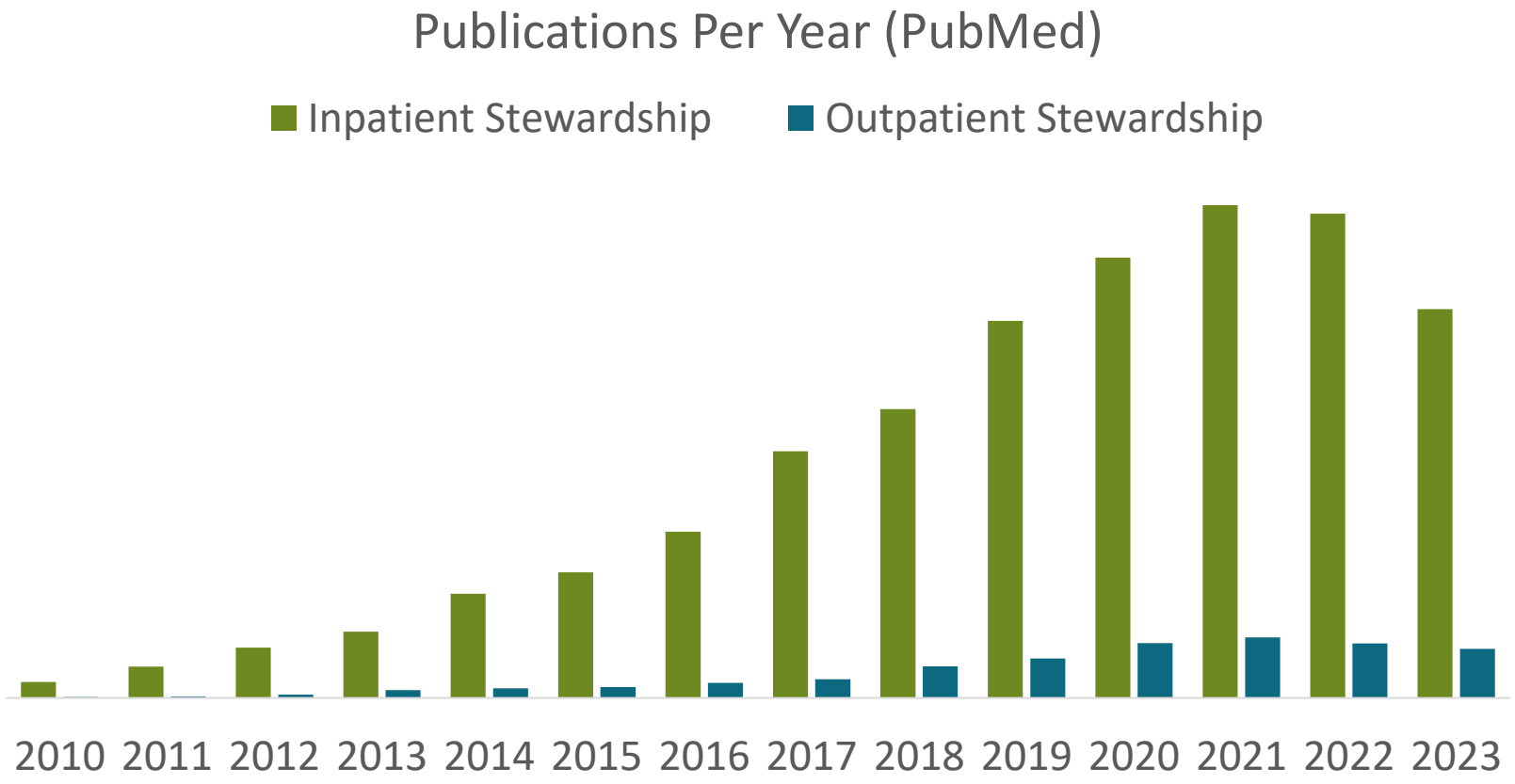
Stanford
MEDICINE

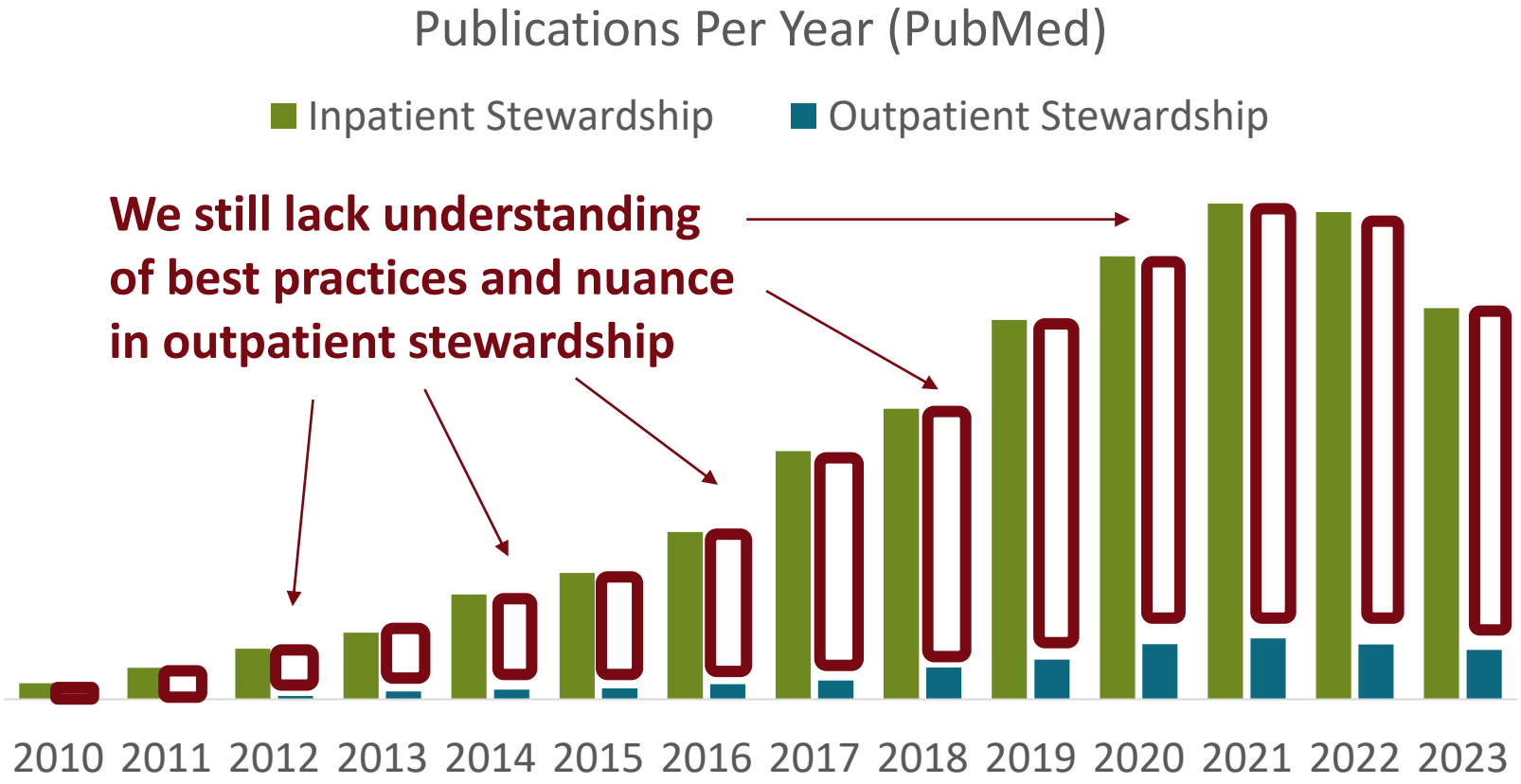
Outpatient Antibiotic Stewardship

David Ha, PharmD



PubMed.gov (Accessed October 2023)

Stanford MEDICINE

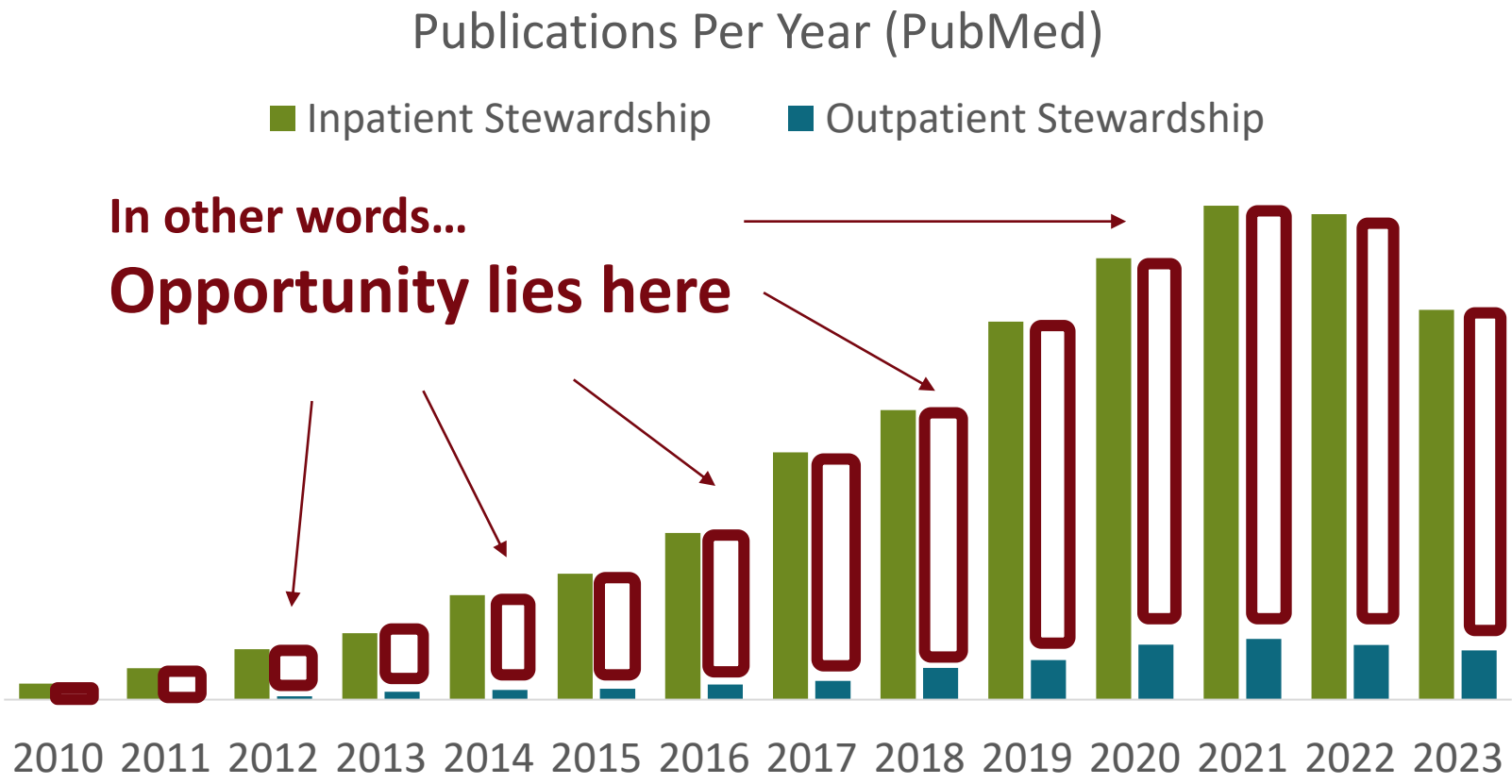


PubMed.gov (Accessed October 2023)

Stanford MEDICINE

Outpatient vs. Inpatient ASP

Stanford MEDICINE



PubMed.gov (Accessed October 2023)

Stanford MEDICINE

CDC Core Elements

Commitment	Action	Tracking and Reporting	Education and Expertise
• Commitment Posters/Letters • Identify single leader • Include AMS-related duties in job description or evaluation • Clinic staff set patient expectations	• Evidence based diagnosis and treatment (guidelines) • Delayed prescribing or Watchful waiting • Communications training • Written justification for antibiotic prescribing • Provide clinical decision support • Triage and prevent unnecessary visits	• Monitor and evaluate prescribing practices • Feedback to clinicians • Share quality measures from health care plans and payors (i.e., HEDIS)	• Clinician education (i.e., academic detailing, CE) • Patient education • Access to consultants

CDC. 2019

Stanford MEDICINE

Commitment

The Journey Starts…Or Ends Here

Stanford MEDICINE

CDC Core Elements

Commitment	Action	Tracking and Reporting	Education and Expertise
• Commitment Posters/Letters • Identify single leader • Include AMS-related duties in job description or evaluation • Clinic staff set patient expectations	• Evidence based diagnosis and treatment (guidelines) • Delayed prescribing or Watchful waiting • Communications training • Written justification for antibiotic prescribing • Provide clinical decision support • Triage and prevent unnecessary visits	• Monitor and evaluate prescribing practices • Feedback to clinicians • Share quality measures from health care plans and payors (i.e., HEDIS)	• Clinician education (i.e., academic detailing, CE) • Patient education • Access to consultants

CDC. 2019

Stanford MEDICINE

How Long Has Your Outpatient Stewardship Program Been In Place?

