

Emergency Department Antibiotic Stewardship Collaborative Kick-Off March 12, 2018

Healthcare-Associated Infections (HAI) Program
Center for Health Care Quality
California Department of Public Health



Agenda

12-12:10PM	Introductions and Roll Call	Group
12:10-12:20PM	Collaborative Background and Overview	Erin Epson
12:20-12:30PM	ED Survey Results Review	Erin Garcia
12:30-1:15PM	Antibiotic Stewardship in the Emergency Department	Larissa May
1:15-1:30PM	Collaborative Next Steps, Q&A	Erin Epson, Larissa May

INTRODUCTIONS

Public Health - Academic Partnership to Improve Antibiotic Prescribing

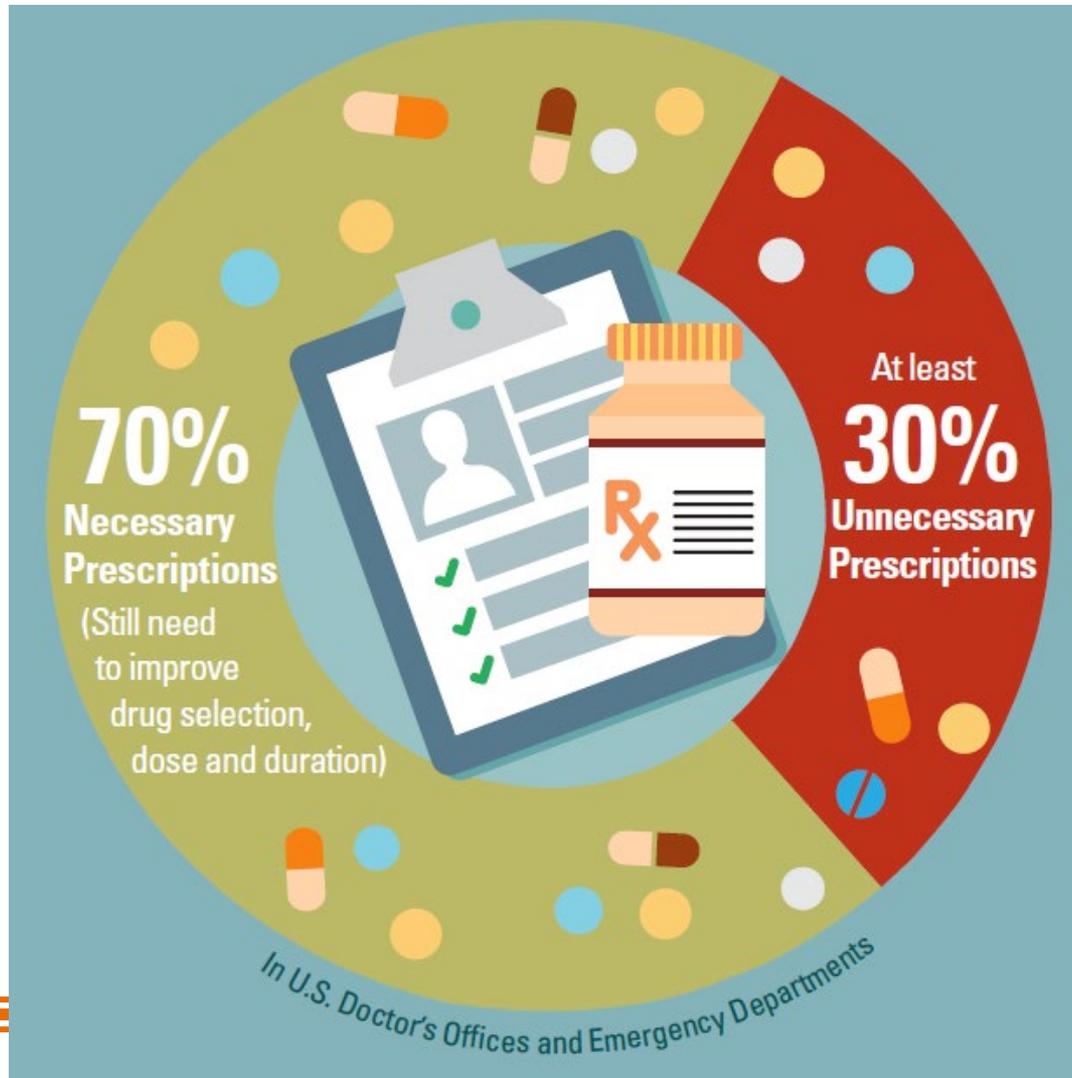
- Erin Epton, MD; Erin Garcia, MPH, CPH – Healthcare-Associated Infections (HAI) Program, California Department of Public Health
- Dawn Terashita, MD; Kelsey OYong, MPH – Los Angeles County Department of Public Health
- Larissa May, MD, MSPH, Director of Emergency Department Antibiotic Stewardship, University of California at Davis

ED Collaborative Participants



COLLABORATIVE BACKGROUND AND OVERVIEW

Antibiotic Prescribing in Outpatient Settings



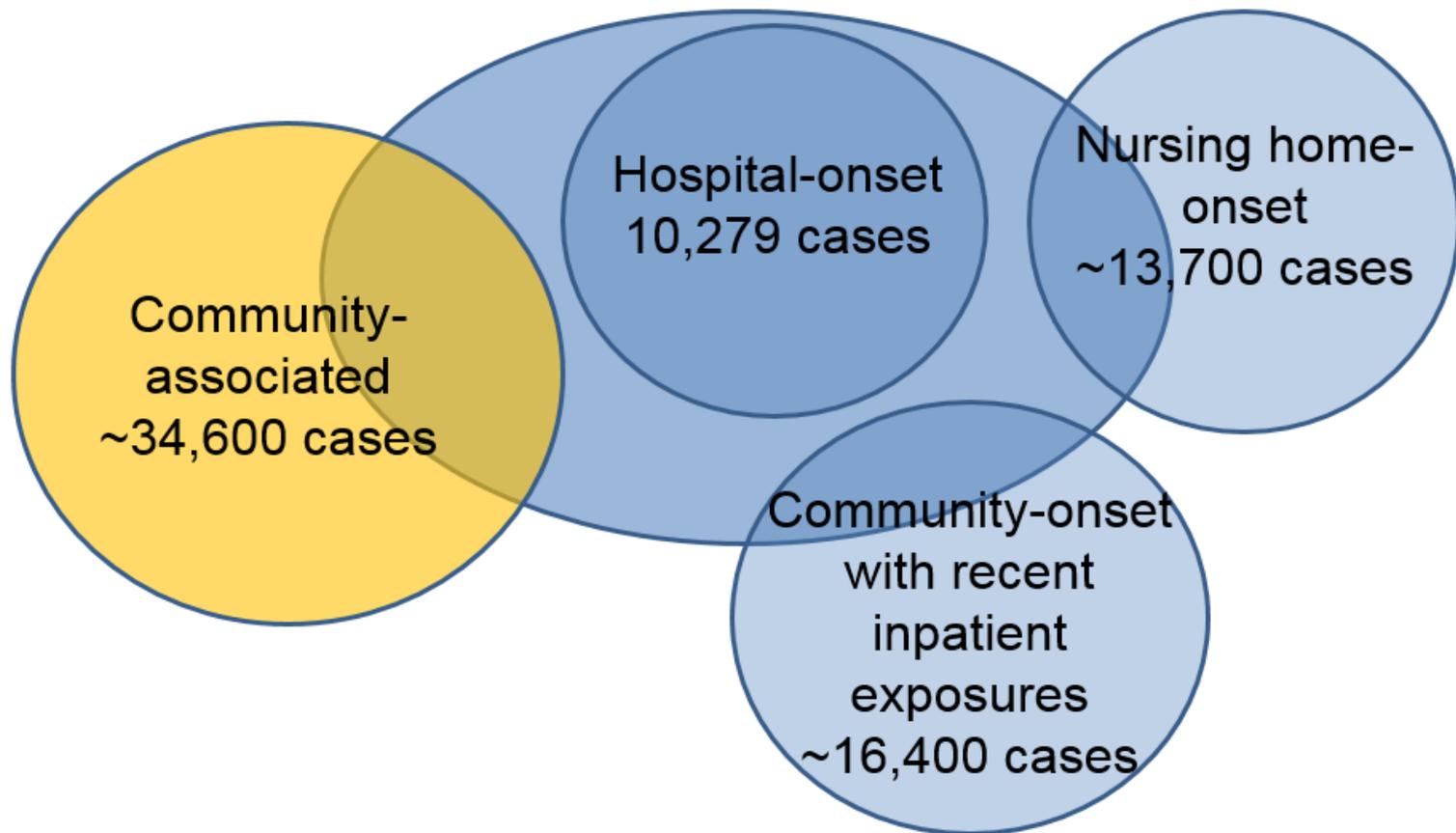
- At least 30% of antibiotic courses are unnecessary
- Most unnecessary antibiotic use for acute respiratory conditions, e.g., acute bronchitis

Consequences of Inappropriate Antibiotic Prescribing

- Leading cause of adverse drug event (ADE)-related ED visits
- Driver of antibiotic resistance and *Clostridium difficile* infections (CDI)
- Community-associated CDI
 - 64% recently exposed to antibiotics, most commonly for upper respiratory tract infection(35%)
 - Reducing outpatient antibiotic prescribing among adults by 10% estimated to result in 17% reduction in CA-CDI rates

Estimated CDI Burden Across the Continuum of Care, California, 2016

Sources: National Healthcare Safety Network (NHSN) and CDC Emerging Infections Program (EIP)



ED Antibiotic Stewardship Collaborative

Mission

The California Emergency Department Antibiotic Stewardship Collaborative aims to engage emergency department (ED) staff in efforts to improve antibiotic prescribing by facilitating shared expertise and best practices for implementing stewardship interventions in ED settings.

