Antibiotic Prescribing in Outpatient Settings: Location, Location, Location




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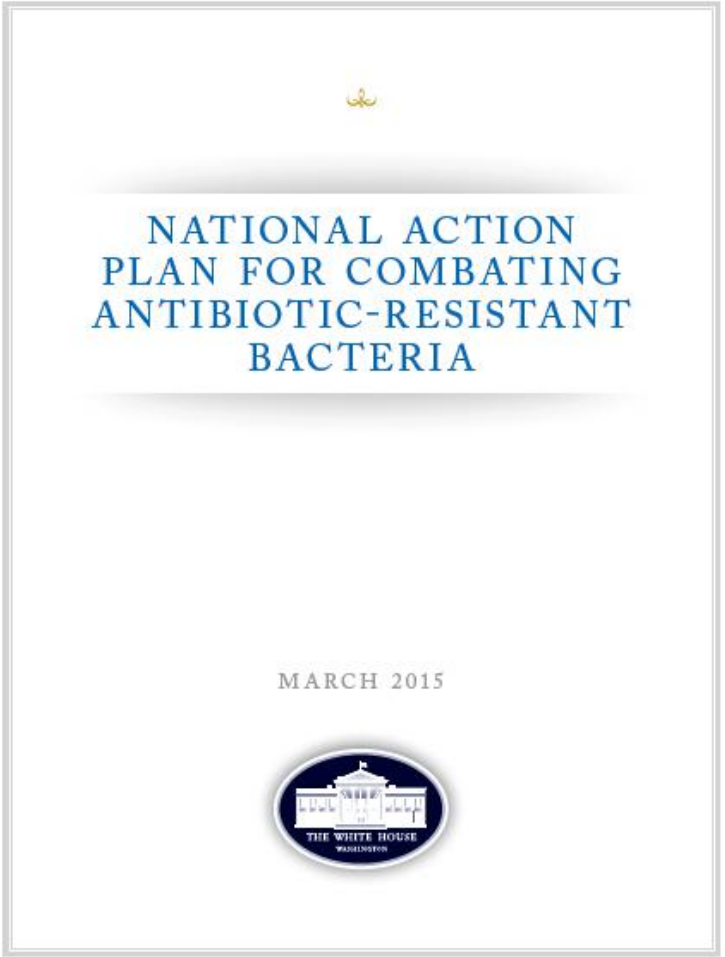
What is antibiotic stewardship?

- Antibiotic stewardship is the effort to:
  - Measure antibiotic prescribing
  - Improve antibiotic prescribing so that antibiotics are only prescribed and used when needed
  - Minimize misdiagnoses or delayed diagnoses leading to underuse of antibiotics
  - Ensure that the right drug, dose, and duration are selected when an antibiotic is needed

It’s about patient safety and delivering high-quality healthcare.

National Action Plan

- Outlines steps to implement the National Strategy
- Significant outcomes expected by 2020
  - Establishment of antimicrobial stewardship programs in all acute care hospitals and improved antimicrobial stewardship across all healthcare settings
  - **Reduction of inappropriate antibiotic use by 50% in outpatient settings** and by 20% in inpatient settings



Data for Action: Measuring Antibiotic Use

Antibiotic Expenditures for Humans in the United States by Treatment Setting 2010-15: Total $56.0 billion

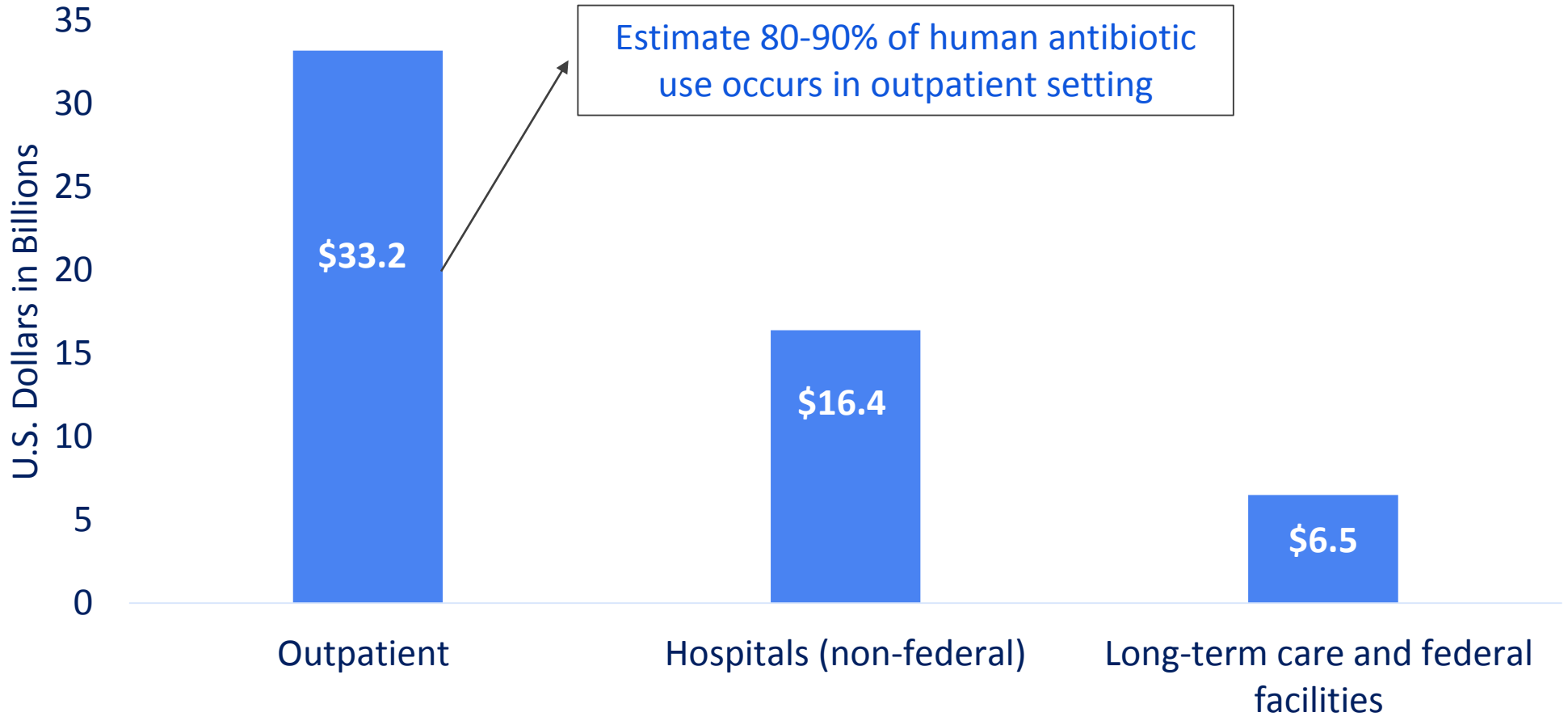
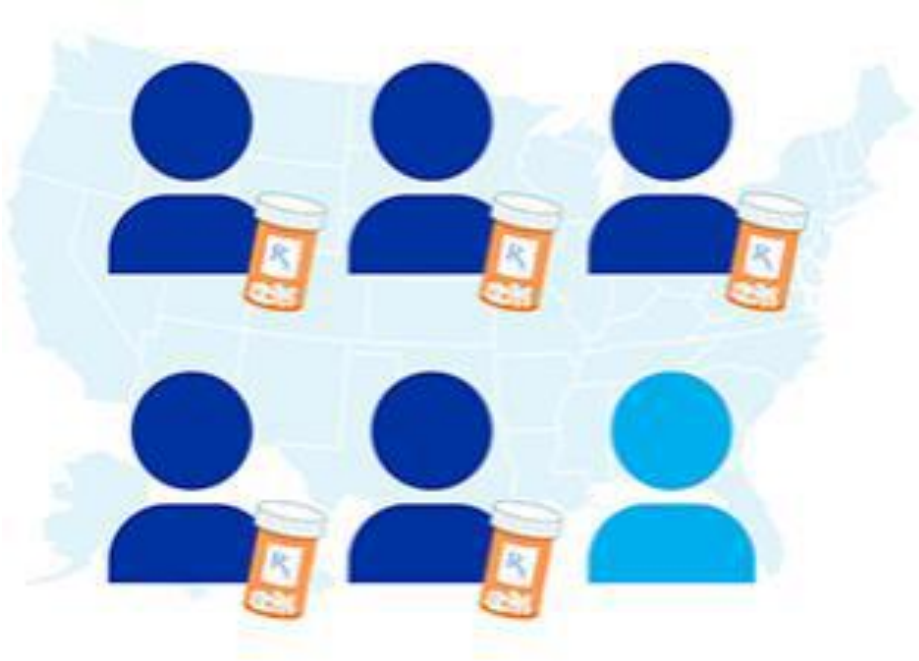


Figure created from data from: Suda et al. *Clin Infect Dis*. 2017; cix773.
Duffy et al. *J Clin Pharm Ther*. 2018; 43(1): 59-64.

