



AHRQ Safety Program for Improving Antibiotic Use

Development and Implementation of Three National Antibiotic Stewardship (AS) Interventions and Toolkits

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Disclosures

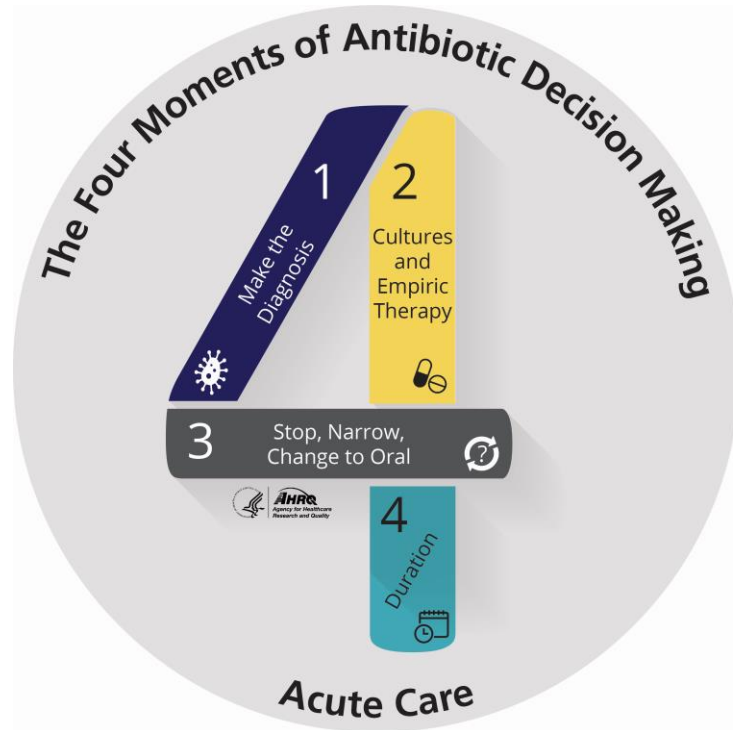
- This work was funded and guided by the Agency for Healthcare Research and Quality (HHSP233201500020I/HHSP23337003T).
- The findings in this presentation are those of the authors who are responsible for its content and do not necessarily represent the views of AHRQ.
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AHRQ Safety Program for Improving Antibiotic Use

- Led by Johns Hopkins Medicine and NORC at the University of Chicago, funded and guided by AHRQ
- Goals: (1) develop and enhance AS infrastructure and (2) train frontline clinicians to be “self stewards” across the US healthcare continuum
 - Acute care hospitals (2018)
 - Long-term care facilities (2019)
 - Ambulatory care practices (2020)

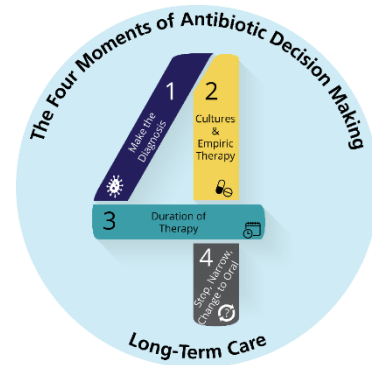
} Goal recruitment 250-500 sites for each
- Program designed based on previous AS work plus experience with interventions to reduce CLABSI, CAUTI, and VAP using the Comprehensive Unit-Based Safety Program (CUSP)
 - CUSP combines improvements in patient safety culture, teamwork, and communication together with a set of evidence-based practices

The Four Moments of Antibiotic Decision Making



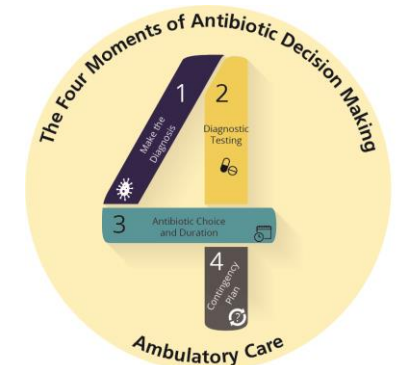
1. Does my patient have an infection that requires antibiotics?
2. Have I ordered appropriate cultures before starting antibiotics? What empiric therapy should I initiate?
3. A day or more has passed. Can I stop antibiotics? Can I narrow therapy or change from IV to oral therapy?
4. What duration of antibiotic therapy is needed for my patient's diagnosis?

Long-Term Care



1. Does the resident have symptoms that suggest an infection? Can we try symptomatic treatment and active monitoring?
2. What type of infection is it? Have we collected appropriate cultures and diagnostic tests before starting antibiotics? What empiric therapy should we initiate?
3. What duration of antibiotic therapy is needed for the resident's diagnosis?
4. It's been 2-3 days since we started antibiotics. Re-evaluate the resident and review results of diagnostic tests. Can we stop antibiotics? Can we narrow therapy?

