NATIONAL QUALITY FORUM

Measure Information

This document contains the information submitted by measure developers/stewards, but is organized according to NQF's measure evaluation criteria and process. The item numbers refer to those in the submission form but may be in a slightly different order here. In general, the item numbers also reference the related criteria (e.g., item 1b.1 relates to sub criterion 1b).

Brief Measure Information

NQF #: 2720
Corresponding Measures:
De.2. **Measure Title:** National Healthcare Safety Network (NHSN) Antimicrobial Use Measure
Co.1.1. **Measure Steward:** Centers for Disease Control and Prevention
De.3. **Brief Description of Measure:** This measure assesses antimicrobial use in hospitals based on medication administration data that hospitals collect electronically at the point of care and report via electronic file submissions to CDC's National Healthcare Safety Network (NHSN). The antimicrobial use data that are in scope for this measure are antibacterial agents administered to adult and pediatric patients in a specified set of ward and intensive care unit locations: medical, medical/surgical, and surgical wards and units. The measure compares antimicrobial use that the hospitals report with antimicrobial use that is predicted on the basis of nationally aggregated data. The measure is comprised of a discrete set of ratios, Standardized Antimicrobial Administration Ratios (SAARs), each of which summarizes observed-to-predicted antibacterial use for one of 16 antibacterial agent-patient care location combinations. The SAARs are designed to serve as high value targets or high level indicators for antimicrobial stewardship programs (ASPs). SAAR values that are outliers are intended to prompt analysis of possible overuse, underuse, or inappropriate use of antimicrobials, subsequent actions aimed at improving the quality of antimicrobial prescribing, and impact evaluations of ASP interventions.
1b.1. **Developer Rationale:** The measure provides summary results that hospital and health system antimicrobial stewardship programs (ASPs) can use as quantitative aids in their efforts to evaluate and improve antibiotic prescribing. The Standardized Antimicrobial Administration Ratios (SAARs) that comprise the measure focus on high value targets and high level indicators of antibiotic use for ASPs. The SAARs can be used by ASPs to benchmark antimicrobial use in multiple patient care locations, identify opportunities for improvement, and gauge the impact of stewardship efforts. At the outset, the SAARs provide a set of signals that often warrant further analysis, such as an evaluation of the extent to which a specific antibiotic or group of antibiotics accounts for a high or low SAAR value and the extent to which an antibiotic or group of antibiotics were used appropriately for specific indications. While the SAARs do not provide a definitive indication that antibiotics are overused or underused, they provide an important starting place for further analysis and possible action. Some of the analytic follow up can be completed with hospital- and patient care location-specific data reported to CDC's National Healthcare Safety Network (NHSN) Antimicrobial Use and Resistance (AUR) Module, using analytic features built into the NHSN application. However, additional analyses to determine the appropriateness of antibiotic use in individual instances are likely to require access to detailed, patient-level data that is beyond the scope of data collection and analysis using the NHSN module, e.g., clinical indications for specific antibiotics and dose and duration decisions.

S.4. **Numerator Statement:** Days of antimicrobial therapy for antibacterial agents administered to adult and pediatric patients in medical, medical/surgical, and surgical wards and medical, medical/surgical, and surgical intensive care units.
S.6. **Denominator Statement:** Days present for each patient care location—adult and pediatric medical, medical/surgical, and surgical wards and adult and pediatric medical, medical/surgical, and surgical intensive care units—is defined as the number of patients who were present for any portion of each day of a calendar month for each location. The day of admission, discharge, and transfer to and from locations are included in days present. All days present are summed for each location and month, and the aggregate sums for each location-month combination comprise the denominator data for the measure.
S.8. **Denominator Exclusions:** Hospital patient care locations other than adult and pediatric medical, medical/surgical, and surgical wards and adult and pediatric medical, medical/surgical, and surgical intensive care units are excluded from this measure.

De.1. **Measure Type:** Process
S.17. **Data Source:** Management Data, Other
S.20. **Level of Analysis:** Facility

IF Endorsement Maintenance – Original Endorsement Date: Dec 10, 2015 **Most Recent Endorsement Date:** Dec 10, 2015

IF this measure is included in a composite, NQF Composite#/title:

IF this measure is paired/grouped, NQF#/title:

De.4. **IF PAIRED/GROUPED, what is the reason this measure must be reported with other measures to appropriately interpret results?**

1. Evidence, Performance Gap, Priority – Importance to Measure and Report

Extent to which the specific measure focus is evidence-based, important to making significant gains in healthcare quality, and improving health outcomes for a specific high-priority (high-impact) aspect of healthcare where there is variation in or overall less-than-optimal performance. ***Measures must be judged to meet all sub criteria to pass this criterion and be evaluated against the remaining criteria.***

1a. Evidence to Support the Measure Focus – See attached Evidence Submission Form
NHSN_AU_Measure_Evidence_Attachment_-1-.docx
1a.1 For Maintenance of Endorsement: Is there new evidence about the measure since the last update/submission?
Please update any changes in the evidence attachment in red. Do not remove any existing information. If there have been any changes to evidence, the Committee will consider the new evidence. If there is no new evidence, no updating of the evidence information is needed.