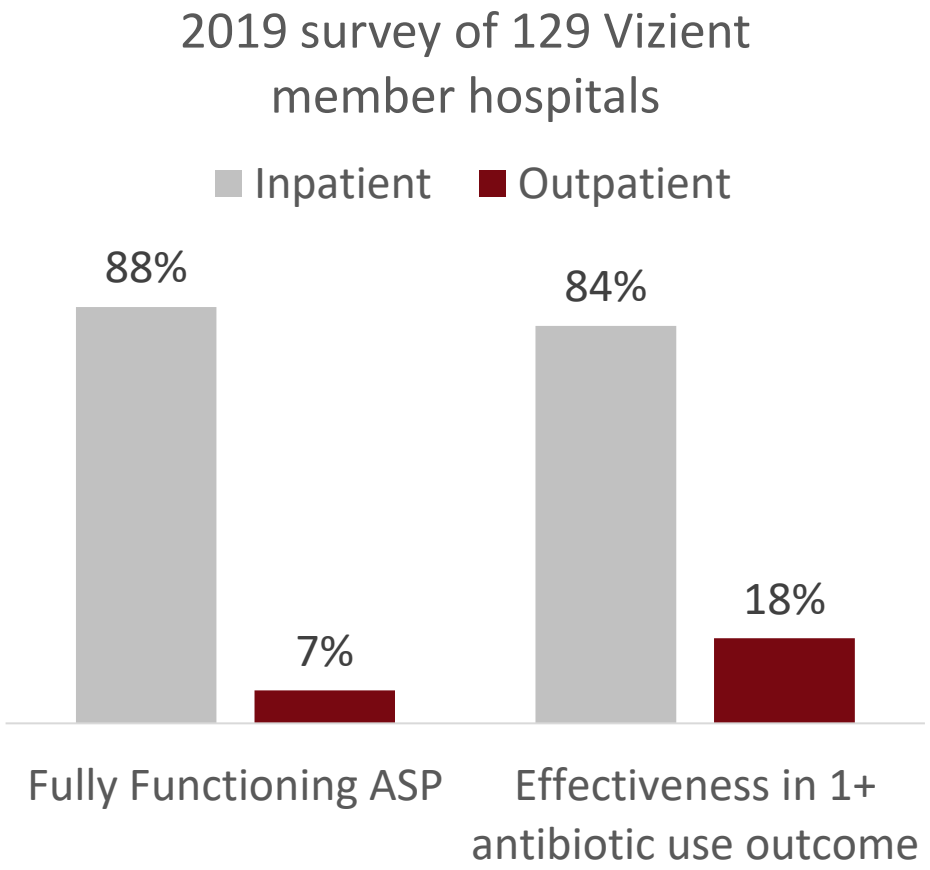
- Less than 1 year
- 1-2 years
- 3-5 years
- >5 years

Stanford MEDICINE

How are *we* doing?

Characteristics of Effective Outpatient ASPs:

- Institutional Guidelines
- Rapid Diagnostics
- Outpatient Antibiograms
- **Dedicated Pharmacist Support**

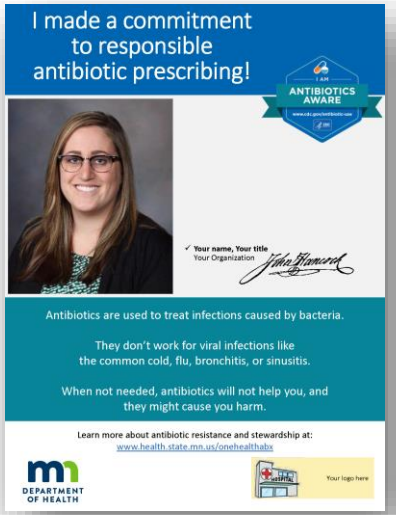


Eudy et al. OFID 2020

Stanford MEDICINE

Commitment Posters

- Randomized trial
- 5 primary care clinics
- Intervention (12 weeks):
  - Poster-sized commitment letter in exam room
  - Commitment to avoid inappropriate antibiotic use for URIs
  - Clinician photos and signatures



Inappropriate Abx:

Control: 43.5% → 52.7%

Poster: 42.8% → 33.7%

19.7% Absolute Reduction

(p=0.02)

Meeker et al. JAMA Intern Med 2014; Minnesota DPH. 2022

Stanford MEDICINE

Tracking and Reporting

Your Starting Line

IMO… The Most Important Piece

Stanford MEDICINE

CDC Core Elements

Commitment	Action	Tracking and Reporting	Education and Expertise
• Commitment Posters/Letters • Identify single leader • Include AMS-related duties in job description or evaluation • Clinic staff set patient expectations	• Evidence based diagnosis and treatment (guidelines) • Delayed prescribing or Watchful waiting • Communications training • Written justification for antibiotic prescribing • Provide clinical decision support • Triage and prevent unnecessary visits	• Monitor and evaluate prescribing practices • Feedback to clinicians • Share quality measures from health care plans and payors (i.e., HEDIS)	• Clinician education (i.e., academic detailing, CE) • Patient education • Access to consultants

CDC. 2019

Stanford MEDICINE

Ambulatory (vs. Inpatient) Antibiotic Data

The Good

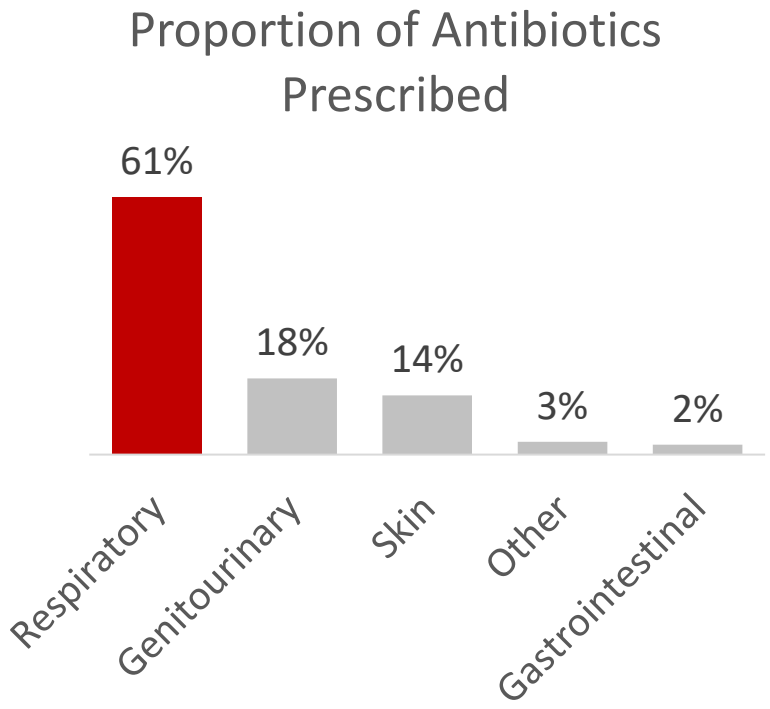
- "Indexed" to an encounter
  - Regimen frequently assessable as a single antibiotic order
- Diagnosis codes may clarify intended indication
  - Especially in urgent care/ED
- Naturally Individualized
  - Assess by clinic/prescriber

The Bad

- More volume…
  - …and handling this volume
- Access to data (IT barriers)
- Diagnosis codes may not clarify intended indication
  - Primary Care – Multiple diagnoses
  - Non-billable encounters
  - Code shifting

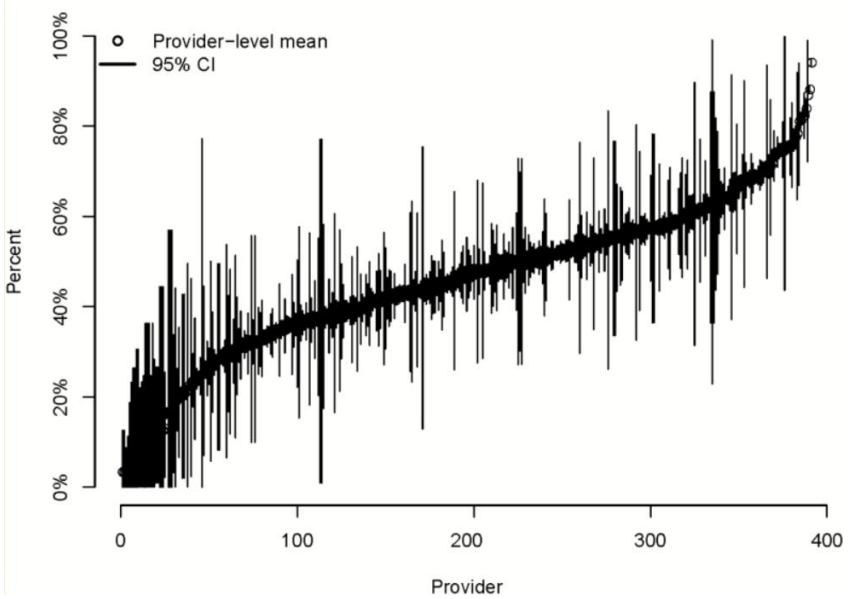
Stanford MEDICINE

Where to Start?



