

# Location, Location, Location! Differences & Similarities STAC vs LTAC vs SNF

stroke, diabetes, hypertension, age, coronary artery disease, and previous

stroke

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# Financial Disclosures

- ▶ Advisory Board: Bayer HealthCare Pharmaceuticals, BioK, Daiichi Sankyo, Co. Ltd., Kindred Healthcare Corporation, Merck & Co., Inc., Novartis Pharmaceuticals Corporation, Paratek Pharma, Sanofi-aventis U.S. Ins., Summit Corporation
- ▶ Speakers Bureau: Bayer HealthCare Pharmaceuticals, Merck & Co., Inc.
- ▶ Research Grants: Amicrobe Inc., Astellas Pharma US, Inc., Avidbiotics Corporation, Cerexa, Clinical Microbiology Institute, Durata, Forrest Pharmaceuticals, Impex Pharmaceuticals, GlaxoSmithKline, GLSynthesis Inc., Gynuity Health Projects, Immunome Inc., Medicines Company, Merck & Co., Inc., Nanopacific Holdings Inc., Novartis Pharmaceuticals Corporation, Pfizer, Inc., rempex Pharmaceuticals, Romark Laboratories LC, Salix Pharmaceuticals, Inc., Sanofi Genzyme, Summitt Corporation, Symbiomix Therapeutics, Theravance Inc., Toltec Pharma LLC, Viroxis Corporation, Warner Chilcott

# Learning Objectives

- ▶ Recognize the vital role that each team member plays in response to a public health emergency
- ▶ Identify unique challenges to infection control in each setting
- ▶ Formulate effective strategies to protect healthcare providers and staff

# CDC Core Elements of Antibiotic Stewardship are **the SAME** for STAC, LTAC, and CCF

- ▶ Leadership commitment
- ▶ Accountability
- ▶ Drug expertise
- ▶ Action—policy & practice change to improve antibiotic use
- ▶ Tracking of antibiotic use
- ▶ Reporting of outcomes
- ▶ Education

The Core Elements of Antibiotic Stewardship for Nursing Homes.  
[www.cdc.gov/longtermcare/prevention/antibiotic-stewardship.html](http://www.cdc.gov/longtermcare/prevention/antibiotic-stewardship.html).

# The Joint Commission Standard on Antimicrobial Stewardship; (MM.09.01.01) **Went into effect Jan. 1, 2017**

- ▶ Requires antimicrobial stewardship to be an organizational priority
- ▶ Education required to all who order, dispense, administer, and monitor—this **includes independent licensed practitioners**
- ▶ Education needs to be ongoing and needs to include patients and families
- ▶ A multi-disciplinary antimicrobial stewardship team will be established and will meet regularly
- ▶ The hospital's ASP will implement and approve protocols and policies to drive anti-infective management
- ▶ The ASP will demonstrate action and will follow up about their activity (**the AS committee will need to show action and results; not just meet**)

New Antimicrobial Stewardship Standard. [https://www.jointcommission.org/assets/1/6/New\\_Antimicrobial\\_Stewardship\\_Standard.pdf/](https://www.jointcommission.org/assets/1/6/New_Antimicrobial_Stewardship_Standard.pdf/)

# Antibiotic Stewardship Program Issues

- ▶ Scope of the issue
- ▶ What is an LTAC vs SNF?
- ▶ How are strategies selected?
  - ▶ Community vs academic hospital
  - ▶ LTAC
  - ▶ SNF
- ▶ Organisms frequency
  - ▶ Acinetobacter, CRE, CDI, MRSA
- ▶ Variations in susceptibility
- ▶ Pharmacy antibiotics and infection prevention targets
- ▶ Cost savings
- ▶ Transition of care

Courtesy of Dr. Ellie Goldstein.

# US vs. California Hospitals Data

(Non-Federal, Acute Care)

	CA	USA
<b>Acute Care Hospitals</b>	345	3,975
<b>Discharges Annually (Millions)</b>	3.1	31.7
<b>Beds</b>	74,806	756,103
<b>Patient Days</b>	14,316,135	150,008,809
<b>Gross Patient Revenue</b>	\$357,873,341	\$2,966,834,751

Hospital Statistics by State. [www.ahd.com/state\\_statistics.html](http://www.ahd.com/state_statistics.html).

# California Laws

## **Senate Bill 739** Effective Jan 1, 2008

- ▶ Requires that **general acute care hospitals** develop a process for evaluating the **judicious use of antibiotics**, the results of which shall be monitored jointly by appropriate representatives and committees involved in quality improvement activities

## **Senate Bill 1311** Effective July 1, 2015

- ▶ Adopt and implement ASP in **accordance with guidelines** established by federal government and professional organizations
- ▶ Establish a **physician-supervised** multidisciplinary antimicrobial stewardship committee
- ▶ At least one physician or pharmacist who has undergone **specific training** related to stewardship
- ▶ Report ASP activities to appropriate hospital committees that are undertaking quality improvement activities

The California Antimicrobial Stewardship Program Initiative. <https://www.cdph.ca.gov/programs/hai/Pages/AntimicrobialStewardshipProgramInitiative.aspx>.



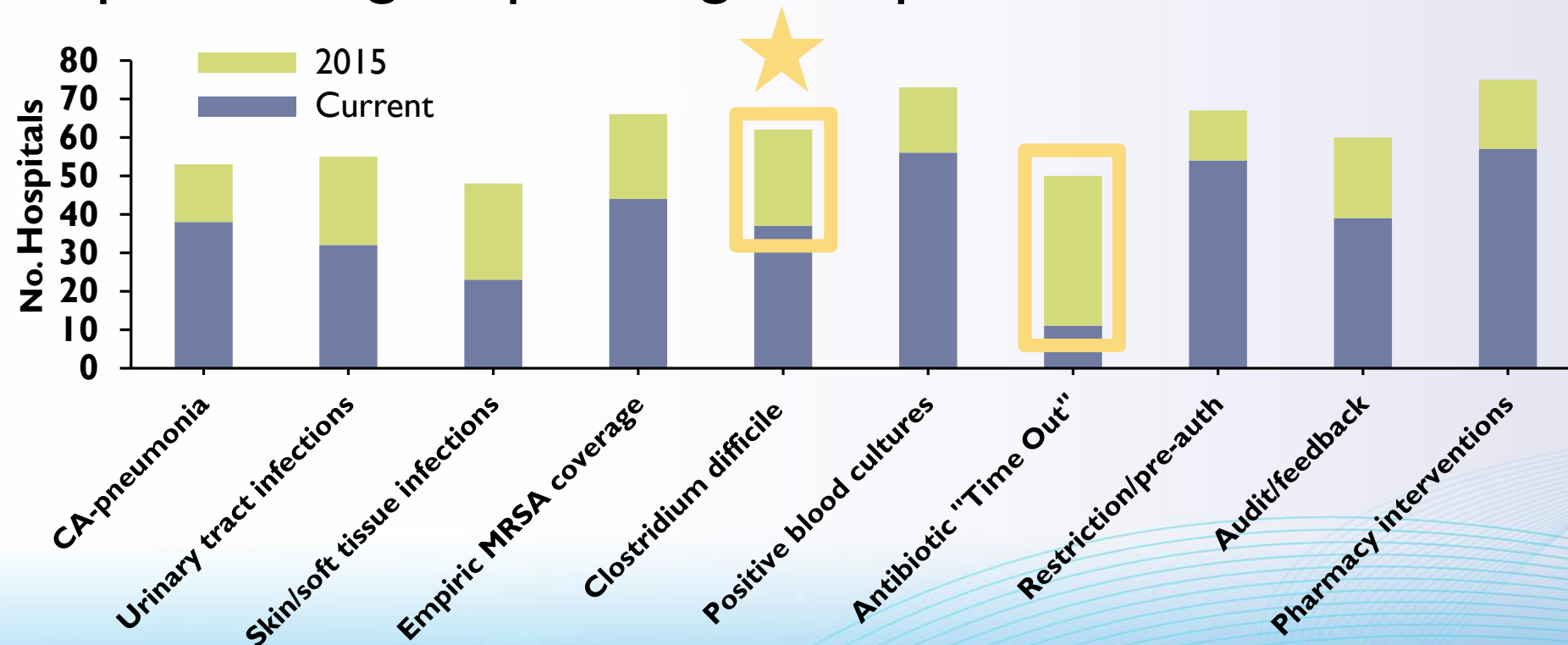
# CDPH ASP Definition\*—11 Elements

Basic	Intermediate	Advanced
1. <b>Antimicrobial stewardship policy/procedure adopted</b>	5. <b>Annual antibiogram developed, distributed, and medical staff educated</b>	9. <b>Antimicrobial formulary reviewed annually and changed based on antibiogram</b>
2. <b>Physician-supervised multidisciplinary committee formed</b>	6. <b>Institutional guidelines for management of common infection syndromes developed</b>	10. <b>Prospective audits performed, with intervention/feedback to prescribers</b>
3. <b>Physician or pharmacist ASP leader received specific stewardship training</b>	7. <b>Antibiotic usage patterns monitored using DDD or DOT</b>	11. <b>Formulary restriction with preauthorization adopted</b>
4. <b>ASP activities reported to hospital quality improvement committees</b>	8. <b>Medical staff/committees provided with ongoing ASP education</b>	<p><b>*As Recommended by HAI Advisory Committee, Dec 2013</b></p>

Antimicrobial Stewardship Program Toolkit Examples for Program Implementation 2015.  
<https://www.cdph.ca.gov/programs/hai/Pages/TEST%20Module.aspx>

# Observations From the ASP Collaborative

- ▶ What stewardship interventions/targets is your ASP currently implementing, or planning to implement in 2015?