1b. Performance Gap

Demonstration of quality problems and opportunity for improvement, i.e., data demonstrating:

- considerable variation, or overall less-than-optimal performance, in the quality of care across providers; and/or
- Disparities in care across population groups.

1b.1. **Briefly explain the rationale for this measure** *(e.g., how the measure will improve the quality of care, the benefits or improvements in quality envisioned by use of this measure)*
IF a PRO-PM (e.g. HRQoL/functional status, symptom/burden, experience with care, health-related behaviors), provide evidence that the target population values the measured PRO and finds it meaningful. (Describe how and from whom their input was obtained.)
IF a COMPOSITE (e.g., combination of component measure scores, all-or-none, any-or-none), SKIP this question and provide rationale for composite in question 1c.3 on the composite tab.
The measure provides summary results that hospital and health system antimicrobial stewardship programs (ASPs) can use as quantitative aids in their efforts to evaluate and improve antibiotic prescribing. The Standardized Antimicrobial Administration Ratios (SAARs) that comprise the measure focus on high value targets and high level indicators of antibiotic use for ASPs. The SAARs can be used by ASPs to benchmark antimicrobial use in multiple patient care locations, identify opportunities for improvement, and gauge the impact of stewardship efforts. At the outset, the SAARs provide a set of signals that often warrant further analysis, such as an evaluation of the extent to which a specific antibiotic or group of antibiotics accounts for a high or low SAAR value and the extent to which an antibiotic or group of antibiotics were used appropriately for specific indications. While the SAARs do not provide a definitive indication that antibiotics are overused or underused, they provide an important starting place for further analysis and possible action. Some of the analytic follow up can be completed with hospital- and patient care location-specific data reported to CDC's National Healthcare Safety Network (NHSN) Antimicrobial Use and Resistance (AUR) Module, using analytic features built into the NHSN application. However, additional analyses to determine the appropriateness of antibiotic use in individual instances are likely to require access to detailed, patient-level data that is beyond the scope of data collection and analysis using the NHSN module, e.g., clinical indications for specific antibiotics and dose and duration decisions.

1b.2. **Provide performance scores on the measure as specified (current and over time) at the specified level of analysis**. *(This is required for maintenance of endorsement. Include mean, std dev, min, max, interquartile range, scores by decile. Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities include.) This information also will be used to address the sub-criterion on improvement (4b) under Usability and Use.*
See Table 3 - NHSN SAAR Distribution and statistical comparison by reporting measure

1b.3. **If no or limited performance data on the measure as specified is reported in 1b2, then provide a summary of data from the**

literature that indicates opportunity for improvement or overall less than optimal performance on the specific focus of measurement.

Numerous individual studies and systematic reviews provide strong evidence that measurement of antimicrobial use and data-driven interventions by antimicrobial stewardship programs (ASPs) lead to more judicious use of antibiotics, reduced antimicrobial resistance, and other favorable healthcare outcomes (Feazel 2014; Davey 2006; Davey 2013; Kaki 2011).

Antimicrobial use measurement enables ASPs to understand prescribing practices, focus efforts on improvement, and determine the impact of their activities (Pollack, 2014). Although standardized metrics have been developed to measure antibiotic use, differences in measurement, limited uptake, and variation among facilities has impeded the ability to compare antibiotic use among hospitals.

The measure will serve as a quantitative guide for hospital and health system ASPs, enabling them to benchmark antibiotic use in their facilities and patient care locations against nationally aggregated data. The measure focuses on antibiotic agents that have been shown to be high value targets for antimicrobial stewardship programs activities such as protocols for use or post-prescription reviews to determine need for de-escalation, dose-optimization or oral conversion. Knowledge about antibiotic use patterns of these agents is a primary means to prioritize and evaluate antimicrobial stewardship efforts.

