Gloves after hand washing associated with fewer infections in preterm babies

August 11 2014

Extremely premature babies in a neonatal intensive care unit (NICU) had fewer infections when medical staff wore gloves after washing their hands compared with hand washing alone.

The author is David A. Kaufman, M.D., of the University of Virginia School of Medicine, Charlottesville, and colleagues.

Late-onset infections (more than 72 hours after birth) and necrotizing enterocolitis (NEC, tissue death in the intestines) can cause death and neurodevelopmental impairment in extremely premature babies. Even after hand washing, medical staff can still have microorganisms on their hands. This can be dangerous for extremely preterm newborns because of their immature immune systems and underdeveloped skin and mucosal barriers.

The authors examined whether wearing nonsterile gloves after hand washing and before all direct patient, bed and/or catheter contact, compared with hand washing alone, would prevent late-onset infections or NEC in preterm babies who weighed less than 1,000 grams and/or had a gestational age of less than 29 weeks and were less than 8 days old. The randomized clinical trial at a single hospital NICU included 120 infants who were enrolled during a 30-month study period from December 2008 to June 2011. Infants were divided in two groups: 60 infants in group A where nonsterile gloves were used after hand washing and 60 infants in group B where hand washing alone was used.

Late-onset invasive infection or NEC occurred in 32 percent of infants (19 of 60) in group A compared with 45 percent of infants (27 of 60) in group B. In group A compared with group B, there also were 53 percent fewer gram-positive bloodstream infections and 64 percent fewer central line-associated bloodstream infections.

"This readily implementable control measure to reduce infections in preterm infants while they have central or peripheral venous access warrants further study in this and other patient populations."

In a related editorial, Susan E. Coffin, M.D., M.P.H., of the University of Pennsylvania, Philadelphia, writes: "In this issue, Kaufman and colleagues describe their efforts to reduce the risk of infection among critically ill neonates. Late-onset infections are devastating for infants."

"While planning their study, the investigators used current data from their institution on the incidence of late-onset infection among extremely low-birth-weight infants to calculate a sample size that would allow them to detect a clinically relevant difference in outcome. Unfortunately for the investigators – but fortunately for their patients – the background rate of late-onset infections appears to have dropped significantly from the time they performed their sample size calculations to the study period (from 60 percent to 45 percent), thus rendering their study underpowered," Coffin notes.

"It is important to recognize that universal glove use might lead to several unintended consequences. Glove use has been found by many investigators to be one of the key barriers to appropriate hand hygiene," Coffin continues.

"At this point, we should applaud Kaufman and colleagues for tackling a challenging and important problem, lobby funding institutions to support additional well-designed infection prevention trials, and await additional

data before donning these gloves," Coffin concludes.

More information: *JAMA Pediatr.* Published online August 11, 2014. DOI: 10.1001/jamapediatrics.2014.953.

JAMA Pediatr. Published online August 11, 2014. DOI: 10.1001/jamapediatrics.2014.1269