

# *Antimicrobial Stewardship: Going Beyond the Inpatient Setting to LTACs and SNFs*

Ravina Kullar, PharmD, MPH

Infectious Disease Scientific Director  
Global Center for Scientific Affairs

Merck & Co., Inc.

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# Disclosure

- The information presented are solely my own and do not represent the views of Merck & Co., Inc.

# Learning Objectives



- Discuss the rationale for optimizing antimicrobial use in hospitals and SNFs
- Describe the challenges and opportunities in implementing antimicrobial stewardship programs (ASP) in SNFs
- Describe an example of ASP implementation in a cohort of SNFs/LTCFs in collaboration with a tertiary hospital, focusing on UTIs



# Stay Tuned – Lancet ID

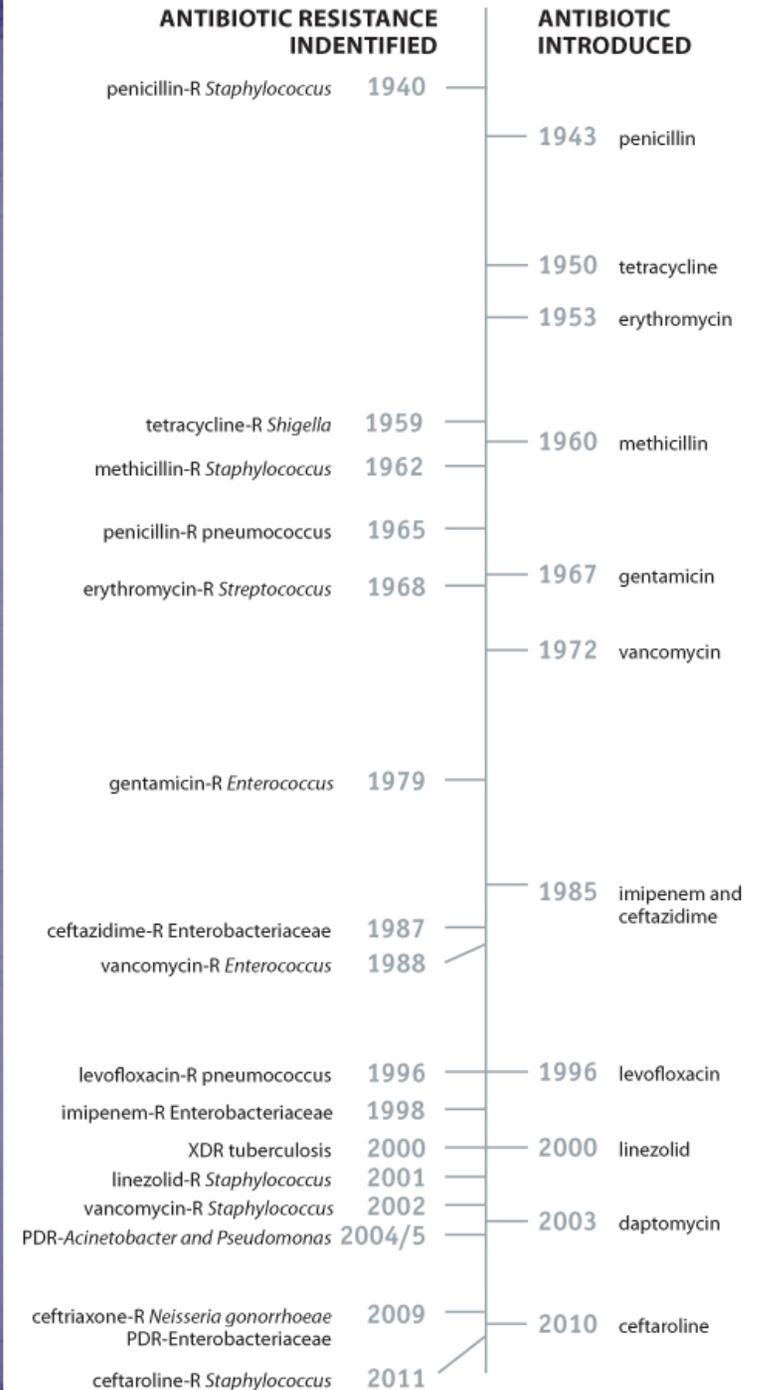
**A Global Call from Five Countries to Collaborate in Antibiotic Stewardship:**