Courtesy of Dr. Erin Epton, CDPH;

Core Elements of Hospital Antibiotic Stewardship Programs.

<https://www.cdc.gov/getsmart/healthcare/implementation/core-elements.html>.

\*Responses from 81 hospitals

# What Is an LTACH?

- ▶ Facility that provides diagnostic and medical treatment or rehabilitation to patients with **chronic illness or complex medical conditions** whose average **length of stay exceeds 25 days**
- ▶ Specialty-care hospital designed for patients with serious medical problems that require intense, special treatment for an extended period of time—usually 20 to 30 days
- ▶ Average length of stay of 25 to 30 days
  - ▶ **Three to 6 concurrent active diagnoses** and an acute episode on top of several chronic illnesses and comorbidities that **cannot be treated effectively at an alternative level of care**
  - ▶ Multiple acute complexities as determined by a physician assessment and subsequent documentation **requiring daily physician intervention**

What is a long term care hospital? <https://www.medicare.gov/Pubs/pdf/11347.pdf>;

Kindred Healthcare. [www.kindredhealthcare.com/what-we-do/transitional-care-hospitals/what-is-an-itac/](http://www.kindredhealthcare.com/what-we-do/transitional-care-hospitals/what-is-an-itac/).

# What Is the Scope of the Issue?

- ▶ **522 LTACHs in US**
  - ▶ 108 (21%) Select Medical Group
  - ▶ 100 (19%) Kindred Healthcare Group
  - ▶ 35 (7%) Vibra Group
- ▶ **42% are free-standing facilities**
- ▶ **17% (90) remote or satellite campuses**
- ▶ **41% (214) are hospital-within-hospital**
  - ▶ All Dubis and Noland are H-in-H
  - ▶ 89% of LHCs; 70% of Selects; 20% of Kindreds

Courtesy Dr. Sean Muldoon, unpublished data.  
Chopra T, et al. *Clin Infect Dis*. 2015;60:72-6.

# LTAC Information

- ▶ 28,666 beds; 40%-84% occupancy
- ▶ Size: varies 15-100 beds
- ▶ 217,380 discharges
- ▶ Medicare 66%, Medicaid 6.8%, Other 27.2%
- ▶ 6,735,486 patient days
- ▶ Case Mix Index **1.107**, so sicker than the average Medicare patient
- ▶ LOS 31 → 24 days      Outliers

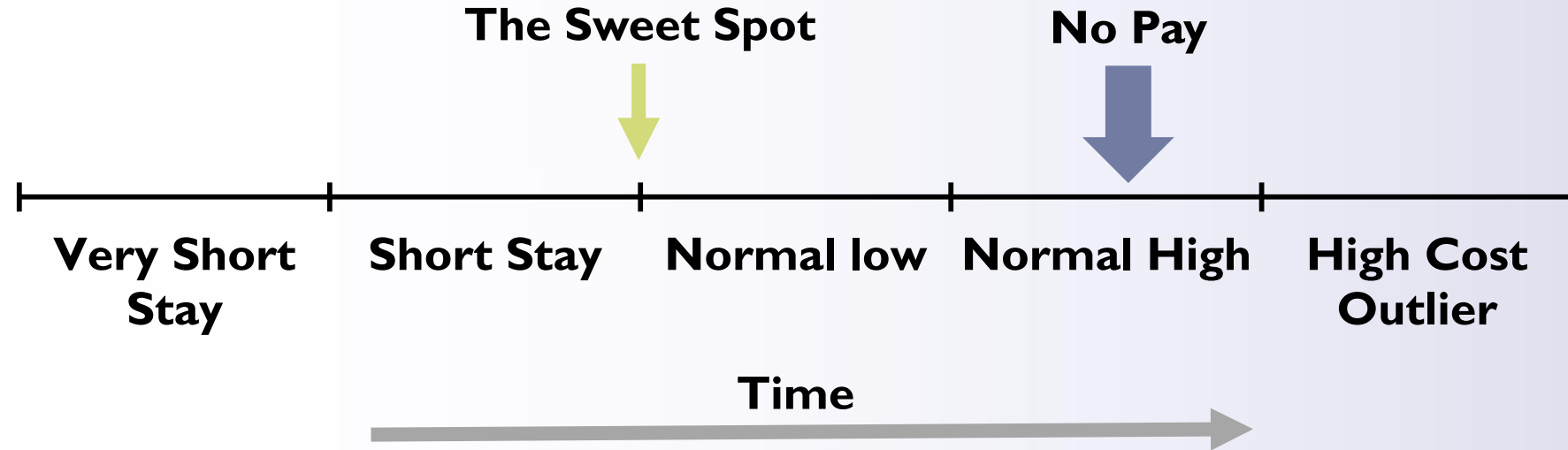
Chopra T, et al. *Clin Infect Dis.* 2015;60:72-6.

# The LTACH Patient

- ▶ Most patients come from other hospitals where they are heavily pretreated with multiple antibiotics
- ▶ Have resistant bacterial infections
- ▶ **Failed prior therapies**
  - ▶ Multiple lines
  - ▶ Renal insufficiency
  - ▶ Decubitus ulcers
  - ▶ Foley catheters
  - ▶ Ventilator dependent
  - ▶ Altered mental status
  - ▶ PEGs
  - ▶ Malnutrition

Courtesy of Dr. Ellie Goldstein.

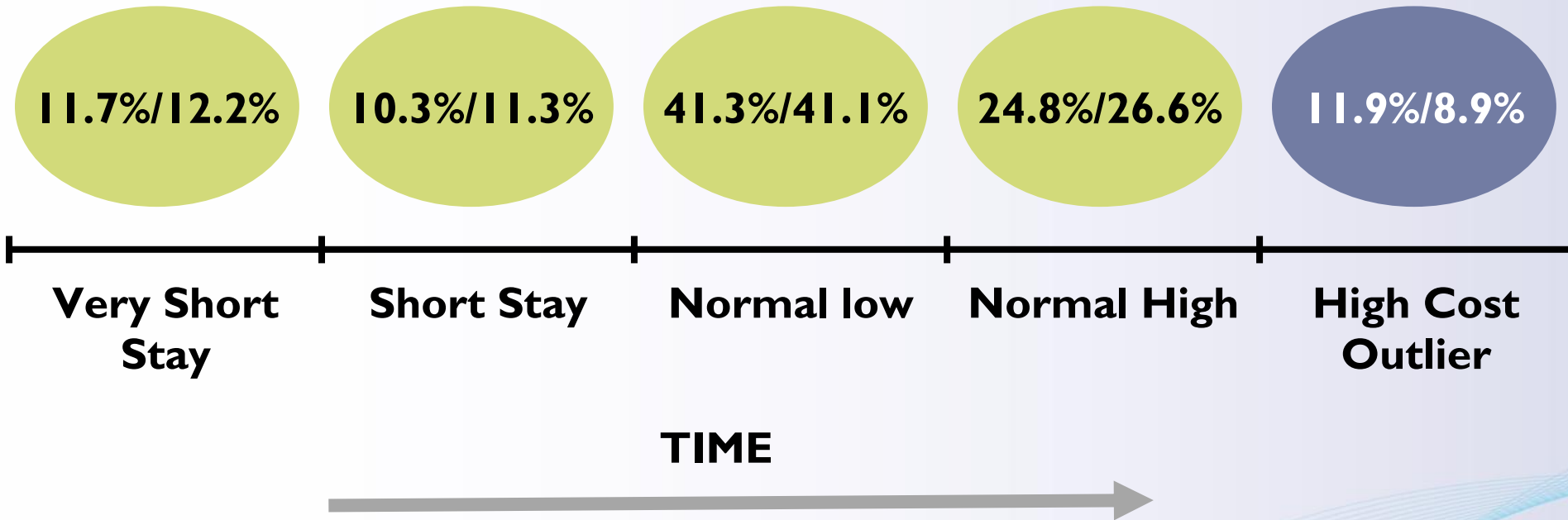
# Utilization Review: Stay Types



**Normal stay is 5/6 to 6/6 GM-LOS to get full DRG payment**

Courtesy of Dr. Drayton P. Graham.

# Utilization Review: Stay Types 2013



Courtesy of Dr. Drayton P. Graham.