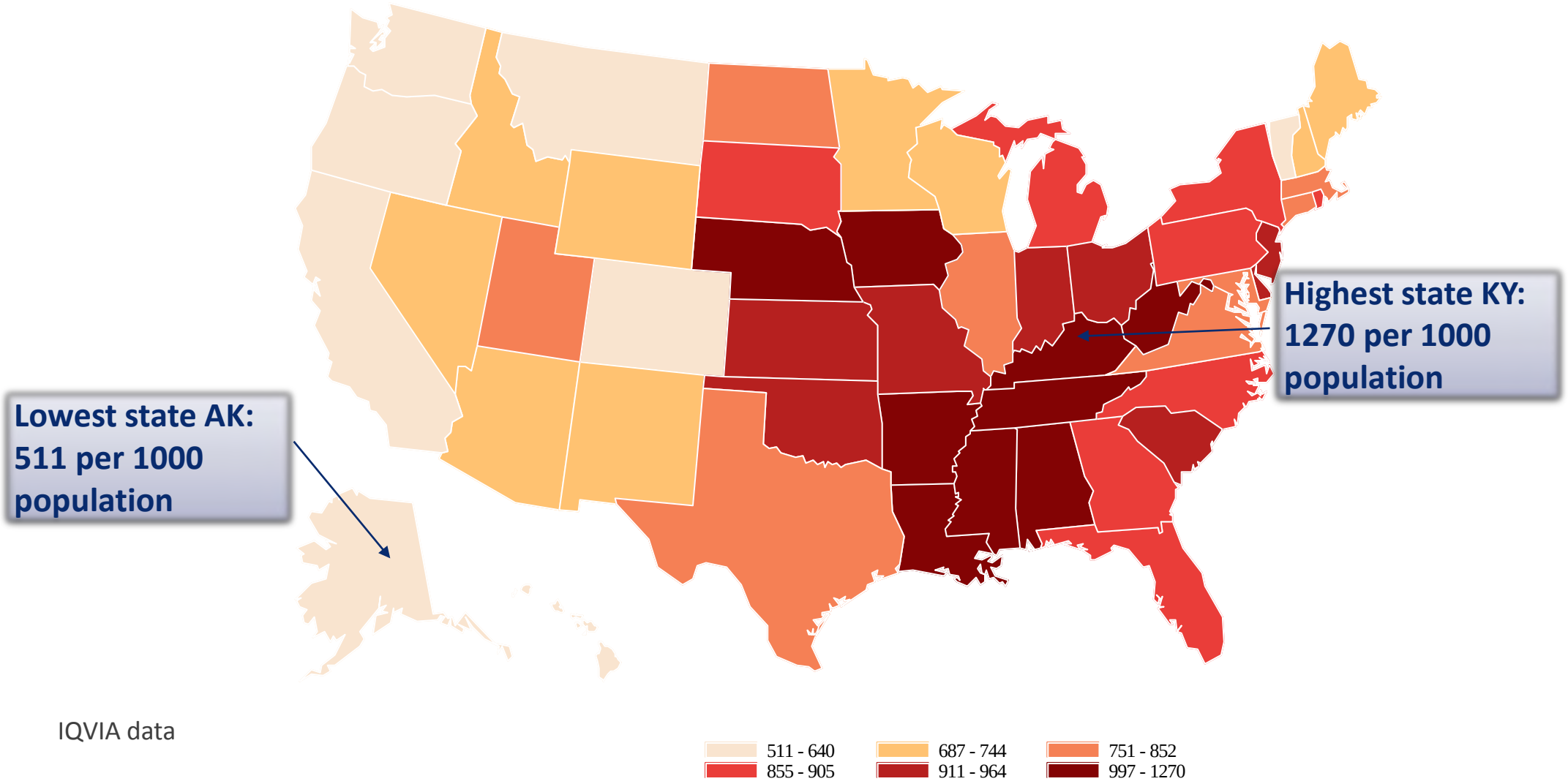
Outpatient Antibiotic Prescriptions per 1000 Persons in the US, 2016

- 273 million antibiotic prescriptions dispensed in outpatient settings
- 877 antibiotic prescriptions per 1000 population
- Estimates from proprietary pharmacy dispensing data from IQVIA™



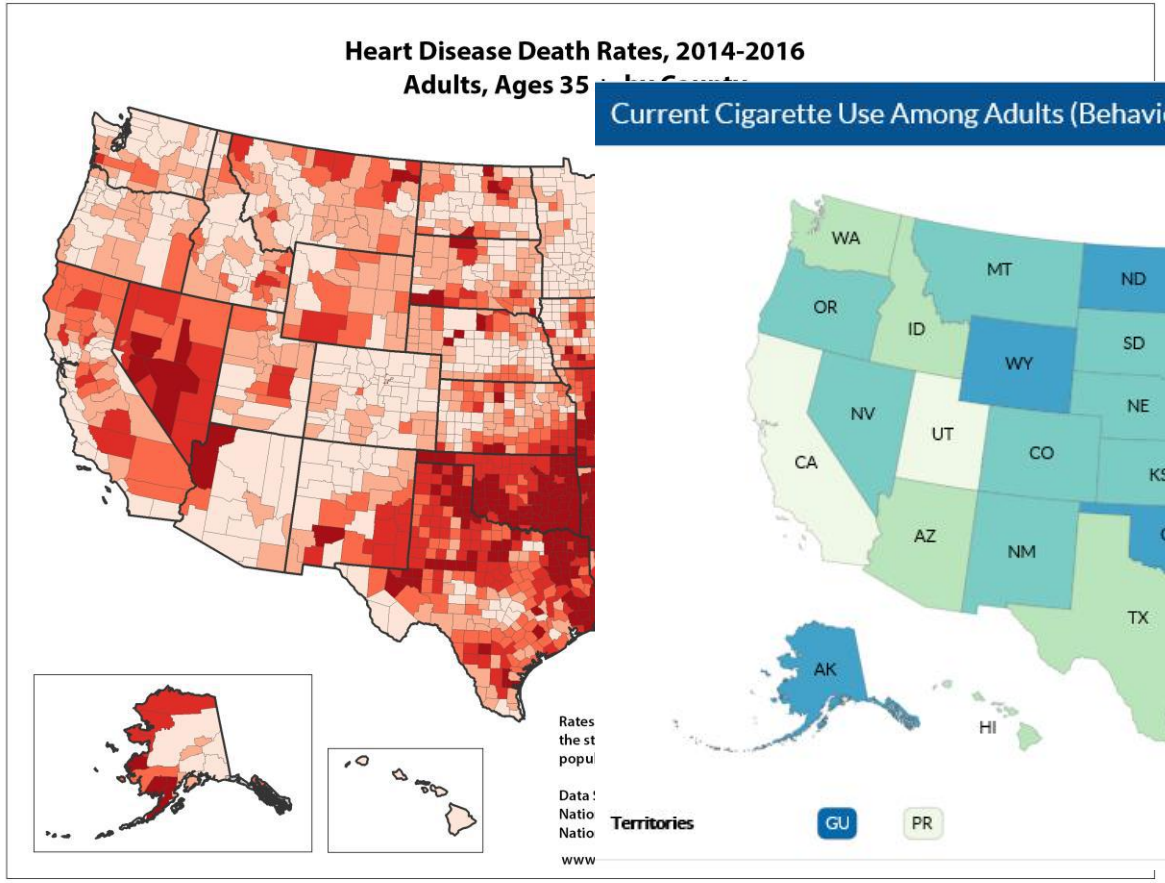
Hicks et al. *Clin Infect Dis* 2015; 60(9): 1308-1316.
https://www.cdc.gov/antibiotic-use/community/programs-measurement/measuring-antibiotic-prescribing.html

