

Antimicrobial Use and Resistance

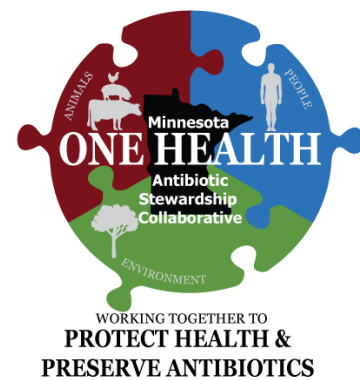
Module: A tool to manage, use, and report hospital antibiotic use data

Antibiotic stewardship is improving antibiotic use to prevent antibiotic resistance.

- Antibiotic resistance is a global threat to health. In the United States, an estimated 2 million people fall ill, and 23,000 die, from antibiotic resistant infections.¹
- The major driver of antibiotic resistance is widespread antibiotic use.
- Although antibiotic overuse in health care is well recognized, improvement relies largely on changing prescriber and patient behaviors, which is a difficult undertaking.
- Antibiotic stewardship programs support providers, facilities, and patients to achieve optimal prescribing and use of antibiotics.

Tracking and reporting antibiotic use can drive practice improvement.

- The Joint Commission and CDC call for hospital stewardship programs to include these elements: **monitoring** antibiotic use and **reporting** information on use to prescribers and hospital staff.^{2,3}
- Robust pharmacy data are needed to effectively monitor prescribing rates, appropriateness, and the impact of stewardship program interventions.
- Some antibiotics are more likely to drive antibiotic resistance or cause adverse side effects in patients, and measurement should facilitate tracking of specific antibiotics and antibiotic classes.
- Measurement of antibiotic use can help hospitals track prescribing over time, by hospital unit, and for specific clinical syndromes.



National Healthcare Safety Network (NHSN) is CDC's national system for tracking healthcare-associated infections in hospitals and other facilities.

Antimicrobial Use and Resistance (AUR) module is a component of NHSN used to track antibiotic use and resistance.

Standardized Antibiotic Administration Ratio (SAAR), is generated by the AUR module, and compares a hospital's antibiotic use to an expected number derived from national hospital data. Five SAAR measures address different clinical situations (e.g., surgical prophylaxis). SAARs are risk-adjusted to control for factors likely to influence antibiotic use: care unit type, teaching hospital status, pediatric vs. adult care.

Electronic Medication Administration Record (eMAR) and Bar-Coded Medication Administration (BCMA) are automated systems used to document medication administration.

Minnesota One Health Antibiotic Stewardship Collaborative

Minnesotans from animal, human, and environmental health are working together to be smart about antibiotic use and preventing antibiotic resistance!

www.health.state.mn.us/onehealthabx



NHSN Antimicrobial Use and Resistance Module is a tool for measuring antibiotic use in hospitals.

- Most Minnesota hospitals report healthcare-associated infections to CDC through NHSN.
- The NHSN Antibiotic Use and Resistance (AUR) module enables hospitals to also track and report antibiotic use and resistance data.
- Deidentified data are automatically pulled from electronic health records (EHR), compiled in standardized format, and sent to NHSN.
- There is no manual data entry involved.
- Outpatient units, like emergency departments, can be included.

How can you make a business case for AUR module reporting?

- AUR submission capitalizes on NHSN protocols and processes already in place in most Minnesota hospitals.
- Minimal IT resources are required to create AUR submission files, including eMAR or BCMA systems (see side bar on page 1).
- Although not required, most hospitals use third-party vendor software products that have AUR module functionality, EHR systems, data mining software, or clinical support tools. The Society of Infectious Diseases Pharmacists maintains a list of companies that process data for AUR <https://www.sidp.org/aurvendors>.
- Some facilities expect that using the AUR module to monitor antibiotic use will result in IT savings over the cost of in-house programming of reports with similar detail.
- If used by antibiotic stewardship programs to target efforts and enlist the support of prescribers, reductions in inappropriate antibiotic use should also be cost-saving.⁴
- National benchmarking against similar hospitals would not be possible using in-house data alone.
- NHSN AUR reporting is an option to meet Stage Three EHR Meaningful Use Criteria <https://www.healthit.gov/policy-researchers-implementers/meaningful-use-regulations>.

References

1. CDC. Antibiotic Resistance Threats in the U.S. <https://www.cdc.gov/drugresistance/threat-report-2013/index.html>
2. CDC. Core Elements of Hospital Antibiotic Stewardship Programs. <https://www.cdc.gov/antibiotic-use/healthcare/implementation/core-elements.html>
3. Joint Commission. Antimicrobial Stewardship. https://www.jointcommission.org/topics/hai_antimicrobial_stewardship.aspx
4. CDC. Impact of Antibiotic Stewardship Program Interventions on Cost. <https://www.cdc.gov/antibiotic-use/healthcare/evidence/asp-int-costs.htm>

Data elements required from EHR for AUR module reporting:

- Type of antibiotic given and administration route (e.g., oral)
- Patient care location (e.g., unit)
- Total number of patients treated in the patient location per day
- Total number of hospital admissions

AUR module users have access to an online application, from which they can access:

- SAAR, which allows comparison of antibiotic use to similar hospitals nationally
- Days of antibiotic therapy per 1,000 hospital days or per 100 admissions
- Reports available:
 - Stratification by medical unit
 - Specific antibiotics, classes
 - Customizable reports and charts
 - Data sets for further analysis

Public health impact:

- Antibiotic use data submitted to the AUR module are used nationally and by states to monitor trends and target stewardship programs and funding.