# Long-Term Care Facilities: Important Participants of the Acute Care Facility Social Network?

Bruce Y. Lee<sup>1,2\*</sup>, Yeohan Song<sup>1,2</sup>, Sarah M. Bartsch<sup>1,2</sup>, Diane S. Kim<sup>3</sup>, Ashima Singh<sup>1,2,4</sup>, Taliser R. Avery<sup>5</sup>, Shawn T. Brown<sup>6,7</sup>, S. Levent Yilmaz<sup>8</sup>, Kim F. Wong<sup>8</sup>, Margaret A. Potter<sup>4</sup>, Donald S. Burke<sup>9</sup>, Richard Platt<sup>5</sup>, Susan S. Huang<sup>3</sup>

Facility Characteristics	Long-Term-Care Facilities			Acute-Care Facilities		
	Mean (SD)	Median	Range	Mean (SD)	Median	Range
<b>Annual Admissions</b>	504 (863)	311	3-7,080	10,171 (8,359)	8,768	101-32,931
<b>Licensed Beds</b>	107 (59)	99	9-300	198 (119)	198	114-282

**Table 3. General Network Measures of Healthcare Facility Network at Patient Transfer Thresholds of  $\geq 1$  and  $\geq 10$ .**

Social Network Measure	Long Term Care Facilities Network		Acute Care Facilities Network		All Facilities	
	$\geq 1$	$\geq 10$	$\geq 1$	$\geq 10$	$\geq 1$	$\geq 10$
<b>Number of Ties</b>	426	9	429	63	2,379	536
<b>Density</b>	8.3%	0.2%	43.2%	6.4%	22.2%	5.0%
<b>Reciprocity</b>	18.7%	0.0%	45.4%	12.5%	41.9%	40.3%
<b>Network Diameter (Number of Facility Pairs)</b>	5 (23)	2 (1)	3 (67)	9 (1)	4 (11)	7 (6)
<b>Facilities With a Geodesic Distance of 1</b>	10.3%	90.0%	44.6%	16.2%	22.9%	6.6%
<b>Betweenness*</b>	44 (0-446)	0 (0-1)	10 (0-75)	225 (0-1,067)	27 (0-881)	38 (0-1,067)
<b>Out-degree*</b>	5 (0-21)	0 (0-4)	15 (2-24)	2 (0-7)	17 (0-83)	3 (0-26)
<b>In-degree*</b>	5.5 (0-16)	0 (0-2)	13 (0-25)	1 (0-7)	20.5 (0-66)	4 (0-23)

\*Median (Range). Doi:10.1371/journal.pone.0029342.t003

# Sharing Patients—10 Patients

Lee BY, et al. *PLOS One*. 2011;6:e29342.

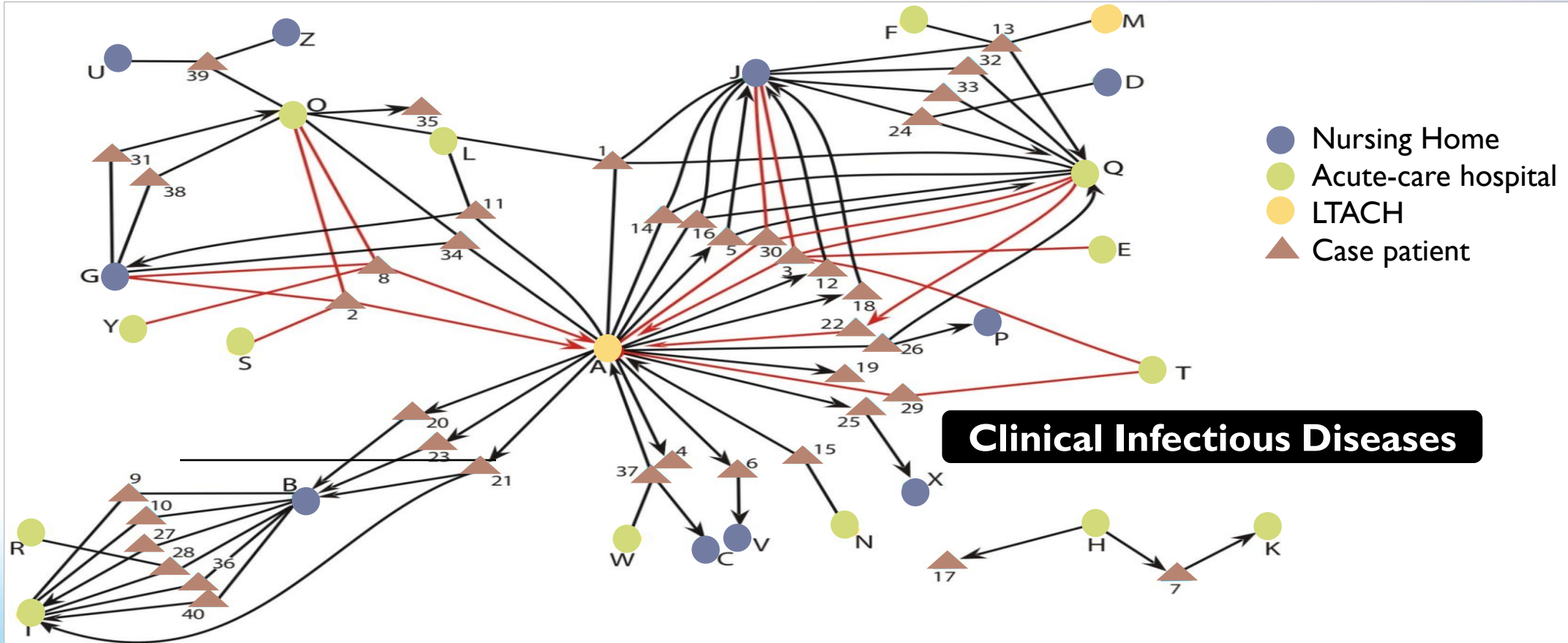
# Tailoring ASP to Local Needs

- ▶ CA MRSA US 300
- ▶ *C. difficile* 027
- ▶ *E. coli* ST 131 H30 Rx
- ▶ Pseudomonas
- ▶ KPC / CRE
- ▶ CRABS (*Acinetobacter*)

Movie images found at: <http://www.imdb.com/title/tt0233469/> and [http://www.starwarsreport.com/wp-content/uploads/2012/05/Star\\_Wars\\_attack\\_of\\_the\\_clones\\_6.jpg](http://www.starwarsreport.com/wp-content/uploads/2012/05/Star_Wars_attack_of_the_clones_6.jpg).

# Emergence and Rapid Regional Spread of *Klebsiella pneumoniae* Carbapenemase-Producing *Enterobacteriaceae*

Sarah Y. Won,<sup>1,2</sup> L. Silvia Munoz-Price,<sup>3</sup> Karen Lolans,<sup>4</sup> Bala Hota,<sup>4,5</sup> Robert A. Weinstein,<sup>4,5</sup> and Mary K. Hayden<sup>4</sup> for the Centers for Disease Control and Prevention Epicenter Program



Won SY, et al.  
*Clin Infect Dis.*  
2011;53:532-40.

# LTAC ASP Program

- ▶ Review antibiotic time out
- ▶ Annual education RPHs, MDs, RNs
- ▶ The 6 Ds: Diagnosis, Drug, Dosage, Duration, De-escalation/Device, Documentation
- ▶ Annual antibiogram
- ▶ Antibiotic utilization
- ▶ Annual formulary review
- ▶ Infection prevention outcomes

Kindred Healthcare. Antimicrobial Stewardship in Post Acute Care. [www.houstontx.gov](http://www.houstontx.gov).

# LTACH Stewardship Issues

## The Perfect Infection Storm

- ▶ PICCs POA
  - ▶ Likely to stay in for > 20 days
- ▶ Foleys—POA and likely to stay in for > 20 days
- ▶ PEGs nutritional diarrhea
- ▶ Ventilator-dependent; slow wean rates
- ▶ Decubitae necessitating Foley
- ▶ Few single rooms
- ▶ **TOTALLY** colonized, but **limited POA** micro data from transferring facility

Courtesy of Dr. Ellie Goldstein, unpublished data.

# Antibiotic Resistance Threats in the US, 2013

Gram-negative Organism	Cases (%)	Deaths (%)	Threat Level
<b>ESBL-producing Enterobacteriaceae</b>	26,000 (1.93)	1,700 (7.44)	Serious
<b>CRE</b>	9,300 (0.69)	610 (2.67)	Urgent
<b>Multidrug-resistant <i>Pseudomonas aeruginosa</i></b>	6,700 (0.5)	440 (1.92)	Serious
<b>Multidrug-resistant <i>Acinetobacter</i> spp.</b>	7,300 (0.54)	500 (2.18)	Serious

- ▶ Estimated annual incidence of infection due to notable antimicrobial-resistant organisms
- ▶ Total: 1,349,766 cases and 22,840 deaths

Thabit AK, et al. *Expert Opin Pharmacother.* 2015;16:159-77;  
Antibiotic Resistance Threats in the United States, 2013. [www.cdc.gov/drugresistance/pdf/ar-threats-2013-508.pdf](http://www.cdc.gov/drugresistance/pdf/ar-threats-2013-508.pdf).

