

Emerging Diseases

Hypochlorite solutions may be useful in managing CA-MRSA

by Nicole Blazek
IDC Staff Reporter

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Many physicians have resorted to recommending bleach baths for *Staphylococcus aureus* infections with only anecdotal evidence to support the usefulness of such measures. A recently published study may offer physicians potential guidelines for implementing this treatment.

Previous reports indicate that about 30% of all healthy individuals experience *S. aureus* colonization in the anterior nares; 22% of children admitted to a hospital in Corpus Christi, Texas, for well visits experienced nasal carriage MRSA colonization. Strategies to prevent skin and soft tissue infections have included bleach bath regimens with solutions ranging from one capful of bleach to one cup of bleach per tub with soaking durations up to 30 minutes.

“Many clinicians are recommending bleach baths to decrease the risk of recurrent CA-MRSA skin infections but are recommending very low concentrations of bleach that are unlikely to kill significant numbers of the colonizing MRSA,” Kenji Cunnion, MD, MPH, of the division of infectious diseases at the Children’s Hospital of The King’s Daughters, Norfolk, Va., told *Infectious Diseases in Children*. “This is the first study to show the concentration of household bleach diluted in tap water and the time length necessary to kill significant numbers of CA-MRSA.”

The researchers suggest that a five-minute soak in a bleach solution consisting of 2.5 mL of bleach diluted into 13 gallons of water, or about one-half cup of bleach diluted into a 50-gallon standard tub filled one-quarter with water, could decrease CA-MRSA colonies by more than 99.9%.

“We tested clinical isolates of CA-MRSA causing these infections and used conditions that replicate the conditions of actual bleach baths in the home,” Cunnion said. Five invasive MRSA isolates were recovered from blood, bone and joint cultures, and five colonizing isolates were obtained using nasopharyngeal swabs. The researchers performed a series of assays to determine the efficacy of several hypochlorite solutions at killing these isolates in vitro.

After five minutes in bleach at 2.5 mL/mL, a high degree of killing was demonstrated for all 10 CA-MRSA isolates, resulting in a greater than three-log reduction in surviving organisms compared with the control strain incubated in municipal tap water alone, according to the researchers.

“Killing was pretty robust after five minutes, which is a lot more convenient than what most physicians are advocating; most are saying 15 to 20 minutes,” Randall Fisher, MD, associate professor of pediatrics at Eastern Virginia Medical School, and a pediatrician at the Children’s Hospital of The King’s Daughters, said in an interview.

A 99.94% to 100% killing range was observed for all isolates and no differences in susceptibility to the treatment among colonizing and invasive isolates were noted.

Duration and frequency

Recommendations for how many times a week and for how many months such treatments should occur do not exist, and many physicians make these decisions on an individual patient basis. Fisher adjusts these variables depending on the frequency and severity of the outbreak, recommending a five- to 10-minute bleach bath once a week for children who have relatively mild outbreaks — that is, those outbreaks occurring two to four times within a six-to-12 month period, with one or two small abscesses. Physicians might consider increasing the number of baths per week to two or three for children with more severe, frequent outbreaks.

Novel treatments such as these may not be for every patient with a MRSA skin infection, according to Fisher. He said he mostly advocates bleach baths in children where the benefits of soaking techniques would be greatest, such as children who have recurrent abscesses confined to the diaper area and the proximal thighs.

“What’s needed next is a randomized, prospective trial,” Fisher said. “Our study provides a reasonable basis for what concentration of bleach to use for the treatment group. Until such a trial is performed, we won’t know whether bleach baths provide any benefit.” Future trials must determine whether bleach baths can decrease the frequency of staphylococcal skin infections in patients who receive them compared with those who do not, the researchers said.

*Editor’s note: This study on the volume of bleach needed to add to a bath tub of water to significantly reduce MRSA colonization is sorely needed (pun intended). Better than a rubber ducky, a half cup of bleach in one-quarter bathtub is quite sufficient to accomplish this task. As the investigators noted, the duration and frequency of this hygienic ritual remains untested, but their educated guess seems reasonable. Like most onerous infectious diseases, (4) ounces of (hypochlorite) protection is always much better than a pound of (antibiotic) cure.— Stan L. Block, MD
Infectious Diseases in Children Editorial Board member*

For more information:

- Fisher RG, Chain RL, Hair PS, et al. Hypochlorite killing of community-associated methicillin-resistant *Staphylococcus aureus*. *Pediatr Infect Dis J*. 2008;doi:10.1097/INF.0b013e318175d871.
- Kaplan SL. Commentary: prevention of recurrent staphylococcal infections. *Pediatr Infect Dis J*. 2008;doi:10.1097/INF.0b013e31818632b3.