

Understanding Antimicrobial Stewardship (ASP) for Nursing Homes in California

James A. McKinnell, MD

ASP Program

Infectious Disease Association of California

Disclosures

- I am the President and Co-Founder of Expert Stewardship
- I have provided promotional speaker services: Abbvie, Ferring
- I serve as a consultant for: Thermo Fisher

Antimicrobial Stewardship

“Antimicrobial stewardship is defined as a formalized program that provides advice, consent, and institutional guidance on appropriate selection, dosing, route and duration of antimicrobial usage.”

Antibiotic Stewardship (simplified)

Right Diagnosis

Right Drug

Right Dose

Right Duration

LUCY

72 year old female has a mechanical fall in her SNF.

PMH: moderate dementia, CKD and aspiration pneumonia. She is a nursing home resident.

T:98.6 P:106/62 R: 22 S:92%

- Alert
- Frail
- Slight temporal wasting
- No Skin Changes



LUCY

No Dysuria
No Urgency
No Frequency
No Foley

Covering Doc: UA/UCX





Hello Doctor, I'm sorry
to bother you...

“Doctor, I’m calling you to let you know that the Urine Culture for HR Is Positive.”

“Read me the sensitivities.”
“Start Levaquin 500 mg po daily x 10 days.”



LUCY

**Morning of Day 3 of Therapy:
LVN finds Lucy**

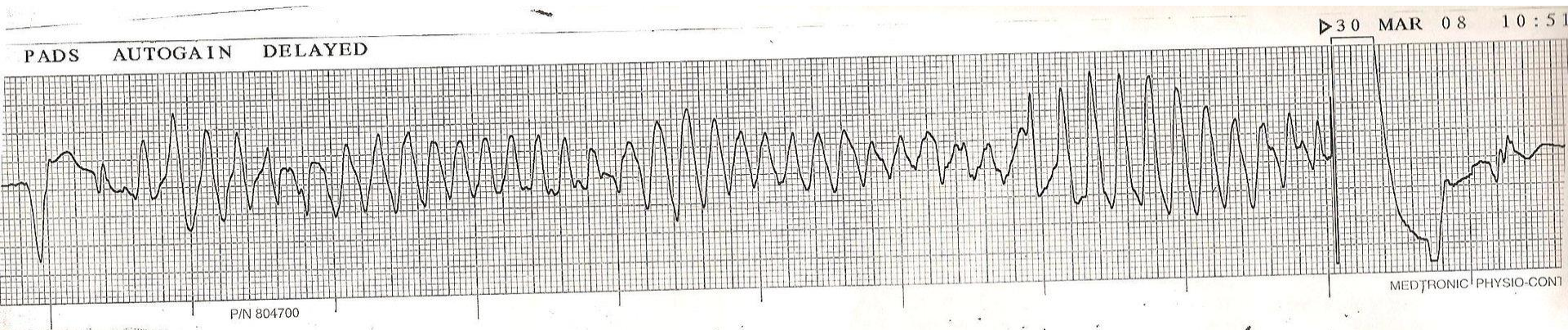
Cold and Pulseless

Time of Death: 6:05 AM

Why did Lucy Die?



Pop Quiz:



FDA Black Box Warning

The FDA first added a Boxed Warning to fluoroquinolones in [July 2008](#) for the increased risk of tendinitis and tendon rupture. In February 2011, the risk of worsening symptoms for those with myasthenia gravis was added to the Boxed Warning. In [August 2013](#), the agency required updates to the labels to describe the potential for irreversible peripheral neuropathy (serious nerve damage).

In November 2015, an [FDA Advisory Committee](#) discussed the risks and benefits of fluoroquinolones for the treatment of acute bacterial sinusitis, acute bacterial exacerbation of chronic bronchitis and uncomplicated urinary tract infections based on new safety information. The new information focused on two or more side effects occurring at the same time and causing the potential for irreversible impairment. The advisory committee concluded that the serious risks associated with the use of fluoroquinolones for these types of uncomplicated infections generally outweighed the benefits for patients with other treatment options.

Today's action also follows a May 12, 2016, [drug safety communication](#) advising that fluoroquinolones should be reserved for these conditions only when there are [no other options](#) available due to potentially permanent, disabling side effects occurring together. The drug safety communication also announced the required labeling updates to reflect this new safety information.

FDA Black Box Warning For

- Sinusitis
- COPD Exacerbation
- Uncomplicated Urinary Tract Infections

Antimicrobial-Associated QT Interval Prolongation: Pointes of Interest

Robert C. Owens, Jr.,^{1,2,4} and Thomas D. Nolin^{1,3,4}

¹Department of Clinical Pharmacy Services and Divisions of ²Infectious Diseases and ³Nephrology and Transplantation, Maine Medical Center, Portland, Maine; and ⁴Department of Medicine, University of Vermont, College of Medicine, Burlington, Vermont

- TdP commonly occurs in older patients (72 +/- 15 years)

Underlying risk factors are common, but not universal:

- 24% with Concomitant QT prolonging medications
- 62% Underlying Heart Disease
- 17% Hypokalemia/Magnesiumemia
- 67% Female

Chest. 2005 Nov;128(5):3398-406.

A randomized trial comparing the cardiac rhythm safety of moxifloxacin vs levofloxacin in elderly patients hospitalized with community-acquired pneumonia.

Morganroth J¹, Dimarco JP, Anzueto A, Niederman MS, Choudhri S; CAPRIE Study Group.

- 394 Randomized, 387 Safety Patients >64
- Randomized to Moxifloxacin or Levofloxacin
- 120 with QT prolonging medications
- 26 Cardiac Events --- 6% Affected **[NNH 15]**
- **1 Case of Torsades --- 0.2% Affected [NNH 500?]**
- **Notably: No Renal Impairment, No Hypo K, No known QTc**

How much risk are we facing

- SNF (100 beds) without ASP uses FQ approximately 50/year
- Every 10 years is about 500 FQ prescriptions
- If you manage 10 facilities, 500 FQ prescriptions/year

**What was Lucy's
original Diagnosis?**



Asymptomatic Bacteriuria

Bacteria in Urine, but no Symptoms

No Fever, Not Altered, Not Very Sick

Table 2. Prevalence of asymptomatic bacteriuria in selected populations.

Population	Prevalence, %	Reference
Healthy, premenopausal women	1.0–5.0	[31]
Pregnant women	1.9–9.5	[31]
Postmenopausal women aged 50–70 years	2.8–8.6	[31]
Diabetic patients		
Women	9.0–27	[32]
Men	0.7–11	[32]
Elderly persons in the community ^a		
Women	10.8–16	[31]
Men	3.6–19	[31]
Elderly persons in a long-term care facility		
Women	25–50	[27]
Men	15–40	[27]
Patients with spinal cord injuries		
Intermittent catheter use	23–89	[33]
Sphincterotomy and condom catheter in place	57	[34]
Patients undergoing hemodialysis	28	[28]
Patients with indwelling catheter use		
Short-term	9–23	[35]
Long-term	100	[22]

^a Age, ≥ 70 years.

25-50% of Elderly Women in a SNF Have Asymptomatic Bacteriuria

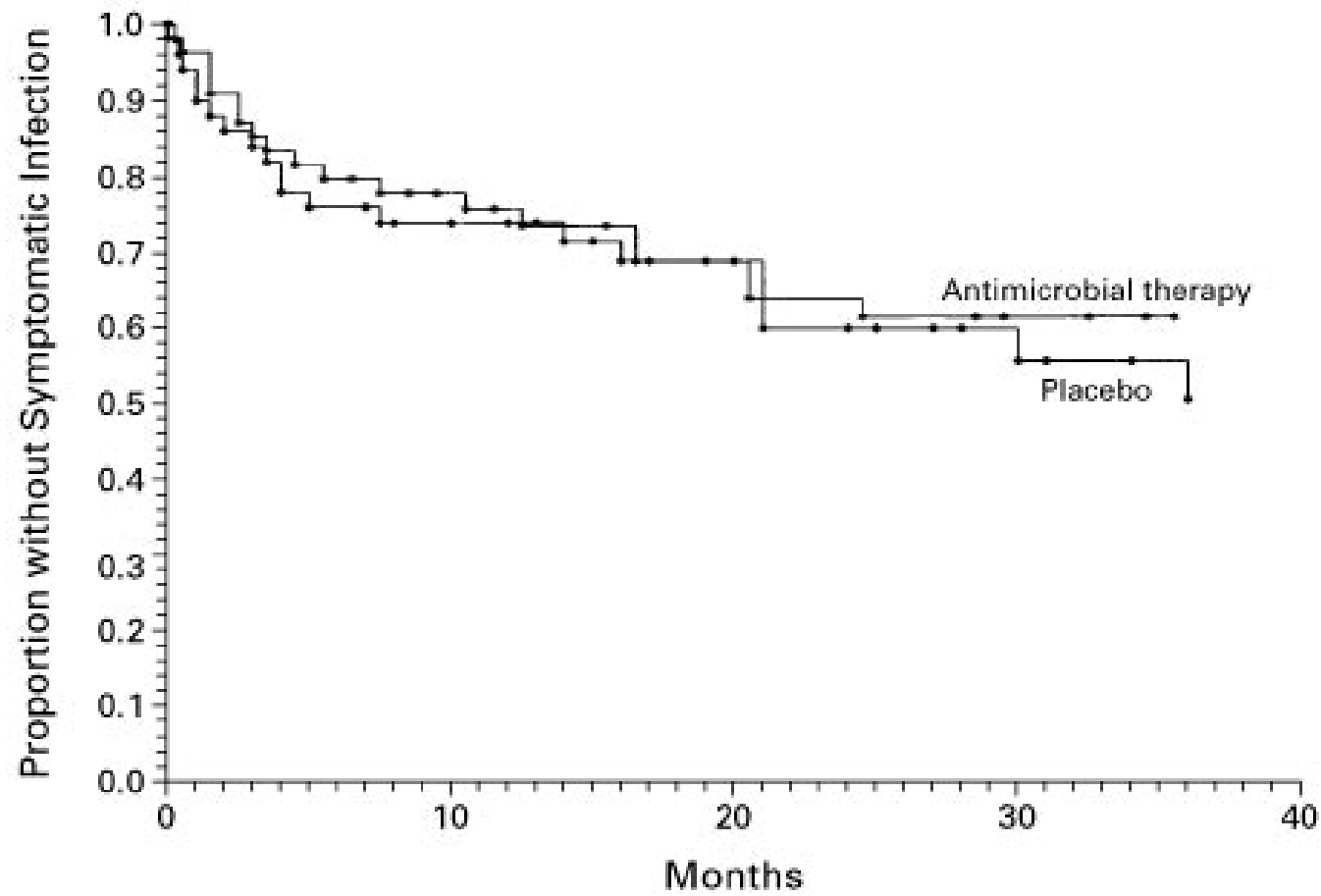
2005 IDSA Guidelines for Asymptomatic Bacteriuria

Prospective Randomized Studies

Treatment vs. No Treatment ASB

Authors	Subjects	Intervention	Outcome
Nicolle LE, et al. NEJM 1983;309:1420-5	Men, NH, median age 80	Treated 16 Not treated 20 Duration 2 years	No difference mortality or infectious morbidity 2 groups
Nicolle LE, et al. Am J Med 1987;83:27-33	Women, NH, median age 83	Treated 26 Not treated 24 Duration 1 year	No difference mortality/GU morbidity. Increase drug reactions and AB resistance treated group.
Abrutyn E, et al. Ann Intern Med 1994;120:827-33	Women, ambulatory and NH Mean age 82	Treated 192 Not treated 166 Duration 8 years	No survival benefit from treatment
Ouslander JG Ann Intern Med 1995;122:749-54	Women and men NH Mean age 85	Treated 33 Not treated 38 Duration 4 weeks	No difference chronic urinary incontinence

Proportion of Women with Diabetes Who Remained Free of Symptomatic Urinary Tract Infection, According to Whether They Received Antimicrobial Therapy or Placebo at Enrollment.



What was Lucy's original Drug?