ED Collaborative Objectives

- Engage ED staff to view antibiotic prescribing as a quality and patient safety issue
- Share ED-specific antibiotic prescribing and stewardship tools and best practices
- Provide a forum to exchange practical strategies for overcoming barriers to stewardship interventions in ED settings
- Reduce inappropriate prescribing in ED settings

Collaborative Structure

- Pre-collaborative ED survey
- Webinars and regional in-person meetings
- ED provider surveys, development of action plans for each participating ED
- ED one-on-one calls
- Dissemination of guidance and tools
- Opportunities to discuss and share best practices

ED SURVEY RESULTS

ED Survey Overview

- Pre-collaborative survey
- 20 questions regarding
 - CDC Core Elements:
Commitment, Action, Tracking and Reporting, Education and Expertise
 - ED prescribing practices and challenges
- Establish baseline, guide discussion topics, identify resources/tools for sharing, and assess progress throughout the year

CDC Core Elements for 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

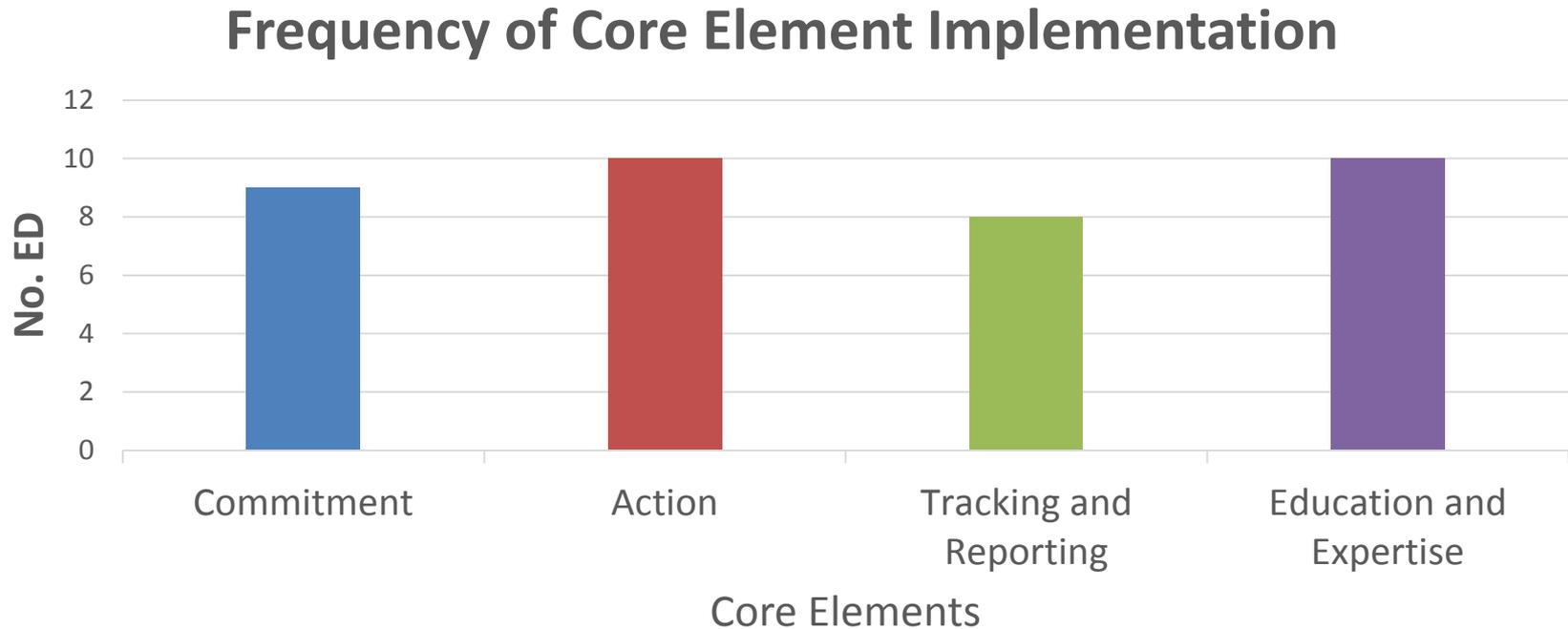
Monitor antibiotic prescribing practices and offer regular feedback to clinicians, or have clinicians assess their own antibiotic prescribing practices themselves.



Education and expertise

Provide educational resources to clinicians and patients on antibiotic prescribing, and ensure access to needed expertise on optimizing antibiotic prescribing.

Core Elements



- Number of ED with all four elements: 7

Commitment

ED can demonstrate dedication to and accountability for optimizing antibiotic prescribing and antibiotic patient safety

Strategy	No. ED (%)
Identify a single leader to direct antibiotic stewardship activities within the ED	7 (70)
Include antibiotic stewardship-related duties in position descriptions or job evaluation criteria	4 (40)

- Number of ED involved with inpatient ASP: 2 (20%)

Action

ED implemented at least one policy or procedure to improve antibiotic prescribing

Strategy	No. ED (%)
Provide communications skills training for clinicians	3 (30)
Use formulary restriction / preauthorization for any antibiotic	4 (40)
Require explicit written justification in the medical record for non-recommended antibiotic prescribing	0 (0)
Provide clinical decision support (e.g., pocket cards, order sets, guidelines)	7 (70)
Use call centers, nurse hotlines, or pharmacist consultations as triage systems to prevent unnecessary visits	1 (10)
Provide education to ED and urgent care patients about the use and duration of antibiotic prescriptions prior to ED discharge	6 (60)

Action – Rapid Diagnostic Testing

Rapid Diagnostic Test Availability

Test Type	No. ED (%)
Procalcitonin	5 (50)
Strep	8 (80)
Respiratory viral panel	6 (60)
Influenza	7 (70)

Tracking and Reporting

ED monitors at least one aspect of antibiotic prescribing

Strategy	No. ED (%)
Information tracked:	
Percentage of all visits leading to antibiotic prescriptions	0 (0)
Complication of antibiotic use and antibiotic resistance trends among common bacterial pathogens	0 (0)
ED-specific antibiogram	3 (30)
Antibiotic prescribing for one or more high-priority conditions (e.g., acute bronchitis, UTI)	5 (50)

Tracking and Reporting

ED monitors at least one aspect of antibiotic prescribing

Strategy	No. ED (%)
Information reported via:	
Report on any tracked measures to quality committee(s) (e.g., percentage of all visits leading to antibiotic prescriptions)	5 (50)
Assess and share performance on quality and process measures and established reduction goals addressing appropriate antibiotic prescribing from health care plans and payers (e.g., obtaining cultures before antibiotics)	2 (20)

Education and Expertise

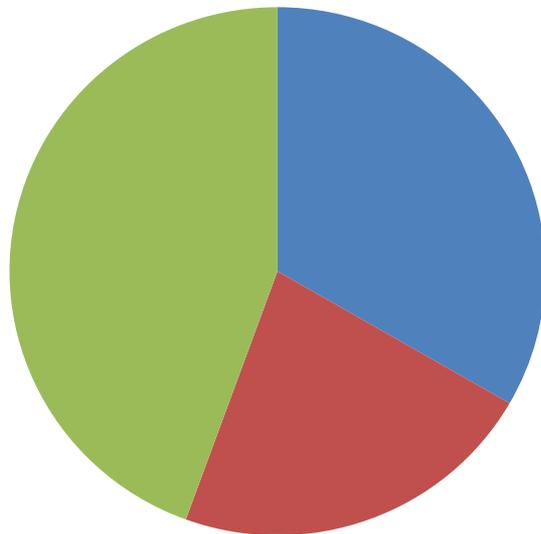
ED provides resources to clinicians and patients on evidence-based antibiotic prescribing

Strategy	No. ED (%)
Provide face-to-face educational training	5 (50)
Provide continuing education activities for clinicians	3 (30)
Ensure timely access to persons with expertise (e.g., inpatient ASP, ED pharmacist)	8 (80)
Provide guidance for using antibiograms to direct antibiotic prescribing	8 (80)

ED Prescribing Practices

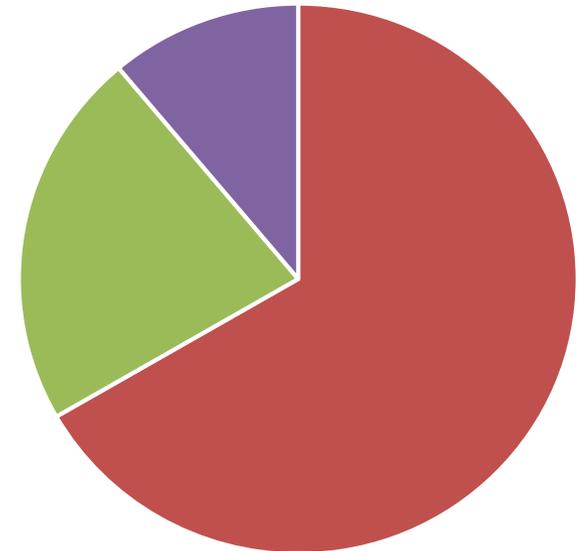
Perceived Frequency of ED Clinicians Prescribing Antibiotics for Specific Conditions