**United We Succeed, Divided We May Fail**

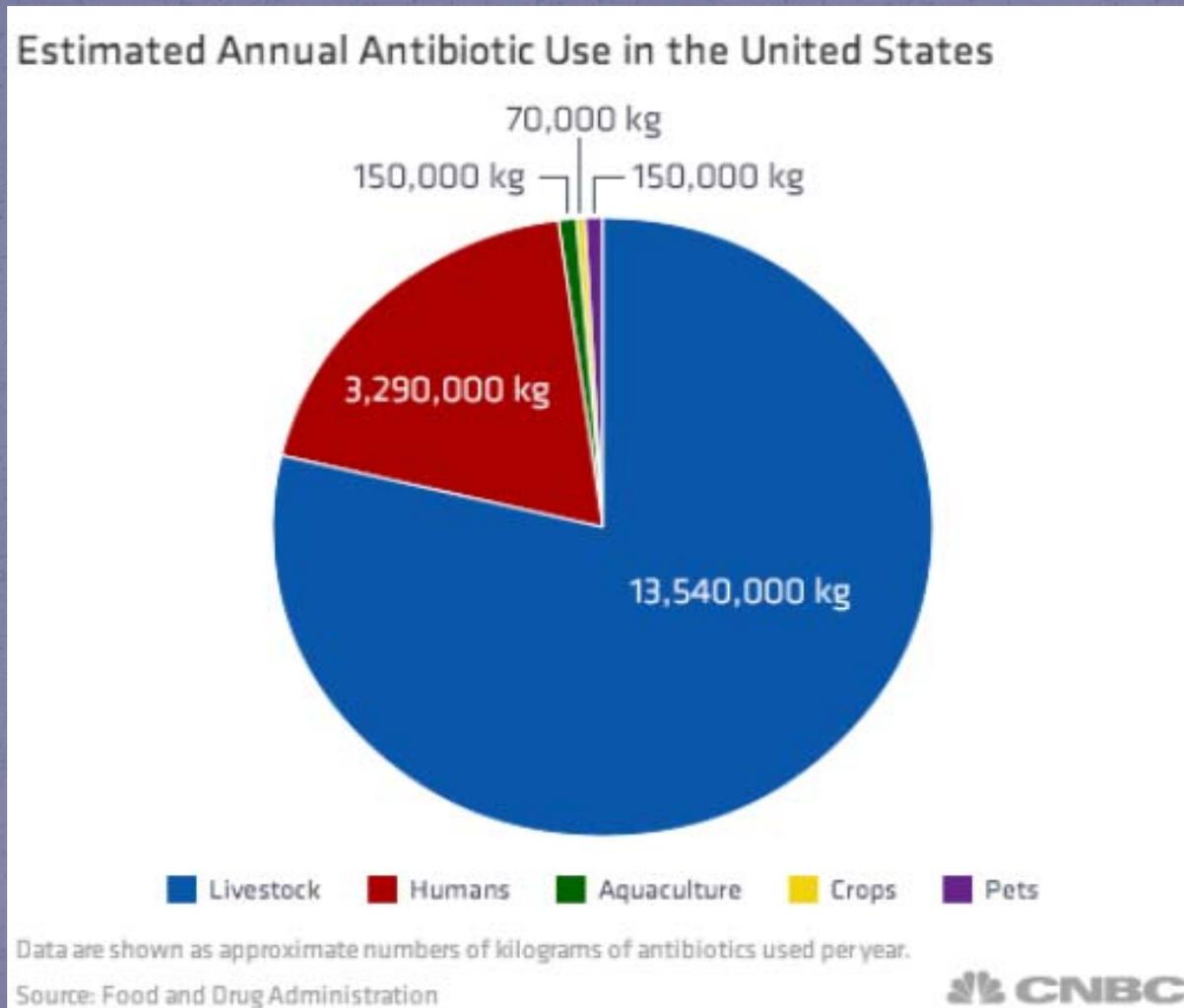
Ravina Kullar, PharmD<sup>1</sup>; Debra A. Goff, PharmD<sup>2</sup>; Ellie J.C. Goldstein, MD<sup>3</sup>; Mark Gilchrist, MPharm<sup>4</sup>; Dilip Nathwani, MB<sup>5</sup>; Allen C Cheng, PhD<sup>6</sup>; Kelly A. Cairns, BPharm<sup>7</sup>; Kevin Escandón-Vargas, MD<sup>8</sup>; Maria Virginia Villegas, MD<sup>8</sup>; Adrian Brink, MMed<sup>9</sup>; Dena van den Bergh, MSC(EngD)<sup>10</sup>; Marc Mendelson, PhD<sup>11</sup>

