Bad Bugs, No Drugs: The Urgent Need for Antimicrobial Stewardship

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A Patient Story

Alfred Reinhart, medical student

Rheumatic fever at age 13

Last year of medical school, 1931:

April – tonsillitis
May – heart palpitations and petechiae on arm
July – right knee pain
August – hospital admission, viridans streptococci
splenic infarction
Sept – painful cutaneous nodules, petechiae, arthralgias,
splenic infarction
Oct – aphasia, hemiplegia, pulmonary edema, death

Weiss S. Self-observations and psychologic reactions of medical student A. S. R. to the onset and symptoms of subacute bacterial endocarditis. *J Mt Sinai Hosp N Y* 1942;8:1079

“Antibiotic resistance - one of the three greatest threats to human health.”

World Health Organisation, 2009

Objectives

Describe present bugs, available drugs and the *global problem*

Identify goals of an Antimicrobial Stewardship Program (ASP)

Review key stewardship core and supplemental strategies

Discuss utilization of stewardship strategies specific to pediatric practice

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A 10-year-old female is admitted to your service with fever, flank pain and foul smelling urine. You suspect UTI. This patient is most likely to be infected with which pan-resistant organism?

A. *Enterobacter cloacae*

B. *Enterococcus faecalis*

C. *Proteus mirabilis*

D. *Staphylococcus aureus*

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A. Enterobacter cloacae

B. Enterococcus faecalis

C. Proteus mirabilis

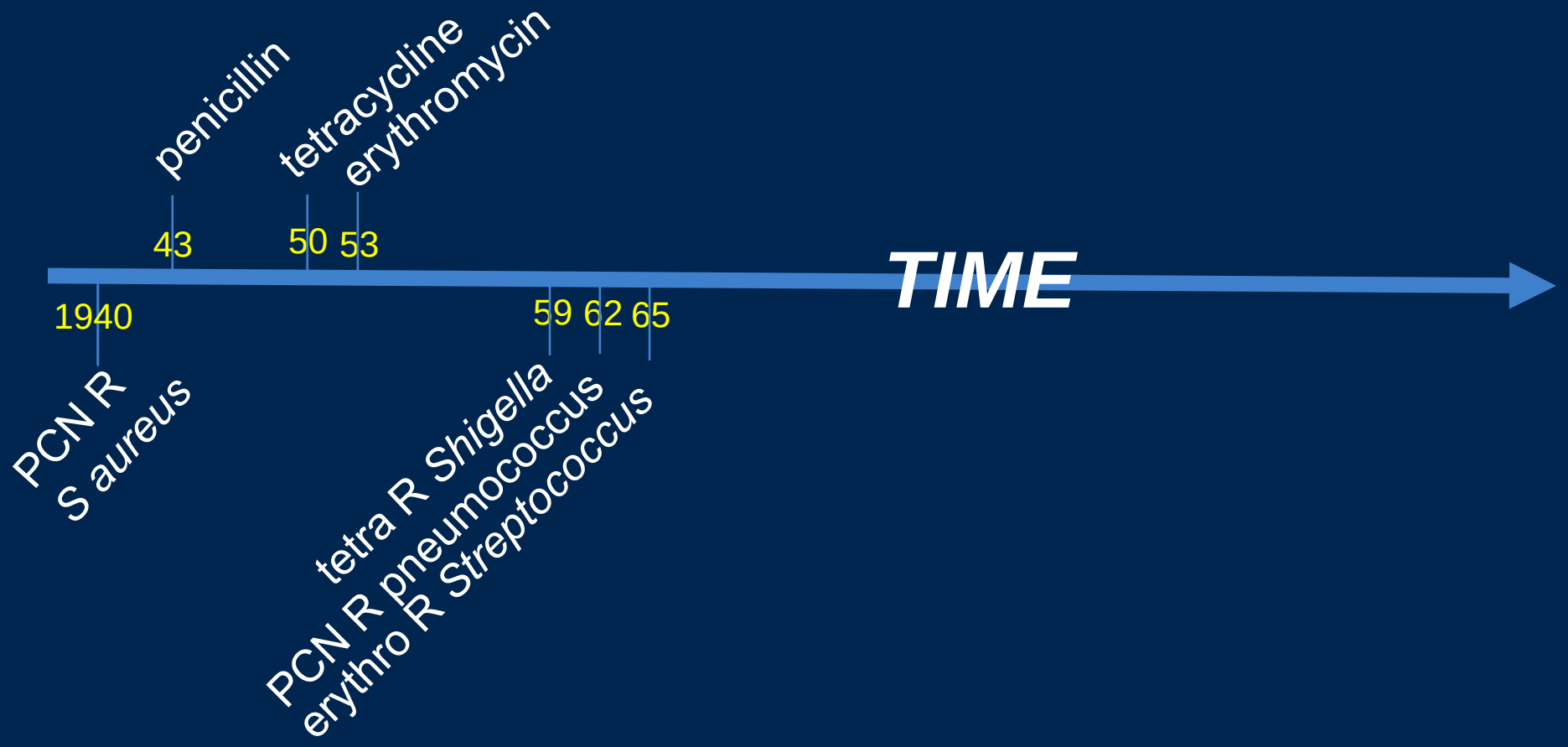
D. Staphylococcus aureus

How did this happen?

Antibiotic Introduced in U.S.

Antibiotic Resistance Identified

Antibiotic Introduced



Antibiotic Resistance Identified

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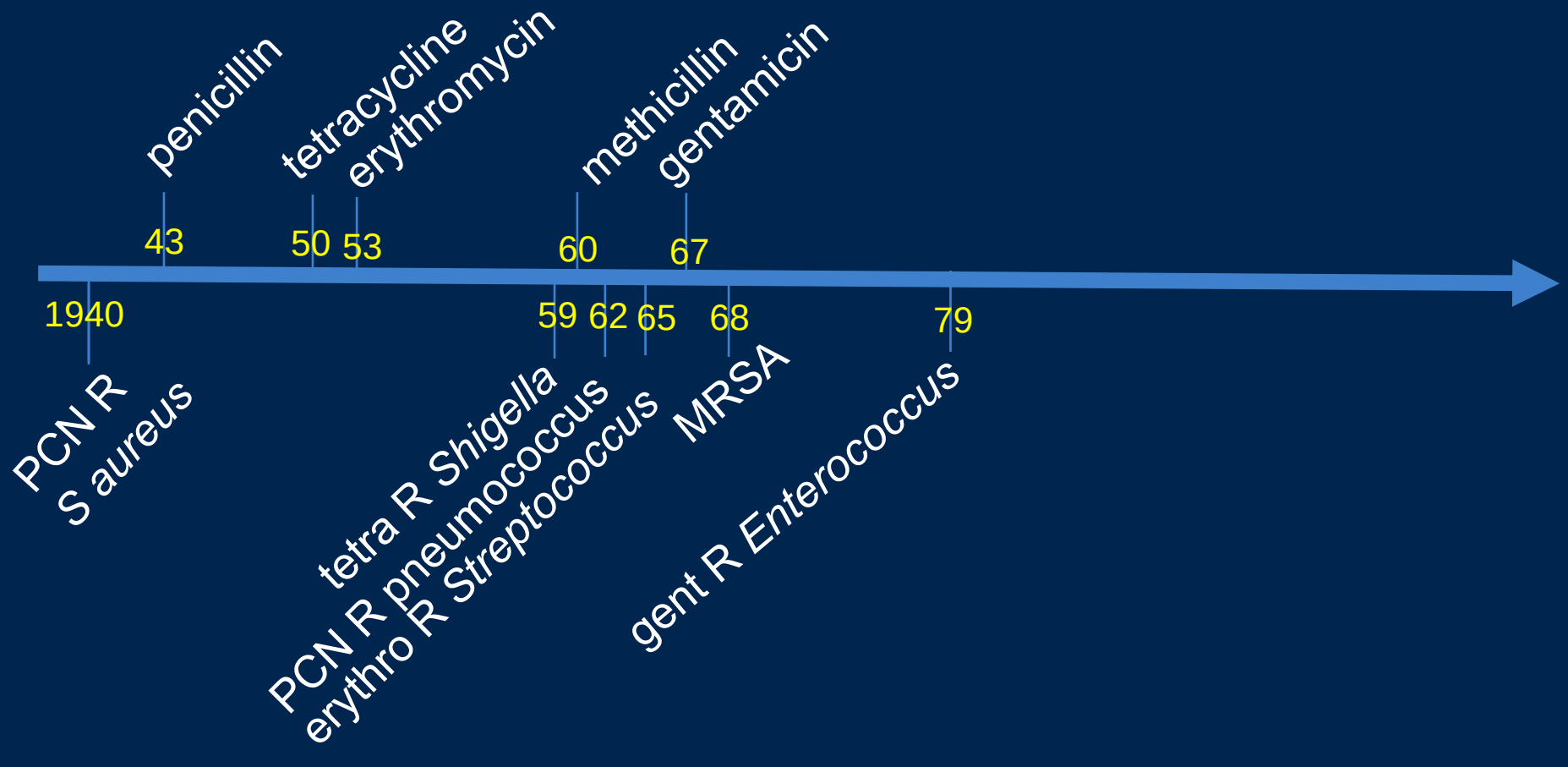
Antibiotic Introduced



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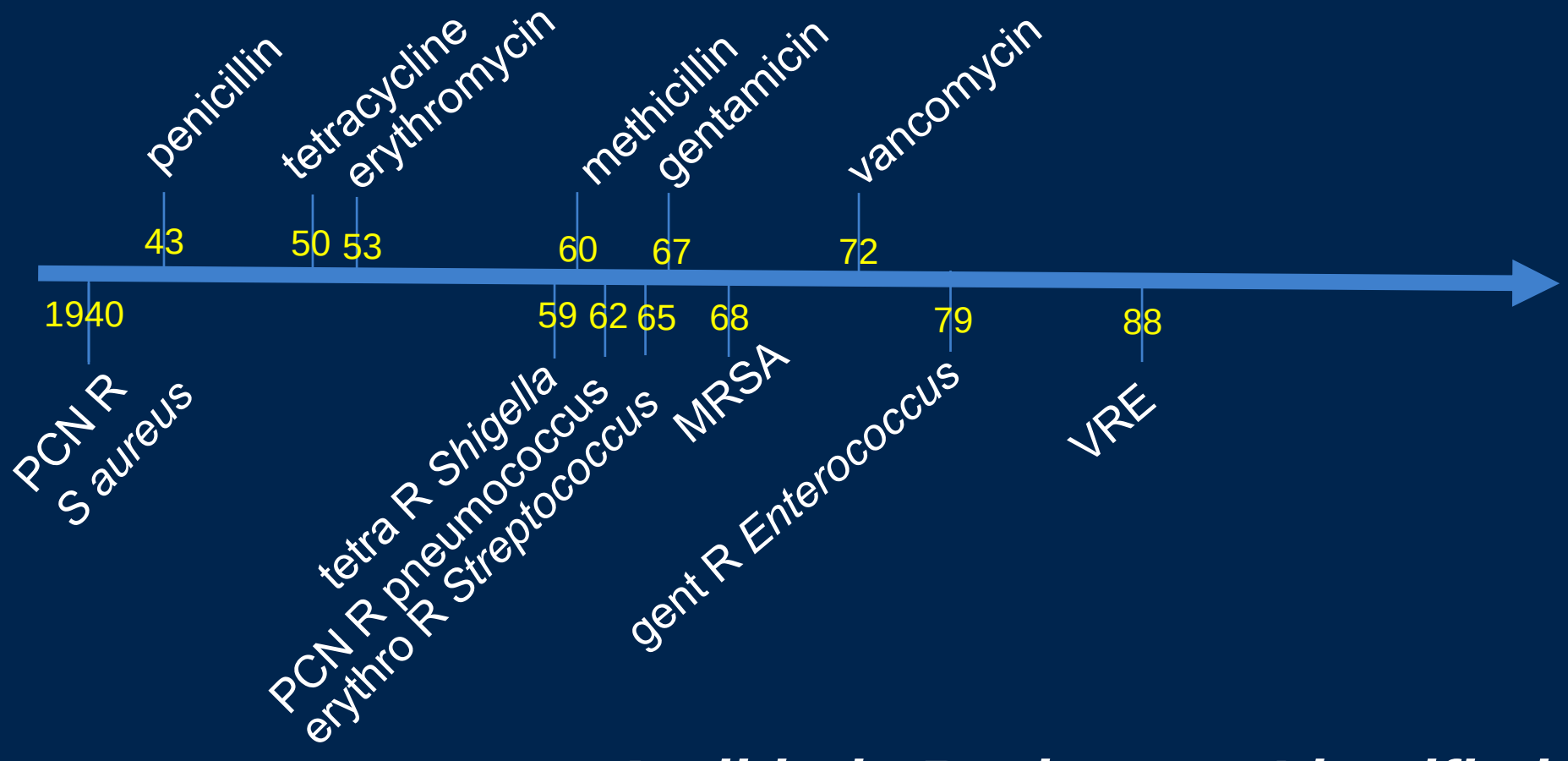

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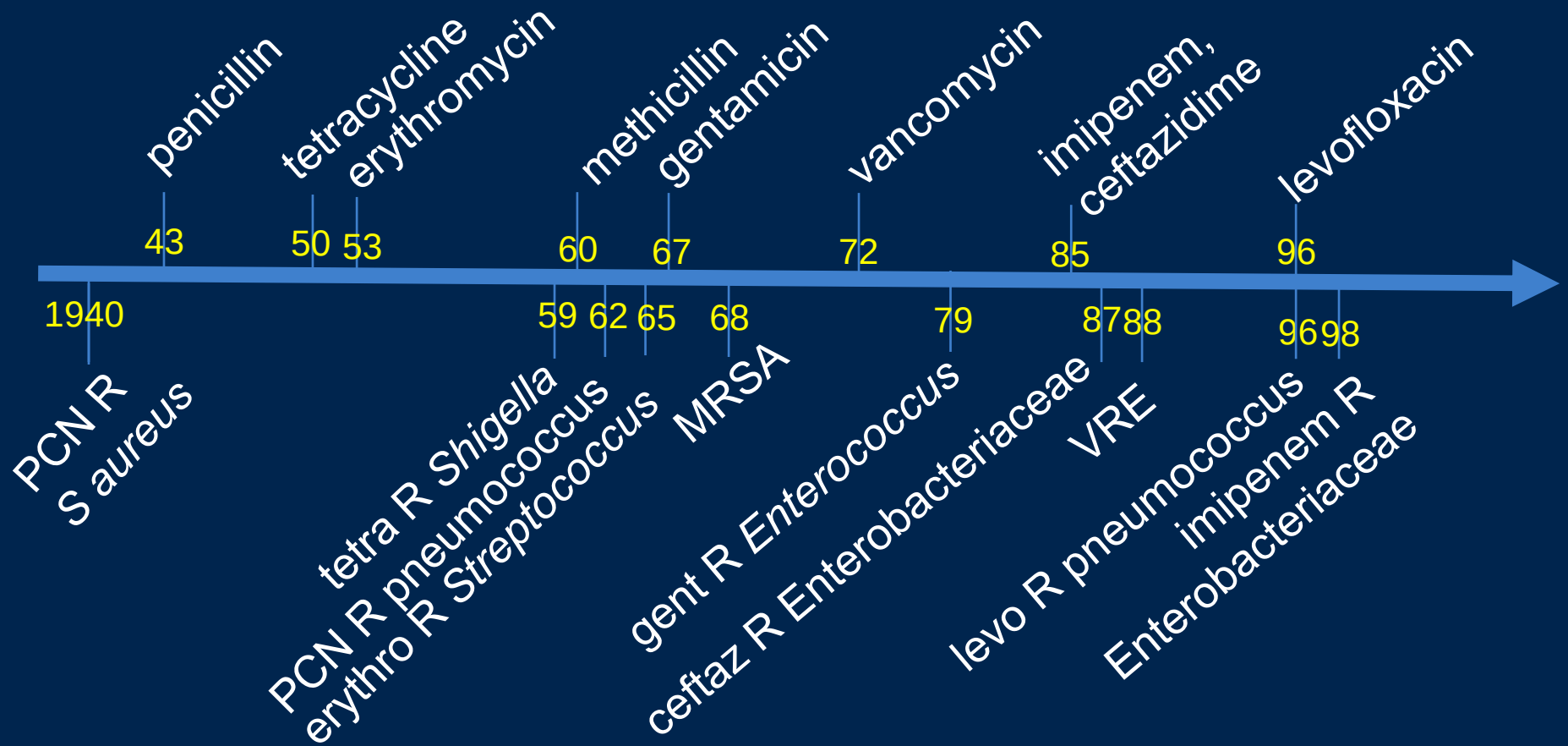