Acute Bronchitis



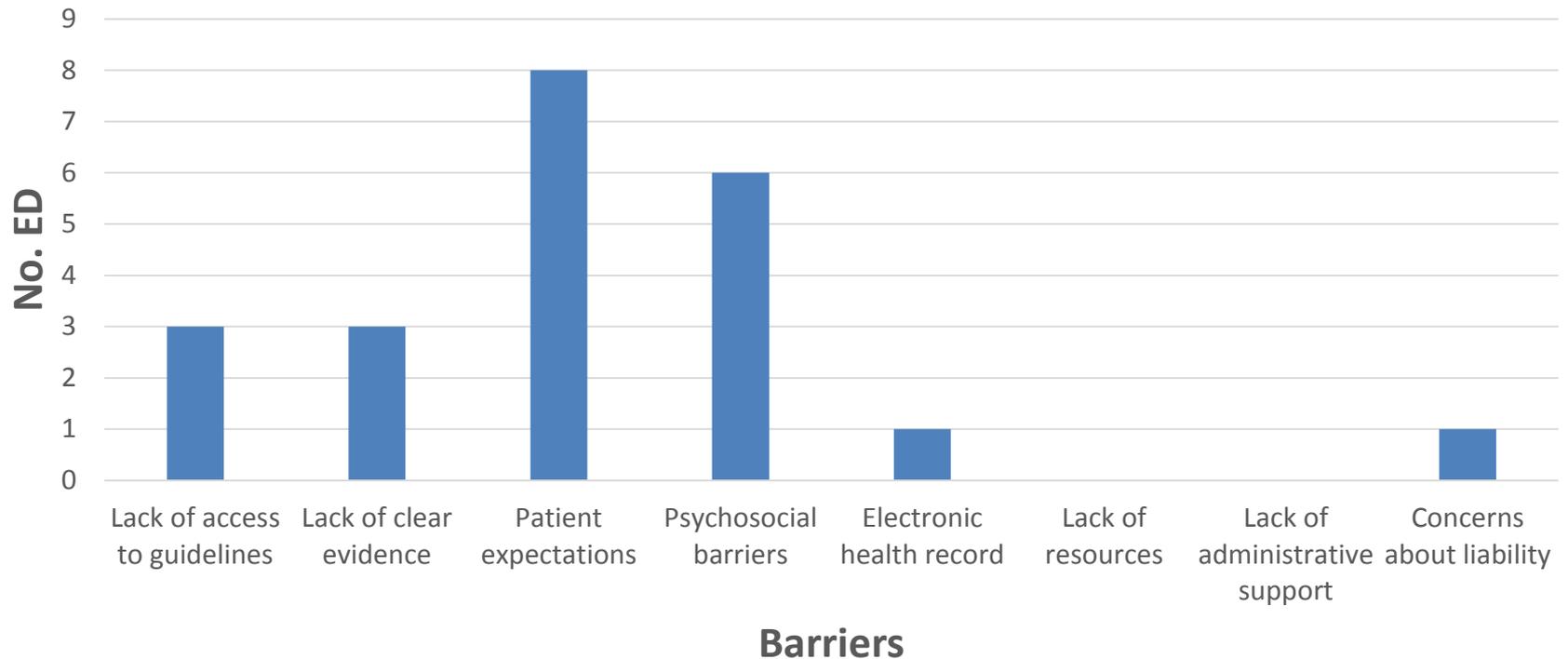
- <10% of the time
- 10-25% of the time
- 26-50% of the time
- 51-75% of the time
- >75% of the time

Sinusitis



ED Prescribing Challenges

Barriers to Appropriate Prescribing for Acute Respiratory Infection

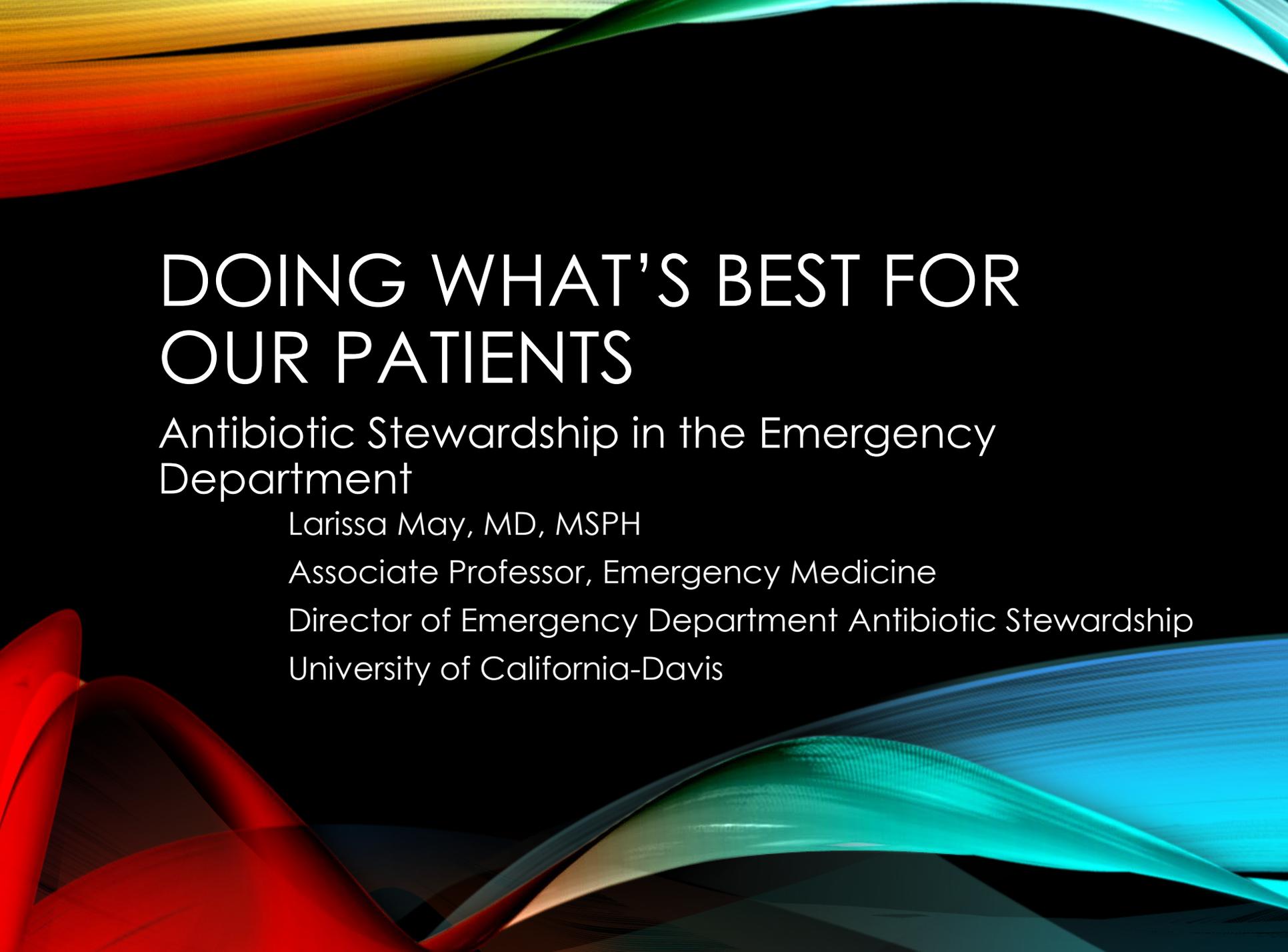


ED Topics of Concern

1. Sepsis, including quality measures
2. Access to rapid diagnostic tests
3. Skin and soft tissue infection
4. Upper respiratory infection
5. Interaction/involvement in inpatient ASP
6. Urinary tract infection

Doing What's Best for Our Patients

ANTIBIOTIC STEWARDSHIP IN THE EMERGENCY DEPARTMENT



DOING WHAT'S BEST FOR OUR PATIENTS

Antibiotic Stewardship in the Emergency
Department

Larissa May, MD, MSPH

Associate Professor, Emergency Medicine

Director of Emergency Department Antibiotic Stewardship

University of California-Davis



ACKNOWLEDGEMENTS

- Collaborators: Kabir Yadav, Ross Fleischman, Daniella Meeker, Jason Doctor, Aubyn Stahmer, Richard Kravitz, Rakesh Mistry
- Presentation Support: Katherine Fleming-Dutra (CDC), Veronica Mijic (CMA)
- Sam Gaona



OUTLINE

- What antibiotic stewardship is
- The importance of the emergency department setting
- Understanding barriers to improving care
- Potential interventions to improving appropriate use of antibiotics

ANTIBIOTIC RESISTANCE

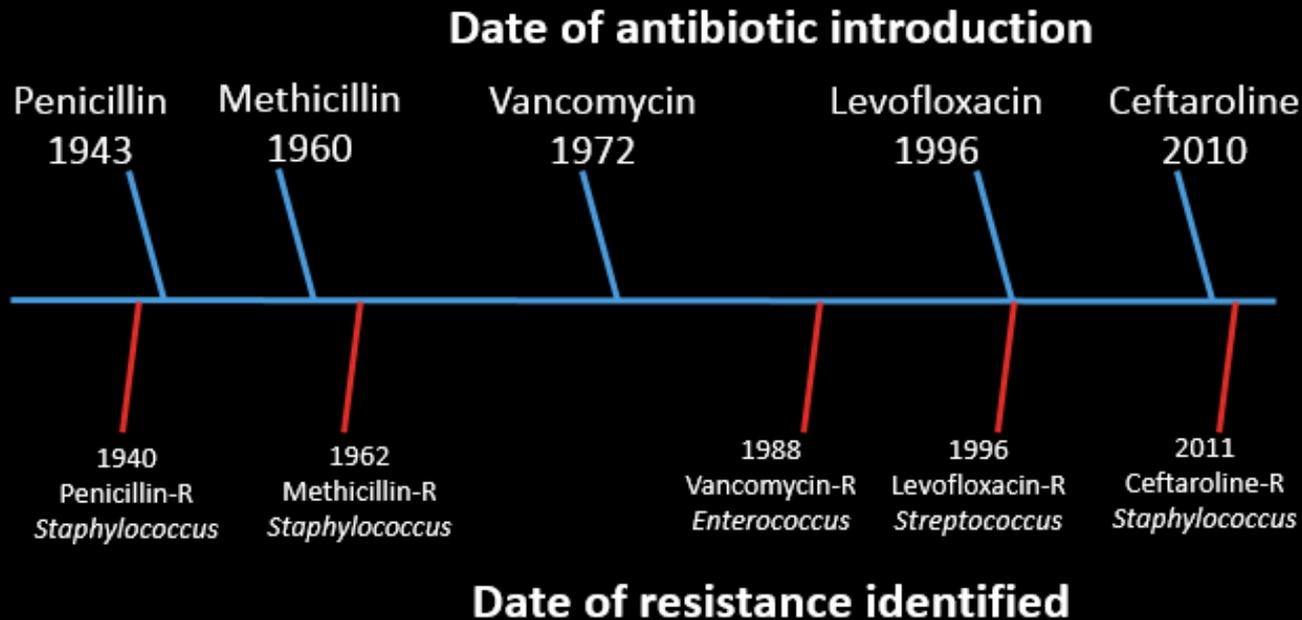
Estimated minimum number of illnesses and deaths caused annually by antibiotic resistance*:

