

# Antimicrobial Stewardship in Long-Term Care Facilities Maryland Train the Trainer Program

*A collaboration between*

*University of Maryland School of Pharmacy, Peter Lamy Center on Drug Therapy and Aging,  
and Maryland Department of Mental Health and Hygiene*

**Nicole J. Brandt, PharmD, MBA, BCGP, BCPP , FASCP**

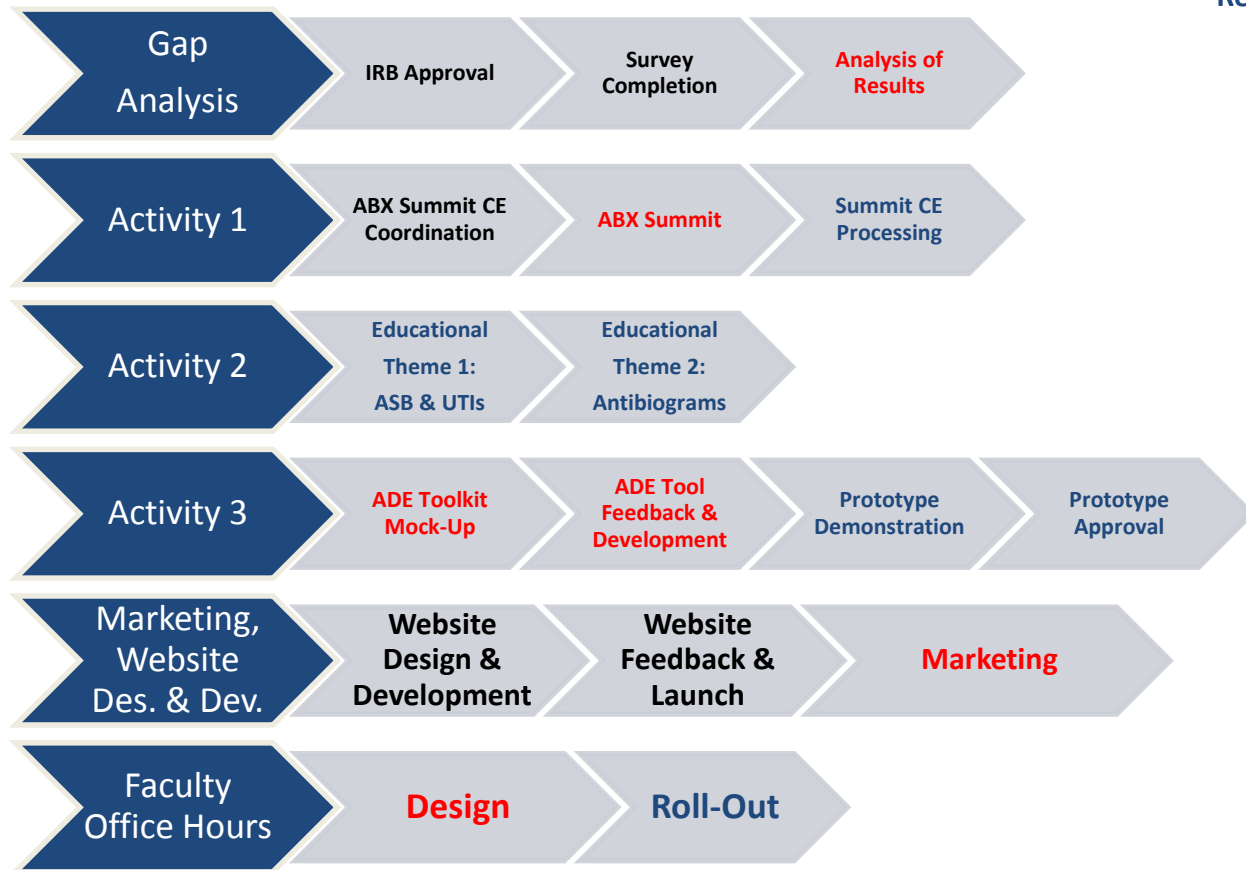
**Professor,** Geriatric Pharmacotherapy, Pharmacy Practice and Science University of Maryland School of  
Pharmacy

**Executive Director,** Peter Lamy Center Drug Therapy and Aging

Email: [nbrandt@rx.umaryland.edu](mailto:nbrandt@rx.umaryland.edu)

# Grant Activities

- In Progress
- Completed Activities
- Remaining Activities



# TEAM MEMBERS

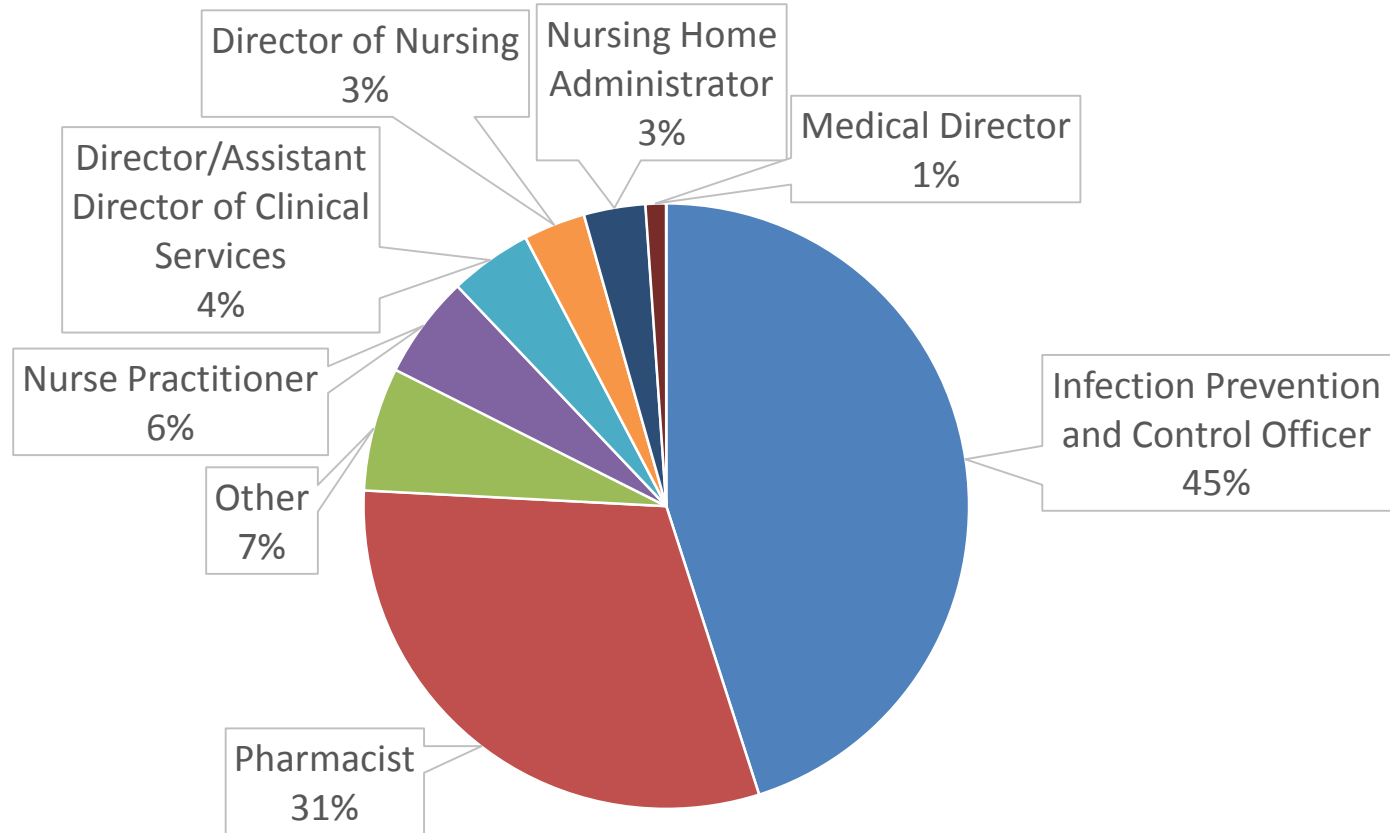
- **Special THANK you to:**
  - Maryland Department of Health
  - Centers for Disease Control
  - Health Quality Innovators
  - Think Research
  - University of Maryland Team &
  - All of You .....