Citations:

Feazel LM, Malhotra A, Perencevich EN, Kaboli P, Diekema DJ, Schweizer ML. Effect of antibiotic stewardship programmes on Clostridium difficile incidence: a systematic review and meta-analysis. J Antimicrob Chemother. 2014;69(7):1748-54. http://jac.oxfordjournals.org/content/69/7/1748.full.pdf

Davey P, Brown E, Fenelon L, Finch R, Gould I, Holmes A, et al. Systematic review of antimicrobial drug prescribing in hospitals. Emerg Infect Dis. 2006;12(2):211-6. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3373108/

Davey P, Brown E, Charani E, Fenelon L, Gould IM, Holmes A, et al. Interventions to improve antibiotic prescribing practices for hospital inpatients. Cochrane Database Syst Rev. 2013;4:CD003543. http://onlinelibrary.wiley.com/store/10.1002/14651858.CD003543.pub3/asset/CD003543.pdf?v=1&t=hvxzajv5&s=a6f3c724ce051d8acba5866a07e3c5ac8c818e83

Kaki R, Elligsen M, Walker S, Simor A, Palmay L, Daneman N. Impact of antimicrobial stewardship in critical care: a systematic review. J Antimicrob Chemother. 2011;66(6):1223-30. http://jac.oxfordjournals.org/content/66/6/1223.full.pdf

Pollack LA, Srinivasan A. Core Elements of Hospital Antibiotic Stewardship Programs from the Centers for Disease Control and Prevention. Clinical Infectious Diseases. 2014;59(suppl 3):S97-S100.

1b.4. **Provide disparities data from the measure as specified (current and over time) by population group, e.g., by race/ethnicity, gender, age, insurance status, socioeconomic status, and/or disability.** *(This is required for maintenance of endorsement. Describe the data source including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included.) For measures that show high levels of performance, i.e., "topped out", disparities data may demonstrate an opportunity for improvement/gap in care for certain sub-populations. This information also will be used to address the sub-criterion on improvement (4b) under Usability and Use.*

1b.5. **If no or limited data on disparities from the measure as specified is reported in 1b.4, then provide a summary of data from the literature that addresses disparities in care on the specific focus of measurement. Include citations. Not necessary if performance data provided in 1b.4**

Sparse data are available on disparities in appropriateness of antibiotic use in hospitals. A retrospective analysis (1996-2007) of prospective data on all surgical patients treated for sepsis at to a tertiary care center demonstrated no differences in demographic and comorbidities between inappropriately and appropriately treated groups. (Davies et al, 2014)

Davies SW, Efird JT, Guidry CA, Hranjec T, Metzger R, Swenson BR, et al. Does it Matter if we get it right? Impact of appropriateness of empiric antimicrobial therapy among surgical patients. Shock. 2014;42(3):185-91.

2. Reliability and Validity—Scientific Acceptability of Measure Properties

Extent to which the measure, as specified, produces consistent (reliable) and credible (valid) results about the quality of care when

implemented. ***Measures must be judged to meet the sub criteria for both reliability and validity to pass this criterion and be evaluated against the remaining criteria.***

2a.1. Specifications The measure is well defined and precisely specified so it can be implemented consistently within and across organizations and allows for comparability. eMeasures should be specified in the Health Quality Measures Format (HQMF) and the Quality Data Model (QDM).

De.5. **Subject/Topic Area** *(check all the areas that apply):*
Infectious Diseases (ID)

De.6. **Non-Condition Specific***(check all the areas that apply):*
Safety : Overuse

De.7. **Target Population Category** *(Check all the populations for which the measure is specified and tested if any):*
Populations at Risk

S.1. **Measure-specific Web Page** *(Provide a URL link to a web page specific for this measure that contains current detailed specifications including code lists, risk model details, and supplemental materials. Do not enter a URL linking to a home page or to general information.)*
http://www.cdc.gov/nhsn/PDFs/pscManual/11pscAURcurrent.pdf

S.2a. **If this is an eMeasure**, HQMF specifications must be attached. Attach the zipped output from the eMeasure authoring tool (MAT) - if the MAT was not used, contact staff. (Use the specification fields in this online form for the plain-language description of the specifications)
Attachment:

S.2b. **Data Dictionary, Code Table, or Value Sets** *(and risk model codes and coefficients when applicable) must be attached. (Excel or csv file in the suggested format preferred - if not, contact staff)*
Attachment **Attachment:** NHSN_Antimicrobial_Use_Measure_Proposal_-_S.15._Detailed_risk_model_specifications-635641102276651436.xlsx

S.3.1. **For maintenance of endorsement:** Are there changes to the specifications since the last updates/submission. If yes, update the specifications for S1-2 and S4-22 and explain reasons for the changes in S3.2.

S.3.2. **For maintenance of endorsement,** please briefly describe any important changes to the measure specifications since last measure update and explain the reasons.