At least  **2,049,442** illnesses,
 **23,000** deaths

**bacteria and fungus included in this report*

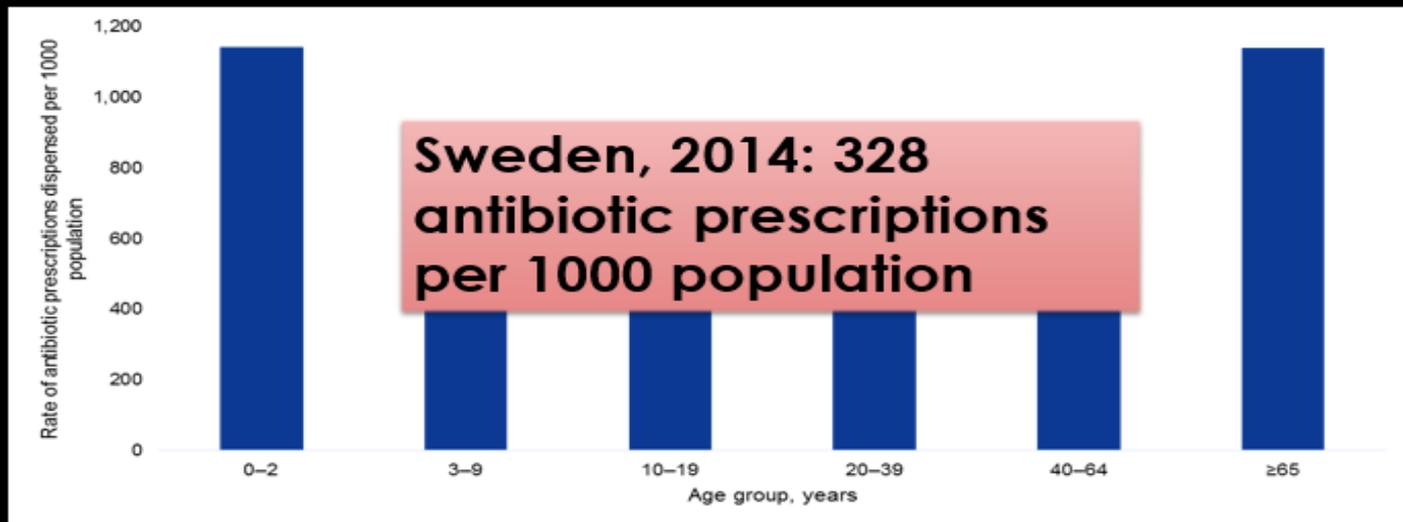
\$20 billion in excess direct healthcare costs annually

ANTIBIOTIC USE DRIVES RESISTANCE



ANTIBIOTIC RX UNITED STATES 2013

- 849 antibiotic prescriptions dispensed per 1000 population in outpatient settings (4 prescriptions for every 5 people)



Hicks CID 2015: 60(9):1308-16. CDC. Outpatient antibiotic prescriptions — United States, 2013. Available via the internet:
http://www.cdc.gov/getsmart/community/pdfs/annual-reports/summary_2013.pdf
<https://www.folkhalsomyndigheten.se/pagefiles/20281/Swedres-Svarm-2014-14027.pdf>

IT'S A MATTER OF PATIENT SAFETY

- Adverse events from antibiotics range from minor to severe
 - Rash or antibiotic-associated diarrhea
 - Anaphylaxis
- 1 in 1000 antibiotic prescriptions leads to an emergency department visit for an adverse event
 - 142,000 ED visits per year
 - Most common cause of drug-related ED visits for children
- Long-term consequences: associated with chronic disease
 - Asthma, food allergies, ?obesity, ~~selfie-obsession~~

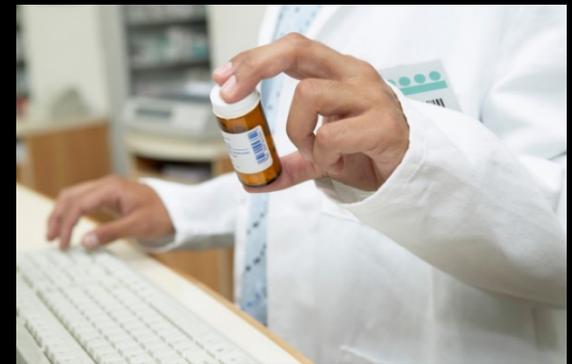
IT'S A MATTER OF PATIENT SAFETY: *CLOSTRIDIUM DIFFICILE*



More recent estimate: **453,000** infections and caused **15,000** deaths in the US annually

WHERE DO WE WANT TO BE?

- Every patient gets optimal antibiotic treatment
 - Antibiotics only when they are needed
 - If needed
 - Right antibiotic
 - Right dose
 - Right duration



- **Antibiotic stewardship** is the effort to measure and optimize antibiotic use



The JAMA Network[®]

Research

Original Investigation

Prevalence of Inappropriate Antibiotic Prescriptions Among US Ambulatory Care Visits, 2010-2011

Katherine E. Fleming-Dutra, MD; Adam L. Hersh, MD, PhD; Daniel J. Shapiro; Monina Bartoces, PhD; Eva A. Enns, PhD; Thomas M. File Jr, MD; Jonathan A. Finkelstein, MD, MPH; Jeffrey S. Gerber, MD, PhD; David Y. Hyun, MD; Jeffrey A. Linder, MD, MPH; Ruth Lynfield, MD; David J. Margolis, MD, PhD; Larissa S. May, MD, MSPH; Daniel Merenstein, MD; Joshua P. Metlay, MD, PhD; Jason G. Newland, MD, MEd; Jay F. Piccirillo, MD; Rebecca M. Roberts, MS; Guillermo V. Sanchez, MPH, PA-C; Katie J. Suda, PharmD, MS; Ann Thomas, MD, MPH; Teri Moser Woo, PhD; Rachel M. Zetts; Lauri A. Hicks, DO

IMPORTANCE The National Action Plan for Combating Antibiotic-Resistant Bacteria set a goal of reducing inappropriate outpatient antibiotic use by 50% by 2020, but the extent of inappropriate outpatient antibiotic use is unknown.

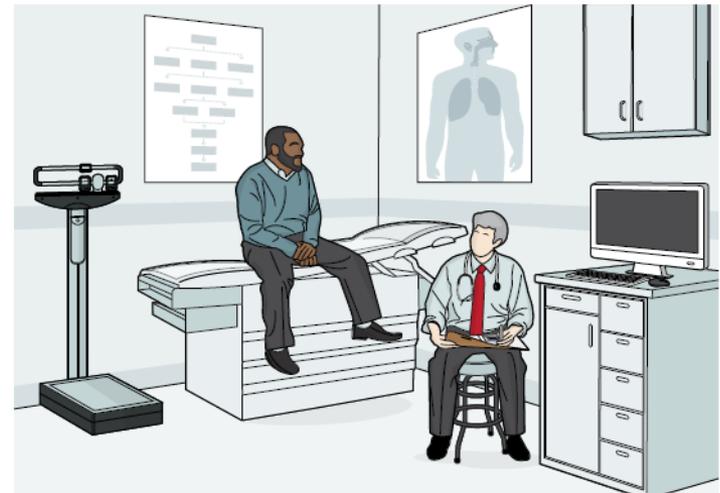
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+ Supplemental
jama.com

+ CME Quiz at

A report from THE PEW CHARITABLE TRUSTS

| May 2016



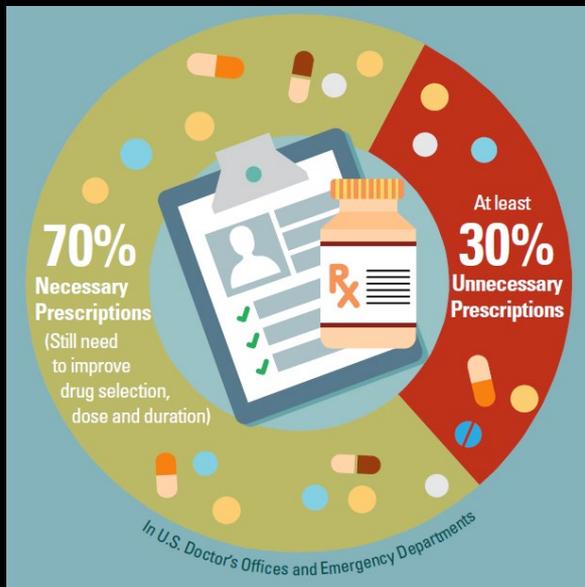
Antibiotic Use in Outpatient Settings

Health experts create national targets to reduce unnecessary antibiotic prescriptions