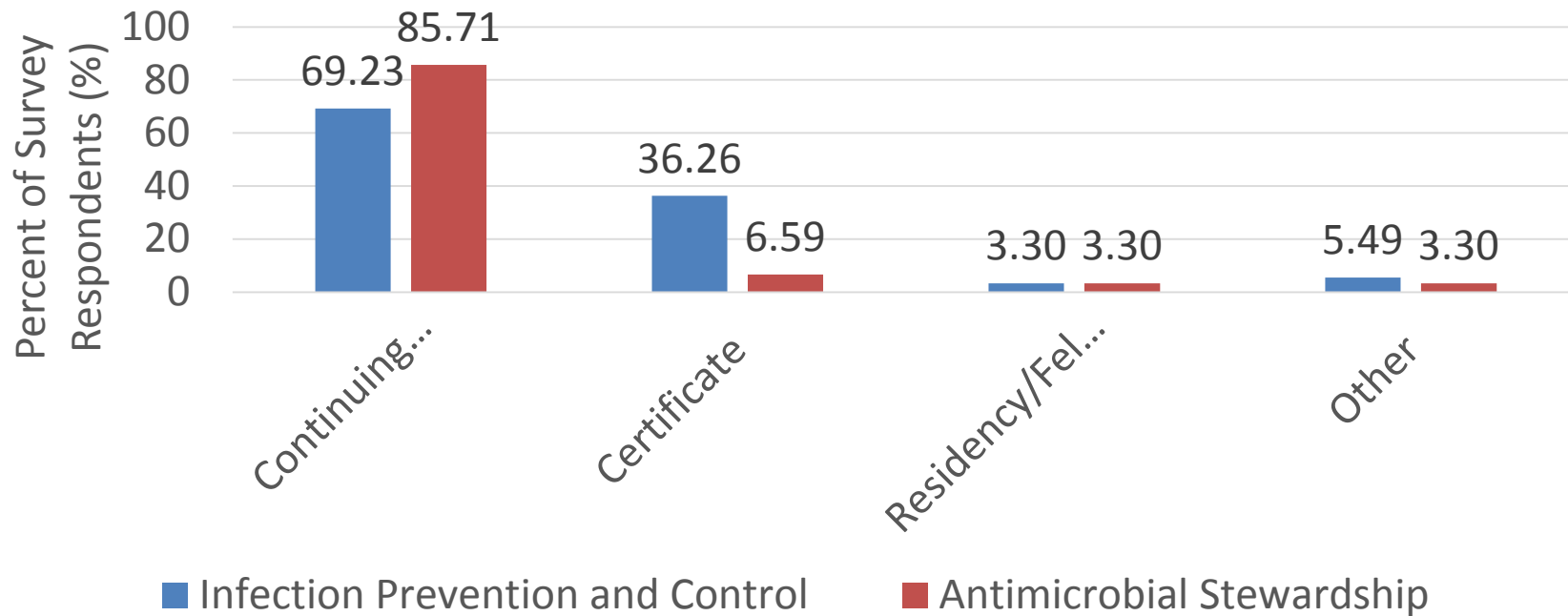
# Gap Analysis

**Overview provided by Rachyl  
Fornaro, PharmD Candidate 2019**

# Respondent Demographics



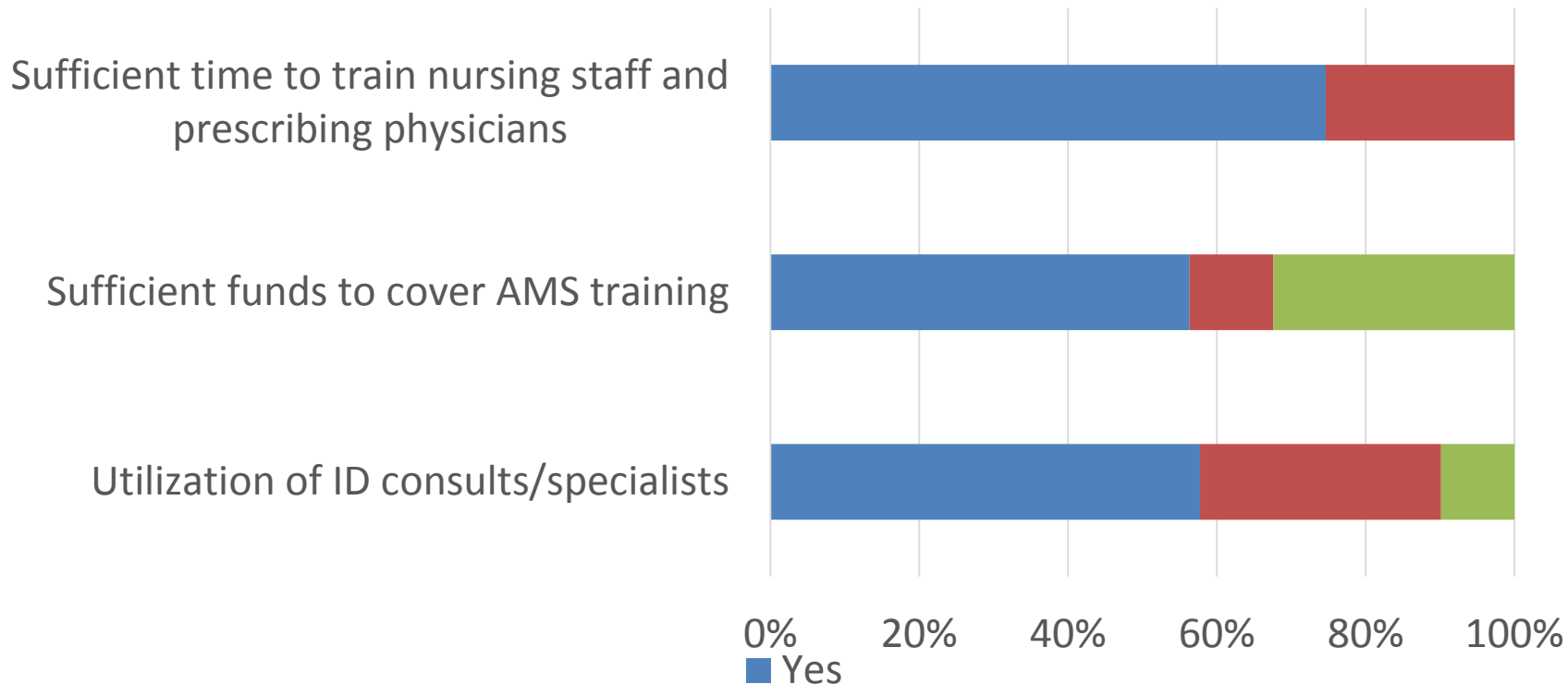
# Respondent Demographics: Infection Prevention and Control Training vs. Antimicrobial Stewardship