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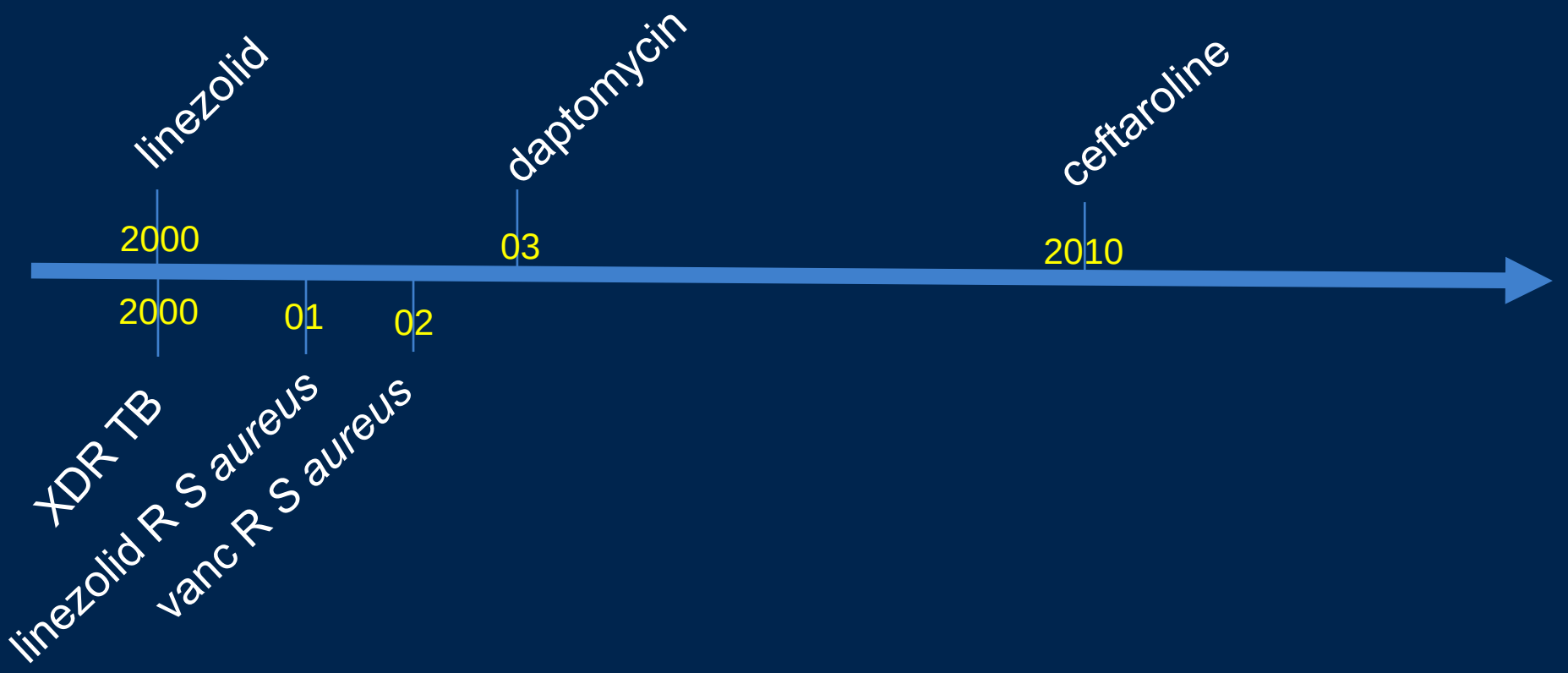

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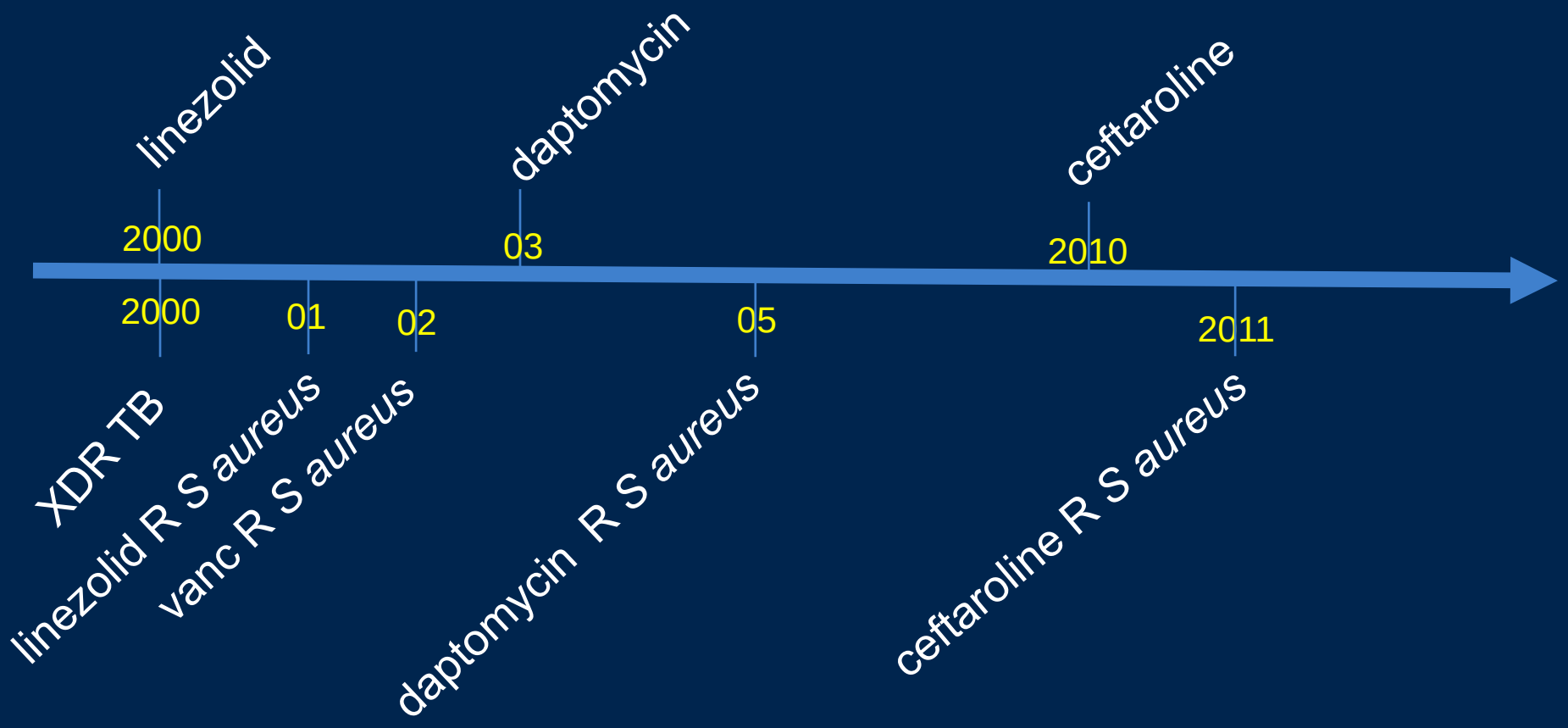

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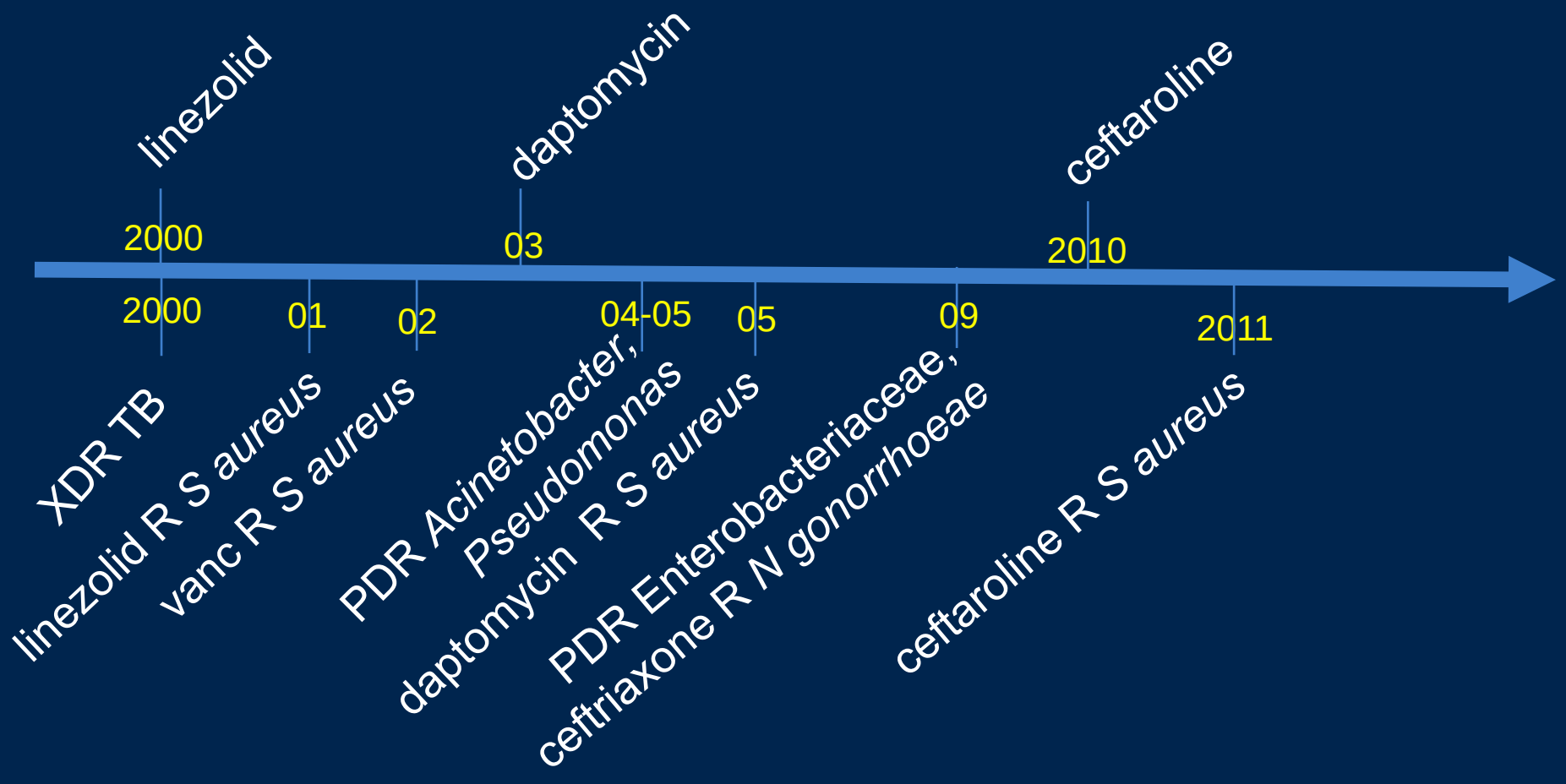

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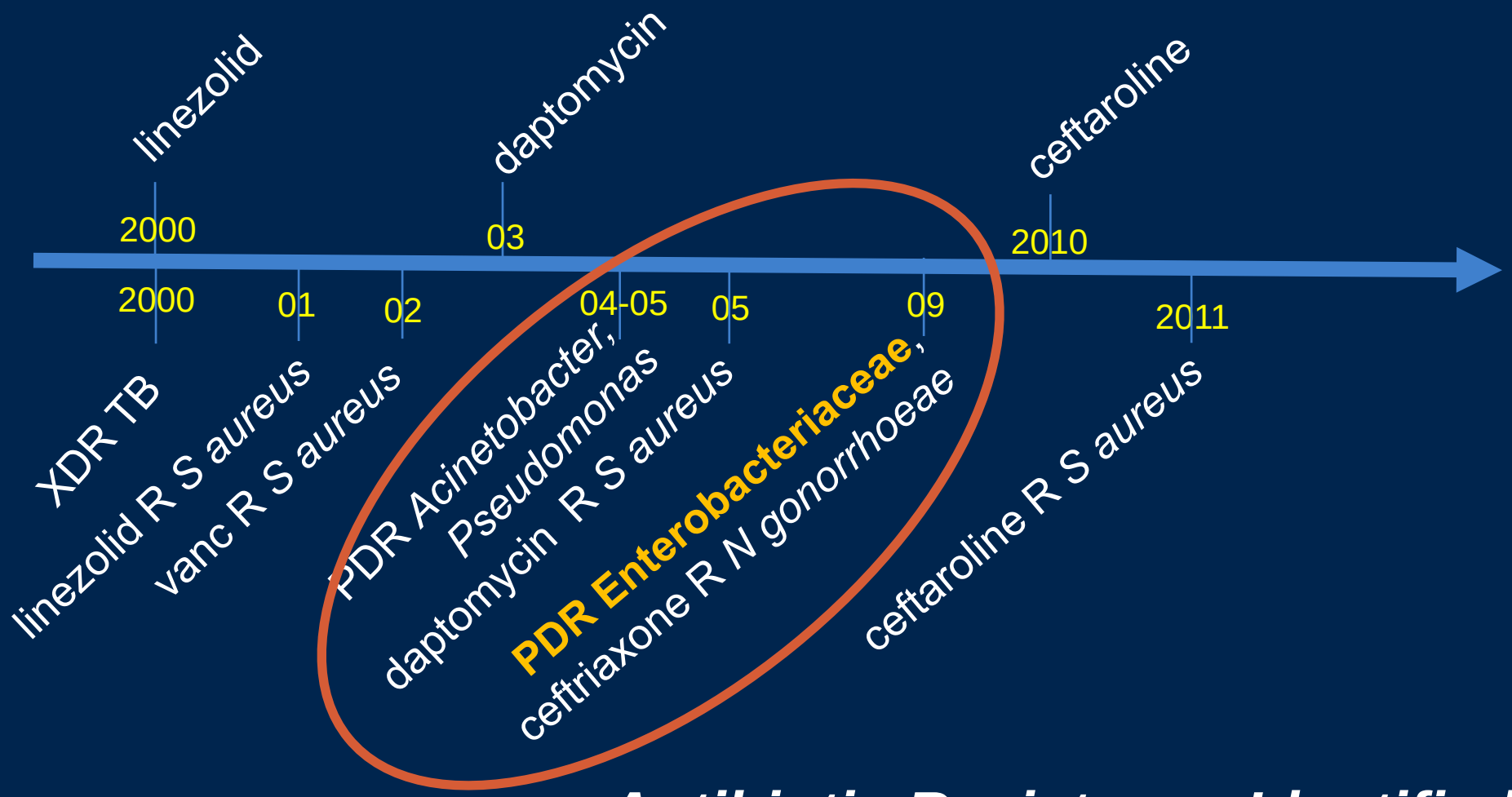

Antibiotic Resistance Identified

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Drivers of Bacterial Resistance

- The use of antibiotics is the single MOST important factor leading to antibiotic resistance around the world

- Antibiotics are among the most commonly prescribed drugs in human medicine

- Up to 50% of all antibiotics prescribed for people are not needed or are not optimally effective as prescribed

Pediatric Perspective

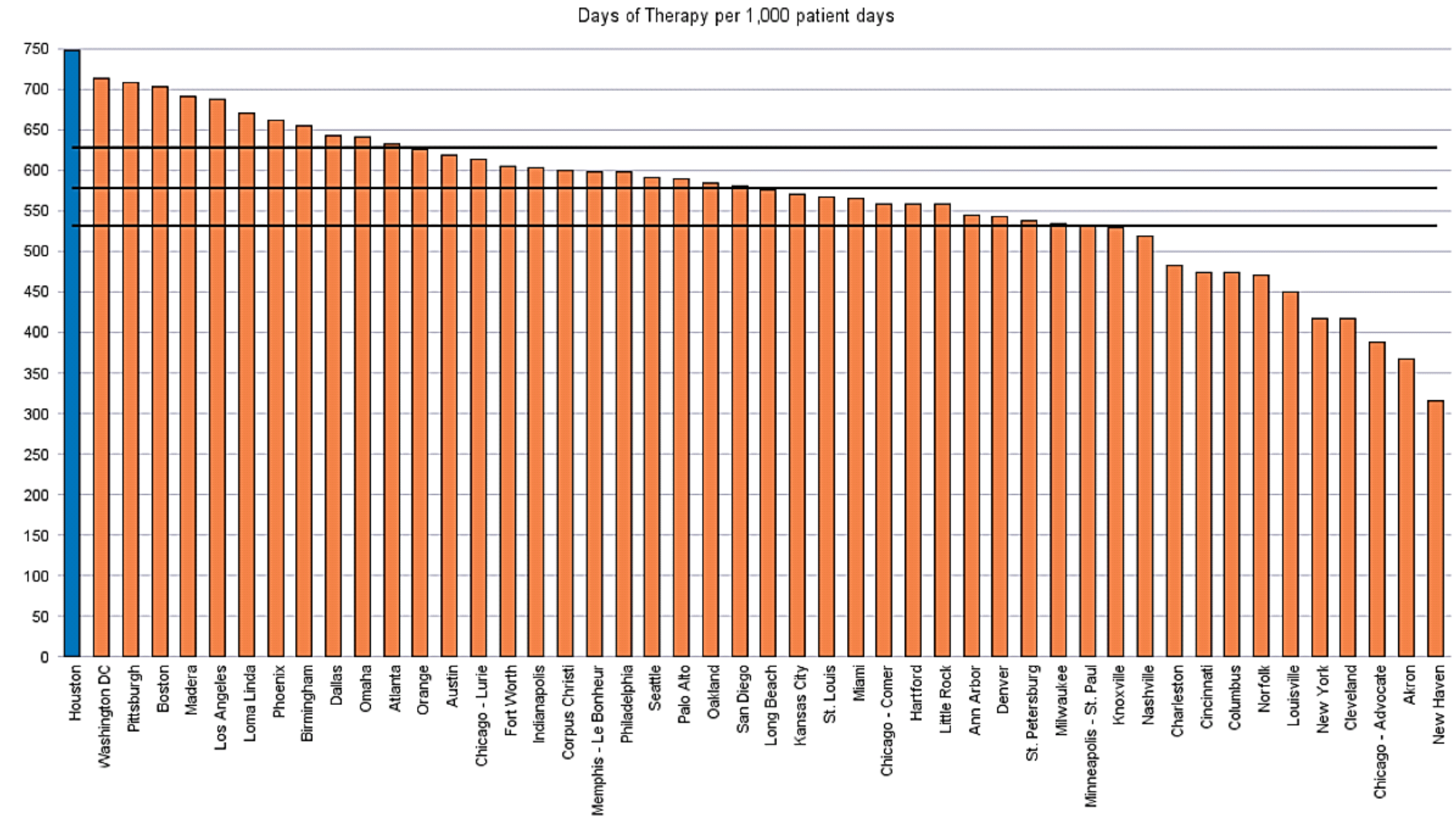
- Antibiotic usage in children is high
- 60% of hospitalized children receive an antibiotic
- Antimicrobials comprise nearly 1/3 of ALL prescriptions

~49 million Rxs, 21% of all ambulatory visits

Half of these prescriptions are prescribed for NON-bacterial infections (eg, URI)

Levy ER et al. Infect Control Hosp Epidemiol 2012;33:346.
Hersh A et al. Pediatrics 2011;128:1053. Kronman M et al. Pediatrics 2014;134:e956

TCH System (Main + West + Woodlands) Was Highest in DOT/1,000 Patient Days in CY17



Horizontal Black Lines Represent 25th, Median, & 75th Percentile.

