



It's Teamwork!

Advantages of an Interprofessional Approach to Antimicrobial Stewardship

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Disclosures

All planners, presenters, reviewers, and ASHP staff of this session report no financial relationships relevant to this activity.

Let's Play a Game!!!

- With your phone or computer, log into **kahoot.it** or download the **Kahoot app** from your app store
- Game PIN: ***To Be Announced***
- Add a **nickname** for yourself to be shown on the leaderboard



Learning Objectives

- Describe the Joint Commission's Medication Management standards related to an antimicrobial stewardship program (ASP).
- Discuss the integral elements related to an ASP.
- Evaluate the importance of an interprofessional approach to establishing a successful ASP.
- Given a scenario, recommend solutions to better manage data collection and analysis of ASP-related metrics.

A top-down view of medical supplies on a teal surface. A stethoscope with a blue tube and silver chest piece is positioned at the top. To its right is a clear plastic syringe with a white plunger. On the left, a pair of blue-handled forceps is partially visible. In the center, a spiral-bound notebook with a white cover and blue grid paper is open. A silver and white pen lies on the notebook's pages. The text 'ANTIMICROBIAL STEWARDSHIP' is printed in large, bold, black serif font across the middle of the notebook. Below it, in a smaller, bold, black sans-serif font, is the phrase 'IT'S KIND OF A BIG DEAL'.

ANTIMICROBIAL STEWARDSHIP

IT'S KIND OF A BIG DEAL

What is Antimicrobial Stewardship?

- Coordinated interventions designed to improve and measure the appropriate use of antimicrobials (antibiotics, antivirals, and antifungals)
- Promotes the selection of the optimal antimicrobial
- Only uses antimicrobial when absolutely needed
- Uses the lowest dose via the simplest route for the shortest duration that will be clinically effective

Goals of an Antimicrobial Stewardship Program



Primary Goals:

- Optimize clinical outcomes
- Minimize unintended consequences of antimicrobials
 - *C. diff.*, resistance, adverse reactions, etc.



Secondary Goal:

- Reduce healthcare costs without adversely impacting quality of care

“Stewardship”

noun: stew·ard·ship 'stü-ərd-,ship

the conducting, supervising, or managing of something; *especially*: **the careful and responsible management of something entrusted to one's care**

ASP is a HOT Topic

- Recommended by:
 - Infectious Disease Society of America (IDSA)
 - Centers for Disease Control and Prevention (CDC)
 - World Health Organization (WHO)
 - Society of Healthcare Epidemiology of America (SHEA)
 - Pediatric Infectious Disease Society (PIDS)
 - The Joint Commission (TJC)
 - Hospital Association of New York State (HANYS)
 - Centers for Medicare and Medicaid Services (CMS)
 - The White House



Why do we need an ASP?

>50%... Patients admitted to U.S. hospitals receive an antimicrobial

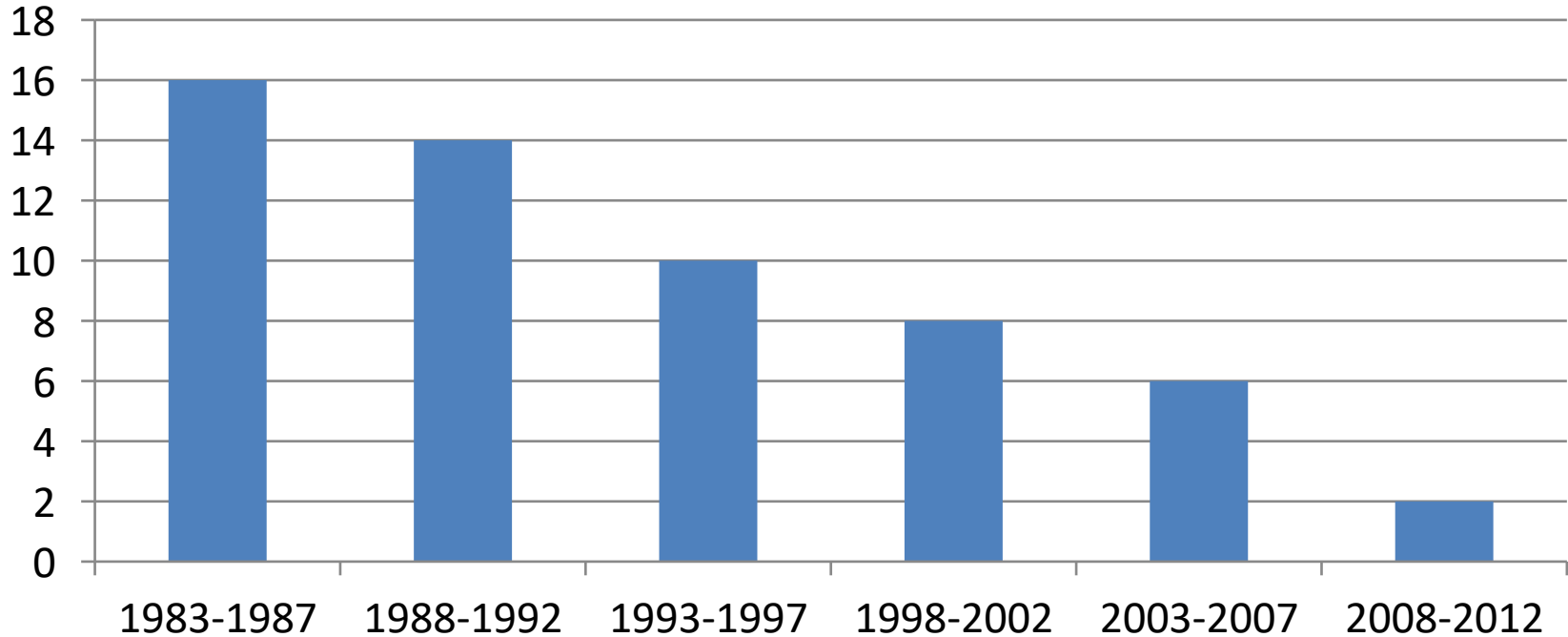
~50%... of those antimicrobials are inappropriate or unnecessary