Ownership Type of Facility	Number of Respondents	Percentage (%)
For profit	52	59.77
Government	4	4.60
Non-profit	31	35.63
Number of Beds in Facility	Number of Respondents	Percentage (%)
0-99	30	34.48
100-199	46	52.87
≥200	11	12.6
Number of Staff in Facility	Number of Respondents	Percentage (%)
0-50	19	26.76
51-99	13	18.31
100-199	21	29.58
200-499	13	18.31
≥500	5	7.04
Nurse Staffing Hours/Resident/Day	Number of Respondents	Percentage (%)
0-3	28	39.44
4-7	19	26.76
>8	24	33.80

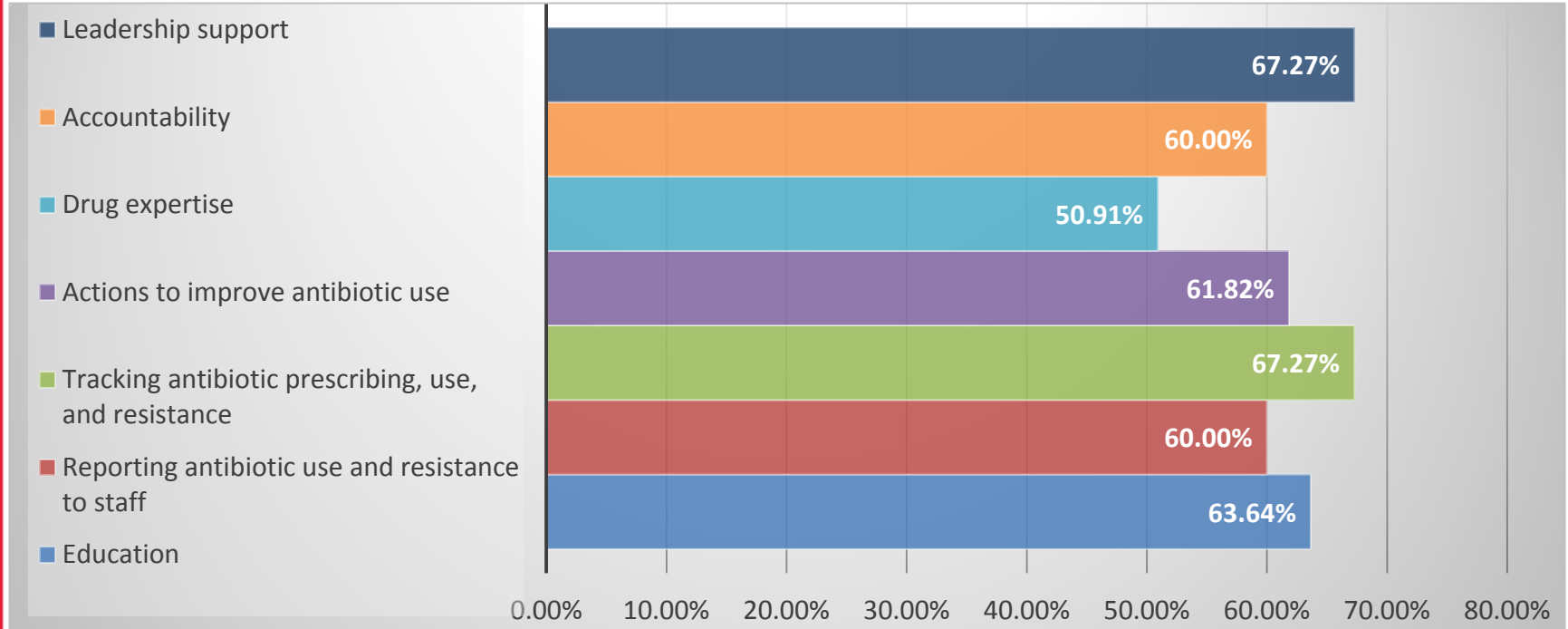