Inpatients <= 18 Yrs old; excludes normal newborns, Ob/Gyn, & Pav; includes mortalities

Chart from PHIS Antibiotic Stewardship Report V2.

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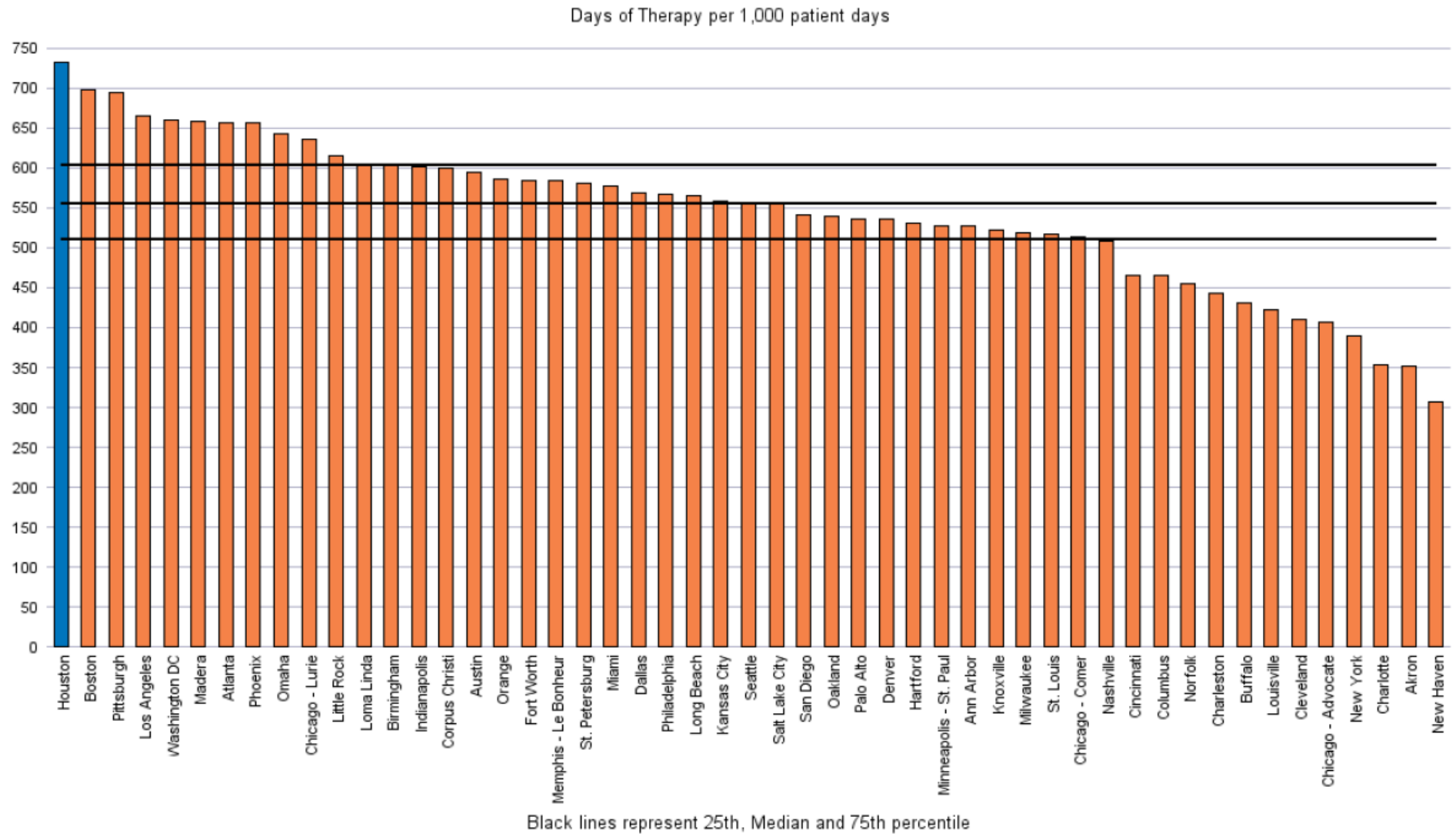
Antibiotics by Hospital

Jan 01, 2018 - Dec 31, 2018

Target Hospital Campuses Included: Main ; See Report Information Page for details on prompt values selected and patient population definitions. Denominator for calculating DOT/ 1,000 patient days is based upon total patient days across the entire hospital.

The 'Disregard DQ Issues' prompt was selected. Therefore, query results include all hospitals with data for the period; no hospitals were excluded using DQ measures in the PHIS reporting tool.



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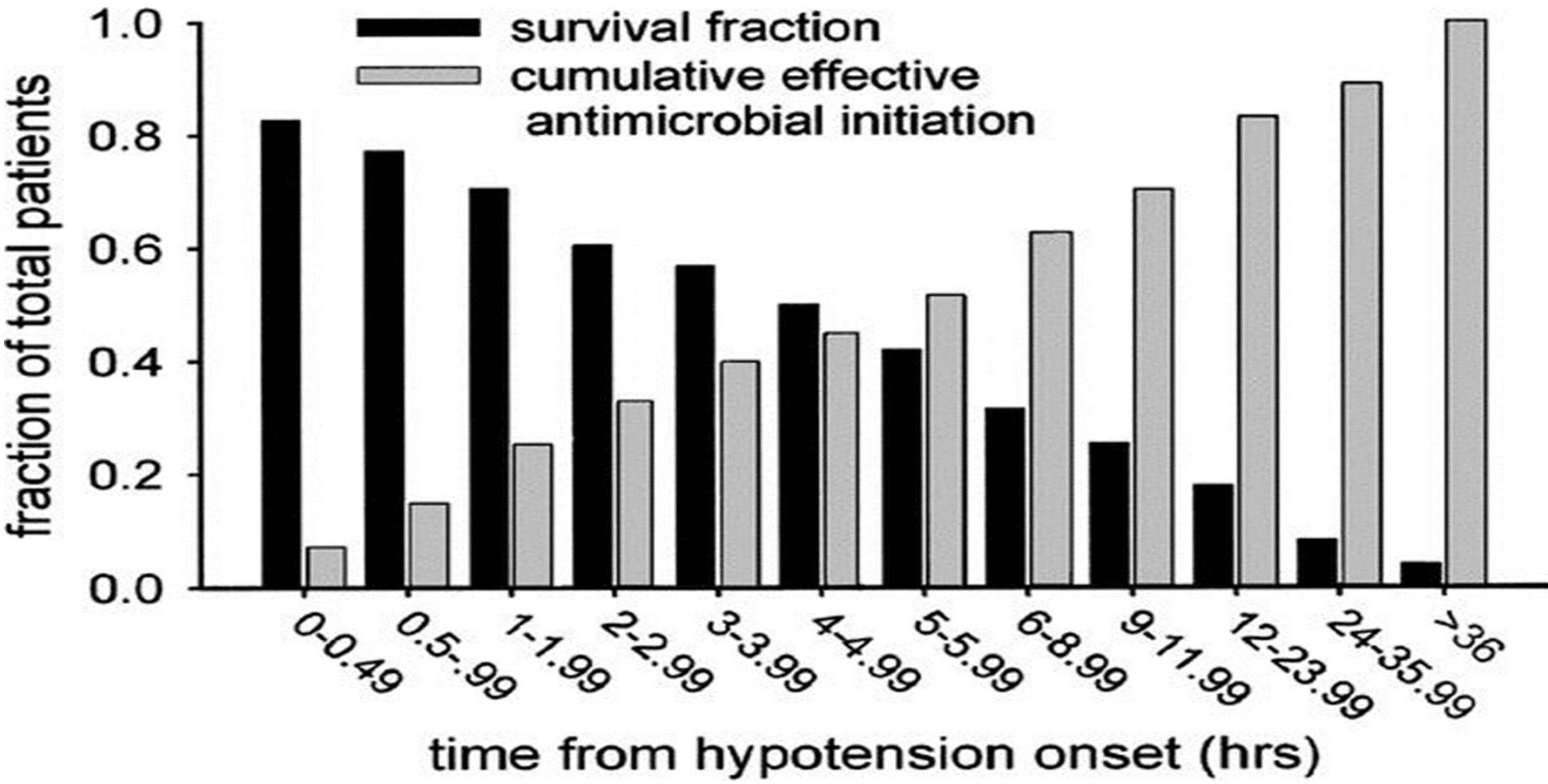
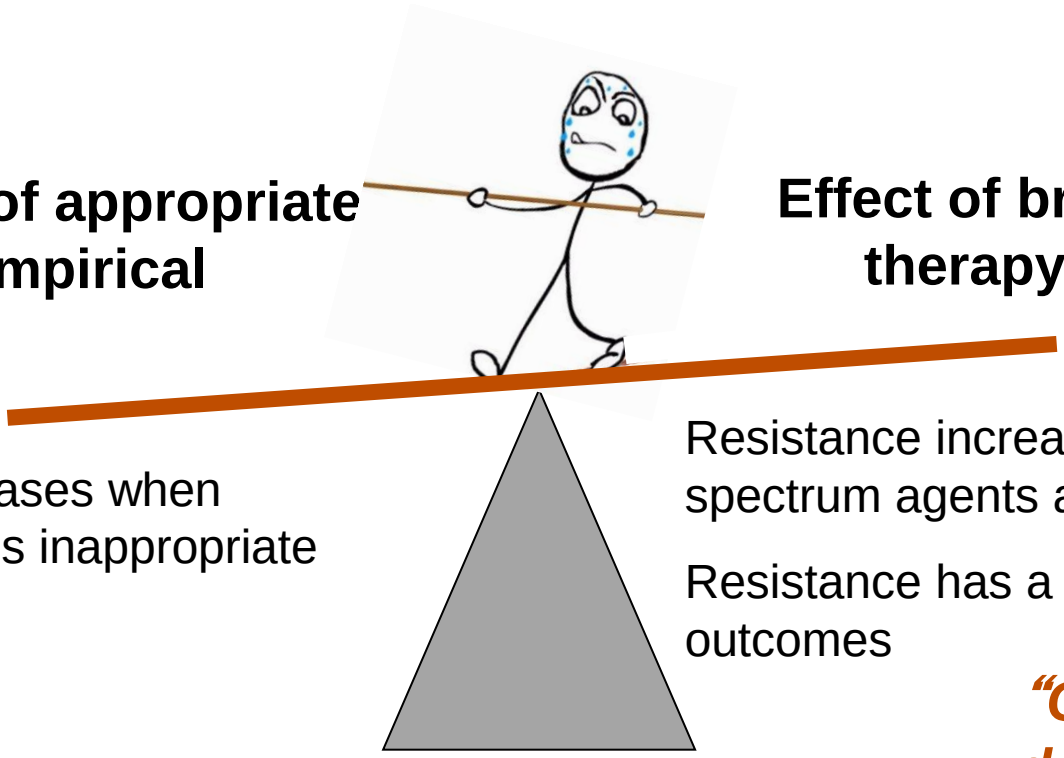
Impact of Delay in Appropriate Antibiotic Therapy



Kumar et al. Crit Car Med 2006;34(6):1589

Here's our TIGHT ROPE

Importance of appropriate and timely empirical therapy



Effect of broad-spectrum therapy on resistance

Mortality increases when initial therapy is inappropriate

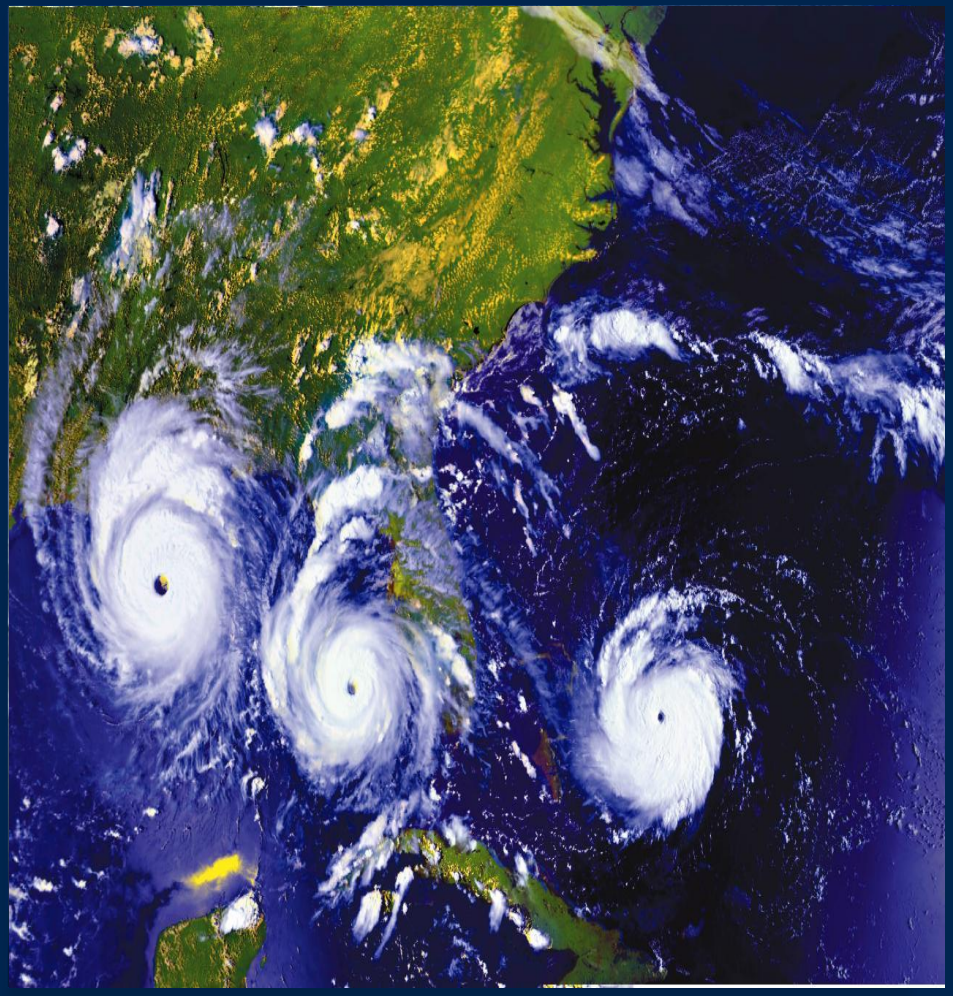
Resistance increases when broad-spectrum agents are used

Resistance has a negative impact on outcomes

"Collateral damage"

Ibrahim et al. Chest 2000;118:146. Alvarez-Lemma et al. Intensive Care Med 1996;22:387.
Leibovici et al. J Intern Med 1998;244:379. Rello et al. AJRCCM 1997;156:196.
Luna et al. Chest 1997;111:676. Cosgrove S. Clin Infect Dis 2006;42(suppl 2):S82

The Perfect Storm: Antimicrobial Resistance



Resistant organisms

↓

more broad spectrum antibiotic use

↓

more resistant organisms

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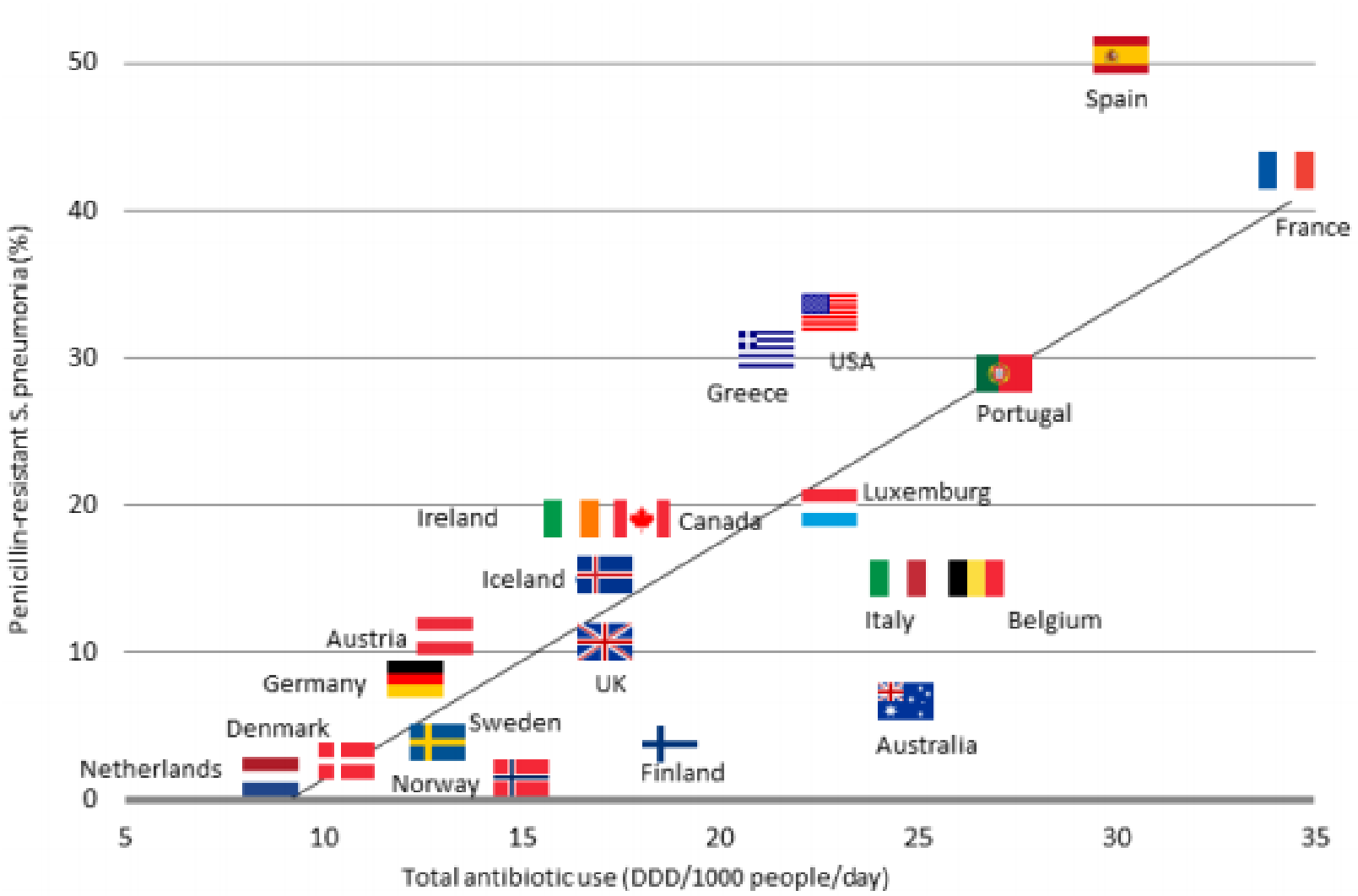
More Antibiotic Use = More Resistance



