Presentation Type:
Poster Presentation

Appropriateness of Anti-MRSA Therapy in Hospitalized Patients With Suspected Community-Onset Infections

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Background: Inappropriate use of MRSA-spectrum antibiotics is an important antimicrobial stewardship target. Contributors to inappropriate use include empiric treatment of patients who are determined to not be infected or who are infected but lack MRSA risk factors, and by excessive treatment duration when suspected MRSA infection is disproven. To characterize opportunities for improvement, we conducted a medical use evaluation (MUE) in 27 VA medical centers. The primary objectives were to assess the following proportions: (1) courses of unjustified empiric vancomycin therapy (patients in whom all antibacterials were halted within 2 days or without a principal or secondary discharge infection diagnosis); (2) courses of unjustified continuation of anti-MRSA therapy beyond day 4 (no MRSA risk factors or proven MRSA infection); and (3) excess anti-MRSA days of therapy (DOT), that is, DOT in unjustified empiric courses plus DOT after day 4 in unjustified continued courses. **Methods:** Clinical pharmacists performed retrospective, structured, manual record reviews of patients started on intravenous vancomycin on day 1 or 2 of hospitalization from June 2017 to May 2018. Exclusion criteria included surgical prophylaxis, recent MRSA infection, β-lactam allergy, renal insufficiency, severe immunosuppression, or infection that warranted anti-MRSA therapy other than vancomycin.

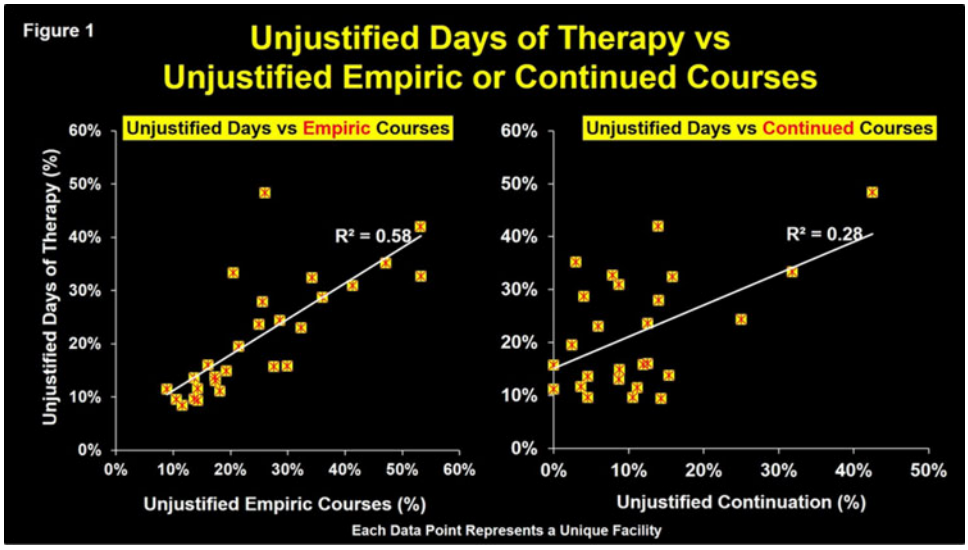

Fig. 1.

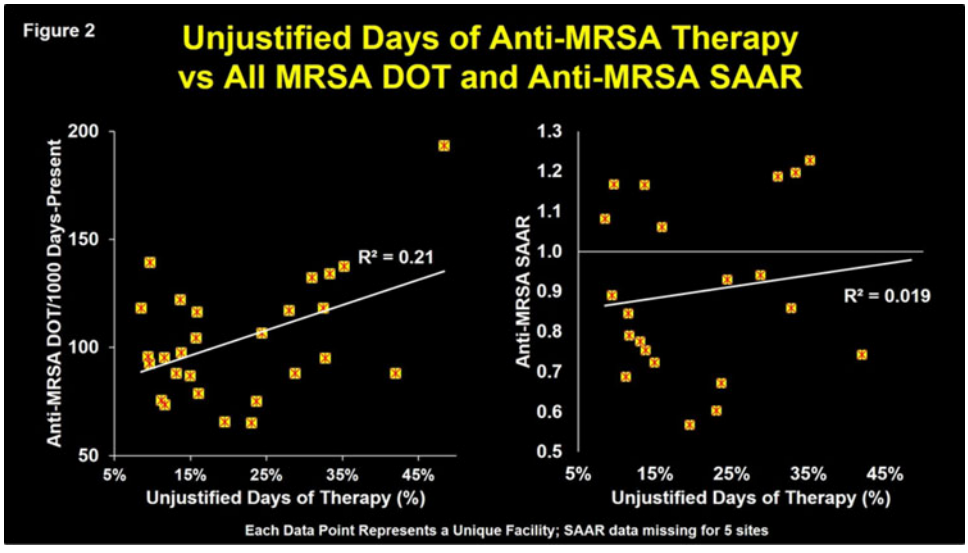

Fig. 2.

