# Outpatient Antimicrobial Stewardship and Quality Improvement: a perfect match!

Navjyot Vidwan, MD, MPH

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Kentucky ANTIBIOTIC Awareness

*Working together to keep the BAD BUGS out of the Bluegrass!*

# Objectives

- Discuss antimicrobial stewardship (AS) and impact on drug resistance
- Discuss AS in the outpatient setting
- Explain CDC Core elements of Outpatient AS
- Incorporate quality improvement to your ASP setting

SCHOOL OF MEDICINE

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# Our Mission

**Kentucky Antibiotic Awareness is a state-wide campaign to encourage appropriate antibiotic use throughout Kentucky.**

This project was supported by the following: Kentucky Cabinet for Health and Family Services: Department for Medicaid Services under the State University Partnership contract titled “Improving Care Quality for Children Receiving Kentucky Medicaid”, Norton Children’s Hospital, the University of Louisville: School of Medicine, Department of Pediatrics; School of Public Health and Information Sciences, and Duke University.

This content is solely the responsibility of the authors and does not necessarily represent the official views of the Cabinet for Health and Family Services, Department for Medicaid Services.

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Just for Kids NORTON Children's

Kentucky Public Health
Prevent. Promote. Protect.

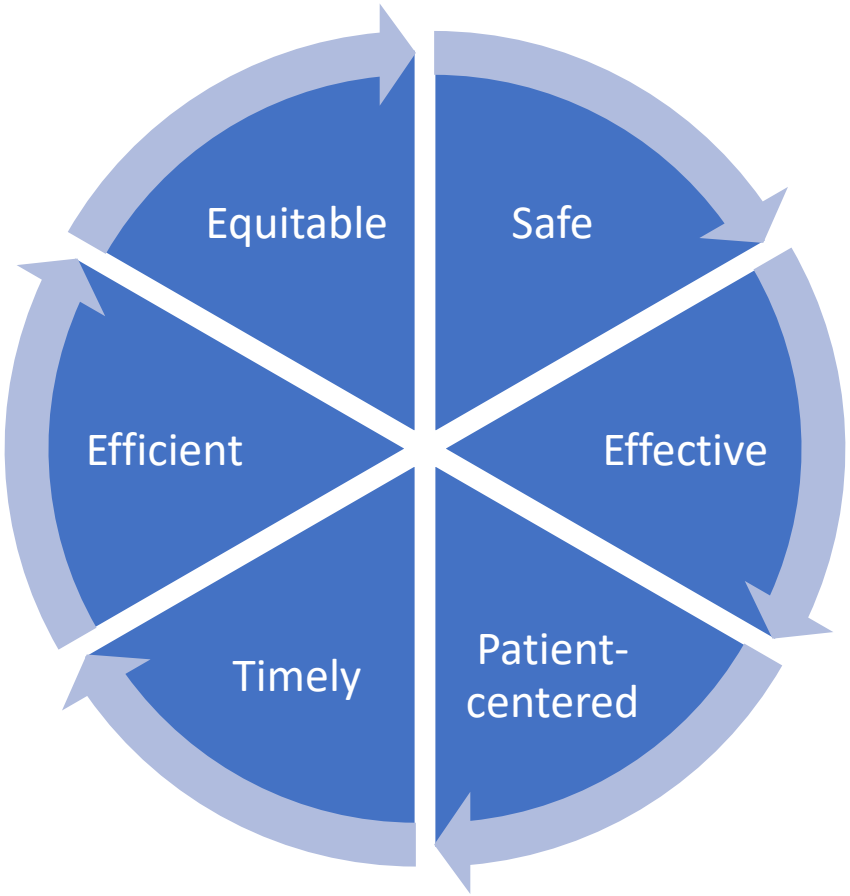
BE ANTIBIOTICS AWARE
SMART USE, BEST CARE

Kentucky ANTIBIOTIC Awareness

# Antimicrobial Stewardship

- **Definition**
  - Coordinated interventions to improve and measure the appropriate use of agents by promoting the selection of the optimal **drug** regimen including **dosing**, **duration** of therapy, and **route** of administration
- **Goals**
  - To optimize clinical outcomes while minimizing **unintended outcomes** of antimicrobial use
  - To reduce healthcare **costs** without adversely impacting quality of care