Albrich WC et al. Emerg infect Dis 2004;10:514

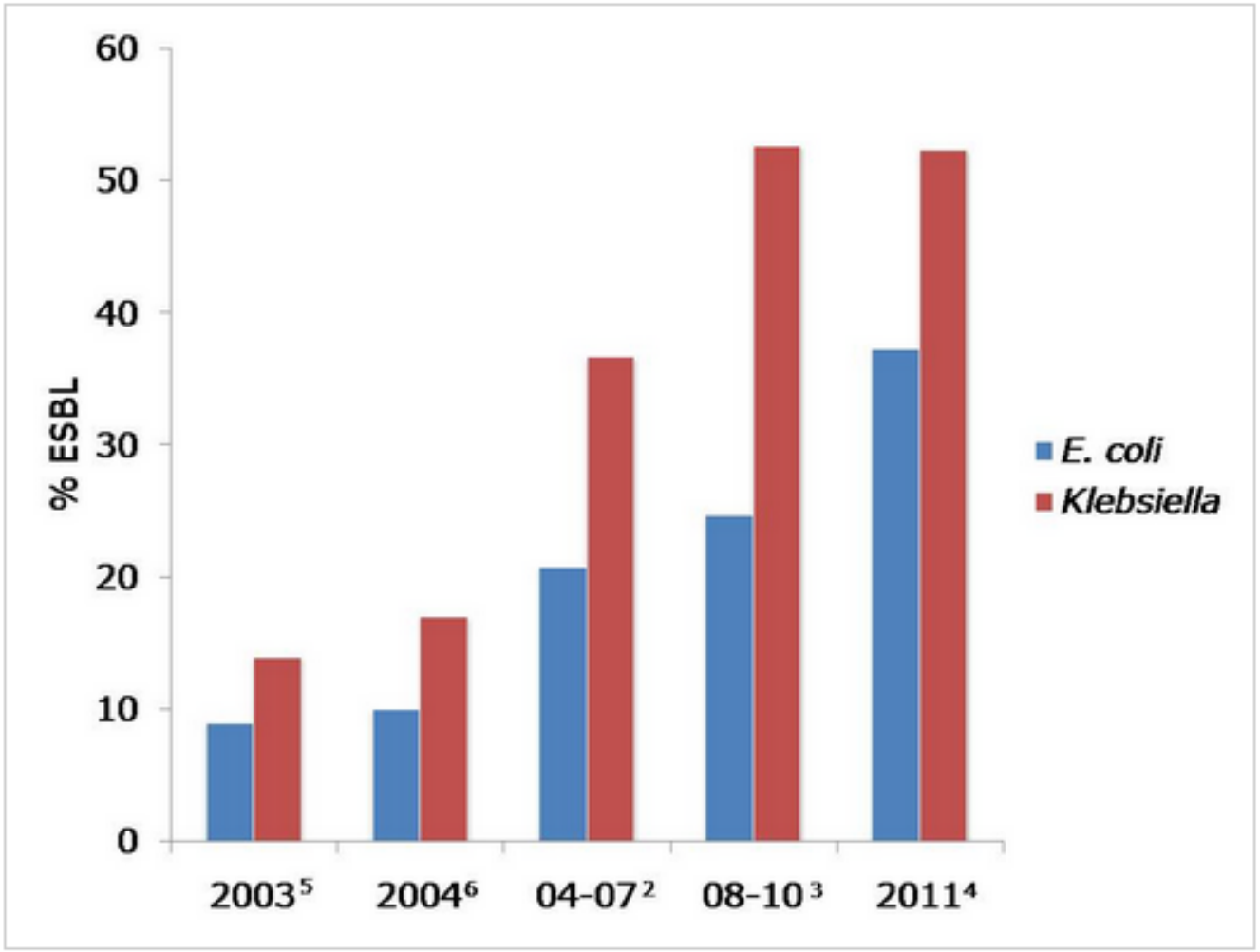
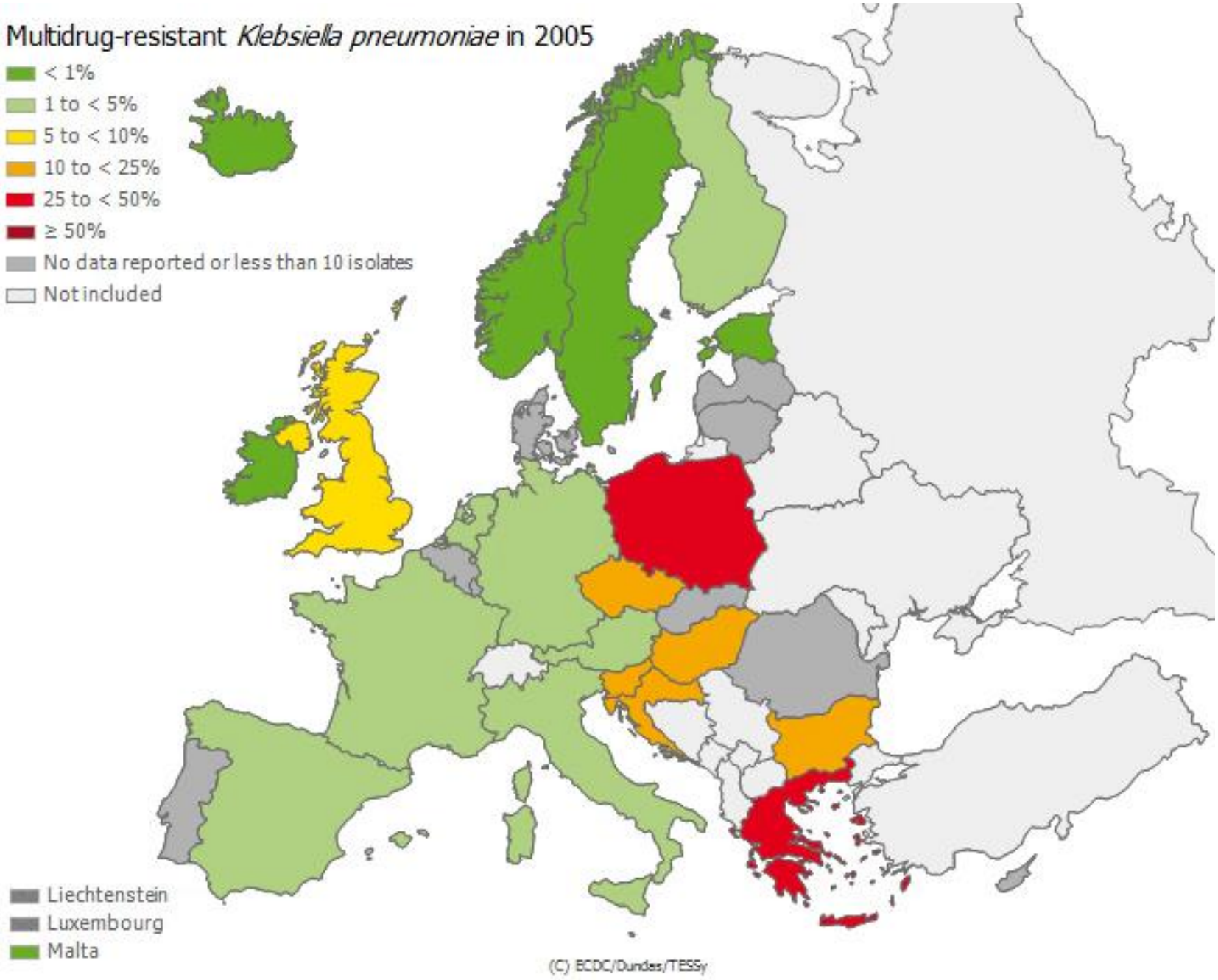


Figure. Inexorable rise in rate of of ESBL-producing E. coli and Klebsiella in Latin America.

2) Rossi F et al. Braz *J Infect Dis* 2008;12:405-15; 3) Gales AC et al. *Diagn Microbiol Infect Dis* 2012;73:354-60.
4) Jones RN et al. *Braz J Infect Dis* 2013 Oct 10; 5) Patterson DL et al. *J Antimicrob Chemother* 2005;55:965-73;
6) Rossi F et al. *J Antimicrob Chemother* 2006;58:205-10.


Multidrug-resistant *Klebsiella pneumoniae* in 2005
< 1%
1 to < 5%
5 to < 10%
10 to < 25%
25 to < 50%
≥ 50%
No data reported or less than 10 isolates
Not included
Liechtenstein
Luxembourg
Malta
(C) ECDC/Dundee/TESSy

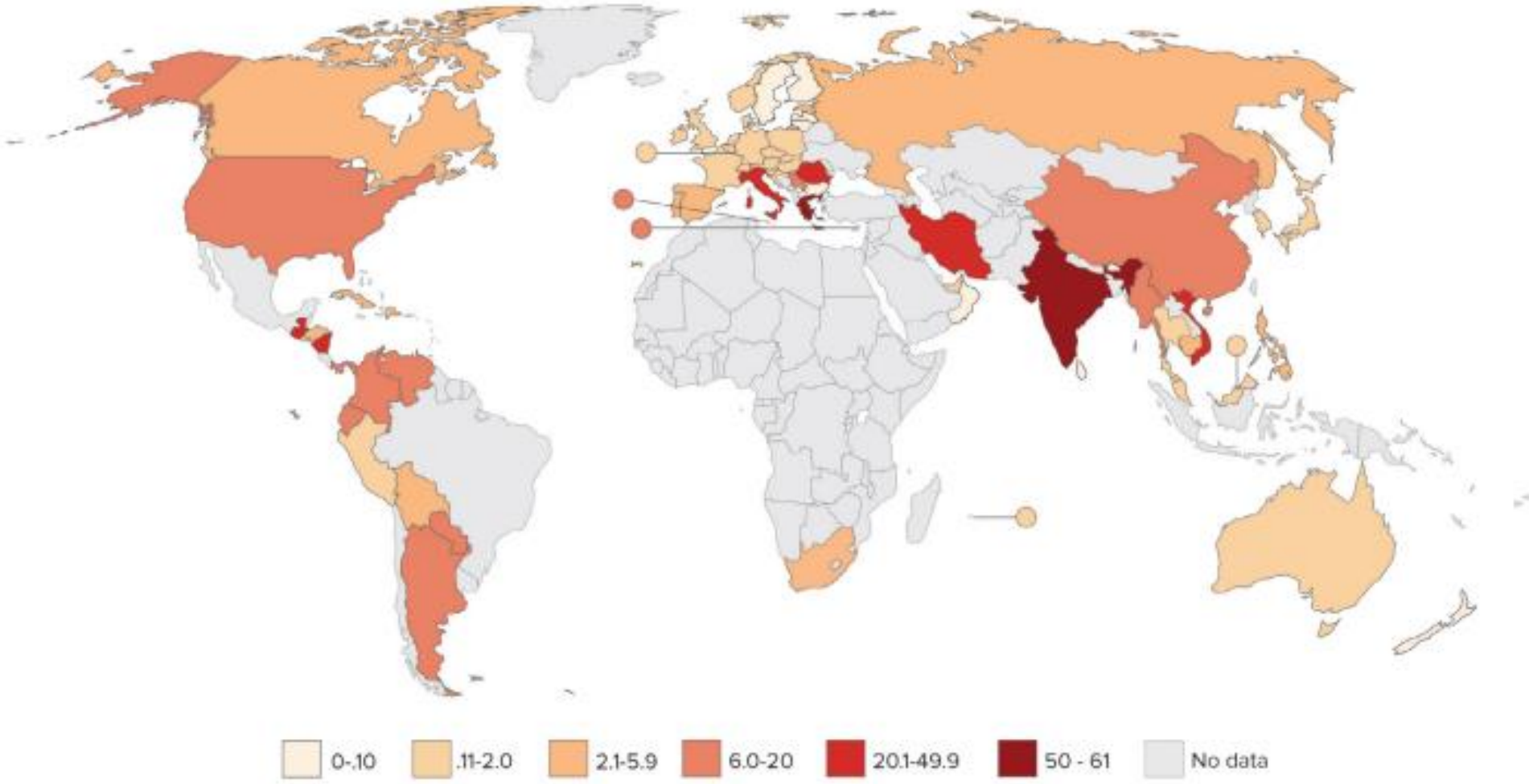
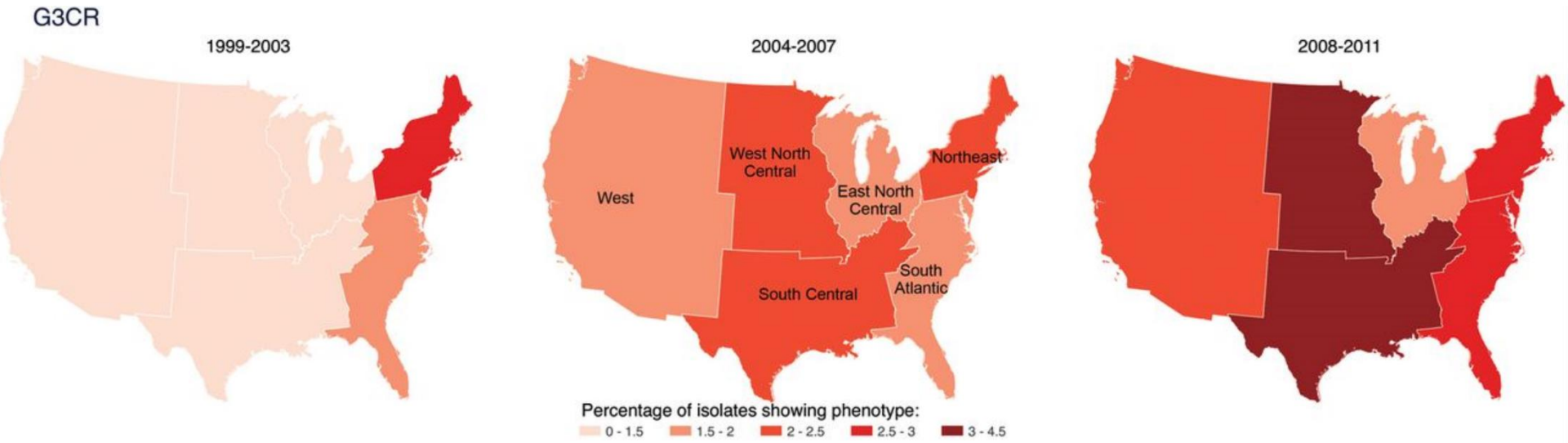


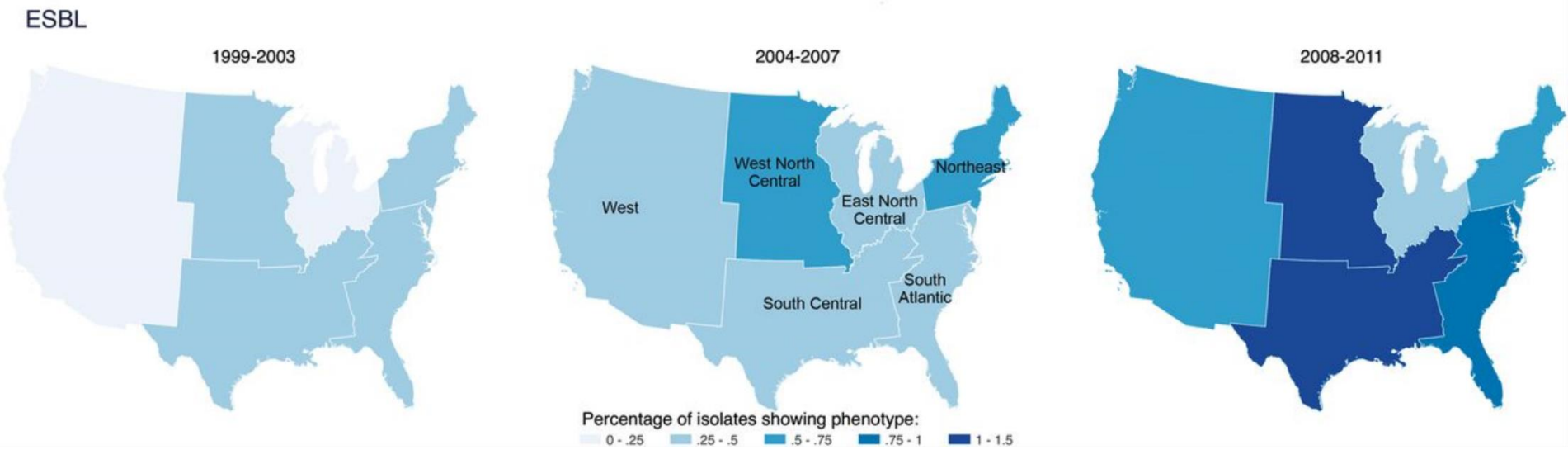
FIGURE 1-3: Percentage of carbapenem-resistant *Klebsiella pneumoniae*, by country (most recent year, 2011–2014)

Source: CDDEP 2015, WHO 2014 and PAHO, forthcoming

Center for Disease Dynamics, Economics & Policy. 2015.
State of the World's Antibiotics, 2015. CDDEP: Washington, D.C.