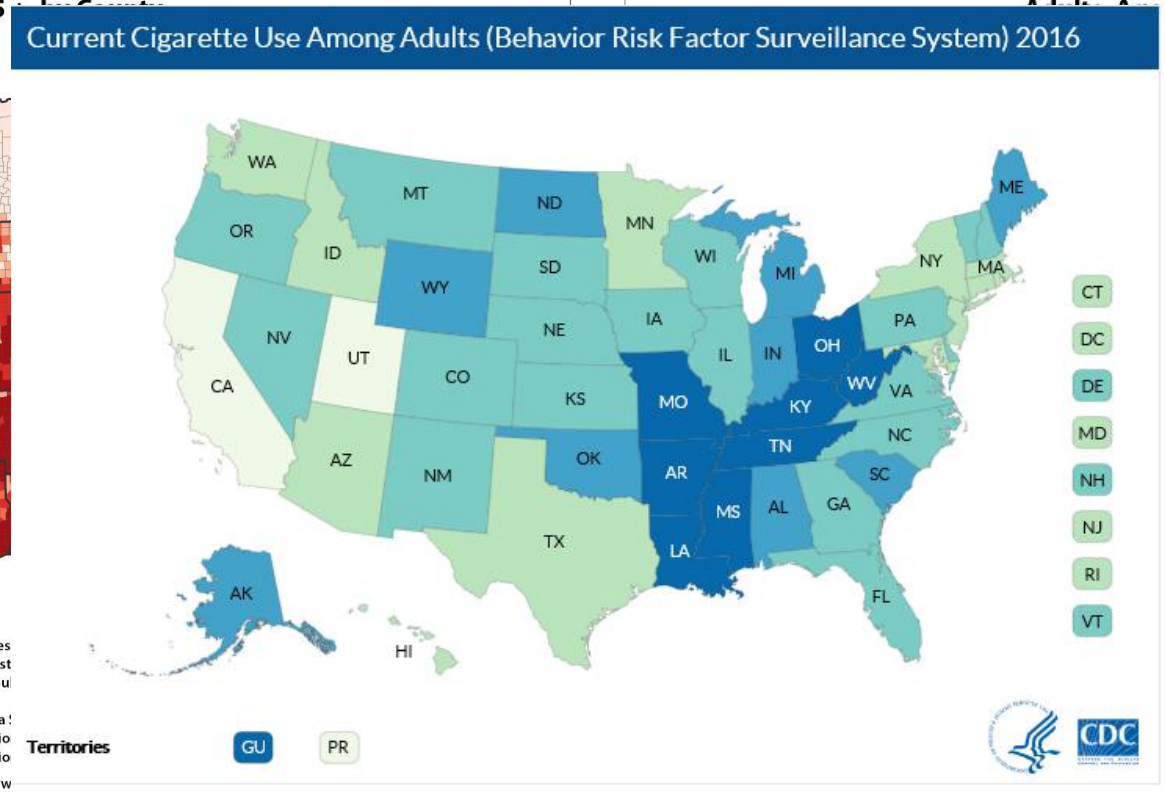
Antibiotic Prescriptions Dispensed per 1000 Population in Outpatient Pharmacies, 2016

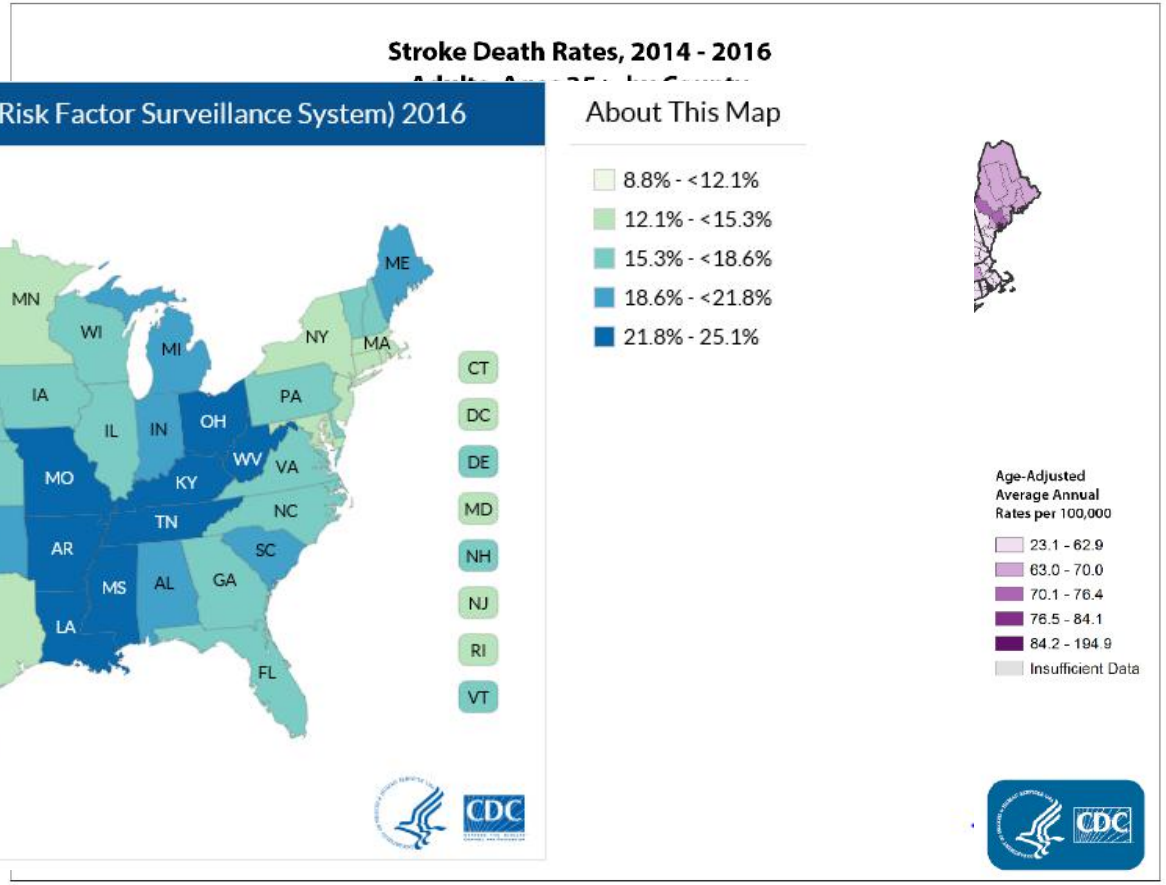


IQVIA data

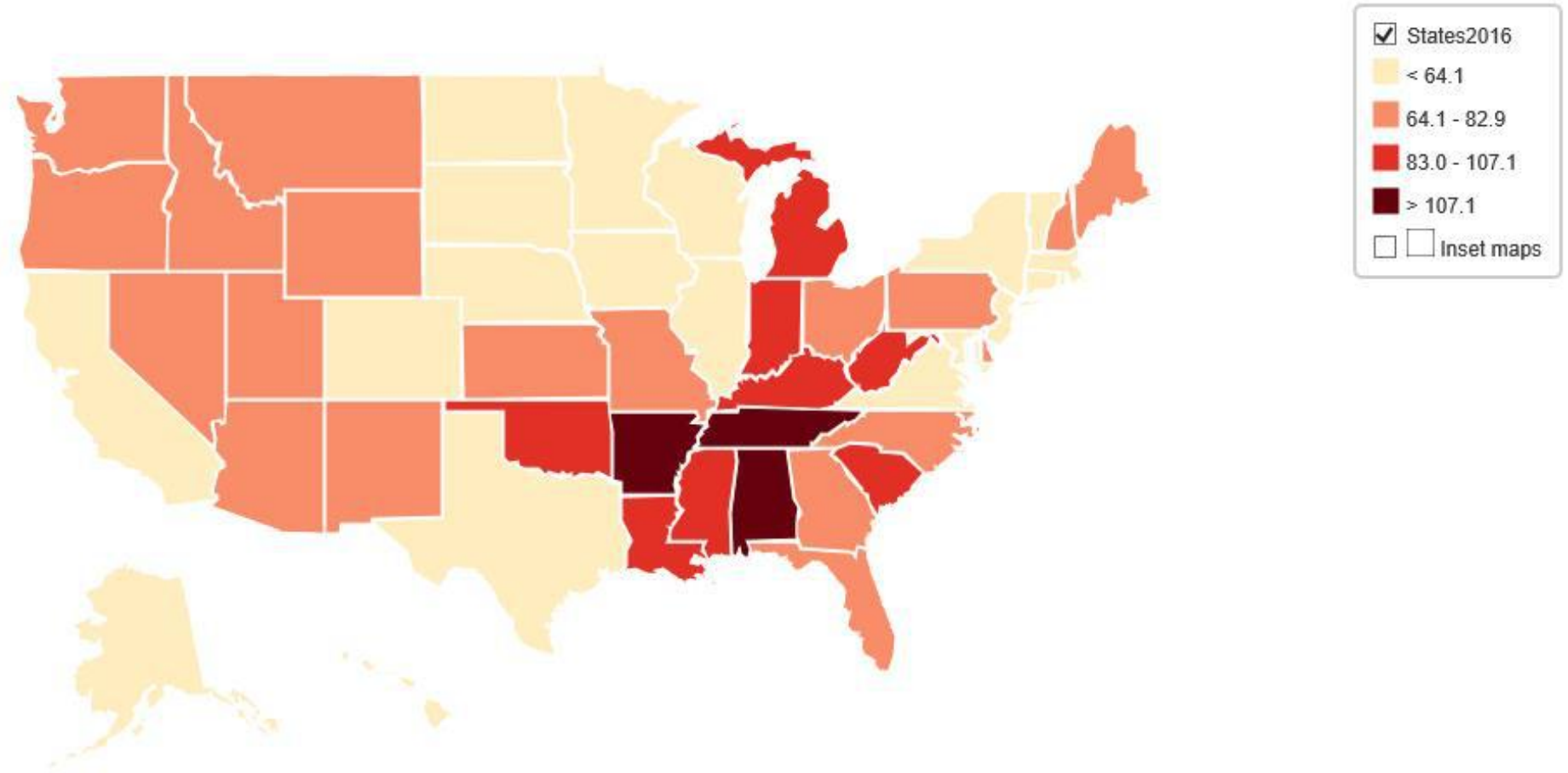
Other CDC Maps







Other CDC Maps--Opioid Prescription per 100 population



What might be contributing to geographic variability in antibiotic use?