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Results: Of 2,493 evaluated patients, 1,320 met the inclusion criteria. Among them, 44% of courses were initiated in the emergency department, 37% of patients had ≥1 risk factor for healthcare-associated infections, and 50% of patients had ≥2 SIRS criteria or required vasopressor support. The most common admission diagnoses were skin and soft-tissue infection (SSTI, 40%; 68% nonpurulent) and pneumonia (27%; 46% without healthcare risk factors). Clinical cultures recovered MRSA from 8% of patients. Empiric therapy was not justified in 342 patients (26%; 57% were clinically stable). Continued therapy was unjustified in 46% of the 320 patients who received >4 days of anti-MRSA therapy. Of all days of anti-MRSA therapy, 23% were unjustified; 65% of these were due to unjustified empiric therapy. Site-specific variations in unjustified empiric therapy better correlated with the proportion of unjustified DOT than did unjustified continuation of therapy (Pearson correlation coefficients [PCC], 0.75 and 0.54, respectively) (Fig. 1). Facility-specific proportions of unjustified DOT modestly correlated with anti-MRSA DOT (PCC, 0.45; n = 27) (Fig. 2) but not the anti-MRSA standardized antimicrobial administration ratio (PCC, 0.15; n = 21). **Conclusions:** In this multicenter MUE, 26% of all days of anti-MRSA therapy lacked justification; this rate correlated with total facility-specific anti-MRSA DOT. Unnecessary empiric therapy, largely in the ED and for nonpurulent SSTIs and pneumonia without risk factors, was the principal contributor to unjustified DOT.

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Appropriateness of *C. difficile* Testing With Clinical Support Tool Versus Mandatory Infectious Diseases Attending Approval

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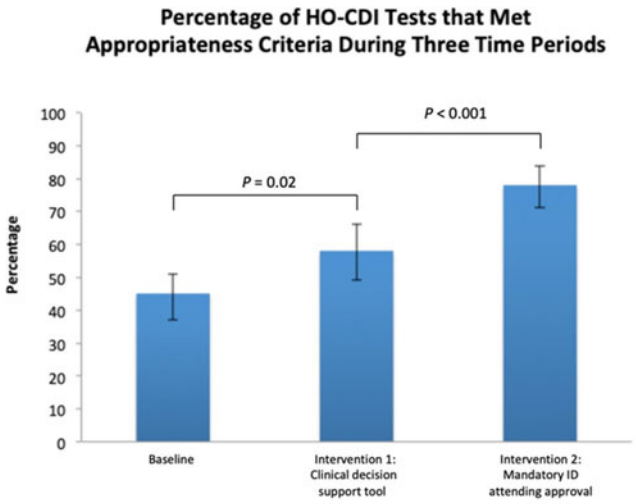
Background: In an effort to reduce inappropriate testing of hospital-onset *Clostridioides difficile* infection (HO-CDI), we sequentially implemented 2 strategies: an electronic health record-based clinical decision support tool that alerted ordering physicians about potentially inappropriate testing without a hard stop (intervention period 1), replaced by mandatory infectious diseases attending physician approval for any HO-CDI test order (intervention period 2). We analyzed appropriate HO-CDI testing rates of both intervention periods. **Methods:** We performed a retrospective study of patients 18 years or older who had an HO-CDI test (performed after hospital day 3) during 3 different periods: baseline (no intervention, September 2014–February 2015), intervention 1 (clinical decision support tool only, April 2015–September 2015), and intervention 2 (ID approval only, December 2017–September 2018). From each of the 3 periods, we randomly selected 150 patients who received HO-CDI testing (450 patients total). We restricted the study to the general medicine, bone marrow transplant, medical intensive care, and neurosurgical intensive care units. We assessed each HO-CDI test for appropriateness (see Table 1 for criteria), and we compared rates of appropriateness using the χ^2 test or Kruskall-Wallis test, where appropriate. **Results:** In our cohort of 450 patients, the median age was 61 years, and the median hospital length of stay was 20 days. The median hospital day that HO-CDI testing was performed differed among the 3 groups: 12 days at baseline, 10 days during intervention 1, and 8.5 days during intervention 2 ($P < .001$). Appropriateness of HO-CDI testing increased from the baseline with both interventions, but mandatory ID approval was associated with the highest rate of testing appropriateness (Fig. 1). Reasons for inappropriate ordering did not differ among the periods, with <3 documented stools being the most common criterion for inappropriateness. During intervention 2, among the 33 inappropriate tests, 8 (24%) occurred where no approval from an ID attending was recorded. HO-CDI test positivity rates during the 3 time periods were 12%, 11%, and 21%, respectively ($P = .03$). **Conclusions:** We found that both the clinical decision support tool and mandatory ID attending physician approval interventions improved appropriateness of HO-CDI testing. Mandatory ID attending physician approval leading to the highest appropriateness rate. Even with mandatory ID attending physician approval, some tests continued to be ordered inappropriately per retrospective chart



Note. HO-CDI= Hospital-onset *Clostridioides difficile* infection. ID= Infectious Diseases. 150 patients with HO-CDI testing were randomly selected for review of appropriateness during each time period. Rate differences were tested using Chi-squared test.

Fig. 1.

Table 1.

Table: Reasons for Inappropriate HO-CDI Testing During Each Intervention Period

	Baseline	Intervention 1 (Clinical Decision Support Tool)	Intervention 2 (ID attending approval)	*P*
<3 documented stools, n/N (%)	62/83 (75)	41/63 (65)	21/32 (65)	0.39
No diarrheal[a] stools charted in prior 24 hours, n/N (%)	9/74 (12)	2/60 (3)	1/30 (3)	0.10
Laxative[b] use in prior 24 hours, n/N (%)	38/83 (46)	34/63 (54)	15/33 (45)	0.57

Note. HO-CDI= Hospital-onset *Clostridioides difficile* infection. *P* value tests the null hypothesis that the proportions are equal across the three time periods. Rate differences were calculated using the Kruskall-Wallis Test.
[a]Diarrhea was defined as liquid, loose, or soft stools.
[b]Laxatives included: lactulose, magnesium citrate, polyethylene glycol, sodium phosphate enema, oral mineral oil, sorbitol 70% solution, glycerin rectal suppository and solution, senna-docusate, and sennosides solution.