Logan LK et al. CDC Epicenters Program. Extended-Spectrum β-Lactamase–Producing and Third-Generation Cephalosporin-Resistant Enterobacteriaceae in Children: Trends in the United States, 1999–2011. J Pediatric Infect Dis Soc 2014;3:320



Logan LK et al. J Pediatric Infect Dis Soc 2014;3:320

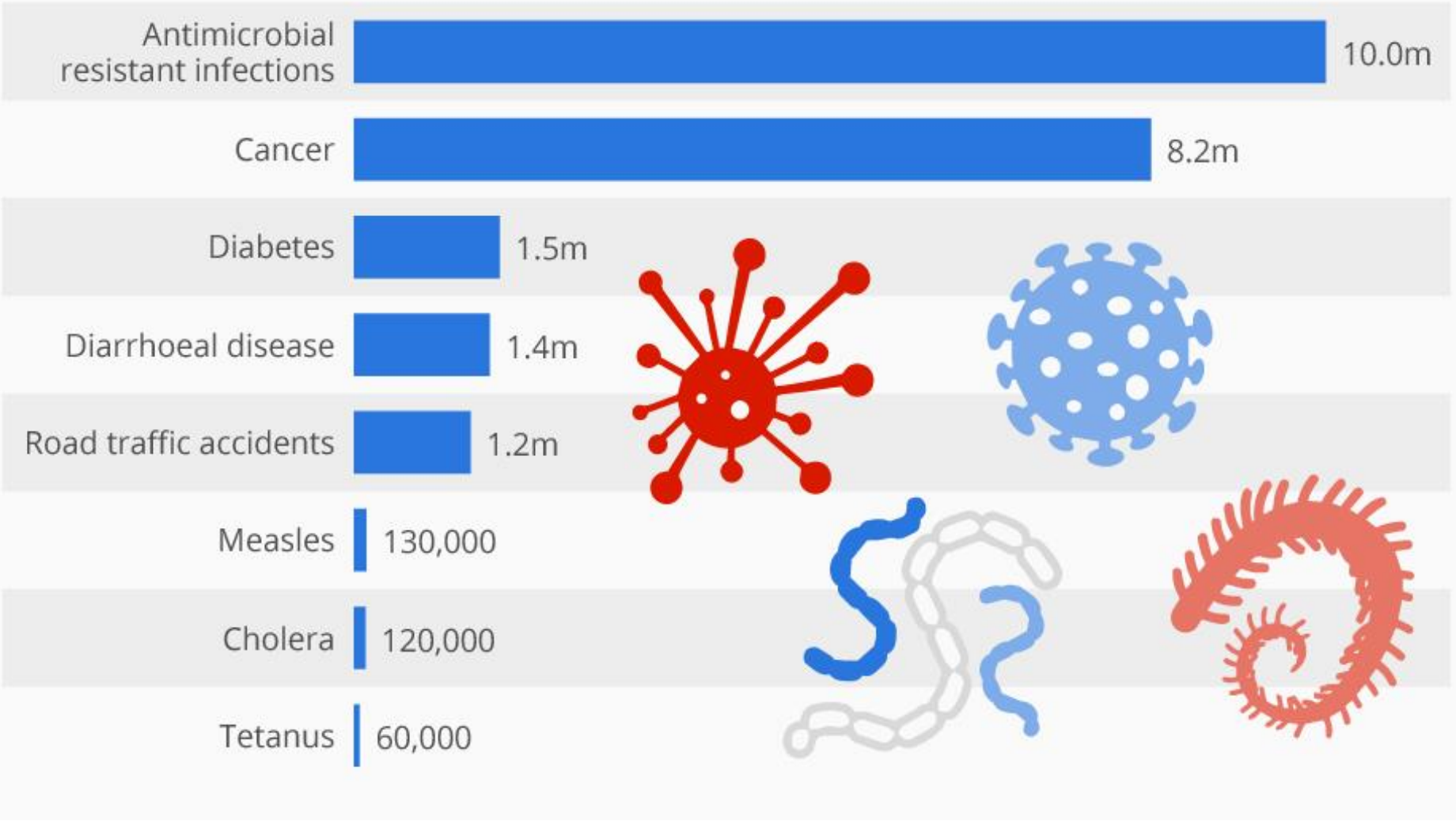
The superbug that doctors have been dreading just reached the U.S.

By Lena H. Sun and Brady Dennis May 27

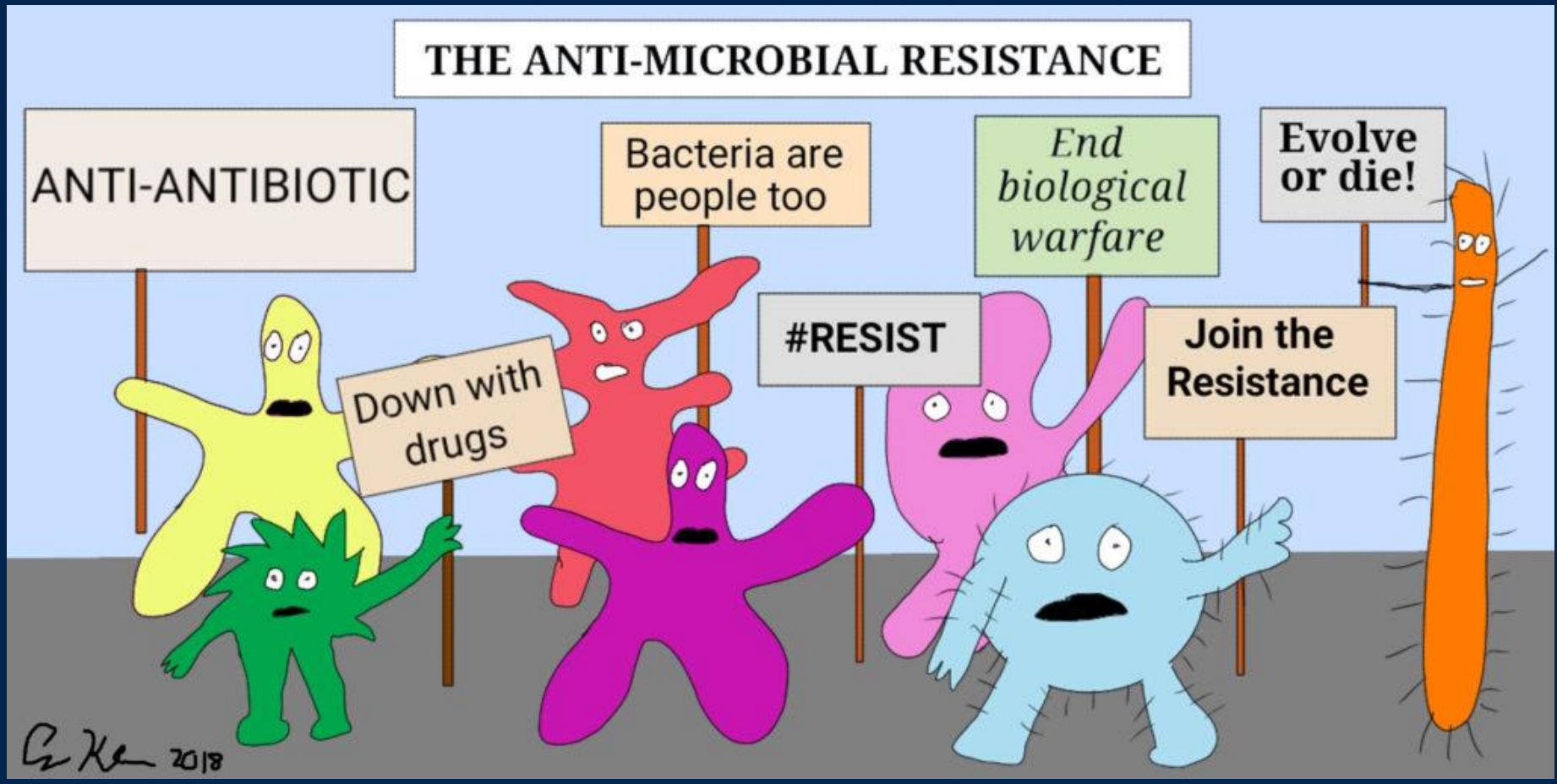
The Post's Lena Sun visited Walter Reed Army Institute of Research in Silver Spring, Md., where scientists there identified a strain of bacteria resistant to the last-resort antibiotic, colistin. The bacteria was found in a Pennsylvania woman. Microbiologist Patrick McGann explains how his team identified the gene that gives the bacteria this resistance (Monica Akhtar,Lena Sun/The Washington Post)

Deaths From Drug-Resistant Infections Set To Skyrocket

Deaths from antimicrobial resistant infections and other causes in 2050



Review on Antimicrobial Resistance, 2014



CURRENT US ANNUAL COST: $ 20 BILLION

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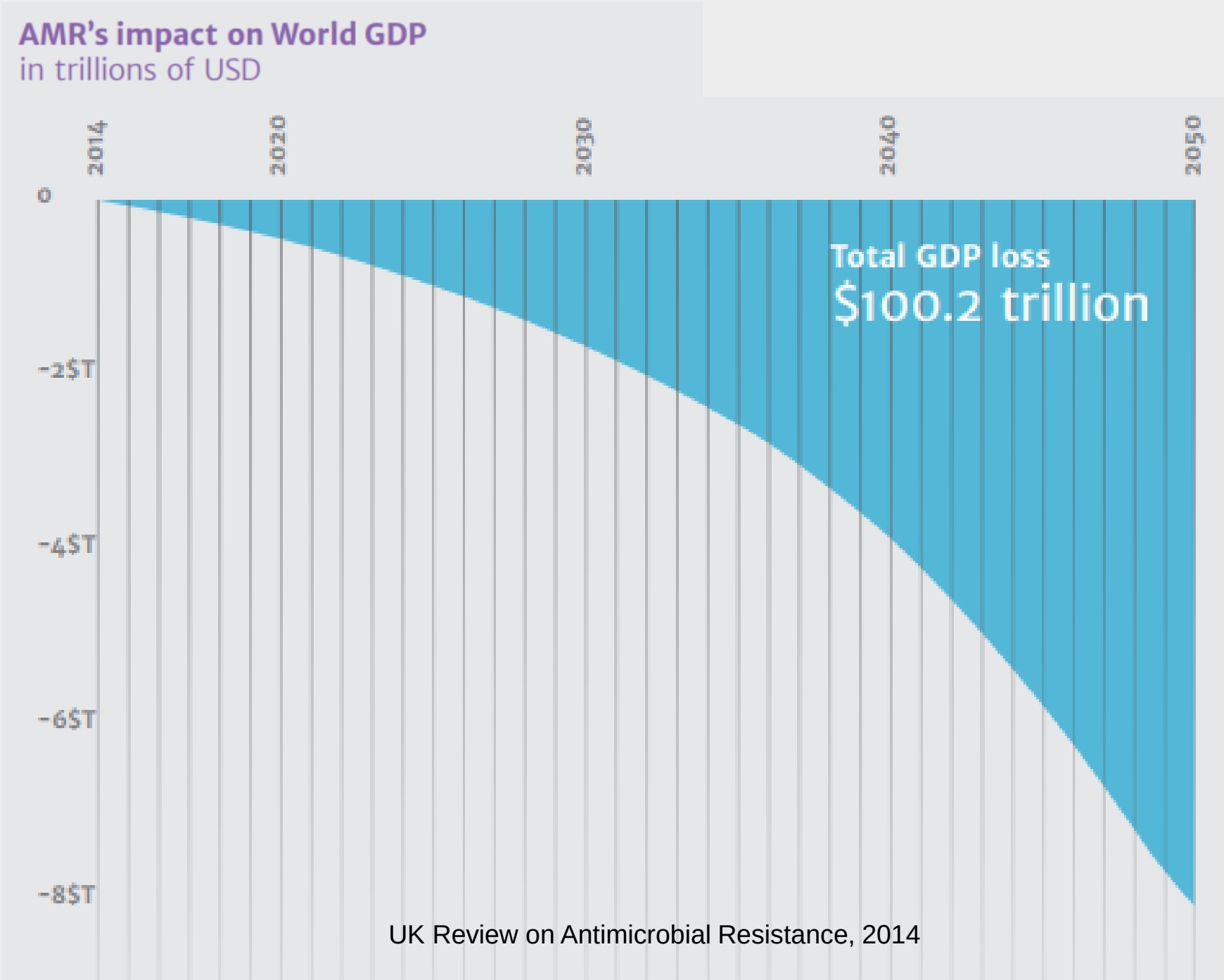
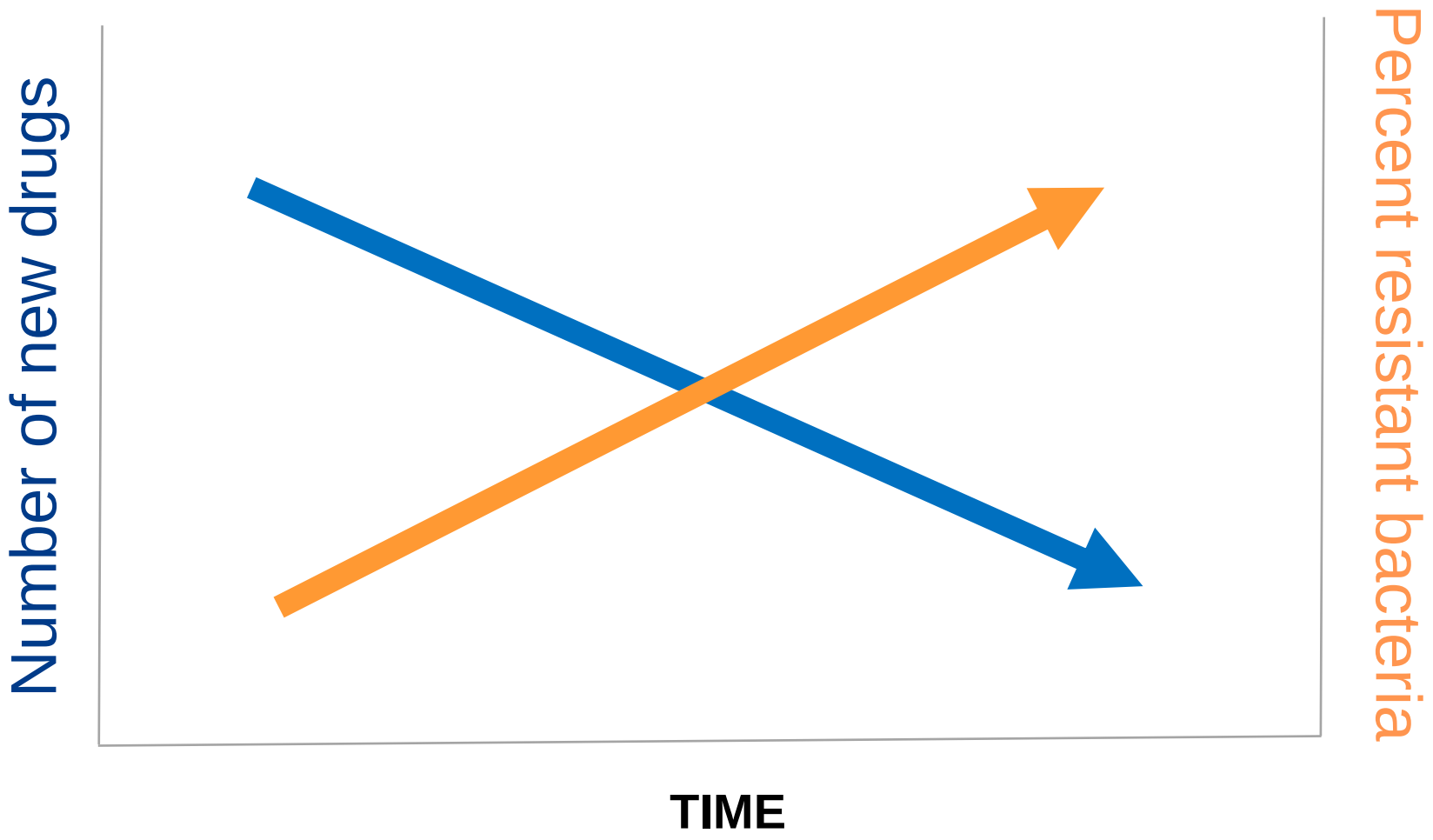


UK Review on Antimicrobial Resistance, 2014

The Problem



IDSA
The 10 x ‘20 Initiative

10 new systemic antibacterial drugs by 2020

-Discovery of new drug classes

-New drugs from existing classes

Improved diagnostic tests specific to multi-drug-resistant infections

Create incentives for R&D with global political, scientific, industry, economic, intellectual property, policy, medical, and philanthropic leaders