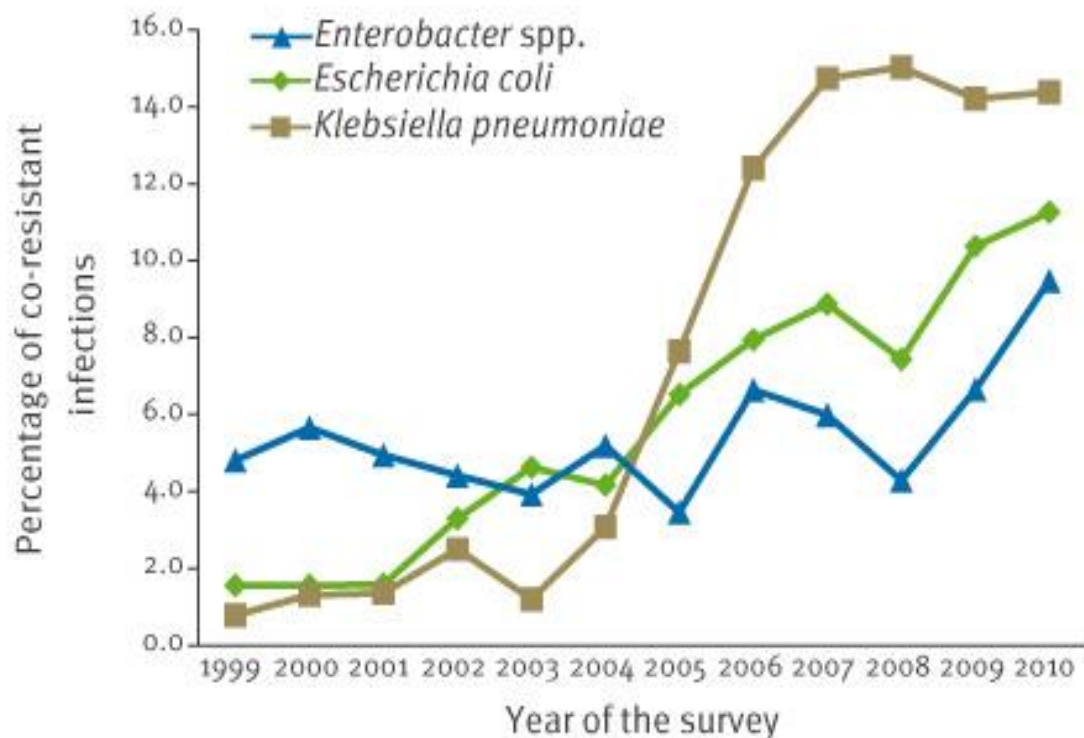
“Read me the sensitivities.”
“Start Levaquin 500 mg po daily x 10 days.”



Fluroquinolone Resistance is Here

FIGURE 4

Annual rates of *Enterobacteriaceae* co-resistant to fluoroquinolones and third-generation cephalosporins, Spain, 1999–2010



Where to Use Fluroquinolones?

- No role in empiric monotherapy
- Potential role in empiric combination therapy
- Targeted therapy for specific pathogens or when no other options are available

What was Lucy's original Drug Duration?

“Read me the sensitivities.”

“Start Levaquin 500 mg po daily x 10 days.”



“One Third of What You Learned in
Medical School is Wrong...

The Trick is Determining Which Third.”

McKinnell's Notes on Antibiotic Duration

- Community Associated Pneumonia 7-10
- HAP/VAP 10-14
- Pyelonephritis 10-14
- Cellulitis 7-10
- Bacteremia 14-42

PYELONEPHRITIS

5-7 DAYS

- **Several RCTs 5-7 days equal to 10-14 days**
- **Short course effective despite diabetes and GNB bacteremia**

Jernelius et al. Acta Med Scand 1988;223:469-77; de Gier R, Karperien A, Bouter K, et al. 1995. Int J Antimicrob Agents 6:27-30; Talan DA, Stamm WE, Hooton TM, et al. 2000 JAMA 283:1583-90; Sandberg et al. 2012 Lancet 380:484-90; Peterson et al. 2008 Urology 71:17-22; Klausner et al. 2007. Current medical research and opinion 23:2637-45.

Short Course Therapy!!!!

Diagnosis	Short (d)	Long (d)	Result
CAP	3 or 5	7, 8, or 10	Equal
HAP	7	10-15	Equal
VAP	8	15	Equal
Pyelo	7 or 5	14 or 10	Equal
Intra-abd	4	10	Equal
AECB	≤ 5	≥ 7	Equal
Cellulitis	5-6	10	Equal
Osteo	42	84	Equal

Why do we need Antimicrobial Stewardship in Long Term Care?



Antibiotic Stewardship in Nursing Homes

4.1 MILLION
Americans are admitted to or
reside in nursing homes during a year¹



UP TO **70%**
of nursing home residents
received antibiotics during a year²



UP TO **75%**
of antibiotics are
prescribed incorrectly^{3,4}

Consequences:

- More-serious illness or disability
- Prolonged recovery
- More-frequent or longer hospitalization
- More doctor visits
- More Readmissions
- Less effective/more-invasive Rx
- More-expensive treatments
- More Deaths: 23,000 annually

US LTC Antibiotic cost:
\$38-\$137 million per year

⁴Incorrectly = prescribing the wrong drug, dose, duration or reason

¹AHCA Quality Report 2013.

²Lim CJ, Kong DCM, Stuart RL. Reducing inappropriate antibiotic prescribing in the residential care setting: current perspectives. Clin Interv Aging. 2014; 9: 165-177.

³Nicolle LE, Bentley D, Garibaldi R, et al. Antimicrobial use in long-term care facilities. Infect Control Hosp Epidemiol 2000; 21:537-45.



Centers for Disease
Control and Prevention
National Center for Emerging and
Zoonotic Infectious Diseases

Regulatory Requirements

- “By the end of 2017, CMS and CA require long-term care and nursing home facilities to develop and implement robust ASPs that adhere to best practices”



US Causes of Death

	2013	Deaths
1	Heart Disease	611,000
2	Cancer	584,000
3	Accidents	130,000
4	Stroke	129,000
5	Healthcare Associated Infections	100,000
6	Alzheimer's Disease	83,000

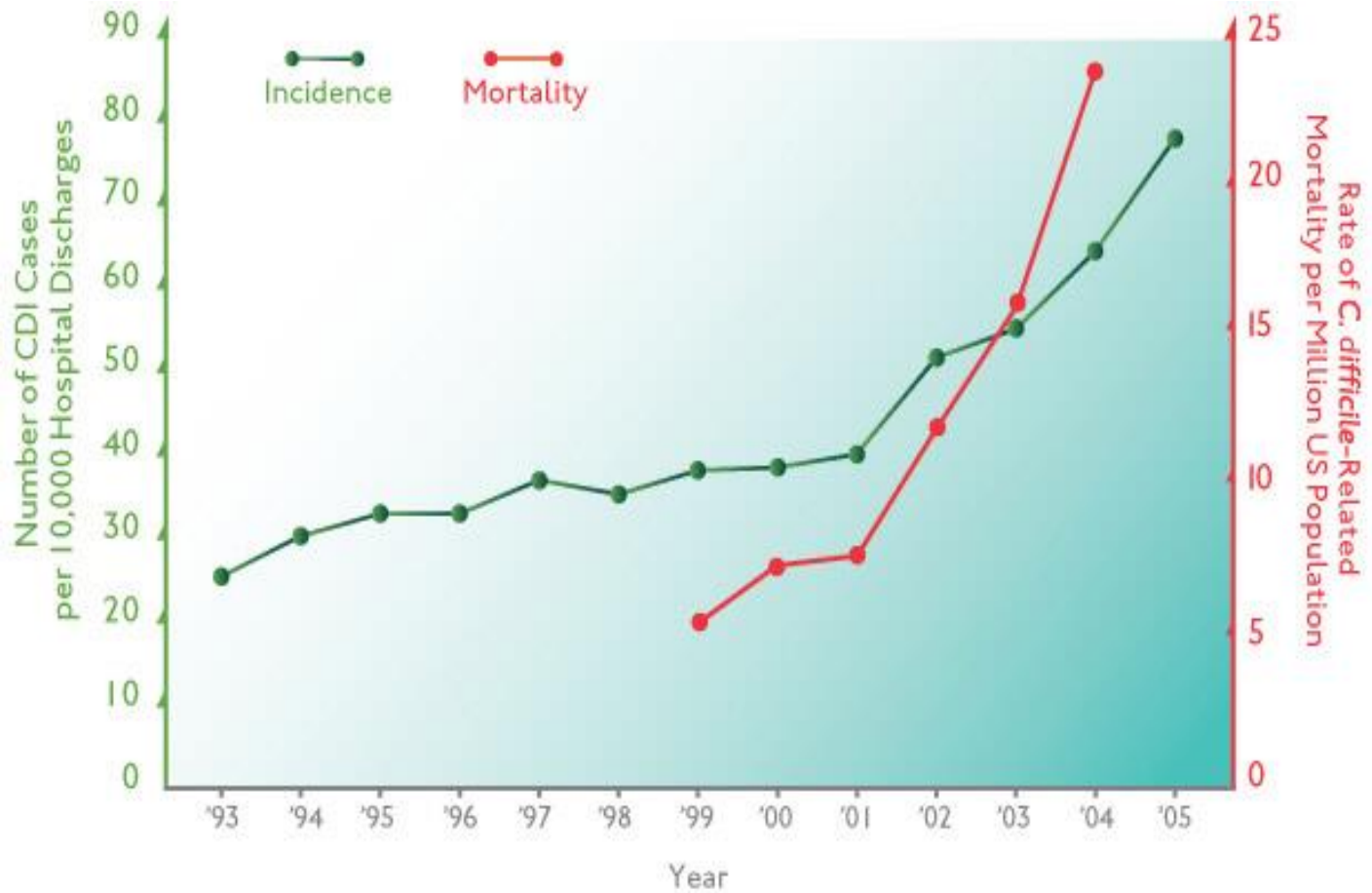
<http://www.cdc.gov/nchs/fastats/leading-causes-of-death.htm> Accessed 4/22/2015, rounded to the nearest thousand deaths.

http://www.cdc.gov/HAI/pdfs/hai/infections_deaths.pdf Accessed 4/22/2015.

CDI: Impact

	Number of annual cases	Cost	Number of annual deaths
Hospital-onset, hospital acquired (HO-HA)	165,000	\$ 1.3 B	9,000
Community-onset hospital acquired (CO-HA) [4 weeks of hospitalization]	50,000	\$ 0.3 B	3,000
Nursing home-onset	263,000	\$ 2.2 B	16,500

Increasing US Mortality due to C difficile

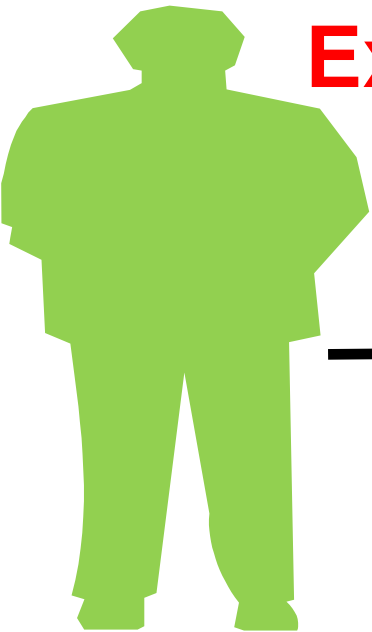


* Daneman et al. JAC 66:2856, Dec 2011

CDI Pathogenesis

C. difficile
Exposure

**Antimicrobial
Treatment**



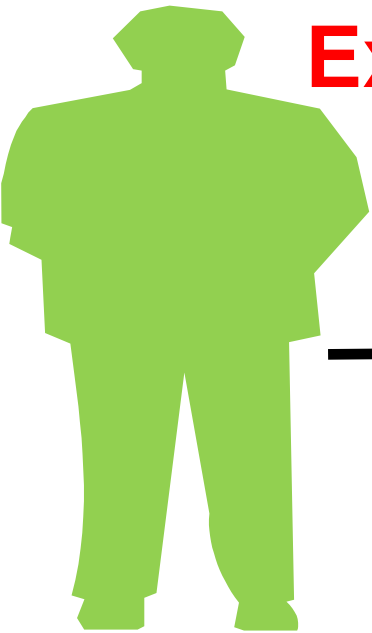
**Admitted to
healthcare facility**

**Colonized
no symptoms**

**Infected
Symptomatic**

CDI Pathogenesis

C. difficile
Exposure



**Admitted to
healthcare facility**



**Colonized
no symptoms**



**Infected
Symptomatic**

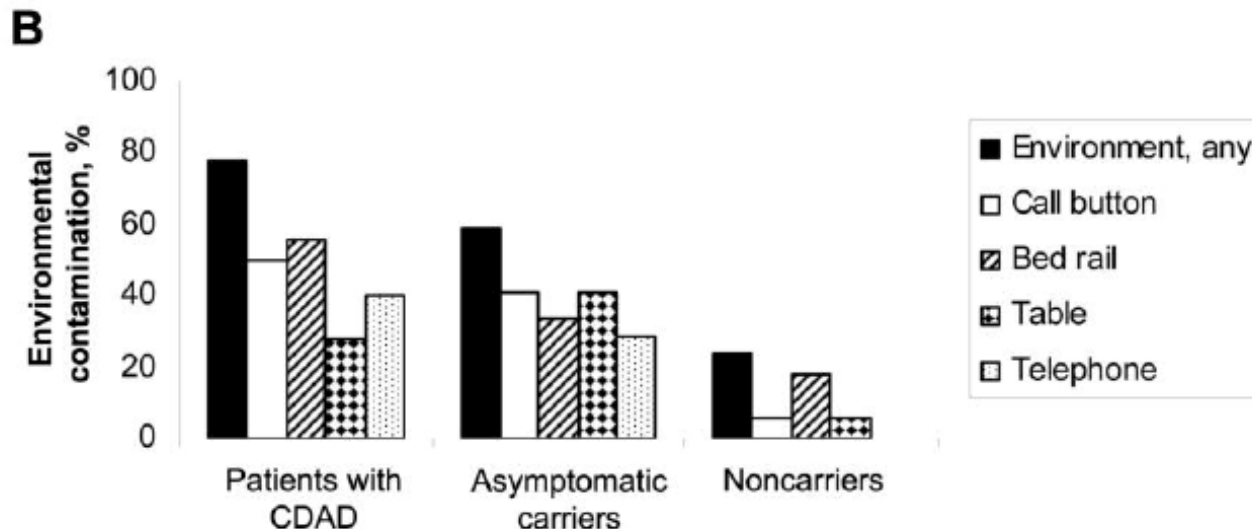
Asymptomatic carriers are a potential source for transmission of *Clostridium difficile*

