

Appropriate Use of Anti-MRSA Antibiotics

Measure Description	
Percentage of patients with empiric anti-MRSA antibiotics discontinued when no resistant <i>Staphylococcus aureus</i> isolates are present in sterile site cultures	
Measure Components	
Numerator Statement	<p>Number of denominator eligible patients who have sterile site cultures negative for resistant <i>Staphylococcus aureus</i> isolates AND discontinuation of intravenous anti-MRSA antibiotic at or before 72-of therapy</p> <p>Definitions: <i>Anti-MRSA antibiotic</i> – For the purposes of this measure, anti-MRSA therapy includes Ceftaroline, Dalbavancin, Daptomycin, Linezolid, Oritavancin, Tedizolid, Telavancin, Tigecycline, Vancomycin</p> <p><i>Sterile site</i> – For the purposes of this measure, sterile sites include blood, cerebrospinal fluid, pleural fluid, pericardial fluid, peritoneal fluid, joint/synovial fluid, bone, internal body sites (lymph node, brain, heart, liver, spleen, vitreous fluid, kidney, pancreas, or ovary).</p> <p><u>Numerator Quality-Data Coding Options for Reporting Satisfactorily:</u> IV anti-MRSA antibiotic discontinued at or before 72-hours of therapy when sterile site cultures are negative for resistant <i>Staphylococcus aureus</i> isolates Performance Met: GXXXX: Documentation of discontinuation of IV anti-MRSA antibiotic at or before 72-hours of therapy after sterile site cultures are negative for resistant <i>Staphylococcus aureus</i> isolates</p> <p><u>OR</u></p> <p>IV anti-MRSA antibiotic <u>NOT</u> discontinued at or before 72-hours of therapy when sterile site cultures are <u>negative</u> for resistant <i>Staphylococcus aureus</i> isolates Medical Performance Exclusion: GXXXX: Documentation of medical reasons for not discontinuing IV anti-MRSA antibiotic at or before 72-hours of therapy after sterile site cultures are negative for resistant <i>Staphylococcus aureus</i> isolates</p>
Denominator Statement	Inpatients age 18 years or older with the RxNorm Code for Vancomycin, Linezolid, Daptomycin, Tigecycline, Oritavancin, Dalbavancin, Telavancin, Tedizolid, Ceftaroline Injectable Solution
Denominator Exclusion	<ul style="list-style-type: none"> - Patients with beta-lactam antibiotic allergies - Patients who expire prior to clinical isolate results - Patients who transfer to a different hospital prior to obtaining clinical isolate results - Pediatric specific units and free standing pediatric hospitals

Denominator Exception	N/A
Rationale for the Measure	<p>Resistant <i>Staphylococcal aureus</i> infections have increased to an epidemic level, affecting many countries in the healthcare and community settings. While infections caused by resistant and non-resistant <i>S. aureus</i> are both of grave concerns, methicillin-resistant <i>S. aureus</i> (MRSA) strains have been associated with lethal infections and worse clinical outcomes when compared to methicillin-sensitive <i>S. aureus</i> strains. Empirical therapy for suspected <i>S. aureus</i> infections have been significantly impacted by community associated MRSA as the majority of beta-lactam antibiotics are not efficacious against various common <i>S. aureus</i> infections, such as MRSA. Although vancomycin is the preferred treatment for serious MRSA infection, prolonged, persistent, or recurrent bacteremia during therapy, high rates of microbiological and clinical failures, nephrotoxicity, and increasing prevalence of non-susceptible strains limit vancomycin’s effectiveness. New antimicrobial discovery and development is essential but is unlikely to resolve drug resistance. The overuse and misuse of antibiotics is clearly a contributing factor to antimicrobial resistance and to effectively impede the rise of resistance more rapid diagnostics, a better understanding of pathogenesis of staphylococcal disease, and non-antimicrobial approaches, antimicrobial stewardship, to prevent and treat infections are urgently needed.</p> <ul style="list-style-type: none"> Chambers HF, Delo FR. Waves of Resistance: Staphylococcus aureus in the Antibiotic Era. <i>Nat Rev Microbiol.</i> 2009; 7: 629-641.
Supporting Guideline & Other Evidence	<p>“Vancomycin has been the mainstay of parenteral therapy for MRSA infections. However, its efficacy has come into question, with concerns over its slow bactericidal activity, the emergence of resistant strains, and possible “MIC creep” among susceptible strains.”</p> <p>“Vancomycin kills staphylococci more slowly than do β-lactams in vitro, particularly at higher inocula (107–109 colony-forming units) and is clearly inferior to β-lactams for MSSA bacteremia and infective endocarditis.”</p> <ul style="list-style-type: none"> Liu, C et al. Clinical Practice Guidelines by the Infectious Diseases Society of America for the Treatment of Methicillin-Resistant Staphylococcus aureus Infections in Adults and Children. <i>Clin Infect Dis</i> 2011; 52. <p>“Though the current recommendations continue to strongly rely on vancomycin as a standard empiric choice in the setting of severe/invasive infections, alternative therapies exist with studies supporting their non-inferiority. This includes the use of linezolid in pneumonia and severe skin and skin structure infections (SSSI) and daptomycin for MRSA bacteremia, endocarditis, SSSIs and bone/joint infections. Additionally, concerns continue to arise in regards to vancomycin, such as increasing isolate MICs, and relatively high rates of clinical failures with vancomycin. Thus, the growing interest in vancomycin alternatives, such as ceftaroline, ceftobriole, dalbavancin, oritavancin, and tedizolid, and their potential role in treating MRSA infections.”</p> <ul style="list-style-type: none"> VanEperen AS, Segreti J. Empirical therapy in Methicillin-resistant Staphylococcus Aureus infections: An Up-To-Date approach. <i>J Infect Chemother.</i> 2016; 22:351-9. <p>“Daily review of administration of antimicrobials targeting MRSA was highly effective in improving clinical outcomes by optimizing early antimicrobial therapy.”</p> <ul style="list-style-type: none"> Niwa T, et al. Early optimization of antimicrobial therapy improves clinical outcomes of patients administered agents targeting methicillin-resistant Staphylococcus aureus. <i>J Clin Pharm Ther.</i> 2016; 41:19-25.