Boucher HW et al. *Clin Infect Dis* 2009;48:1

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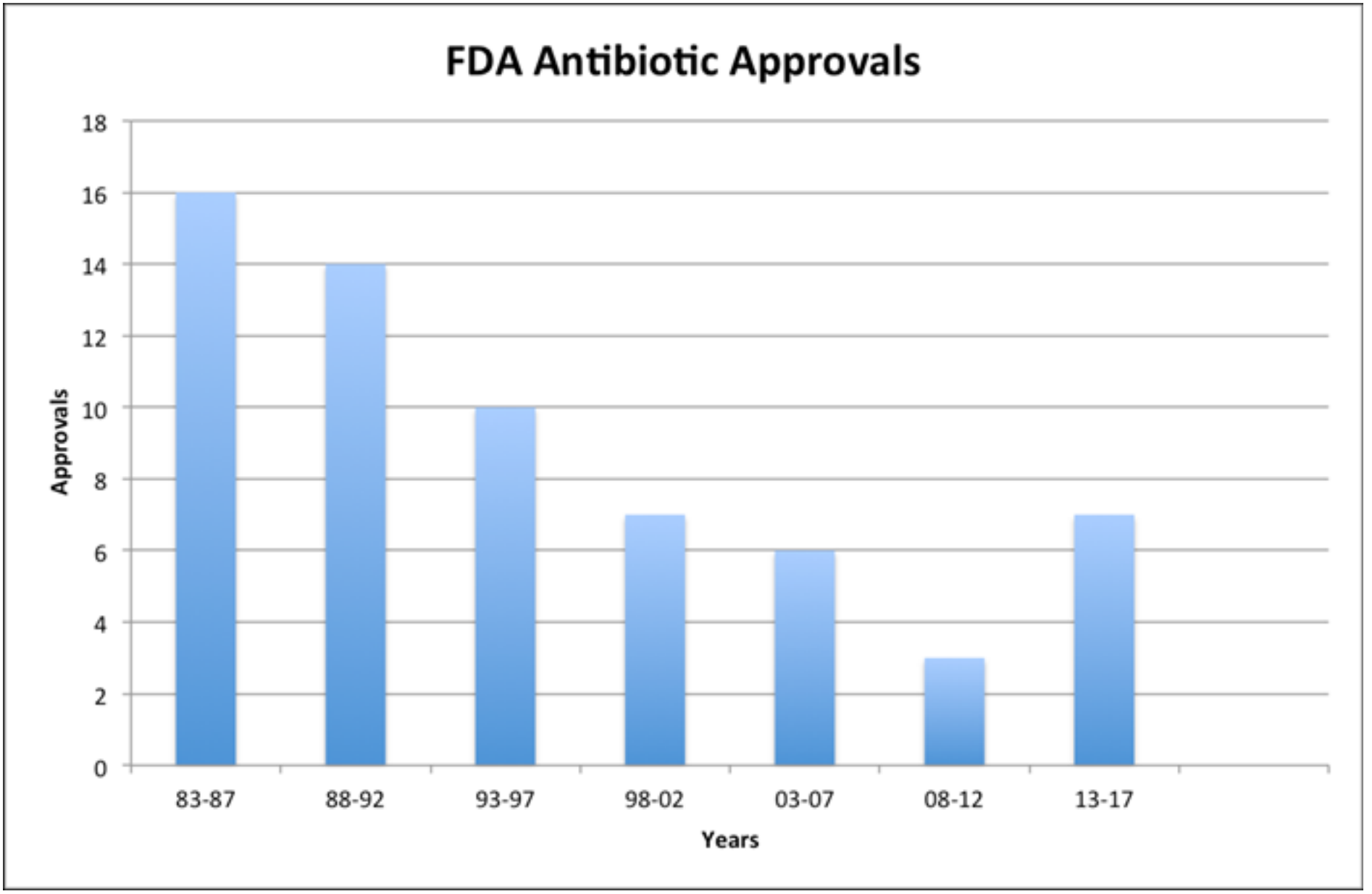
FDA Antibiotic Approvals
18
16
14
12
10
8
6
4
2
0
Approvals
83-87
88-92
93-97
98-02
03-07
08-12
13-17
Years

The National Agenda

President's Council of Advisors on Science and Technology (PCAST)

Executive order 13676: combating Antibiotic-Resistant Bacteria—issued by President Barack Obama on 9/18/2014

National Action Plan

Antimicrobial Stewardship Programs, for the first time, will be monitored by multiple regulatory agencies (JACHO, CMS)

Here's the PROBLEM...

Antimicrobials are Misused

- Wrong antibiotic given to treat an infection
- Broad spectrum agents used to treat susceptible bacteria
- Given at the wrong dose (renal, weight-based dosing)
- Continued when no longer necessary (duration)
- Given when not needed at all

Here's the PROBLEM...

Antimicrobials are Misused

- Wrong antibi
- Broad spectr eptible bacteria
- Given at the sed dosing)
- Continued w ation)
- Given when

ANTIMICROBIAL STEWARDSHIP

DRUG

BUG

DOSE

ROUTE

DURATION

Antimicrobial Stewardship Goals

Antimicrobial Stewardship Goals

Optimize clinical outcomes

Minimize unintended consequences

- Toxicity
- Selection of pathogens
- Emergence of resistant bugs

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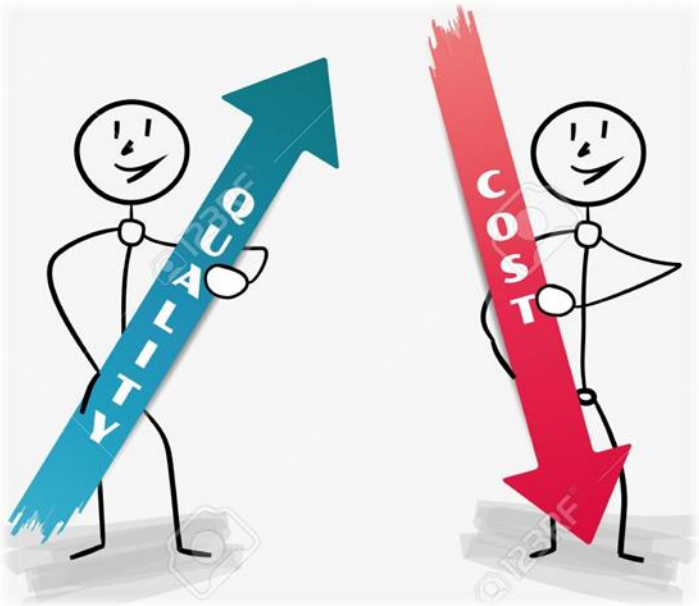

What Methods are Effective in Promoting Antimicrobial Stewardship?

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Antibiotic Profile
January - December 2017

Total Patients

ANTIBIOGRAM Q&A

GRAM NEGATIVE	Total Isolates	Ampicillin	Amoxicillin/ Clavulanate	Cefoxitin	Ceftazidime	Cefotaxime	Ceftriaxone	Cefepime	Piperacillin / Tazobactam	Meropenem	Ciprofloxacin	Levofloxacin	Amikacin	Gentamicin	Tobramycin	Minocycline	Trimethoprim/ Sulfamethoxazole	Nitrofurantoin Urine Isolates Only	Cefazolin** Urine Isolates Only
ORGANISMS	#	% SUSCEPTIBILITY																	
Achromobacter xylosoxidans	40				68			0		85	10	49	8	5	8	74	85		
Acinetobacter baumannii complex	45				84		8					88		96	100	88	84		
Citrobacter freundii	29				89	93	93	100	100	100	100	100	100	90	90		84	89	
Citrobacter species	35				88	89	89	97	89	100	100	100	100	100	100		97	89	
Enterobacter cloacae	163				71	70	70	88	68	99	99	99	100	97	94		80	43	
Enterobacter species	49				91	81	81	98	60	100	98	98	100	98	98		94	39	
Escherichia coli	1,862	36	72	87	93	89	89	95	90	100	85	85	99	88	87		60	97	85
Klebsiella pneumoniae	338		80	82	93	87	87	95	89	99	91	96	100	92	89		73	38	80
Klebsiella species not pneumoniae	60		78	85	89	87	87	97	86	100	97	98	98	92	90		82	85	
Morganella morganii	36				92	94	94	100	100	97	94	94	100	94	94		83	0	
Proteus mirabilis	147	87	99	99	99	99	99	99	99	100	99	100	99	97	97		83	0	100
Pseudomonas aeruginosa	421				90			93	88	97	91	91	99	93	98				
Salmonella species not typhi	38	92			93	95	95				94	97					97		
Serratia species	59				97	95	95	97	95	100	98	98	98	97	80		96		
Stenotrophomonas maltophilia	58				45							86				100	100		
Cystic Fibrosis Isolates																			
Achromobacter xylosoxidans (CF)	38				37			6		76	5	26	8	8	6	66	68		
Pseudomonas aeruginosa (CF)	279				78			81	78	85	75	90	71	59	77				
Stenotrophomonas maltophilia (CF)	67				22							74				100	94		

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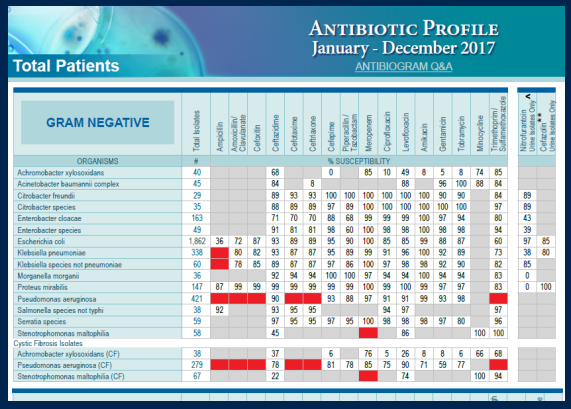

ANTIBIOTIC PROFILE
January - December 2017
ANTIBIOGRAM Q&A

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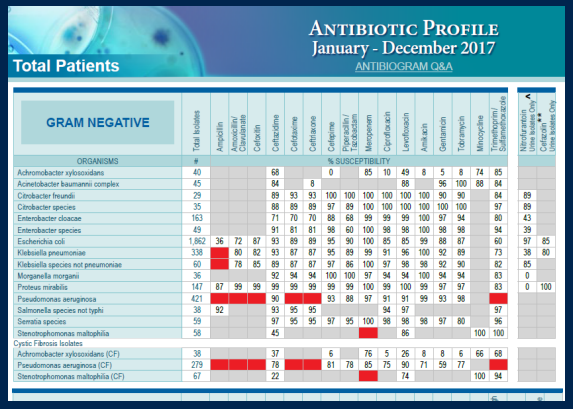

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Citrobacter freundii	29				89	93	93	100	100	100	100	100	100	100	90	90		84	89
Citrobacter species	35				88	89	89	97	89	100	100	100	100	100	100	100		97	89
Enterobacter cloacae	163				71	70	70	88	68	99	99	99	100	97	94			80	43
Enterobacter species	49				91	81	81	98	60	100	98	98	100	98	98			94	39
Escherichia coli	1,862	36	72	87	93	89	89	95	90	100	85	85	99	88	87			60	97	85
Klebsiella pneumoniae	338		80	82	93	87	87	95	89	99	91	96	100	92	89			73	38	80
Klebsiella species not pneumoniae	60		78	85	89	87	87	97	86	100	97	98	98	92	90			82	85	
Morganella morganii	36				92	94	94	100	100	97	94	94	100	94	94			83	0	
Proteus mirabilis	147	87	99	99	99	99	99	99	99	100	99	100	99	97	97			83	0	100
Pseudomonas aeruginosa	421				90			93	88	97	91	91	99	93	98					
Salmonella species not typhi	38	92			93	95	95				94	97						97		
Serratia species	59				97	95	95	97	95	100	98	98	98	97	80			96		
Stenotrophomonas maltophilia	58				45							86				100	100			
Cystic Fibrosis Isolates																				
Achromobacter xylosoxidans (CF)	38				37			6		76	5	26	8	8	6	66	68			
Pseudomonas aeruginosa (CF)	279				78			81	78	85	75	90	71	59	77					
Stenotrophomonas maltophilia (CF)	67				22							74				100	94			

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What Methods are Effective in Promoting Antimicrobial Stewardship?

A. Prior authorization of antimicrobials/formulary restriction*

B. Antimicrobial audit and feedback*

* Strong recommendation based on moderate quality evidence to use

Dellit TH et al. *Clin Infect Dis 2007;44:159*

Barlam TF et al. *Clin Infect Dis 2016;62:e51*

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Prior Authorization/Formulary Restriction

Provider writes order for “restricted drug”

Dellit TH, et al. CID 2007;44(2):159-177.

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Prior Authorization/Formulary Restriction

Provider writes order for “restricted drug”

Order arrives in pharmacy; pharmacist informs provider that drug is “restricted”

Dellit TH, et al. CID 2007;44(2):159-177.

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Prior Authorization/Formulary Restriction

Provider writes order for “restricted drug”

Order arrives in pharmacy; pharmacist informs provider that drug is “restricted”

Prescribing provider and the “GATE KEEPER” converse

Dellit TH, et al. CID 2007;44(2):159-177.

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Prior Authorization/Formulary Restriction

Provider writes order for “restricted drug”

Order arrives in pharmacy; pharmacist informs provider that drug is “restricted”

Prescribing provider and the “GATE KEEPER” converse

Approval or alternative antibiotic selected

Dellit TH, et al. CID 2007;44(2):159-177.

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Prior Authorization/Formulary Restriction

Advantages:

Direct control over antimicrobial use

Effective control of antimicrobial use during outbreaks

Decreased inappropriate use of antimicrobials (and thus costs)

Disadvantages:

Antagonistic relationship (loss of autonomy)

Potential delayed therapy

De-escalation not addressed

Effectiveness in decreasing resistance is less clear

Dellit TH, et al. CID 2007;44(2):159-177.

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TCH

PRIOR AUTHORIZATION

Amphotericin B, liposomal
(ID, heme-onc, transplant)

Anidulafungin
(ID, heme-onc, BMT)

Ceftazidime/avibactam
(ID)

Levofloxacin
(ID, heme-onc, BMT, pulm)

Linezolid (ID)

Meropenem
(ID, pulm)

Micafungin
(ID, heme-onc, BMT)

Posaconazole
(ID, heme-onc, BMT, lung tx)

Ribavirin, inhaled
(ID, BMT, pulm)

Voriconazole
(ID, heme-onc, transplant)

Antimicrobial Audit and Feedback

Provider prescription  Antibiotic is dispensed

Dellit TH, et al. *CID. 2007;44(2):159*
Barlam TF, et al. *CID 2016;62:e51*

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Antimicrobial Audit and Feedback

Provider prescription → Antibiotic is dispensed

↓

Antibiotics are reviewed by ASP

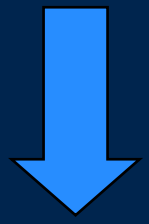
(Targeted list of antibiotics, drug/bug mismatches, ICU patients, duration)

Dellit TH, et al. *CID. 2007;44(2):159*
Barlam TF, et al. *CID 2016;62:e51*

Antimicrobial Audit and Feedback

Provider prescription

Antibiotic is dispensed



Antibiotics are reviewed

1) Prescribing provider contacted and recommendation made

2) Antibiotic change/continued based on Practice Guidelines or ASP recommendation

Dellit TH, et al. *CID. 2007;44(2):159*
Barlam TF, et al. *CID 2016;62:e51*

Antimicrobial Audit and Feedback

Advantages:

Prescriber autonomy

Patient information can be reviewed before ASP interaction

Educational opportunity

De-escalation happens

Inappropriate use decreased

Dellit TH, et al. *CID. 2007;44(2):159*
Barlam TF, et al. *CID 2016;62:e51*

Antimicrobial Audit and Feedback

Advantages:

- Prescriber autonomy
- Patient information can be reviewed before ASP interaction
- Educational opportunity
- De-escalation happens
- Inappropriate use decreased

Disadvantages:

- Requires technology support
- Prescribers may be reluctant to change therapy if patient is doing well
- Some inappropriate antimicrobial use permitted (with retrospective audit)

Dellit TH, et al. *CID. 2007;44(2):159*
Barlam TF, et al. *CID 2016;62:e51*

Barriers to Audit and Feedback

Diagnoses without culture data (i.e. pneumonia, sinusitis, cellulitis)

Provider Beliefs

- Fear of error or missing something, “patient really sick”
- Not believing culture data (eg, negative cultures)
- Myth of “double coverage”
- “They got better on drug X, Y, and Z so I will just continue those”

Audit and feedback examples

Regulatory Compliance

Centers for Medicare and Medicaid Services (CMS):

- The hospital's antibiotic stewardship policy and procedures requires practitioners to document in the medical record or during order entry an indication for all antibiotics, in addition to other required elements such as dose and duration.
- The hospital has a formal procedure for all practitioners to review the appropriateness of any antibiotics prescribed after 48 hours from the initial orders (e.g., antibiotic time out).