3-month study in LTCF with 73 residents

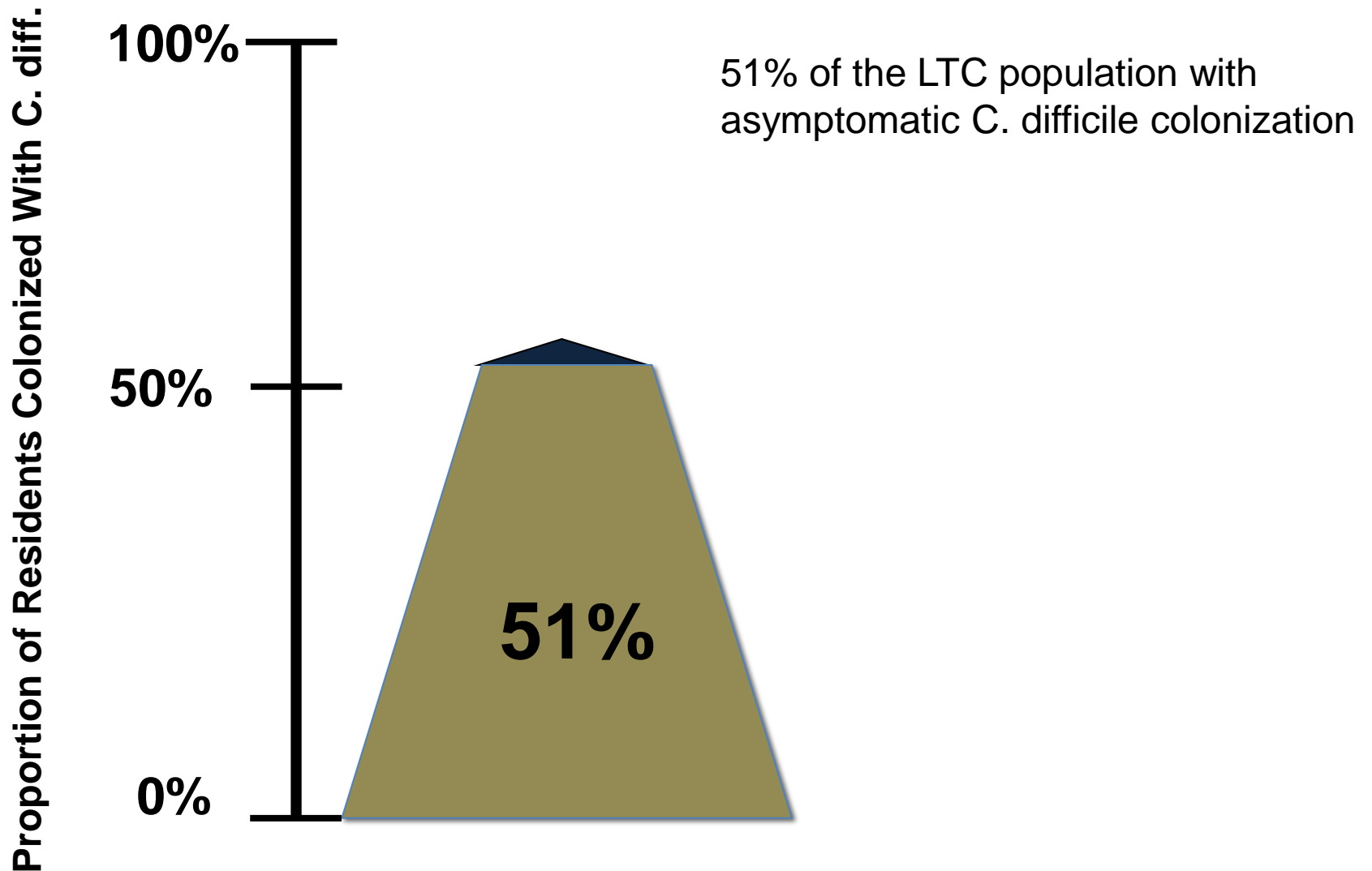
Five (7%) patients had CDI

35 (51%) were asymptomatic carriers (nine had a prior history of CDI)

Asymptomatic carriers associated with significantly higher rates of skin (61% vs. 19%) and environmental contamination (59% vs. 24%) than non-carriers



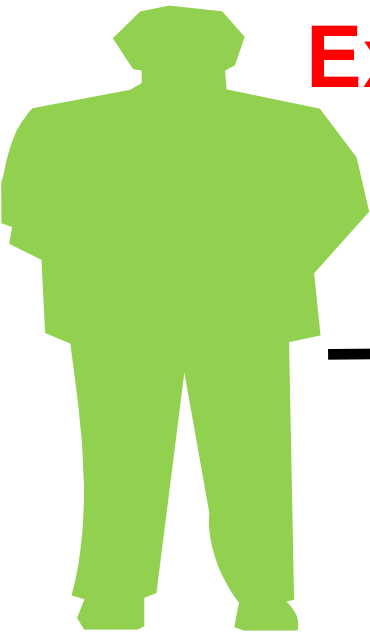
The Iceberg of CDI in Long Term Care



CDI Pathogenesis

C. difficile
Exposure

**Antimicrobial
Treatment**



**Admitted to
healthcare facility**

**Colonized
no symptoms**

**Infected
Symptomatic**

Implementing an Antibiotic Stewardship Program: Guidelines by the Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America

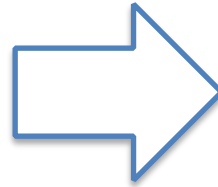
Tamar F. Barlam,¹ Sara E. Cosgrove,² Lilian M. Abbo,³ Conan MacDougall,⁴ Audrey N. Schuetz,⁵ Edward J. Septimus,⁶ Arjun Srinivasan,⁷ Timothy H. Dellit,⁸ Yngve T. Falck-Ytter,⁹ Neil O. Fishman,¹⁰ Cindy W. Hamilton,¹¹ Timothy C. Jenkins,¹² Pamela A. Lipsett,¹³ Preeti N. Malani,¹⁴ Larissa S. May,¹⁵ Gregory J. Moran,¹⁶ Melinda M. Neuhauser,¹⁷ Jason G. Newland,¹⁸ Christopher A. Ohl,¹⁹ Matthew H. Samore,²⁰ Susan K. Seo,²¹ and Kavita K. Trivedi²²

Strategies with **strong recommendations** include:

- Preauthorization and/or prospective audit with feedback
- Limit therapy to shortest effective duration
- Reduce use of antibiotics associated with a high risk of CDI
- Pharmacy-based interventions – Pharmacokinetic monitoring; IV to PO conversion

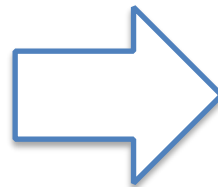
Antibiotics and CDI

Risk of CDI compared to resident on 1 antibiotic



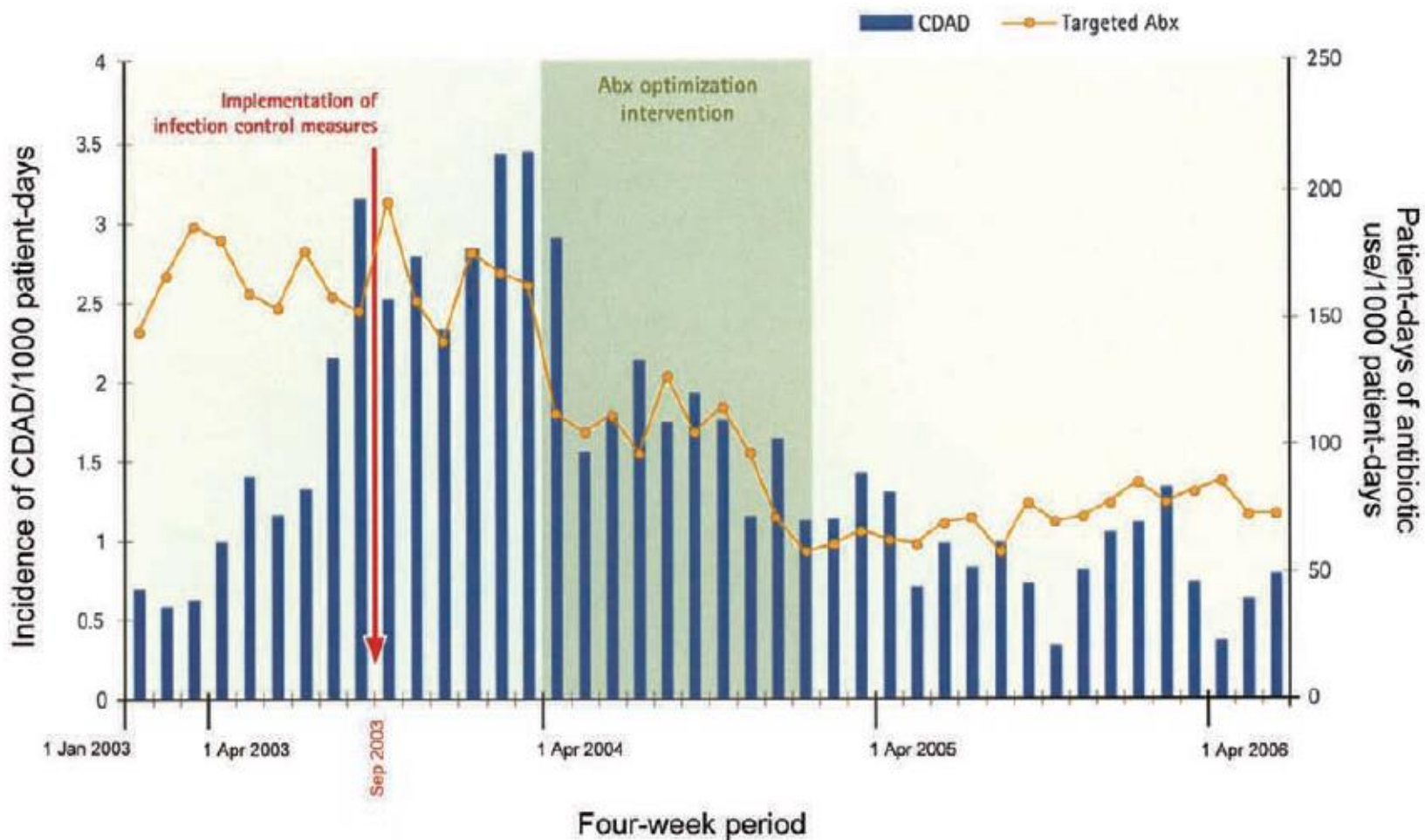
	Number of ATBs		
	2 ATBs	3-4 ATBs	5+ ATBs
	2.5 times higher	3.3 times higher	9.6 times higher

Risk of CDI compared to resident on ATBs for <4 days



	Days of Antibiotic		
	4-7 days	8-18 days	>18 days
	1.4 times higher	3 times higher	7.8 times higher

Targeting High-Risk Antibiotics Reduces CDI



Effects of control interventions on *Clostridium difficile* infection in England: an observational study



Kate E Dingle, Xavier Didelot, T Phuong Quan, David W Eyre, Nicole Stoesser, Tanya Golubchik, Rosalind M Harding, Daniel J Wilson, David Griffiths, Alison Vaughan, John M Finney, David H Wyllie, Sarah J Oakley, Warren N Fawley, Jane Freeman, Kirsti Morris, Jessica Martin, Philip Howard, Sherwood Gorbach, Ellie J C Goldstein, Diane M Citron, Susan Hopkins, Russell Hope, Alan P Johnson, Mark H Wilcox, Timothy E A Peto, A Sarah Walker, Derrick W Crook, the Modernising Medical Microbiology Informatics Group*



- Incidence of *C. difficile* in UK dropped by 80% after 2006
- Fluoroquinolone reduction is thought to be the primary driver for change

What is the Current State of Antimicrobial Stewardship in Long Term Care?