S.4. **Numerator Statement** *(Brief, narrative description of the measure focus or what is being measured about the target population, i.e., cases from the target population with the target process, condition, event, or outcome) DO NOT include the rationale for the measure.*
IF an OUTCOME MEASURE, state the outcome being measured. Calculation of the risk-adjusted outcome should be described in the calculation algorithm (S.14).
Days of antimicrobial therapy for antibacterial agents administered to adult and pediatric patients in medical, medical/surgical, and surgical wards and medical, medical/surgical, and surgical intensive care units.

S.5. **Numerator Details** *(All information required to identify and calculate the cases from the target population with the target process, condition, event, or outcome such as definitions, time period for data collection, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b)*
IF an OUTCOME MEASURE, describe how the observed outcome is identified/counted. Calculation of the risk-adjusted outcome should be described in the calculation algorithm (S.14).
An antimicrobial day (also known as a day of therapy) is defined by any amount of a specific antimicrobial agent administered in a calendar day to a particular patient as documented in an electronic medication administration record (eMAR) and/or bar coding medication record (BCMA). All antimicrobial days for specified categories of antibacterial agents administered in specified patient

care locations—adult and pediatric medical, medical/surgical, and surgical wards and adult and pediatric medical, medical/surgical, and surgical intensive care units—are summed for each location and comprise the numerator data for the measure. The specified categories of antibacterial agents are: 1) Broad spectrum agents predominantly used for hospital-onset/multi-drug resistant infections, 2) Broad spectrum agents predominantly used for community-acquired infections, 3) Anti-MRSA agents, 4) Agents used predominantly for surgical site infection prophylaxis, and 5) All agents.

See attached Table 1. NHSN Antimicrobial Use Measure proposal for lists and descriptions of patient care locations and antibacterial agent categories

S.6. **Denominator Statement** *(Brief, narrative description of the target population being measured)*
Days present for each patient care location—adult and pediatric medical, medical/surgical, and surgical wards and adult and pediatric medical, medical/surgical, and surgical intensive care units—is defined as the number of patients who were present for any portion of each day of a calendar month for each location. The day of admission, discharge, and transfer to and from locations are included in days present. All days present are summed for each location and month, and the aggregate sums for each location-month combination comprise the denominator data for the measure.

S.7. **Denominator Details** *(All information required to identify and calculate the target population/denominator such as definitions, time period for data collection, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b.)*
IF an OUTCOME MEASURE, describe how the target population is identified. Calculation of the risk-adjusted outcome should be described in the calculation algorithm (S.14).
See attached Table 1. NHSN Antimicrobial Use Measure proposal for list and description of patient care locations included in the measure.

S.8. **Denominator Exclusions** *(Brief narrative description of exclusions from the target population)*
Hospital patient care locations other than adult and pediatric medical, medical/surgical, and surgical wards and adult and pediatric medical, medical/surgical, and surgical intensive care units are excluded from this measure.

S.9. **Denominator Exclusion Details** *(All information required to identify and calculate exclusions from the denominator such as definitions, time period for data collection, specific data collection items/responses, code/value sets – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format at S.2b.)*
See Table 1. NHSN Antimicrobial Use Measure Proposal for description of patient care locations. Listed locations are included in the measure; all other locations are excluded.

S.10. **Stratification Information** *(Provide all information required to stratify the measure results, if necessary, including the stratification variables, definitions, specific data collection items/responses, code/value sets, and the risk-model covariates and coefficients for the clinically-adjusted version of the measure when appropriate – Note: lists of individual codes with descriptors that exceed 1 page should be provided in an Excel or csv file in required format with at S.2b.)*
Antimicrobial use data is stratified by hospital-specific and patient care location-specific variables: hospital teaching status (major [medical school and post-graduate training], graduate only [residents and/or fellows], undergraduate only [medical students], not a teaching hospital); hospital bedsize; hospital ICU status (presence or absence of ICU beds); hospital ICU bedsize; patient care location bedsize for adult and pediatric medical, medical/surgical, surgical intensive care units and adult and pediatric medical, medical/surgical, surgical wards.

S.11. **Risk Adjustment Type** (Select type. Provide specifications for risk stratification in measure testing attachment)
Statistical risk model
If other:

S.12. **Type of score:**
Ratio
If other:

S.13. **Interpretation of Score** *(Classifies interpretation of score according to whether better quality is associated with a higher score, a lower score, a score falling within a defined interval, or a passing score)*

S.14. Calculation Algorithm/Measure Logic (*Diagram or describe the calculation of the measure score as an ordered sequence of steps including identifying the target population; exclusions; cases meeting the target process, condition, event, or outcome; time period for data, aggregating data; risk adjustment; etc.)*

The Standardized Antimicrobial Administration Ratio (SAAR), the ratio of observed to predicted antimicrobial use, is a score that can be above, equal to, or below 1.0. A high score (above 1.0) that achieves statistical significance may indicate excessive antimicrobial use. A score that is not significantly different than 1.0 indicates antimicrobial use that is equivalent to the referent population's antimicrobial use. A low score (below 1.0) that achieves statistical significance may indicate antimicrobial under use.