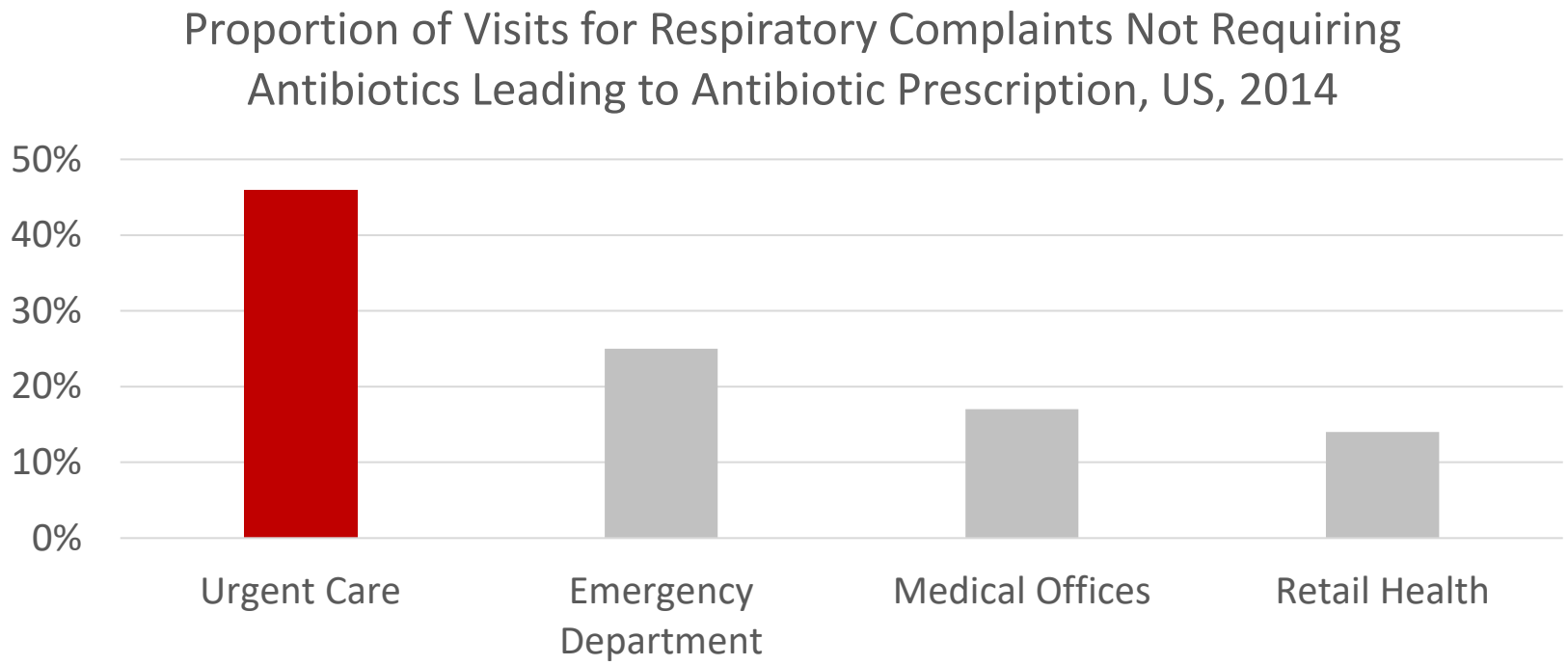
Stenehjem et al. CID 2020

Prescribing Variability (Respiratory)



Stanford MEDICINE

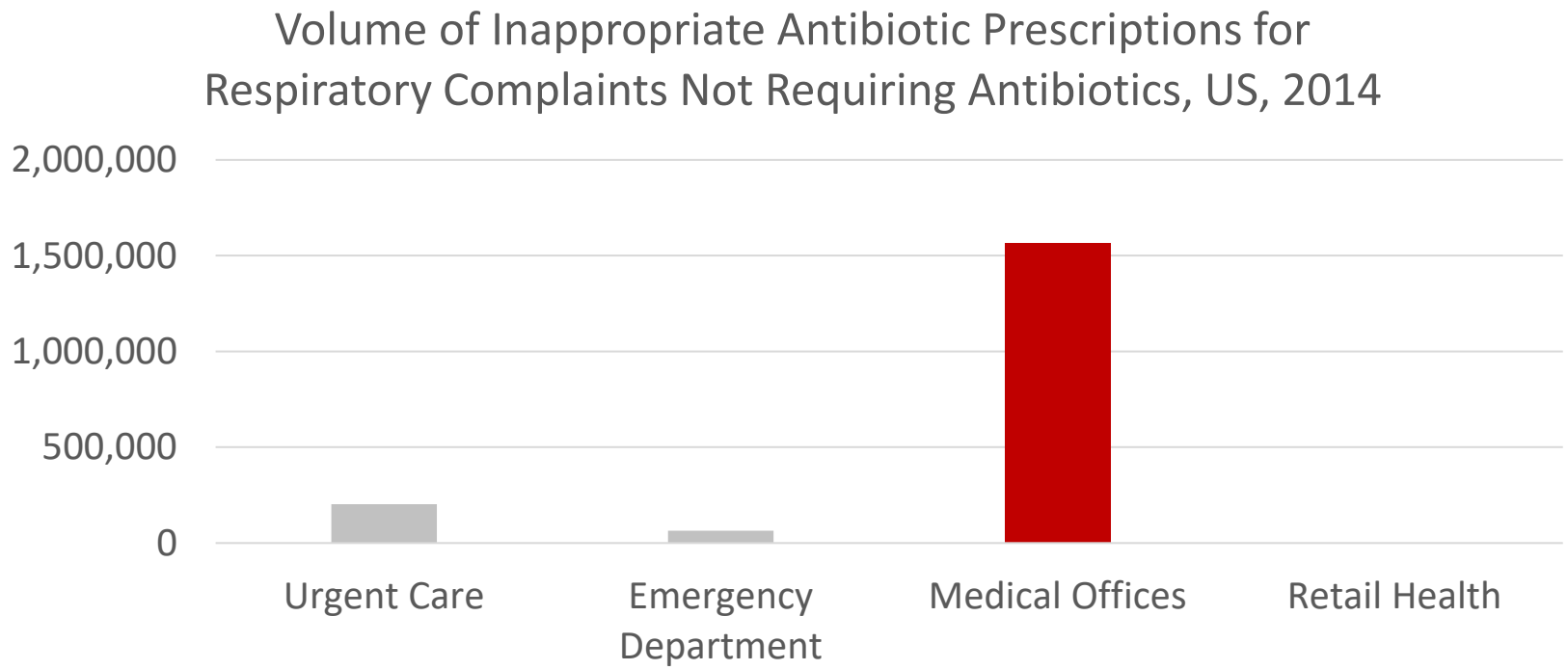
Where to Start?



Palms et al. JAMA Intern Med 2018

Stanford MEDICINE

Where to Start?



Palms et al. JAMA Intern Med 2018

Stanford MEDICINE

Outpatient Antibiotic Data Structure

- Encounter Data
  - Encounter-associated antibiotic regimen
    - Drug, Dose, Route, Duration, Refills
  - Encounter-associated diagnosis(es)
  - Encounter-associated prescriber, prescriber type (MD/DO vs. APP), clinic
  - Encounter type
    - In-office vs. Telemedicine vs. Phone Call/Message vs. Nurse Visit vs. Other
- Patient Data
  - Age (peds vs. adult), Gender, Race/Ethnicity/Zip Code, Insurance/Medical Group

Stanford MEDICINE

ICD-What?

- Diagnosis codes are important for estimating antibiotic prescribing appropriateness in select scenarios
- There are >70,000 ICD-10 codes
- Dictionaries are key!
  - Example: Scan QR Code
  - Click “Supplementary Materials”
  - Click last document (“…Supplementary_Appendix…”)

Stenehjem et al. CID 2020

Stanford MEDICINE

ICD-10 Dictionary – IHS Example

- Click "Supplementary Materials"
- Click last document ("…Supplementary _Appendix…")

- Step 1: Identify Priority ICD-10
  - Lowest tier ICD-10 takes priority (if multiple)
- Step 2: Assign Tier, Category, Subcategory
  - Based on Priority ICD-10
- Example:
  - J20.9 Bronchitis
    - Tier = 3, Category = Respiratory, Subcategory = Bronchitis
  - Antibiotic Rx: Azithromycin 500 mg PO daily x 3 days
  - Assessment = **Inappropriate**

Tier 1	Antibiotics <u>Almost Always</u> Indicated
Tier 2	Antibiotics <u>Sometimes</u> Indicated
Tier 3	Antibiotics <u>Almost Never</u> Indicated
Category	i.e., Respiratory, GU, GI, Skin, Other
Subcategory	i.e., Sinusitis, URI, UTI, Cellulitis, Diverticulitis

Stenehjem et al. CID 2020; Fleming-Dutra et al. JAMA 2016

Stanford MEDICINE

Possible Metrics

Metric	How to Calculate	Example
Antibiotic Prescribing Rate (APR)	$\frac{Encounters\ with\ antibiotic\ precribed}{All\ encounters}$	APR for Tier 3 Respiratory Encounters
Proportion of Prolonged Antibiotic Course Prescribed	$\frac{Encounters\ with\ antibiotic\ duration > X\ days}{All\ encounters}$	Proportion of Tier 1 Respiratory Encounters with Duration >5 days
Proportion of Inappropriate Antibiotic Selection	$\frac{Encounters\ with\ inappropriate\ antibiotic}{All\ encounters}$	Proportion of Tier 1 Respiratory Encounters (excluding aeCOPD) with Azithromycin Monotherapy
Specific Antibiotic Prescribing Index	$\frac{Encounter\ with\ X\ antibiotic\ prescribed}{Encounters\ with\ any\ antibiotic\ prescribed}$	Proportion of amoxicillin among all antibiotics (e.g., "Amoxicillin Index")

Leung et al. JAC Antimicrob Resist 2021; Poole et al. AJIC 2021

Stanford MEDICINE

HEDIS – Bronchitis (AAB)

- Comparative quality measures for healthcare payors
- "Avoidance of Antibiotic Treatment for Acute Bronchitis (AAB)"
  - % of visits with coded diagnosis of URI without antibiotic prescription (3 months and older)
  - Added in 2021

AAB Year	Commercial HMO	Commercial PPO	Medicaid HMO
2021	47.6%	47.2%	55.7%
2020	44.3%	43.9%	55.3%
2019	41.2%	40.2%	52.3%
2018	35.1%	32.5%	36.4%

NCQA. 2021 www.ncqa.org/hedis/measures/avoidance-of-antibiotic-treatment-for-acute-bronchitis-bronchiolitis/); Melville et al. ASHE 2023

Stanford MEDICINE

De-Prescribing Not the Only Target

Sinusitis	5 days	
CAP	5 days	May consider 3 days
aeCOPD	3-5 days	
Cellulitis	5 days	May consider extension if lack of improvement
Skin Abscess	5 days from I&D	
Uncomplicated Cystitis	5 days (nitrofurantoin) 3 days (TMP/SMX) 1 dose (fosfomycin)	3-7 days for oral beta lactams
Pyelonephritis or Complicated Cystitis	7 days (FQs)	7-14 days TMP/SMX 10-14 days oral beta lactams

Durations listed are for infections in adults

Stanford MEDICINE

Target Duration!