# Antimicrobial Resistance Happens Quickly!!!

- Methicillin:
  - Developed in 1960
  - Resistance by 1962
  
- Linezolid
  - Developed in 2000
  - Resistance by 2001



# Annual Antibiotic Use



# Consequences of Antibiotic Use: CDI

Single most important risk factor for CDI?



Antibiotic exposure has lasting impact on the gut bacteria



CDI risk 7-10X 3 months after treatment with antibiotics

# 85-90%

of CDI occurs within 30 days of antibiotic exposure

Chang et al. ICHE 2007;28(8):926-931.

Hensgens et al. J Antimicrob Chemother 2012;67(3):742-748.

Lessa et al. NEJM 2015;372(9):825-834.

# Age as a risk factor for CDAD

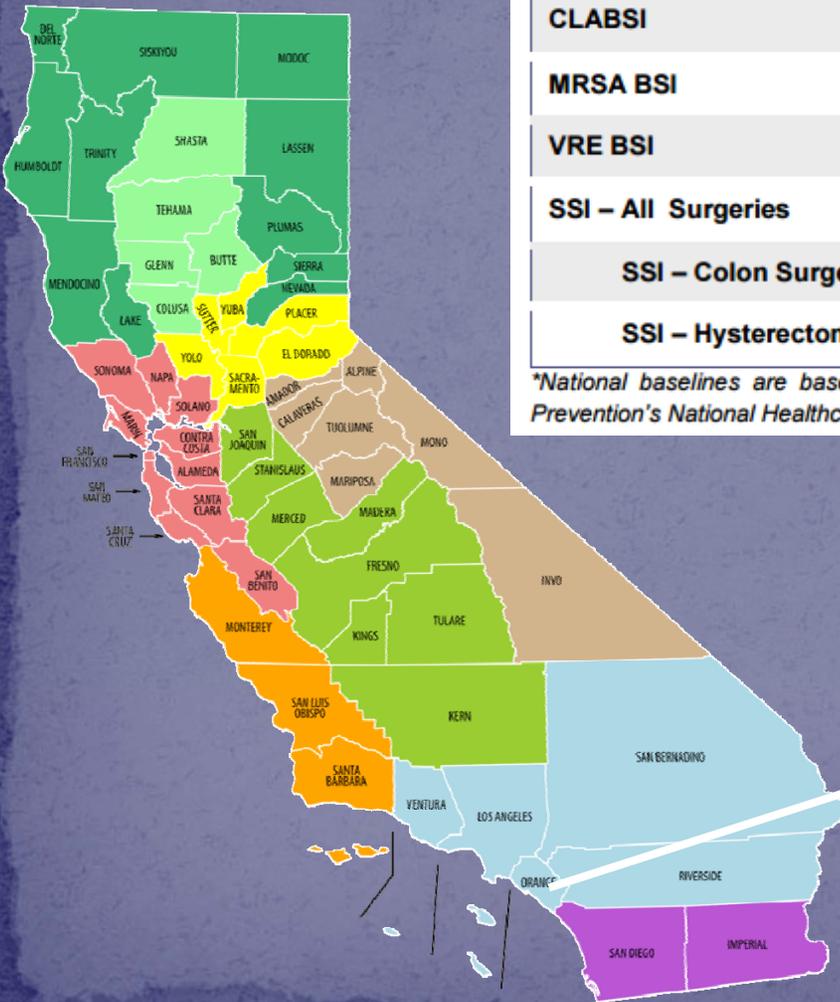
- Age is consistently a risk factor for CDAD, in all retrospective and prospective studies