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

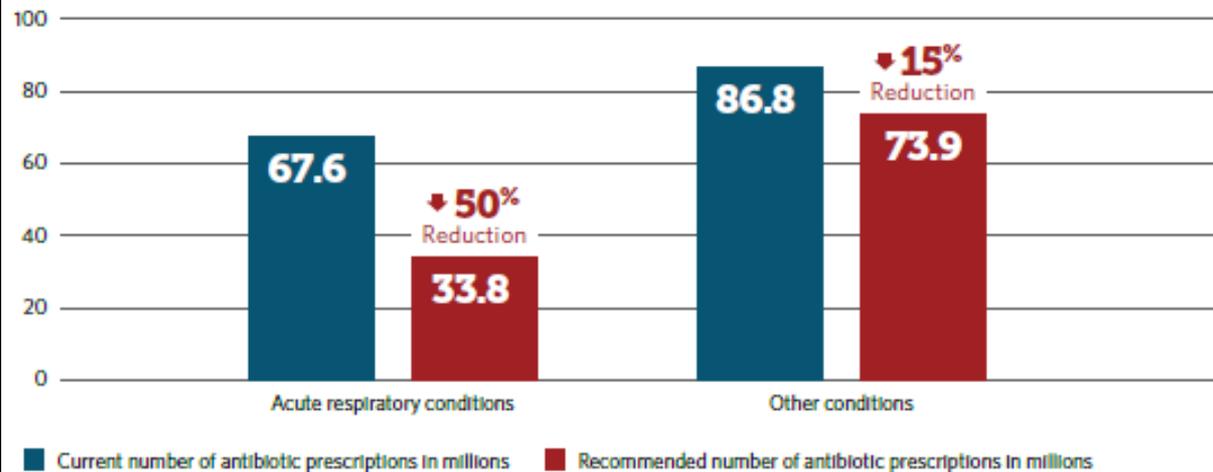
The Pew Charitable Trusts. May 2016.

SETTING NATIONAL TARGETS: OUTPATIENT ANTIBIOTIC PRESCRIBING



47 million unnecessary antibiotic prescriptions per year

Outpatient Antibiotic Prescribing Reduction Targets



Source: Analysis of NAMCS and NHAMCS data on U.S. antibiotic prescribing, 2010-2011

© 2016 The Pew Charitable Trusts

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

<http://www.pewtrusts.org/~media/assets/2016/05/antibioticuseinoutpatientsettings.pdf>;

TARGETS FOR STEWARDSHIP

- Appropriate antibiotics
 - Pneumonia, urinary tract infections and miscellaneous bacterial infections
- No antibiotics
 - Bronchitis, bronchiolitis, viral upper respiratory infection (URI), influenza, non-suppurative otitis media, viral pneumonia, asthma, and allergy
- Test for bacterial infection
 - Pharyngitis (all-cause)
- Reduction in antibiotics to level of the lowest prescribing region
 - Sinusitis
 - Suppurative otitis media
 - All other remaining conditions

ED AS A TARGET SITE FOR STEWARDSHIP

- Each year 10 million antibiotic prescriptions are written from the emergency department
- Unnecessary antibiotics are frequently prescribed for known viral infections
 - 75% of adults with acute bronchitis
 - 45% of children with viral URI
- Inappropriate antibiotics are frequent
 - >66% for UTI



CHALLENGES FOR THE ED

- ED crowding/boarding
- Patient turnover
- Quick decision-making
- Mix of providers-shift-based scheduling
- Diagnostic uncertainty
- Concern for poor outcomes
- Lack of patient follow-up
- Patient satisfaction



WHY MIGHT PROVIDERS PRESCRIBE ANTIBIOTICS INAPPROPRIATELY?

- Lack of knowledge of appropriate indications?
- Fear of complications?
- Patient pressure and satisfaction?
- Habit?
- What else?

WHY MIGHT PROVIDERS PRESCRIBE ANTIBIOTICS INAPPROPRIATELY?

- ~~Lack of knowledge of appropriate indications~~
 - Providers generally know the guidelines
 - *Just-in-time evidence delivery*
- Fear of complications
 - Providers cite fear of infectious complications

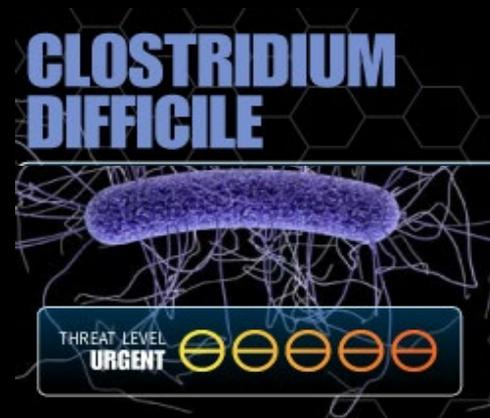
WHAT IF SOMETHING BAD HAPPENS?

- **Without an antibiotic**

- Complications to common respiratory infections are very rare
- NNT=4000 URIs treated to prevent 1 case of pneumonia

- **With an antibiotic**

- Side effects
 - Diarrhea in 5-25% (NNH 4-20)
 - Yeast infections
 - Allergic reactions and anaphylaxis
- 1:1000 antibiotics lead to ED visit for adverse events
- *Clostridium difficile* infection



WHY MIGHT PROVIDERS PRESCRIBE ANTIBIOTICS INAPPROPRIATELY?

- ~~Lack of knowledge of appropriate indications~~
 - Providers generally know the guidelines
 - *Just-in-time evidence delivery*
- ~~Fear of complications~~
 - Providers cite fear of infectious complications
 - *Understanding adverse events (NNH)*
- Patient pressure and satisfaction
 - Providers universally cite patient requests for antibiotics
 - Providers worry about losing patients to other providers

PHYSICIAN PERCEPTION OF PATIENT EXPECTATIONS

- Overt requests for antibiotics are rare
- When physicians think patients/parents want antibiotics, they are more likely to prescribe
 - 62% when they thought parent wanted antibiotics
 - 7% when they thought parent did **not** want antibiotics
- ED physicians are terrible at predicting which patients want antibiotics
 - 25-33% correctly identified patient's expectations
 - Why are we so bad at predicting?

WHY DO WE THINK PATIENTS WANT ANTIBIOTICS?

- Physicians thought parents wanted antibiotics when
 - Parents suggested a candidate diagnosis
 - Parents question non-antibiotic treatment plan
- Parents who questioned the treatment plan were equally likely to expect or not expect antibiotics
- Two different conversations
 - One that the physician understands
 - One that the patient is having

Stivers. *Journal Family Practice* 2003; 52(2):140-8.

Mangione-Smith. *Arch Pediatr Adolesc Med* 2006;160(9): 945-952.



IMPROVE PATIENT SATISFACTION

- Parents are still satisfied if they don't get antibiotics
- Parents are dissatisfied if communication expectations are not met
- What do parents want?
 - Explanation
 - Positive recommendations
 - Contingency plan

Mangione-Smith *Pediatrics* 1999;103(4):711-8.

Mangione-Smith *Arch Pediatr Adolesc Med* 2001;155:800-6.

Mangione-Smith *Ann Family Med* 2015; 13(3) 221-7.



WHY MIGHT PROVIDERS PRESCRIBE ANTIBIOTICS INAPPROPRIATELY?

- ~~Lack of knowledge of appropriate indications~~
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 - *Just-in-time evidence delivery*
- ~~Fear of complications~~
 - Providers cite fear of infectious complications
 - *Understanding adverse events (NNH)*
- ~~Patient pressure and satisfaction~~
 - Providers universally cite patient requests for antibiotics
 - *Effective communication skills, managing expectations*
- Habit

PROVIDER VARIABILITY: HABIT OF PRESCRIBING ANTIBIOTICS

- In a large study of 1 million VA outpatient visits for acute respiratory infections (most do not require antibiotics)
 - **Top 10% of providers prescribed antibiotics in $\geq 95\%$ visits**
 - Lowest 10% prescribed antibiotics in $\leq 40\%$ of ARI visits
- In a pediatric network of 25 practices, antibiotic prescribing variability
 - 18 to 36% of acute visits resulted in antibiotic prescriptions by practice
 - 15 to 57% of antibiotics were broad-spectrum by practice

HOW CAN WE CHANGE CLINICIAN ANTIBIOTIC PRESCRIBING PRACTICES?

- Identify effective interventions to improve outpatient antibiotic prescribing
- Adapt them to the local context
- Use rigorous implementation science methods before and after
- Disseminate for broader uptake (scale and spread)



EM AS LEADERS OF CHANGE

- Team based approach
- Nexus of community and hospital
- Willingness to take on new tasks and learn
- Patient education/communication tools
- Innovate/create
 - Local guidelines/pathways
 - CDSS
 - Rapid diagnostics
 - Antibigrams

WHAT WORKS IN THE OUTPATIENT SETTING?