Sinusitis	5 days
CAP	5 days
aeCOPD	3-5 days
Cellulitis	5 days
Skin Abscess	5 days from I&D
Uncomplicated Cystitis	5 days (nitrofurantoin) 3 days (TMP/SMX) 1 dose (fosfomycin)
Pyelonephritis or Complicated Cystitis	7 days (FQs)

In assessing for inappropriate durations…

>5 days gets to most of these

>7 days gets to all* (including peds)

*some exception for adult cUTI/pyelo

Durations listed are for infections in adults

Stanford MEDICINE

Action

Where the Rubber Meets the Road

(Ideally once you have data)

Stanford MEDICINE

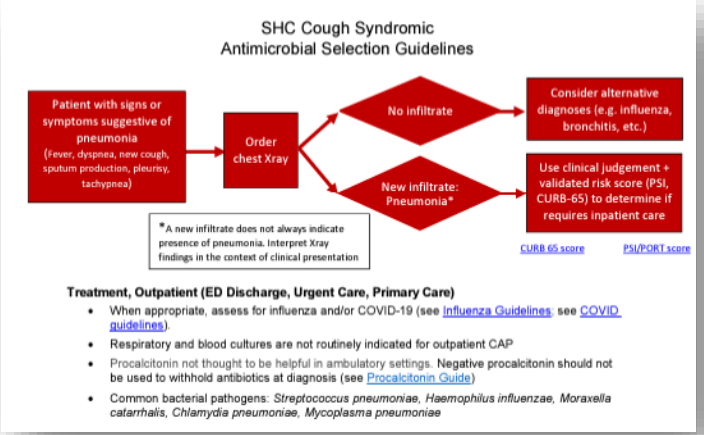
CDC Core Elements

Commitment	Action	Tracking and Reporting	Education and Expertise
• Commitment Posters/Letters • Identify single leader • Include AMS-related duties in job description or evaluation • Clinic staff set patient expectations	• Evidence based diagnosis and treatment (guidelines) • Delayed prescribing or Watchful waiting • Communications training • Written justification for antibiotic prescribing • Provide clinical decision support • Triage and prevent unnecessary visits	• Monitor and evaluate prescribing practices • Feedback to clinicians • Share quality measures from health care plans and payors (i.e., HEDIS)	• Clinician education (i.e., academic detailing, CE) • Patient education • Access to consultants

CDC. 2019

Stanford MEDICINE

Guidelines



- Resources for clinicians
- "True north" to define appropriateness
  - Ideal when developing metrics
- Involve front line clinicians – leverage the IKEA® effect
- Patient education tool
- TJC element of performance for ambulatory ASP
  - *"EP3: The organization uses evidence-based practice guidelines related to its annual antimicrobial stewardship goal(s)"*
- No need to reinvent the wheel…

TJC. 2020 (https://www.jointcommission.org/standards/r3-report/r3-report-issue-23-antimicrobial-stewardship-in-ambulatory-health-care/)

Stanford MEDICINE

Guidelines

Stanford Bugs and Drugs

https://med.stanford.edu/bugsanddrugs

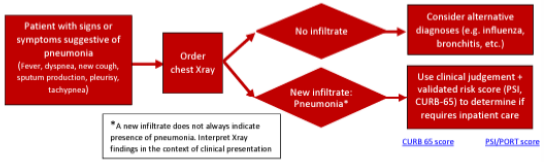
Stanford MEDICINE | Stanford Antimicrobial Safety & Sustainability Program

Outpatient Antibiotic Resources

Clinical Pathways

- Cough Management
- Influenza Treatment Guide
- Sinusitis Treatment Guide
- Skin and Soft Tissue Infection Treatment Guide
- Urinary Tract Infection Treatment Guide

SHC Cough Syndromic Antimicrobial Selection Guidelines



Treatment, Outpatient (ED Discharge, Urgent Care, Primary Care)

- When appropriate, assess for influenza and/or COVID-19 (see Influenza Guidelines; see COVID guidelines).
- Respiratory and blood cultures are not routinely indicated for outpatient CAP
- Procalcitonin not thought to be helpful in ambulatory settings. Negative procalcitonin should not be used to withhold antibiotics at diagnosis (see Procalcitonin Guide)
- Common bacterial pathogens: *Streptococcus pneumoniae, Haemophilus influenzae, Moraxella catarrhalis, Chlamydia pneumoniae, Mycoplasma pneumoniae*

Table 1. Outpatient Rx: Community Acquired Pneumonia Treatment

Risk factors	Preferred Antibiotic Regimen	Alternative Antibiotic Regimen	Duration
No comorbidities (below) No risk factors for MRSA or *Pseudomonas aeruginosa*[a]	Amoxicillin 1000 mg PO TID	Cefpodoxime 200 mg PO BID[b] **OR** Levofloxacin 750 mg PO daily[c]	5 days
Presence of comorbidities, including: Chronic heart, lung, liver, or renal disease, Diabetes, Alcoholism, Malignancy, Asplenia	Amoxicillin/Clavulanate 875/125 mg PO BID **AND** Azithromycin 500 mg PO x 1 on first day followed by 250 mg PO daily on days 2-5[d]	Cefpodoxime 200 mg PO BID[b] **AND** Azithromycin 500 mg PO x 1 on first day followed by 250 mg PO daily on days 2-5[d] **OR** Levofloxacin 750 mg PO daily[c]	5 days

[a] No history of hospitalization AND receipt of IV antibiotics in last 90 days and no prior respiratory isolation of MRSA or *Pseudomonas aeruginosa*
[b] Cefpodoxime may be substituted with Cefuroxime 500 mg PO BID or cefdinir 300 mg PO BID
[c] Levofloxacin may be substituted with Moxifloxacin 400 mg PO daily
[d] Azithromycin dose can also be 500 mg PO daily x 3 doses or may be substituted with Doxycycline 100 mg PO BID

SHC ABX Guidelines: Acute Rhinosinusitis in Adults

Considerations:

- Most (90-98%) sinusitis in the ambulatory setting is due to a viral infection that will self-resolve.
- Guidelines recommend against antibiotics in the first week of symptoms for patients with mild-moderate sinusitis. [IDSA guidelines, Choosing Wisely]
- In a Cochrane review of this issue[1], studies that compared antibiotics with placebo for maxillary sinusitis showed that, in most cases, symptoms improved within two weeks, regardless of whether the participant received an antibiotic or not.

Table 1. Treatment, Outpatient (ED Discharge, Urgent Care, Primary Care)

Antibiotics are only indicated in the following presentations		
ACUTE SYMPTOMS	• Does not meet criteria for the presentations below	No antibiotics. Watchful waiting
SEVERE	• Temp ≥39°C (102°F) **AND** • Facial pain/pressure **AND** • Purulent discharge for > 3 consecutive days	Antibiotics indicated (see Table 2)
PERSISTENT	• Purulent discharge **AND** • Facial pain/pressure or nasal obstruction without improvement for > 10 days	Watchful waiting and no antibiotic prescription (with return precautions) **OR** Delayed prescription (see Table 2) *Contact clinic or fill prescription in 2 – 3 days if worsening or 5-7 days if not improving*
WORSENING	• New or worsening sinusitis signs or symptoms **AFTER** ○ initial improvement **OR** ○ following a URI has lasted > 7 days	

Table 2. Options when antibiotics are indicated

Preferred Regimen	Alternative Regimen for penicillin allergy	Duration
Amoxicillin/Clavulanate 875/125 mg PO BID **OR** Cefpodoxime 200 mg PO BID **OR** Cefuroxime 500 mg PO BID	Levofloxacin 750 mg PO daily	5-7 days
AVOID: *Doxycycline or Azithromycin – high rates of *S. pneumoniae* resistance at SHC *Fluoroquinolones in absence of allergy or contraindication to preferred regimens		

MEDICINE

Selected Resources

- CDC Adult/Pediatric Outpatient Treatment Recommendations
  - https://www.cdc.gov/antibiotic-use/clinicians/
- Stanford Children's Health
  - https://www.stanfordchildrens.org/en/for-health-professionals/antimicrobial-stewardship-program
- Intermountain Health Care
  - https://intermountainhealthcare.org/health-information/health-library/antibiotic-stewardship/
- UCSF Infectious Diseases Management Program
  - https://idmp.ucsf.edu/
- UC Davis
  - https://health.ucdavis.edu/antibiotic-stewardship/outpatient-stewardship.html
- University of Michigan
  - https://www.med.umich.edu/asp/outpatient.html
- *…and many more…*

CDC

Stanford MEDICINE
Children's Health

Intermountain Health

UCSF Infectious Diseases Management Program at UCSF

UCDAVIS HEALTH Antibiotic Stewardship Program

MICHIGAN MEDICINE UNIVERSITY OF MICHIGAN ANTIMICROBIAL STEWARDSHIP

Stanford MEDICINE

Peer Comparison

- Stepped wedge cluster randomized trial
- 30 primary care clinics in UPenn Health System, >185,000 visits
- Interventions:
  - Education (RTI prescribing + Communication skills)
  - Provider Feedback (monthly performance emails relative to peers)

↓ Overall APR
(35.2% → 23%)

↓ Abx Rx for Tier 2 and 3

↓ Bronchitis APR
(75.3% → 49.6%)

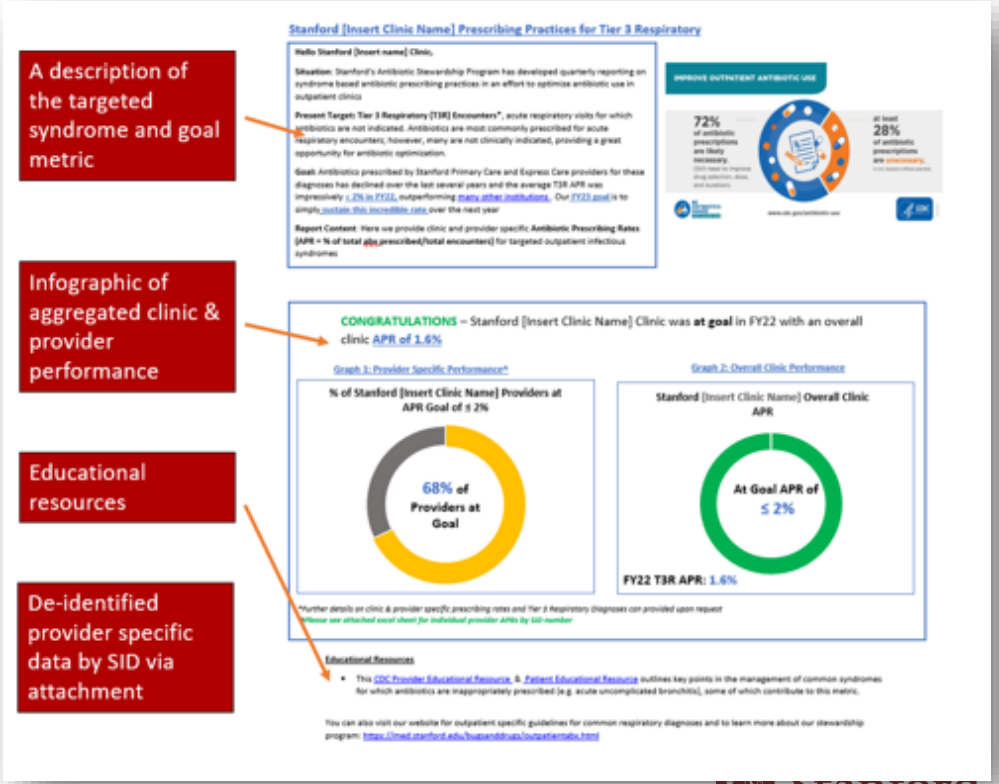
↔ Abx Rx for Tier 1

Dutcher et al. CID 2022

Stanford MEDICINE

Feedback and Peer Comparison at Stanford

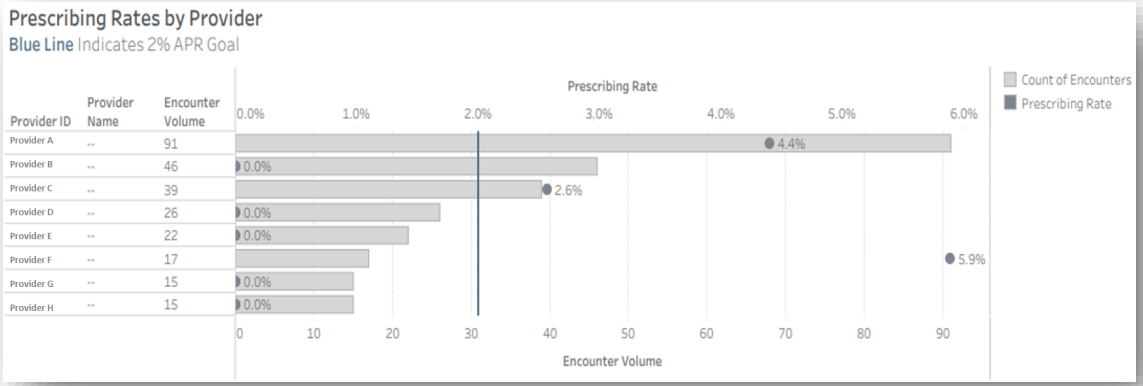
- Quarterly reports to clinic medical directors
- Targets: Non-bacterial (tier 3) respiratory, Sinusitis, Skin Infections, etc.
- Overall clinic performance
- % of providers at goal