- Age      CDAD incidence

• 0-4 yo	5.3
• 5-14	2.7
• 15-24	2.2
• 25-34	6.4
• 35-44	9.2
• 45-54	15.7
• 55-64	16.8
• 65-74	38.5
• $\geq 75$	98.9

Elderly are  
16-30 fold  
higher risk  
for CDAD

# National epidemic with worsening rates in California and Orange County

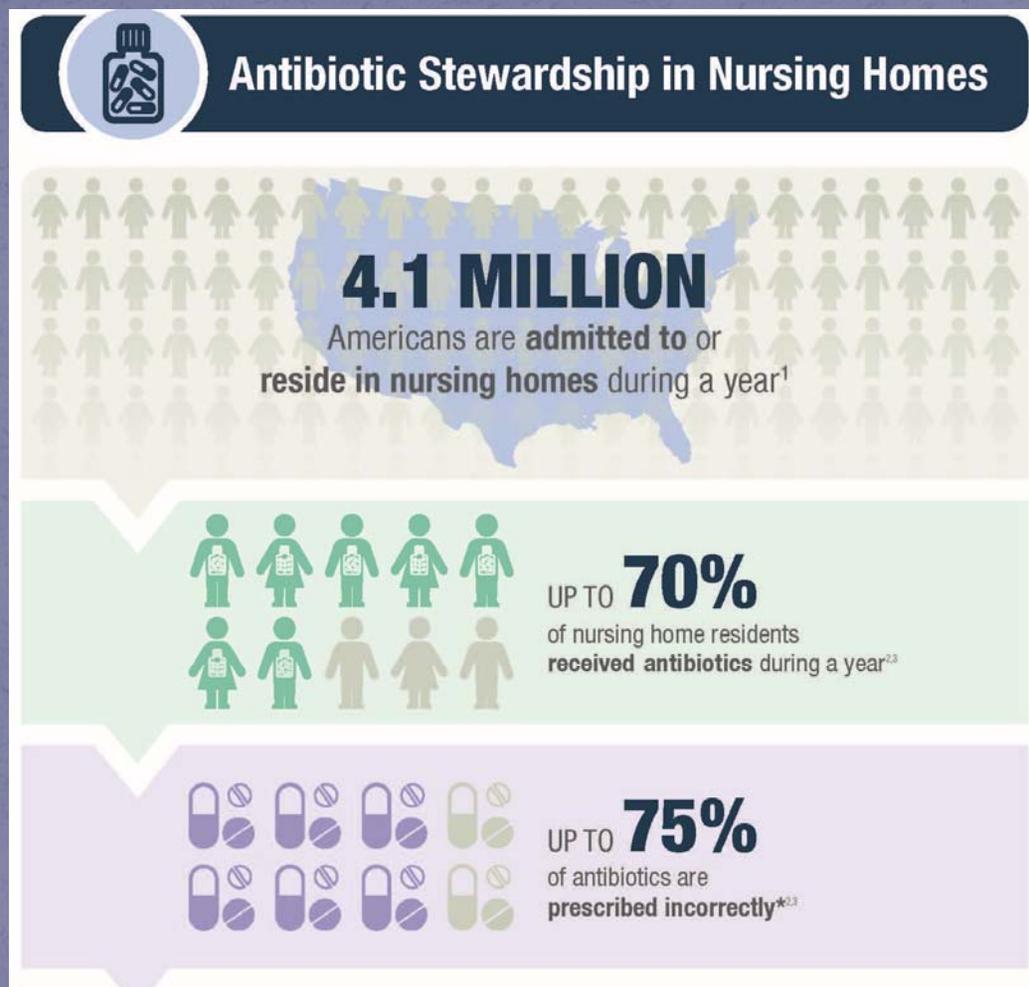


	No. of HAI Reported by California Hospitals in 2014	2014 California HAI Data Compared with National Baselines*
<b>CDI</b>	10,588	↑ 9% since 2011
<b>CLABSI</b>	2809	↓ 49% since 2008
<b>MRSA BSI</b>	705	↓ 24% since 2011
<b>VRE BSI</b>	782	No national baseline
<b>SSI – All Surgeries</b>	4,316	↓ 40% since 2008
<b>SSI – Colon Surgery</b>	911	No difference from 2008
<b>SSI – Hysterectomy</b>	168	↓ 20% since 2008

\*National baselines are based on surveillance data reported by U.S. hospitals to the Centers for Disease Control and Prevention's National Healthcare Safety Network.