# Blood Cultures 2016

## Academic vs Community vs LTAC

Organism	Academic Rank (No)	Community Rank (No)	LTAC* Rank (No)
<b>Coag Neg Staph</b>	# 1 (553)	#1 (222)	# 4 (148)
<b>Enterococcus</b>	#2 (198) 48% VRE	#7 (27) 19% VRE	#6 (104)
<b>E. coli</b>	#3 (156) 22% CTRX R	#2 (85)	
<b>S. aureus</b>	#4 (148) 31% MRSA	#3 (62) 26% MRSA	#5 (144) 90% MRSA
<b>Klebsiella 29% CTRX R</b>	#5 (111)	#4 (31)	#2 (175)
<b>Alpha Strep</b>	#6 (86)	#8 (18)	
<b>Pseudomonas</b>	#8 (50)	#10 (16)	
<b>C. glabrata</b>	#9 (40)	Rare	#3 (149)
<b>C. albicans</b>	#11 (13)	#13 (7)	#1 (188)
<b>C. parapsilosis</b>			#7 (89)
<b>C. tropicalis</b>			#8 (86)

\* LTAC 512/1,083 43% are *Candida* species

Courtesy of Dr. Ellie Goldstein, unpublished data.



# Know Your Antibigram

## Gram-Negative Bacteria Resistance Rates (%)—UCLA 2014

Organism	No. Tested	Drug			
		CTAZ	Pip/Taz	Carbapenem	Quinolone
<i>E. coli</i>					
<b>OP</b>	244	16%	5%	1%	33%
<b>IP</b>	97	29%	16%	1%	46%
<b>ICU</b>	93	44%	27%	10%	57%
<i>Klebsiella</i>					
<b>OP</b>	99	10%	5%	4%	12%
<b>IP</b>	62	17%	16%	6%	11%
<b>ICU</b>	86	23%	27%	13%	22%
<i>P. aeruginosa</i>					
<b>OP</b>	299	6%	10%	9%	19%
<b>IP</b>	91	26%	31%	21%	29%
<b>ICU</b>	<b>119</b>	<b>22%</b>	<b>32%</b>	<b>33%</b>	<b>29%</b>

Courtesy of UCLA Health System. Antimicrobial Susceptibility Summary.

# ESBL Rates 2006-2011

## Four Nearby LA Hospitals

	Yr	Community	Teaching A*	Teaching B*	LTAC
<b><i>E. coli</i> 06</b>	06	1%	7.1%	9.7%	75%
	07	1.4%	13.2%	13.6%	
	10	3%	13%	13%	80%
	13	5%	20%	30%	80%
<b><i>K. pneumoniae</i></b>	06	3%	14.8%	18%	96%
	07	5.6%	28%	18%	> 90%
	10	10%	19%	15%	> 90%
	13	9%	10%	15%	> 90%

•Blood cultures only  
 ESBL = extended spectrum  $\beta$ -lactamases.

Courtesy of Dr. Ellie Goldstein, unpublished data.

# Antibiotic Resistant Infections US Hospitals— 2014 NHSN

- ▶ 4,000 STACs, 501 LTACs, 1,135 SNFs, 3,655 CLABSI, & 3,791 CAUTI

Organism	CLABSI		CAUTI	
	No Tested	%	No Tested	%
<b>Enterobacteriaceae ESBL +</b>				
<b>STAC</b>	2,804	21.1%	11,146	16%
<b>LTAC</b>	401	39.7%	1,324	38.2%
<b>Enterobacteriaceae Carb Resistant</b>				
<b>STAC</b>	3,199	4.9%	10,530	2.8%
<b>LTAC</b>	480	14.6%	1,328	11.1%
<b><i>Pseudomonas</i> MDRO</b>				
<b>STAC</b>	810	15.7%	3,392	13.9%
<b>LTAC</b>	138	31.9%	934	32.9%

Weiner LM, et al. *MMWR Morb Mortal Wkly Rep.* 2016;65:235-41.

# Three Nearby LA Hospitals

## Resistance Variations—2016

	Community	Teaching	%
<b>No Beds</b>	250	520	88
<b><i>Acinetobacter</i></b>			
<b># Isolates tested</b>	<b>32</b>	<b>49</b>	<b>104</b>
<b>Amp/sulbactam</b>	25%	31%	76%
<b>Carbapenem</b>	45%	26%	89%
<b>Amikacin</b>	36%	26%	82%
<b><i>Pseudomonas</i></b>			
<b># Isolates tested</b>	<b>545</b>	<b>498</b>	<b>165</b>
<b>Cefepime</b>	8%	21%	39%
<b>Carbapenem</b>	11%	20%	52%
<b>Cipro</b>	20%	22%	53%
<b>Pip-Tazo</b>	12%	23%	50%

Courtesy of Dr. Ellie Goldstein, unpublished data.

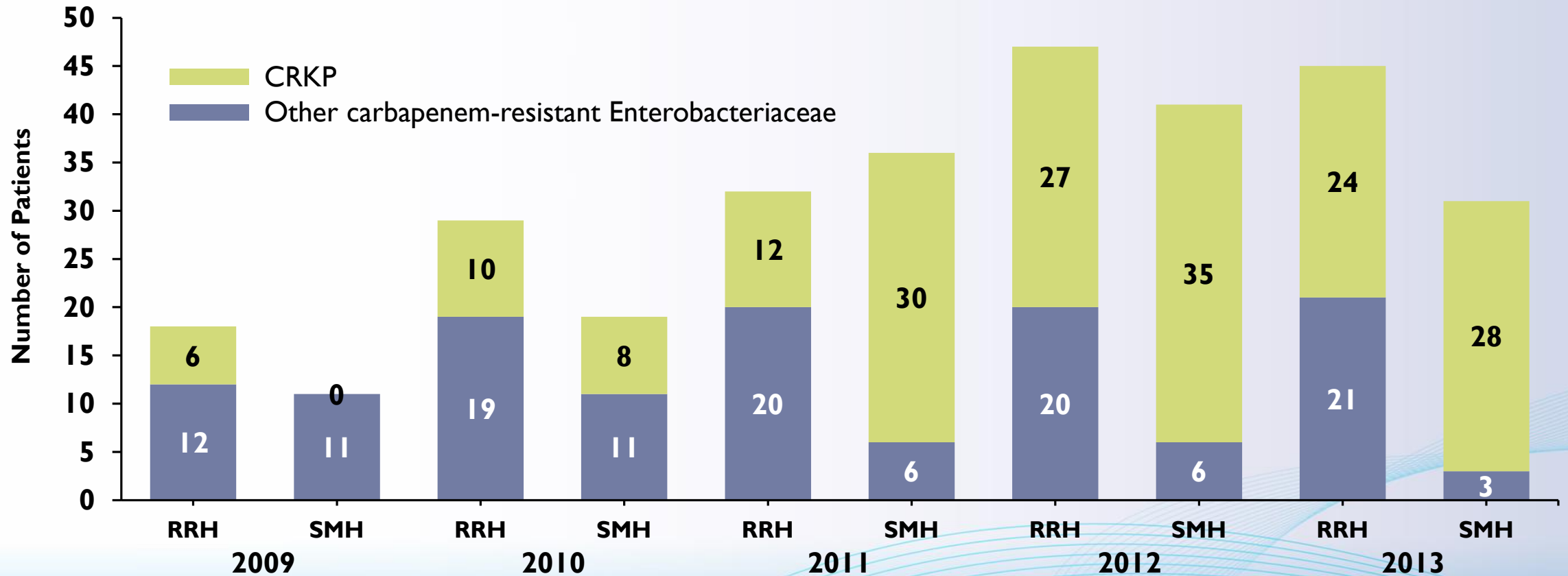
# Facilities Reporting at Least One CRE (CAUTI or CLABSI) for NHSN Jan-June 2012

Facility Characteristics	No. Facilities With CRE From CAUTI or CLABSI	Total Facilities Performing CAUTI or CLABSI Surveillance	Percentage (%)
<b>All Acute Care Hospitals</b>	181	3,918	4.6%
<b>STACs</b>	145	3,716	3.9%
<b>LTACs</b>	36	202	<b>17.8%</b>

CLABSIs = central-line-associated bloodstream infections;  
CAUTIs = catheter-associated urinary tract infections;

CDC. *MMWR Morb Mortal Wkly Rep.* 2013;62:165-70.