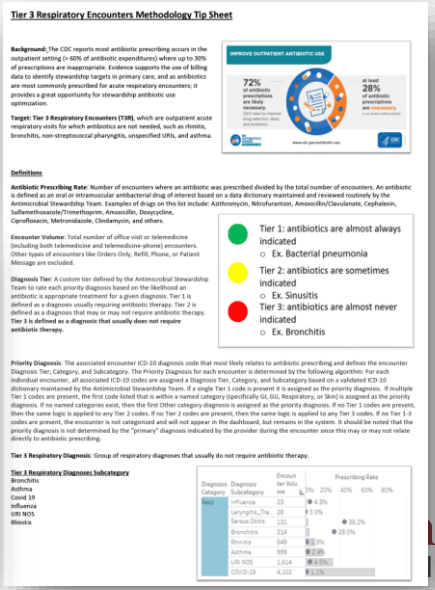
Stanford MEDICINE

Feedback and Peer Comparison at Stanford

- Blinded prescriber feedback relative to peers
- Reference document with detailed methodology on public website
- Mechanism for clarifying data with ASP team

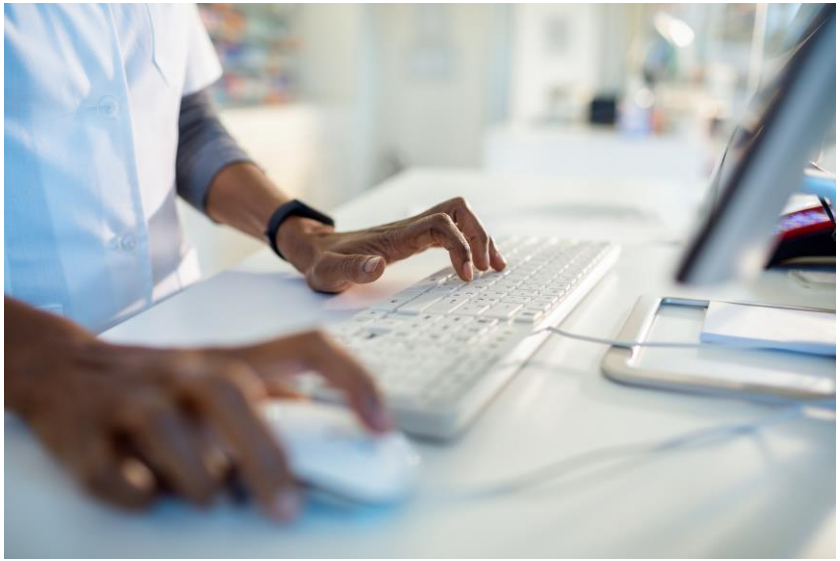


J20.8	Acute bronchitis due to other specified organisms
J20.9	Acute bronchitis, unspecified
J21	Acute bronchiolitis
J21.0	Acute bronchiolitis due to respiratory syncytial virus
J21.1	Acute bronchiolitis due to human metapneumovirus
J21.8	Acute bronchiolitis due to other specified organisms
J21.9	Acute bronchiolitis, unspecified
J30.0	Vasomotor rhinitis
J30.1	Allergic rhinitis due to pollen
J30.2	Other seasonal allergic rhinitis
J30.89	Other allergic rhinitis
J30.9	Allergic rhinitis, unspecified
J31.0	Chronic rhinitis
J31.1	Chronic nasopharyngitis



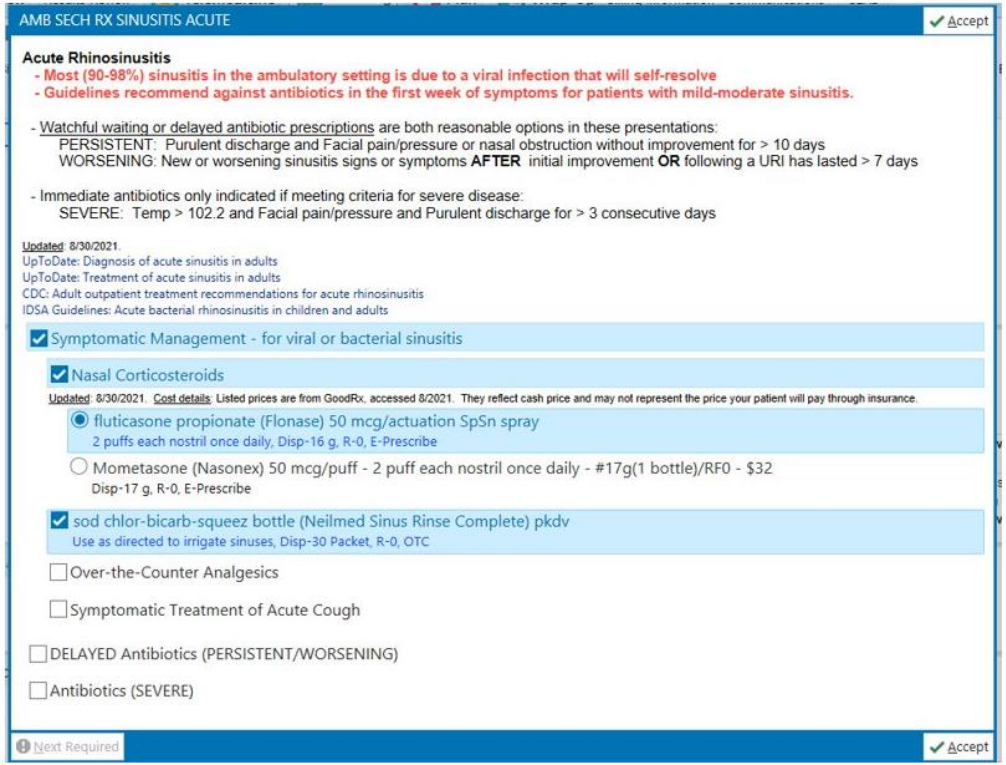
Clinical Decision Support

- Suggested Alternatives
- Accountable Justification



Stanford MEDICINE

Suggested Alternatives



Instructions from Stewardship:
When are ABX appropriate?

Links to relevant webpages

Symptomatic therapies:
- Nasal sprays defaulted
- Additional order panels for analgesics, cough

Antibiotic Orders
- Labeled for specific scenarios
- Delayed ABX orders

Slide Courtesy of Amy Chang, PharmD, MD

Stanford MEDICINE

Accountable Justification

Alert!

The antibiotic ordered does not appear indicated for the infection: **Bronchitis (J20.9)**

☐ Discontinue antibiotic

☐ Continue to prescribe, Please document rationale below:

Rationale

Stanford MEDICINE

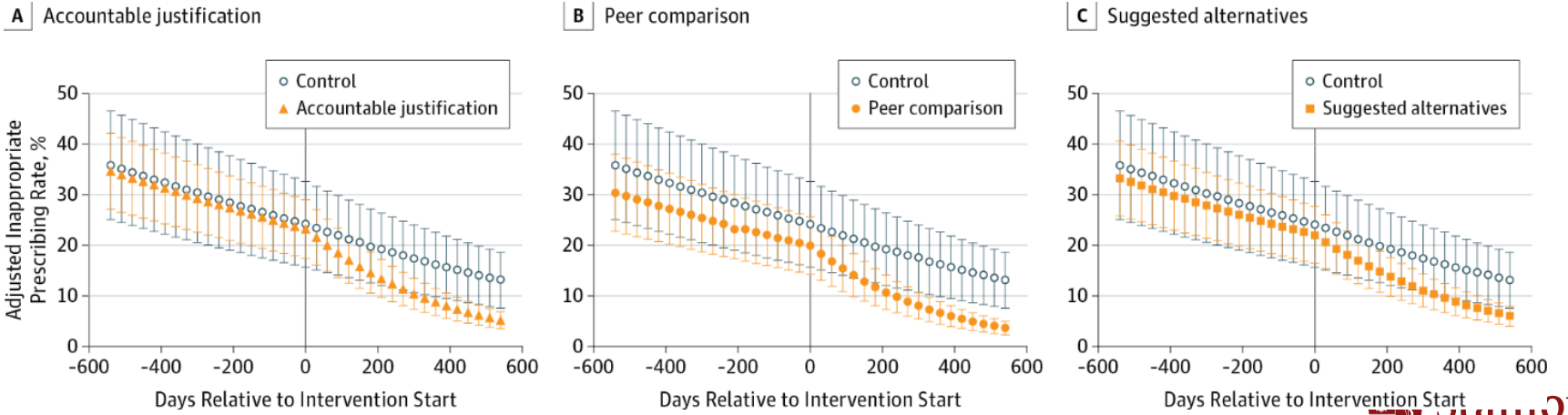
Clinical Decision Support

- Cluster randomized trial
- 47 primary care practices, Boston and LA (248 clinicians), 2011-2014

Suggested Alternatives: -5.0%
(95% CI=-7.8% to 0.1%)

Accountable Justification: -7.0%
(95% CI = -9.1% to -2.9%)

Peer Comparison: -5.2%
(95% CI = -6.9% to -1.6%)

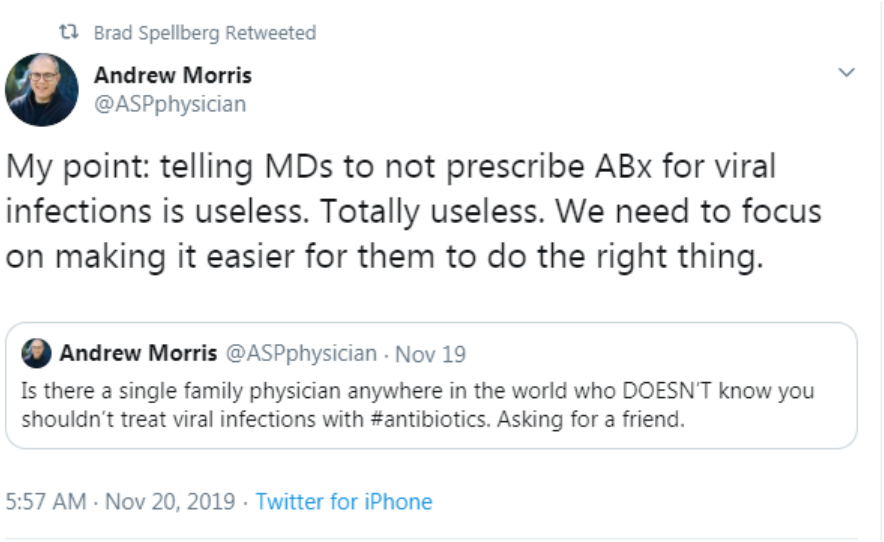


Meeker et al. JAMA 2016

Stanford MEDICINE

Clinical Decision Support

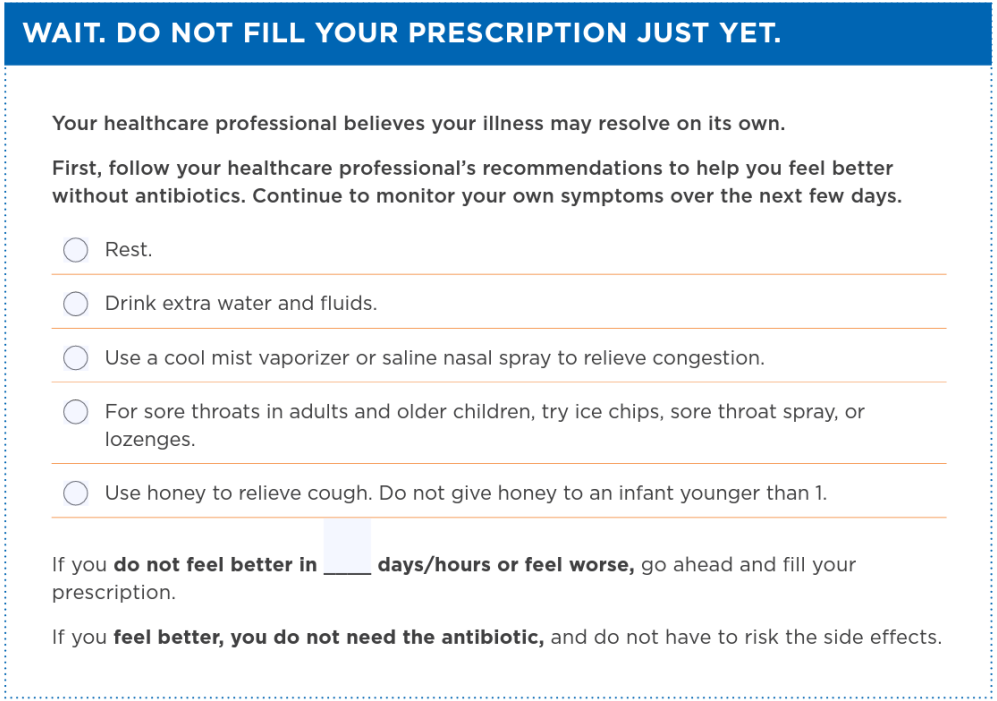
- Make it **hard** to do the **wrong** thing
- Make it **easy** to do the **right** thing



Morris A. Twitter 2019

Stanford MEDICINE

Delayed Antibiotic Prescribing



WAIT. DO NOT FILL YOUR PRESCRIPTION JUST YET.