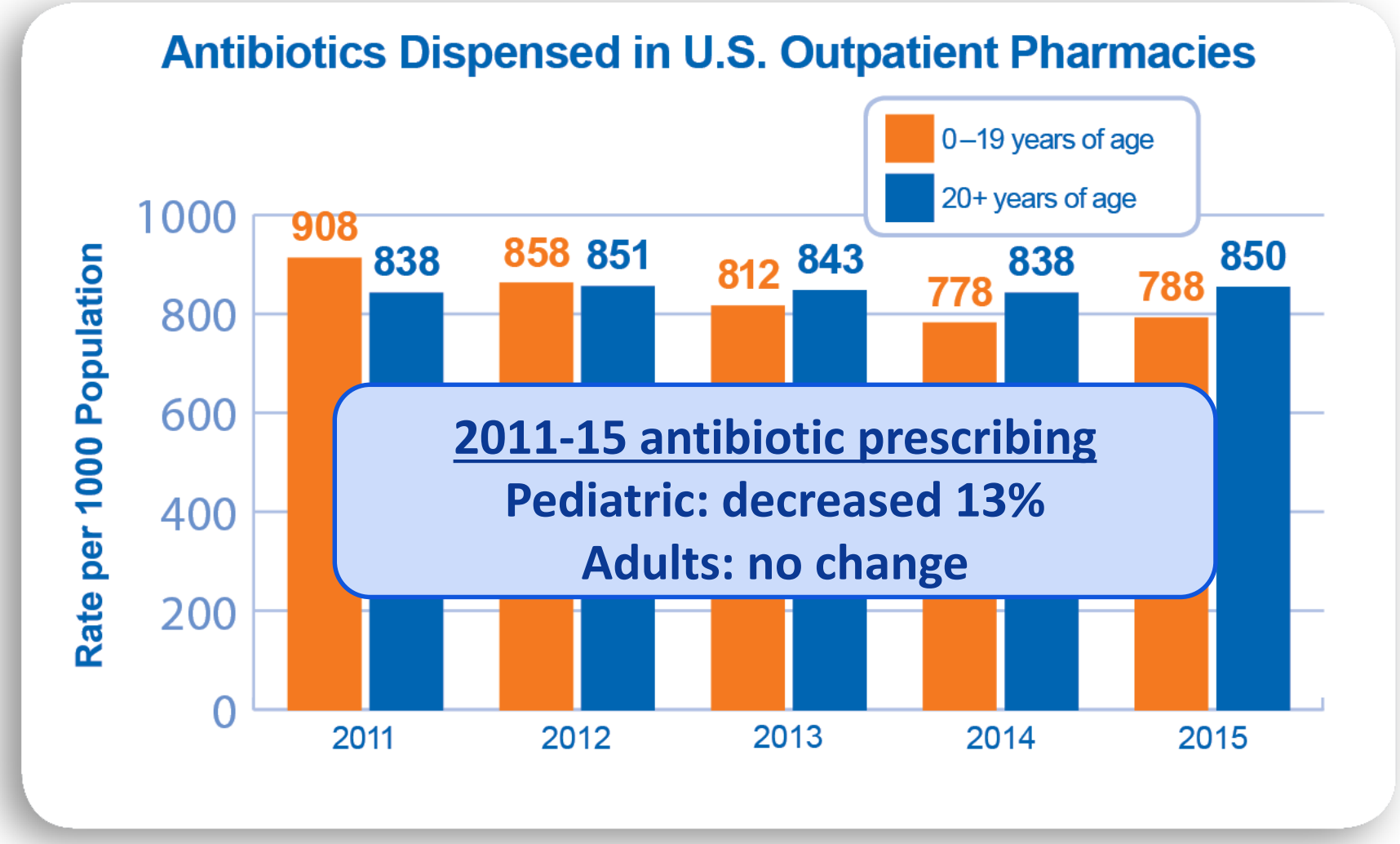
- Does the incidence of bacterial disease and need for antibiotics vary by region?
- Does care-seeking behavior vary by region?
- How do regional differences in provider practice patterns play into this?
- How do regional differences in patient expectations for antibiotics play into this?
- How do regional differences in social and cultural factors affect the provider-patient interaction and thus likelihood of receiving an antibiotic?

Analysis of Administrative Data: Summary of Preliminary Findings

- Patients in the South receive more antibiotics per visit than other regions
  - More acute respiratory tract infection (ARTI) diagnoses
  - More likely to get antibiotics for ARTIs
  - More likely to get antibiotics for sinusitis, otitis and pharyngitis (antibiotics sometimes indicated) and colds, bronchitis, and flu (antibiotics not indicated)
  - It doesn't appear that comorbidities nor a high proportion of young children are driving these differences.

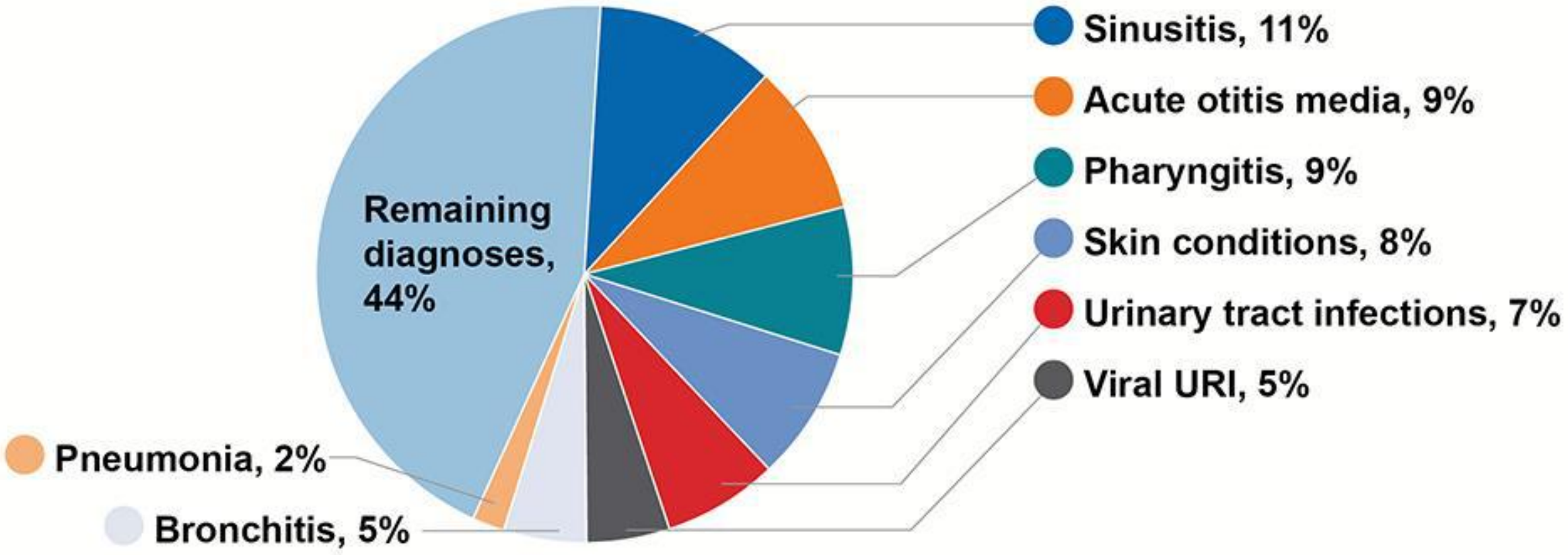
- Preliminary data seems to indicate that cultural differences are likely affecting the variability in antibiotic prescribing