Elements of Documentation: TCH

Piperacillin/tazobactam justification for usage assessed from provider notes at 72 hours (n=115):

- Indication for use was listed – 43.4%
- Antimicrobial agents listed – 19.1%
- Specimen/sensitivity listed – 25.2%
- Day of Therapy (DOT) listed – 14.8%
- Plan for ABX therapy listed – 12.2%

Elements particularly important at transitions of care

ASP Intervention: Bundle of Care

Antimicrobial Bundle of Care (ABC's)		
I	Indication	What bacterial infection are you treating?
A	Antimicrobial agent(s)	Do these agents have appropriate: • Dose • Frequency • Monitoring • De-escalation?
S	Specimen(s)	I have review/listed cultures to support agent usage?
P	Plan	The next provider will know: • Current day of therapy • Start date • Planned days • Proposed stop date

.ABXSTW

Antimicrobial Bundle	
Infection	****
Antimicrobial	**** (day#)
Culture, pending or resulted/Date Collected	****
Planned length of therapy	***** (stop date)

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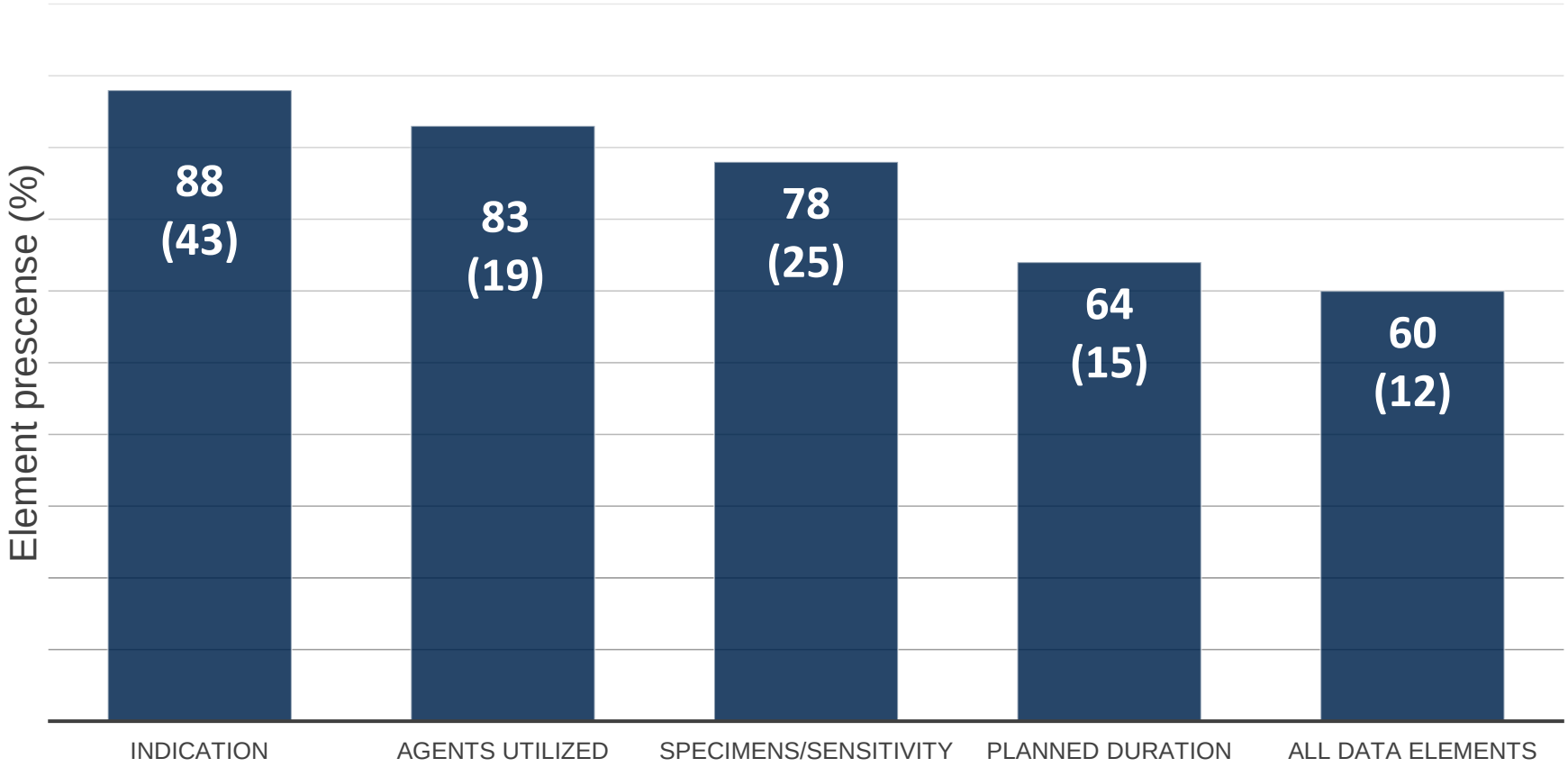
Post-intervention: Elements in Progress Notes (n=124)



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Association of Bundle Use with Narrow Spectrum Antimicrobial and Plan Documentation

	Bundle Used, n=98	Bundle Not Used, n=81	p-value
On Narrowest Spectrum Antimicrobial, n (%)*	91 (92.9)	48 (59.2)	<0.001
Appropriate Plan Documented, n (%)*	97 (98.9)	22 (27.2)	<0.001
On Narrowest Spectrum Antimicrobial & Appropriate Plan Documented, n (%)	91 (92.9)	20 (24.7)	<0.001

*Categories not mutually exclusive

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GeneXpert – Rapid Diagnostic

- PCR test for *Staphylococcus aureus*
  - Methicillin susceptible vs resistant
  - Results available as soon as 1 hour following positive blood culture
    - 24-48 hours earlier vs. traditional methods

Bauer KA et al. Clin Infect Dis. 2010 Nov 1;51(9):1074-80

ASP Intervention: GeneXpert Result Notification

Pre-intervention n=221, 3 months	Post-intervention n=236, 3 months
Gram-stain: GPCs in clusters (n=173) (%) • MRSA 11 (6.4) • MSSA 20 (11.6) • CoNS 142 (82)	Gram-stain: GPCs in clusters (n=183) (%) • MRSA 10 (5.5) • MSSA 24 (13.1) • CoNS 149 (81.4)
Time to **traditional** identification: 1836 ± 768 min	Time to **molecular** identification: 180 ± 250
	ASP notification (n=102)
MSSA: Time to de-escalate from vancomycin 2632 ± 1236 min	MSSA: Time to de-escalate from vancomycin 115 ± 121 min
CoNS *[excluded: CVL, NICU, immunocompromised]* (n=58) 704 ± 581 min	CoNS *[excluded: CVL, NICU, immunocompromised]* (n=68) 241 ± 305 min

GPC, Gram-positive cocci
MRSA, methicillin-resistant *Staph aureus*
CVL, central line

MSSA, methicillin-sensitive *Staph aureus*
CoNS, coagulase-negative *Staphylococcus*
NICU, neonatal intensive care unit

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RDT Use for CoNS Can Save $$

The Improved Patient Flow Could **Prevent 70** Admissions / Year

The Decrease in LOS could reduce **40** to **70** patient days per Year

Potentially **SAVING** **$213,000** per year *

Potentially **SAVING** **$45,000** to **$105,000** per year*

Total Potential Savings in Direct Variable Costs is **$258,000** to **$318,000** / Year

Direct Variable Costs = lab tests, meds, supplies, & nursing expense

*Based on CY 2014, 48 hr stays, $3000 direct var costs per stay & CoNS rate of 1.5% at TCH (250 cases / year), $25/Xpert cartridge

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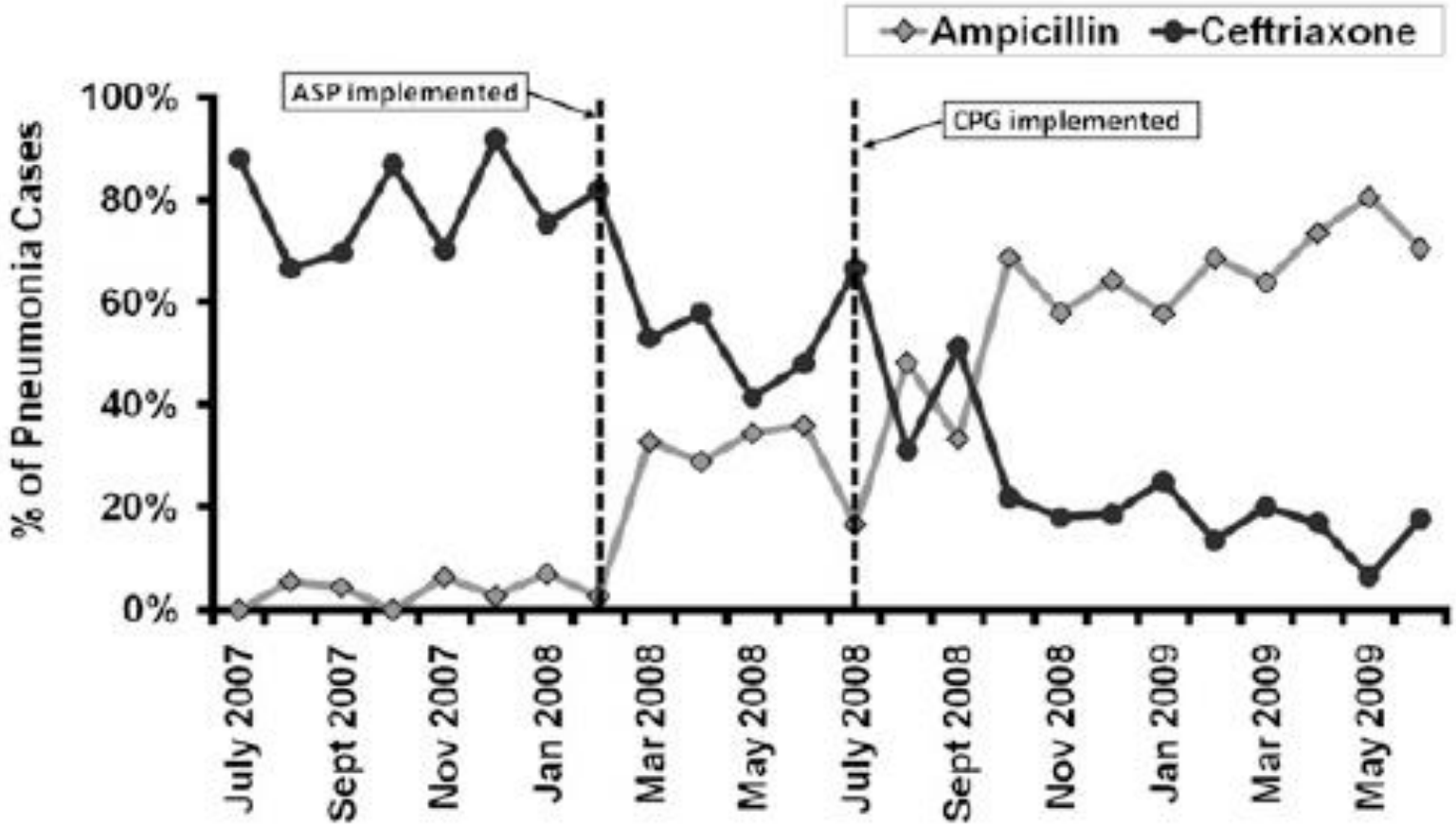
Clinical guideline with audit and feedback example

Use clinical practice guidelines

1. Principles of Judicious Antibiotic Prescribing for Upper Respiratory Tract Infections in Pediatrics
2. Diagnosis and Management of Acute Bacterial Sinusitis in Children Aged 1 to 18 Years
3. Diagnosis and Management of Acute Otitis Media.
4. The Management of Community-Acquired Pneumonia in Infants and Children Older Than 3 Months of Age
5. Diagnosis and Management of the Initial UTI in Febrile Infants and Children 2 to 24 Months

1) *Pediatrics* 2013 132:1146-1154; doi:10.1542/peds.2013-3260; 2) *Pediatrics* 2013;132:e262; 3) *Pediatrics* 2013;131:e964; 4*) Clin Infect Dis* 2011;e1; 5) *Pediatrics* 2011;128:595

Impact of clinical practice guidelines



Newman RE, et al. *Pediatrics* 2012;129;e597-e604.

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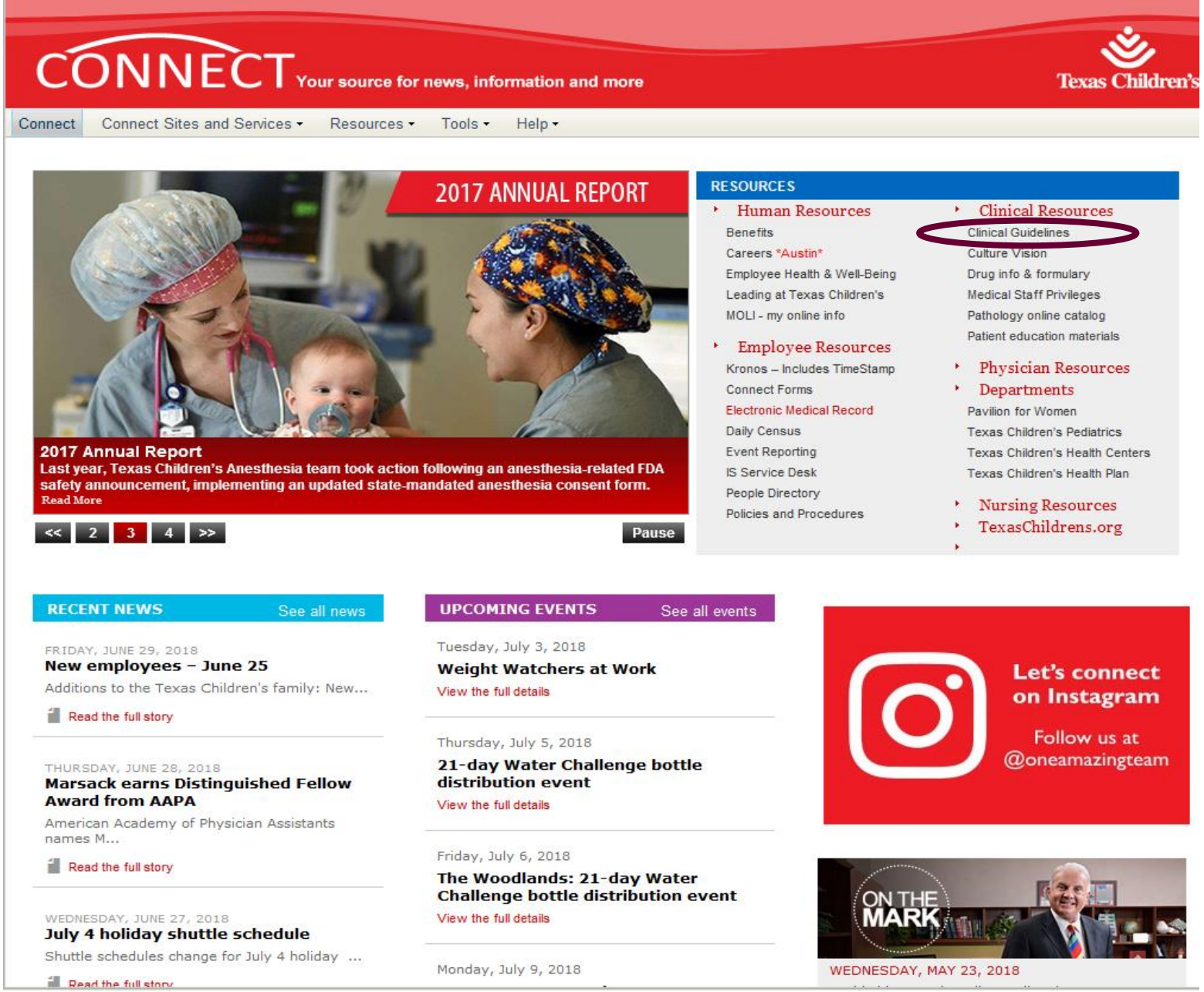
So what can YOU do?



Use guidelines and order sets!

Provider engagement in stewardship

Document 4 elements of antimicrobial use (.abxstw)

- Indication
- Agent
- Specimen/labs
- Plan

Antimicrobial Bundle	
Infection	****
Antimicrobial	**** (day#)
Culture, pending or resulted/Date Collected	****
Planned length of therapy	***** (stop date)

Review antimicrobials daily but especially at 48 hours

Use the TCH antibiogram to guide decisions

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CONNECT

Your source for news, information and more

Texas Children's

Connect | Connect Sites and Services | Resources | Tools | Help

2017 Annual Report

Last year, Texas Children's Anesthesia team took action following an anesthesia-related FDA safety announcement, implementing an updated state-mandated anesthesia consent form.

Read More

<< 2 3 4 >> Pause

RESOURCES

Human Resources
- Benefits
- Careers *Austin*
- Employee Health & Well-Being
- Leading at Texas Children's
- MOLI - my online info

Employee Resources
- Kronos – Includes TimeStamp
- Connect Forms
- Electronic Medical Record
- Daily Census
- Event Reporting
- IS Service Desk
- People Directory
- Policies and Procedures

Clinical Resources
- Clinical Guidelines
- Culture Vision
- Drug info & formulary
- Medical Staff Privileges
- Pathology online catalog
- Patient education materials

Physician Resources

Departments
- Pavilion for Women
- Texas Children's Pediatrics
- Texas Children's Health Centers
- Texas Children's Health Plan

Nursing Resources

TexasChildrens.org

RECENT NEWS

See all news

FRIDAY, JUNE 29, 2018

New employees – June 25

Additions to the Texas Children's family: New...

Read the full story

THURSDAY, JUNE 28, 2018

Marsack earns Distinguished Fellow Award from AAPA

American Academy of Physician Assistants names M...

Read the full story

WEDNESDAY, JUNE 27, 2018

July 4 holiday shuttle schedule

Shuttle schedules change for July 4 holiday

UPCOMING EVENTS

See all events

Tuesday, July 3, 2018

Weight Watchers at Work

View the full details

Thursday, July 5, 2018

21-day Water Challenge bottle distribution event

View the full details

Friday, July 6, 2018

The Woodlands: 21-day Water Challenge bottle distribution event

View the full details

Monday, July 9, 2018

West Campus: 21-day Water

Let's connect on Instagram

Follow us at @oneamazingteam

WEDNESDAY, MAY 23, 2018

On his blog, Mark Wallace talks about Texas Children's most recent milestone – the opening of

Pages - Physician Resources - Internet Explorer

http://connect2depts.texaschildrens.org/depts/1/Resources/Physician%20Resources/Pages/

Pages - Physician Resources | Evidence Based Outcomes Cent...

File Edit View Favorites Tools Help

CONNECT Your source for news, information and more

Texas Children's

Physician Resources ▸ Physician Resources

Connect Departments | Connect Sites and Services | Resources | Tools | Help | All Sites

- Clinical Resources
- Emergency Management
- Employee Resources
- News
- Physician Resources
- Lists
- Libraries
- Health Notices
- The Big Picture IDS
- Phys Search Info
- Phone Directories
- Online Tools
- Hospital Satellite Locations
- GiftShops
- Education Training
- Connect Workstation Software
- Connect Workstation Software
- Centers
- Audix Tips

Physician Resources

"As members of the Medical Staff of Texas Children's Hospital we treat everyone: our patients, their families, our colleagues and all who work at the Hospital with dignity and respect".

Carla M. Giannoni, MD
President of the Medical Staff

TEXAS CHILDREN'S HOSPITAL
Main Campus
Pavilion for Women
Texas Children's Hospital West Campus
Texas Children's Hospital The Woodlands
Texas Children's Health Centers
Jan and Dan Duncan Neurological Research Institute
Texas Children's Specialty Care Centers

Texas Children's Pediatrics
Texas Children's Urgent Care
Texas Children's Health Plan
The Center for Children & Women

DEPARTMENTS

ABOUT TCH

Annual Goals
Mark Wallace's Leadership Maxims
TCH History, Mission, Vision and Values
TCH Leadership
TCH Organizational Chart
TCH Professional Expectations

EMERGENCY PREPAREDNESS

Emergency Management
Physician Emergency Preparedness Quick Reference Guide

MEDICAL STAFF

Medical Staff Committee Schedule
Medical Staff Committees and Chairs
Medical Staff Physician Leadership
Medical Staff Roster

QUARTERLY MEDICAL STAFF MEETINGS

NEWSLETTERS, ETC.