# Domains of Health Care Quality



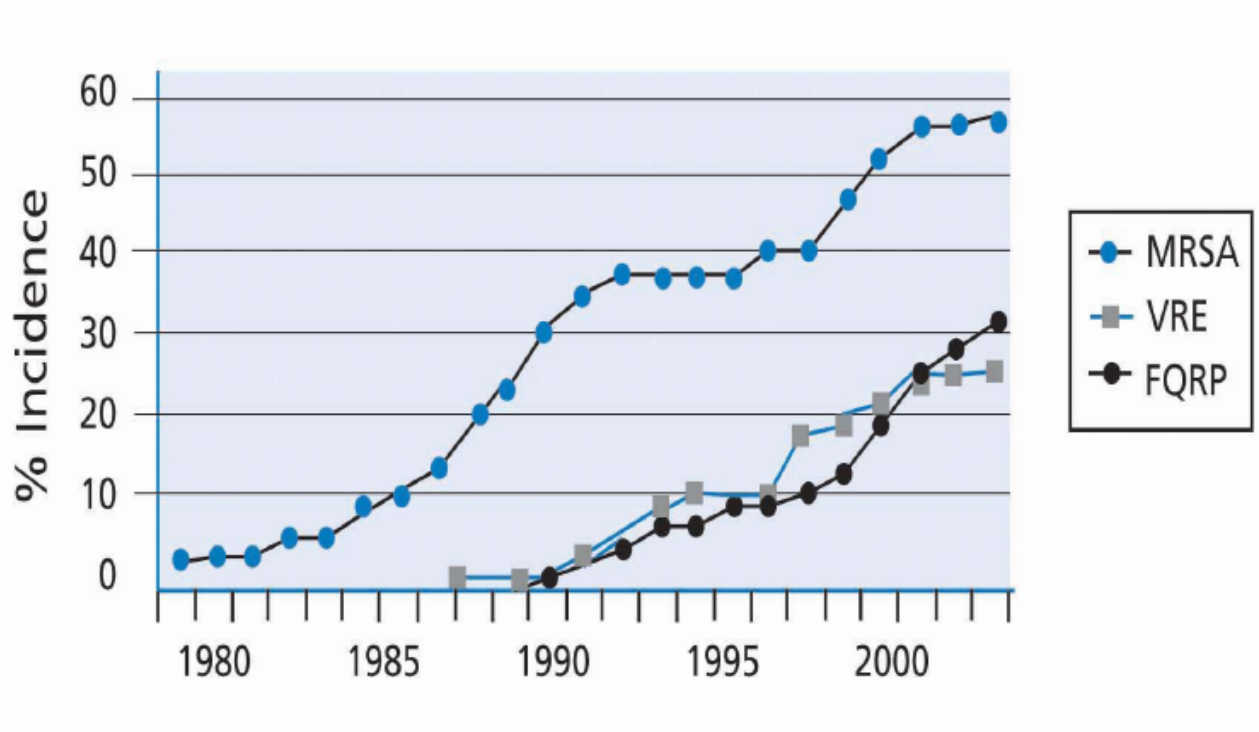

IOM. Crossing the Quality Chasm. 2001

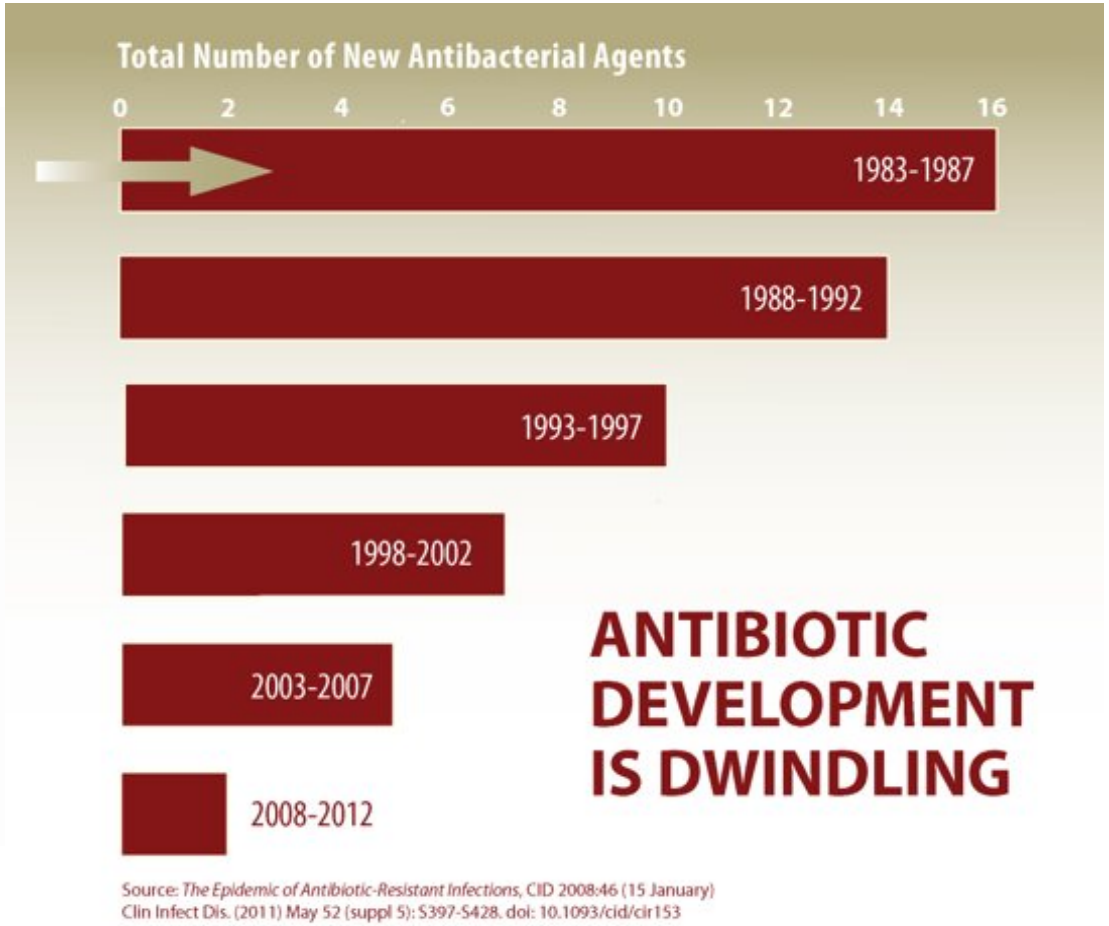
# Unintended Outcomes of Antibiotic Use

- Drug resistance
- Adverse effects
  - Most common reason for medication-related ED visits in children
  - Approximately half of all *C. difficile* cases are community-acquired

Lovegrove *JPIDS* 2018.
www.cdc.gov/antibiotic -use
Ofori *J Hosp Infect* 2018.

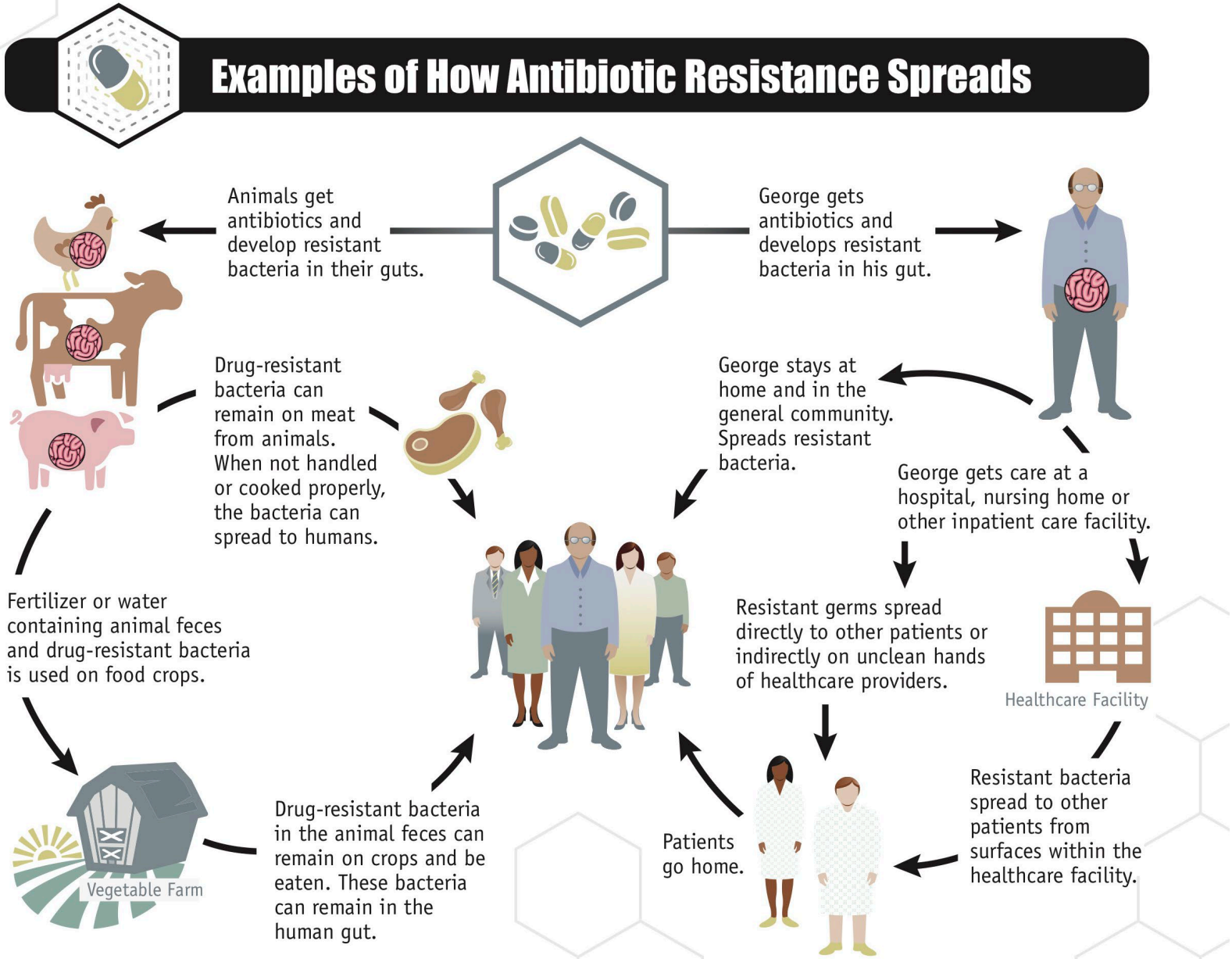
# Drug-resistant organisms




Source: *The Epidemic of Antibiotic-Resistant Infections*, CID 2008:46 (15 January)
Clin Infect Dis. (2011) May 52 (suppl 5): S397-S428. doi: 10.1093/cid/cir153

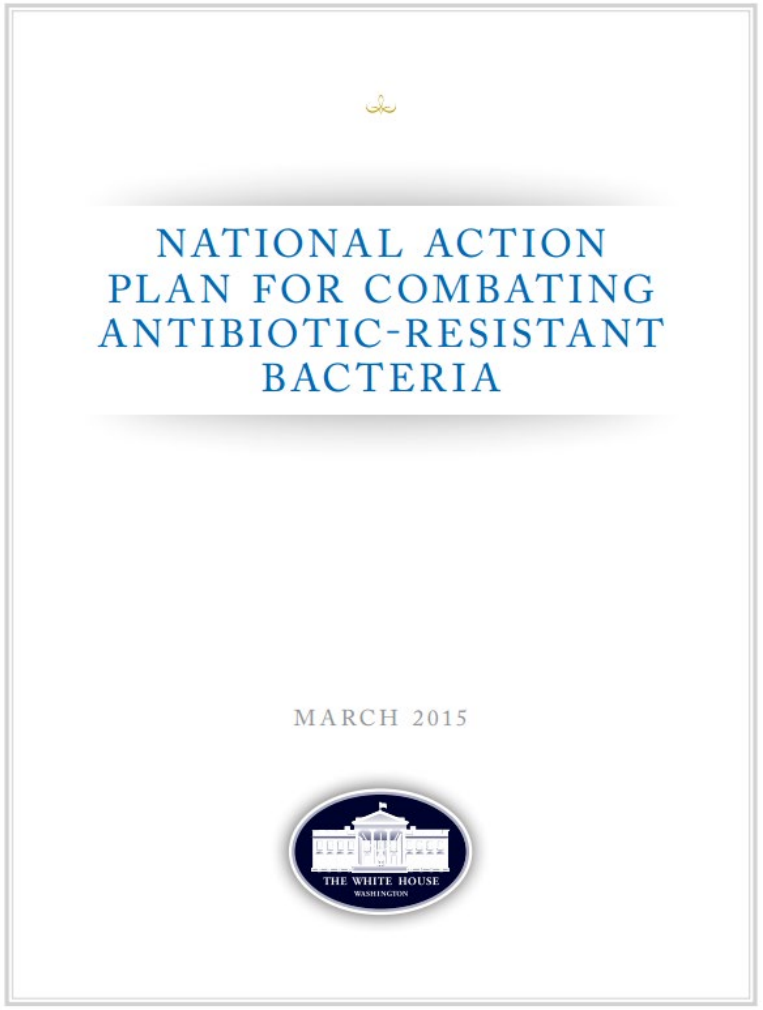
# Examples of How Antibiotic Resistance Spreads




**Simply using antibiotics creates resistance. These drugs should only be used to treat infections.**

CS239559

# A Call to Action




CMS
CENTERS FOR MEDICARE & MEDICAID SERVICES

NCQA
Measuring quality.
Improving health care.