Improvements Have Been Driven by Clinicians Prescribing for Children

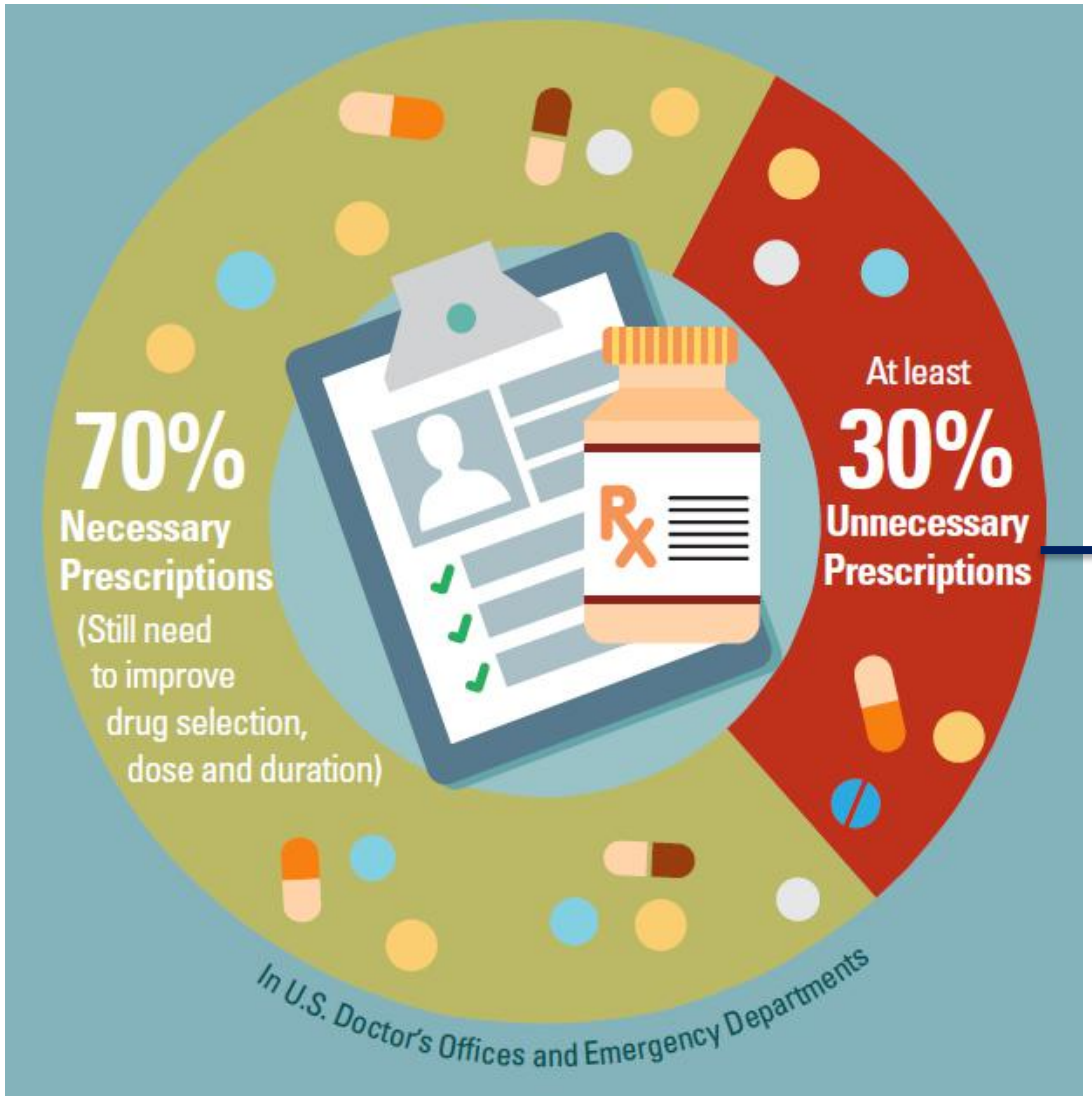


https://gis.cdc.gov/grasp/PSA/indexAU.html

Diagnoses Leading to Antibiotics in Doctors' Offices and Emergency Departments — United States, 2010–11



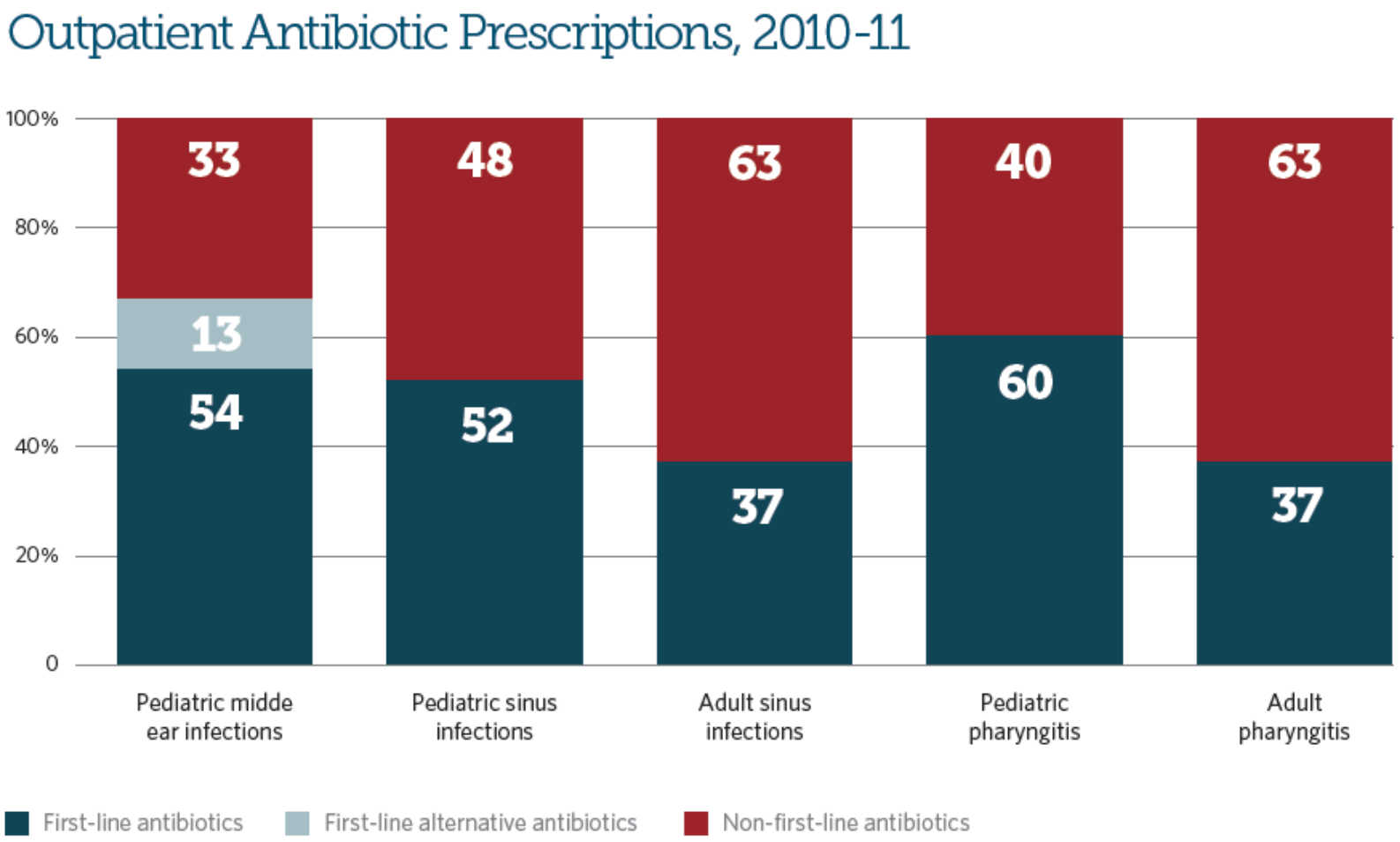
How much antibiotic use is unnecessary in outpatient settings?



Represents unnecessary risks to patients of adverse drug events, *Clostridium difficile* infection and development of antibiotic resistance

Fleming-Dutra et al. JAMA 2016;315(17): 1864-1873.

Improving Outpatient Antibiotic Selection



- Among 3 most common diagnoses leading to antibiotics, **52%** received first-line therapies
- At least 80% should receive first-line therapy, accounting for allergies and treatment failures

Hersh et al. JAMA Int Med 2016;315(17): 1864-1873.
The Pew Charitable Trusts. May 2016.


