

## Survey Results: Emergency Department Skin and Soft Tissue Infection Management

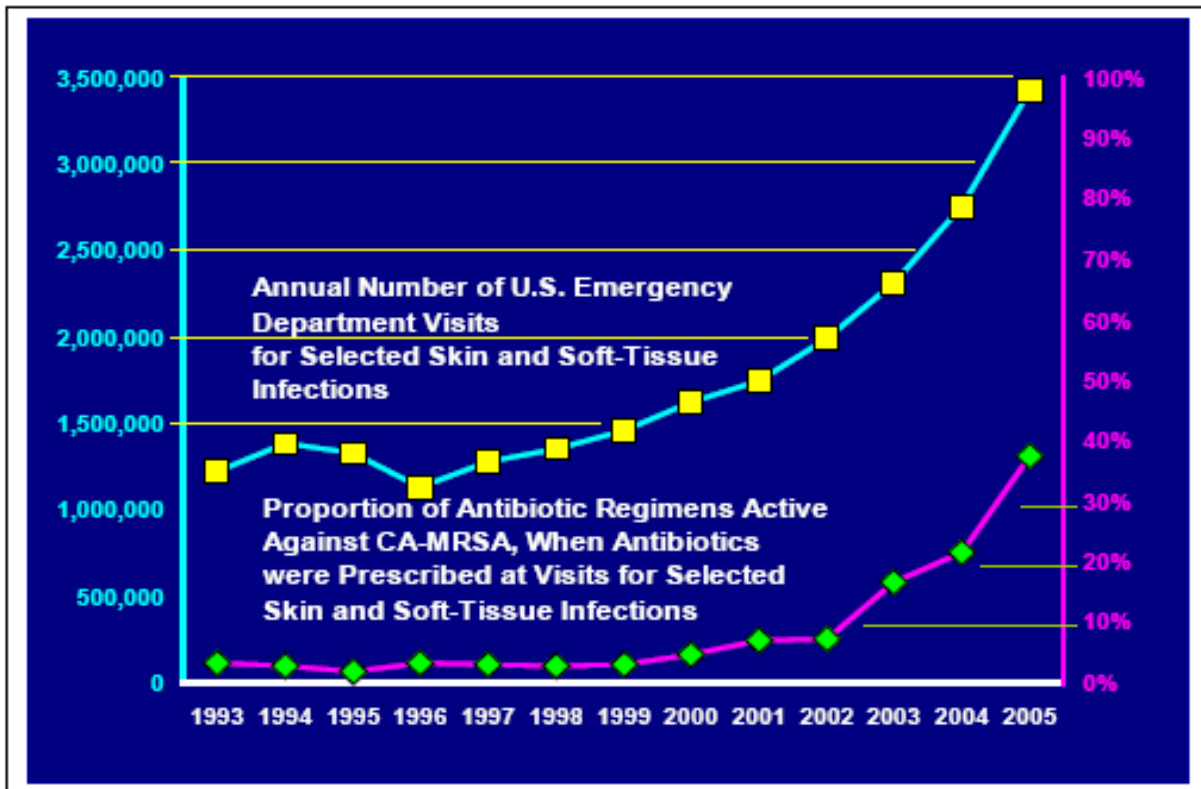
### OUTPATIENT TREATMENT

1. Over the course of 3-4, 8-hour ED shifts (about one week), how many patients presenting with skin and soft tissue infections do you think you see?

- A. 0-4      20.0%
- B. 5-10      52.7%**
- C. 11-15    19.0%
- D. >15      8.2%

#### Discussion:

More than 50% of respondents reported that they see 5-10 patients with skin and soft tissue infection over the course of 3-4, 8-hour ED shifts. This translates into approximately 2 patients with skin and soft tissue infections each shift. Importantly, 80% of respondents reported seeing between 5 and >15 patients during a one-week period in the ED. We now know that the number of patients with such infections is increasing, as is the number who present to ED departments each year as shown in the graphic below (Pallin D. *Ann Emerg Med.* 2008;51:291-8).



2. *What proportion of patients presenting with skin and soft tissue infections do you treat empirically for MRSA?*

- A. 0-10% 4.9%
- B. 11-25% 8.0%
- C. 26-50% 9.3%
- D. 51-75% 24.0%
- E. >75% 53.9%**

**Discussion:**

More than 50% of respondents noted that they empirically treat for MRSA in patients who present with skin and soft tissue infections >75% of the time. Community associated-MRSA is now so prevalent that it is the most common cause of purulent skin and soft tissue infections and cultured from about 50% of infections (Moran GJ. *N Engl J Med.* 2006; 355:666-74). Because MRSA is so common, most ED physicians treat empirically before culture and sensitivity results are available.