# Facility Demographics

# Current Practices: Potential Barriers to Implementing Antimicrobial Stewardship





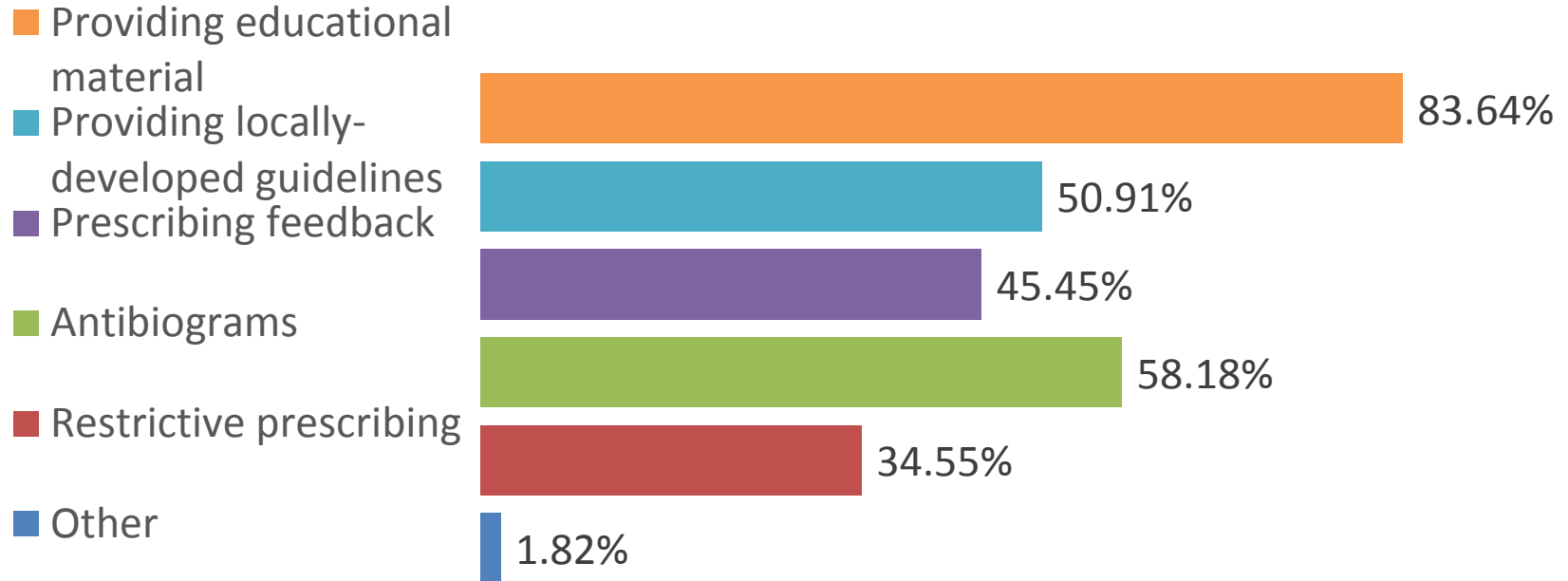
# Current Practices: Implementation of CDC Core Elements



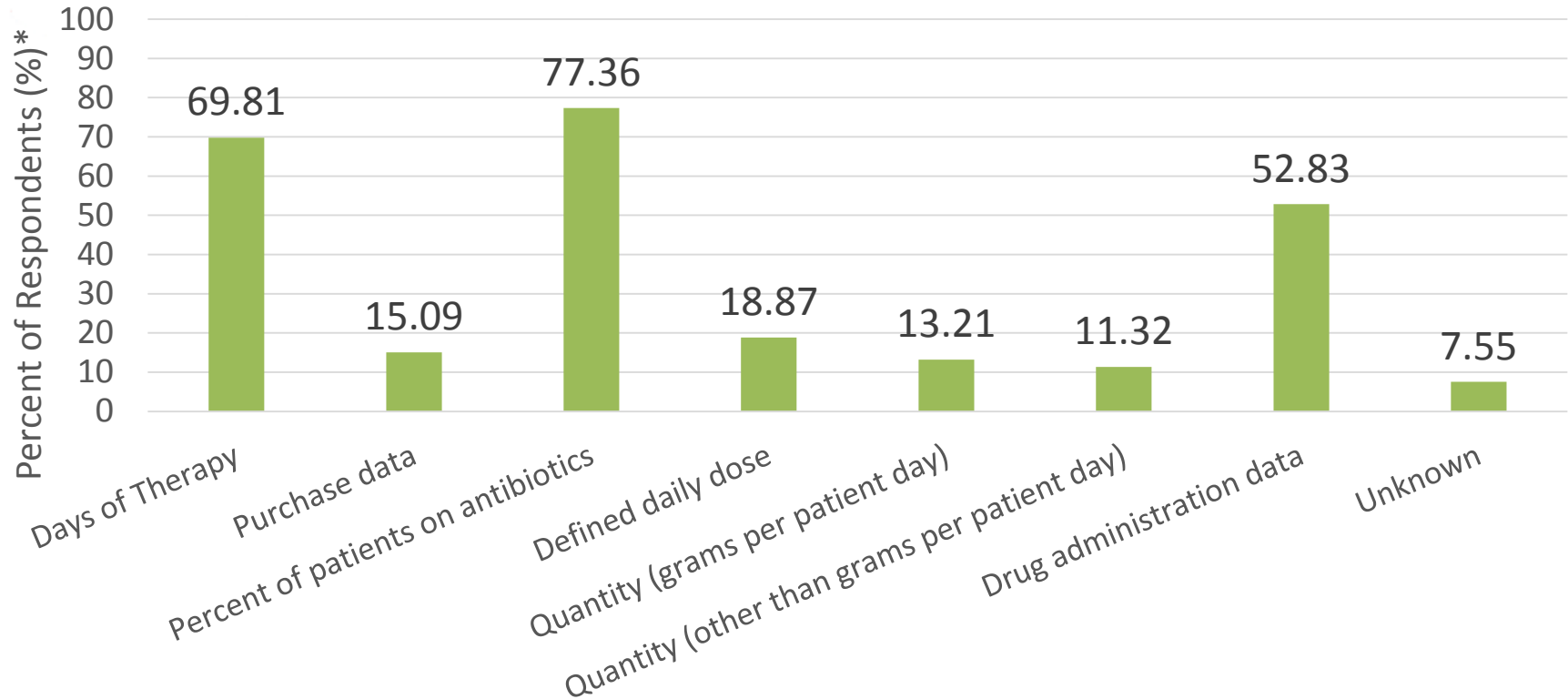
Source: [CDC Core Elements for Antimicrobial Stewardship in Nursing Homes](#).

Of note, five respondents (9.09%) indicated that their facility has not yet implemented any of the Core Elements. Ten respondents (18.18%) indicated that they did not know whether their facility has implemented the Core Elements.