Letters

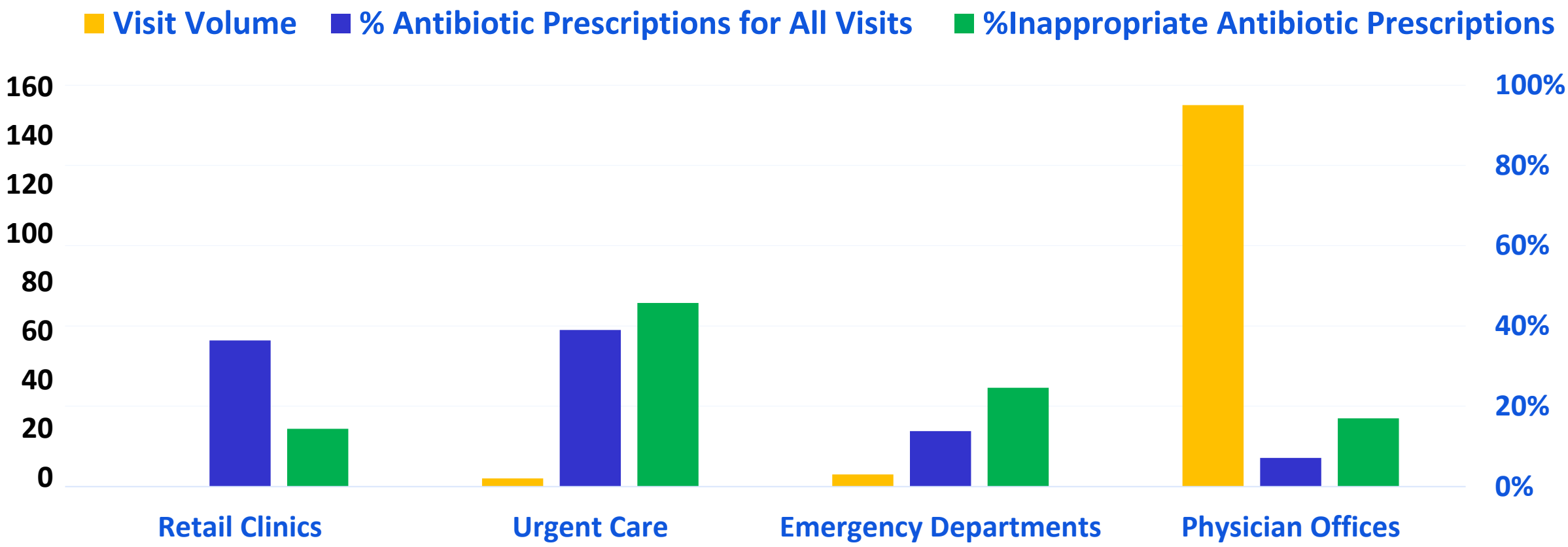
RESEARCH LETTER

Comparison of Antibiotic Prescribing in Retail Clinics, Urgent Care Centers, Emergency Departments, and Traditional Ambulatory Care Settings in the United States

- Question: how does antibiotic prescribing compare across different outpatient settings?
- Methods: retrospective cohort study using the 2014 Truven Marketscan Commercial Claims and Encounters Database
- Findings: the percentage of visits for an antibiotic-inappropriate diagnoses leading to antibiotic prescription was highest for urgent care (45.7%)

Palms DL,et al. JAMA Intern Med. 2018 Sep 1;178(9):1267-1269.

Targets: Antibiotic Prescribing in Outpatient Settings



Palms, et al. JAMA Intern Med. 2018 Sep 1;178(9):1267-1269.

We Know A Lot About Outpatient Antibiotic Use

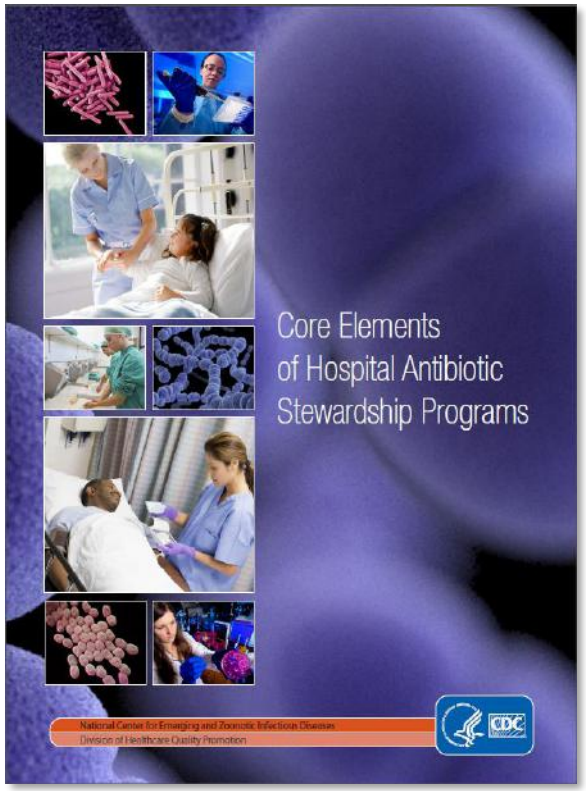
- There is great geographic variability (location matters)
- There is a lot of unnecessary use, especially for respiratory conditions
- There is often a mismatch between the recommended antibiotic and the one prescribed
- We need to target new professional settings (setting matters)
  - Urgent care and telemedicine represent new opportunities
- We need to target certain provider types that haven't been targeted in past
  - Physician assistants and nurse practitioners prescribe **23%** of outpatient antibiotics
  - Dentists prescribe **10%** of all outpatient antibiotic courses

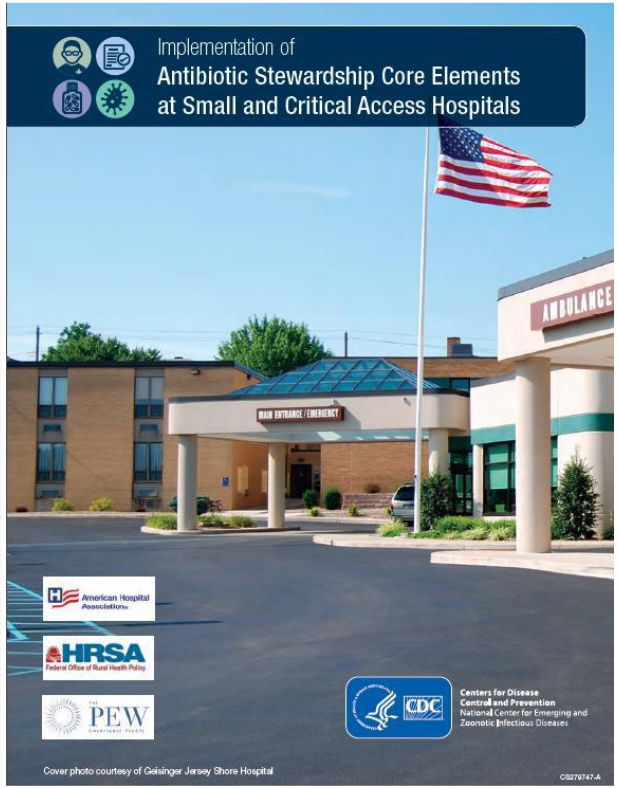
Examples of Antibiotic Stewardship Targets

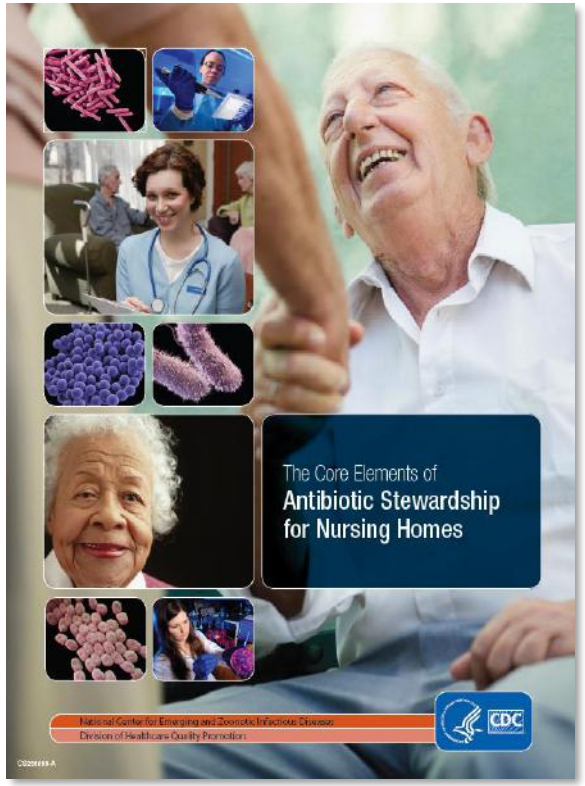
Category	Hospitals	Nursing Homes	Outpatient
Most frequent diagnoses leading to antibiotic prescribing	• **Pneumonia (34%)** • **Urinary tract infection (UTI) (17%)** • Skin and soft tissue infections (15%)	• **UTI (32%)** • **Pneumonia (25%)** • Skin and soft tissue infections (18%)	• **Sinusitis (11%)** • **Acute otitis media (9%)** • **Pharyngitis (9%)** • **Colds & bronchitis (10%)** • UTI (7%) • Pneumonia (2%)
Antibiotics of concern	• **Fluoroquinolones** • 3rd & 4th gen cephalosporins • Carbapenems • Beta lactam/beta lactamase inhibitor combinations	• **Fluoroquinolones**	• **Fluoroquinolones** • Macrolides
Key provider groups	• Antibiotic stewardship program • Pharmacists, infectious disease, critical care, hospitalists • C-suite	• Medical directors • Nursing directors • Consultant pharmacist	• Adult & Pediatric primary care, Urgent care • Nurse practitioners and Physician assistants • Dentists (10% of antibiotics)