Each SAAR is calculated as follows:
1. Identify the antimicrobial days reported for each patient care location included in the SAAR for the measurement period
2. Total each of these numbers for an observed number of antimicrobial days
3. Obtain the predicted antimicrobial days in the same patient care locations by multiplying the observed days present by the corresponding antimicrobial use rate in the standard population obtained from the relevant regression model
4.Sum the predicted antimicrobial days for the patient care locations included in the SAAR
5. Divide the total number of antimicrobial days by the predicted number of antimicrobial days
6. Result = SAAR

A discrete set of SAARs comprise the antimicrobial use measure: SAARs that are intended to serve as high value targets for antimicrobial stewardship programs and SAARs that are intended to serve as high level indicators of all antimicrobial use across multiple patient care locations.

High value targets – SAARs for 14 different antibacterial agent-patient care location combinations

Adult
1. Broad spectrum antibacterial agents predominantly used for hospital-onset/multi-drug resistant infections – adult medical, medical/surgical, and surgical intensive care units
2. Broad spectrum antibacterial agents predominantly used for hospital-onset/multi-drug resistant infections – adult medical, medical/surgical, and surgical wards
3. Broad spectrum antibacterial agents predominantly used for community-acquired infections – adult medical, medical/surgical, and surgical intensive care units
4. Broad spectrum antibacterial agents predominantly used for community-acquired infections – adult medical, medical/surgical, and surgical intensive care wards
5. Anti-MRSA-antibacterial agents – adult medical, medical/surgical, and surgical intensive care units
6. Anti-MRSA-antibacterial agents – adult medical, medical/surgical, and surgical wards
7. Antibacterial agents predominantly used for surgical site infection prophylaxis – all adult medical, medical/surgical, and surgical locations (intensive care units and wards)

Pediatric
1. Broad spectrum antibacterial agents predominantly used for hospital-onset/multi-drug resistant infections – pediatric medical, medical/surgical, and surgical intensive care units
2. Broad spectrum antibacterial agents predominantly used for hospital-onset/multi-drug resistant infections – pediatric medical, medical/surgical, and surgical wards
3. Broad spectrum antibacterial agents predominantly used for community-acquired infections – pediatric medical, medical/surgical, and surgical intensive care units
4. Broad spectrum antibacterial agents predominantly used for community-acquired infections – pediatric medical, medical/surgical, and surgical intensive care wards
5. Anti-MRSA-antibacterial agents – pediatric medical, medical/surgical, and surgical intensive care units
6. Anti-MRSA-antibacterial agents – pediatric medical, medical/surgical, and surgical wards
7. Antibacterial agents predominantly used for surgical site infection prophylaxis – all pediatric medical, medical/surgical, and surgical locations (intensive care units and wards)

High level indicators – SAARs for 2 different antibacterial agent-patient care location combinations

Adult

1. All antibacterial agents – all adult medical, medical/surgical, and surgical locations (intensive care units and wards)

Pediatric
1. All antibacterial agents – all pediatric medical, medical/surgical, and surgical locations (intensive care units and wards)

S.15. **Sampling** *(If measure is based on a sample, provide instructions for obtaining the sample and guidance on minimum sample size.)*
IF a PRO-PM, identify whether (and how) proxy responses are allowed.

S.16. **Survey/Patient-reported data** *(If measure is based on a survey or instrument, provide instructions for data collection and guidance on minimum response rate.)*
IF a PRO-PM, specify calculation of response rates to be reported with performance measure results.

S.17. **Data Source** *(Check ONLY the sources for which the measure is SPECIFIED AND TESTED).*
If other, please describe in S.18.
Management Data, Other

S.18. **Data Source or Collection Instrument** *(Identify the specific data source/data collection instrument (e.g. name of database, clinical registry, collection instrument, etc., and describe how data is collected.)*
IF a PRO-PM, identify the specific PROM(s); and standard methods, modes, and languages of administration.