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

The Joint Commission

IDSA
Infectious Diseases Society of America

World Health Organization

# Objectives

- Discuss antimicrobial stewardship (AS) and impact on drug resistance
- **Discuss AS in the outpatient setting**
- Explain CDC Core elements of Outpatient AS
- Incorporate quality improvement to your ASP setting

# Joint Commission Antimicrobial Stewardship Ambulatory Care Centers


Mandatory to have "Elements of Performance" (EPs)
In effect- January 2020

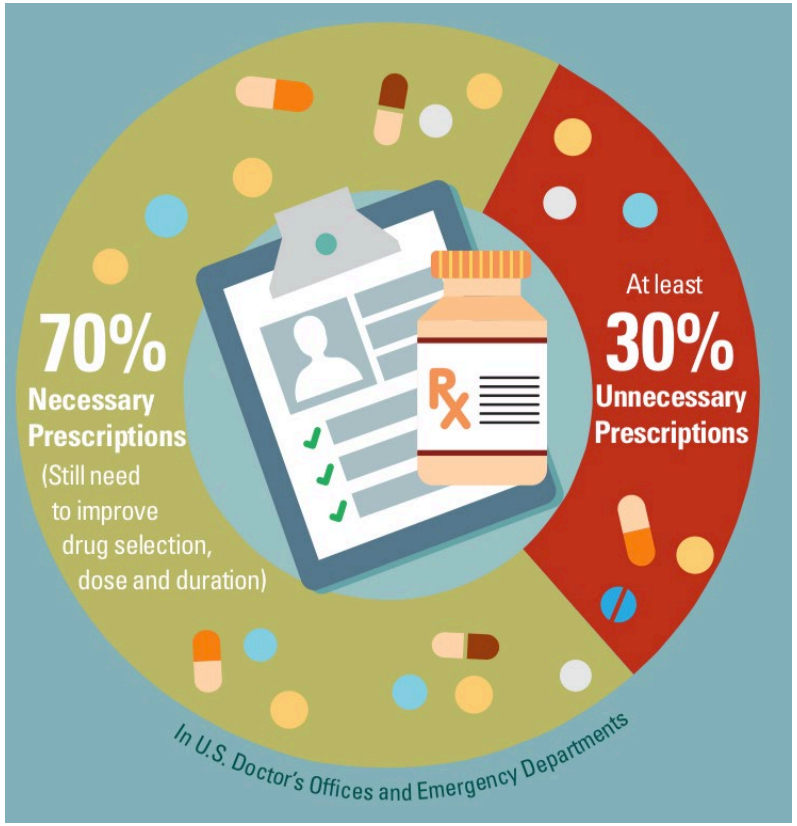
https://www.jointcommission.org/assets/1/18/R3_23_Antimicrobial_Stewardship_AMB_6_14_19_FINAL2.pdf

Which of the following outpatient settings are within your organization?

- Places of ASP intervention:
  - Emergency Department
  - Urgent Cares
  - Primary Care offices
  - Specialty clinics
  - Retail pharmacies

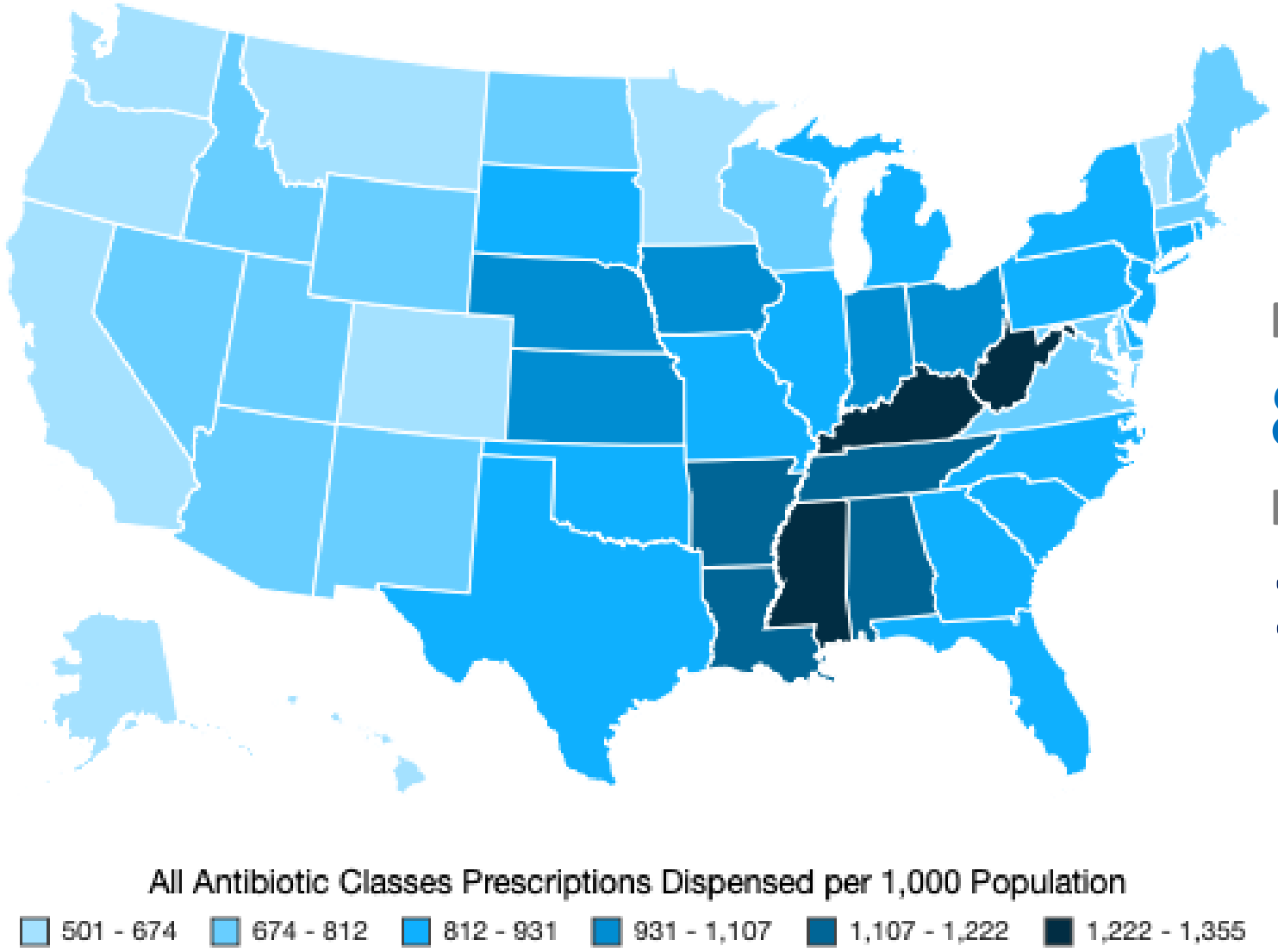
# Outpatient Antibiotic Prescribing

- 80-90% of antibiotic use > outpatient setting
- 30% of antibiotics prescribed in outpatient setting are unnecessary
- A CDC study found only 50% of outpatient antibiotic prescribing was for the guideline recommended first-line antibiotic




Fleming-Dutra *JAMA* 2016.
Shapiro *J Antimicrob Chemother* 2014.
Palms *Antimicrob Angents Chemother* 2019