Your healthcare professional believes your illness may resolve on its own.

First, follow your healthcare professional's recommendations to help you feel better without antibiotics. Continue to monitor your own symptoms over the next few days.

- ◯ Rest.
- ◯ Drink extra water and fluids.
- ◯ Use a cool mist vaporizer or saline nasal spray to relieve congestion.
- ◯ For sore throats in adults and older children, try ice chips, sore throat spray, or lozenges.
- ◯ Use honey to relieve cough. Do not give honey to an infant younger than 1.

If you **do not feel better in ____ days/hours or feel worse,** go ahead and fill your prescription.

If you **feel better, you do not need the antibiotic,** and do not have to risk the side effects.

CDC. 2020

CDC. 2019

Stanford MEDICINE

Delayed Antibiotic Prescribing

- Open label RCT (n=405)
- 23 primary care centers in Spain
- Acute, uncomplicated URI
- Interventions (randomized to 1 of the following 4):
  - Immediate Rx
  - Delayed Rx patient fill on own
  - Delayed Rx clinic fill
  - No Antibiotic Rx

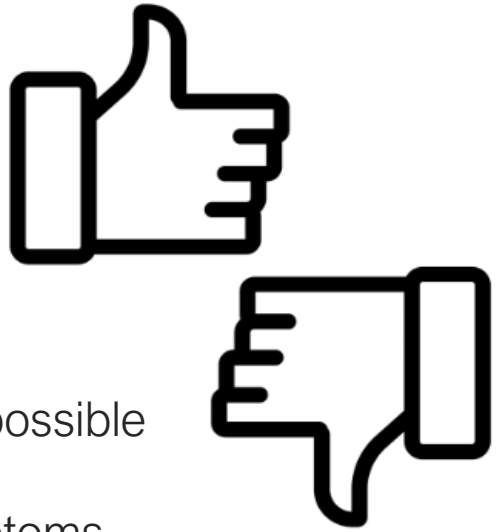
Intervention	% Used Antibiotic	Symptom Duration
Immediate	91%	3.6 days (SD 3.3)
Delayed Patient Fill	33%	3 days (IQR 3-6)
Delayed Clinic Fill	23%	3 days (IQR 1-4)
No Antibiotic	12%	4.7 days (SD 3.6)

de la Poza Abad et al. JAMA Intern Med 2016

Stanford MEDICINE

Delayed Antibiotic Prescribing

- Pros
  - Decreases antibiotic use
  - Preserves patient satisfaction
    - May be more acceptable to clinicians
  - Largely similar outcomes
- Cons
  - May not decrease antibiotic use to fullest extent possible
    - Some inappropriate use may still occur
  - Limited, variable signal of longer duration of symptoms
- Studied in:
  - Acute otitis media (Peds), URI, Acute Cough, Sinusitis



Stanford MEDICINE

Education

Knowledge… and Skills

Stanford MEDICINE

CDC Core Elements

Commitment	Action	Tracking and Reporting	Education and Expertise
• Commitment Posters/Letters • Identify single leader • Include AMS-related duties in job description or evaluation • Clinic staff set patient expectations	• Evidence based diagnosis and treatment (guidelines) • Delayed prescribing or Watchful waiting • Communications training • Written justification for antibiotic prescribing • Provide clinical decision support • Triage and prevent unnecessary visits	• Monitor and evaluate prescribing practices • Feedback to clinicians • Share quality measures from health care plans and payors (i.e., HEDIS)	• Clinician education (i.e., academic detailing, CE) • Patient education • Access to consultants

CDC. 2019

Stanford MEDICINE

Prelude to Education… Knowledge vs. Perception

Stanford MEDICINE

What is the Appropriate Antibiotic Therapy for a Viral Upper Respiratory Infection?

- Amoxicillin
- Amoxicillin/Clavulanate
- Levofloxacin
- No Antibiotics Are Indicated

Stanford MEDICINE

What is the Appropriate Antibiotic Therapy for a Viral Upper Respiratory Infection?

- Amoxicillin
- Amoxicillin/Clavulanate
- Levofloxacin
- No Antibiotics Are Indicated

Stanford MEDICINE

What is the Appropriate Antibiotic Therapy for a Viral Upper Respiratory Infection?

- Amoxicillin
- Amoxicillin/Clavulanate
- Levofloxacin
- No Antibiotics Are Indicated

What proportion of primary care clinicians would get this question wrong on a test?

Stanford MEDICINE

Knowledge Deficit or Something Else?

- Qualitative study of 36 PCPs (physicians and APPs)
- Interviews explored:
  - Antibiotic drug selection for common infections
  - Antibiotic resistance
- Domains assessed:
  - Knowledge
  - Attitudes
  - Self-reported Practices

PCPs familiar with guideline recommendations but did not always follow them

Concern for patient satisfaction

Fear of infectious complications

Belief that non-recommended agents were superior

Widespread concern for AMR but did not factor into decision-making

Sanchez et al. Emerg Infect Dis 2014

Stanford MEDICINE

Patient and Parent Perceptions of Antibiotics

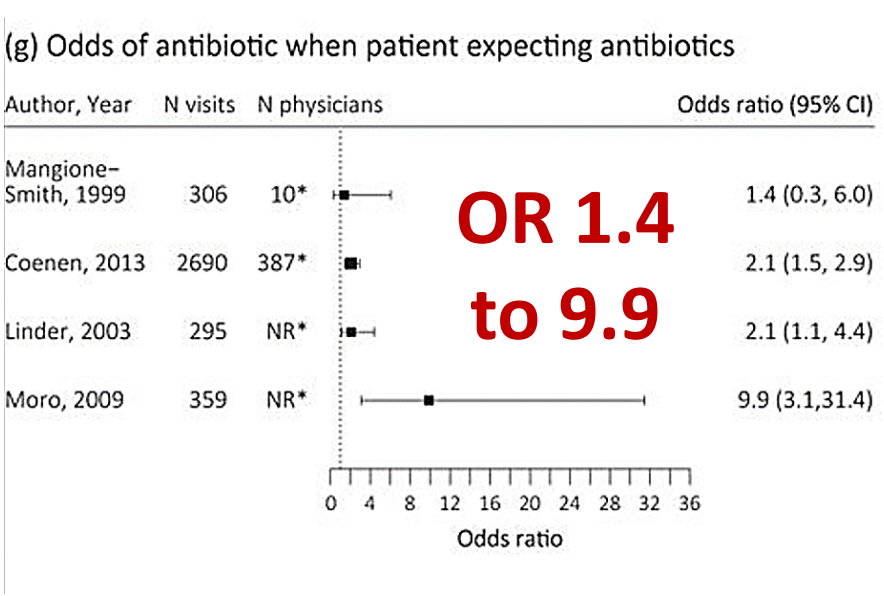
- …would try antibiotics "if I think there's **even a chance that I'll get better quicker**"
- "When I take them, **I don't imagine that there are any, like real risks**. I'm sure that there are, but I don't think that there are"
- When you don't feel good, you're looking for **anything to help**… anything that will provide you some sort of **relief**
- **If kids need [antibiotics], they need it**. I had a cousin who was along those lines and was just doing drops in her baby's ears when the baby clearly had an ear infection, and the boy ended up having all these hearing problems. So, I guess I caution on the side of if they need it, they need it, and we have to keep them safe.

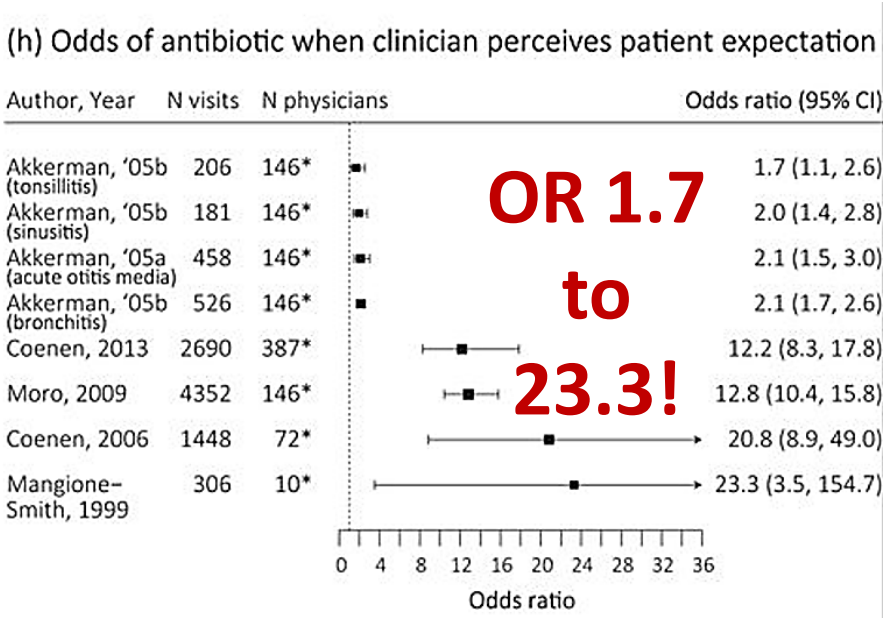
Spicer et al. OFID 2020

Stanford MEDICINE

Expectation… and Expectation of Expectation

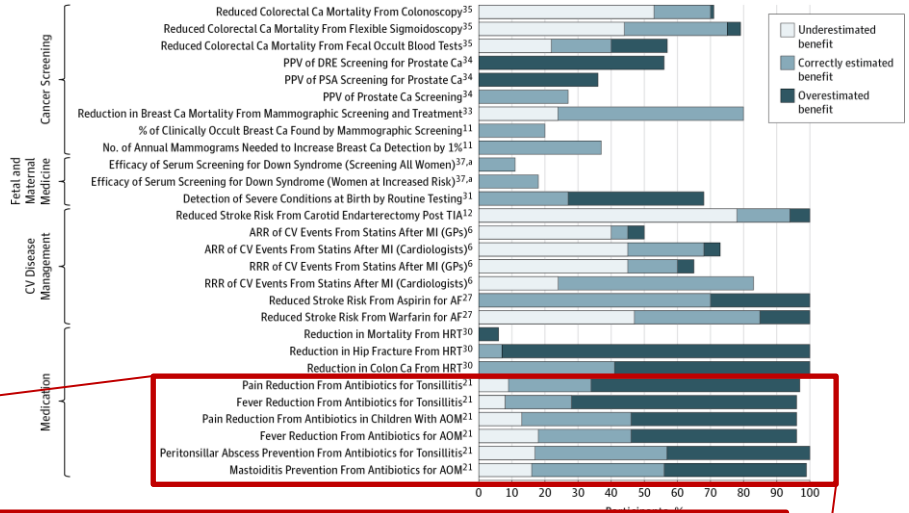
Clinicians tend to over-estimate patient expectations of antibiotics and prescribe more antibiotics when they anticipate the expectation