S.19. **Data Source or Collection Instrument** *(available at measure-specific Web page URL identified in S.1 OR in attached appendix at A.1)*
Available at measure-specific web page URL identified in S.1

S.20. **Level of Analysis** *(Check ONLY the levels of analysis for which the measure is SPECIFIED AND TESTED)*
Facility

S.21. **Care Setting** *(Check ONLY the settings for which the measure is SPECIFIED AND TESTED)*
Hospital, Inpatient Rehabilitation Facility, Long Term Acute Care
If other:

S.22. **COMPOSITE Performance Measure** - Additional Specifications *(Use this section as needed for aggregation and weighting rules, or calculation of individual performance measures if not individually endorsed.)*

2. Validity – See attached Measure Testing Submission Form
Copy_of_TABLE_3--Measure_Testing_2b_5_2__Statistically_Significant_Differences.xlsx,Template_MeasSubm_MeasTesting_2014_Nov17_-2--635664276615195350.docx

2.1 For maintenance of endorsement
Reliability testing: If testing of reliability of the measure score was not presented in prior submission(s), has reliability testing of the measure score been conducted? If yes, please provide results in the Testing attachment. (Do not remove prior testing information – include date of new information in red.)

2.2 For maintenance of endorsement
Has additional empirical validity testing of the measure score been conducted? If yes, please provide results in the Testing attachment. (Do not remove prior testing information – include date of new information in red.)

2.3 For maintenance of endorsement
Risk adjustment: For outcome, resource use, cost, and some process measures, risk-adjustment that includes SDS factors is no longer

prohibited during the SDS Trial Period (2015-2016). Please update sections 1.8, 2a2, 2b2, 2b4, and 2b6 in the Testing attachment and S.14 and S.15 in the online submission form in accordance with the requirements for the SDS Trial Period. NOTE: These sections must be updated even if SDS factors are not included in the risk-adjustment strategy. If yes, and your testing attachment does not have the additional questions for the SDS Trial please add these questions to your testing attachment:

What were the patient-level sociodemographic (SDS) variables that were available and analyzed in the data or sample used? For example, patient-reported data (e.g., income, education, language), proxy variables when SDS data are not collected from each patient (e.g. census tract), or patient community characteristics (e.g. percent vacant housing, crime rate).

Describe the conceptual/clinical and statistical methods and criteria used to select patient factors (clinical factors or sociodemographic factors) used in the statistical risk model or for stratification by risk (e.g., potential factors identified in the literature and/or expert panel; regression analysis; statistical significance of p<0.10; correlation of x or higher; patient factors should be present at the start of care)

What were the statistical results of the analyses used to select risk factors?

Describe the analyses and interpretation resulting in the decision to select SDS factors (e.g. prevalence of the factor across measured entities, empirical association with the outcome, contribution of unique variation in the outcome, assessment of between-unit effects and within-unit effects)

3. Feasibility

Extent to which the specifications including measure logic, require data that are readily available or could be captured without undue burden and can be implemented for performance measurement.

3a. Byproduct of Care Processes

For clinical measures, the required data elements are routinely generated and used during care delivery (e.g., blood pressure, lab test, diagnosis, medication order).

3a.1. **Data Elements Generated as Byproduct of Care Processes.**
Generated or collected by and used by healthcare personnel during the provision of care (e.g., blood pressure, lab value, diagnosis, depression score)
If other:

3b. Electronic Sources

The required data elements are available in electronic health records or other electronic sources. If the required data are not in electronic health records or existing electronic sources, a credible, near-term path to electronic collection is specified.

3b.1. **To what extent are the specified data elements available electronically in defined fields** (*i.e., data elements that are needed to compute the performance measure score are in defined, computer-readable fields*) Update this field for **maintenance of endorsement**.
ALL data elements are in defined fields in a combination of electronic sources

3b.2. **If ALL the data elements needed to compute the performance measure score are not from electronic sources, specify a credible, near-term path to electronic capture, OR provide a rationale for using other than electronic sources.** For **maintenance of endorsement**, if this measure is not an eMeasure (eCQM), please describe any efforts to develop an eMeasure (eCQM).

3b.3. **If this is an eMeasure, provide a summary of the feasibility assessment in an attached file or make available at a measure-specific URL. Please also complete and attach the NQF Feasibility Score Card.**
Attachment:

3c. Data Collection Strategy

Demonstration that the data collection strategy (e.g., source, timing, frequency, sampling, patient confidentiality, costs associated with fees/licensing of proprietary measures) can be implemented (e.g., already in operational use, or testing

demonstrates that it is ready to put into operational use). For eMeasures, a feasibility assessment addresses the data elements and measure logic and demonstrates the eMeasure can be implemented or feasibility concerns can be adequately addressed.