# Outpatient Prescription Rate of All Antibiotic Classes Dispensed in US Pharmacies by State



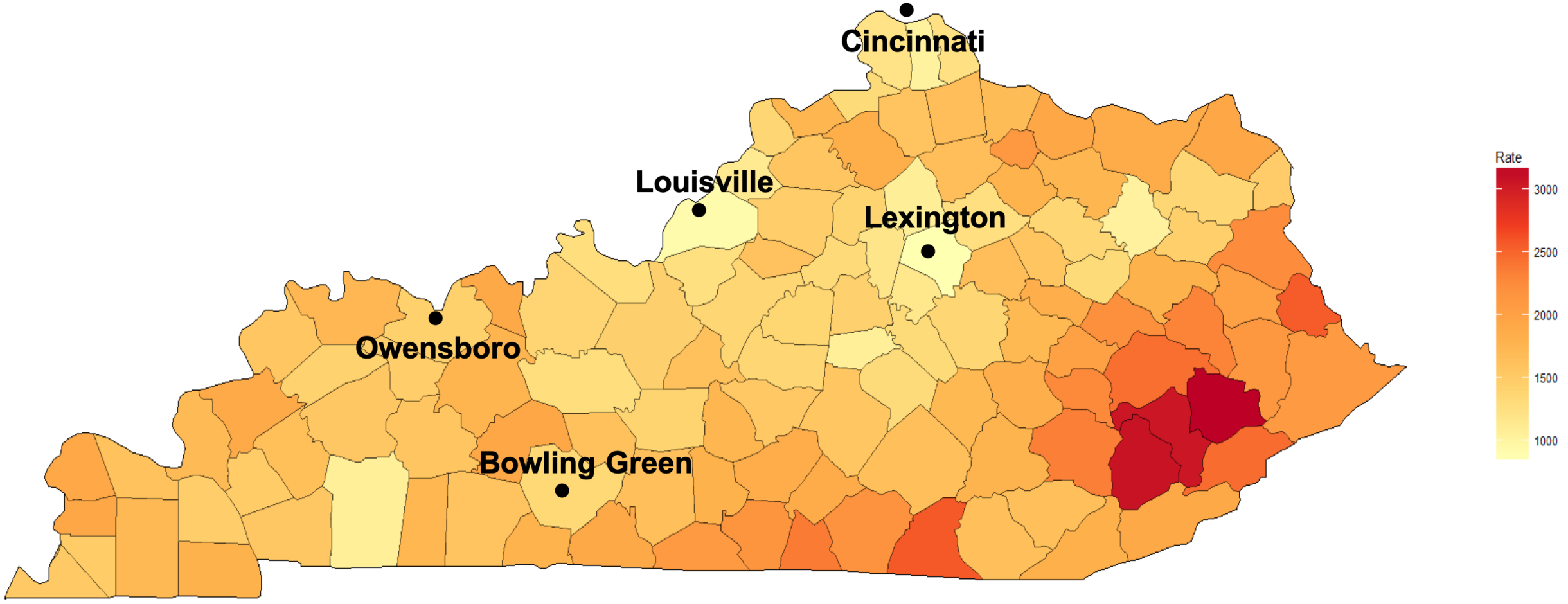

**National Rate:**

**821**

**Kentucky Rate:**

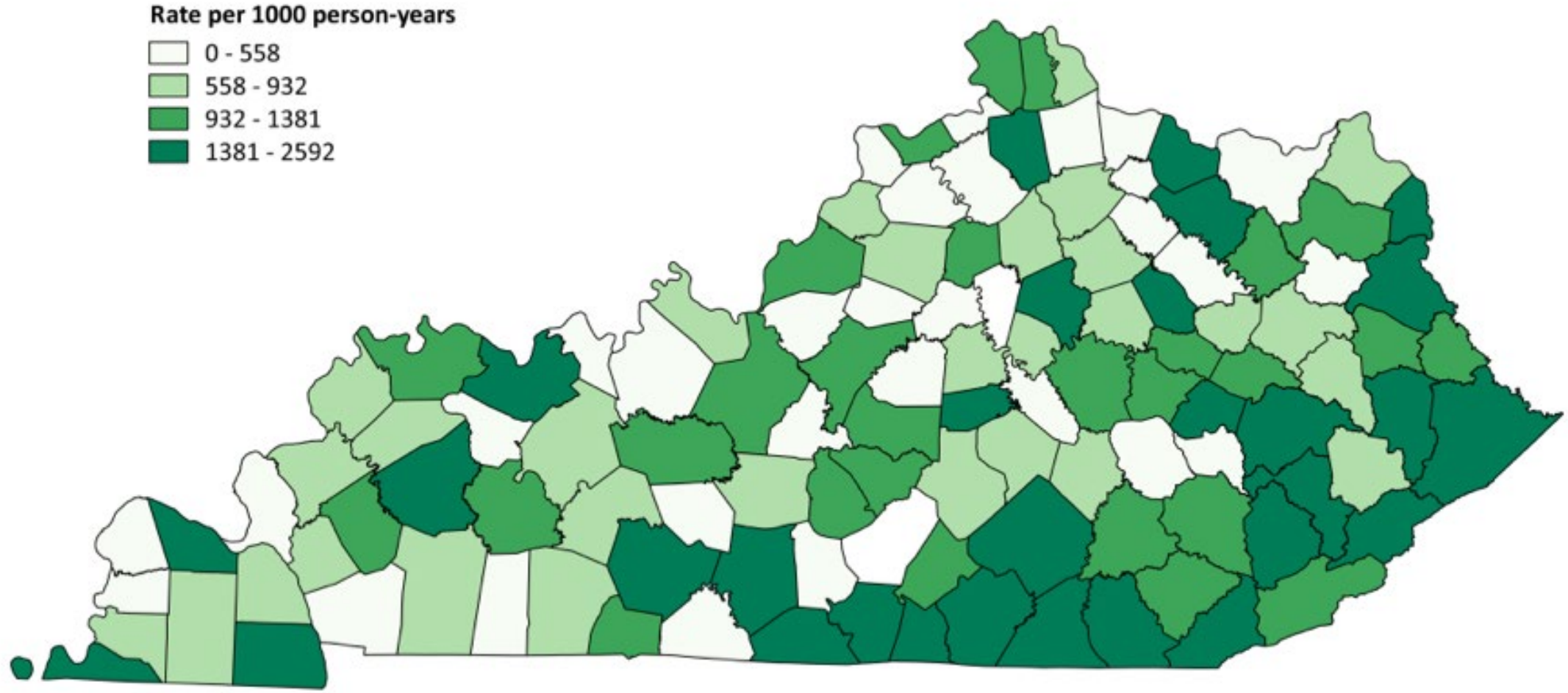
**1,231**

# Kentucky Antibiotic Prescribing – Medicaid Children




Medicaid prescription claims data, 2016

# Kentucky Antibiotic Prescribing – All Ages




KDPH, IMS Government Solutions antimicrobial data, 2013-14

# Barriers to Outpatient Stewardship

- Knowledge
- Patient expectations and satisfaction
- Time constraints
- Diagnostic challenges
- Data Resources

# Objectives

- Discuss antimicrobial stewardship (AS) and impact on drug resistance
- Discuss AS in the outpatient setting
- **Explain CDC Core elements of Outpatient AS**
- Incorporate quality improvement to your ASP setting

# The Core Elements of Outpatient Antibiotic Stewardship



Sanchez *MMWR Recomm Rep* 2016.

# Joint Commission AMS -Ambulatory Care Centers-
Elements of performance (EPs)

## January 2020

- Identifying an antimicrobial stewardship leader
- Establishing an annual antimicrobial stewardship goal
- Implementing evidence-based practice guidelines
- Providing clinical staff with educational resources
- Collecting, analyzing, and reporting data

https://www.jointcommission.org/assets/1/18/R3_23_Antimicrobial_Stewardship_AMB_6_14_19_FINAL2.pdf

# Incorporate Quality Improvement with AMS

# Commitment = Plan

- Identify leadership
  - Pharmacist champion
  - Primary care prescriber
- Join the Listserv
  - http://eepurl.com/dGgOZL
- Display posters
- Use social media
- Annual organizational goal


## A Commitment to Our Patients About Antibiotics

Kentucky ANTIBIOTIC Awareness
Working together to keep the BAD BUGS out of the Bluegrass!

### Did you know that Kentucky has the highest rate of antibiotic prescriptions in the country?

- **Antibiotics only work for infections caused by bacteria.**
- **Antibiotics will NOT help you feel better for viral infections such as:**
  - Cold or runny nose
  - Bronchitis or chest cold
  - Flu
- **Taking antibiotics when you don't need them can cause harm:**
  - Diarrhea, skin rash, yeast infections
  - Antibiotic resistance can cause antibiotics to not work when you need them

### Your child's health is important to us.

**We promise to provide the best treatment for your child.**
If an antibiotic is not needed, we will offer a different treatment plan that will help.
We are **dedicated** to prescribing antibiotics **only** when they are needed.

**If you have any questions, please ask.**

For more information

Facility Logo

Your Photo Here

**Sincerely**,
Your Name Here

UofL SCHOOL OF MEDICINE | Norton Children's | Kentucky Public Health | BE ANTIBIOTICS AWARE

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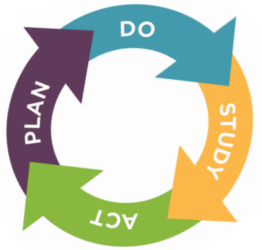
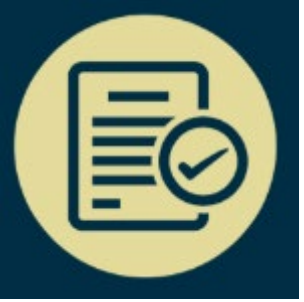
# Action = Do

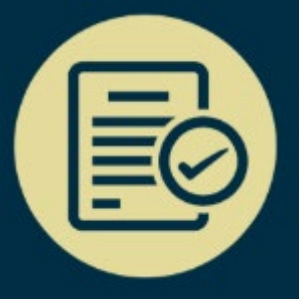



| Interventions | |
|---|---|
| Protocol Development | Clinical Decision Support |
| Provider Feedback | Indications or Written Justification |
| Triage Visits | Education |



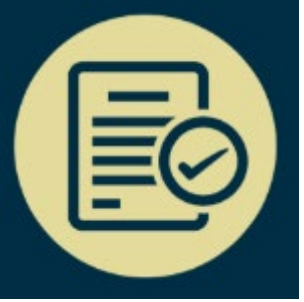
# Action = Do

| Intervention | Details |
| --- | --- |
| **Protocol Development** | Use evidence-based diagnostic criteria and treatment recommendations<br>• IDSA Guidelines<br>• AAP Guidelines<br>• Summary of treatment recommendations on CDC website |



# Action = Do

| Intervention | Details |
| --- | --- |
| **Provider Feedback** | Monthly reports on the topic of your choice:<br>• Overall antibiotic prescribing<br>• High-priority conditions<br>• Use of 1st line antibiotics<br>• Peer comparison/report cards |



# Action = Do

| Intervention | Details |
| --- | --- |
| **Indications or Written Justification** | Require written justification in the medical record or indications on all antibiotic prescriptions – Joint commission requirement |

# Action: Example

| Intervention | Details |
| --- | --- |
| **UTI Treatment** | ED QI STUDY:<br>Follow-up with patients to discontinue or narrow antibiotic therapy based on urine culture results |

# Tracking and Reporting = Study


- Track and report data on antimicrobial prescribing
- Assess and share performance on quality measures
  - Healthcare Effectiveness Data and Information Set (HEDIS)
    - *Avoidance of Antibiotic Treatment in Adults With Acute Bronchitis*
    - *Appropriate Treatment for Children With Upper Respiratory Infection*
    - *Appropriate Testing for Children With Pharyngitis*

# Metrics for antibiotic use

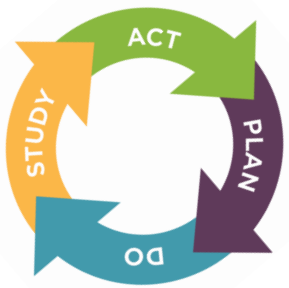
1) Prescriptions per 1000 children per year
2) Days prescribed
3) Indication-specific antibiotic use

   HEDIS metrics

   1) Viral URI
   2) Appropriate testing in children with pharyngitis
4) Choice of therapy
5) Appropriateness of therapy

Kentucky ANTIBIOTIC Awareness

# Provider Education = Act




CDC TRAIN

**CDC Training on Antibiotic Stewardship**

https://www.train.org/cdctrain/training_plan/3697

- **Section 1:** Antibiotic Resistance and the benefits of antibiotic stewardship
- **Section 2**: Antibiotic stewardship in outpatient settings
- **Section 3:** Antibiotic stewardship considerations for the management of common outpatient conditions and dentistry
  - UTI, SSTI, bronchitis, asthma, COPD, viral URI, sinusitis, AOM, pharyngitis
- **Section 4:** Antibiotic stewardship in emergency departments, hospitals, and nursing homes.