# UCLA vs. SMH-UCLA CRE 2009-2013

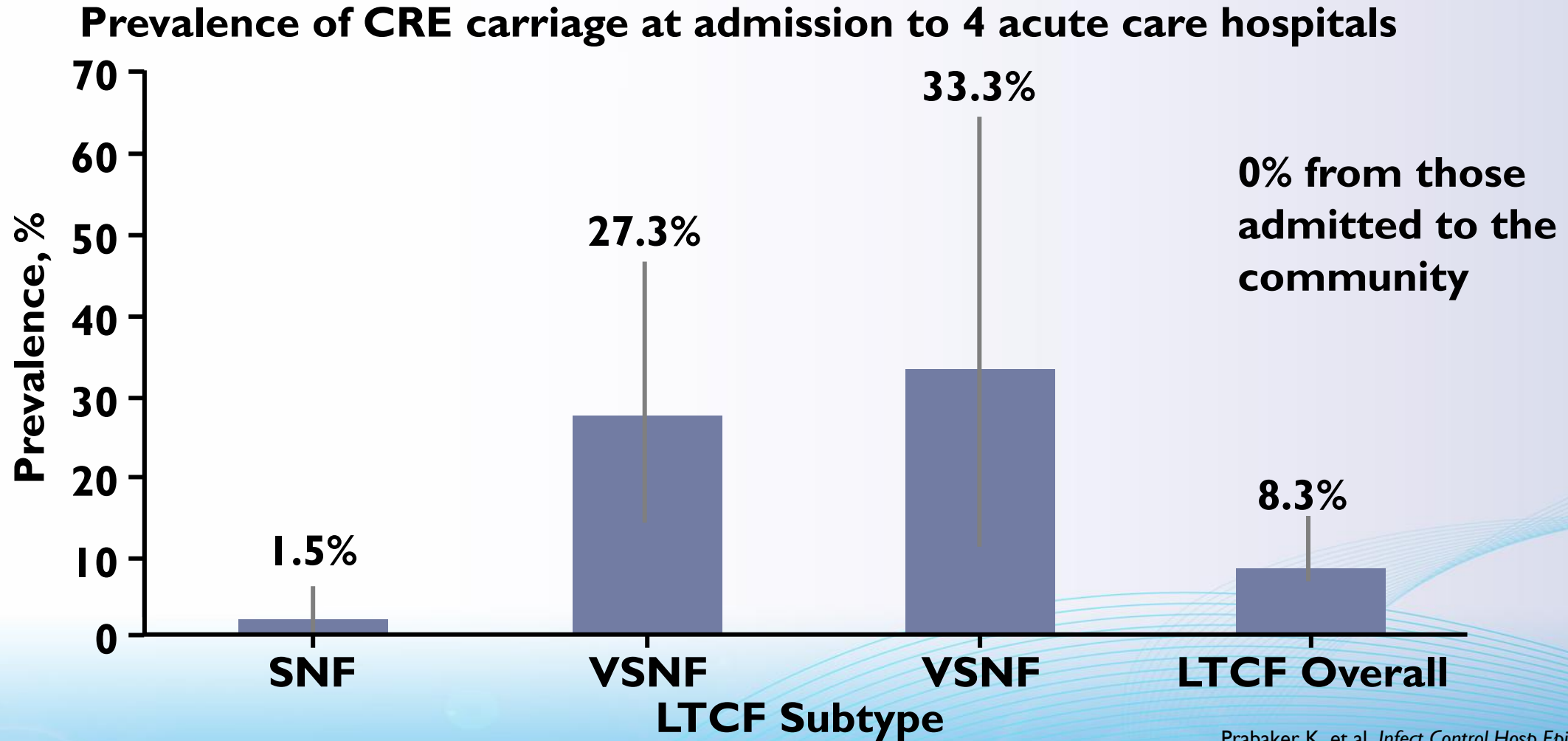


UCLA Health System: Antimicrobial Susceptibility Summary 2015.

[www.asp.mednet.ucla.edu/files/download/AMIC2015online?version\\_id=7520334](http://www.asp.mednet.ucla.edu/files/download/AMIC2015online?version_id=7520334)

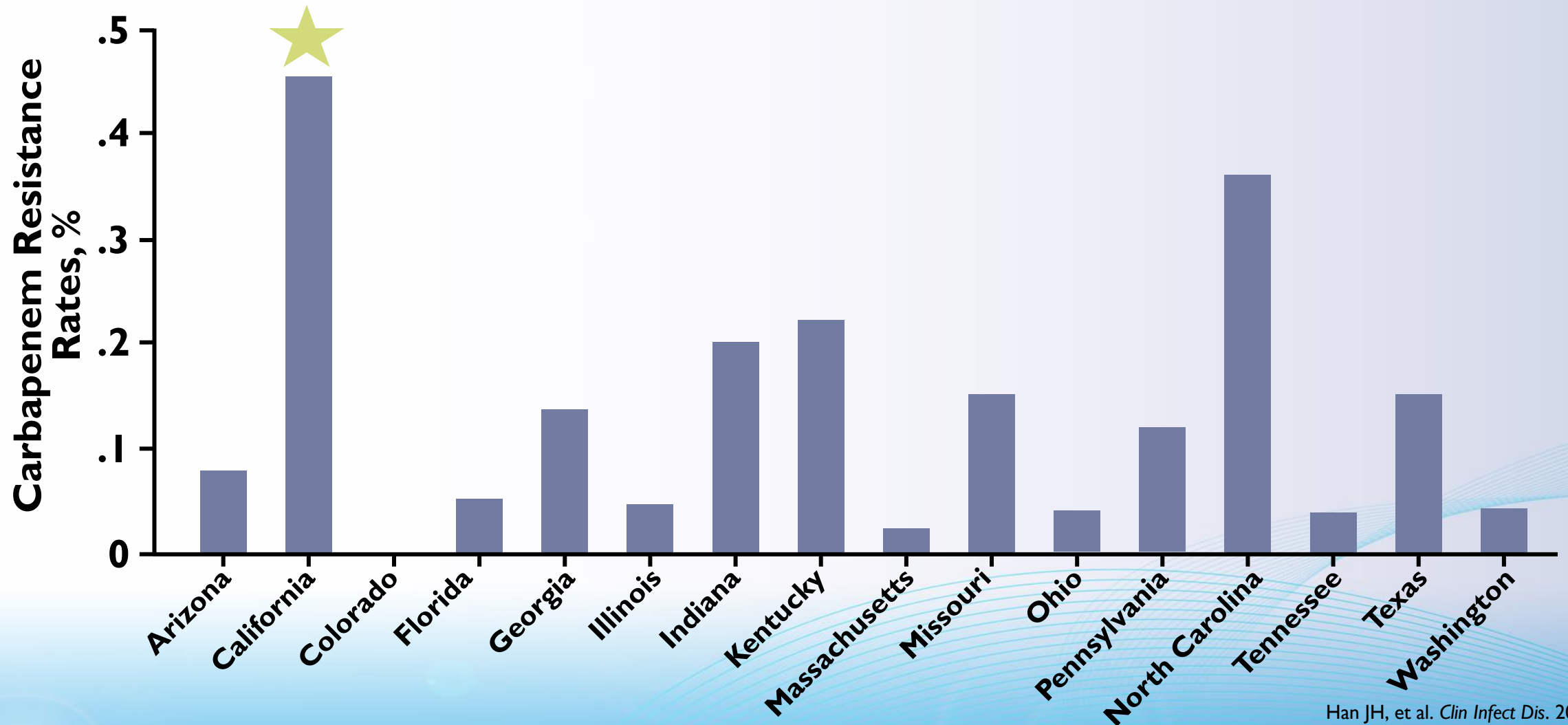
<sup>1</sup>Includes isolates that produce carbapenemases such as KPC and NDM

# CRE Prevalence in LTCF: By Type



Prabaker K, et al. *Infect Control Hosp Epidemiol.* 2012;33:1193-9.

# CRKP Rates at Select LTAC by State, Jan 2014 to Mar 2015



Han JH, et al. *Clin Infect Dis.* 2016;Dec 24.



# Antibiotic Susceptibility Profiles of CRKP Isolates at LTACs, 2014-2015

Antibiotic	No. of Isolates Tested	Susceptible n (%)	Intermediate n (%)	Resistant n (%)
<b>Amikacin</b>	885	298 (33.7)	63 (7.1)	524 (59.2)
<b>Ciprofloxacin</b>	630	10 (1.6)	2 (0.3)	618 (98.1)
<b>Levofloxacin</b>	713	12 (1.7)	3 (0.4)	698 (97.9)
<b>Gentamicin or tobramycin</b>	630	11 (1.7)	3 (0.5)	616 (97.8)
<b>Colistin or polymyxin B</b>	690	579 (83.9)	--	111 (16.1)
<b>Tigecycline</b>	439	413 (94.1)	23 (5.2)	3 (0.7)

Han JH, et al. *Clin Infect Dis*. 2016;Dec 24..

# CRE in LTACs Southern California—2014

	January				February				March			
	POA		HAC		POA		HAC		POA		HAC	
	Col	Inf	Col	Inf	Col	Inf	Col	Inf	Col	Inf	Col	Inf
<b>BP</b>	1	1	10	1	0	0	11	1	14	4	3	0
<b>Riv</b>	1	0	0	0	0	0	0	0	0	0	1	0
<b>RSH</b>	3	0	1	1	7	0	0	1	5	0	0	0
<b>Ont</b>	5	1	4	0	2	0	4	0	1	0	7	0
<b>La M</b>	5	3	5	2	4	0	5	2	4	2	0	0
<b>SG</b>	7	4	0	4	6	1	0	3	8	0	0	0
<b>W</b>	1	0	5	1	1	0	3	1	6	0	1	2
<b>LA</b>	1	0	1	1	2	0	6	0	5	0	1	0
<b>TOTALS</b>	<b>24</b>	<b>9</b>	<b>26</b>	<b>10</b>	<b>22</b>	<b>1</b>	<b>29</b>	<b>8</b>	<b>43</b>	<b>6</b>	<b>13</b>	<b>2</b>

**POA 89 → 16 INF**

**HAC 68 → 20 INF**

► **Don't take credit for POAs**

Courtesy of Dr. Ellie Goldstein, unpublished data.