Orange County  
CDI rate is 15%  
higher

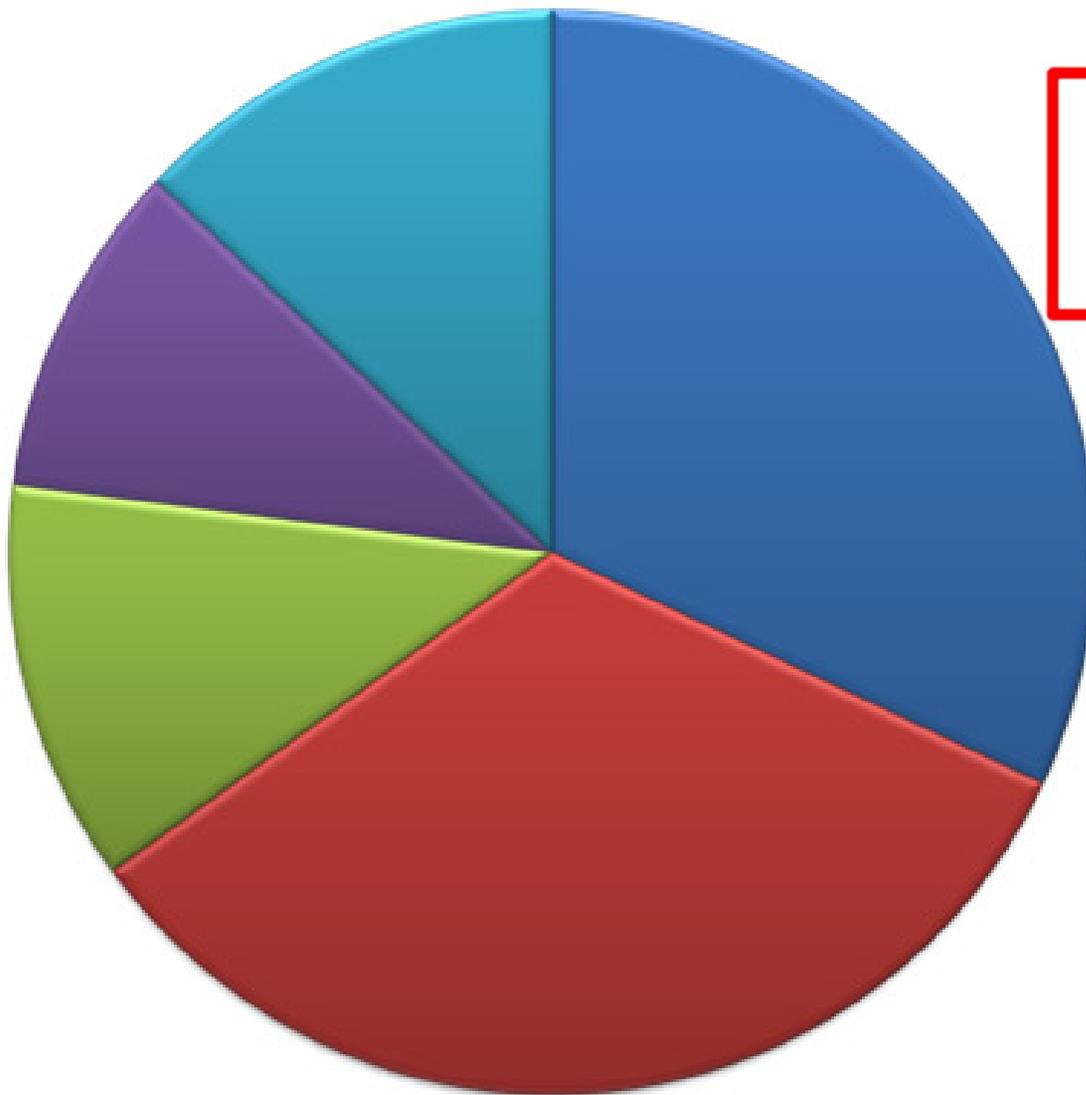
# Nursing Homes and Antibiotic Use



# Challenges of Antibiotic Prescribing in NHs

- How do prescribers make decisions on antibiotic orders?
  - Rely on assessments made by someone else
  - 67% of antibiotics ordered over the phone
- Limited documentation of assessments
  - 43% of NH-initiated antibiotic courses had no documentation of infection in patient chart
- Data/Labs
  - Difficulty obtaining and interpreting laboratory and diagnostic data to inform prescribing
- Other pressures
  - Influence of resident, family, and other NH staff on decision to start antibiotics