# Patient Education

- Outpatient settings
  - Handouts, TV/computer monitors, posters, etc.
- Community education
  - Social media, traditional media, community events, etc.

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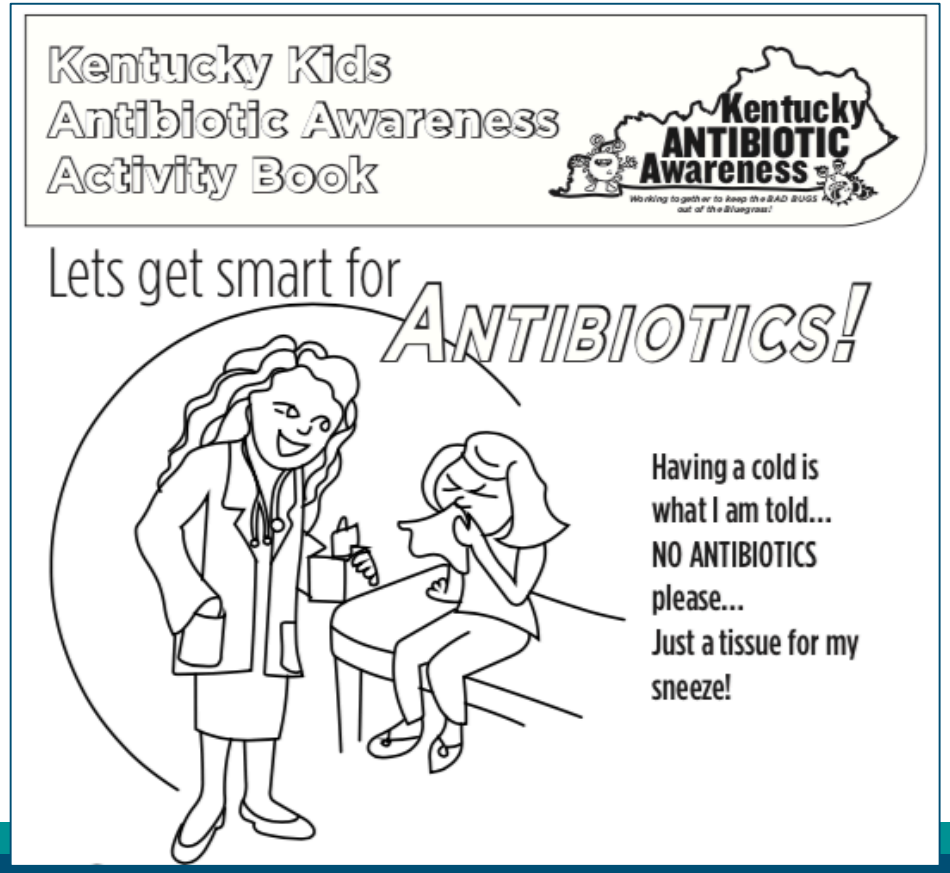
Twitter: @KYAbxAwareness

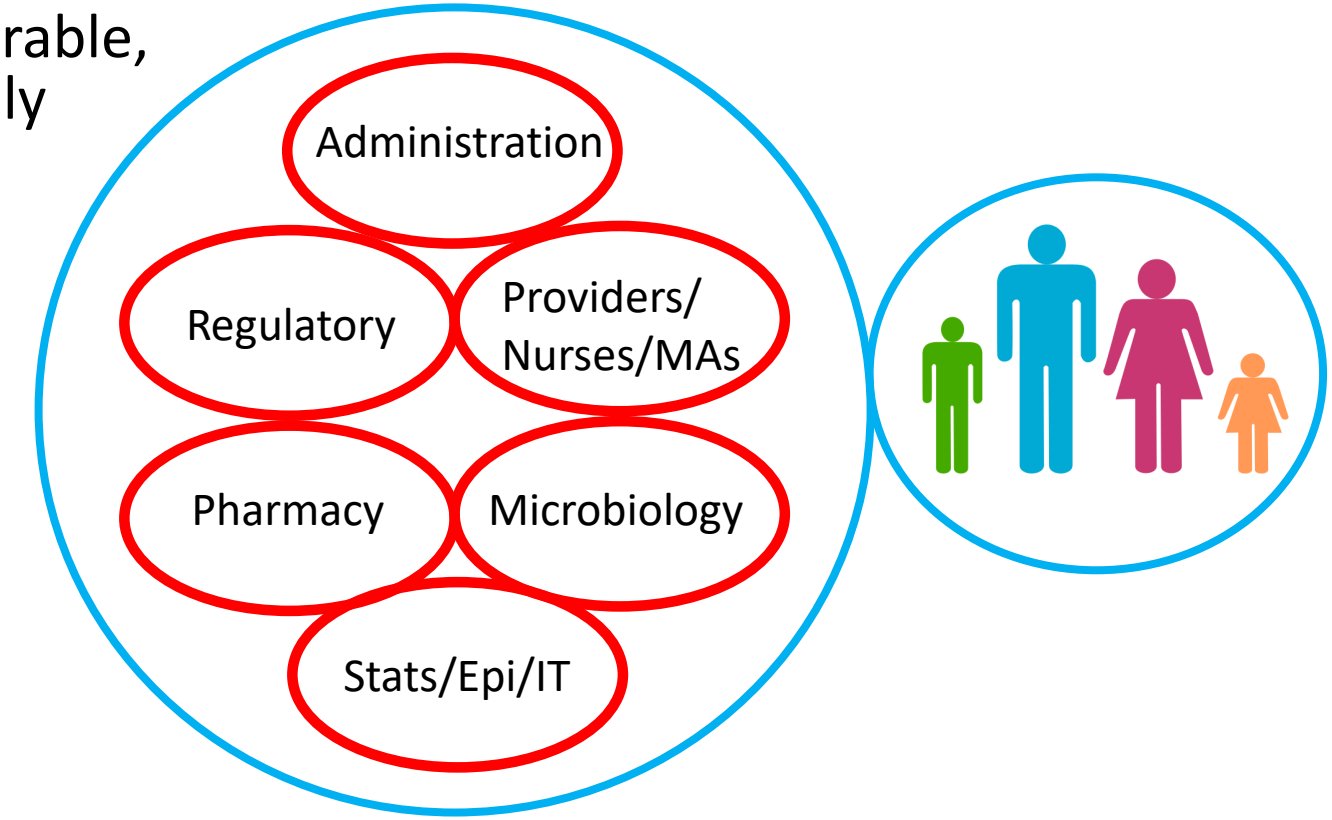



# Objective

- Discuss antimicrobial stewardship (AS) and impact on drug resistance
- Discuss AS in the outpatient setting
- Explain CDC Core elements of Outpatient AS
- **Incorporate quality improvement to your ASP setting**