LA County DPH SNF Interviews

- Random selection of 50 nursing facilities licensed in L.A. County
- Randomization stratified by >99 beds and ≥ 100 beds
- Questions based off CDC checklist for antimicrobial stewardship in California (mirrors state toolkit)
- Telephone-based survey process

Element 1. Leadership Commitment

SNF leadership commitment support helps ensure adequate funding and staffing of the ASP, and facilitates buy-in among clinicians.

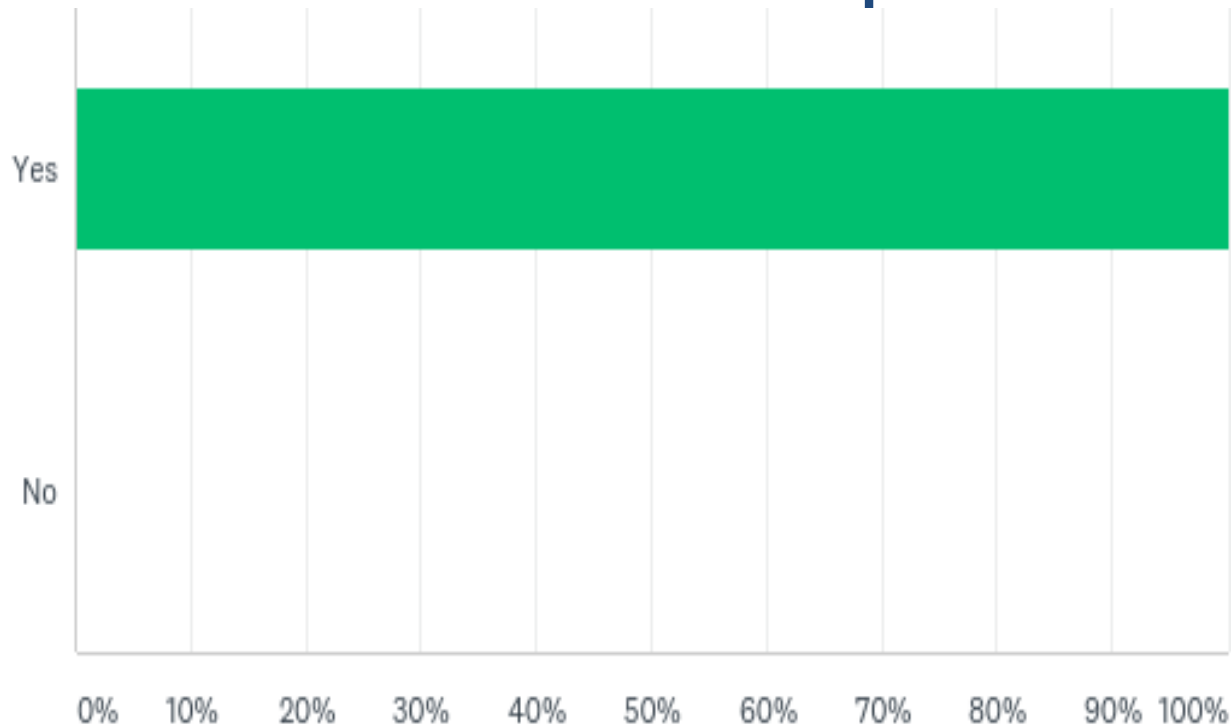
- Create a written statement in support of ASP
- Establish antibiotic stewardship as a Performance Improvement Program under QAPI
- Routinely review ASP activities during the facility quality-improvement committee meetings

Element 2. Accountability

An SNF leader should be accountable for ASP outcomes and their effectiveness assessed through clear performance standards. ASP leaders serve as liaisons and champions to promote stewardship education and practices across disciplines.

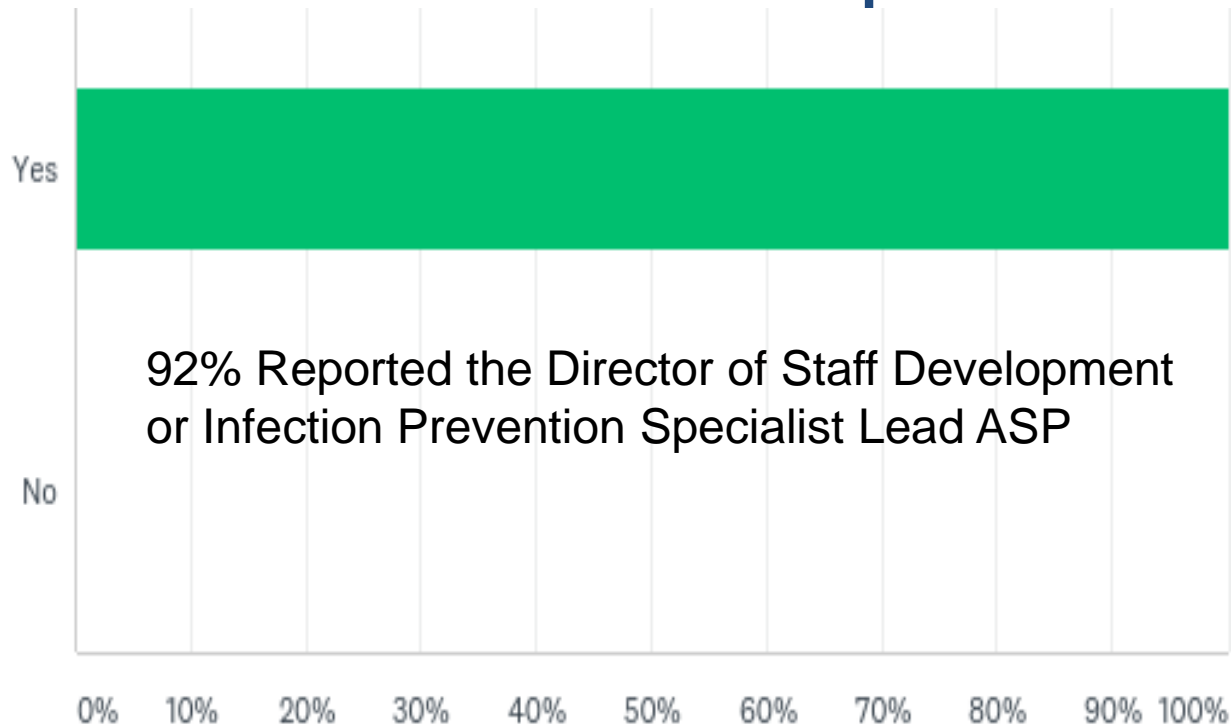
- Convene a **physician-supervised** multidisciplinary antibiotic stewardship committee, subcommittee, or workgroup

Has your facility identified a lead(s) for antibiotic stewardship activities?



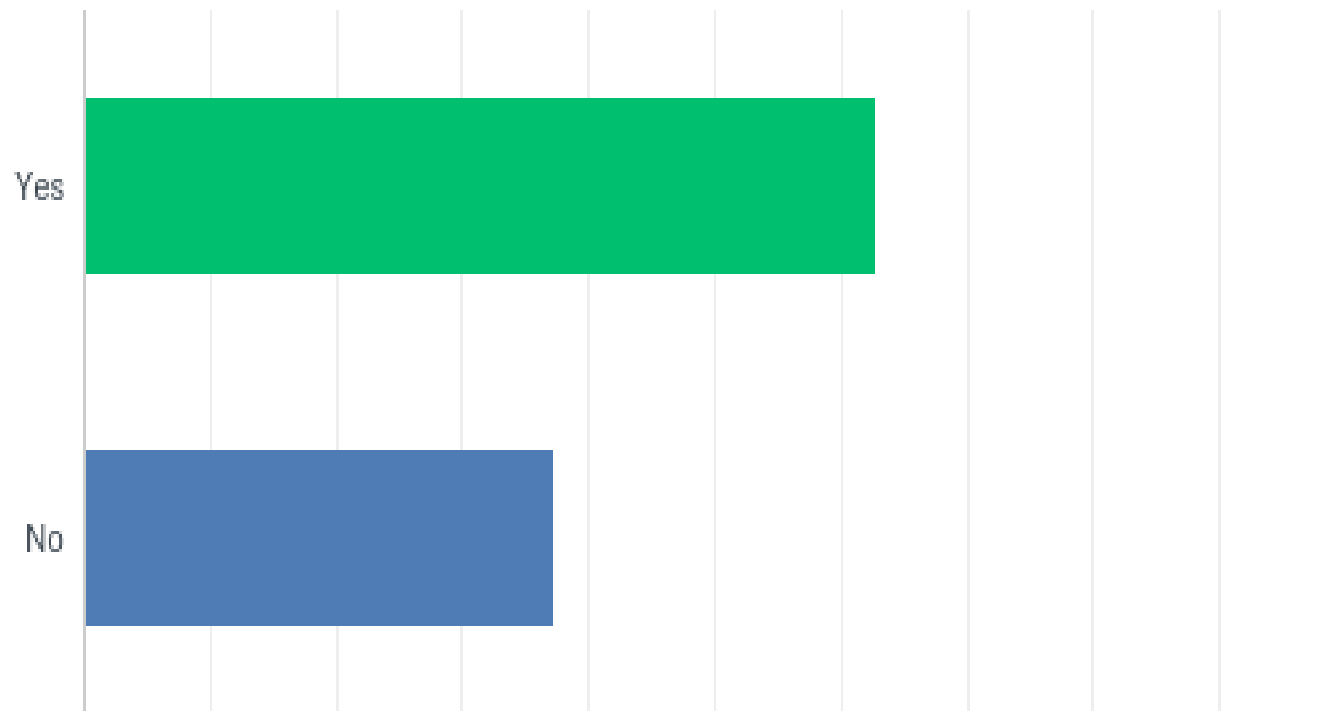
ANSWER CHOICES	RESPONSES
Yes	100.00% 35
No	0.00% 0
TOTAL	35

Has your facility identified a lead(s) for antibiotic stewardship activities?



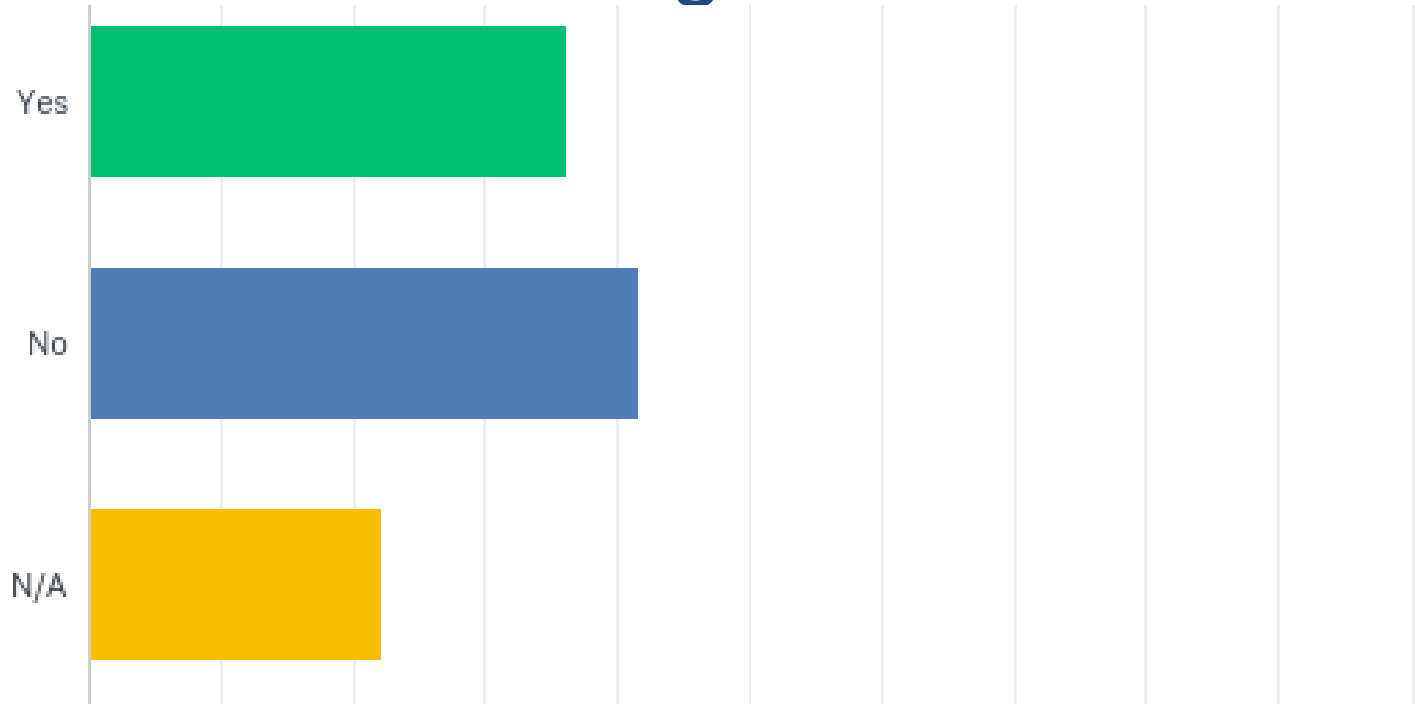
ANSWER CHOICES	RESPONSES	
Yes	100.00%	35
No	0.00%	0
TOTAL		35

Do you have a physician lead for ASP?



