Setting National Targets to Reduce Unnecessary Antibiotic Prescribing

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Antibiotic Resistance Project

Use in Human Healthcare

Use in Food Animals

Innovation

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The Path to Setting National Targets

• Establishing the methodology for measuring antibiotic use
  – Ability to assess appropriateness
    • “Quality” of antibiotic prescribing, not just “Quantity”
  – Replicable on a year-to-year basis
    • Mechanism to track progress
  – Utilization of a comprehensive data source
    • Nationally representative data
  – Consensus among experts

Partnership between Pew and U.S. Centers for Disease Control and Prevention
Setting National Targets - Outpatient

• Methodology
  – Data Source: National Ambulatory Care Survey (NAMCS) and National Hospital Ambulatory Medical Care Survey (NHAMCS)
  - Nationally representative sample of visits in office-based visits, emergency departments, and outpatient departments in hospitals
  - Data includes demographics, medications, and diagnoses
  – Analysis
  - Outcome #1: Based on diagnoses, percentage of antibiotics prescribed that are unnecessary
  - Outcome #2: For three diagnoses, percentage of prescriptions with inappropriate selection of antibiotics
Unnecessary Outpatient Antibiotic Use

Prevalence of Inappropriate Antibiotic Prescriptions Among US Ambulatory Care Visits, 2010-2011

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The National Action Plan for Combating Antibiotic-Resistant Bacteria set a goal of reducing inappropriate outpatient antibiotic use by 50% by 2020, but the extent of inappropriate outpatient antibiotic use is unknown.
Outpatient Antibiotic Use in U.S.

Figure 1
Outpatient Antibiotic Prescriptions by Diagnosis

- **44%** Acute respiratory conditions
- **56%** Other conditions

Acute respiratory conditions:
- **25%** Sinus infections
- **22%** Middle ear infections
- **20%** Pharyngitis
- **12%** Viral upper respiratory infections
- **12%** Bronchitis/bronchiolitis
- **5%** Pneumonia (nonviral)
- **4%** Asthma/allergy

Note: Not pictured are influenza and viral pneumonia. There are not enough visits with an antibiotic prescribed in the data set to calculate reliable estimates for these diagnoses individually. Both diagnoses do contribute to the total number of antibiotics prescribed for acute respiratory conditions.

Source: Analysis of NAMCS and NHAMCS data on U.S. antibiotic prescribing, 2010-2011

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Outpatient Antibiotic Use in U.S.

Figure 2
Outpatient Antibiotic Prescriptions (per 1,000 People) by Age

Source: Analysis of NAMCS and NHAMCS data on U.S. antibiotic prescribing, 2010-2011
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Outpatient Antibiotic Use in U.S.

Figure 3
Outpatient Antibiotic Prescriptions (per 1,000 People) by Region

Source: Analysis of NAMCS and NHAMCS data on U.S. antibiotic prescribing, 2010-2011
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Unnecessary Outpatient Antibiotic Use

Proportion of unnecessary antibiotic use: All conditions

- 30% Unnecessary use
- 70% Appropriate use

Figure 5: Outpatient Antibiotic Prescribing Reduction Targets

- Acute respiratory conditions: Current 67.6, Recommended 33.8 (-50%)
- Other conditions: Current 86.8, Recommended 73.9 (-15%)

Source: Analysis of NAMCS and NHAMCS data on U.S. antibiotic prescribing, 2010-2011
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Unnecessary Outpatient Antibiotic Use

Figure 6
Recommended Prescribing Reduction—Sinus Infections

- 9% 0-19 years old
- 51% 20-64 years old
- 16% 65 years and older

Source: Analysis of NAMCS and NHAMCS data on U.S. antibiotic prescribing, 2010-2011
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Figure 11
Recommended Prescribing Reduction—Bronchitis and Bronchiolitis

- 100% All ages

Source: Analysis of NAMCS and NHAMCS data on U.S. antibiotic prescribing, 2010-2011
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Inappropriate Outpatient Antibiotic Selection

RESEARCH LETTER

Frequency of First-line Antibiotic Selection Among US Ambulatory Care Visits for Otitis Media, Sinusitis, and Pharyngitis

Health Experts Establish National Targets to Improve Outpatient Antibiotic Selection
Inappropriate Outpatient Antibiotic Selection

All 3 Conditions, all ages: 52% First Line Agents

National Goal: 80% First Line Agents

Figure 1
Outpatient Antibiotic Prescriptions, 2010-11

Note: The recommended first-line antibiotic for middle ear infections is amoxicillin. An alternative first-line therapy in select circumstances is amoxicillin with clavulanate, which is recommended as initial therapy only in select circumstances (for example, concurrent ear and eye infections). Recommended first-line antibiotics for sinus infections include amoxicillin or amoxicillin with clavulanate. Recommended first-line antibiotics for pharyngitis include amoxicillin or penicillin.

Sources: Analysis of NAMCS and NHAMCS data on U.S. antibiotic prescribing, 2010-2011.
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Setting National Targets - Hospitals

• Methodology
  – CDC Emerging Infections Programs (EIP)
    • Assessment of appropriate use for two antibiotic agents and two conditions
  – CDC National Healthcare Safety Network (NHSN)
    • Antibiotic Use and Resistance Module
    • Development of Antibiotic Use Measure: Standardized Antibiotic Administration Ratio (SAAR)
Standardized Antibiotic Administration Ratio

National Healthcare Safety Network
SAARs Table - All Standardized Antimicrobial Administration Ratios (SAARs) High-Level Indicators and High-Value Targets
As of: January 27, 2016 at 10:59 AM
Date Range: AU_SAAR summaryYQ 2014Q1 to 2014Q4

All antimicrobials used in adult ICUs and wards

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Observed Use / Predicted Use = SAAR
SAAR Dashboard

Higher than expected use

Lower than expected use

Individual SAARs for the selected facility