# LTAC CRE Initiative

- ▶ CRE noted to occur in some system hospitals
- ▶ All sites with **> 3/month or 10 CREs in quarter** period become a “focus hospital”—regional variation
- ▶ **PLAN**
  - ▶ New isolation signage (purple)
  - ▶ CRE screening on admission
  - ▶ Proper cohorting
  - ▶ Monitor PPE and hand hygiene compliance
  - ▶ Daily CHG bathing
  - ▶ CRE education to staff

Courtesy of Dr. Ellie Goldstein.

# Summary

- ▶ **Multi-departmental initiatives**
  - ▶ Microbiology lab rapid identification
  - ▶ Identify POAs
- ▶ Regular (daily) communication
- ▶ Disseminated and concordant ABX and micro ASP
- ▶ Tailor ASP to local susceptibility patterns
- ▶ Concurrent review

Courtesy of Dr. Ellie Goldstein.

# Staff Education and Acknowledgement Physicians, Nurses, and Other Personnel

Courtesy of Dr. Ellie Goldstein, unpublished data.

# ASP Medical Staff Acknowledgement Form

- ▶ **Diagnosis:** Where is the infection, or is the therapy empiric? Do the cultures represent infection or colonization?
- ▶ **Drug:** Does the drug choice cover the most likely pathogens on the antibiogram?
- ▶ **Dose:** Is the dose appropriate for the patient's age, weight, site of infection, and any renal or hepatic insufficiencies?
- ▶ **Duration:** Antimicrobials should be given for the appropriate period of time and not any longer
- ▶ **De-escalation:** Broad spectrum antimicrobials may be needed initially (empirically), but should be narrowed once cultures return, assuming the patient improves
- ▶ **Documentation:** Initial and continued progress notes should reflect all of the D's listed previously; many of the issues around antibiotic excess will resolve themselves if this disciplined prescriptive approach to the documentation is followed

Courtesy of Dr. Ellie Goldstein, unpublished data.

# Microbiology

- ▶ **Blood culture guidelines**—only 2 sets of blood cultures within 48 hours except:
  - ▶ Suspected acute endocarditis: 3 sets from 3 separate sites over 1-2 hours
  - ▶ Suspected subacute endocarditis: 3 sets from 3 separate sites taking greater or equal to 15 minutes apart; if negative at 48 hours, may obtain 3 more sets
  - ▶ Acute change in the clinical condition of the patient
    - ▶ In absence of temperature above 100.8 or < 96 and an elevated or low WBC count, physician should clarify the blood culture order with the Laboratory Manager
- ▶ **Stool cultures and ova & parasites** are not routinely done after 72 hours of hospitalization except in HIV+ patients
  - ▶ *C. difficile* toxin A/B
    - ▶ Test will not be performed if previous positive result was obtained within the past 8 days
    - ▶ If patient on PO Vanco, *C. difficile* will not be performed unless physician contacts the Laboratory Department about extenuating circumstances
- ▶ **Wound culture** should not be performed routinely
  - ▶ Deep tissue cultures from the OR will be cultured
  - ▶ Abscesses will be cultured
  - ▶ Cultures obtained by physician, nursing supervisor, or wound care nurse will be accepted
- ▶ **Urine culture**
  - ▶ The lab will perform a C&S if there is evidence of pyuria as evidenced by: WBCs present on microscopic examination or leukocyte esterase + or nitrites + on dipstick; one specimen every 72 hours, unless specified by the physician
- ▶ **Sputum cultures**
  - ▶ One specimen every 72 hours (except AFB and bronchoscopy)
- ▶ **Catheter tips**
  - ▶ Catheter tips cultures are not performed routinely; if culture is needed, the ordering physician will need to contact the laboratory to clarify the need for the culture before the specimen is sent out

For exception, contact the Laboratory Manager, Infection Committee Chair, or Chief of Staff.

Physician Signature, Date

Courtesy of Dr. Ellie Goldstein, unpublished data;  
Bauer TM, et al. *JAMA*. 2001;285(3):313-19.

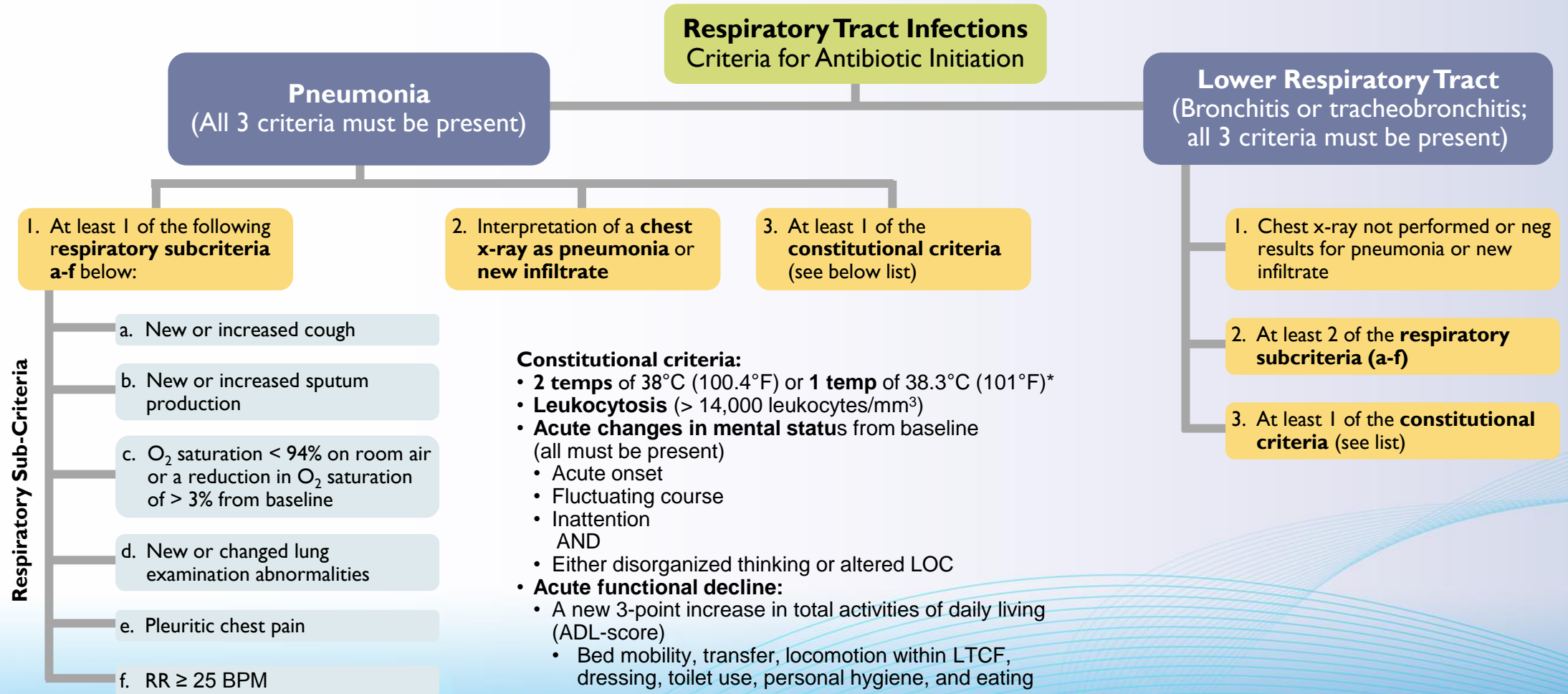
# McGeer Criteria (October 2012 Update by Stone, et al.)

- ▶ Identification of infection should **not** be based on a single piece of evidence, but should always consider:
  - ▶ The **clinical presentation**
  - ▶ Microbiologic information
  - ▶ Radiologic information
- ▶ **Goal:** to standardize identifying factors for infections in LTCF patients that are often difficult to assess
  - ▶ Symptoms not expressed or misinterpreted
  - ▶ Comorbidities can obscure signs and symptoms of infection
- ▶ Criteria for antibiotic initiation falls into 4 main categories:
  - ▶ UTI
  - ▶ Respiratory infection
  - ▶ Skin and soft tissue infection
  - ▶ Fever of unknown origin

Nicolle LE, et al. *Infect Control Hosp Epidemiol.* 2000;21:537-45;  
Stone ND, et al. *Infect Control Hosp Epidemiol.* 2012;33:965-77.