ANSWER CHOICES	RESPONSES	
Yes	62.86%	22
No	37.14%	13
TOTAL		35

Does the physician lead spend time outside QA meetings on ASP?



ANSWER CHOICES	RESPONSES
Yes	36.11% 13
No	41.67% 15
N/A	22.22% 8
TOTAL	36

Element 3. Drug Expertise

SNF should establish access to individuals with antibiotic expertise to implement antibiotic stewardship activities.

Suggestions:

- Obtain ASP support from a physician or pharmacist who has attended specific training on antibiotic stewardship. The trained physician or pharmacist may be consultant pharmacy staff trained or experienced in antibiotic stewardship, an external infectious disease stewardship consultant, or part of the stewardship team at a referral hospital.
- CDC, SHEA, IDSA, IDAC, etc.

THE
AMERICAN BOARD OF INTERNAL MEDICINE
 INCORPORATED 1936
 ATTESTS THAT
James Alexander McKinnell

HAS MET THE REQUIREMENTS OF THIS BOARD AND IS HEREBY
 CERTIFIED FOR THE PERIOD 2009 THROUGH 2019
 AS A DIPLOMATE IN
INFECTIOUS DISEASE



Wesley Lewison
 CHAIR
 AMERICAN BOARD OF INTERNAL MEDICINE

D. J. B. U.
 CHAIR-ELECT
 AMERICAN BOARD OF INTERNAL MEDICINE

Griffin P. Rodgers
 SECRETARY-TREASURER
 AMERICAN BOARD OF INTERNAL MEDICINE

Charles
 PRESIDENT
 AMERICAN BOARD OF INTERNAL MEDICINE

SUBSPECIALTY BOARD ON INFECTIOUS DISEASE

Murray H. Kasam
 CHAIR

Frank J. B...

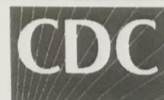
J. Stephen Dumme
J...

Karen M. Murray
Thomas Flatterton

Michelle Blanton
John S. Steer

NUMBER 280050

2009



*SHEA Antimicrobial Stewardship
Training Course*

Certificate of attendance awarded to

James A. McKinnell, MD

as part of the

*SHEA Spring 2016 Conference held from
May 18 – 21, 2016, in Atlanta, GA.*

Signed: *Eve Humphreys*

*Eve Humphreys, MBA, CAE
Executive Director, SHEA*

Date: *May 21, 2016*



Physician Certificate of Credit

This is to certify that

James McKinnell, M.D.

was a registered participant in attendance at

Practical Antimicrobial Stewardship 2016

September 23, 2016 — Great Wolf Lodge, Garden Grove, CA

Presented by the

Infectious Disease Association of California

The Infectious Disease Association of California (IDAC) is accredited by the Institute for Medical Quality / California Medical Association (IMQ/CMA) to provide continuing medical education for physicians. IDAC takes responsibility for the content, quality, and scientific integrity of this CME activity.



IDAC designates this educational activity for a maximum of 7.00 *AMA PRA Category 1 Credits™*. IDAC certifies that the aboved named attendee participated in this educational activity for 6.0 hours. Attendees should only claim credit commensurate with the extent of their participation in the activity. This credit may also be applied to the CMA Certification in Continuing Medical Education.

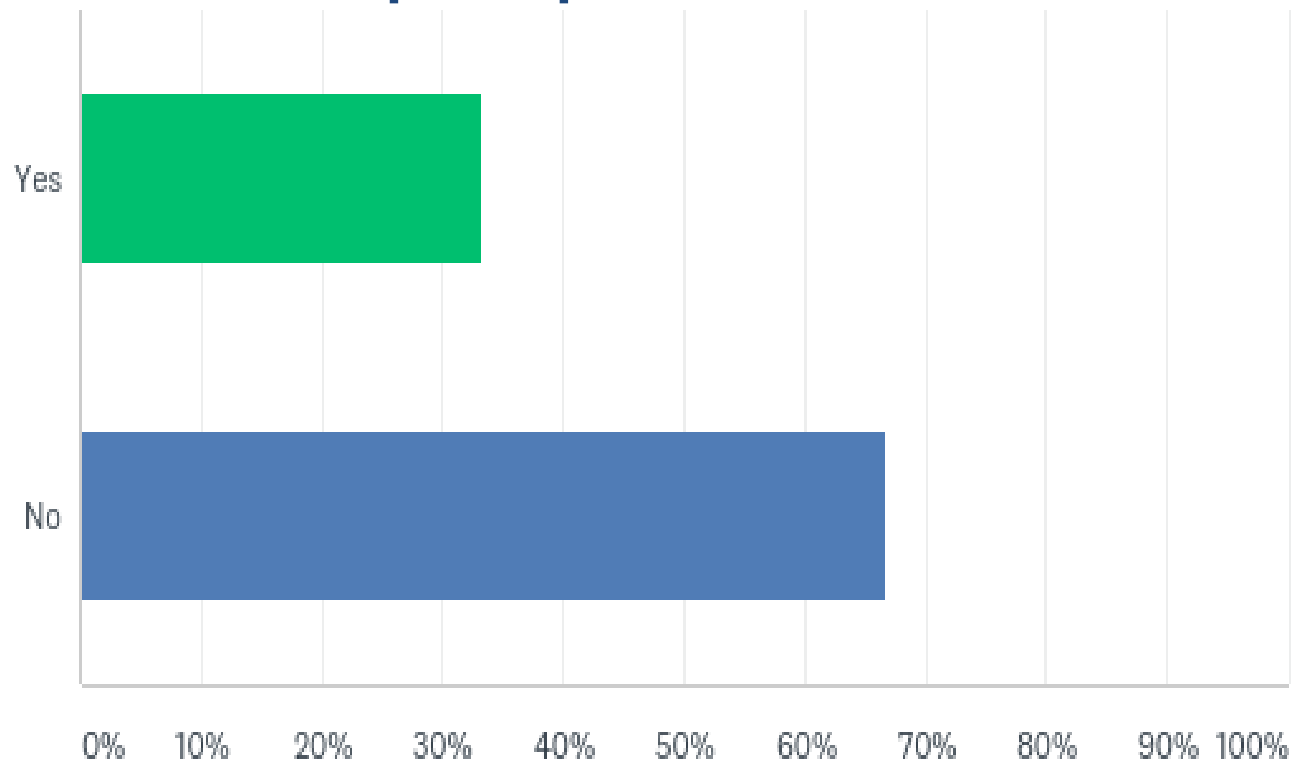
Gregory Strayer, M.D.

IDAC CME Chairman

Francesca Torriani, M.D.

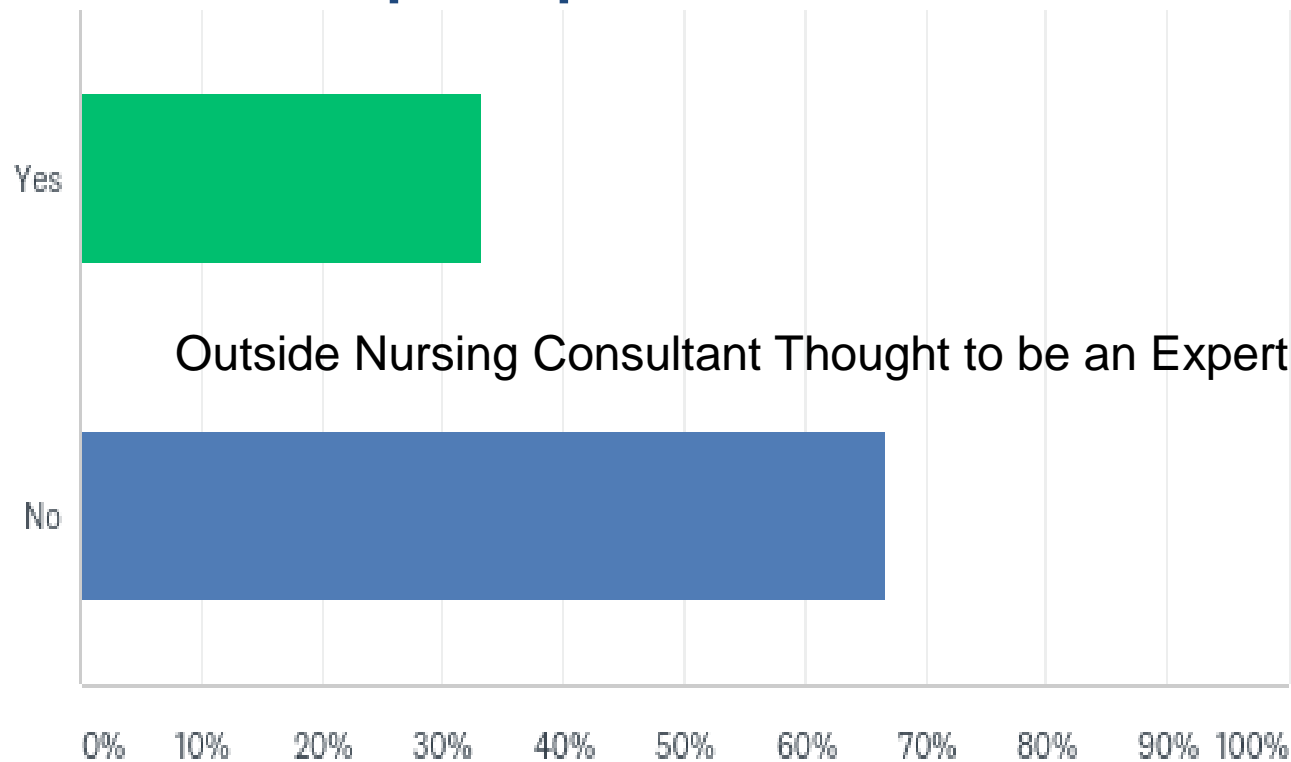
IDAC President

Access to individual(s) with antibiotic stewardship expertise?



ANSWER CHOICES	RESPONSES
Yes	33.33% 12
No	66.67% 24
TOTAL	36

Access to individual(s) with antibiotic stewardship expertise?



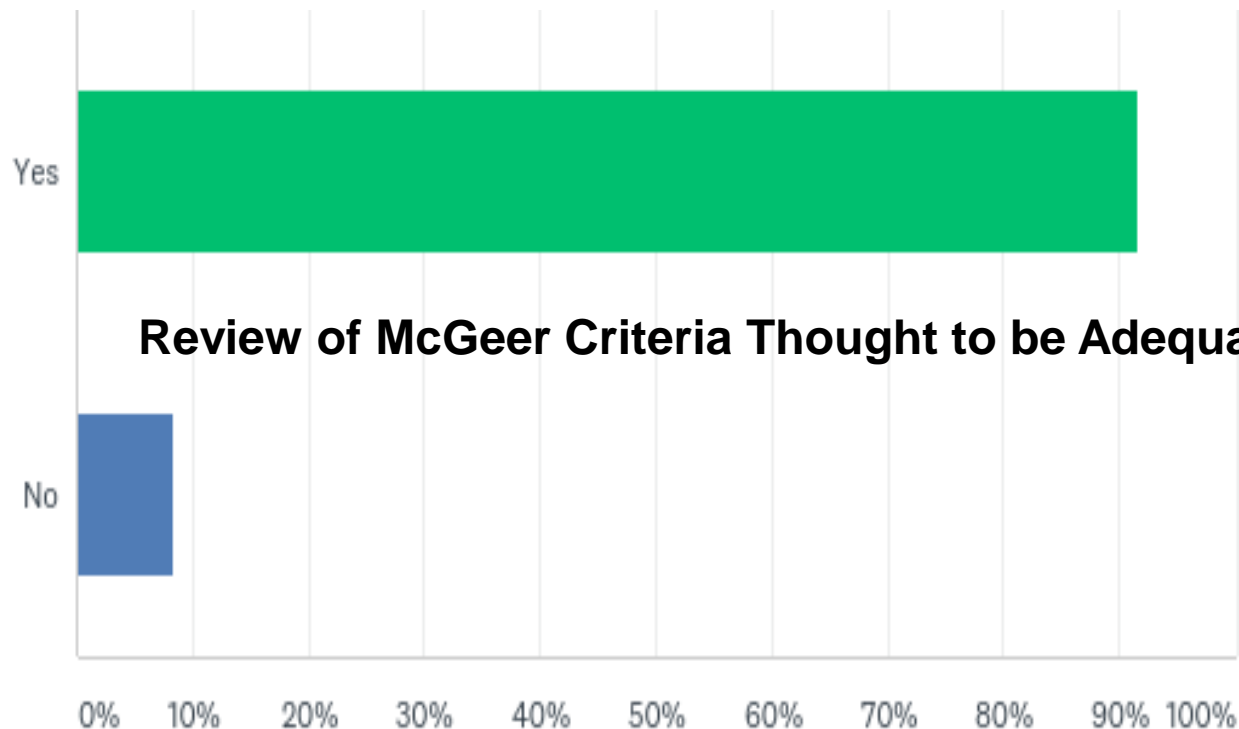
ANSWER CHOICES	RESPONSES
Yes	33.33% 12
No	66.67% 24
TOTAL	36

Element 4. Action

SNF should implement at least one intervention to improve antibiotic use.