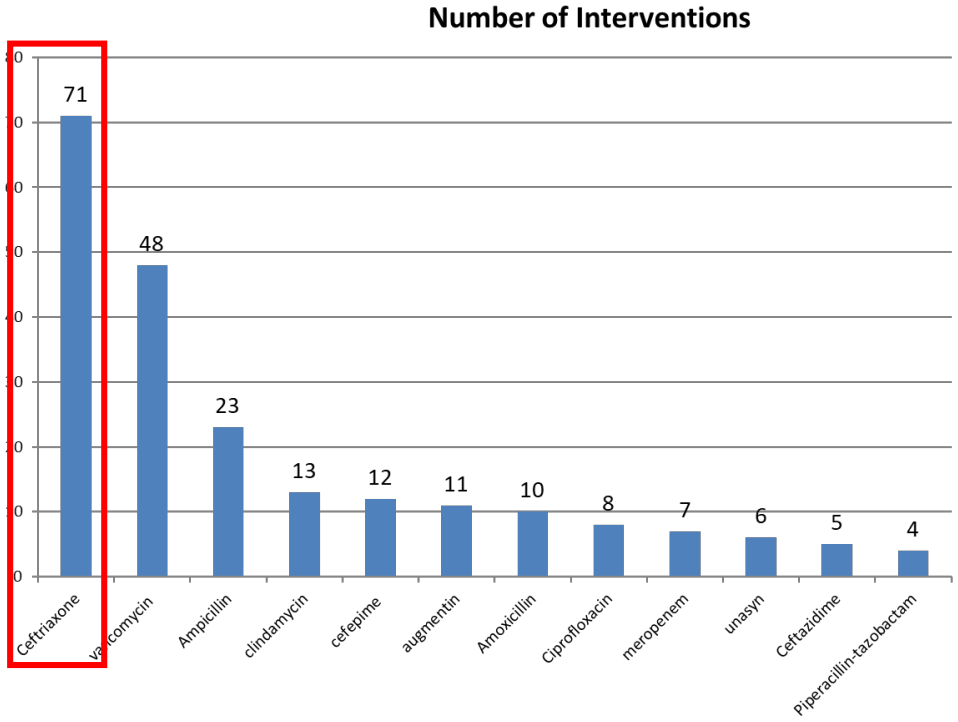
# Aim Statement Template

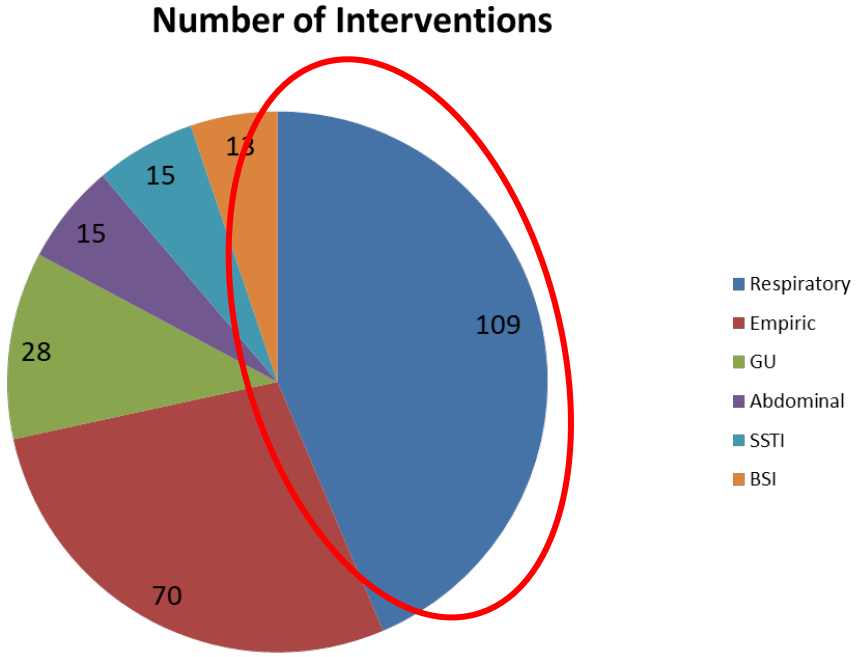
- We aim to:
  - Goal (SMART): **S**pecific, **M**easurable, **A**chievable, **R**elevant and **T**imely
  - Importance
  - Specific population
  - Time frame
- How will we achieve it?
  - Procedures
  - Personnel
  - Time
  - Resources



# Example ASP QI (MOC) Project

# Data Gathering: Prospective Audit and Feedback




**FOCUS: Decreasing the Use of Ceftriaxone for Community Acquired Pneumonia (CAP)**

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™

FROM THE AMERICAN ACADEMY OF PEDIATRICS

Organizational Principles to Guide and Define the Child Health Care System and/or Improve the Health of all Children

STATEMENT OF ENDORSEMENT

# Management of Community-Acquired Pneumonia (CAP) in Infants and Children Older Than 3 Months of Age

# Aim Statement

- During the 2019-2020 pneumonia season, we will decrease the inappropriate use of ceftriaxone for community acquired pneumonia in patients admitted to the general wards at NCH by 30% through two key interventions targeting providers.

- (SMART): **S**pecific, **M**easurable, **A**chievable, **R**elevant and **T**imely

# Plan Do Study Act (PDSA) Cycle Template


**Opportunities for improvement:**

**Emergency Department**

**Pediatric Intensive Care Unit**

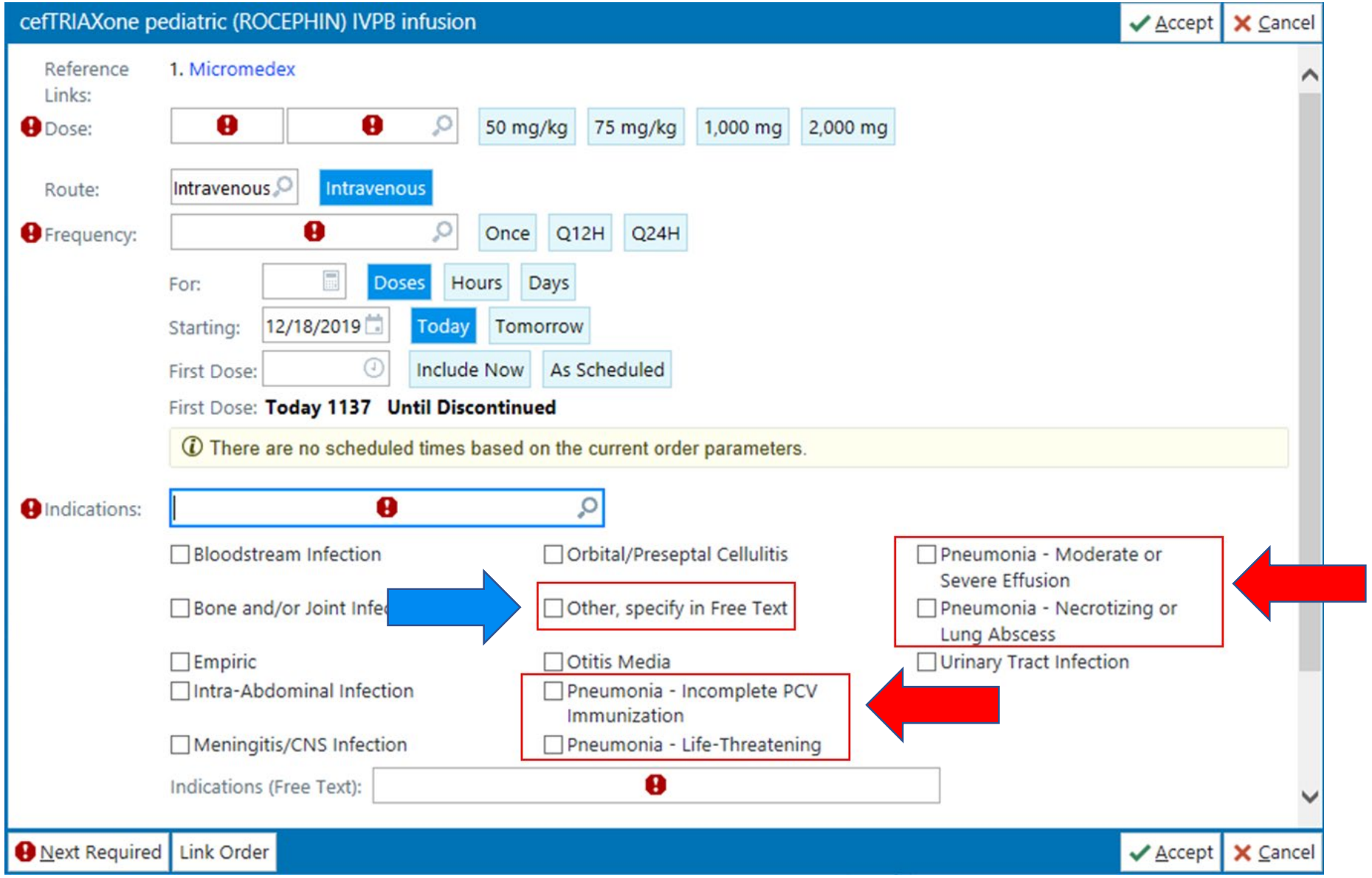
**General Inpatient Ward**


**Pre-Intervention: September-December**

**Post-Intervention: January-April**

**Guideline-Driven Education**
- Residents
- Attendings

**Hard Stop Ceftriaxone Order Indication**


cefTRIAXone pediatric (ROCEPHIN) IVPB infusion
Accept
Cancel
Reference Links:
1. Micromedex
Dose:
50 mg/kg
75 mg/kg
1,000 mg
2,000 mg
Route:
Intravenous
Intravenous
Frequency:
Once
Q12H
Q24H
For:
Doses
Hours
Days
Starting:
12/18/2019
Today
Tomorrow
First Dose:
Include Now
As Scheduled
First Dose: Today 1137 Until Discontinued
There are no scheduled times based on the current order parameters.
Indications:
Bloodstream Infection
Bone and/or Joint Infe
Empiric
Intra-Abdominal Infection
Meningitis/CNS Infection
Orbital/Preseptal Cellulitis
Other, specify in Free Text
Otitis Media
Pneumonia - Incomplete PCV Immunization
Pneumonia - Life-Threatening
Pneumonia - Moderate or Severe Effusion
Pneumonia - Necrotizing or Lung Abscess
Urinary Tract Infection
Indications (Free Text):
Next Required
Link Order
Accept
Cancel


