

MRSA — happy and thriving in Canada. What's an emergency doctor supposed to do?

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Every day hundreds of patients with soft tissue infections register for treatment in Canadian emergency departments (EDs); and, as 2 articles published in this issue of *CJEM* illustrate,^{1,2} many of them will be harbouring methicillin-resistant *Staphylococcus aureus* (MRSA) infections. Over 50% of cultures taken from the infection sites of patients in Stenstrom and coauthors' study¹ tested positive for MRSA, and the prevalence increased dramatically from 21% in January 2003 to 68% in September 2004. Adam and colleagues² report the results of wound cultures during a 3-month period in 2007 from 7 urban EDs in the Greater Toronto Area. They found an overall prevalence of 19% (range from site to site of 6%–25%) with one-half of the MRSA infections demonstrating the molecular characteristics and antibiotic sensitivities of community-associated MRSA (CA-MRSA). These prevalence calculations may underestimate the true prevalence of MRSA in Canadian EDs, since not all ED patients who were treated for skin and soft tissue infections (SSTIs) during both studies had cultures performed. And although both of these studies were conducted in large urban centres, it would be naive to think that smaller centres will escape this trend. The optimal management for ED patients with purulent skin infections, particularly soft tissue abscesses, has become more nuanced in the last few years with the arrival of MRSA and, particularly, CA-MRSA. As the research (and MRSA) continue to accumulate, there remain some basic questions:

CAN I TELL WHICH PATIENTS WITH AN ABSCESS HAVE MRSA OR CA-MRSA?

In a word, no. Many risk factors for both MRSA and

CA-MRSA have been identified. In the Stenstrom study,¹ injection drug use, recent antibiotic use, admission to hospital less than 12 months before presenting to the ED, previous MRSA colonization, diabetes mellitus and the presence of an abscess were associated with MRSA infection. Adam and coworkers² compared risk factors between patients with MRSA and CA-MRSA, using an extensive telephone interview process. Although limited by small numbers, they found that patients with CA-MRSA tended to be younger, less likely to report recent antibiotic use or health care-related risk factors, and more likely to have a community-related risk factor. Many of the identified community-related risk factors revolve around close contact with others, which is common in our society. This is the problem: it is becoming difficult to find patients without risk factors. Young children, elderly patients, athletes, those who live or work in a variety of institutions, gay men, intravenous drug users, homeless people, those serving in the military, individuals who have recently had an influenza-like illness or contact with MRSA or CA-MRSA have all been identified as being at risk.^{3,4} Finally, the distinction between CA-MRSA and MRSA as “community-based” and “hospital-based” is becoming blurred, as CA-MRSA has been identified as a nosocomial pathogen,⁵ and patients without hospital contact or risk factors can have MRSA grow from their wounds.²

Wound cultures from soft tissue abscesses in the pre-MRSA era were unlikely to provide useful information in the majority of patients. However, with the prevalence of MRSA rapidly increasing around the world and in Canadian EDs, it is time to re-evaluate the utility of routine

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wound cultures for all patients with a soft tissue abscess. If all purulent SSTIs were routinely cultured in each ED, local trends in prevalence and resistance would quickly be revealed. With a small investment of administrative time, a mechanism to contact patients who are growing MRSA and CA-MRSA could be put into place, ensuring that their infections are resolving and offering an opportunity for education about contact precautions and follow-up strategies. Local surveillance can provide important information regarding focused outbreaks of soft tissue infections, which have been reported in sports teams and in other groups in close contact. Less common, but far more worrisome, are the cases of severe and fatal invasive infections from CA-MRSA, often in children and adolescents who were previously well.^{6,7} Timely provision of appropriate antibiotics is essential for the management of patients with these infections. Local prevalence and resistance of MRSA and CA-MRSA is an important piece of information necessary to guide initial treatment of ED patients who present with invasive infection or overwhelming sepsis.

SHOULD ADJUVANT ANTIBIOTICS BE PRESCRIBED AFTER INCISION AND DRAINAGE OF AN ABSCESS? WHAT IF I SUSPECT THE PATIENT HAS MRSA?

The short answer here is, again, no and no. Two observational trials in patients with MRSA positive abscesses and SSTIs failed to show any difference in outcomes between antibiotic treatment with antibiotics active against MRSA and those which were not.^{8,9} Most persuasively, a recent randomized controlled trial of 166 patients with soft tissue abscesses in downtown San Francisco demonstrated similar cure rates between the placebo group (91% [95% confidence interval (CI) 82%–96%]) versus the oral cephalexin group (84% [95% CI 74%–91%]) after incision and drainage.¹⁰ Admittedly, the cephalexin was a placebo of sorts since most patients tested had MRSA (88% of 114 positive cultures). Furthermore, the abscesses studied were large (mean diameter 20 cm² with a mean of 20–30 mL pus drained) and to be eligible the attending physicians had to believe that the patients would require an additional 5 days of antibiotic therapy. The high cure rates observed in this trial show that adjuvant antibiotic therapy is unlikely to improve outcomes, even in patients with methicillin-resistant organisms.

An important prospective study of MRSA and CA-MRSA in US ED patients demonstrated variable resistance patterns among cultured organisms,³ similar to those found by Adam and colleagues.² This finding strengthens

the argument against empiric antibiotic therapy for soft tissue abscesses. Even if we could identify clinically which patients have MRSA or CA-MRSA, variations in antibiotic resistance will result in ineffective prescriptions.

WHAT ARE MY COLLEAGUES DOING?

A recent *New England Journal of Medicine* practice survey profiled the case of a young athlete with a buttock abscess and a low-grade temperature, and asked practitioners to choose between 3 treatment options (incision and drainage alone, incision and drainage plus an antibiotic active against MRSA, or incision and drainage plus an antibiotic active against methicillin-susceptible *Staphylococcus aureus*).¹¹ The most popular management choice from 41% of over 11 000 respondents worldwide was incision and drainage plus adjuvant antibiotic coverage active against MRSA. Reasons cited highlighted the patient's presumed higher risk for CA-MRSA and concerns about transmission and a potential regional outbreak within the sports team to which he belonged.

This is a Catch-22. Overuse of antibiotics has been implicated in the rapid surge in drug-resistant organisms, and yet our response is to use more and more sophisticated antibiotics as front-line agents to treat relatively benign entities like soft tissue abscesses. A recent *CMAJ* editorial on this topic¹² again asks us to reduce our “antibiotic footprint,” and the management of soft tissue abscesses is a good place to start. We know that emergency physicians and EDs are at the front line for identification of infectious diseases. We are certainly at the front line for management of soft tissue abscesses. Our approach should be to initiate routine wound cultures for soft tissue abscesses and treat them with incision and drainage alone, followed by appropriate education and careful follow-up. Antibiotics should be reserved for patients who fail to improve or become systemically unwell, and should be narrow spectrum based on culture and sensitivity results. Our patients deserve better than a knee-jerk prescription whenever an abscess is drained.

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