Information Guide for Medical Staff Members, Residents and Fellows
Meal Options at Texas Children
Additional Dining Options at Texas Children's
PPID and Transfusion Safety
The Anesthesia Record
December 2016
The Blood Times
Blood Bank and Coagulation Newsletter
The Path Report
Pathology News for the Medical Staff
Viral Epidemiology Snapshot
Monthly

PROVIDER TOOLS

Clinical Guidelines
Current Antibiogram
Online Tools
Ordering & Authentication Guidelines
PALS Course Registration
Red Book Online
SPOK On Call Schedule and Directory
TCH Nitrous Oxide Credentialing Course & Exam
Therapeutic Abortion & Sterilization

Antibiotic Profile
January - December 2017
ANTIBIOGRAM Q&A

Total Patients

Clinical Pathology Division
Microbiology Section

GRAM NEGATIVE

ORGANISMS	Total Isolates	Ampicillin	Amoxicillin/ Clavulanate	Cefoxitin	Ceftazidime	Cefotaxime	Ceftriaxone	Cefepime	Piperacillin/ Tazobactam	Meropenem	Ciprofloxacin	Levofloxacin	Amikacin	Gentamicin	Tobramycin	Minocycline	Trimethoprim/ Sulfamethoxazole	Nitrofurantoin Urine Isolates Only <	Cefazolin** Urine Isolates Only
	#	% SUSCEPTIBILITY																	
Achromobacter xylosoxidans	40				68			0		85	10	49	8	5	8	74	85		
Acinetobacter baumannii complex	45				84		8					88		96	100	88	84		
Citrobacter freundii	29				89	93	93	100	100	100	100	100	100	90	90		84	89	
Citrobacter species	35				88	89	89	97	89	100	100	100	100	100	100		97	89	
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Morganella morganii	36				92	94	94	100	100	97	94	94	100	94	94		83	0	
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Pseudomonas aeruginosa	421				90			93	88	97	91	91	99	93	98				
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Serratia species	59				97	95	95	97	95	100	98	98	98	97	80		96		
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Achromobacter xylosoxidans (CF)	38				37			6		76	5	26	8	8	6	66	68		
Pseudomonas aeruginosa (CF)	279				78			81	78	85	75	90	71	59	77				
Stenotrophomonas maltophilia (CF)	67				22							74				100	94		

GRAM POSITIVE

ORGANISMS	Total Isolates	Ampicillin	Cefotaxime	Cefotaxime Meningitis	Cefotaxime Nonmeningitis	Ceftriaxone Meningitis	Ceftriaxone Nonmeningitis	Clindamycin	Gentamicin High Level	Levofloxacin	Linezolid	Meropenem	Oxacillin	Penicillin	Penicillin Meningitis	Penicillin Nonmeningitis	Streptomycin High Level	Tetracycline °	Trimethoprim/ Sulfamethoxazole	Vancomycin	Nitrofurantoin Urine Isolates Only <
	#	% SUSCEPTIBILITY																			
Alpha streptococcus not streptococcus pneumoniae	83	45	76											39						100	
Coagulase negative staphylococcus†	186							51			100		39					90		100	
Enterococcus faecalis	132	100							79	92	97			99			88	23		99	96
Enterococcus species	251	94							82	92				93			88	26		98	98
Staphylococcus aureus	1,765							81			100		60					95	97	100	
Streptococcus agalactiae [group B streptococcus]	117							46						TOC*							
Streptococcus anginosus group	176	80	99											90						100	
Streptococcus pneumoniae	205			83	93	86	92	81		100	100	81			52	88		78	54	100	
Streptococcus pyogenes [group A streptococcus]														TOC*							
Cystic fibrosis isolates																					
Staphylococcus aureus (CF)	353							66			99		74					94	97	100	
Staphylococcus aureus,methicillin resistant (CF)	93							49			99		0					96	95	100	
Staphylococcus aureus,methicillin sensitive (CF)	253							71			99		100					94	98	100	

The cumulative susceptibilty data report is based on the inclusion of only the first isolate of a given species from an individual patient.

This data is presented with the aim of guiding the clinician in the selection of initial emperical antimicobial therapy for infection.

**URINE ISOLATES ONLY: Cefazolin can be used to predict susceptibility to certain oral Cephalosporins.

^ Not recommended for pyelonephritis, even if susceptible

° Organisms that are susceptible to tetracycline are also susceptible to doxycycline and minocycline. However, some organisms that are intermediate or resistant to tetracycline may be susceptible to doxycycline, minocycline, or both.

† Susceptibility data for coagulase negative Staphylococcus is not for treatment purposes, Vancomycin is the therapy of choice.

GRAY shading indicates drug/ bug combination generally not recommended for therapy.

Red shading indicates intrisic resistance.

*TOC = Therapy of Choice; no resistance has been reported.

VIEW ANTIBIOTIC PROFILES BY SECTION:
INPATIENTS
OUTPATIENTS
EC
NEONATOLOGY
PAVILION OBGYN

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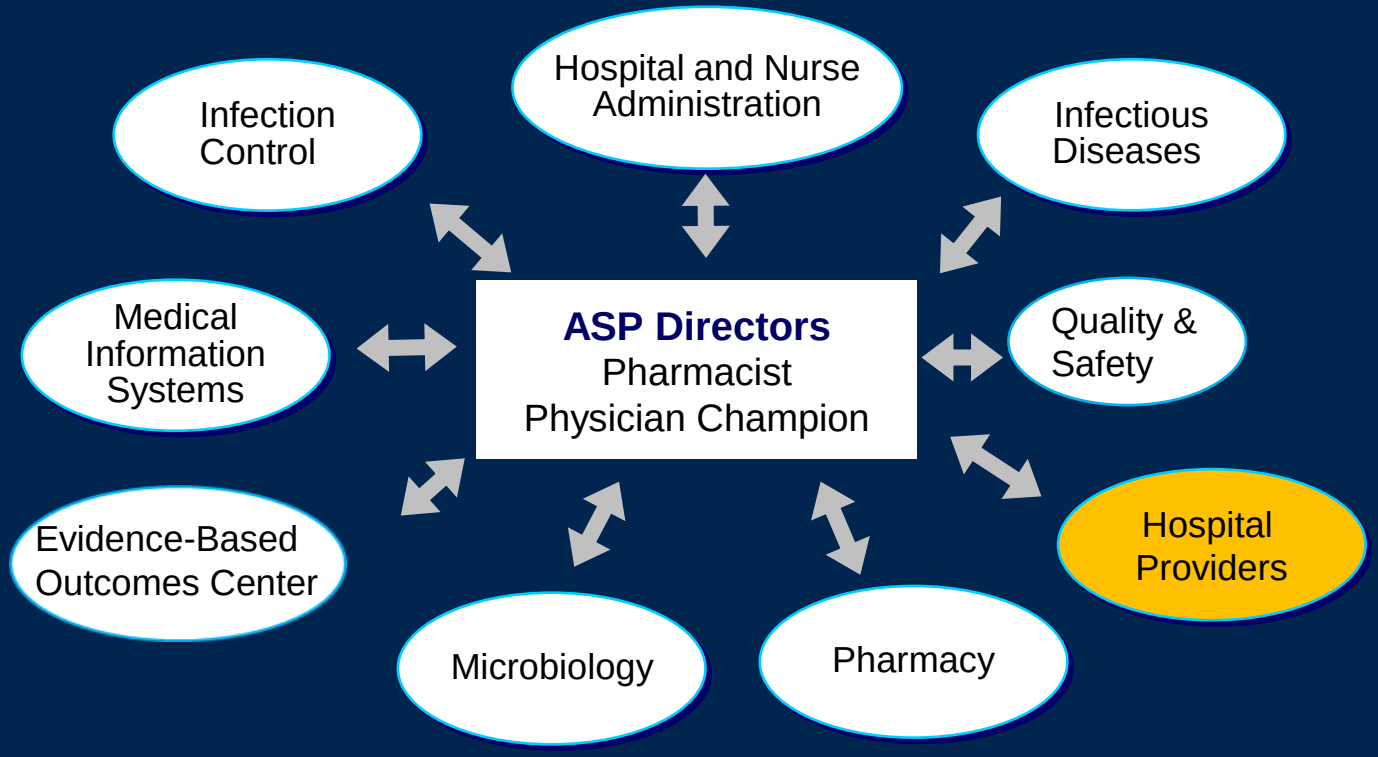
ASP Effectiveness



Adapted from Dellit TH, et al. *CID 2007;44(2):159-177.*

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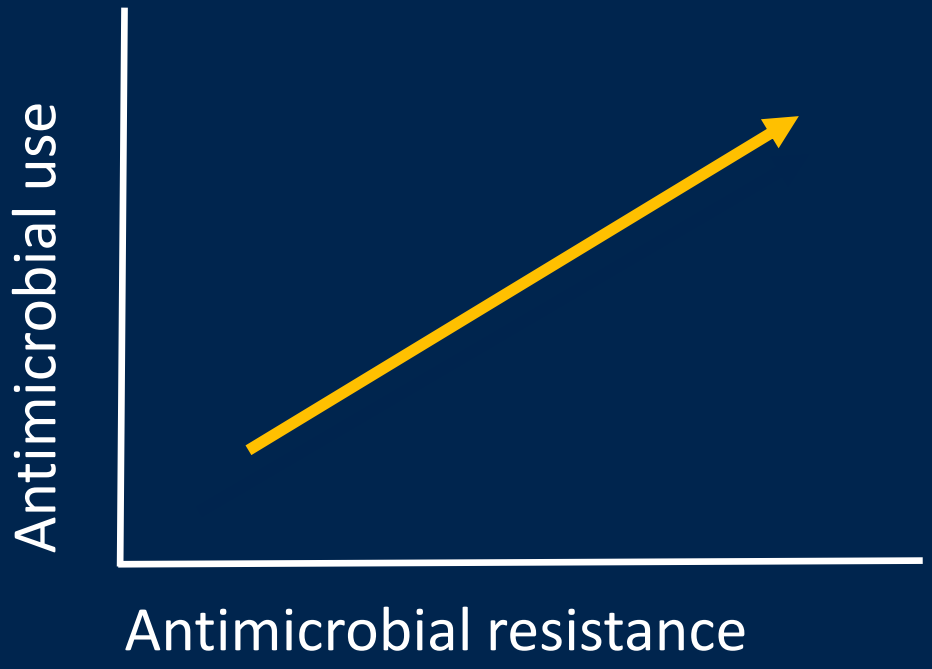
Remember

Antibiotics are the *only* drug where use in one patient can impact the effectiveness in another

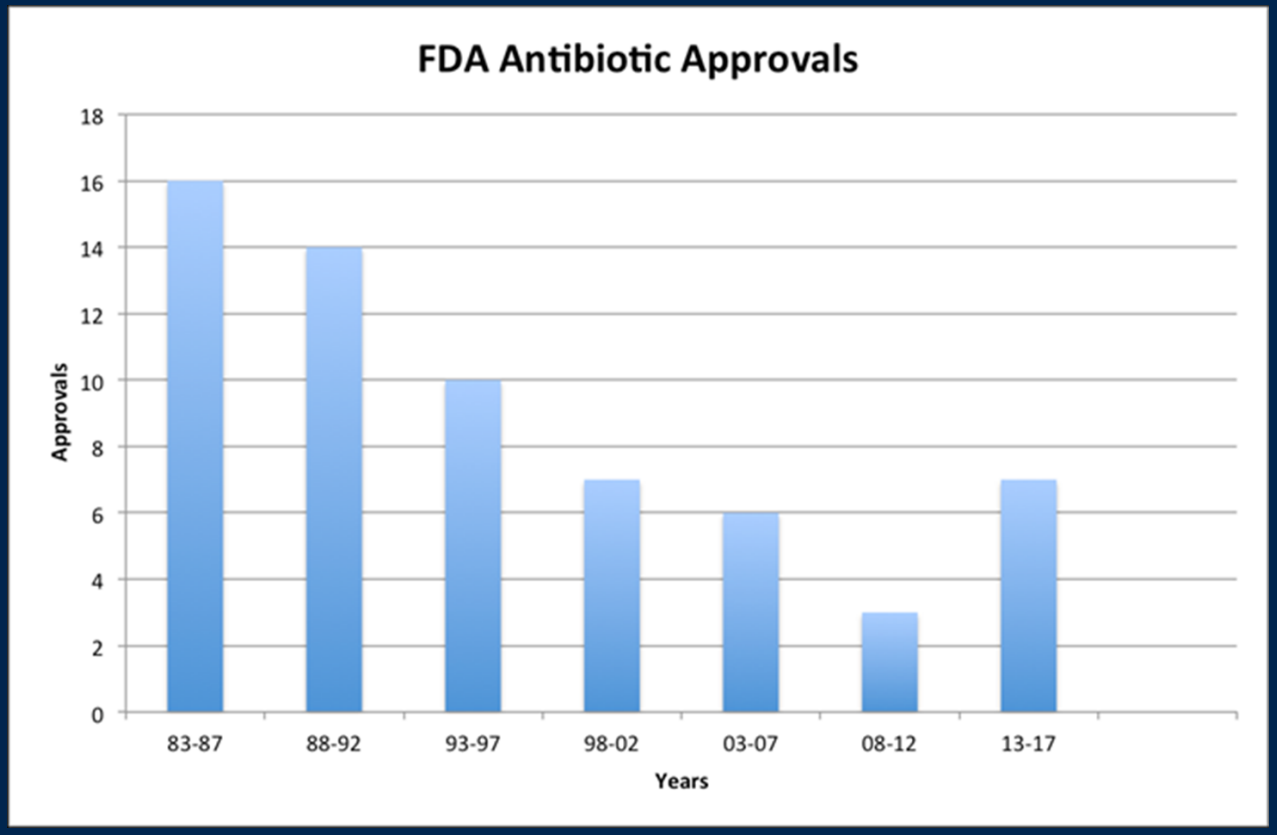
If everyone does not use antibiotics well, we will all suffer the consequences

Summary



Antibiotic use is the single MOST important factor in the development of resistance

Summary



The antibiotic pipeline is inadequate to meet demands

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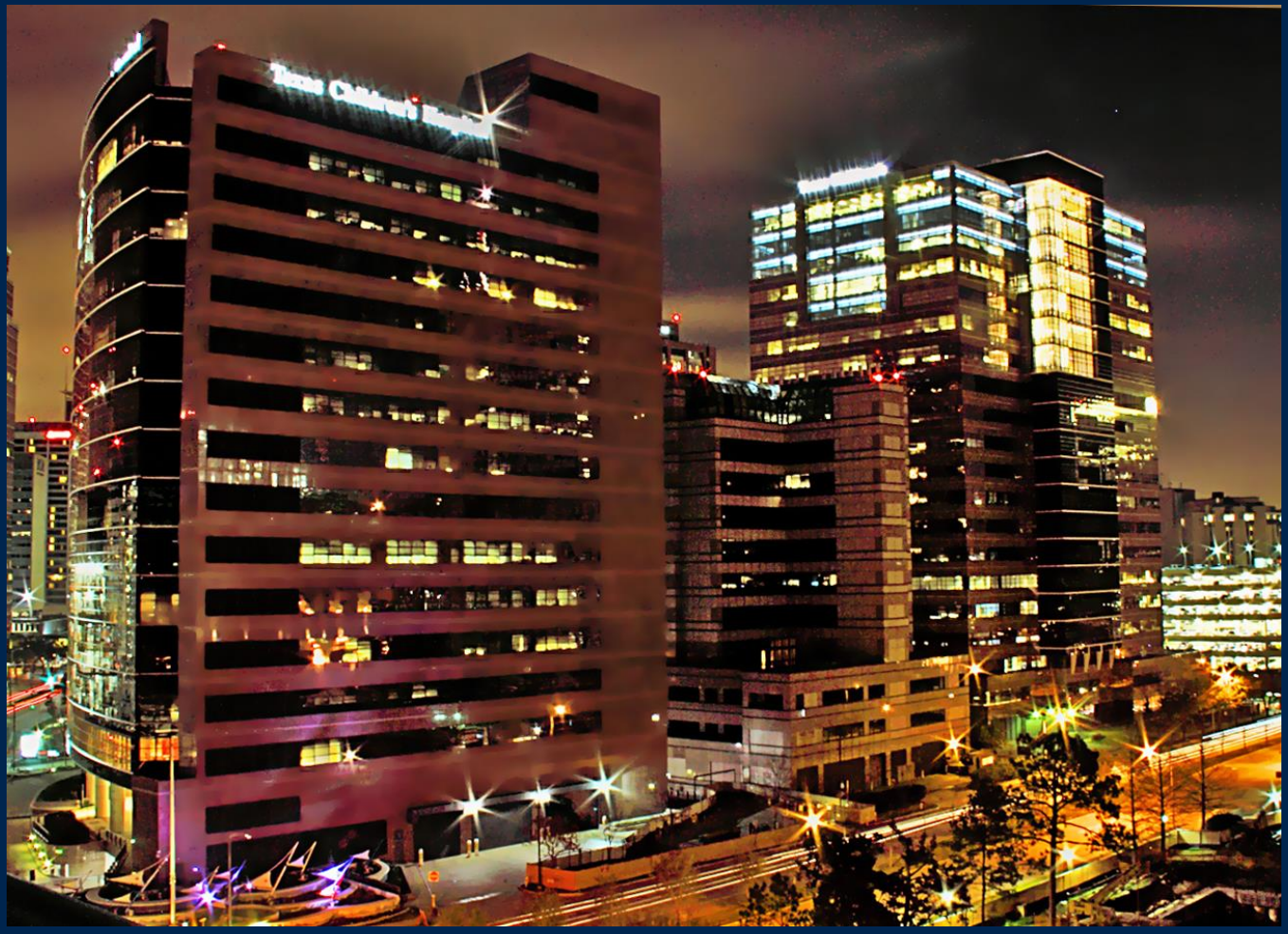
Summary

Antimicrobial stewardship (in which you are a *critical player*) is essential – please use the resources available to you


THANKS

Questions



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