3c.1. **Required for maintenance of endorsement. Describe difficulties (as a result of testing and/or operational use of the measure) regarding data collection, availability of data, missing data, timing and frequency of data collection, sampling, patient confidentiality, time and cost of data collection, other feasibility/implementation issues.**
IF a PRO-PM, consider implications for both individuals providing PRO data (patients, service recipients, respondents) and those whose performance is being measured.
Use of electronic data sources for numerator and denominator data collection has proven feasible across multiple hospital settings; data are routinely available as a byproduct of electronic medication administration record keeping at the point of care and can be reported in a timely manner. Data for antimicrobial days and days present in specified patient care locations are reported as sums for all patients in those locations. i.e., 100% sample. Patient-identifiable data is not reported (aggregate data only), hence the risk of a breach of patient confidentiality is extremely low. Upfront implementation costs and technical challenges are the main operational issues for initial data collection and reporting; costs and level of effort vary across settings. Technical assistance provided by CDC facilitates implementation.

3c.2. **Describe any fees, licensing, or other requirements to use any aspect of the measure as specified** *(e.g., value/code set, risk model, programming code, algorithm)*.
Does not apply--no fees, license, or other requirements

4. Usability and Use

Extent to which potential audiences (e.g., consumers, purchasers, providers, policy makers) are using or could use performance results for both accountability and performance improvement to achieve the goal of high-quality, efficient healthcare for individuals or populations.

4a. Accountability and Transparency

Performance results are used in at least one accountability application within three years after initial endorsement and are publicly reported within six years after initial endorsement (or the data on performance results are available). If not in use at the time of initial endorsement, then a credible plan for implementation within the specified timeframes is provided.

4.1. **Current and Planned Use**
NQF-endorsed measures are expected to be used in at least one accountability application within 3 years and publicly reported within 6 years of initial endorsement in addition to performance improvement.

Specific Plan for Use	Current Use (for current use provide URL)
	Public Health/Disease Surveillance National Healthcare Safety Network http://www.cdc.gov/nhsn/acute-care-hospital/aur/index.html Quality Improvement (Internal to the specific organization) National Healthcare Safety Network http://www.cdc.gov/nhsn/acute-care-hospital/aur/index.html

4a.1. **For each CURRENT use, checked above (update for maintenance of endorsement), provide:**

- Name of program and sponsor
- Purpose
- Geographic area and number and percentage of accountable entities and patients included
- Level of measurement and setting

National Healthcare Safety Network (NHSN), Centers for Disease Control and Prevention

NHSN is the system used by CDC and its partners in clinical care and public health for surveillance of healthcare-associated infections, healthcare worker safety, blood safety, antimicrobial use and resistance, and adherence to prevention practices. The system is designed to provide actionable data for healthcare facilities and systems, public health agencies at the state and federal

levels, and prevention collaboratives. NHSN is the data source for multiple NQF-endorsed measures for which CDC reports measure results on behalf of healthcare facilities to the Centers for Medicare and Medicaid Services (CMS) quality measurement reporting programs.

NHSN provides national coverage and over 95% of all U.S. hospitals participate in the system.

4a.2. **If not currently publicly reported OR used in at least one other accountability application (e.g., payment program, certification, licensing) what are the reasons?** (*e.g., Do policies or actions of the developer/steward or accountable entities restrict access to performance results or impede implementation?*)
This is a new measure. Its initial use for public health/disease surveillance, quality improvement with benchmarking (external benchmarking to multiple organizations), and quality improvement (internal to the specific organization) will enable the measure steward, the CDC's National Healthcare Safety Network (NHSN), to identify and address any gaps in the measure specifications that must be closed before the measure can be recommended for public reporting or other accountability purposes.

4a.3. **If not currently publicly reported OR used in at least one other accountability application, provide a credible plan for implementation within the expected timeframes -- any accountability application within 3 years and publicly reported within 6 years of initial endorsement.** (*Credible plan includes the specific program, purpose, intended audience, and timeline for implementing the measure within the specified timeframes. A plan for accountability applications addresses mechanisms for data aggregation and reporting.*)
The CDC's National Healthcare Safety Network (NHSN) will work with hospitals and healthcare systems that report antimicrobial use data to NHSN to further evaluate the measure's usefulness for antimicrobial stewardship programs and to refine the measure as needed to improve its value for assessing variation in antimicrobial use intra- and inter-organizationally. NHSN will serve as the data aggregating system. The NHSN Antimicrobial Use reporting option--fully operational since 2011--will provide the technical infrastructure for data collection, analysis, and measure results reporting to participating hospitals, including national benchmarks presented using the SAARs as the summary measures. This additional field experience with measure data, coupled with systematic studies, will, within 3 years, serve to define what additional data and methods, if any, are needed to enable use of the NHSN antimicrobial use measure for accountability purposes.

Improvement
Progress toward achieving the goal of high-quality, efficient healthcare for individuals or populations is demonstrated. If not in use for performance improvement at the time of initial endorsement, then a credible rationale describes how the performance results could be used to further the goal of high-quality, efficient healthcare for individuals or populations.