## Most common infections treated with antibiotics in nursing homes



■ Urinary Tract Infection 32%

■ Respiratory Tract Infection 33%

■ Skin and Soft Tissue Infection 12%

■ Other 10%

■ Undocumented 13%

■ Source: Benoit et al. J Am Geriatr Soc. 2008 Nov;56(11):2039-44.

# Prevalence of Asymptomatic Bacteriuria in Elderly SNF Patients

Common to find bacteria in urine without infection in elderly SNF patients



**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 <sup>a</sup>		
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]

<sup>a</sup> Age, ≥70 years.

# The Importance of Antimicrobial Stewardship

- Antimicrobial Stewardship (AMS) is:

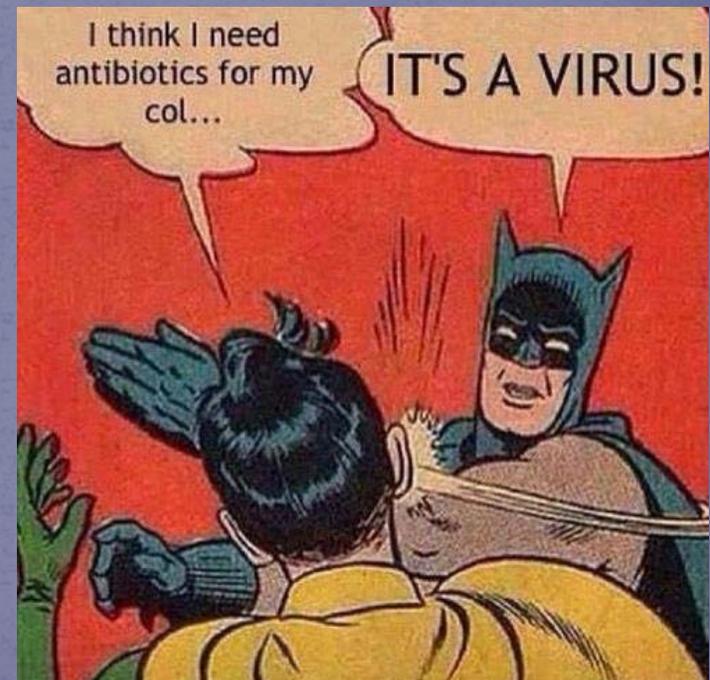
**Right Patient**

**Right Antibiotic**

**Right Time**

**Right Dose**

**Right Duration**



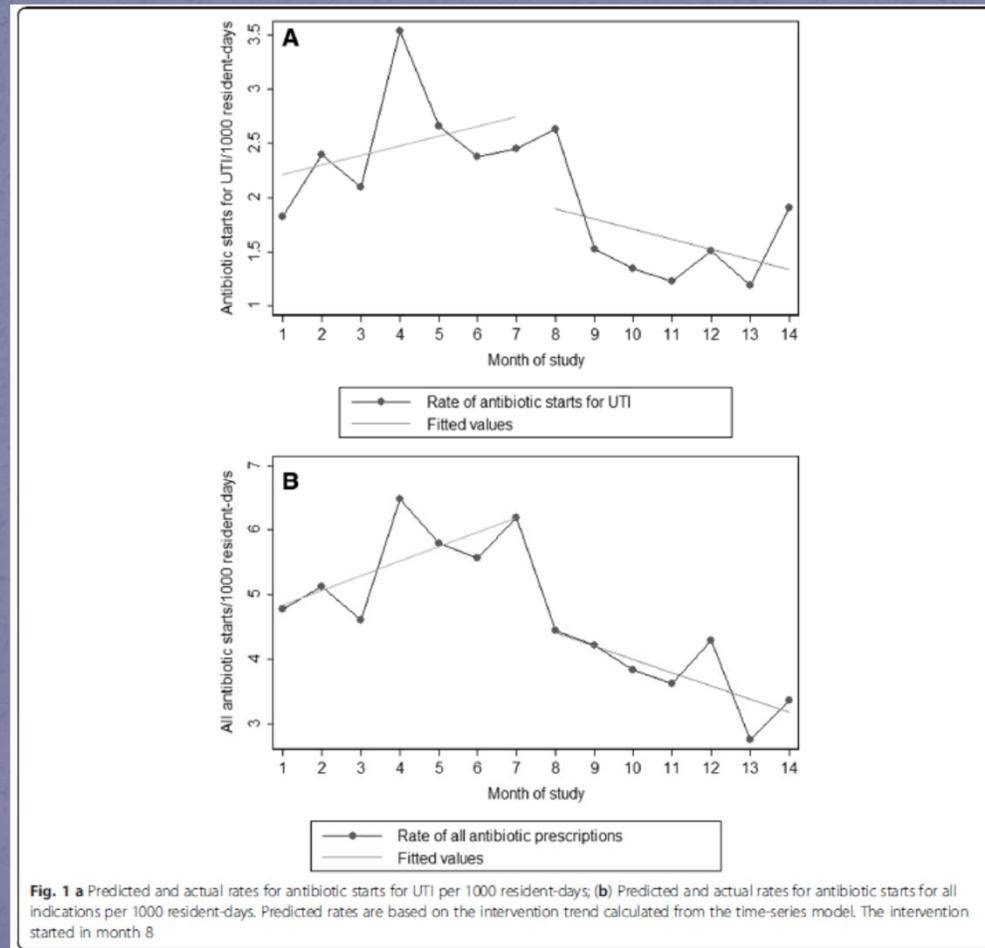
<http://ripbird.com/surprisingly-unknown-common-facts-that-you-need-to-know-right-now/>

# Does Antimicrobial Stewardship work?

“The first step toward change is awareness”



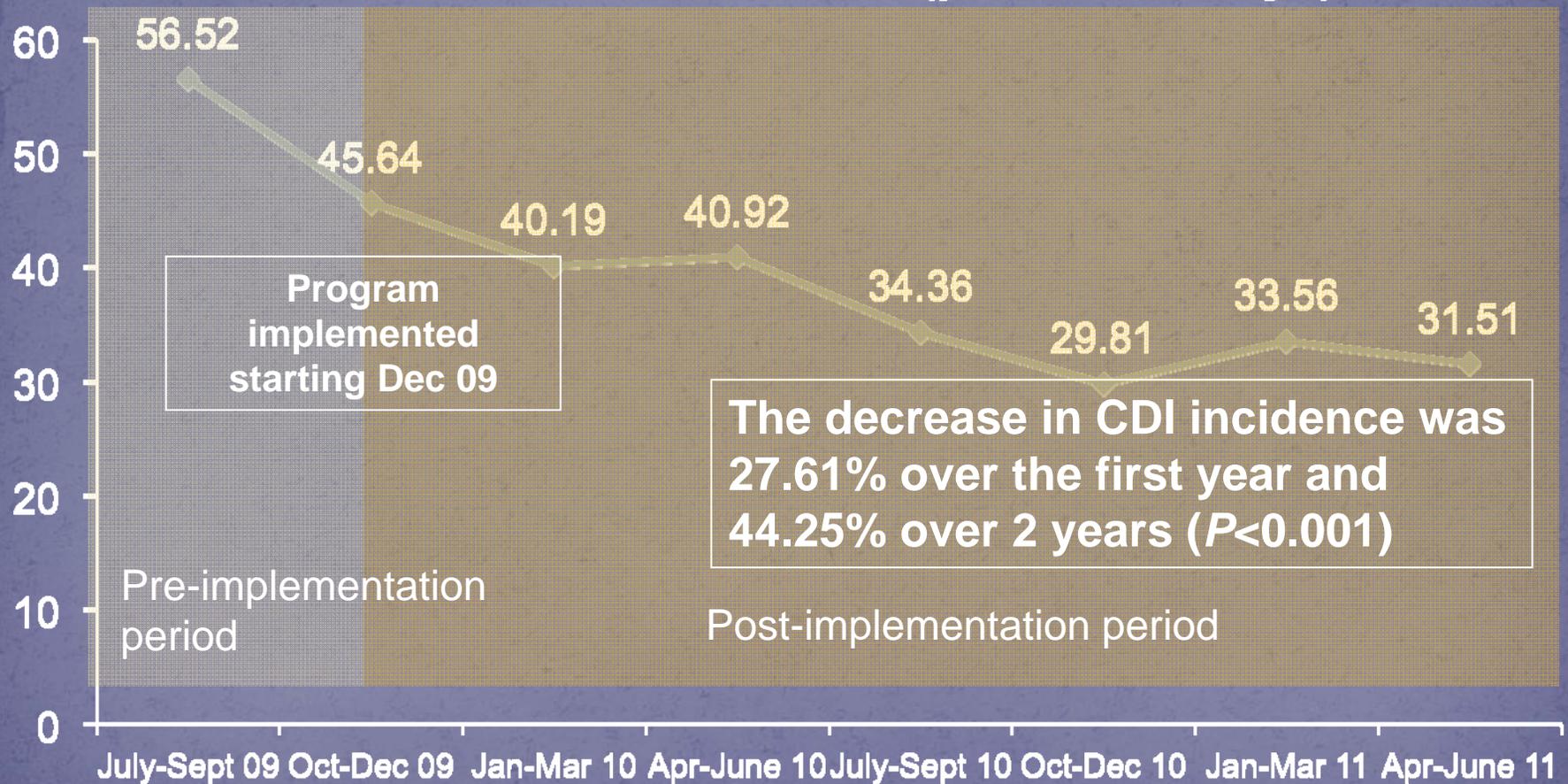
# Implementation of an ASP targeting residents with UTI in 3 community LTCFs: A quasi-experimental study using time-series analysis