## Current Practices: Implementation of Strategies to Improve Antimicrobial Use

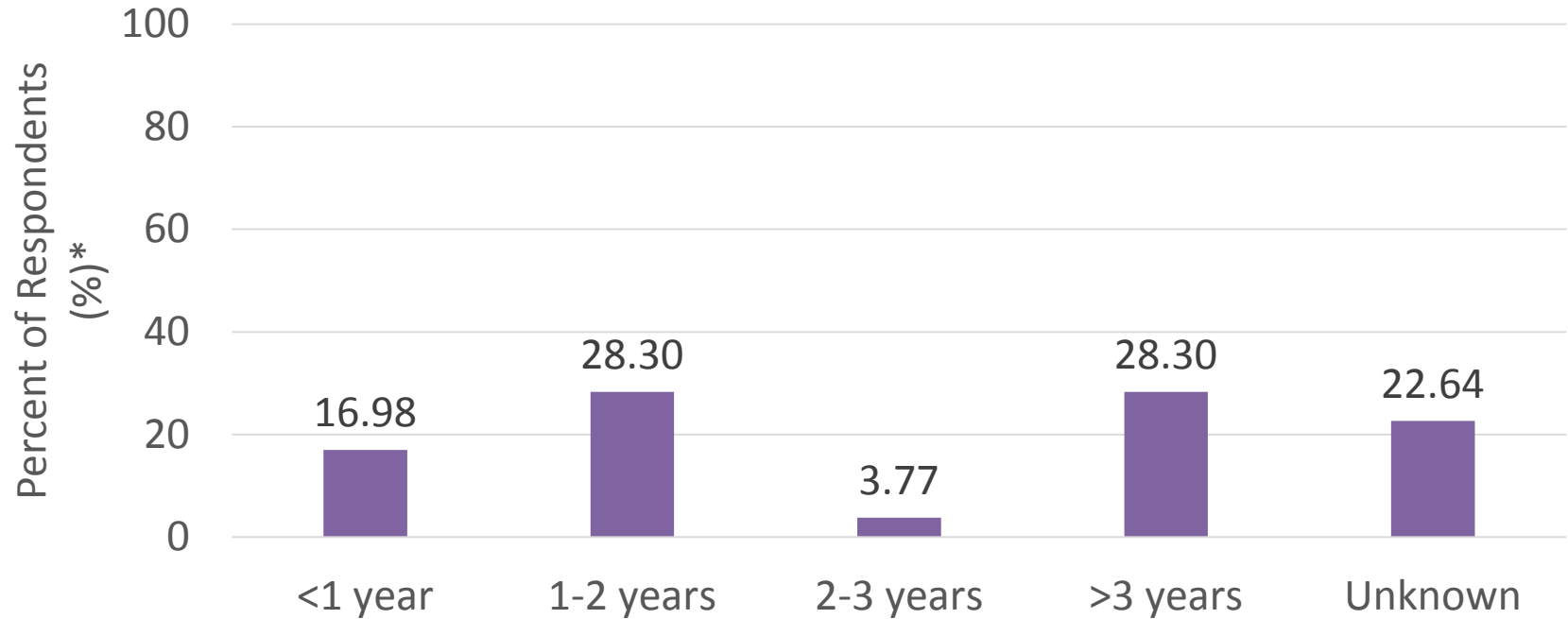


## Data Collection: Types Antibiotic Use Data



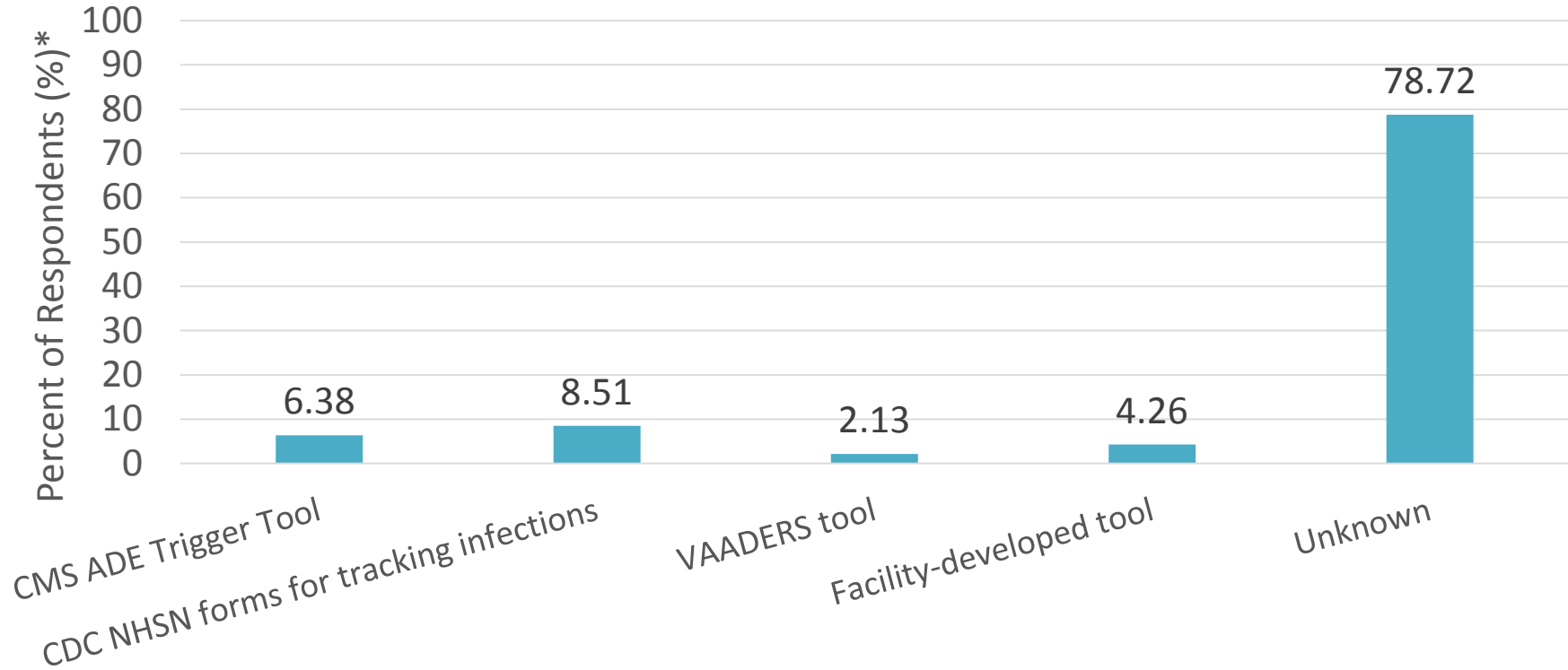
*\*53 respondents answered "yes" or "unknown" when asked whether their facility collects antibiotic use data. These individuals provided the above information.*

## Data Collection: Duration of Antibiotic Use Data Collection



*\*53 respondents answered “yes” or “unknown” when asked whether their facility collects antibiotic use data. These individuals provided the above information.*

# Data Collection: Adverse Event Data Collection Tools



CMS: Centers for Medicare and Medicaid; ADE: Adverse Drug Event; CDC: Centers for Disease Control and Prevention; NHSN: National Healthcare Safety Network; VAADERS: Veteran's Affairs Adverse Drug Event Reporting.

\*47 respondents answered "yes" or "unknown" when asked whether their facility collects data about adverse events. These individuals provided the above information.