4b. **Refer to data provided in 1b but do not repeat here. Discuss any progress on improvement (trends in performance results, number and percentage of people receiving high-quality healthcare; Geographic area and number and percentage of accountable entities and patients included.)**
If no improvement was demonstrated, what are the reasons? If not in use for performance improvement at the time of initial endorsement, provide a credible rationale that describes how the performance results could be used to further the goal of high-quality, efficient healthcare for individuals or populations.

4c. Unintended Consequences

The benefits of the performance measure in facilitating progress toward achieving high-quality, efficient healthcare for individuals or populations outweigh evidence of unintended negative consequences to individuals or populations (if such evidence exists).

4c.1. **Please explain any unexpected findings (positive or negative) during implementation of this measure including unintended impacts on patients.**
No unintended negative consequences identified during testing.

4c.2. **Please explain any unexpected benefits from implementation of this measure.**

4d1.1. **Describe how performance results, data, and assistance with interpretation have been provided to those being measured or other users during development or implementation.**
How many and which types of measured entities and/or others were included? If only a sample of measured entities were

included, describe the full population and how the sample was selected.

4d1.2. **Describe the process(es) involved, including when/how often results were provided, what data were provided, what educational/explanatory efforts were made, etc.**

4d2.1. **Summarize the feedback on measure performance and implementation from the measured entities and others described in 4d.1.**
Describe how feedback was obtained.

4d2.2. **Summarize the feedback obtained from those being measured.**

4d2.3. **Summarize the feedback obtained from other users**

4d.3. **Describe how the feedback described in 4d.2 has been considered when developing or revising the measure specifications or implementation, including whether the measure was modified and why or why not.**

5. Comparison to Related or Competing Measures

If a measure meets the above criteria and there are endorsed or new related measures (either the same measure focus or the same target population) or competing measures (both the same measure focus and the same target population), the measures are compared to address harmonization and/or selection of the best measure.

5. Relation to Other NQF-endorsed Measures
Are there related measures (conceptually, either same measure focus or target population) or competing measures (conceptually both the same measure focus and same target population)? If yes, list the NQF # and title of all related and/or competing measures.
No

5.1a. **List of related or competing measures (selected from NQF-endorsed measures)**

5.1b. **If related or competing measures are not NQF endorsed please indicate measure title and steward.**

5a. Harmonization of Related Measures
The measure specifications are harmonized with related measures;
OR
The differences in specifications are justified

5a.1. **If this measure conceptually addresses EITHER the same measure focus OR the same target population as NQF-endorsed measure(s):**
Are the measure specifications harmonized to the extent possible?

5a.2. **If the measure specifications are not completely harmonized, identify the differences, rationale, and impact on interpretability and data collection burden.**

5b. Competing Measures
The measure is superior to competing measures (e.g., is a more valid or efficient way to measure);
OR

Multiple measures are justified.

5b.1. **If this measure conceptually addresses both the same measure focus and the same target population as NQF-endorsed measure(s):**
Describe why this measure is superior to competing measures (e.g., a more valid or efficient way to measure quality); OR provide a rationale for the additive value of endorsing an additional measure. (Provide analyses when possible.)

Appendix

A.1 Supplemental materials may be provided in an appendix. All supplemental materials (such as data collection instrument or methodology reports) should be organized in one file with a table of contents or bookmarks. If material pertains to a specific submission form number, that should be indicated. Requested information should be provided in the submission form and required attachments. There is no guarantee that supplemental materials will be reviewed.
Attachment:

Contact Information

Co.1 **Measure Steward (Intellectual Property Owner):** Centers for Disease Control and Prevention
Co.2 **Point of Contact:** Daniel, Pollock, dap1@cdc.gov, 404-639-4237-
Co.3 **Measure Developer if different from Measure Steward:** Centers for Disease Control and Prevention
Co.4 **Point of Contact:** Daniel, Pollock, dap1@cdc.gov, 404-639-4237-

Additional Information

Ad.1 **Workgroup/Expert Panel involved in measure development**
Provide a list of sponsoring organizations and workgroup/panel members' names and organizations. Describe the members' role in measure development.

Measure Developer/Steward Updates and Ongoing Maintenance
Ad.2 **Year the measure was first released:**
Ad.3 **Month and Year of most recent revision:**
Ad.4 **What is your frequency for review/update of this measure?**
Ad.5 **When is the next scheduled review/update for this measure?**

Ad.6 **Copyright statement:**
Ad.7 **Disclaimers:**

Ad.8 **Additional Information/Comments:**