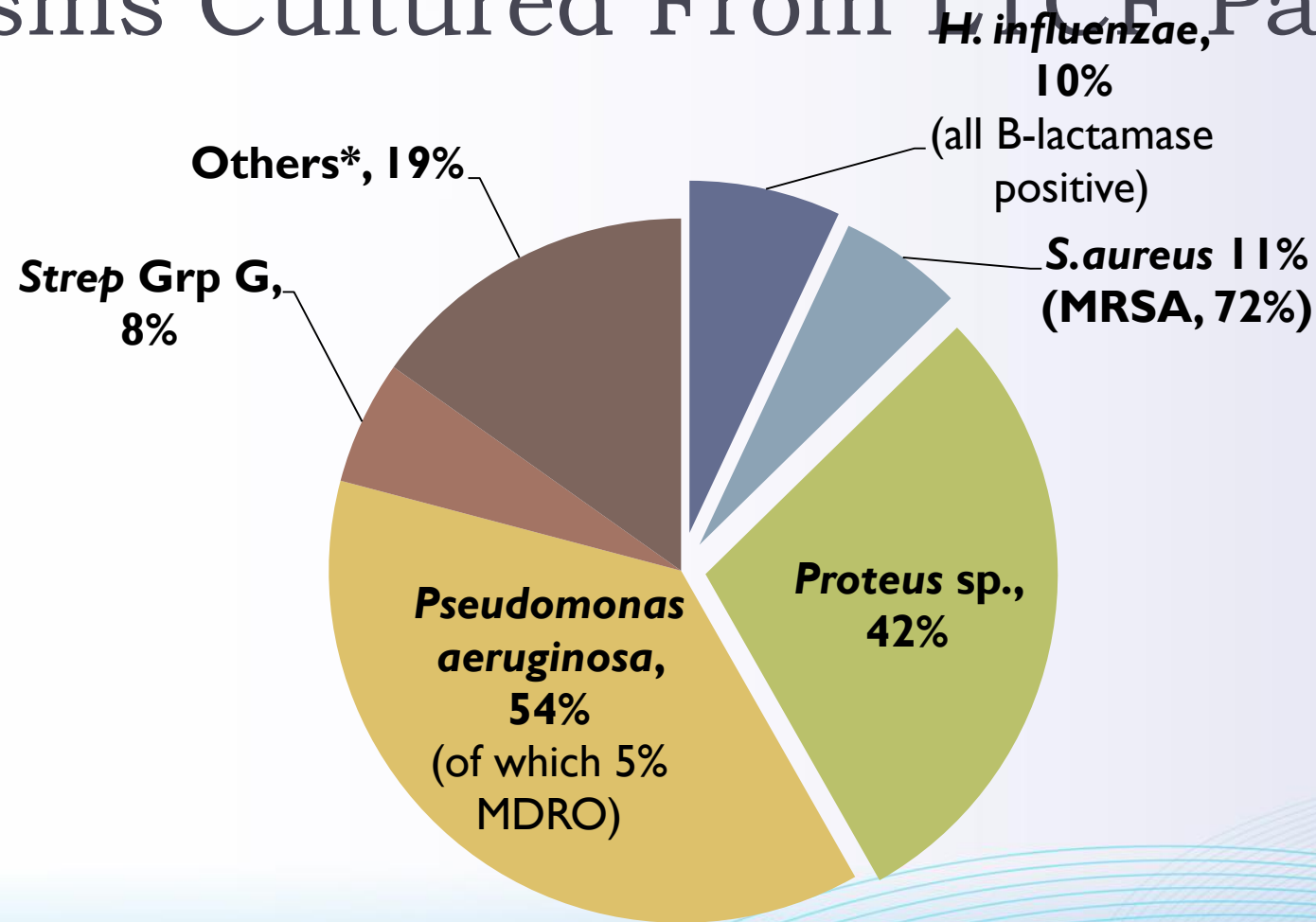


# McGeer Criteria Flow Charts: Respiratory



Stone ND, et al. *Infect Control Hosp Epidemiol.* 2012;33:965-77.

# Microbiology Data 2015: Respiratory Organisms Cultured From LTCF Patients

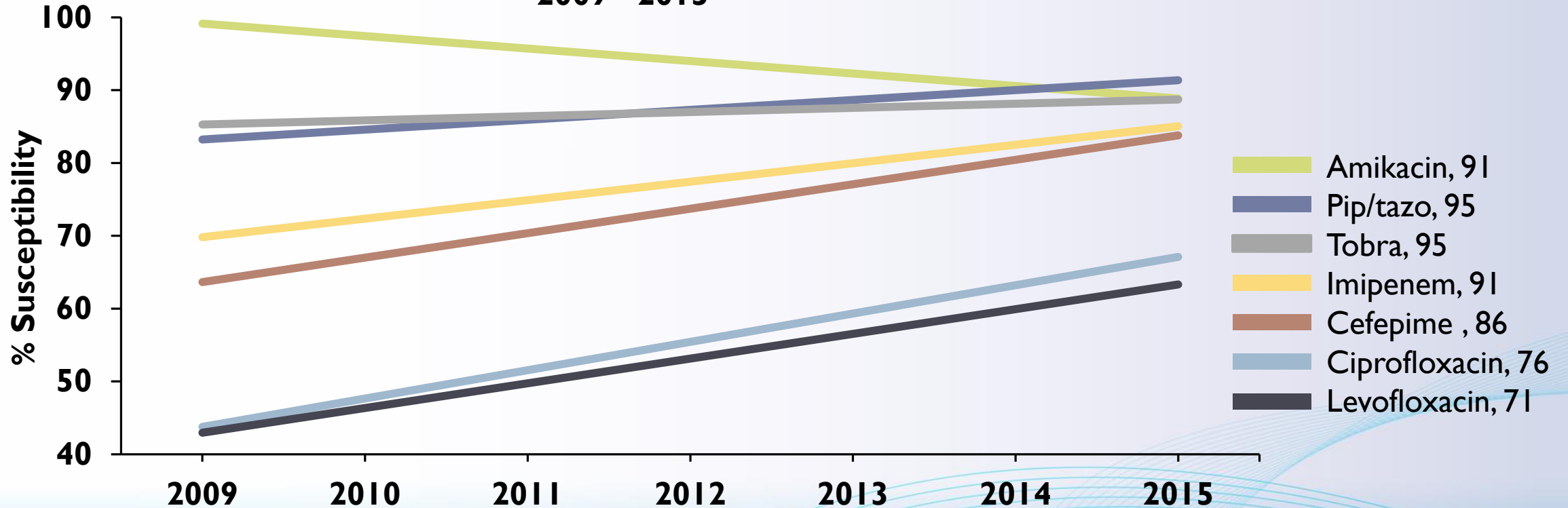


\*Others = *Acinetobacter*, *Chryseobacterium*, *Corynebacterium*, *E. cloacae*, *Klebsiella*, *Moraxella spp*, *Mycobacterium*, *Serratia*, grp B Strep, *S. pnemo*, *E. coli*

Courtesy of Bridget Olsen, RPh, unpublished data.

# ASP Effects: Decreased Anti-Pseudomonal Use → Increased *Pseudomonas aeruginosa* (PSA) Susceptibility

LTCF *pseudomonal* Susceptibility Trending\*  
2009 - 2015



\*Linear trendlines

Sharp Coronado Hospital & Villa LTCF  
Courtesy of Bridget Olsen, RPh, unpublished data.

# *Clostridium difficile* in LTACs

- ▶ Los Angeles, 2007
  - ▶ 11.1% of admissions *C. difficile* Ag (+)
  - ▶ 5.5% unsuspected active disease
  - ▶ 8.3% Ag (–) developed CDAD

Goldstein EJ, et al. *Anaerobe*. 2009;15:241-3.

# *Clostridium difficile* Infection in Long-term Care Facilities: A Call to Action for Antimicrobial Stewardship

Teena Chopra<sup>1</sup> and Ellie J. C. Goldstein<sup>2,3</sup>

<sup>1</sup>Division of Infectious Diseases, Wayne State University, Detroit, Michigan; <sup>2</sup>R M Alden Research Laboratory, Santa Monica, California; and <sup>3</sup>David Geffen School of Medicine at the University of California, Los Angeles

EXPERT  
REVIEWS

*Clostridium difficile*:  
improving the prevention  
paradigm in healthcare  
settings

Expert Rev. Anti Infect. Ther. 12(9), 1087-1102 (2014)

15 Element Bundle

Vassallo, A, M-C Tran, EJC Goldstein

- ▶ **Bundle approach** with a combination of infection control and antimicrobial management strategies
- ▶ **Components:**
  - ▶ Preemptive contact isolation
  - ▶ Preemptive treatment
  - ▶ Hand hygiene with soap and water
  - ▶ Effective environmental cleaning
- ▶ Environmental cleansing with 1:10 hypochlorite solution or 10% bleach after discharge
- ▶ Discontinuation of contact precautions
  - ▶ After resolution of diarrhea
  - ▶ Some institutions continue until discharge because of *C. difficile* spores excretion
- ▶ Probiotics?