# Summit Objectives

- ✓ Provide a general overview of the CDC Core Elements of Antibiotic Stewardship in Long-Term Care Facilities
- ✓ Introduce the Maryland Train the Trainer program – review goals and expected outcomes of program participation
- ✓ Understand challenges to effective stewardship in long-term care facilities (LTCFs) and describe potential solutions to overcome these challenges
- ✓ Discuss strategies for program implementation for an antimicrobial stewardship intervention
- ✓ Describe collaborative strategies for health care professionals to optimize antimicrobial stewardship outcomes in LTCFs

# Summit Agenda

**8:45 – 9:00:** Welcome & Introduction to the Antimicrobial Stewardship in LTCF Maryland Collaborative

- Nicole Brandt, PharmD, MBA

**9:00 – 10:00:** The CDC Core Elements for Antimicrobial Stewardship in LTCFs and Building the Stewardship Dream Team

- Lucy Wilson, MD, ScM; Nicole Brandt, PharmD, MBA; Sarah Kabbani, MD, MSc

**10:00 – 11:00:** Regulatory Issues and LTCF Survey Implications

- Bill Vaughan, RN; Jennifer Hardesty, PharmD

**11:00 – 12:15:** Clinical Overview: Microbiology, Antibiotograms and Anti-Infective Basics 101

- J. Kristie Johnson, PhD; Kim Claeys, PharmD; Emily Hall, PharmD

**12:15 – 1:00:** Lunch/ Break

**1:00 – 1:45:** Clinical Overview: Urinary Tract Infections and Asymptomatic Bacteriuria

- Surbhi Leekha, MBBS, MS

**1:45 – 2:30:** Adverse Drug Events and Trigger Tool Prototype Introduction

- Barbra Zarowitz, PharmD

**2:30 – 4:00:** Getting Started: Implementation Strategies Workshop

- Group Facilitators

**4:00:** Closing announcements and next steps

Materials will be posted on:  
<https://www.pharmacy.umaryland.edu/centers/lamy/education/antimicrobial-stewardship/>

# Next Steps

## 1) Network Engagement:

- ✓ Post Summit Implementation Activity
- ✓ Exchange of Resources such as AHRQ and policies
- ✓ ADE Prototype

## 2) Online Materials:

- ✓ Educational Recordings

## 3) Faculty Office Hours





# 12 Steps to QAPI



1. Define leadership responsibility & accountability
- 2. Develop deliberate approach to teamwork**
3. Conduct a self-evaluation
4. Identify organizational guiding principles
5. Develop a QAPI plan
6. Conduct QAPI awareness campaign
7. Develop strategy for collecting and using QAPI data
8. Identify gaps and opportunities
9. Prioritize and charter projects
10. Plan, conduct, and document PIPs
- 11. Identify the root cause of problems**
- 12. Take systematic actions**

# Take Home Activity & Points for Implementation

- A clear, measurable aim
- A measurement framework in support of reaching the aim
- A clear description of the
  - Ideas (content) and how these ideas are expected to impact the results (the causal pathway from changes to desired outcomes)
  - Execution strategy (what will be done to ensure reliable adoption of the content?)
- Dedication to rapid testing (PDSA cycles), prediction, and learning from tests

# Tracking: Monitoring Antibiotic Prescribing, Use, and Resistance

Does your facility monitor one or more outcomes of antibiotic use?

- Rates of *C. difficile* infection
- Rates of antibiotic resistant organisms
- Rates of adverse drug events due to antibiotics

Adverse events due to use of medications in skilled nursing homes accounted for nearly 40% of harms identified in a recent report.<sup>1</sup> Antibiotics are among the most frequently prescribed medications in LTCFs and have a high rate of adverse drug events.<sup>2,3</sup>

1. Office of the Inspector General. Adverse Events in Skilled Nursing Facilities: National Incidence Among Medicare Beneficiaries (OEI-06-11-00370), February 2014.  
2. Nicolle LE, Bentley D, Garibaldi R, et al. Antimicrobial use in long-term care facilities. Infect Control Hosp Epidemiol 2000; 21:537–45.  
3. Gurwitz JH, Field TS, Avorn J et al. Incidence and preventability of adverse drug events in nursing homes. Am J Med. 2000;109:87–94.

# Antibiotic-associated Adverse Drug Events

## **RATE**

20% of hospitalized adults have at least 1 ADE

## **RISK**

Every 10 days of antibiotic therapy confers a 3% increased risk of ADE

## **TYPE**

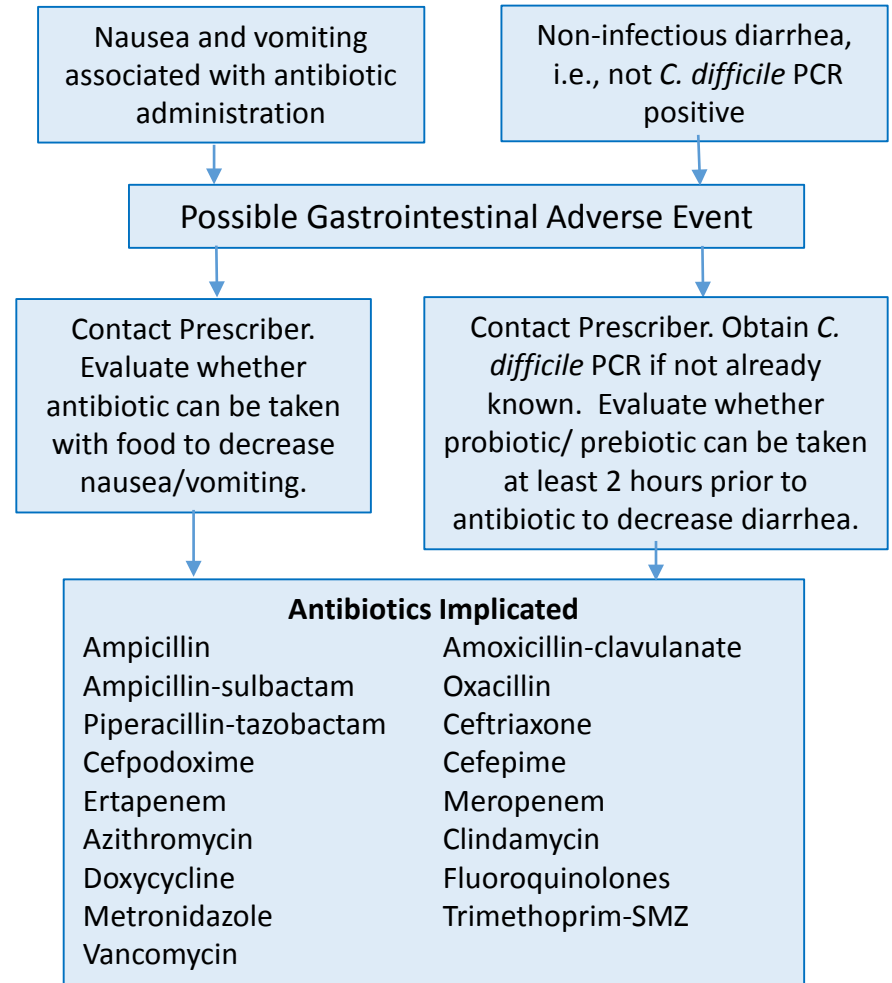
GI (42%), Renal (24%), Blood (15%), Liver (7%), Neurologic (7%)

# Sample Decision Algorithms for Antibiotic ADEs

This prototype remains in draft form, is subject to further development, and is being presented for educational purposes only. Healthcare practitioners should use their professional judgment in using the information provided. This is not a substitute for the care provided by licensed healthcare practitioners. We do not assume any responsibility for any aspect of healthcare administered with the aid of this tool, prototype, or information provided herein.