- New policies and procedures should be introduced in a step-wise fashion.
- Prioritize interventions based on the prescribing and resistance patterns or most prevalent antibiotic adverse events (e.g., *Clostridium difficile* infections) at the facility.

Implemented practices to improve antibiotic use?

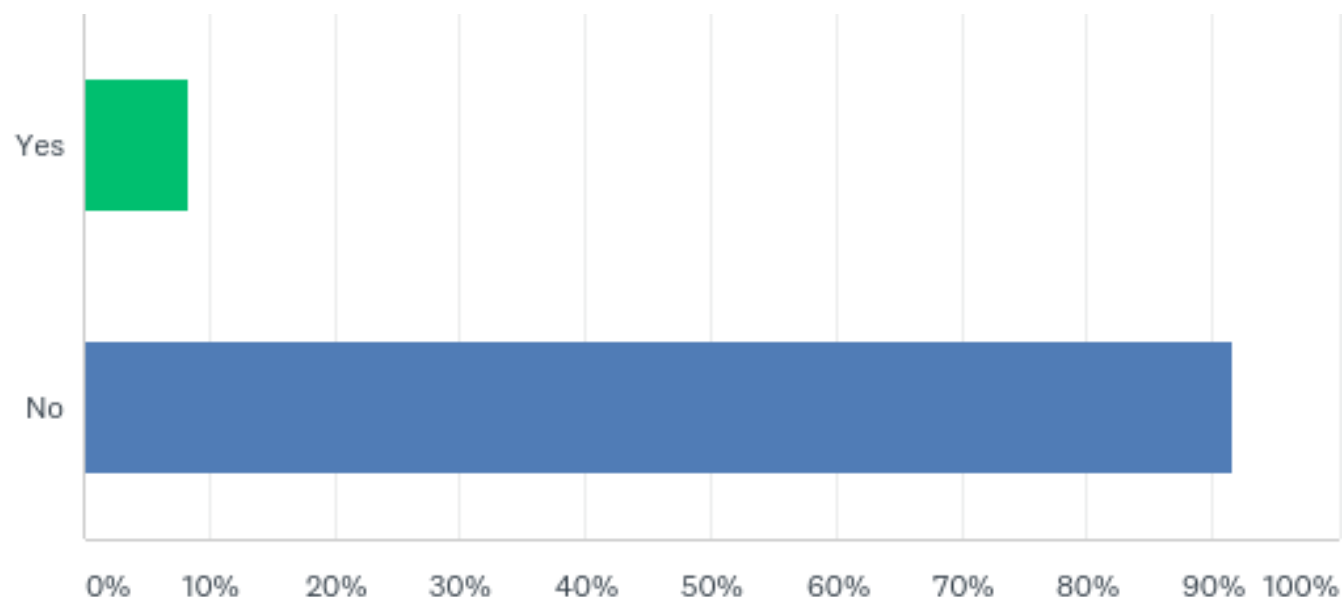


ANSWER CHOICES	RESPONSES	
Yes	91.67%	33
No	8.33%	3
TOTAL		36

McGeer Criteria are the Wrong Criteria for Antimicrobial Stewardship

- 78-year-old resident with temperature of 99.6 degrees, heart rate of 132, blood pressure of 90/40, white blood cell count of 13,500 and no localizing signs of infection
- 78-year-old resident complaining of dysuria, urgency, frequency, CVA tenderness, suprapubic pain, no evidence of fever, heart rate of 88, blood pressure of 120/80

Did you have any antibiotic stewardship deficiencies?



ANSWER CHOICES	RESPONSES	
Yes	8.33%	3
No	91.67%	33
TOTAL		36

ASP Confusion

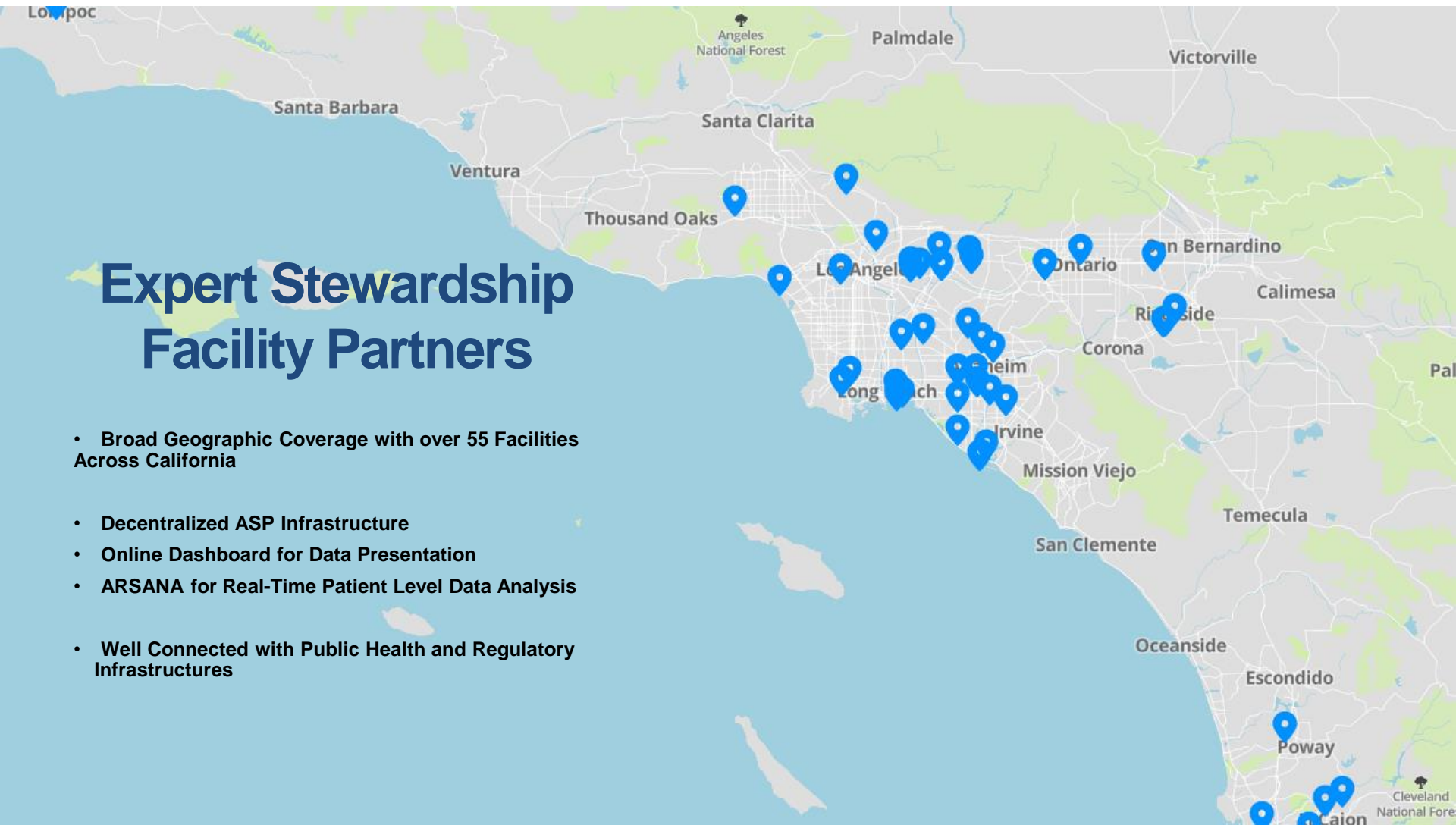
- Nursing homes are confusing infection prevention with antimicrobial stewardship
 - Structure of program is wrong
 - Insufficient expertise
 - Incorrect application of clinical criteria
- Some facilities may meet the regulations with paper compliance, but still fail to have a robust program
 - Few deficiencies have been issued to date

**Can Antimicrobial Stewardship be
done in Long Term Care?**

YES!!!

Expert Stewardship Facility Partners

- Broad Geographic Coverage with over 55 Facilities Across California
- Decentralized ASP Infrastructure
- Online Dashboard for Data Presentation
- ARSANA for Real-Time Patient Level Data Analysis
- Well Connected with Public Health and Regulatory Infrastructures



CMS Protocol Requirements

- Written antibiotic use protocols on antibiotic prescribing, including the documentation of the indication, dosage, and duration of use of antibiotics
- Protocols to optimize the treatment of infections by ensuring that residents who require antibiotics are prescribed the appropriate antibiotic

The Five D's of Ordering Antibiotics



DRUG

effective, minimal adverse drug events, and least expensive

DOSE

adjusted for body size, renal and hepatic function

DIAGNOSIS

ensuring the right diagnosis is key to selecting proper therapy

DURATION

evidence-based, when feasible

DOCTOR

contact information



EXPERT STEWARDSHIP

**Remember the Five D's
Even For New Admissions**

Duration of Antibiotic

Antibiotic use drives antibiotic resistance and *Clostridium difficile*:

- Antibiotics that last more than 7 days increased risk of CDI more than 3-fold¹.
- Three or more antibiotics increased risk of CDI more than 3-fold¹.
- Fluoroquinolones increased risk of CDI by 4-fold¹.

Pneumonia	5-7 Days
Cellulitis	5 Days
Simple Cystitis	3-5 Days
Pyelonephritis	7 Days
Foley UTI	5-10 Days
<i>C. diff</i>	14 Days
Bacteremia	ID Consult

These duration recommendations are guidelines only and do not replace clinical evaluation, judgement, and monitoring.

¹ Stevens et al, CID, 2011. Cumulative Antibiotics and Risk of CDI

Updated June 25, 2017

IV to PO Switches

Patients who can tolerate an oral diet should be switched to oral antibiotic therapy when clinically indicated. Possible IV to Oral Antibiotic switches:

Vancomycin IV → Bactrim or Doxycycline PO

Bactrim and Doxycycline still retain near 100% sensitivity against MRSA and MSSA. Clindamycin is not recommended.

Fluoroquinolone IV → Fluoroquinolone PO

Excellent oral bio-availability and therapeutic equivalency; Fluoroquinolones should never be used as first-line agents if possible.

Ceftriaxone [UTI] → Keflex

Cephalosporins retain excellent activity on our antibiogram.

Ceftriaxone [PNEUMONIA] → Azithromycin +/- Augmentin

As per the pneumonia recommendation.

IV to IV Switches

Brand Name to Generic

Unasyn IV → Ampicillin/sulbactam IV

Generic to Generic

Oxacillin IV → Cefazolin IV



EXPERT
STEWARDSHIP

320 SUPERIOR AVENUE | SUITE
290
NEWPORT BEACH, CA | 92633
PHONE | (800) 480-3910

Blue Book

“The purpose of the antimicrobial stewardship program is to provide guidance on the appropriate selection, dosing, route, and duration of antimicrobial usage.”

-Infectious Disease Society of America (IDSA)

These Antimicrobial Stewardship Guidelines do NOT replace good clinical judgment.