3. *What proportion of patients presenting with skin and soft tissue infections express concern to you about MRSA?*

- A. 0-5% 18.1%
- B. 6-10% 17.0%
- C. 11-25% 20.0%**
- D. 26-50% 20.0%**
- E. 51-75% 10.8%
- F. >75% 14.1%

**Discussion:**

Based on these responses, 40% of respondents stated that between 11% and 50% of patients with skin and soft tissue infections now express concerns about MRSA. Information about MRSA has recently been broadly distributed to the public by the media and victims, with stories appearing on TV, in print, and on the internet. An Oprah Show dedicated to MRSA on April 28, 2009 and a World MRSA Day planned for October 1, 2009 ensure that awareness of the increasing impact of MRSA will remain high among the general public.

4. *Of patients presenting with skin and soft tissue infections, what proportion do you treat as outpatients?*

- A. 90-100% 32.0%
- B. 80-89% 35.7%**
- C. 70-79% 18.1%
- D. 60-69% 5.3%
- E. 50-59% 5.3%
- F. <50% 3.6%

**Discussion:**

As reflected by the responses to this question, most skin and soft tissue infections are minor and more than 80% are treated as outpatients. However, conversely, approximately 20% of patients have infections severe enough to be admitted to the hospital.

5. *In what proportion do you order culture and sensitivity (C&S) testing of the wound drainage?*

- A. 0-10% 17.0%
- B. 11-25% 12.0%
- C. 26-50% 14.3%
- D. 51-75% 12.8%
- E. >75% 43.9%**

**Discussion:**

Based on these responses, a majority of physicians order C&S testing in greater than 75% of patients with wound drainage. The reasons to perform C&S are twofold: to clear up any uncertainty about the cause of infection and the likelihood that the empirical antibiotics prescribed will be active against the cultured pathogen(s), and to guide infection control decisions, such as MRSA precautions, if the patient is to be admitted. And, as discussed, many patients now want to know if they have an MRSA infection. On the other hand, tests are associated with costs, and C&S results generally take 2-3 days and require follow-up, which can be cumbersome for the ED.

6. *If you sometimes order C&S testing, how is the result, which typically comes back in about 2 days, usually followed and acted upon?*

- A. By a subsequent ED physician 51.1%**
- B. By an ED-based NP PA 27.0%
- C. Not specifically followed-up by available 5.3%
- D. I do not order C&S testing 3.2%
- E. Other 13.5%

**Discussion:**

Most respondents noted that C&S test results are usually handled by a subsequent ED physician. However, numerous other responses were provided for this question underscoring the procedural and legal difficulties of tracking and following up on C&S test results for an individual patient once they leave the ED.

7. If you feel impediments exist to ordering routine C&S testing please indicate these by most important, somewhat important or not important. If you feel none exist, then please select 'none'.

	Most Important	Somewhat Important	Not Very Important
Time required for the results to be available	45.0%	42.0%	13.0%
Time and effort to follow-up on the result and contact the patient	41.1%	45.2%	13.7%
Expense to patient	25.1%	51.0	24.0%
Results often do not affect subsequent care	28.4%	55.6%	15.9%
Medical-legal responsibility if results are ordered and not acted upon	33.5%	39.3%	27.2%
None	48.6%		

**Discussion:**

The response to this question is summarized in the above table. As you can see, respondents felt that the most important impediment to ordering routine C&S testing was the time required for the results to be available. Somewhat important impediments in rank order included: results often do not affect subsequent care, expense to the patient, time and effort to follow-up on the result and contact the patient, and medical-legal responsibility if results are ordered and not acted upon.

8. If you could get an accurate result indicating if MRSA or MSSA (Methicillin-sensitive *S. aureus*) was present within about 1-hour, in what proportion of patients would you order this test (assuming it's a comparable cost to C&S testing)?

- A. 0-5%                    4.2%
- B. 6-10%                 6.0%
- C. 11-25%               7.5%
- D. 26-50%               13.0%
- E. 51-75%               21.3%
- F. >75%                48.1%**

**Discussion:**

The majority of respondents stated that they would order a rapid test for MRSA in greater than 75% of patients assuming a comparable cost to C&S testing. Of note, the responses to this question parallel those for question 5 regarding the ordering of C&S testing indicating that a rapid test would probably be used in place of, or in conjunction with, C&S testing. Interestingly, many physicians who selected response A (0-5%) noted that they currently empirically treat *all* suspected cases of MRSA.

9. If you answered that you would order the rapid MRSA/MSSA test rarely or never, i.e., 0-5% of the time for outpatients (if you indicated otherwise, then skip this question), indicate the importance of various possible reasons for NOT ordering the test.