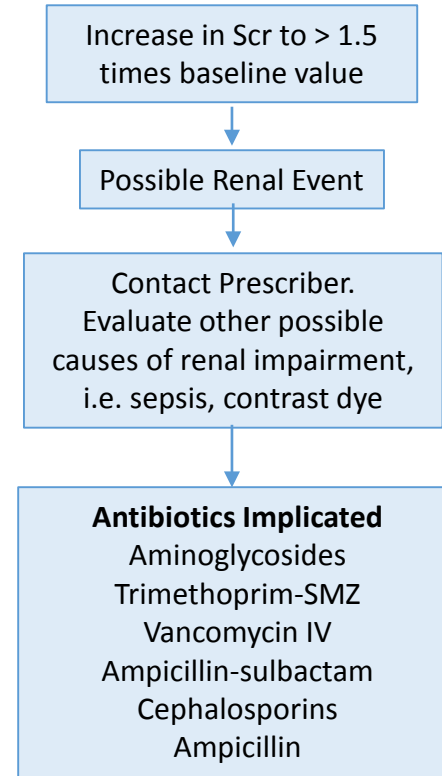
# Antibiotic ADE: GI Event

- Diarrhea: > 3 loose stools per day; absence of laxatives
- Nausea and/or vomiting; nausea and vomiting associated with antibiotic; no other explanation
- Prevalence: 42%
- Median time to occurrence: 5 days (2 – 9)



# ADE: Renal Event

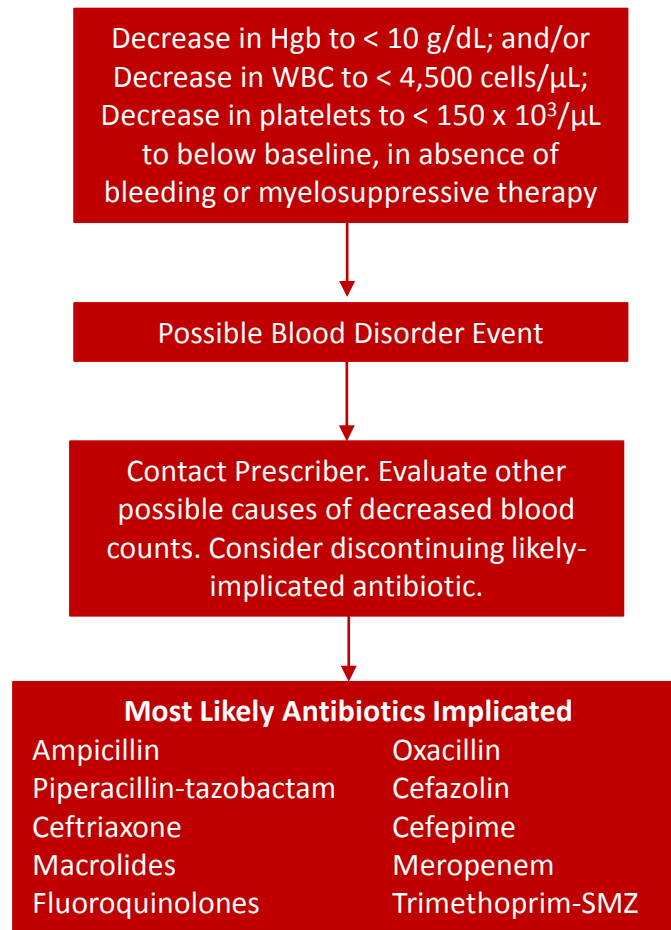
- Increase in Scr to  $> 1.5$  times baseline; absence of precipitating renal factors (i.e., sepsis, other nephrotoxic drugs)
- Prevalence: 24%
- Median time to occurrence: 5 days (2 – 10)



# ADE: Blood Disorder

- Anemia (hgb < 10 g/dL); Leukopenia (WBC < 4500 cells/ $\mu$ L); thrombocytopenia (platelets <  $150 \times 10^3/\mu$ L; no bleeding or myelosuppressive therapy)
- Prevalence: 15%
- Median time to occurrence: 12 days (6 – 24)

Tamma PD, et al. Association of adverse events with antibiotic use in hospitalized patients. JAMA Int Med 2017;177:1308-15.





# Longer Term Antibiotic ADEs – up to 90 days

## ***C. Difficile* Infection – Infectious Diarrhea**

- Prevalence:
  - 3.9 cases per 10,000 person days
  - 4% of study patients
- Median time to occurrence: 15 days (4 – 34)
- Implicated antibiotics:  
3<sup>rd</sup> generation cephalosporins, cefepime, and fluoroquinolones

## **Infection with Multi-drug Resistant Organisms (MDRO)**

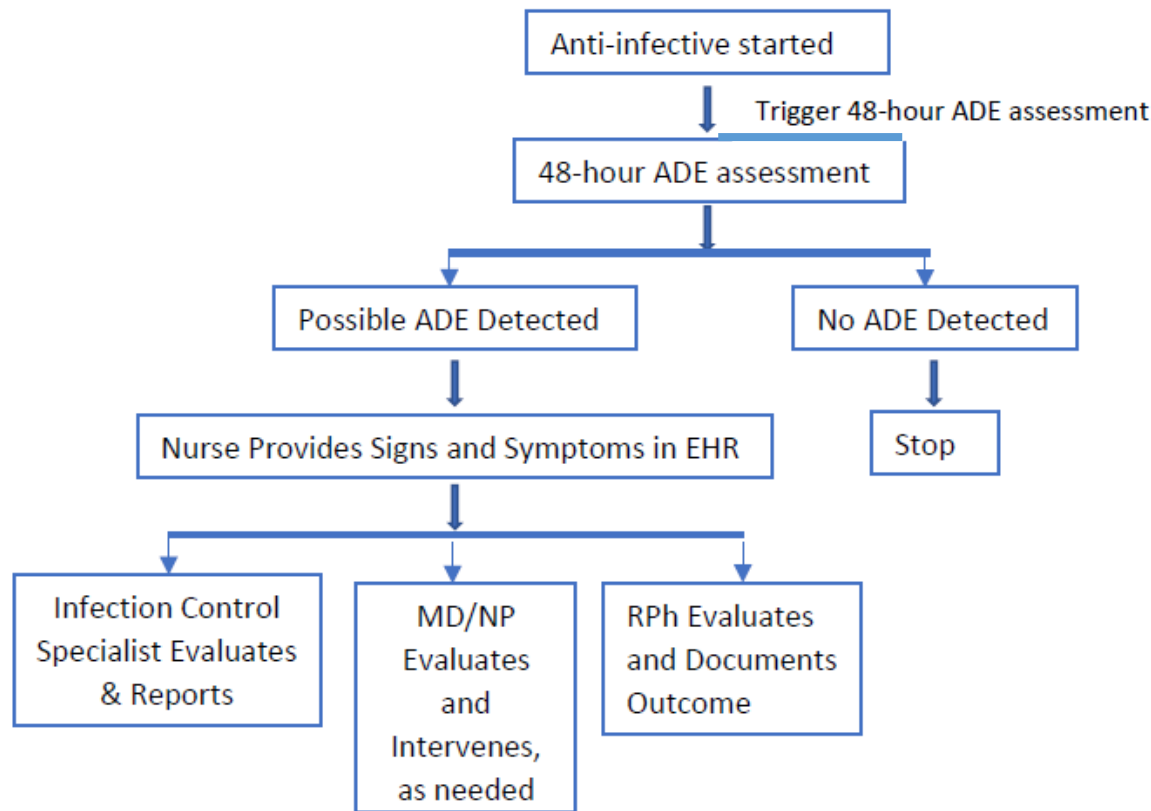
- Prevalence:
  - 6.1 cases per 10,000 person days
  - 6% of study patients
- Median time to occurrence: within 90 days
- Gm +ve resistance (4.8/10,000 person days): VRE (67%)
- Gm –ve resistance (1.7/10,000 person days): extended spectrum  $\beta$ -lactamase production