Chopra T, et al. *Clin Infect Dis.* 2015;15:60:S72-6.

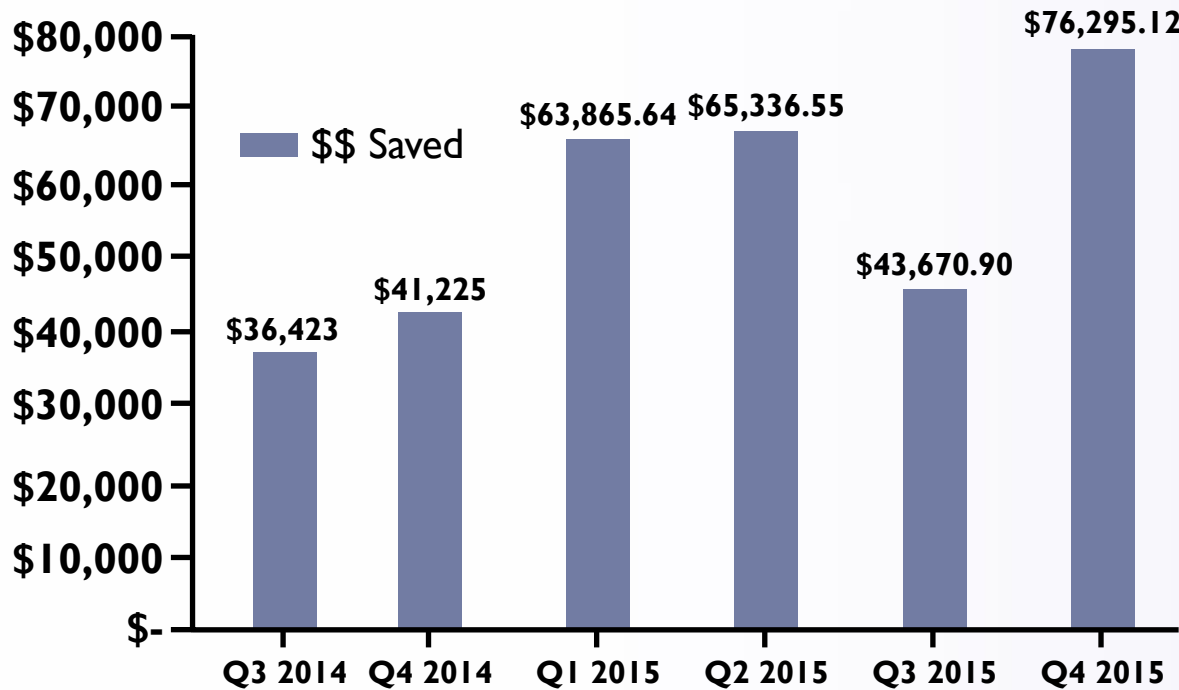
15-Step CDI Prevention Bundle	LEAN Stakeholder Analysis	Checklist
<b>Patient Identification</b> <b>1. Does the laboratory have the necessary microbiology equipment to test for CDI?</b> a. The lab implements rapid diagnostics to test for CDI, when possible.	M, MS, A	
<b>2. The emergency department should be recognizing signs and symptoms of CDI and testing prior to admission, when possible.</b>	IP, MS, A	
<b>Infection Prevention</b> <b>3. The hospital should have a strong, well-respected, and supported Infection Prevention (IP) program.</b>	IP, MS, A, N, Q	
<b>4. IP should conduct daily microbiology reviews and keep records of all CDI patients with internal benchmarking.</b> a. CDI should be included on the hospital's annual Infection Prevention Risk Assessment. b. Measurable goals aimed at CDI prevention should be included on the hospital's annual Infection Prevention Program Plan.	IP, MS, A, N, Q	
<b>5. IP should report significant data and trends to more committees than just the Infection Prevention Committee in order to highlight important events and direct leadership energy.</b> a. These committees include: Quality, EOC, Critical Care, Emergency Medicine, NICU/Pediatric, Surgery, Medical Executive, and the Board of Directors.	IP, MS, A, N, Q, EOC	
<b>6. IP should maintain good relationships and regular communication with:</b> a. Neighboring facilities i. This should include hospitals, nursing homes, long-term care facilities, and dialysis centers b. Local IPs i. This should include active participation in local, state, and national APIC groups c. Local health authority	IP, CM	
<b>7. IP should conduct ongoing education for:</b> a. All disciplines including MD, RN, CNA, RT, RD, PT/OT, EVS, Transport, Volunteers, Case Workers, and Clergy i. Special attention and clear direction to EVS regarding thorough daily and terminal cleaning practices of high touch surfaces b. Patients and visitors about good hand hygiene and practices necessary to reduce transmission of CDI in the home environment	IP, EVS, CM	

Vassallo A, et al. *Expert Rev Anti Infect Ther.* 2014;12:1087-102.

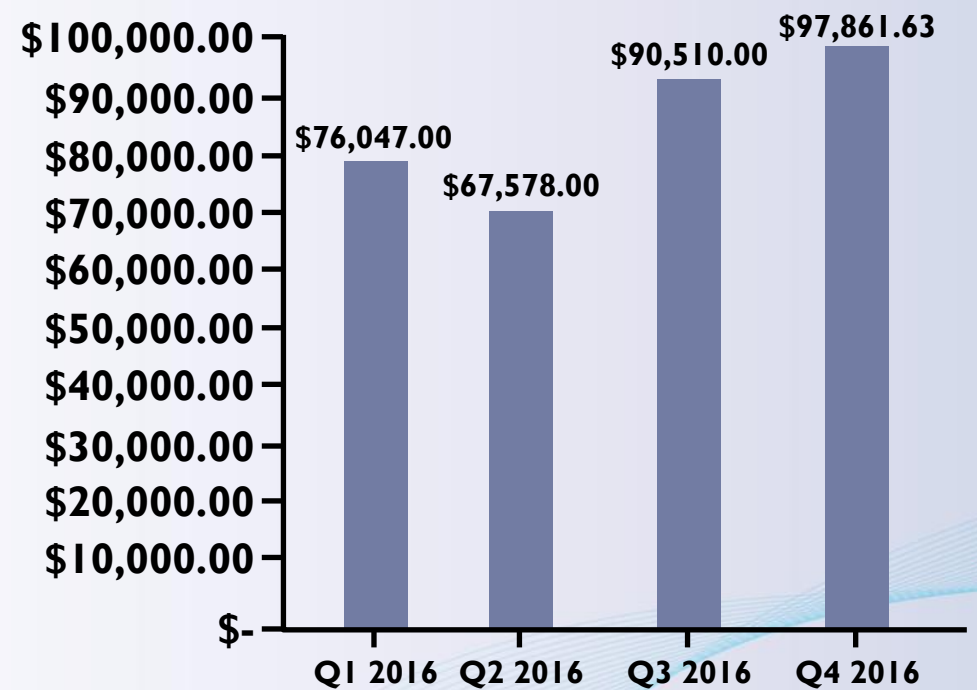
# \$\$ Saved by ASP Program

## Part Time to Full Time ASP Pharmacist

2014 2- Quarters) +2015  
 \$\$ Saved \$326,846



AMS Cost Saving 2016  
 \$428,043



Courtesy of Snezana Naumovski, PharmD and Dr. Ellie Goldstein, unpublished data.

# Approaching ASPs Diverse Elements

- ▶ Teamwork—a culture of compliance
- ▶ Proper program preparation and focus
- ▶ Managing the outlier/noncompliant physician
- ▶ Finding the cause
  - ▶ Early, effective Rx
  - ▶ De-escalation
  - ▶ Duration of Rx
- ▶ Communications
- ▶ Interventions
- ▶ Credentialing

Goldstein EJ, et al. *Clin Infect Dis.* 2016;63:532-8.



# Establish a Dialogue

<http://knowyourmeme.com/memes/you-keep-using-that-word-i-do-not-think-it-means-what-you-think-it-means>

# Declination by Outlier Physicians

## Jan-June 2014

No Declinations per Proposed Intervention			Physician Number
<b>Total Reviewed</b>	<b>589</b>		Five Physicians Take 80% of the Time
<b>Appropriate</b>	<b>228</b>	<b>38.8%</b>	
<b>Total Accepted</b>	<b>318</b>	<b>53.9%</b>	
<b>Total Declined</b>	<b>43</b>	<b>7.3%</b>	
<b>15/48</b>	<b>31.3%</b>		MD A # XX915
<b>14/48</b>	<b>77.8%</b>		MD B # XX599
<b>6/29</b>	<b>20.7%</b>		MD C # XX303
<b>8/12</b>	<b>77.7%</b>		MD D # XX790

Goldstein EJ, et al. *Clin Infect Dis*. 2016;63:532-8.

Los Angeles County Department of Health.  
Inter-facility Infection Control Transfer For States Establishing  
Healthcare-associated Infection Prevention Collaboratives.  
<https://www.cdc.gov/hai/pdfs/toolkits/infectioncontroltransferformexample2.pdf>

Thank you!!  
From Venice,  
California