	Most Important	Somewhat Important	Not Very Important
The result would rarely change my antibiotic treatment decisions.	52.7%	36.4%	10.9%
The result would rarely be of personal important interest to my patients.	11.6%	49.1%	39.3%
The result would not provide enough information about antibiotic susceptibility to be useful.	20.9%	46.4%	32.7%
The cost seems excessive compared to the benefit.	36.4%	41.1%	22.4%
Waiting for the test result would importantly lengthen patient ED visit time.	37.3%	44.5%	18.2%

**Discussion:**

Greater than 50% of respondents who stated that they would order the rapid MRSA/MSSA test rarely or never indicated that the primary reason for this decision was that the result would not change the antibiotic treatment decision. Somewhat important reasons for rarely or never using a rapid test included: the result would rarely be of personal important interest to my patients, the result would not provide enough information about antibiotic susceptibility to be useful, waiting for the test result would importantly lengthen patient ED visit time, and the cost seems excessive compared to the benefit.

10. If you could get an accurate result indicating if MRSA or MSSA was present within about 1-hour, do you think that you would sometimes order this test in order to address a patient's concern about being infected with MRSA?

- A. Yes        **94.3%**
- B. No         5.7%

**Discussion:**

As discussed, awareness and fear of MRSA among the general population continues to increase. Not surprisingly, almost all respondents stated that they would order a rapid test in order to address a patient's concern about being infected with MRSA.

11. Indicate below what your antibiotic regimen would be for ABSCESSSES (when you think antibiotics are indicated) if you had no rapid test (empirical treatment) or if you had test results showing MRSA or MSSA was present within one hour.

Under each column, check the antibiotic(s) you would use for empirical and directed treatment (i.e., if you knew MRSA or MSSA was present).

	Empirical Rx	MRSA Only	MSSA Only
Cephalexin	48.4%	4.6%	<b>79.3%</b>
Dicloxacillin	26.6%	7.5%	<b>77.1%</b>
TMP/SMX	<b>82.6%</b>	73.8%	9.0%
Clindamycin	<b>65.8%</b>	63.6%	15.2%
Doxycycline or related	<b>61.9%</b>	59.7%	19.0%
Erythromycin or related	28.9%	3.1%	<b>74.2%</b>

**Discussion:**

The results from this question are difficult to interpret. Because the overall percentages do not add to 100%, it must be assumed that combination therapy would be used by most respondents. Starting with the column that addresses empirical treatment, most respondents selected TMP/SMX, followed by clindamycin and doxycycline, which are appropriate antibiotic choices if MRSA is suspected. Importantly, the use of cephalexin monotherapy is ill advised because beta-lactams have no activity against MRSA. The results for confirmed MRSA were similar to empirical therapy. The respondents stated that cephalexin, dicloxacillin, or erythromycin would be preferred for infections due to MSSA.

The use of a rapid test can help guide appropriate antibiotic use in all categories. For example, if MSSA is found then a drug like cephalexin would be perfect because it would treat both MSSA and strep. If neither MRSA nor MSSA is found, then penicillin to treat strep would be indicated. If MRSA is found, then TMP/SMX (or with cephalexin to cover for strep), or clindamycin would be recommended.

12. Indicate below what your antibiotic regimen would be for **WOUND INFECTIONS with drainage**, if you had no rapid test (empirical treatment) or if you had test results showing MRSA or MSSA was present within one hour. Under each column, check the antibiotic(s) you would use for empirical and directed treatment (i.e., if you knew MRSA or MSSA was present).

	Empirical Rx	MRSA Only	MSSA Only
Cephalexin	52.4%	5.7%	<b>77.2%</b>
Dicloxacillin	28.2%	9.9%	<b>74.2%</b>
TMP/SMX	75.2%	<b>75.9%</b>	10.0%
Clindamycin	62.1%	<b>69.3%</b>	13.6%
Doxycycline or related	<b>62.2%</b>	58.5%	17.5%
Erythromycin or related	28.0%	8.3%	<b>72.7%</b>

**Discussion:**

Question 12 was similar to question 11 except that it referred to wound infections. As you can see, the respondents' answers to this question were similar to those for question 11. It is important to note that wound infections are more likely to contain both streptococci and MRSA. TMP/SMX is considered less active against streptococci. Based on our data of patients with cellulitis and purulent drainage in which we found community-MRSA, MSSA and streptococci, we recommend corresponding empirical regimens, which include TMP/SMX and cephalexin, or clindamycin.

A rapid PCR test has recently been FDA approved and is commercially available. The test, called Xpert MRSA/SA SSTI, can accurately identify from wound drainage the presence, or absence of MRSA and MSSA within about 1 hour. This same test platform, called the GeneXpert System (Cepheid), has been in use to rapidly identify patients with MRSA nasal colonization. The MRSA/SA SSTI test only provides identification of MRSA and MSSA and not specific antibiotic susceptibility data, and does not provide information on other pathogens, like streptococci. However, as opposed to standard culture and sensitivity testing, the result is available within the timeframe of ED care and not 2-3 days later.