***C. difficile* and MDRO infections comprised 43% of all antibiotic-associated ADEs**

# Why Document Anti-infective ADEs?

- Protect the resident from future exposure to the ADE
- Communicate findings with other health care clinicians to avoid future occurrences
- Comply with standards of practice
- Adhere to regulatory and accreditation guidance
  - JCAHO
  - AMA Code of Ethics
  - CDC Core Principles of Antibiotic Stewardship
  - State Operations Manual: Appendix PP

# Proposed Workflow



Where: EHR=electronic health record

# Resources

<https://www.pharmacy.umaryland.edu/centers/lamy/education/antimicrobial-stewardship/resources/>



### Suspected UTI SBAR

Complete this form before contacting the resident's physician.

Date/Time \_\_\_\_\_

Nursing Home Name \_\_\_\_\_

Resident Name \_\_\_\_\_ Date of Birth \_\_\_\_\_

Physician/NP/PA \_\_\_\_\_ Phone \_\_\_\_\_

\_\_\_\_\_ Fax \_\_\_\_\_

Nurse \_\_\_\_\_ Facility Phone \_\_\_\_\_

Submitted by ☐ Phone ☐ Fax ☐ In Person ☐ Other \_\_\_\_\_

#### A Situation

I am contacting you about a suspected UTI for the above resident.

Vital Signs BP \_\_\_\_\_ / \_\_\_\_\_ HR \_\_\_\_\_ Resp. rate \_\_\_\_\_ Temp. \_\_\_\_\_

#### B Background

Active diagnoses or other symptoms (especially bladder/kidney/genitourinary conditions)

Specify \_\_\_\_\_

☐ No ☐ Yes The resident has an indwelling catheter

☐ No ☐ Yes Patient is on dialysis

☐ No ☐ Yes The resident is incontinent. If yes, new/worsening? ☐ No ☐ Yes

☐ No ☐ Yes Advance directives for limiting treatment related to antibiotics and/or hospitalizations

Specify \_\_\_\_\_

☐ No ☐ Yes Medication Allergies

Specify \_\_\_\_\_

☐ No ☐ Yes The resident is on Warfarin (Coumadin®)

## Infection Prevention, Control & Immunizations

**Infection Control:** This facility task must be used to investigate compliance at F880, F881, and F883. For the purpose of this task, "staff" includes employees, consultants, contractors, volunteers, and others who provide care and services to residents on behalf of the facility. The Infection Prevention and Control Program (IPCP) program must be facility-wide and include all departments and contracted services. If a specific care area concern is identified, it should be evaluated under the specific care area, such as for pressure ulcers, respiratory care, catheter care, and medication pass observations which include central lines, peripheral IV's, and oral/IM/respiratory medications.

### Coordination:

- ☐ One surveyor coordinates the facility task to review for:
  - The overall Infection Prevention and Control Program (IPCP);
  - The annual review of the IPCP policies and practices;
  - The review of the surveillance and antibiotic stewardship programs; and
  - Tracking influenza/pneumococcal immunization of residents.
- ☐ Team assignments must be made to include the review of:
  - Laundry services;
  - A resident on transmission-based precautions, if any;
  - Five sampled residents for influenza/pneumococcal immunizations; and
  - Other care-specific observations if concerns are identified.
- ☐ Every surveyor assesses IPCP compliance throughout the survey and communicates any concerns to the team.

### Hand Hygiene:

- ☐ Staff implement standard precautions (e.g., hand hygiene and the appropriate use of personal protective equipment (PPE)).
- ☐ Appropriate hand hygiene practices are followed.
- ☐ Alcohol-based hand rub (ABHR) is readily accessible and placed in appropriate locations. These may include:
  - Entrances to resident rooms;
  - At the bedside (as appropriate for resident population);
  - In individual pocket-sized containers by healthcare personnel;
  - Staff work stations; and
  - Other convenient locations.
- ☐ Staff wash hands with soap and water when their hands are visibly soiled (e.g., blood, body fluids), or after caring for a resident with known or suspected C. difficile infection (CDI) or norovirus during an outbreak, or if endemic rates of CDI are high. ABHR is not appropriate to use under these circumstances.
- ☐ Staff perform hand hygiene (even if gloves are used) in the following situations:
  - Before and after contact with the resident;

THANK YOU!

IF INTERESTED IN JOINING

Email: [nbrandt@rx.umaryland.edu](mailto:nbrandt@rx.umaryland.edu) or the  
[lamycenter@rx.umaryland.edu](mailto:lamycenter@rx.umaryland.edu)

# AHRQ Safety Program for Improving Antibiotic Use

- Collaborative intervention: JHH, AHRQ, NORC
- Overarching goal
  - To improve antibiotic prescribing practices by promoting communication and culture change and to assist facilities in implementing effective stewardship programs.
- What does the program address?
  - **Technical aspects**
    - Best practice in antibiotic prescribing for common infectious diseases syndromes in long term care (UTIs, respiratory disease, skin/soft tissue infections)
  - **Adaptive aspects**
    - Safety culture, behavior change, teamwork and communication



# Participating in the AHRQ Safety Program

- One-year program begins in December 2018
- **FREE TO PARTICIPATE**
- Participation **satisfies CMS requirements**
- Facilities with and without existing stewardship programs are welcome to join
- Continuing medical education (CME) credits and continuing education units (CEU) are free and available for physicians and nurses



# To Learn More and Enroll

- Visit [our Web site:](https://safetyprogram4antibioticstewardship.org/)
  - <https://safetyprogram4antibioticstewardship.org/>
- Complete the online application on the Web site
- Email [antibioticsafety@norc.org](mailto:antibioticsafety@norc.org) with any questions