- Educational methods — decisions are based on knowledge
 - Guidelines
 - Clinical decision support
- Behavioral methods — decisions are influenced by psychosocial factors
 - Communications training
 - Public commitments
- Mixed theoretical basis
 - Audit and feedback with comparisons to peers
 - Academic detailing (one-on-one education)

CLINICAL DECISION SUPPORT

- Effective intervention
 - Acute bronchitis: 12–14% reduction in antibiotic prescribing
 - Pharyngitis: reduced antibiotics use
 - Pneumonia: improved antibiotic selection
- Important considerations
 - Print and electronic tools are likely equally effective
 - Tools need to be **used** to be effective
 - In one study, tool was used in 6% of eligible visits
 - Alert fatigue is a problem

BEHAVIORAL CLINICAL DECISION SUPPORT: ACCOUNTABLE JUSTIFICATION

- “Antibiotic justification note” in medical record
 - Prompted free text note if antibiotics prescribed for diagnosis for which antibiotics are not indicated
 - If no text entered: “No justification given” appeared in medical record
 - Note disappeared if antibiotic prescription deleted
- Idea: Clinicians want to preserve their reputation
- **Reduced inappropriate antibiotic prescribing from 23.2% to 5.2% pre and post-intervention (-7.0% difference in differences)**

PUBLIC COMMITMENT POSTERS

- Simple intervention: poster-placed in exam rooms with provider picture and commitment to use antibiotics appropriately
- Principle of behavioral science: desire to be consistent with previous commitments
 - “As your doctors, we promise to treat your illness in the best way possible. We are also dedicated to avoid prescribing antibiotics when they are likely do to more harm than good.”*
- **Adjusted absolute reduction: -20% compared to controls**

AUDIT AND FEEDBACK WITH PEER COMPARISONS

- RCT of audit-and-feedback for unnecessarily broad-spectrum antibiotics for sinusitis in children
 - Included clinician's data and the average performance of their peers in their practice and network
- Results
 - Clinicians in the feedback group performed significantly better than control clinicians
 - **Antibiotic selection patterns reverted to baseline once audit-and-feedback was stopped**

PUBLIC COMMITMENT

JAMA Internal Medicine

Original Investigation

Nudging Guideline-Concordant Antibiotic Prescribing A Randomized Clinical Trial

Daniella Meeker, PhD; Tara K. Knight, PhD; Mark W. Friedberg, MD, MPP; Jeffrey A. Linder, MD, MPH;
Noah J. Goldstein, PhD; Craig R. Fox, PhD; Alan Rothfeld, MD; Guillermo Diaz, MD; Jason N. Doctor, PhD

Meeker D, Knight TK, Friedberg MW, Linder JA, Goldstein NJ, Fox CR, Rothfeld A, Diaz G,
Doctor JN.

JAMA The Journal of the
American Medical Association

 ORIGINAL CONTRIBUTION

Effect of Behavioral Interventions on Inappropriate Antibiotic Prescribing Among Primary Care Practices A Randomized Clinical Trial

Daniella Meeker, PhD; Jeffrey A. Linder, MD, MPH; Craig R. Fox, PhD; Mark W. Friedberg, MD, MPP;
Stephen D. Persell, MD, MPH; Noah J. Goldstein, PhD; Tara K. Knight, PhD; Joel W. Hay, PhD; Jason N. Doctor, PhD

Daniella Meeker, Jeffrey Linder, Mark W. Friedberg, Stephen D. Persell, Craig R. Fox, Noah J. Goldstein,
Alan F. Rothfeld, Joel Hay, Jason N. Doctor

PEER COMPARISON TO TOP PERFORMERS

- “You are a Top Performer”
- “You are not a Top Performer”
- **Mean antibiotic prescribing decreased from 19.9% to 3.7% (-16.3%)**

PEER COMPARISON: FURTHER EVIDENCE

- National Health Service randomized trial of letters to 1581 GP practices
 - *“Your practice is prescribing antibiotics at a rate higher than 80% of your local GP practices”*
 - From England’s Chief Medical Officer
- 3.3% relative reduction in antibiotic prescribing
 - Estimated ~73,000 antibiotic prescriptions saved
- Concluded it was cost effective
 - Materials to send letters v. cost of antibiotic prescriptions

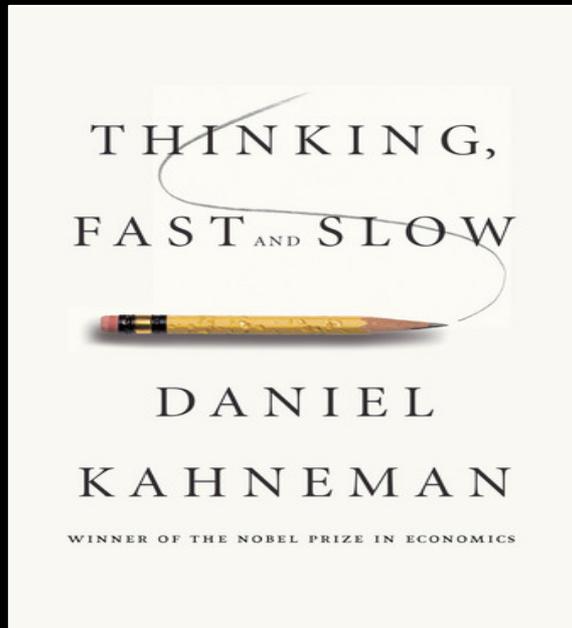
CONCLUSIONS AND IMPLICATIONS

- *Physicians are people too*
- *Traditional CDS the least effective*
- *Social motivation appears effective*
- *Participatory design for QI may not yield desired results...*

CHANGING BEHAVIOR

- **Implicit model:** clinicians reflective, rational, and deliberate
 - “Educate” and “remind” interventions
- **Behavioral model:** decisions fast, automatic, influenced by emotion and social factors
 - Cognitive bias
 - Appeal to clinician self-image
 - Consider social motivation

COGNITIVE SYSTEMS



1. Automatic
2. Reflective

TWO DISTINCT COGNITIVE SYSTEMS

Automatic

Uncontrolled

Effortless

Associative

Fast

Unconscious

Experience-based

Reflective

Controlled

Effortful

Deductive

Slow

Self-aware

Rule-based

NUDGES TARGET AUTOMATIC THINKING

- **Nudge:** gentle, non-intrusive persuaders which influence choice in a certain direction
 - Different frames, default rules, feedback mechanisms, social cues
 - Can be ignored
 - A good nudge will only affect choice when there are not strong reasons for the decision



Public Commitment as a Motivator for Weight Loss

Prashanth U. Nyer
Chapman University

Stephanie Dellande
University of New Orleans



Meals and Miles
Thursday

I'm running 8 miles on Saturday and riding my bike 50 miles on Monday. Hoping if I put these things out there, that they will actually happen. :)

State your own workout goals below. Let's help hold each other accountable through the holiday weekend.

PUBLIC COMMITMENT

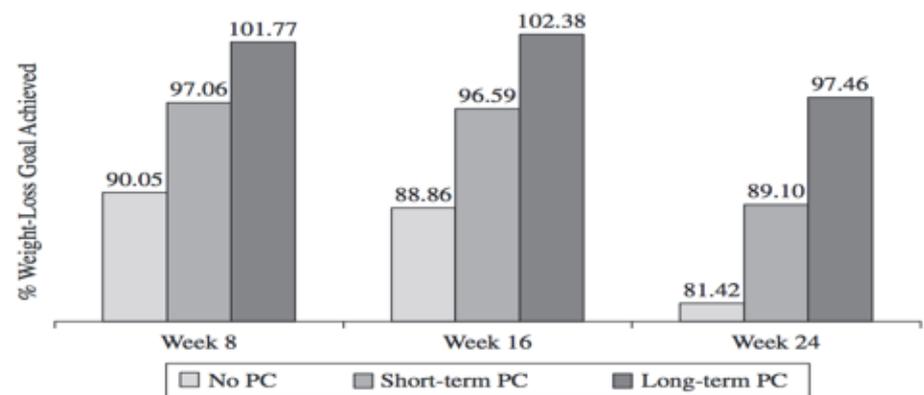


Figure 2. The effect of public commitment on weight loss.

Safe Antibiotic Use: A Letter From Your Medical Group

Dear Patient,

We want to give you some important information about antibiotics.

Antibiotics, like penicillin, fight infections due to bacteria that can cause some serious illnesses. But these medicines can cause side effects like skin rashes, diarrhea, or yeast infections. If your symptoms are from a virus and not from bacteria, you won't get better with an antibiotic, and you could still get these bad side effects.

Antibiotics also make bacteria more resistant to them. This can make future infections harder to treat. This means that antibiotics might not work when you really need them. Because of this, it is important that you only use an antibiotic when it is necessary to treat your illness.

How can you help? Carefully follow your doctor's advice on when you should or should not take antibiotics.

When you have a cough, sore throat, or other illness, ask your doctor for the best possible treatments. If an antibiotic is necessary, your doctor will explain this to you, and you should take it exactly as directed.

Your health is very important to us. As your doctor, we promise to treat your illness in the best way possible. We are also dedicated to avoid prescribing antibiotics when they are likely to do more harm than good.

If you have any questions, please feel free to ask your doctor, nurse, or pharmacist.

Sincerely,



El Uso Seguro de Antibióticos: Una Carta de su Grupo Médico

Estimado Paciente:

Queremos compartir información importante con usted sobre los antibióticos.

Los antibióticos como la penicilina ayudan a combatir infecciones debido a bacterias que pueden causar serias enfermedades. Pero estas medicinas también tienen efectos secundarios como erupciones de la piel, diarrea, o infecciones por hongos de levadura. Si sus síntomas son debidos a un virus y no por una bacteria, no se mejorará con un antibiótico, y usted aún puede obtener estos efectos secundarios no deseables.

Los antibióticos también pueden hacer la bacteria más resistente a ellas. Esto hará que infecciones en el futuro sean más difíciles de tratar. Eso significa que los antibióticos no trabajarán cuando ustedes en realidad necesitan que funcionen. Por eso es importante que usted sólo use un antibiótico cuando sea necesario para su

Your health is very important to us. As your doctors, we promise to treat your illness in the best way possible. We are also dedicated to avoid prescribing antibiotics when they are likely to do more harm than good.

mejor para usted.

