Antibiotic Stewardship Metrics and Measurement

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• Research best practice guidelines for metric suggestions
• Look for external benchmark data
• Outline internal benchmarks
• Determine what can be measured & collected from data available
• Establish your baseline
• Assign responsibility and frequency of measurement
• Monitor for program effectiveness
• Report out and take action

Antibiotic Stewardship Metrics and Measurement-Getting Started
Core Element 5: Tracking and Monitoring Antibiotic Prescribing, Use, and Resistance

Monitoring antibiotic prescribing and resistance patterns is critical to identify opportunities for improvement and to assess the impact of improvement efforts.

- Systematic collection of antibiotic use and resistance data allows facilities to assess, monitor, and improve prescribing practices.

Examples of Implementation

**Basic: Process Measures**
- Adherence to documentation policies, e.g., requirement to document indications for antibiotic use and requirements to document performance of time-outs.
- Tracking of diagnosis, drug, dose, duration, and de-escalation with antibiotic time-out.
- Adherence to facility-specific treatment recommendations or guidelines.
- Adherence to specific interventions.
- Accurate antibiotic allergy and adverse reaction histories.

**Intermediate: Outcome Measures**
- Sequential tracking of antibiotic resistance patterns (e.g., gram negative resistance).
- Tracking of C. difficile infection rates.
- 30-day readmission rates for pneumonia and C. difficile.

**Advanced: Antibiotic Use Measures**
- Number of antibiotics administered to patients per day (i.e., days of therapy, or “DOT”). Hospitals can use the CDC National Healthcare Safety Network (NHSN) Antibiotic Use Option to track and benchmark days of therapy.
- Grams of antibiotics used (defined daily dose, or “DDD”) could be used if DOT not available.
- Standardized antibiotic administration rate (SAAR), an NGF-underscored quality benchmarking measure for antibiotic use, available to hospitals enrolled in the NHSN Antibiotic Use Option.
- Direct antibiotic expenditures (purchasing costs).
Expenditure Measures

GUIDELINE XXI
What is the Best Measure of *Expenditures* on Antibiotics to Assess the Impact of ASPs and Interventions?

22. We recommend measuring antibiotic costs based on prescriptions or administrations instead of purchasing data. *(good practice recommendation)*
Percent (%) of Total Drug Spend on Therapeutic Class of Antibacterial Antifungal Antiviral
Antibacterial Antifungal /Antiviral
Mean Cost per Adjusted Patient Day ($/APD)

Financial, cont’d
Antibiotic Use Measures

CDC recommends two different types of quantitative measurements as a numerator: Examples are Days of Therapy (DOT) and Defined Daily Dose (DDD)
Which Overall Measures Best Reflect the Impact of ASPs and Their Interventions?

21. We suggest monitoring antibiotic use as measured by days of therapy (DOTs) in preference to defined daily dose (DDD). (weak practice recommendation, low-quality evidence)
The DDD is the assumed average maintenance dose per day for a drug used for its main indication in adults. [https://www.whocc.no/atc_ddd_index/]
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<th>Ceftriaxone (2)</th>
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Defined Daily Dose and Adjusted Patient Day Data
Defined Daily Dose (DDD) per Adjusted Patient Day/1000
Internally Defined Measure

Metrics Guidelines, 4
Antibiotic Use Measure - Orders and Units/Adjusted Patient Day

Orders/Adjusted Patient Day

ABX Units/Adjusted Patient Day

Number of Rx's / APD YTD (all ABX)

Number of units / APD YTD (all ABX)
Outcome Measures

- New Onset C-Diff Infection Rates
- Reducing Antibiotic Resistance
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Clinical Metrics-Multi Drug Resistant Isolates

C-Diff

MRSA
Benchmarking

• Purchased Benchmarking Service

• NSHN-Antibiotic Use Module and standardized antibiotic administration ration (SAAR)

• Purchasing Group Benchmarking
Reporting and Action

- Pharmacy and Therapeutics Committee
- Infection Control
- Medical Staff
- Medical Executive Committee