Based upon 2016 Antibiogram
Results and Clinical Practice
Patterns in 2016

Check Antibiotic Duration

Pneumonia	7 Days
Cellulitis	5 Days
Simple Cystitis	3 Days
Pyelonephritis	7 Days
Foley UTI	7-10 Days
C. Diff	14 Days

CMS Clinical Review Requirements

- Protocols to review clinical signs and symptoms and laboratory reports to determine if the antibiotic is indicated or if adjustments to therapy should be made and identify what infection assessment tools or management algorithms are used for one or more infections (e.g., SBAR tool for urinary tract infection (UTI) assessment, **Loeb minimum criteria for initiation of antibiotics**);

Minimum Criteria for Initiation of Antibiotics in Long-term care residents

Fever with No Known Source Of Infection

1. Temperature $>100^{\circ}$, $>99^{\circ}$ Twice in 24 Hours, or 2° over Baseline

And

2. At least 2 of the following:

- ☉ Rigors
- ☉ Delirium
- ☉ Unstable Vitals

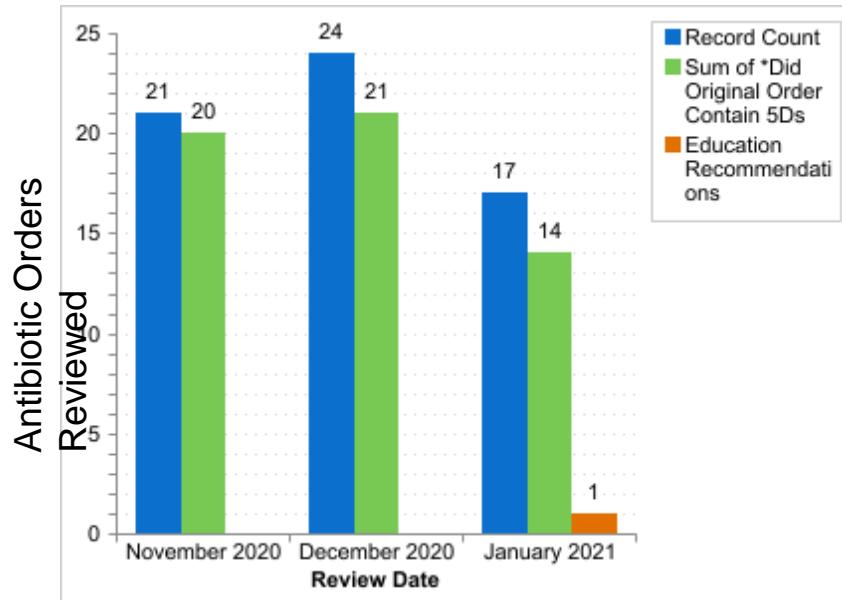
- 1) Check treatment guidelines
- 2) Call MD for antibiotic orders
- 3) Monitor closely with q4 vitals and checks

Source: Loeb et al. Development of Minimum Criteria for the Initiation of Antibiotics in Residents of Long-Term Care Facilities: Results of a consensus Conference. *Inf Control Hosp Epi.* 2001

Antibiotic Time Out

- periodic review of antibiotic use by prescribing practitioners: for example, ...
- Determine whether the antibiotic use monitoring system is reviewed when the resident is **new to the facility**, when a **prior resident returns** or is transferred from a hospital or other facility, **during each monthly drug regimen review** when the resident has been prescribed or is taking an antibiotic, or any antibiotic drug regimen review as requested by the QAA committee;

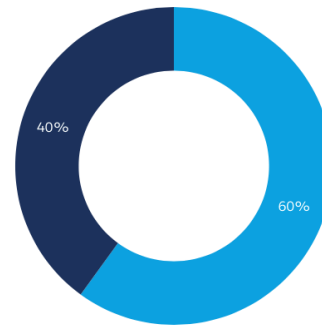
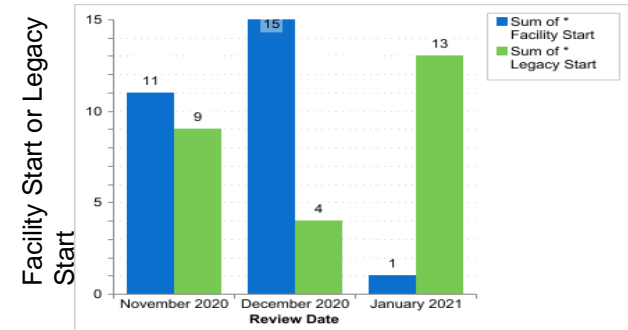
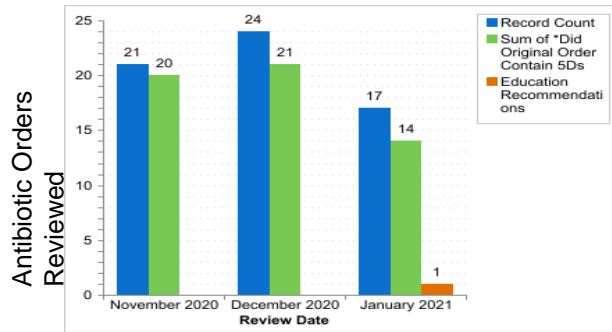
Expert Stewardship Antibiotic Timeout Reviews



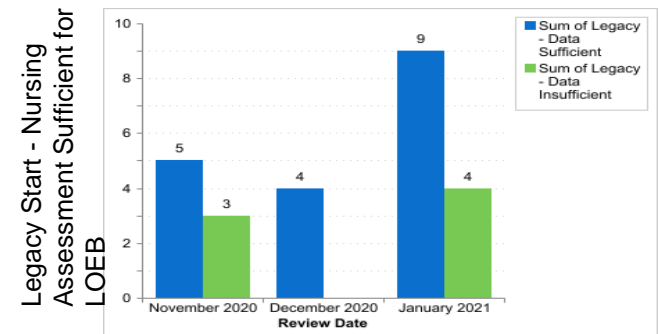
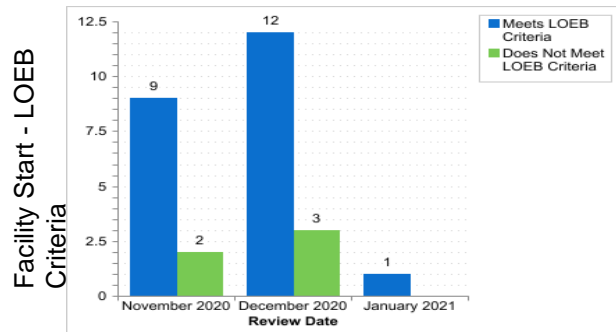
EXAMPLE

- Conducted 1 time a week to provide active and timely assessments of antibiotic prescription practices
- Data gathered at a patient level
- Feedback provided on antibiotic usage to improve and optimize the selection, dose, and duration of therapy

Expert Stewardship Monthly Reports



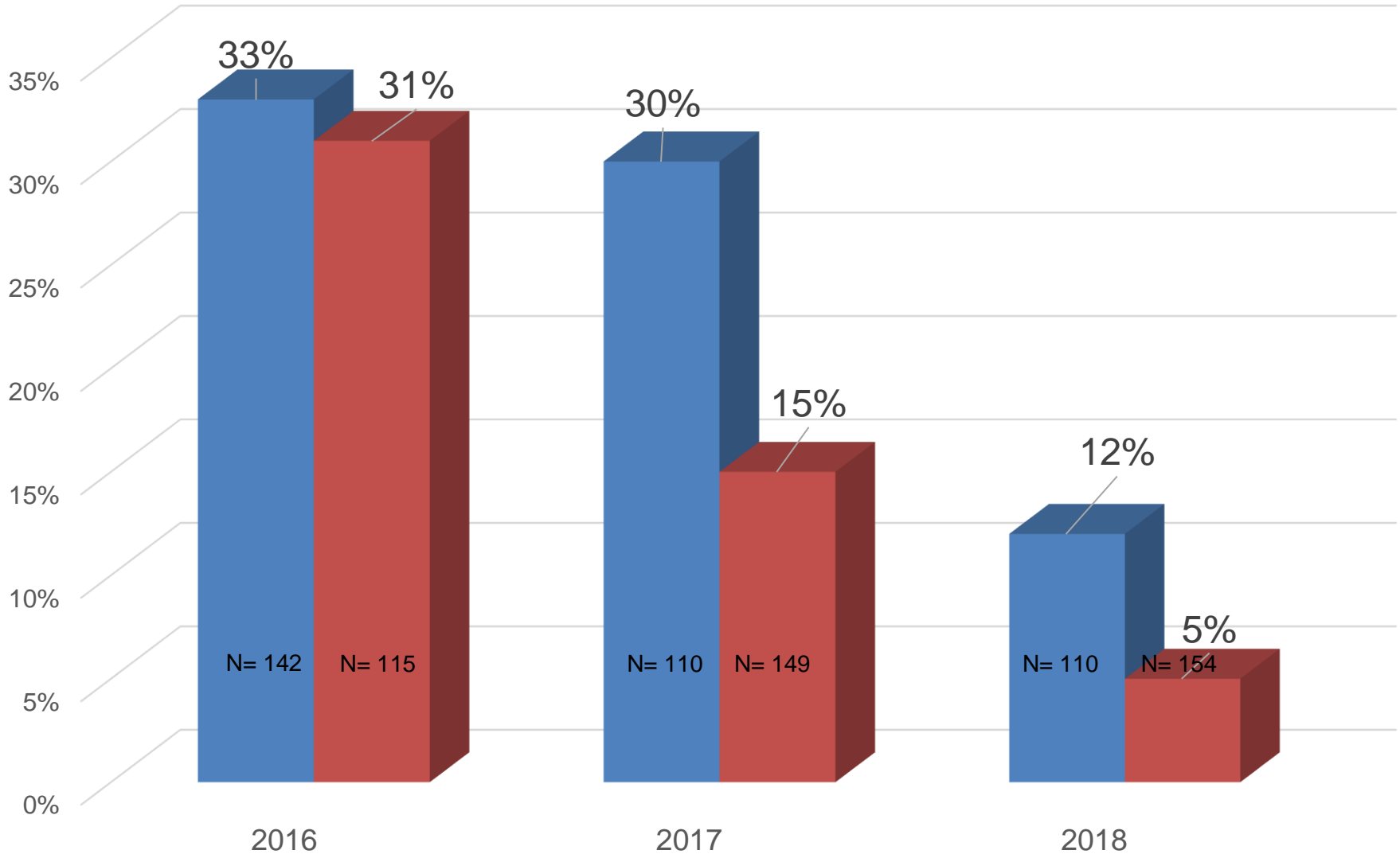
Facility Independent ATO Review ●
 ID Pharmacist Supervised ATO Review ●



CMS Feedback Requirements

- A system for the provision of feedback reports on antibiotic use, antibiotic resistance patterns based on laboratory data, and prescribing practices for the prescribing practitioner.

FQ(%) Use Among Facility Top Prescribers : Jan - Jun 2016 vs 2017 vs 2018



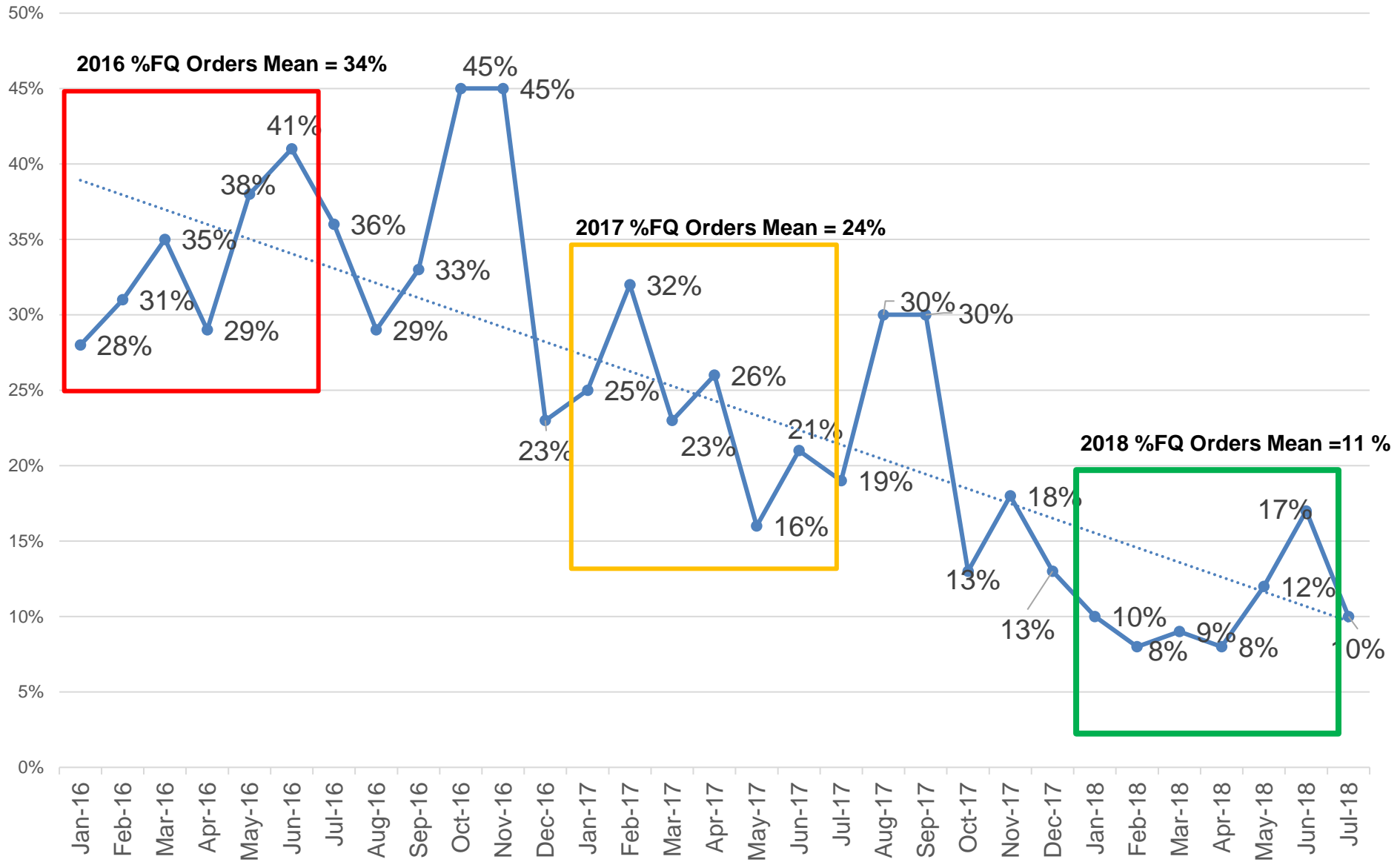
Physician #1 in Blue, Physician #2 in Red