**Study: Days of Ceftriaxone therapy (DOT) for CAP per 1000 patient days**
**Calculated monthly**
**Pre- and Post-Intervention**

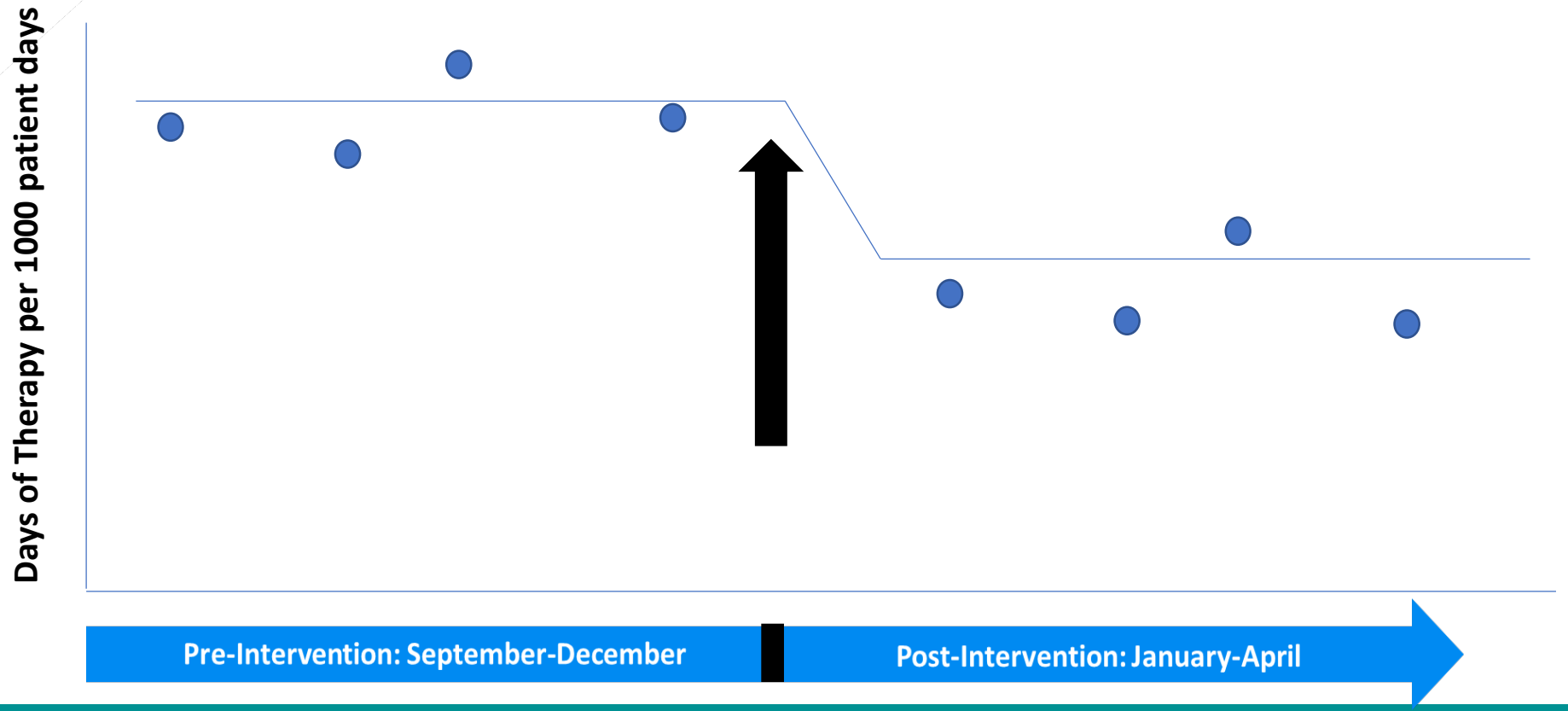
**Pre-Intervention: September-December**

**Post-Intervention: January-April**

**Guideline-Driven Education**
**Residents**
**Attendings**

**Hard Stop Ceftriaxone Order**
**Indication for CAP**


**Study: Days of Ceftriaxone therapy (DOT) for CAP per 1000 patient days Calculated monthly Pre- and Post-Intervention**

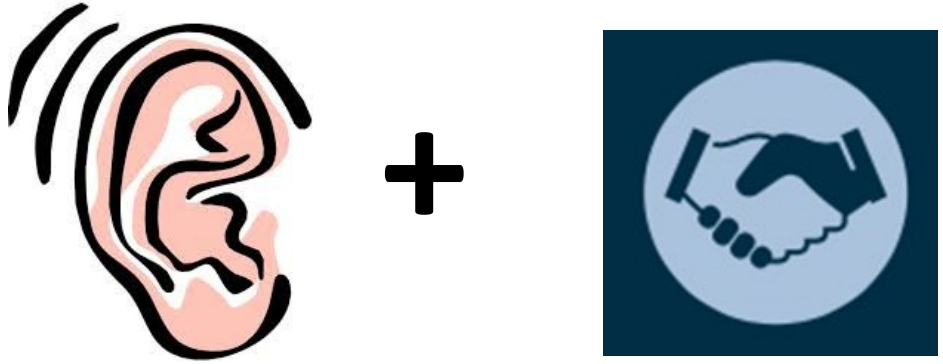



# Additional Outcomes

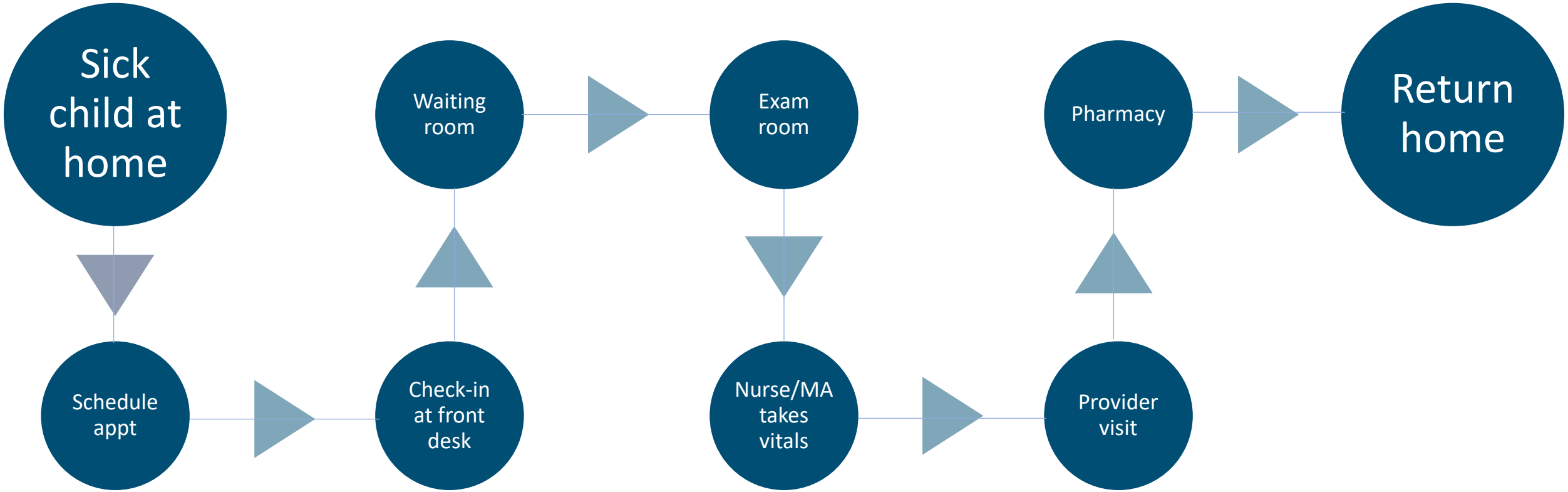
- Balancing measures = unintended/unforseen consequences for patients placed on narrower Ampicillin versus Ceftriaxone
  - Pediatric ICU admission rates
  - 30-day re-admission rates
- Patient statistics
- Provider behavior


# Examples of Action

- This cycle:
  - Provider feedback
  - Plan for sustainability
- Next cycle:
  - Expand to ED and PICU



