

THE APPLICABILITY AND USE OF WATERLESS HAND SANITIZER IN VETERINARY AND ANIMAL AGRICULTURAL SETTINGS

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Abstract

An increase in outbreaks caused by zoonotic agents has brought about intensified efforts to address the transmission of infectious organisms in animal settings. In October 2002, the CDC released recommendations for the use of waterless hand sanitizer (WHS) in human healthcare settings. The question arises whether WHS may be as effective in veterinary and animal agricultural settings given some of the dissimilarities in conditions.

To address this question, three studies were conducted. The first was a retrospective analysis of a *Samonella agona* outbreak which occurred in 2001 at the Large Animal Teaching Hospital of the Virginia-Maryland Regional College of Veterinary Medicine (VMRCVM). The second evaluated the pattern of use and efficacy of hand hygiene products in the VMRCVM Large Animal Hospital. The third study assessed the efficacy of WHS among visitors to a children's petting zoo at the 2002 Virginia State Fair.

Regarding the *Salmonella* outbreak, it is thought that a calf from the university owned dairy herd was the index case. A total of 16 equine patients acquired *S. agona* while hospitalized. The nosocomial disease incidence risk for in-house patients was estimated to be 33% (16/49). The LAH was closed for 7 months for cleaning, disinfection and renovation. The total cost of the outbreak was estimated to be at least \$755,000.

Waterless hand sanitizer proved useful in the veterinary hospital setting. When measured immediately after use, WHS reduced bacterial loads on the hands of 20 LAH

personnel ($P < 0.001$). Before WHS use, HBC ranged from less than 20 to 48,800 CFU/ml with a geometric mean of 6,926 CFU/ml. Counts after WHS use ranged from less than 20 to 23,400 with a geometric mean of 1,152 CFU/ml. Differences in before and after ranged from -4,000 to 48,200 CFU/ml with a median of 9,700 CFU/ml. The logarithmic reduction in bacterial load before and after WHS use was 0.78 (79.7%).

In the petting zoo study, bacterial counts on the fingers of the children sampled before use of WHS ranged from 40 to 75,200 CFU/ml with a geometric mean of 8,653 CFU/ml. After WHS use, bacterial growth ranged from 19 to 58,400 CFU/ml with a geometric mean of 1,727 CFU/ml. Differences in before and after ranged from -35,600 to 59,400 CFU/ml with a median of 8,190 CFU/ml. The logarithmic reduction in bacterial load before and after WHS use was 0.70 (82.2%; $P < 0.001$).

These data suggest that WHS may be of benefit in veterinary medicine and animal agriculture as a means to reduce nosocomial and zoonotic infections.

KEYWORDS: nosocomial infection, outbreak, *Salmonella*, veterinary hospital, hand hygiene, hand sanitizer, petting zoo