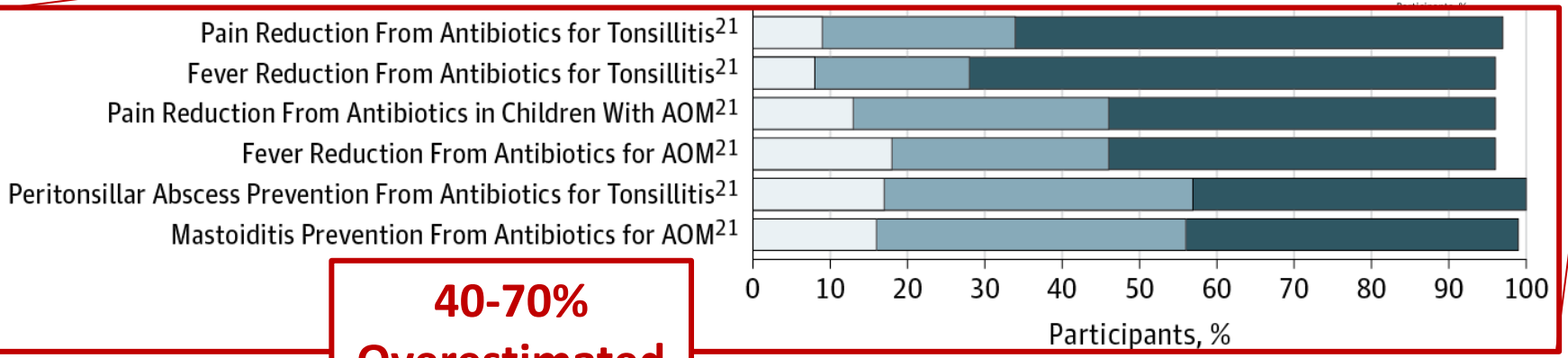




Altiner Fam Pract 2004; McCay et al. AAC 2016

Perceptions… Not Just Patients





40-70% Overestimated Benefit

Hoffman and Mar. JAMA Intern Med 2017

Stanford MEDICINE

Communication Skills Training

- Cross-sectional study
- 10 pediatric practices in Seattle
- Post-RTI visit surveys of both providers and parents

Positive Recs (symptom reduction)

aRR 0.48 (95% CI 0.24-0.95)

Positive (symptom reduction) + Negative (Ruling out need for antibiotics) Recs

aRR 0.15 (95% CI 0.06-0.40)

- Open label, stepped wedge, cluster randomized trial
- 359 adult general practices in Belgium
- Training focused on RTIs + use of CRP
  - Web-based with video content
  - In-depth (INTRO) + brief (TRACE)

↓APR 7% (TRACE)

Effect most pronounced 1 month post training, faded over months 2-6

Mangione-Smith et al. Ann Fam Med 2015; D'Hulster et al. JAC Antimicrob Resist 2022

Stanford MEDICINE

Dialogue Around Respiratory Illness Treatment (DART)

Review Physical Exam Findings	*"Her ears look good and lungs sound great, no sign of pneumonia. Nose is fairly congested though and throat is red but nothing concerning for Strep throat."*
Deliver Clear Diagnosis	*"What we have here is a cold"*
Negative Treatment Recommendation	*"This is a cold, caused by a virus, nothing an antibiotic can help with"*
Positive Treatment Recommendation	*"But raising the head of the bed will help with the drainage so she won't cough as much"*
Provide Contingency Plan	*"I want you to call me right away if she develops high fevers or has a hard time catching her breath. I don't expect this, but that is what you should watch for."*

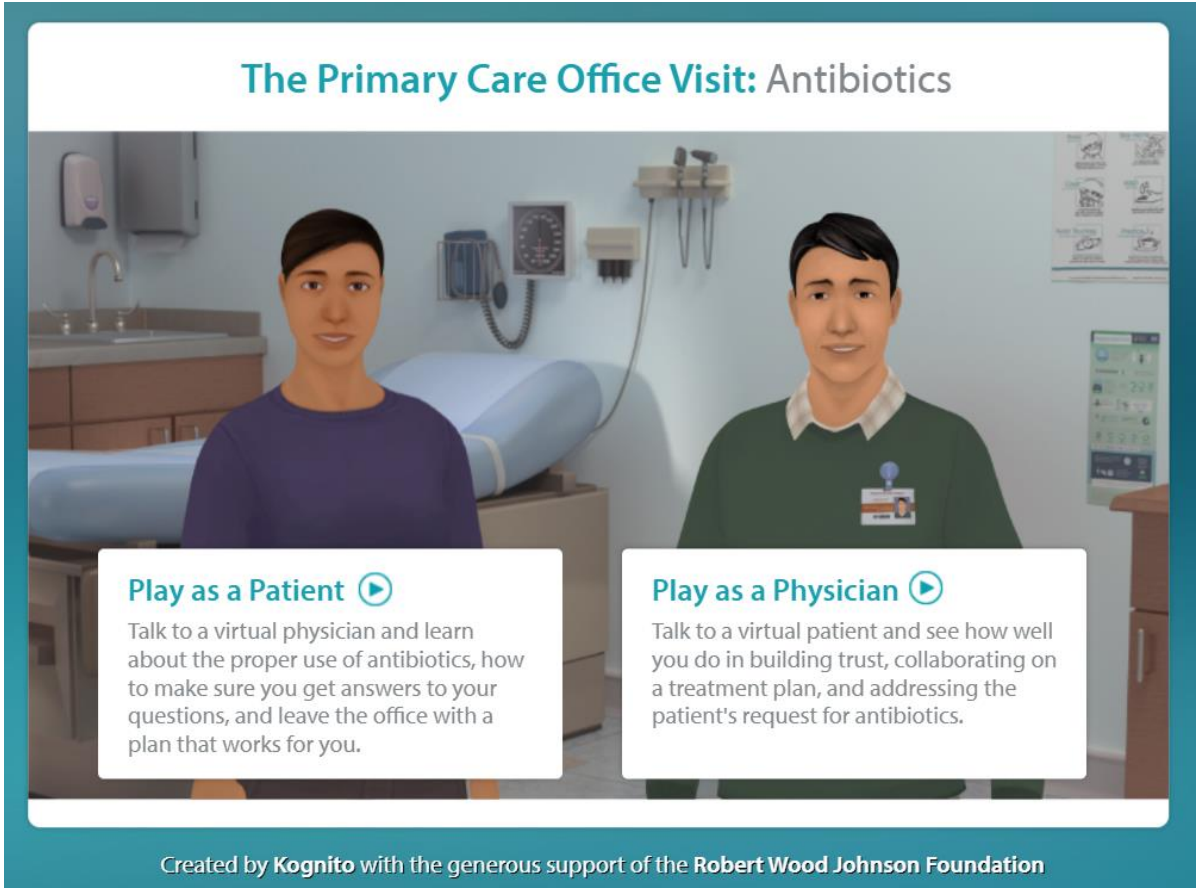
University of Washington. https://www.uwimtr.org/dart/

Stanford MEDICINE

Dialogue Around Respiratory Illness Treatment

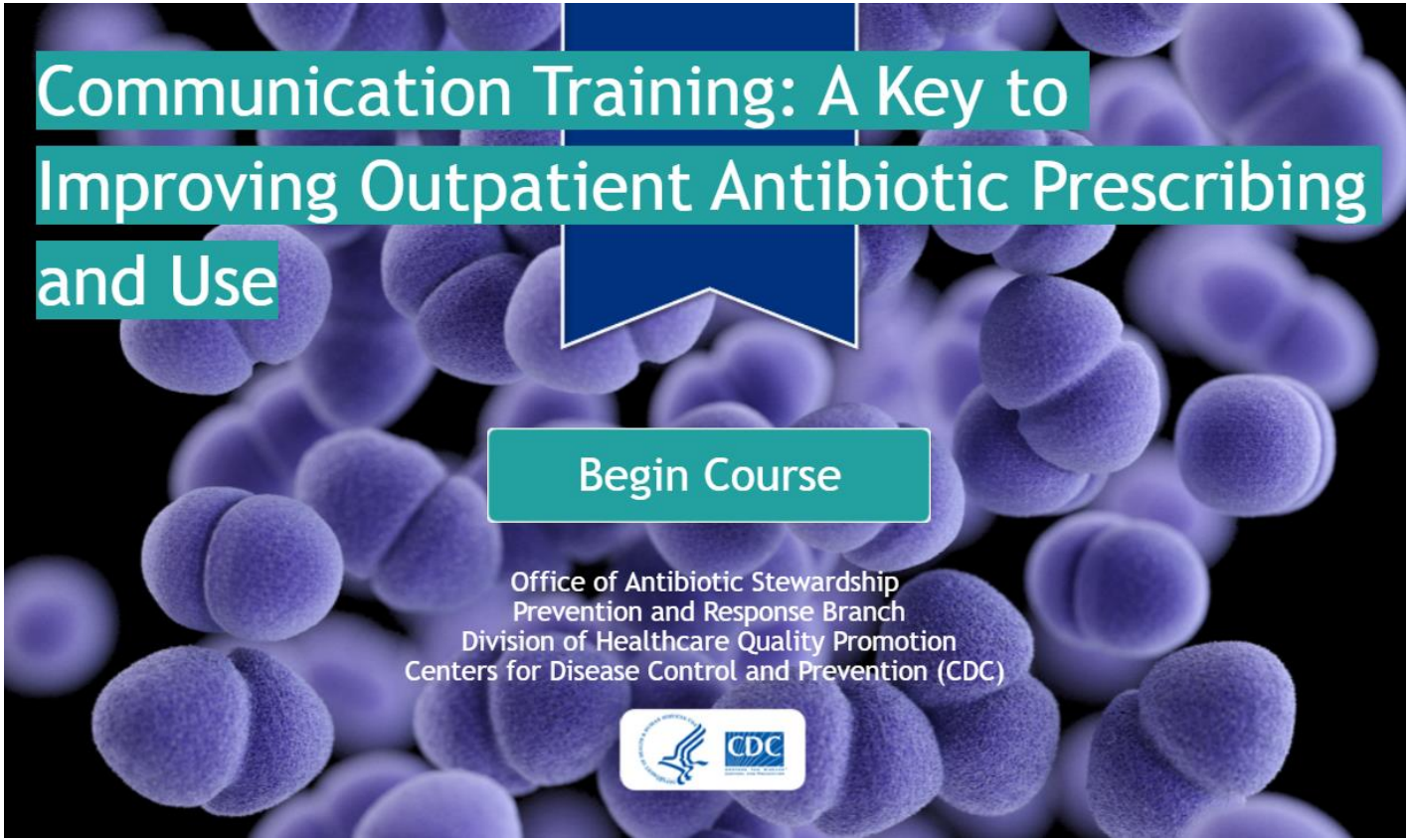
University of Washington. https://www.uwimtr.org/dart/

Stanford MEDICINE



Robert Wood Johnson Foundation. https://www.conversationsforhealth.com/antibiotics/

