

Alcohol-Based Hand Sanitizers Associated With Norovirus Outbreaks

Ron Zimmerman

February 23, 2011 (San Antonio, Texas) — Use of alcohol-based hand sanitizer (ABHS) in place of soap and water in nursing homes represents one of the greatest institutional risk factors for the spread of noroviruses and can lead to outbreaks of acute gastroenteritis, according to a study presented here at Preventive Medicine 2011: Annual Meeting of the American College of Preventive Medicine. The findings suggest that significant changes should be made either by substituting soap for these products or by training staff members in ways to use them more effectively.

The study, conducted by David Blaney, MD, PhD, from the Centers for Disease Control and Prevention in Atlanta, Georgia, attempted to identify risk factors for widespread norovirus outbreaks in long-term care facilities (LTCFs) in New England.

The region averaged 35 outbreaks in the 3 years before the study period, but outbreaks spiked to 54 and 124 in the 2-year study period of 2006 to 2007. This time corresponded with the emergence of 2 new GII.4 norovirus strains: Minvera and Laurens.

Noroviruses are single-stranded RNA viruses and are highly infectious, requiring as few as 10 viral particles to infect, Dr. Blaney pointed out. They are stable in the environment and are spread by the fecal-oral route. Virus outbreaks are common in LTCFs, perhaps because of the specific characteristics of those facilities, such as close living quarters, shared toilet facilities, incontinence among residents, and poor hygiene resulting from dementia or physical disabilities, he added.

Dr. Blaney's team performed a univariate analysis to evaluate the association between the staff and patient characteristics and to identify potential risk factors for an outbreak. Norovirus was confirmed in 1184 residents and 737 staff members.

The greatest risk ratio among 8 identified risk factors was when use of an ABHS was equal or more likely than soap and water. That risk ratio was 3.02 ($P = .012$). Other risk factors with high risk ratios were the use of part-time staff when the proportion of staff-to-patients was less than 1:2 (risk ratio, 2.78; $P = .005$) and when the total staff-to-patient ratio was less than the industry median (risk ratio, 1.88; $P = .039$).

Dr. Blaney pointed out that norovirus exhibits resistance to alcohol-based hand sanitizers, according to a study published in 2010. His study confirms that in LTCFs, the preferential use of an ABHS alone may not be effective in preventing the spread of these viruses and may in fact increase the risk for outbreaks.

A physician with responsibility over LTCFs in Rochester, New York, Byron Kennedy, MD PhD, deputy director of public health of Monroe County, said the study definitely caught his attention.

"What I walked away from the study with was [that] maybe some of the benefits we think are conveyed by ABHS are not really there," he said. "I think it's an important study simply because of the number of folks we have in nursing homes and healthcare facilities — and that number is only going to increase."

However, Dr. Kennedy cannot see that the study points to a clear direction for change in hand sanitizing practices.

"I don't think with the data he had in the study we can justify that change at this point. Because we need to know what kind of training the staff has been given, and were there certain instances where the person's hands were visibly soiled or not, and were they doing it appropriately. So, until we get more information on that, it is probably not wise to change what our current guidelines are."

A staff physician at the Atlanta Veterans Administration Hospital, Tisha Titus, MD, MPH, said the study has relevance for her facility. "In our [intensive care units], we actually have a hand hygiene compliance of 30% with the options of hand sanitizer and copious amounts of soap, but we haven't been successful in getting them to use either. Hand hygiene with ABHS is quicker and easier than using soap, but we still can't get them to use it. And if we're now having antimicrobial resistance to that, that's actually likely to make our hand hygiene even worse."

Dr. Titus thought the study showed soap was more effective than ABHS for a simple reason: friction. "Most soaps and sanitizers are considered to be antibacterial," she said. "Here, we're talking about a virus. Perhaps soap did better because at least you're rinsing it off down the drain, whereas hand sanitizers are going to rub those things around if those microbes aren't killed."

If the choice is between soap and sanitizer, Dr. Kennedy would like a clear set of results, perhaps in a refined study.

"You really need a prospective study," he said, "where you're looking at, from the very beginning, nursing facilities where they are randomized and some are using ABHS and others where they're using soap. And then you follow them forward in time to see to what extent you're having norovirus acute gastroenteritis. And what those rates are compared to the other group. Assuming of course that in both groups the products are used optimally."

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