

SHOOT THE MESSENGER

An infectious disease specialist seeks to curtail a deadly outbreak by going after its misunderstood source



Dr. Andrew Simor

Sometimes, says Dr. Andrew Simor, a senior scientist at Sunnybrook Research Institute and head of Sunnybrook's department of microbiology and division of infectious diseases, medical science is less about the actual and more about the potential.

In a paper published in *Clinical Infectious Diseases* in 2007, Simor, who directs the research institute's discipline of clinical integrative biology and teaches at the University of Toronto, explored a treatment option for people who are carriers—said to be “colonized”—of methicillin-resistant *Staphylococcus aureus* (MRSA), a potentially deadly strain of bacteria. It was an effort, he says, apart from the usual energy invested in treating patients already infected with this disease. “It would be nice to find a treatment for the infection,” says Simor, whose randomized controlled trial, conducted between 2000 and 2003, was the first to identify a safe and effective therapy for eradicating MRSA colonization in hospitalized patients for at least three months. “But I hope I've also shown why it would be useful to be able to clear the colonized patients, and thereby prevent an infection from happening in the first place.”


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The MRSA organism typically resides on skin and mucosal membranes, especially in the nose. Colonized individuals—so-called because they have the staph bacteria but are not ill from it—have a 20% to 30% risk of developing an infection within 18 months of becoming colonized. But it's their exposure to others—whose less resilient natural immunities might render them more susceptible to this infection—that is a greater cause for concern. The mortality rate of MRSA, after all, is between 4% and 10%. And it's thanks in part to encounters with colonized individuals, says Simor, that between 5% and 10% of patients admitted to hospital without an infection, develop one while there. “That's a huge number.”

In the modern definition of a superbug, MRSA emerges as a particularly super one. First identified in 1963, the bacterium didn't cause problems in Canada until the late 1990s, when it came to light as the most common antibiotic-resistant organism causing infections in hospitalized patients. The sensitive strain of *S. aureus* has been around for centuries, but novel community strains of MRSA, which cause disease in nonhospitalized and otherwise healthy people, are the worrying new entity. They appear to be even more virulent, capable of being spread easily and causing severe disease. “This observation makes our study findings even more relevant,” says Simor.

In the U.S., a little less than 1% of the general population are MRSA carriers. We don't have any comparable data in Canada, but, says Simor, about eight of every 1,000 patients admitted to hospital in this country are either MRSA carriers or have the staph infection.

Ten years ago, frustrated by the lack of attention being paid the issue of MRSA carriage, Simor and his team began treating patients with a blend of antibiotics and learned, retrospectively, that a combination therapy of antiseptic soap, antibiotic ointment and antibiotic pills seemed to work. The randomized controlled trial he shepherded in response to these findings concluded that, three months in, 74% of MRSA carriers were clear.

The scientist is philosophical about the results. Even this treatment—currently the best available—wasn't effective in the long run with 25% to 30% of patients. Just the same, Simor, who admits to liking things that aren't necessarily straightforward or well understood, is optimistic about this being a first step, and excited to be on the pathway. “I often say to my students, ‘When was the last time anyone discovered a new heart or kidney disease?’ These organisms are constantly evolving, and that creates new challenges for diagnosis, treatment and prevention. That's what I find so exciting.” 

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