Measure Importance	
Relationship to Desired Outcome	The desired outcome of this measure is the appropriate use of antibiotics for the treatment of non-resistant Staph aureus infections. The Clinical Practice Guidelines by the Infectious Diseases Society of America for the Treatment of Methicillin-Resistant Staphylococcus aureus Infections in Adults and Children cites multiple studies highlighting the inferior efficacy of vancomycin against non-resistant S. aureus infections (MSSA) compared to beta-lactam antibiotics. If the administration of powerful antibiotics indicated for resistant S. aureus, such as vancomycin, is continued without the presence of resistant S. aureus, it can contribute to bacterial resistance and render the current pipeline of antibiotics ineffective, which is the case for E.coli bacteria carrying the <i>mrc-1</i> gene. The Appropriate Use of Anti-MRSA antibiotics metric encourages clinicians to assess broad-spectrum antibiotic therapy according to available culture data to potentially switch to a more effective antibiotic, according to the clinician’s medical expertise. The appropriate use of anti-MRSA antibiotic therapy will limit patient exposure to unnecessary drugs as well as improve the efficacy of treatment.
Opportunity for Improvement	<p>Antibiotic resistance is a major global public health threat that has emerged with the inappropriate prescription and use of antibiotics [1, 2]. The Center for Disease Control and Prevention’s <i>Antibiotic Resistance Threats in the United States, 2013</i> report states that up to 50% of all antibiotic prescriptions are not needed or optimally effective as prescribed. In 2014, the CDC’s <i>Antibiotic Resistance Threats in the United States, 2013</i> report as well as the <i>Report to the President on Combating Antibiotic Resistance</i>, September 2014 has highlighted the urgency for combating antibiotic resistance with clinical actions that encourage the judicious use of antibiotics.</p> <ol style="list-style-type: none"> 1. Deuster S, Roten I, Muehlebach S: Implementation of treatment guidelines to support judicious use of antibiotic therapy. <i>Journal of Clinical Pharmacy and Therapeutics</i> 2010, 35(1):71-78. 2. Goossens H, Ferech M, Vander Stichele R, Elseviers M: Outpatient antibiotic use in Europe and association with resistance: a cross-national database study. <i>The Lancet</i> 2005, 365(9459):579-587.
Exception Justification	N/A
Measure Designation	
Measure Purpose	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Quality improvement • <input checked="" type="checkbox"/> Accountability • <input type="checkbox"/> MOC
Type of Measure	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Process • <input type="checkbox"/> Outcome • <input type="checkbox"/> Structure
National Quality Strategy Priority/CMS Measure Domain (check all that apply)	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Clinical Process-Effectiveness • <input checked="" type="checkbox"/> Patient Safety • <input type="checkbox"/> Patient Experience • <input type="checkbox"/> Care Coordination • <input checked="" type="checkbox"/> Efficiency: Overuse • <input checked="" type="checkbox"/> Efficiency: Cost • <input type="checkbox"/> Population & Community Health

Level of Measurement (check all that apply)	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Individual clinicians • <input checked="" type="checkbox"/> Clinician groups • <input checked="" type="checkbox"/> Hospitals Outpatient/ED
Care setting (check all that apply)	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Emergency Departments • <input type="checkbox"/> Urgent Care • <input type="checkbox"/> Harmonize with other care settings <ul style="list-style-type: none"> ○ <input type="checkbox"/> Physician Office Based Measures ○ <input checked="" type="checkbox"/> Hospital Level Measures
Data source (check all that apply)	<ul style="list-style-type: none"> • <input type="checkbox"/> Electronic Health Record (EHR) data • <input checked="" type="checkbox"/> Administrative Data/Claims (inpatient, outpatient, or multiple-source claims) • <input checked="" type="checkbox"/> Paper medical record/chart abstracted • <input type="checkbox"/> Registry