Ambulatory Care



1. Does my patient have an infection that requires antibiotics?
2. Do I need to order any diagnostic tests?
3. If antibiotics are indicated, what is the narrowest, safest, and shortest regimen I can prescribe?
4. Does my patient understand what to expect and the follow-up plan?

Domains of the Intervention

Development of AS Programs/Activities

Successful stewardship in all settings requires:

- A defined leadership structure
- Interventions to improve antibiotic use
- Metrics to track progress and guide activities

Behavioral Issues in Antibiotic Prescribing

- Need to address behavioral drivers of antibiotic decision making among clinicians, patients, and family
- Need to improve teamwork and communication

Best Practice for Common ID Syndromes

(e.g., respiratory tract infections, pneumonia, UTI, cellulitis, abdominal infection)

- Clinicians like to learn by syndrome, not antibiotic
- Materials organized according to the Four Moments Framework

Specific Elements of the Intervention

- **1-3 webinars per month over 1 year each delivered 3 times (time zones) covering domains**
- **Implementation advisors (one/site)**
 - Provide expertise in implementation of QI interventions
- **Office hours**
 - Provide access to ID/AS expertise
- **One page documents on ID syndromes for local guideline development**
 - Local guidelines are essential to gain consensus and standardize recommendations
- **Centralized data submission with quarterly feedback reports to sites**
 - Track progress and compare to peer institutions
- **Specific tasks for ASPs and front-line providers**
 - Motivate people to stay engaged
 - Acute care: daily time out and monthly team antibiotic review form
 - LTC: monthly team antibiotic review form, specific instructions about activities to do during each month
 - Ambulatory: guides with ~5 questions on how the practice will reach consensus for use at monthly practice meetings

Cholecystitis and Cholangitis

Diagnosis

- Cholangitis: right upper quadrant (RUQ) pain (80%), fever (80%), jaundice (50%)
 - In the absence of signs and symptoms of infection, patients with jaundice or non-obstructing gallstones do not require antibiotics
- Acute cholecystitis: RUQ pain, fever, nausea/vomiting, usually in the presence of gallstones
 - In the absence of signs and symptoms of infection, patients with biliary colic (i.e., RUQ pain lasting 1–3 hours that resolves) do not require antibiotics
- Microbiology: *Escherichia coli*, *Klebsiella pneumoniae*, *Enterococcus* species
- Blood cultures should be obtained in all patients with cholangitis
- Blood cultures should be obtained in patients with cholecystitis that have concomitant sepsis
- Bile cultures should be obtained if the biliary tree is accessed via endoscopic retrograde cholangiopancreatography (ERCP) or percutaneous drainage
- RUQ ultrasound is the initial imaging modality of choice

Treatment

• Nonseverely ill patients with community-acquired infections

- Coverage for *Enterobacteriaceae*
- [Place local recommendations here]
- [Place local recommendations here]

Note: Staphylococcus aureus, Pseudomonas aeruginosa, and anaerobes are generally not biliary pathogens and do not require empiric coverage in nonseverely ill patients with community-acquired infections; Enterococcus species grow in the biliary tree but are of low virulence and do not require empiric coverage in this population.

• Patients with severe infection, hospital-acquired infection, or prior extensive biliary tract manipulation

- Broader coverage for *Enterobacteriaceae*, *P. aeruginosa*, and anaerobes; consider coverage for *Enterococcus* species
- Review any prior biliary cultures to inform empiric therapy
- [Place local recommendations here]
- [Place local recommendations here]

• Narrowing and oral therapy

- Narrow based on available culture data
- Consider transition to oral therapy when clinical it and source control are achieved
- Oral therapy can be used for bacteremia if agent chosen (e.g., trimethoprim-sulfamethoxazole, fluc)
- Oral options: [Place local recommendations here]

Duration

- Acute cholangitis and source control
- Acute cholangitis and source control with concomitant bacteremia
- Uncomplicated acute cholecystitis, medical management
- Uncomplicated acute cholecystitis, surgical management
- Complicated acute cholecystitis (e.g., perforation, fistula), surgical management for source control

*Recommendations are for patients without significant immunocompromise or complex infectious diseases; should be considered for cases falling outside of the scope of these



Participation

- **Acute Care (2018)**
 - 402 hospitals (92%) completed the program
 - 49 states represented (except Montana)
 - Majority community hospitals (42%) and critical access hospitals (21%)
- **Long-term Care (2019)**
 - 439 (82%) facilities completed the program
 - 46 states represented (except Oregon, Utah, Louisiana, Vermont)
 - Majority in rural areas and non hospital-based with 56% owned by a larger system and 30% independent
- **Ambulatory Care (2020)**
 - 389 (83%) practices completed the program
 - 43 states represented (except Nevada, Utah, Mississippi, Alabama, South Carolina, West Virginia, Wisconsin)
 - Majority primary care (42%) and urgent care (41%)