CDC Resources to Improve Clinician Prescribing

CDC's Core Elements of Antibiotic Stewardship:
Hospitals, Critical Access Hospitals, Nursing Homes, Outpatient Settings

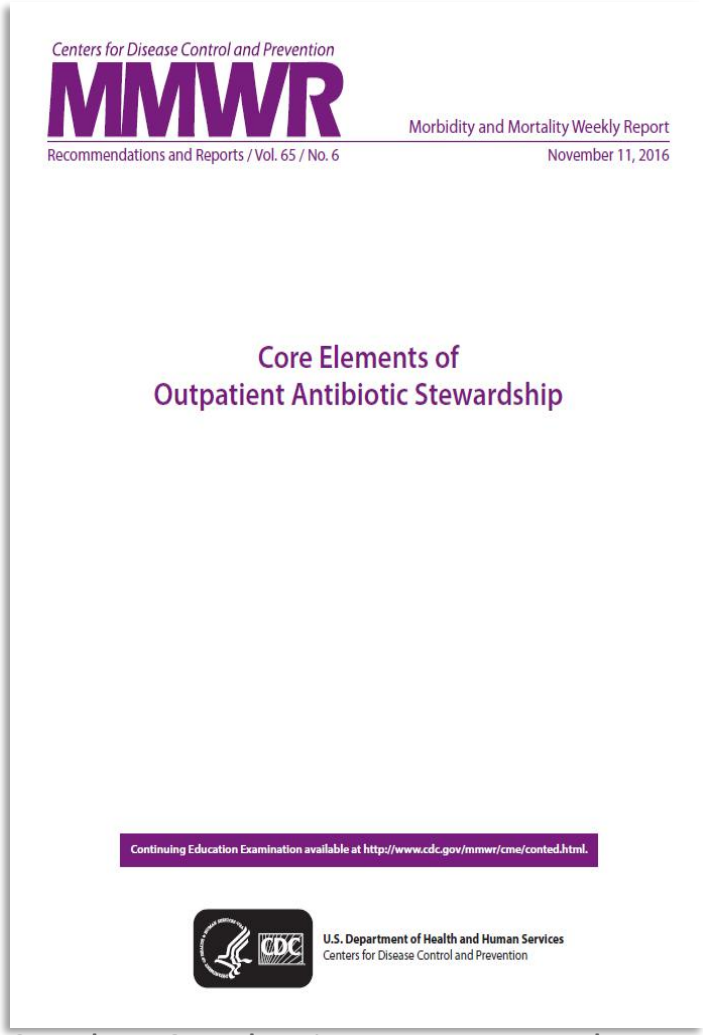






https://www.cdc.gov/getsmart/healthcare/implementation/core-elements.html;
https://www.cdc.gov/longtermcare/prevention/antibiotic-stewardship.html
https://www.cdc.gov/getsmart/community/improving-prescribing/core-elements/core-outpatient-stewardship.html
https://www.cdc.gov/getsmart/healthcare/implementation/core-elements-small-critical.html

Core Elements of Outpatient Antibiotic Stewardship



CORE ELEMENTS OF OUTPATIENT ANTIBIOTIC STEWARDSHIP

COMMITMENT
Demonstrate dedication to and accountability for optimizing antibiotic prescribing and patient safety.

ACTION FOR POLICY AND PRACTICE
Implement at least one policy or practice to improve antibiotic prescribing, assess whether it is working, and modify as needed.

TRACKING AND REPORTING
Monitor antibiotic prescribing practices and offer regular feedback to providers, or have providers assess their own antibiotic prescribing practices themselves.

EDUCATION AND EXPERTISE
Provide educational resources to providers and patients on antibiotic prescribing, and ensure access to needed expertise on optimizing antibiotic prescribing.

Sanchez GV, Fleming-Dutra KE, Roberts RM, Hicks LA. Core Elements of Outpatient Antibiotic Stewardship. MMWR Recomm Rep 2016;65(No. RR-6):1-12. https://www.cdc.gov/mmwr/volumes/65/rr/rr6506a1.htm?s_cid=rr6506a1_e

The role of communications training

- In a qualitative analysis of primary care visits for acute cough, clinicians were found to overestimate the actual pressure to prescribe antibiotics[1]

- Clinicians are more likely to prescribe antibiotics when they think that the patient wants them[2]
  - The doctors perception of the patient expectations were found to be the strongest determinant of medication prescribing[3]

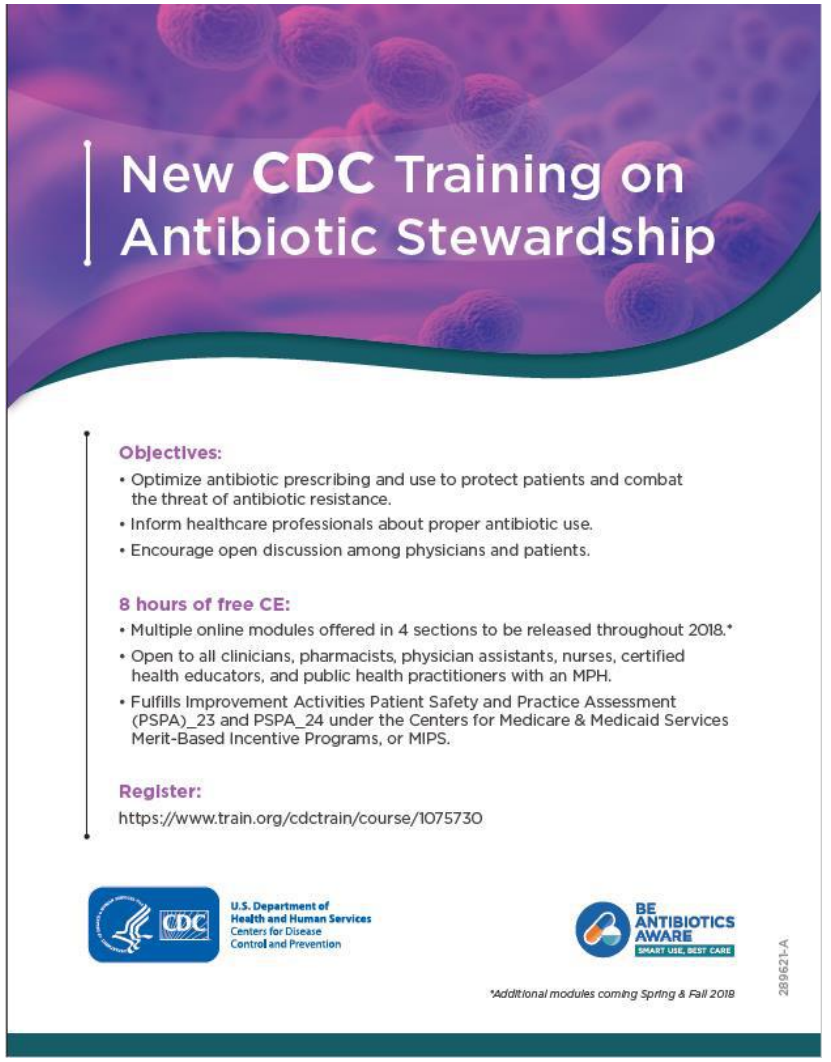
1. Altiner, Fam Pract. 2004;21(5):500-6.
2. Sanchez, EID. 2014; 20(12);2041-7.
3. Cockburn, BMJ. 1997 Aug 30;315(7107):520-3.

