Prevention & Antibiotic Stewardship: Improving Antibiotic Use in Human Health

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How CDC and Public Health Protect People and Communities

Infection Control and Prevention
Vaccination

Detect & Respond

Data for Action

Prevent Infections
Healthy People & Healthy Communities

Improve Use

Antibiotic Stewardship

Innovation: CDC continually improves and develops innovative approaches to maximize public health impact
Human Healthcare: Where Do We Want to Be?

- Every patient gets optimal antibiotic treatment
  - Antibiotics only when they are needed
  - The right antibiotic
  - At the right dose
  - For the right duration

- Every healthcare facility implements antibiotic stewardship programs
- Every provider incorporates antibiotic stewardship practices
How CDC is Working to Improve U.S. Antibiotic Use

- Tackling antibiotic misuse and overuse in all healthcare settings
- Setting national prevention goals/targets and defining concrete measures
- Measuring antibiotic use to guide improvement and track progress
- Establishing standards and guidance for program implementation, e.g., Core Elements
- Pairing education with provider-level interventions
- Working to accelerate change through policy levers
- Developing innovative approaches to expand implementation and develop new interventions
- Working with diverse partners—federal, state, local, academic, healthcare, industry, consumers, policymakers—to implement what we know works
Policies that Protect Patients

- The Joint Commission developed, with CDC expertise, a new standard that calls for antibiotic stewardship programs in diverse healthcare settings
  - Hospitals and critical access hospitals (based on CDC core elements): effective early 2017
  - Ambulatory health care organizations, nursing care centers, office-based surgery practices (based on national guidelines)

- Federal policies (CMS) that
  - Require healthcare facilities have infection prevention and control programs that include antibiotic stewardship and antibiotic use monitoring
  - May require antibiotic use as part of quality reporting
Setting National Targets: Outpatient Antibiotic Prescribing

70% Necessary Prescriptions
(Still need to improve drug selection, dose and duration)

At least 30% Unnecessary Prescriptions

47 million unnecessary antibiotic prescriptions per year

Outpatient Antibiotic Prescribing Reduction Targets

- **Current number of antibiotic prescriptions in millions**
- **Recommended number of antibiotic prescriptions in millions**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Current</th>
<th>Recommended Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute respiratory</td>
<td>67.6</td>
<td>33.8 (50% Reduction)</td>
</tr>
<tr>
<td>Other conditions</td>
<td>86.8</td>
<td>73.9 (15% Reduction)</td>
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</tbody>
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Source: Analysis of NAMCS and NHAMCS data on U.S. antibiotic prescribing, 2010-2011
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By 2020, significant outcomes of Goal 1 will include: *(CARB National Action Plan)*

- Establishment of antibiotic stewardship programs in all acute care hospitals and improved antibiotic stewardship across all healthcare settings.
- Reduction of inappropriate antibiotic use by 50% in outpatient settings and by 20% in inpatient settings.

What We Know about U.S. Outpatient & Nursing Home Antibiotic Use

- Outpatient:
  - The U.S. uses lots of outpatient antibiotics compared to other countries; there is a lot of geographic variability within the U.S.
  - There is a lot of unnecessary use, especially for respiratory conditions, in doctors’ offices and emergency departments

- Nursing Home:
  - Up to 70% of residents receive an antibiotic each year
  - Estimate 40-75% of antibiotic use in inappropriate or unnecessary
    - Lack national data
CDC’s Get Smart Campaign

CDC launched the National Campaign for Appropriate Antibiotic Use in the Community in 1995

Get Smart Campaign launched in 2003 with a focus on improving antibiotic use for respiratory infections in children and adults in doctors’ offices

Now includes hospitals and long-term care facilities

Additional focus on improving quality of healthcare and preventing adverse events (e.g., *Clostridium difficile* colitis)

Get Smart About Antibiotics Week annual observance November 14-20

http://www.cdc.gov/getsma/index.html
Next Generation Tracking: Whole Genome Sequencing

- WGS provides a very precise DNA fingerprint
  - Enables rapid detection of genes that make bacteria resistant to antibiotics critically important to human medicine
  - Allows public health officials to pinpoint investigations of outbreaks caused by antibiotic resistant pathogens/mechanisms
- WGS provides more detailed data to enable public health to track antibiotic resistance patterns and trends more effectively
Building State Capacity to Fight Foodborne Infections:
Conduct whole genome sequencing to enhance investigations, patient interviews

Detect and describe resistant bacteria rapidly.
Increase state laboratory capacity to rapidly uncover foodborne drug-resistant bacteria, including *Campylobacter* and *Salmonella*, using whole genome sequencing (WGS).

Find outbreaks faster by increasing lab testing.
Test every *Salmonella* isolate for drug resistance.

Improve health outcomes.
With increased lab capacity, track and investigate life-threatening *Salmonella* infections to prevent outbreaks and provide rapid response.

Promote responsible antibiotic use in food-producing animals.
Promote responsible use of antibiotics to prevent drug resistance by providing tools and information to practicing veterinarians.