Results

- **Acute Care**

- Significant reduction in antibiotic days/1000 patient days (900.7 vs 870.4, $p < 0.01$)
- Significant reduction in hospital onset CDI cases/10,000 patient days (6.3 vs 5.1 $p = 0.03$)

- **Long-term Care**

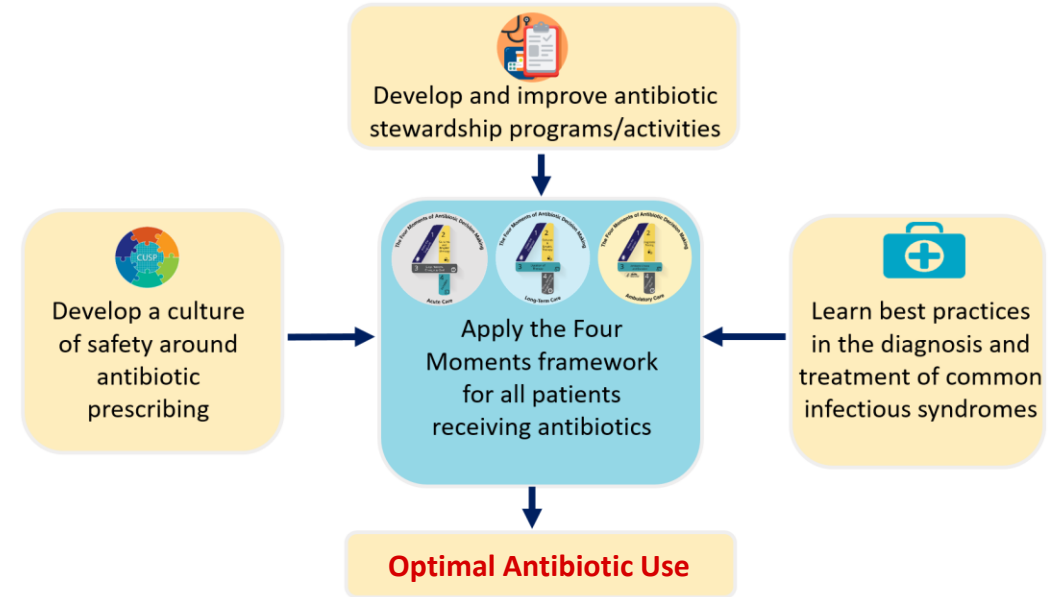
- Significant reduction in antibiotic starts/1000 resident days (7.89 vs 7.48, $p = 0.02$)
- Significant reduction in urine cultures collected/1000 resident days (3.01 vs 2.63, $p < 0,001$)
- No change in CDI cases

- **Ambulatory Care**

- Significant reduction in total antibiotic prescribing per visit (18% vs 9%)
- Significant reduction in antibiotic prescribing per ARI visit (39% vs 25%)

Conclusions

- Implementation of the AHRQ Safety Program for Improving Antibiotic Use expanded AS capacity and led to reductions in antibiotic use in acute care, LTC and ambulatory care settings across the US
- Improving antibiotic use is patient safety issue because antibiotic use can cause harm and inappropriate use increases this harm
- Addressing the behavioral issues around prescribing should receive the same attention as addressing knowledge gaps
- There is a critical need for approaches to ensure that robust AS activities continue to be implemented and maintained across the healthcare spectrum



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Home Antibiotic Stewardship Toolkits

Antibiotic Stewardship Toolkits

The AHRQ Safety Program for Improving Antibiotic Use aims to improve antibiotic use in acute, long-term, and ambulatory care settings by enhancing antibiotic stewardship programmatic activities and engaging frontline providers to incorporate stewardship into routine clinical practice using the Four Moments of Antibiotic Decision Making.

In each of the toolkits below, you will find materials to develop and improve your antibiotic stewardship program, engage frontline staff in improving prescribing behavior, and diagnose and treat hospitalized patients with common infectious syndromes.

Select the Toolkit for your clinical setting below:

- Acute Care Hospital Toolkit
- Long-Term Care Toolkit
- Ambulatory Care Toolkit

Acknowledgements

- Pranita Tamma (JHM, co-lead)
- Kathleen Speck (JHM)
- Prashila Dullabh (NORC)
- Roy Ahn (NORC)
- Melissa Miller (AHRQ)
- Jim Cleeman (AHRQ)
- Morgan Katz (JHM, LTC)
- Robin Jump (Case Western, LTC)
- Theresa Rowe (Northwestern, LTC)
- Sara Keller (JHM, ambulatory)
- Tania Caballero (JHM, ambulatory)
- Jeffrey Linder (Northwestern, ambulatory)