# Reduction of the CDI Rate in a LTCF

Change in the *C. difficile* Cumulative Rate<sup>1</sup>

## *C. difficile* Cumulative Rate (per 10,000 Days)



CDI = *Clostridium difficile* infection; LTCF = long-term care facility.

1. Brakovich B, et al. *Q Healthc Qual.* 2013;35(3):15-21.

# The Importance of Antimicrobial Stewardship

- New 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”



# CS ECP SNF Antimicrobial Stewardship Quality Improvement Collaboration 2016

Diagnosis and Treatment of Urinary Tract Infections  
(UTIs)

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# Cedars-Sinai (CS) and the Enhanced Care Program (ECP) with SNFs

## Cedars-Sinai

- Largest not-for-profit medical center in Western US (923 beds)
- In 2013, CS established the ECP to improve care team collaboration and transitions of care for SNF-bound patient
- Through the program, CS delivers care transitions services to 8 SNFs in their market (Nurse Practitioner assigned to each SNF)
  - Resulted in 25% reduction in 30-day readmissions from participating SNF partners
  - Established structure for collaboration on other CS strategic initiatives (such as ASP)



# Why was this Project Initiated??

- *C. difficile* rates higher than benchmark at Cedars Sinai
- Higher elderly and SNF population than comparable acute care hospitals
- CS projects have been focused on reducing *C. difficile* (hand hygiene, environmental cleaning, early detection, antimicrobial stewardship) have had some impact – to build on these
- New projects underway focused on antimicrobial stewardship to reduce duration of unnecessary antibiotics (“Antibiotic Time Out” at 72 hours)



# SNF Collaboration and Baseline Assessment: 2015

- SNF Engagement
  - Conducted survey of AS practices and policies in eight ECP SNFs
  - Conducted SNF site visits and interviews of key leadership for assessment of infrastructure related to AS and infection prevention
  - Provided education on AS and new regulations to SNF leadership
- Baseline SNF ASP Assessment
  - Established collaboration with SNF Pharmacy and Lab consultants
  - Facilitated planning for AS metrics with SNFs and Lab/Pharmacy consultants
  - Initiated data collection and reporting system for antibiotic use monitoring
  - Developed checklist and tools to assist in implementing AS infrastructure
  - Facilitated baseline process and outcome measurement (e.g., rates of antibiotic usage, *C. difficile*, etc.)
  - Developed QI project plan for improving appropriate use of antibiotics for urinary tract infection (UTI)