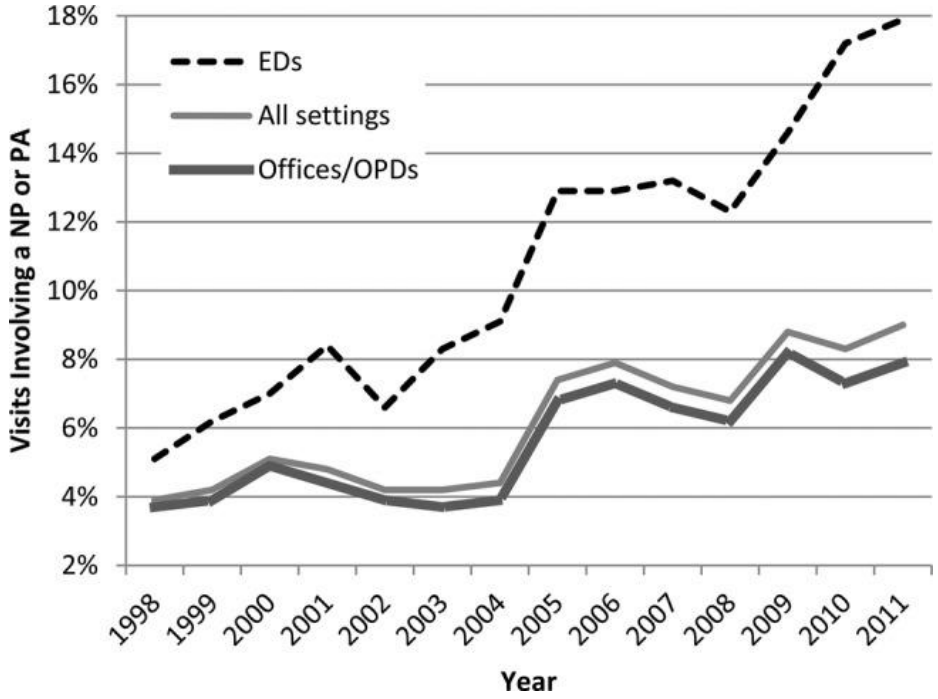
Stanford MEDICINE



CDC. https://www.cdc.gov/antibiotic-use/training/continuing-education.html

Stanford MEDICINE

Your Audience Should Include APPs



APPs prescribed 14% of all antibiotic prescriptions in 2011

…and…

>30% in 2020

Sanchez et al. OFID 2016; Hersh et al. ICHE 2023

Stanford MEDICINE

Academic Detailing
(Retrospective Audit & Feedback)

- Cluster randomized trial
- 140 general practices in Switzerland
- Interventions:
  - Guidelines for Respiratory and Urinary Infections
  - Individualized Feedback on Antibiotic Prescribing for 2 Years

↔ **APR for sinusitis, URI**

↔ **FQs for eCOPD**

↑ **PCNs for RTIs**
(57% vs. 49%)

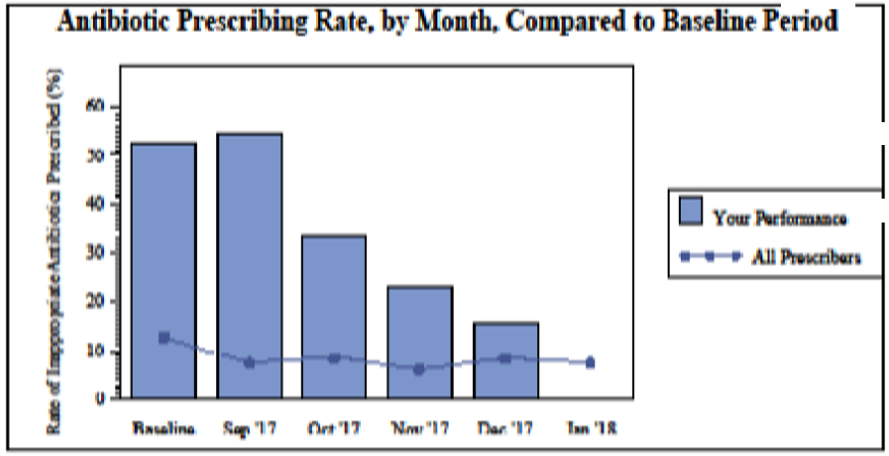
↑ **TMP/SMX for uUTI**
(35% vs. 19%) – guideline adherent

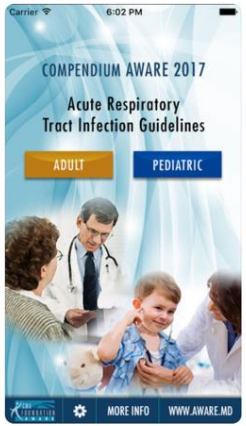
Hurlimann et al. JAC 2015

Stanford MEDICINE

Putting It All Together

- LA County DPH
- **Targeting Appropriate Prescribing in Outpatient Settings (TAP OUT)**
  - Respiratory Conditions
    - i.e., bronchitis, URI, rhinitis, cough, nasopharyngitis, influenza
- Interventions:
  - Peer Comparison
  - Self Comparison
  - Communication Training
  - Commitment Posters
  - App-Based Guidelines





Content courtesy of James McKinnell, MD

MEDICINE

TAP OUT Outcomes

7,446 Encounters

APR 15.3% → 7.3%

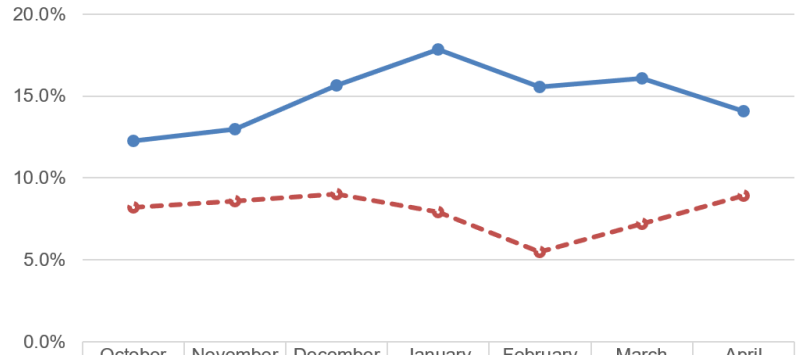
Relative Reduction = 52%

(p<0.0001)

Urgent Care ↓55%

Internal Medicine ↓45%

Antibiotic prescribing rate for acute upper respiratory infections, by respiratory season



	October	November	December	January	February	March	April
2016-17	12.3%	13.0%	15.6%	17.8%	15.5%	16.1%	14.1%
Encounters for which antibiotics were prescribed, 2016-17	98	103	165	256	183	194	137
Eligible encounters, 2016-17	800	795	1055	1436	1178	1207	975
2017-18	8.2%	8.6%	9.0%	7.9%	5.5%	7.2%	8.9%
Encounters for which antibiotics were prescribed, 2017-18	71	83	112	143	79	117	90
Eligible encounters, 2017-18	894	968	1255	1899	1545	1614	1343

Content courtesy of James McKinnell, MD

Stanford MEDICINE

TAP OUT Resources

- Resources available at: http://publichealth.lacounty.gov/acd/TAPOUT.htm

Behavioral insights to curtail antibiotic overuse

Jason N. Doctor, PhD

Appropriate Treatment of Common Infections in Primary Care

James McKinnell, MD
Infectious Disease Specialist
Associate Professor at the David Geffen School of Medicine, UCLA
Consulting Specialist, Acute Communicable Disease Control at the LA County Department of Public Health

National Center for Emerging and Zoonotic Infectious Diseases

Antibiotic Stewardship in the Outpatient Setting

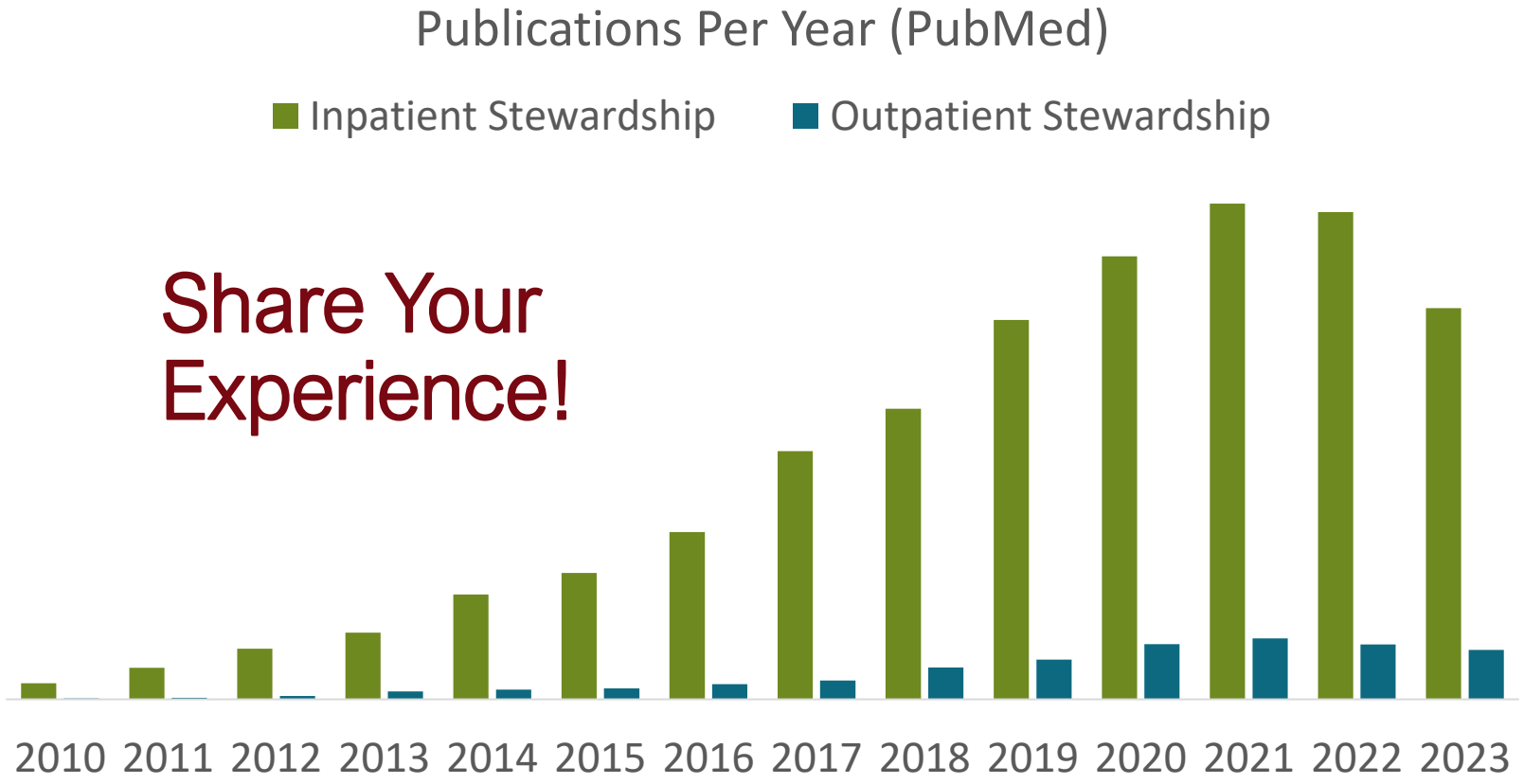
Katherine Fleming-Dutra, MD

BE ANTIBIOTICS AWARE
SMART USE, BEST CARE

Office of Antibiotic Stewardship
Division of Healthcare Quality Promotion
National Center for Emerging and Zoonotic Infectious Diseases
Centers for Disease Control and Prevention

Content courtesy of James McKinnell, MD

MEDICINE



PubMed.gov (Accessed October 2023)

Stanford MEDICINE

Acknowledgements

- James McKinnell, MD
- Marisa Holubar, MD
- Mary Smith, MD
- Amy Chang, PharmD, MD

Stanford MEDICINE


Stanford
MEDICINE