# Antibiotic Stewardship throughout the Primary Care visit



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Twitter: @KYAbxAwareness

## How to care for your sick child

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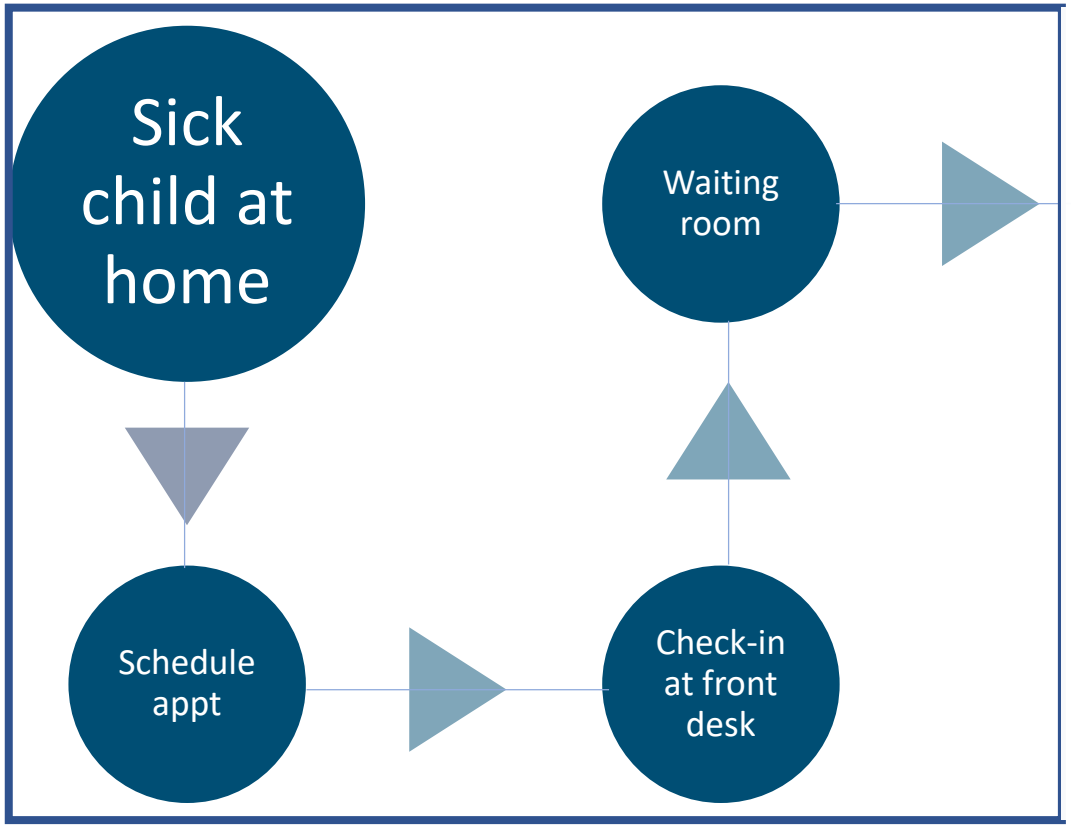
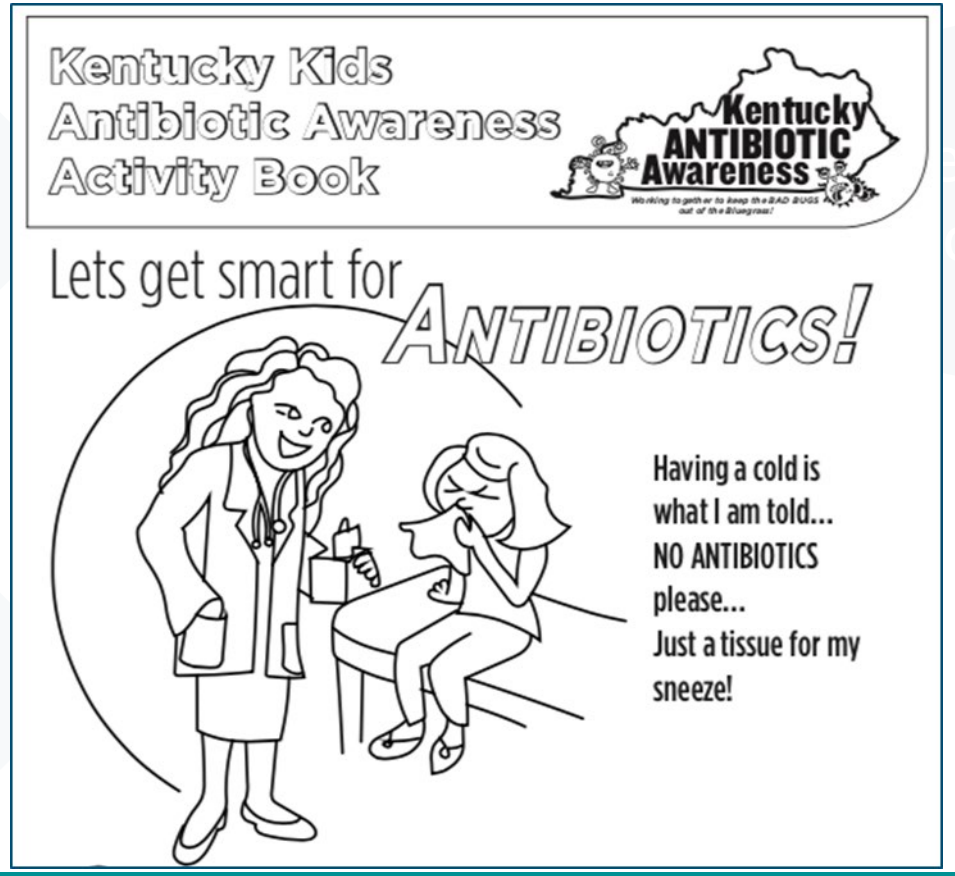
Working together to keep the BAD BUGS out of the Bluegrass!

**Did you know that most symptoms are caused by colds and can be cared for at home?**

| Symptoms of a cold: | How to treat a cold at home: |
|---|---|
| • Runny nose<br>• Sneezing | • Allow extra sleep<br>• Drink lots of fluids |



Sick child at home

Schedule appt

Check-in at front desk

Waiting room

Exam room

Nurse/MA takes vitals

Provider visit

Pharmacy

Return home

Sick child at home

Schedule appt

Check-in at front desk

Waiting room

Exam room

Pharmacy

Provider visit

Return home

# Aim Statement Template

**We aim to:**
(What are we trying to accomplish? Make the aim specific, measurable, achievable, and relevant. Use words like improve, reduce, and increase to identify the overall goal.)

_____

_____

**because:**
(Why is it important? Answer the "so what" question and describe the rationale and reasoning behind this improvement project.)

_____

_____

**for:**
(Who is your specific target population/customer?)

_____

**by:**
(What is the specific time frame, such as month/year, in which you intend to complete the improvement?)

_____

**We will achieve this by:**
(How will you carry out the work and reach your overall aim?)

_____

_____

**Our goals include:**
(What are your measurable goals? State them as numeric goals that are specific, measurable, achievable, and relevant. Think of the key changes you need to make.)

_____

# PLAN

## Objective for this cycle

What do you hope to learn? What ideas are you testing?

## Specific questions to address

1.
2.
3.

DO

## Carry out the change/test

Collect data and when completed, note observations, problems encountered, and special cirumstances.

## STUDY

### Analyze and summarize data (quantitative and qualitative)

What went well?

What could be improved?

## ACT

### Document what was learned and plan the next cycle

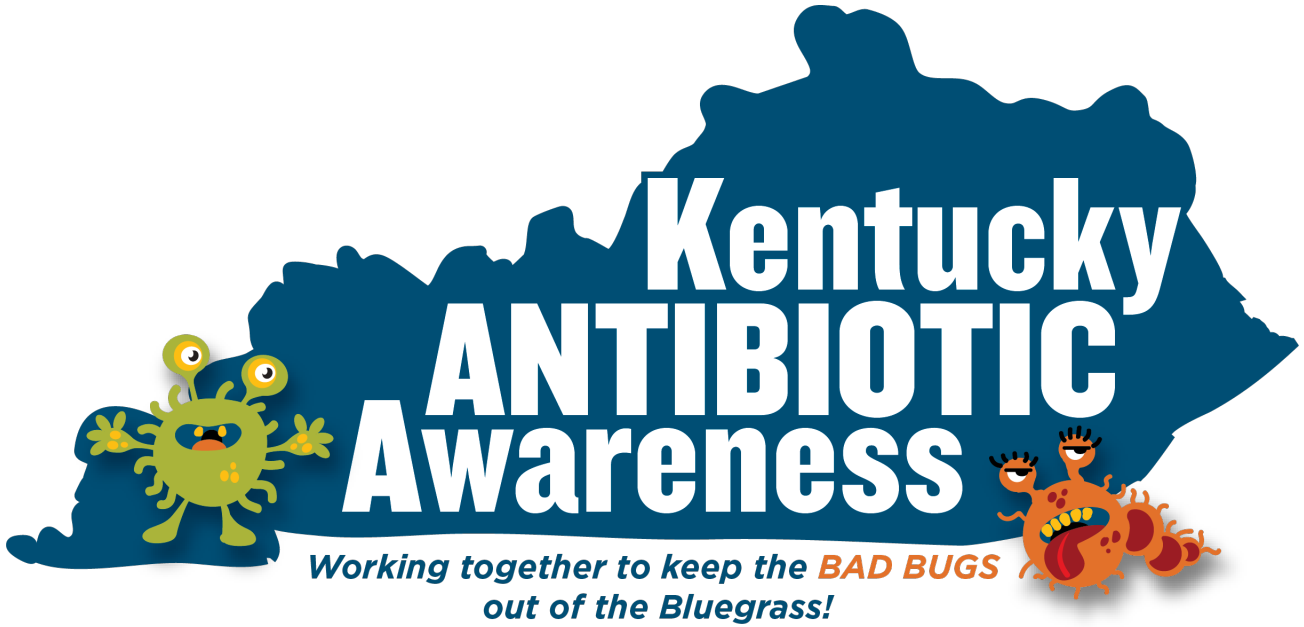
Adapt, adopt, or abandon the change?

What adaptations are needed?

Are you confident that you should expand the size or scope of the test?

# Kentucky Antibiotic Awareness

**Our Mission:** KAA is a state-wide campaign to encourage appropriate antibiotic use throughout Kentucky.




uofl.edu/ky-antibiotic-awareness

# QUESTIONS?