Su salud es importante para nosotros. Como sus doctores, nosotros prometemos tratar su enfermedad en la mejor manera posible. También nos comprometemos a evitar recetar antibióticos cuando sean probables de hacer más daño que bien.

Si tiene cualquier pregunta, pregúntele a su doctor, enfermera, o farmacéutico.

Atentamente,



EXAMPLES: SSTI IN THE ED-LOW HANGING FRUIT?

- Nearly 3 million visits/year
- Empiric treatment for MRSA
- Overuse of broad spectrum agents for SSTI, both abscess and cellulitis
 - Clinician concerns about MRSA
 - Evidence suggests antibiotic overuse
 - Treatment discordant with guidelines
 - Antibiotics more common in ED setting
 - 3% adverse events

BARRIERS

Provider Identified Barriers

- Patient expectations
- Lack of access to guidelines



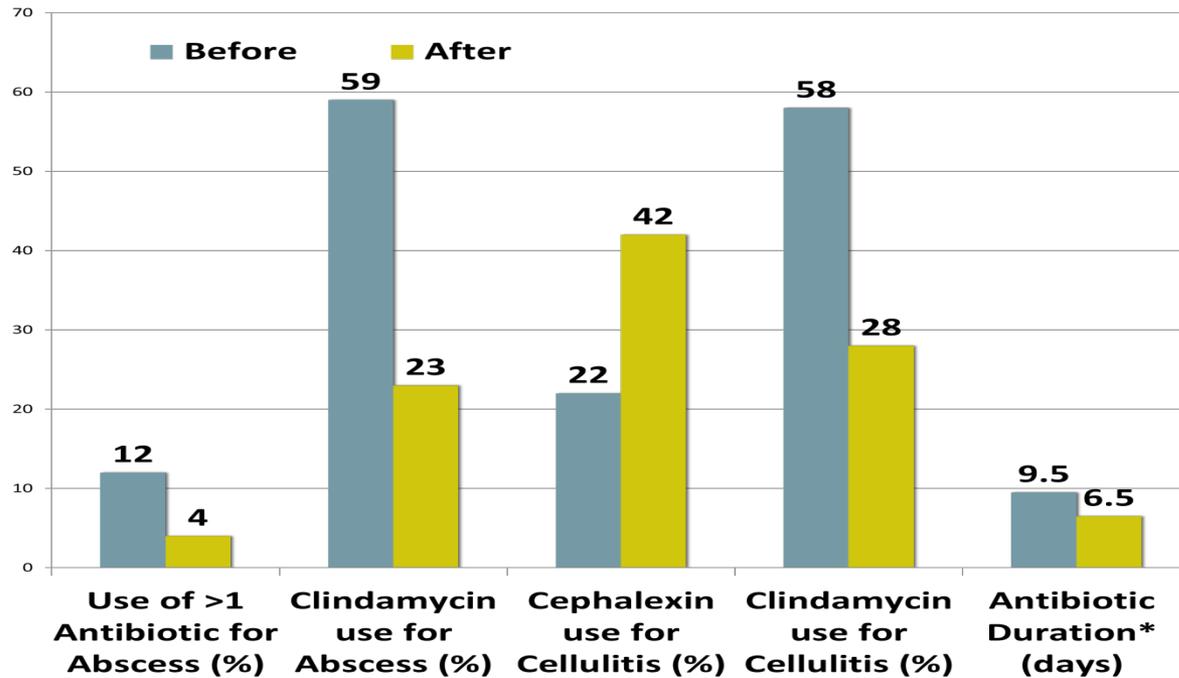
INTERVENTION

- Educational presentations
- Implementation of a clinical treatment algorithm and order set based on IDSA practice guidelines
 - Incorporate current antibiograms, with current formulary approved drugs via EHR
- Peer comparison reports to ED clinicians
 - Duration of Rx
- Individual provider feedback: “top performer” or “not a top performer” and general feedback
 - Antibiotic selection and duration
 - Confidential feedback to outlier clinicians

RESOURCES NEEDED

- Formal commitment =ED champion
- Low hanging fruit for stewardship improvement
- Clinician buy-in and pre-program implementation
- Team: Director of ED Antibiotic Stewardship (10% protected time) and program associate (50-75% time)
- Consultation from adult +pediatric infectious diseases faculty
- Information Technology Support
 - Electronic order set in EHR
 - Analyst to develop feedback report for select ICD10 codes

Results of SSTI stewardship



*Difference of -3.0 (-0.6, -5.3) days (95% CI adjusted for provider cluster effects)



RESULTS

- Antibiotic overuse self reports decreased from 67% to 32%.
- Those reporting antibiotic stewardship programs as important increased from **72% to 84%**.
- Of the **24** post survey respondents who had participated in the stewardship program,
 - **88%** felt the program changed their practice,
 - **13% felt** ED stewardship programs interfered with usual decision-making.
- **80%** of respondents thought the stewardship program was valuable

LESSONS LEARNED

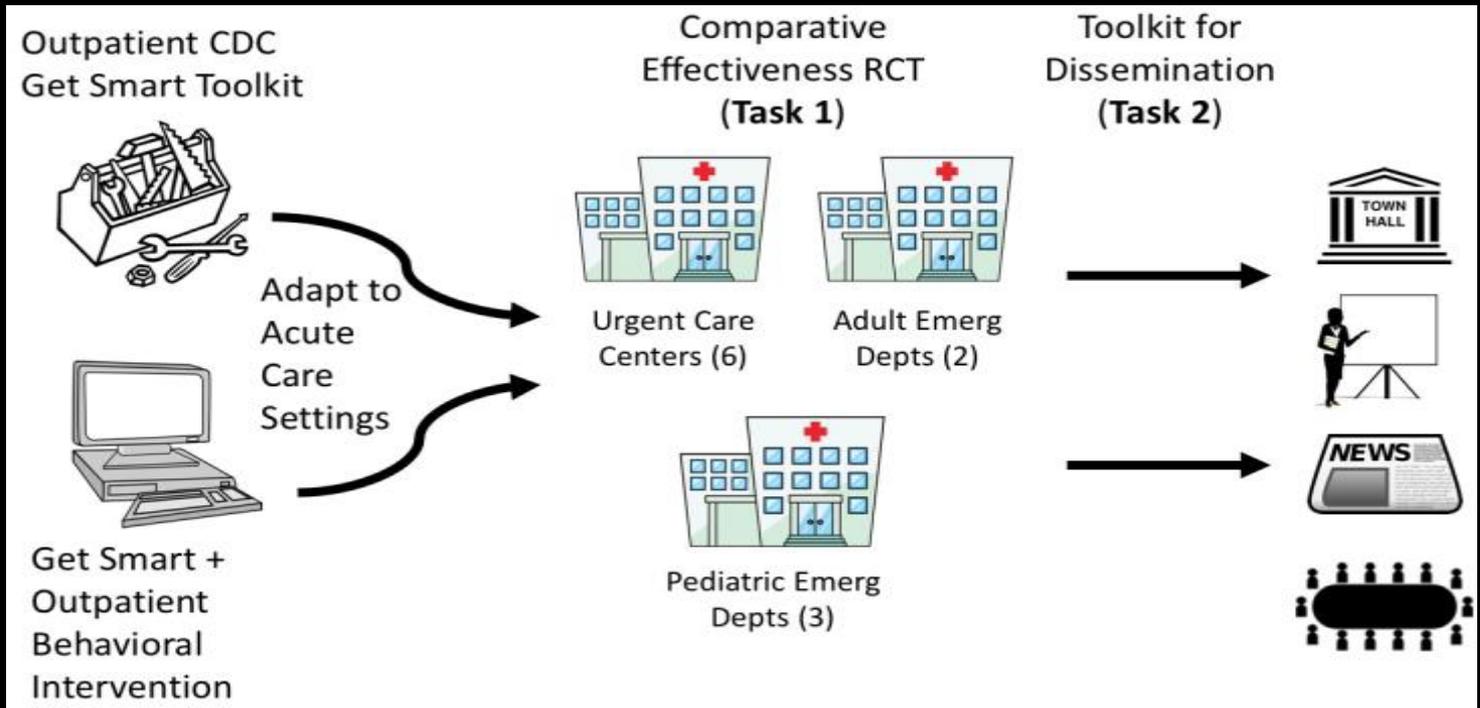
- Ground up approach
- ED champion should be passionate and have administrative support
 - Buy in from ED colleagues/staff + other key stakeholders
 - Chief Quality Officer, adult/pediatric ID and pharmacists
- Implementation science and QI approaches can provide a framework for program implementation
 - Assessment/ongoing modification of ED workflow, stakeholder buy in, education and feedback delivery
 - Focus on low hanging fruit
- Evidence-based intervention tailored to local setting
- External factors and prioritization=need institutional buy in!
- Align projects with operational goals of the department and institution
- Relationship building and collaboration
 - Time should be spent at the outset & checking in frequently



MITIGATE STUDY

- MITIGATE: an Antibiotic Stewardship Implementation Science Project
- A Multifaceted Intervention to Improve Prescribing for Acute Respiratory Infection for Adults and Children in Emergency Department and Urgent Care Settings

STUDY OVERVIEW



STUDY OVERVIEW

Table 1. Intervention Components by Intervention Package

Component	Definition	Adapted	Enhanced
Provider education	Educational presentations, electronic reminders of ARI guidelines, GetSmart brochures	X	X
Patient education	CDC GetSmart posters in waiting rooms, discharge handouts	X	X
Provider Commitment-Enhanced Patient Education	Personalized Posters in exam rooms including modified GetSmart content directed at patients, enhanced with E-BIFEP clinicians' photos and signed public commitment to antibiotic stewardship ²⁰ .	**	X
Physician champion	Designated physician at each site who will lead provider education and be an advocate for antimicrobial stewardship	X	X
Departmental Feedback	Monthly aggregate of antibiotic prescribing practices for ARI from electronic health record data provided to departmental leadership	X	X
Peer-comparisons in personalized Audit and Feedback	Personalized monthly performance ranking with each physician receiving designation of being a "top performer" (top decile) or "not a top performer" for appropriate antibiotic Rx for ARI delivered by email ^{20*}		X

*Peer comparison will be distinct from traditional audit-and-feedback interventions in its comparison with top-performing peers instead of average-performing peers and its delivery of positive reinforcement to top performers—a strategy shown elsewhere to sustain performance. Norms will be computed within each clinical institution.