The physicians prescribed antibiotics in all 3 years. N = total number of antibiotics ordered.
Number of total antibiotic orders over 3 years: Collado = 596 , Ovalle =615

Prescribing Patterns of the Highest Antibiotic Prescribers

Prescriber	Antibiotic Orders (n)	Ave DOT	FQ Orders	non-FQ Orders	FQ ave DOT
Doctor	48	7.6	12.5%	87.5%	6.7
Doctor	21	7	33.3%	66.7%	6.6
Doctor	21	6.3	9.5%	90.5%	8.5
Doctor	20	6.2	40.0%	60.0%	7.3
Doctor	20	6.3	35.0%	65.0%	4.6
Doctor	15	8.4	20.0%	80.0%	10.3

%FQ Orders By Months: Jan 2016 to July 2018

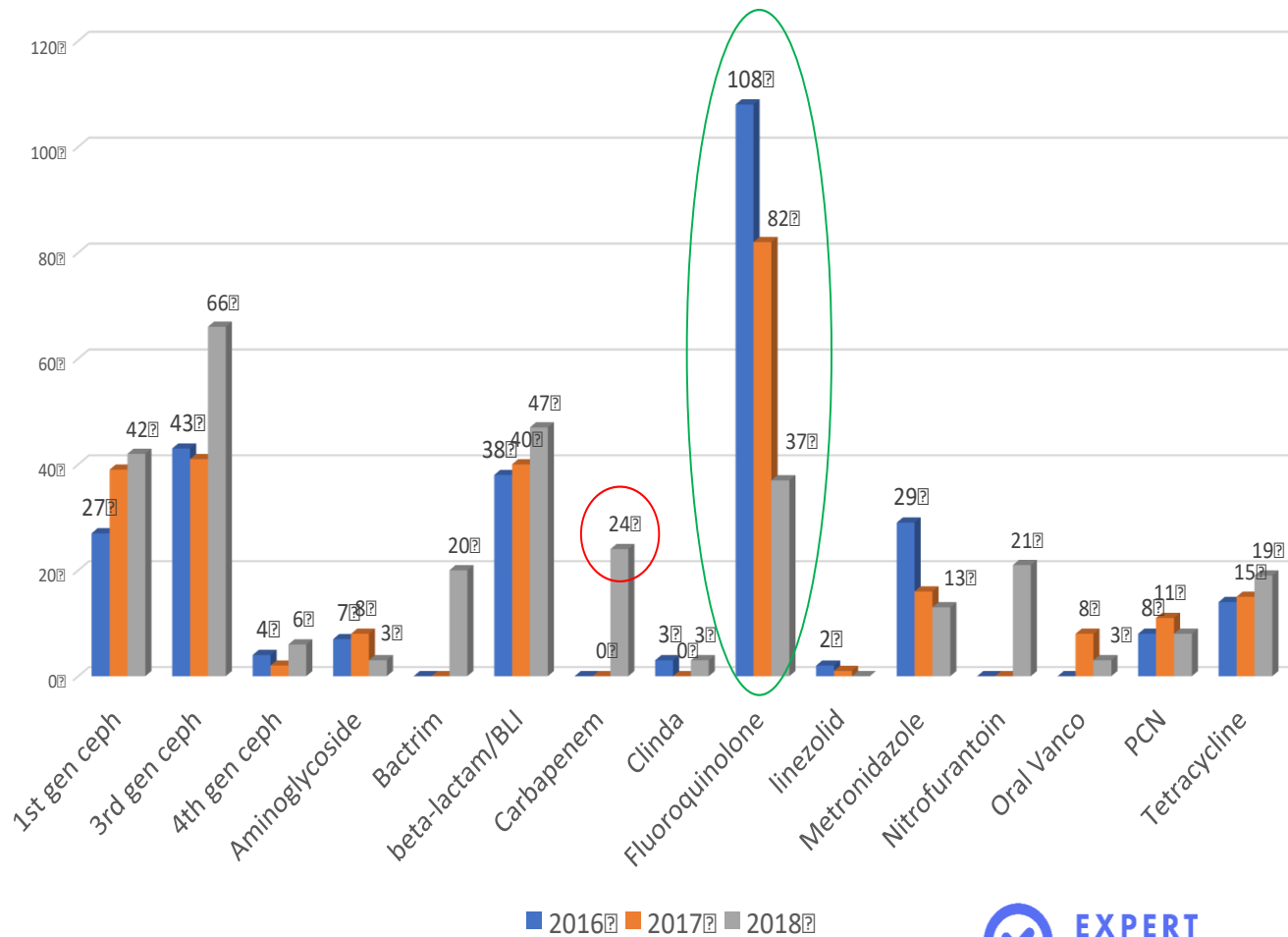


ES began Jan 2017

Comparison : Jan to Jun 2016 vs Jan to Jun 2017 vs Jan to Jun

2016

Number of Antibiotic Orders by Class: Jan-Jun 2016 vs 2017 vs 2018



CMS Education Requirements

SNF ASP should educate both **clinical providers** and **nursing staff** on the rationale and goals of antibiotic stewardship interventions, and the responsibility of each group for ensuring implementation. SNF should also **engage residents and their family members** in antibiotic use and stewardship education to ensure their support when clinicians make appropriate antibiotic use decisions.

- Regularly provide education and updates about antibiotic resistance and opportunities for improving use to clinical providers, nursing staff, residents, and families.

Nursing Education



HEALTHCARE PROFESSIONALS AND OUR
LONG-TERM CARE PARTNERS
(PASSWORD PROTECTED)

Education



EXPERT STEWARDSHIP

This certifies that

L.V.N. LICENSE NUMBER

DATE

OTHER IDENTIFICATION NUMBER

Has successfully completed a course in:

Antimicrobial Stewardship Topics for Registered Nurses in Long-Term Care Facilities

Barbara Goss-Bottorff MPH, MSN, RN, CNS, CIC
COURSE COORDINATOR

*Provider approved by the California Board of Registered Nursing
Provider #CEP16939 for 2.0 Contact Hours*

Certificate must be retained by the licensee for a period of four years after the course ends

Resident Education



RESIDENTS AND THEIR FAMILIES



What You Need to Know About Antibiotics in a Nursing Home

What are antibiotics?

Antibiotics are drugs used to treat infections caused by bacteria. They do not work for illnesses caused by viruses, like flu and most cases of bronchitis.



When are antibiotics necessary?

There are times when antibiotics are urgently needed; for example, to treat sepsis (e.g., when bacteria cause a severe infection of the bloodstream), pneumonia caused by bacteria, and meningitis caused by bacteria. Using antibiotics when they are not necessary increases the risk they will not work when needed most.



Can taking antibiotics be harmful?

Antibiotics, like any medications, can have minor side effects like upset stomach or a rash, as well as serious allergic reactions or dangerous interactions with other medications a person is taking. In particular, antibiotics put people at risk for a deadly type of diarrhea caused by *C. difficile*. Frequent or excessive use of antibiotics leads to developing bacteria that are resistant to those antibiotics. Antibiotic-resistant bacteria are harder to kill, and can cause untreatable infections. A person also can carry resistant bacteria without feeling sick (this is called “colonization”), but if that bacteria causes an infection, it can require more complex treatments and transfer to the hospital.



What is antibiotic stewardship?

Antibiotic stewardship refers to a set of commitments and actions designed to make sure patients receive the right dose, of the right antibiotic, for the right amount of time; and only when truly necessary. Improving antibiotic use will ensure these life-saving medications are effective and available when we need them.



Why is improving antibiotic prescribing practices important for nursing homes?

Nursing home residents have a higher risk of colonization with bacteria for many reasons. The presence of invasive devices such as urinary-catheters and feeding tubes, wounds, and conditions that affect the bladder (e.g., diabetes or stroke) can all lead to colonization. Difficulties in separating colonization of bacteria from true illness in frail or older adults can lead to the overuse of antibiotics, which in turn drives antibiotic resistance.



continued on next page

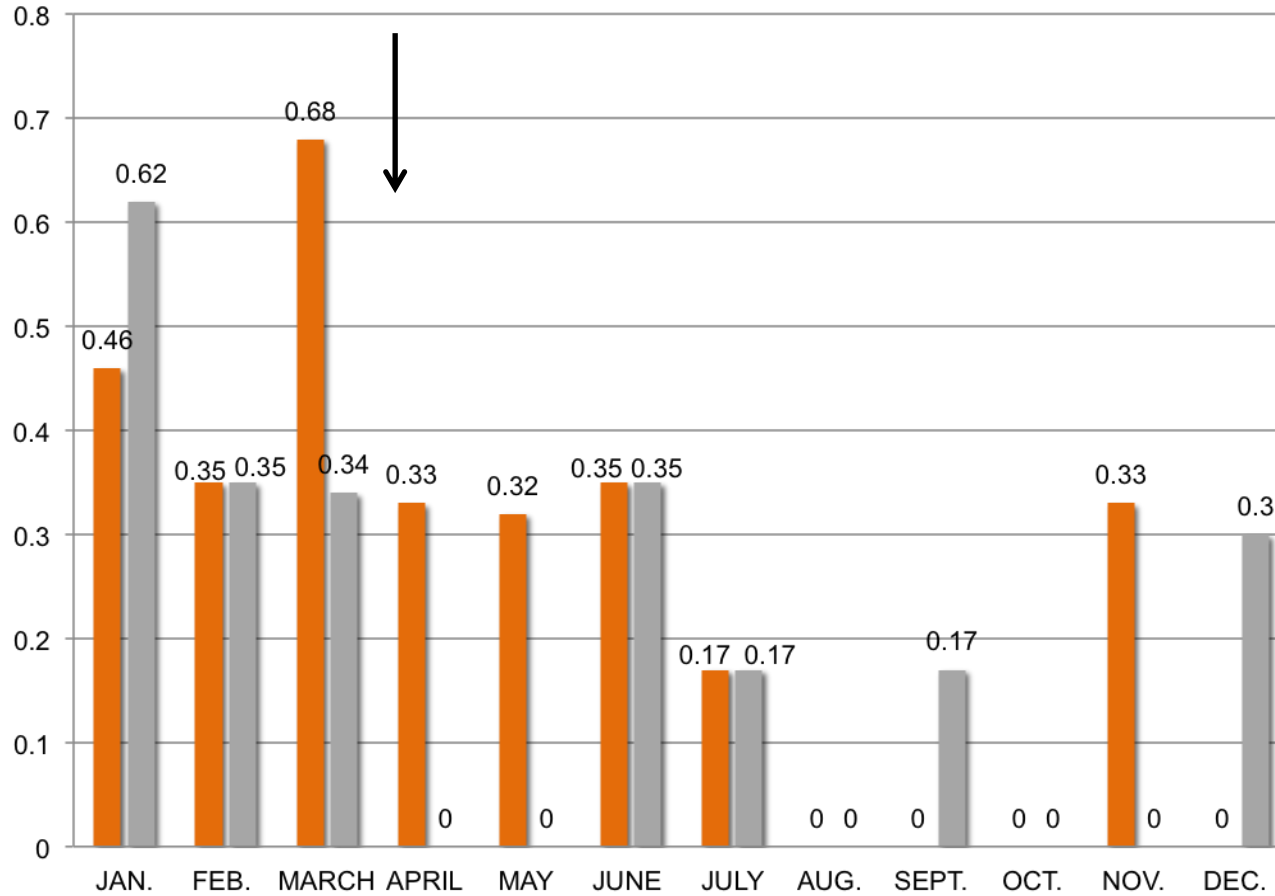


Stewardship Can Be Done in SNFs!



C-DIFF RATES 2016

■ CAI'S RATES ■ HAI'S RATES



Expert Stewardship Pharmacy Analytics Team

Jason Yamaki PharmD PhD

Linda Khatchatourian PharmD BCPS

- **Infectious Disease Trained Pharmacists**
- **Leaders of Hospital Based Antimicrobial Stewardship Programs**



Expert Stewardship Antibiotic Timeout Team

**Danielle Kunz, RPh, BCPD-AQ
Infectious Disease**

**Ravina Kullar Pharm D, MPH,
FIDSA**

- **Infectious Disease Trained Pharmacists**
- **Multiple Academic Publications**
- **Best in the Business**



I'm happy to take questions during the break.