INTRODUCTION

Blue Bulb Syringes (BBSs) • Used to remove oral and nasal secretions from newborns • Provided to parents at hospital discharge • Can be purchased by parents for home 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 BBS1 • 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

Experimental study

Intervention Application of a specific concentration of selected antiseptic

Negative control experiment showed that intervention is necessary to achieve bactericidal state Experiments run in triplicate to ensure integrity of results

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, used in some countries as mouthwash for VAP prevention L-Lactic Acid: active ingredient in Palmolive® antibacterial dish detergent Chlorhexidine Gluconate: active ingredient in Peridex® mouthwash

RESULTS

Disinfection of E. coli VSS5-A1 in Mueller-Hinton broth, 22C, with different antiseptics at multiples of the Minimum Inhibitory Concentration (MIC)

Antiseptic Antiseptic Concentration with Ec. coli in 27 seconds Not currently FDA approved for mucosal contact Home use, followed by rinse with clean water and drip dry Surgical scrub strength (4%) causes ARDS/death in 80% of rats Chlorhexidine gluconate 5*MIC 9.15 Yes Killed 99% of E. coli in 25 seconds Home use, since it requires 30 minute soak Countries which permit mucosal contact Not recommended; research supports FDA ban Hydrogen Peroxide 5*MIC 1.18 Yes Inexpensive 4 minutes to kill 99% of E. coli Home use, since it requires 30 minute soak Countries which permit mucosal contact Not currently FDA approved for mucosal contact Not currently FDA approved for mucosal contact

REFERENCES


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RECOMMENDED ANTISEPTICS FOR KILLING BACTERIAL GROWTH IN NEONATAL BLUE BULB SYRINGES: ADDRESSING A CLINICAL ISSUE

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PRACTICE IMPLICATIONS

• 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 • Identified antiseptics are inexpensive and widely available and can be used in underdeveloped areas of the world • Effective killing of bacteria in has potential to break the chain of infection at the mode of transmission • I-Lactic acid is FDA approved, has a rapid kill rate, and is widely available