**Because exam rooms are shared across enrolled providers and patients from both experimental arms, those in the adapted arm will be exposed to commitment posters despite having not been offered to make the commitment or be pictured on posters.



RESOURCES

- <https://www.cdc.gov/getsmart/>
- <http://www.thecmafoundation.org/Programs/AWARE>

AWARE



Background & History



Acute Respiratory Tract Infection
Guideline Summary - Adult



Acute Respiratory Tract Infection
Guideline Summary - Pediatric

Download the AWARE Compendium

The Alliance Working for Antibiotic Resistance Education (AWARE) was initiated by the CMA Foundation in 2000, as a long-term statewide effort to promote the appropriate use of antibiotics. Physician organizations, healthcare providers, health systems, health plans, public health agencies, consumer and community based organizations, federal, state and local government representatives and the pharmaceutical industry have all worked to achieve the mission and goals of this project



PROJECT MISSION

Reduce the unnecessary use of antibiotics and reduce the prevalence of antibiotic resistant bacteria in California.

PROJECT GOALS

- Increase appropriate prescribing of antibiotics.
- Raise consumer awareness and understanding regarding the appropriate use of antibiotics.
- Mobilize the community to reduce the unnecessary use of antibiotics





Alliance
Working for
Antibiotic
Resistance
Education

AWARE Basics

AWARE, the Alliance Working for Antibiotic Resistance Education, was initiated by the California Medical Association Foundation in 2000 and is a long-term, statewide effort to promote the appropriate use of antibiotics. The partnership includes physician organizations, healthcare providers, health systems, health plans, public health agencies, consumer and community based organizations, government representatives and the pharmaceutical industry.

The goals of AWARE are to:

- Increase appropriate prescribing of antibiotics.
- Raise consumer awareness and understanding regarding the appropriate use of antibiotics.
- Mobilize the community to reduce the unnecessary use of antibiotics.



The AWARE Toolkit



Each year, the CMA Foundation convenes an expert clinical workgroup to develop timely educational materials, commonly known as the "AWARE" toolkit, which promote the appropriate use of antibiotics in English and Spanish.

Through partnerships with health plans across California, high-prescribing physicians are identified and mailed the most recent AWARE Toolkit. The goal of this educational intervention is to reduce the increasing rate of antimicrobial resistance by promoting adherence to appropriate prescribing guidelines among physicians, decreasing demand for antibiotics for viral upper respiratory infections among patients, and increasing patient adherence to prescribed antibiotics for upper respiratory infections caused by bacteria.



AWARE Online

In addition to mailing the AWARE Toolkit to high-prescribing physicians, the CMA Foundation also offers educational materials online at www.AWARE.md. These materials are accessible to anyone interested in learning more about antibiotic stewardship, with some materials targeted specifically to patients and families.

Recently, the CMA Foundation developed the AWARE Toolkit mobile app for Apple and Android devices to provide prescribers with updated antibiotic guidelines directly on their mobile devices. To promote this tool, a Google AdWords campaign was created to present targeted ads for the AWARE website and AWARE Toolkit to people who search for specific keywords, such as "antibiotic resistance" or "antibiotic prescribing guidelines".



NEXT STEPS

- Toolkit development and approval
- Dissemination through various local and national channels
- Expansion and uptake of our toolkit to diverse academic and community-based collaborating sites through the CDPH ED Antibiotic Stewardship Collaborative

SUMMARY

- Providers prescribe antibiotics inappropriately for a variety of reasons
 - Fear of complications, perceived patient expectations, practice variability
- ED antibiotic prescribing can be improved
 - In line with national goals (and local goals)
 - Support and expand to community efforts
- Interventions effective in improving antibiotic Rx even in chaotic ED setting
 - Need to address more than knowledge deficits
 - Incorporating principles of implementation science can help change behavior

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COLLABORATIVE NEXT STEPS

Next Steps

- Decide upon a quality improvement project
- Schedule ED one-on-one call with collaborative leads
- Conduct ED provider survey

Quality Improvement Project Examples

- Feasible in 12 months (duration of collaborative)
- Can build upon an existing initiative
- Syndrome-specific
- Track existing quality measures, e.g., HEDIS

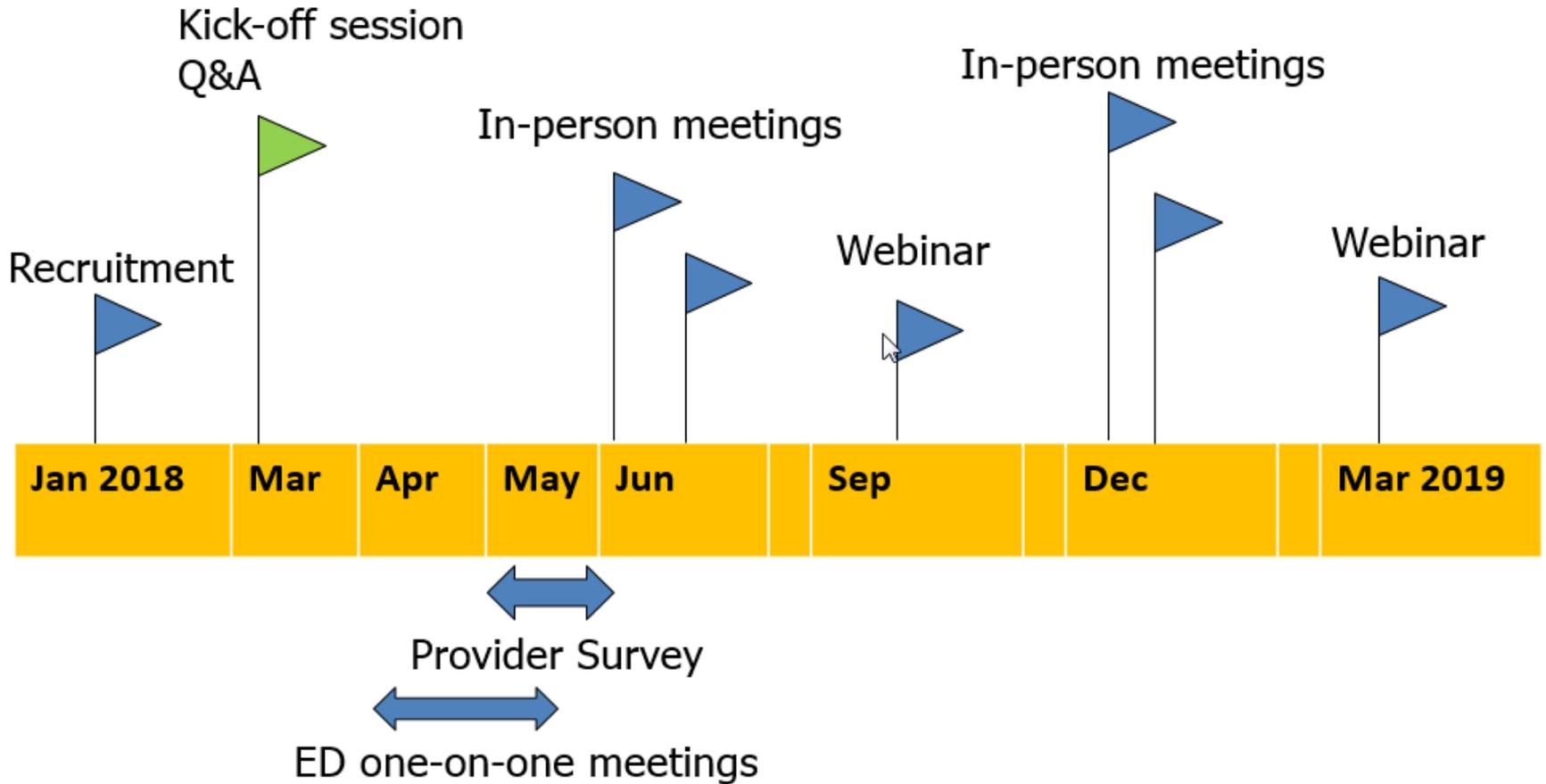
One-on-One Phone Calls

- Each participating ED will discuss plans for QI project with collaborative leads
- Timeframe – April 2018

ED Provider Survey

- Prescribing practices and attitudes related to QI project area of focus
- ED Champion will receive link to be distributed to all ED staff
- Goal: at least 30% response rate
- Timeframe – May 2018 (TBD)

Collaborative Timeline



Next Meetings

In-person / SoCal

Friday, June 1, 2018, 10-12:30

In-person / NorCal

Monday, June 25, 2018, 1-3:30PM

Webinar

Tuesday, September 11, 2018, 12-1:30PM

Questions?

Contact:

Larissa May - lsmay@ucdavis.edu

Dawn Terashita - dterashita@ph.lacounty.gov

Kelsey OYong - koyong@ph.lacounty.gov

Erin Epson - Erin.Epson@cdph.ca.gov

Erin Garcia - Erin.Garcia@cdph.ca.gov