## **INPATIENT TREATMENT**

13. *In what proportion do you order culture and sensitivity (C&S) testing of the wound drainage?*

- A. 0-10% 6.5%
- B. 11-25% 5.3%
- C. 26-50% 8.4%
- D. 51-75% 8.9%
- E. >75% 70.9%**

### **Discussion:**

Based on responses to this question, more than 70% of respondents order C&S testing of wound drainage in greater than 75% of inpatient cases compared with only 43.9% of respondents for outpatients (Question 5). Obviously, there is greater justification for ordering C&S testing for inpatients due to the severity of infections.

14. *In what proportion do you start empirical antibiotic regimens that have MRSA activity (e.g., Vancomycin, Daptomycin, Tigecycline, Linezolid)?*

- A. 0-10% 6.8%
- B. 11-25% 7.9%
- C. 26-50% 10.6%
- D. 51-75% 12.1%
- E. >75% 62.6%**

### **Discussion:**

More than 62% of respondents stated that they start empiric antibiotic regimens that have MRSA activity in greater than 75% of inpatients with skin and soft tissue infection.

15. *What proportion do you admit to some type of MRSA infection control precaution (e.g., contact isolation, private or cohorted room)?*

- A. 0-5% 13.0%
- B. 6-10% 10.4%
- C. 11-25% 7.4%
- D. 26-50% 10.9%
- E. 51-75% 13.0%
- F. >75% 45.3%**

### **Discussion:**

Almost half of respondents stated that they admit greater than 75% of patients to some type of MRSA infection control precaution. Of note, C&S test results take 2 to 3 days. Patients with MRSA who are not placed in isolation present a risk of transmission, while patients placed in isolation who are subsequently found not to have MRSA use up valuable resources.

Hospitals vary in their approach to control of the patient with infection or colonization of MRSA, and Centers for Disease Control and Prevention (CDC) guidelines allow various approaches (Siegel JD. Management of multi-resistant organisms in healthcare

settings, 2006, <http://www.cdc.gov/ncidod/dhqp/pdf/ar/mdroGuideline2006.pdf>). Most hospitals contact isolate patients known to harbor MRSA, but in the ED, we only know that many, if not most, patients with skin and soft tissue infections will subsequently grow MRSA on culture. Some hospitals isolate these patients presumptively, others wait for culture results to be available. In EDs using rapid PCR testing, MRSA status can guide infection control admission decisions in real time, before the patient gets to the ward or ICU. Under the rules adopted by the Centers for Medicare and Medicaid Services (CMS) in 2008, payments will be withheld from hospitals for care associated with treating certain preventable infections, such as catheter-associated infections. In response to these new rules, many hospitals have enhanced their surveillance for MRSA, including among high-risk patients being admitted to the hospital through the ED.

*16. If you could get an accurate result indicating if MRSA or MSSA was present within about 1-hour, in what proportion of patients would you order this test (assuming it's a comparable cost to C&S testing)?*

- A. 0-5%      1.9%
- B. 6-10%     2.7%
- C. 11-25%    2.9%
- D. 26-50%    6.2%
- E. 51-75%    10.1%
- F. >75%      76.2%**

**Discussion:**

Greater than 75% of respondents stated that they would employ a 1-hour rapid test to get an accurate result indicating if MRSA or MSSA was present in the inpatient setting. The percent of respondents who would use the rapid test for inpatients is much higher than the percent who would use it in outpatients (Question 8). This result can be explained by the fact that an accurate diagnosis has greater cost implications in the inpatient setting, including the fact that parenteral MRSA antibiotics are expensive. The use of the rapid test could guide the use of more expensive parenteral antibiotics.

17. If you answered that you would order the rapid MRSA/MSSA test rarely or never, i.e., 0-5% of the time for inpatients (if you indicated otherwise, then skip this question), indicate the importance of various possible reasons for not ordering the test.

	Most Important	Somewhat Important	Not Very Important
The result would rarely change my antibiotic treatment decisions.	41.8%	42.9%	15.4%
The result would rarely change the infection control precautions a patient would receive.	30.8%	52.7%	16.5%
The result would rarely be of personal important interest to my patients.	8.9%	60.0%	31.1%
The result would not provide enough information about antibiotic susceptibility to be useful.	21.8%	55.2%	23.0%
The 2 days wait for culture and sensitivity results and need for follow-up is not overly burdensome.	18.8%	63.5%	17.6%
The cost seems excessive compared to the benefit.	12.6%	63.2%	24.1%
Waiting for the test result would importantly lengthen patient ED visit time.	20.9%	53.5%	25.6%

**Discussion:**

Similar to the response for question 9, respondents noted that the most important reason to order the rapid MRSA/MSSA test rarely or never for inpatients was that the result would rarely change the antibiotic treatment decision. The ranking for somewhat important issues was quite close for all statements.