New CDC Training on Antibiotic Stewardship

- Online free course with 8 hours of continuing education credits, released in 4 sections through 2018
  - Medical, nursing, pharmacy, CHES, certified public health
  - Section 1 is available now (over 3500 registered learners)

- Fulfills Improvement Activities Patient Safety and Practice Assessment (PSPA)_23 and PSPA_24 under the CMS Merit-Based Incentive Programs, or MIPS

- https://www.train.org/cdctrain/course/1075730



Be Antibiotics Aware: Smart Use, Best Care

- New educational effort: Refining messaging and expanding to new target audiences.
  - Focus on patient safety
  - Increased messaging for adult patients
  - New effort to reach hospitalists, nurse practitioners, physician assistants, urgent care clinicians

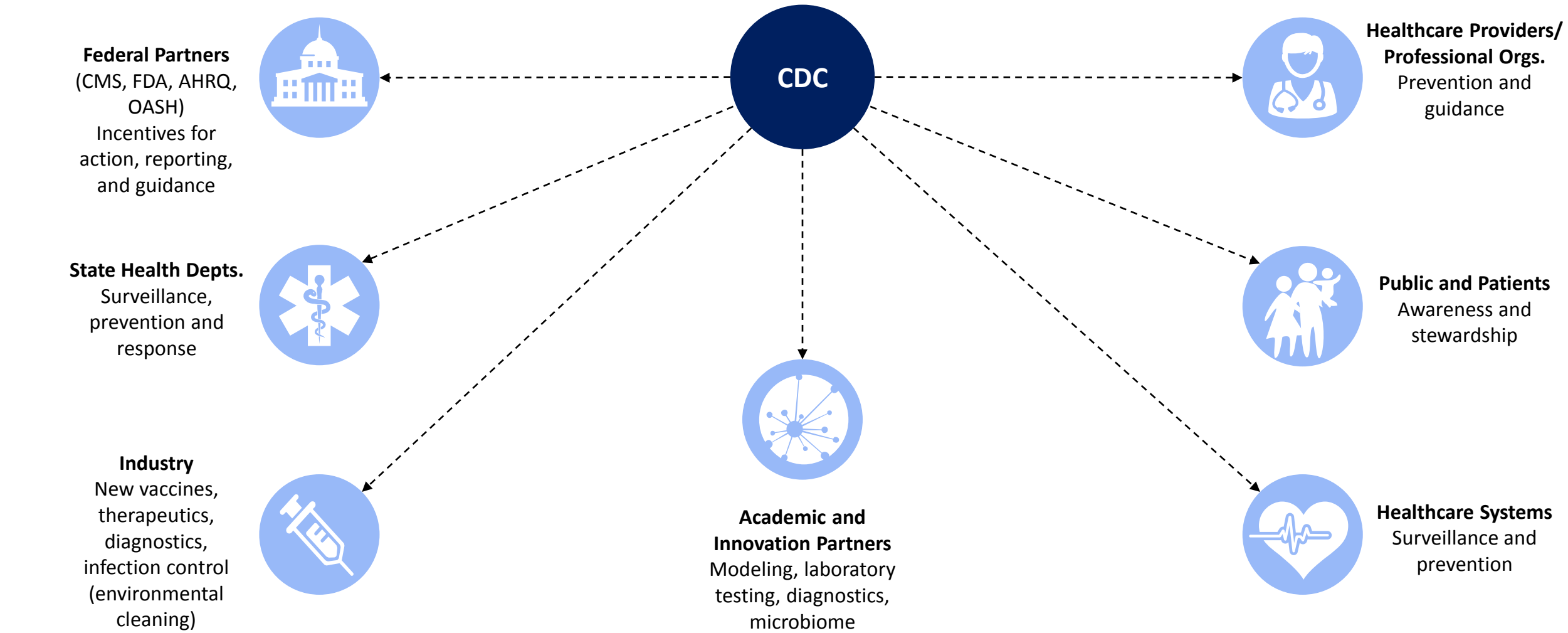
- Public Service Announcement: https://www.youtube.com/watch?v=dETK7Jc-XWA

BE ANTIBIOTICS AWARE
SMART USE, BEST CARE

www.cdc.gov/antibiotic-use

Partnerships to Improve Antibiotic Prescribing

Partners are Critical



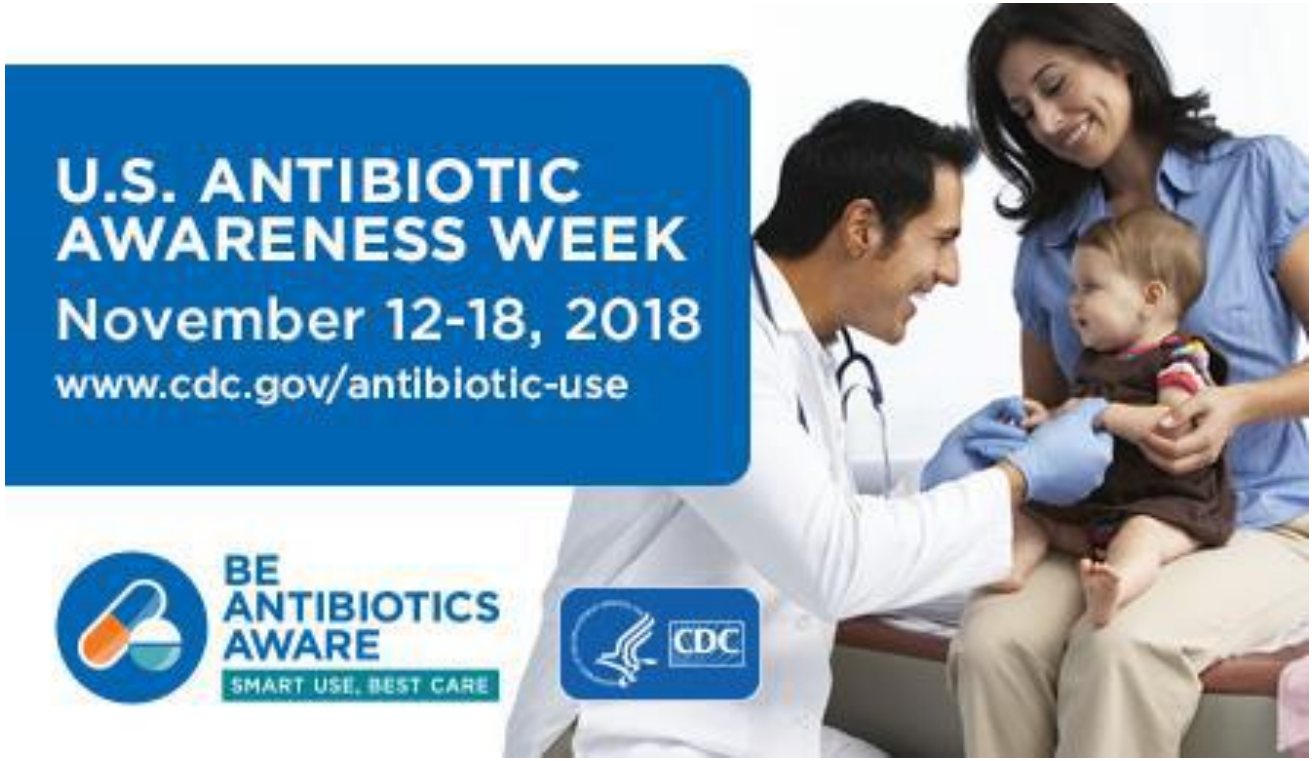
Health Insurers and The Joint Commission Increasing Uptake of CDC's Core Elements of Antibiotic Stewardship

- CMS
  - Quality Innovation Network and Quality Improvement Organizations (QIN-QIOs)
    - Outpatient Implementation of the Core Elements
    - Target 80% of recruited practices to implement the Core Elements by July 2018
    - Just finished recruitment of >7000 facilities
  - Incorporating outpatient stewardship course developed by CDC as a Clinical Practice Improvement Activity in CMS's Merit-based Incentive Payment System
- Aetna providing audit and feedback to individual providers
- The Joint Commission—accreditation standard requires hospitals to have stewardship programs and developing new standard for outpatient settings

Progress and Opportunities

- Antibiotic use is a major driver of antibiotic resistance, and the majority of antibiotics used in human healthcare are used in the outpatient setting
- Reductions in outpatient antibiotic prescribing have been seen, but at least 30% of outpatient antibiotic prescriptions were unnecessary in 2010-11
- Need to increase focus on states, settings, providers, patient populations where antibiotic use is highest
- CDC's Core Elements and educational resources can be used to support stewardship implementation

https://www.youtube.com/watch?v=dETK7Jc-XWA



For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

www.cdc.gov/antibiotic-use