

Surgical scrub solution: It's good for patients, too (w/ Video)

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Giving critically ill hospital patients a daily bath with a mild, soapy solution of the same antibacterial agent used by surgeons to "scrub in" before an operation can dramatically cut down, by as much as 73 percent, the number of patients who develop potentially deadly bloodstream infections, according to a new study by patient safety experts at The Johns Hopkins Hospital and five other institutions.

Bloodstream infections, they say, strike as many as one in five [patients](#) in [hospital](#) intensive care units and up their chances of dying by as much 25 percent. Even when they are not fatal, such infections have been reported to lengthen hospital stays by an average of a full week and add as much as \$40,000 in costs.

The new study, described this summer in the June issue of the journal *Critical Care Medicine*, tracked daily neck-to-toe sponge baths with a mild, 4 percent solution of chlorhexidine gluconate, given to 2,650 ICU patients at six different U.S. hospitals. Chlorhexidine gluconate is the same antibacterial agent used by surgeons while scrubbing in for an operation and by dentists as a potent mouthwash to guard against [gum disease](#). Weekly swab testing found 32 percent fewer patients colonized with methicillin-resistant [Staphylococcus aureus](#) (MRSA) and 50 percent fewer cases of vancomycin-resistant *Enterococci* (VRE), when compared to a similar number of ICU patients (2,670) at the same hospitals who were washed with just plain soap and [water](#). MRSA and VRE are the two most common so-called hospital superbugs.

"Doing everything possible to ward off [bloodstream infections](#) and halt the spread of these dangerous bacteria is essential to safeguarding our patients' well-being, encouraging their speedy recovery and sparing valuable hospital resources," says study co-investigator Trish Perl, M.D., director of hospital epidemiology and infection control at Johns Hopkins.

"It's just as important to find the right soap to prevent infection as it is to find the right drug to treat patients who develop an infection," says Perl, a professor of medicine and pathology at the Johns Hopkins University School of Medicine.

"Our results show that using chlorhexidine [glutamate] as a daily washing agent is a simple, effective and relatively cheap way to protect the health of our most vulnerable patients," she adds, noting that various products cost very little. A 320-ounce bottle of the scrub solution costs as little as \$6 a bottle, while 15 milliliter packets cost 33 cents each. It is also available as either a solid reddish-colored bar or an even milder baby-wipe type cloth containing a 2 percent chlorhexidine glutamate solution (at a cost of \$2.57 for a pack of two.)

Perl says the goal is to "actively remove" bacteria that may be harmful to the patient or other patients in the hospital, people at greater risk of infection because of a weakened immune system or from use of medical devices that may offer a route for bacteria to enter the body.

"Because these bacteria have built up resistance to many of the most common antibiotic drugs used to kill them, our goal is to stop them from infecting patients or from spreading from patient to patient, as we are left with few options for treatment after they colonize and then infect a patient," says Perl, who points out that the chemical's antibacterial effects can last from six to 48 hours, depending on the strength of the solution.

"And altering the daily bathing routine is a simple and effective means of doing so because it involves no additional workload for nurses," she says.

The study showed no skin rashes or adverse events during the test period, between December 2004 and January 2006. Each critically ill patient was tested for infectious bacteria within 48 hours of admission and then weekly thereafter with either nasal or buttock swabs, and for the remainder of their hospital stay.

Among some 500 patients whose stay in hospital was long (at least 10 days), 11 who were washed with chlorhexidine had MRSA and five developed bloodstream infections. By contrast, MRSA was detected in 27 of a similar group who were bathed with plain [soap](#), with eight developing bloodstream infections. Similarly, with VRE, nine patients in the chlorhexidine group had bloodstream infections, while 33 were infected in the plain-soap group.

As part of routine hospital procedures, any patients found to be infected or to be a carrier before infection has set in are placed in isolation for the remainder of their stay. Wound care is done only in designated, confined treatment spaces or separate rooms, and hospital staff must take special precautions between treatments, such as cleaning equipment and furniture with strong disinfectants and wearing disposable gloves, masks and gowns.

Perl says chlorhexidine has been in use since the 1950s, but its practical value had "not been appreciated" until now, citing the chemical's occasional use as a treatment for recurrent pimples as the main reason why the multicenter research team conducted the latest study.

"Our research is particularly important for preventing MRSA and other drug-resistant infections in children," she adds. Her team's previous

research in 2007 showed that children admitted to Hopkins are increasingly identified as harboring MRSA or VRE, with four times as many children admitted to the pediatric ICU with MRSA and twice as many with VRE than five years ago.

In 2006, the Joint Commission estimated that 70 percent of the bacteria that cause infections for 2 million hospitalized Americans each year are resistant to at least one of the drugs most commonly used to treat them. Perl's only caution is the need for long-term monitoring to make sure that hampering the growth of one kind of bacteria -- both *S. aureus* and *Enterococci* or so-called gram-positive bacteria -- does not promote the growth of other kinds, specifically, gram-negative bacteria.

Source: Johns Hopkins Medical Institutions

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