsing in warm, soapy water
• Previous research identified bacterial growth in a BBS
• No research studies have identified the efficacy of cleaning methods for killing bacteria growing in secretions inside the BBS
• Three inexpensive, widely-available antiseptics are effective in killing bacterial growth within a BBS

Methods
Why Escherichia coli?
• Most common bacteria (approximately 10%) found in BBS used in vaginal deliveries
• Leading cause of neonatal sepsis in newborns
• Leading cause of Early Onset Neonatal Bacterial Meningitis (EONBM)

Intervention
Application of a specific concentration of selected antiseptic

Null hypothesis
Intervention would have no impact on bacterial colony count

Criteria for selection of antiseptic included being inexpensive and widely available:
Triclosan: active ingredient in Equate® antibacterial dish detergent
Hydrogen Peroxide: Equate® hydrogen peroxide
Povidone-Iodine: active ingredient in Equate® antiseptic and Betadine
I-Lactic Acid: active ingredient in Palmolive® antibacterial dish detergent
Chlorhexidine Gluconate: active ingredient in Peridex® mouthwash

Results

- Negative control experiment showed that intervention is necessary to achieve bactericidal state
- Triclosan is not an effective antiseptic – supports the recent FDA ban on Triclosan in household products
- Hydrogen Peroxide was bactericidal, but took approximately 4 minutes to achieve a 2-log kill
- Povidone-Iodine achieved a 2-log kill, killing 99% of existing bacteria in 27 seconds
- Lactic Acid achieved a 2-log kill, killing 99% of existing bacteria in 26 seconds
- Chlorhexidine Gluconate achieved a 2-log kill, killing 99% of existing bacteria in 25 seconds

Impact on Nursing
• Blue Bulb Syringes have the potential to cause disease in a newborn or young child if reused
• Three antiseptics identified which are more effective than the current recommendation at killing bacterial growth in a BBS
• Identified antiseptics are inexpensive and widely available
• Identified antiseptics can be used in underdeveloped areas of the world
• Effective killing of bacteria in a BBS has potential to break the chain of infection at the mode of transmission

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REFERENCES