~2M... MDRO infections annually in the U.S.

~\$20B... Excess costs to U.S. healthcare market

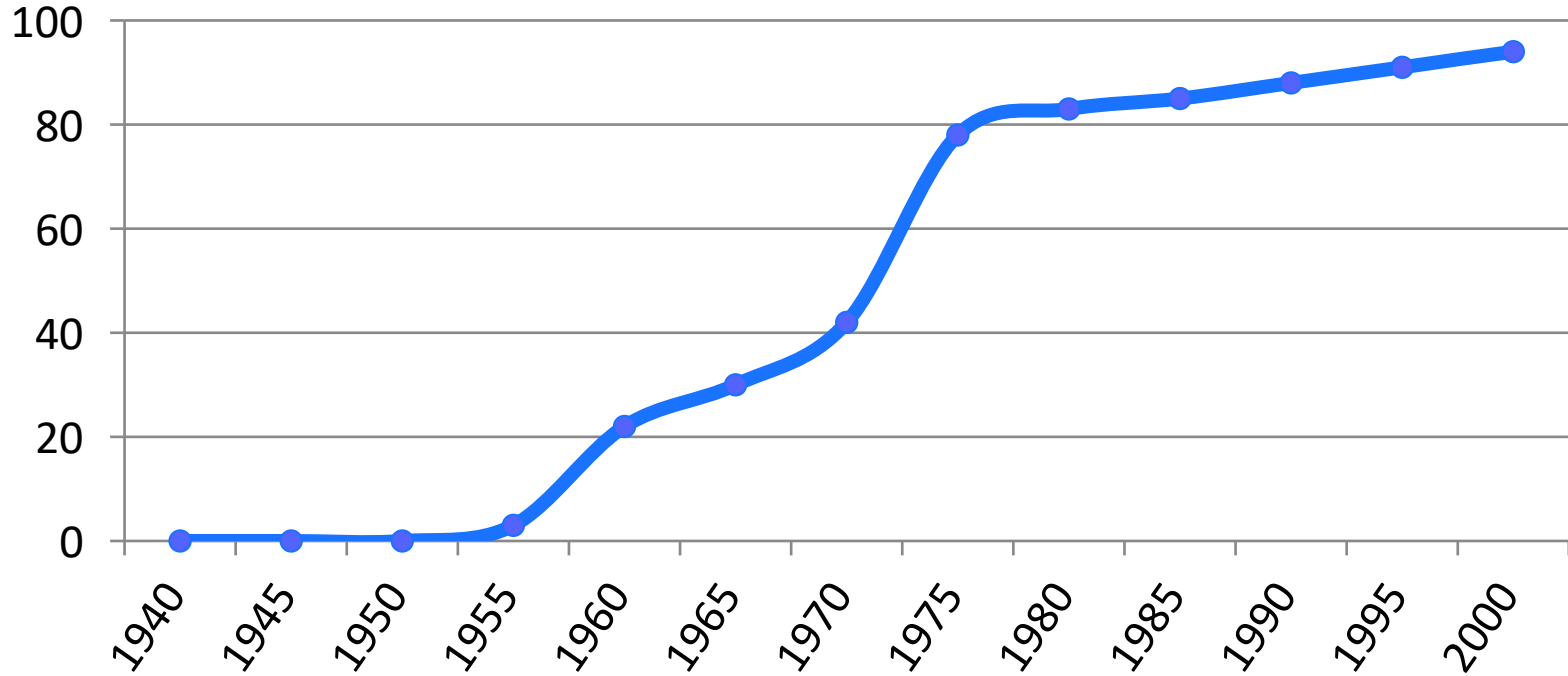
Why do we need an ASP?

New FDA-Approved Antibiotics



Why do we need an ASP?

MRSA Isolates (% per Year)



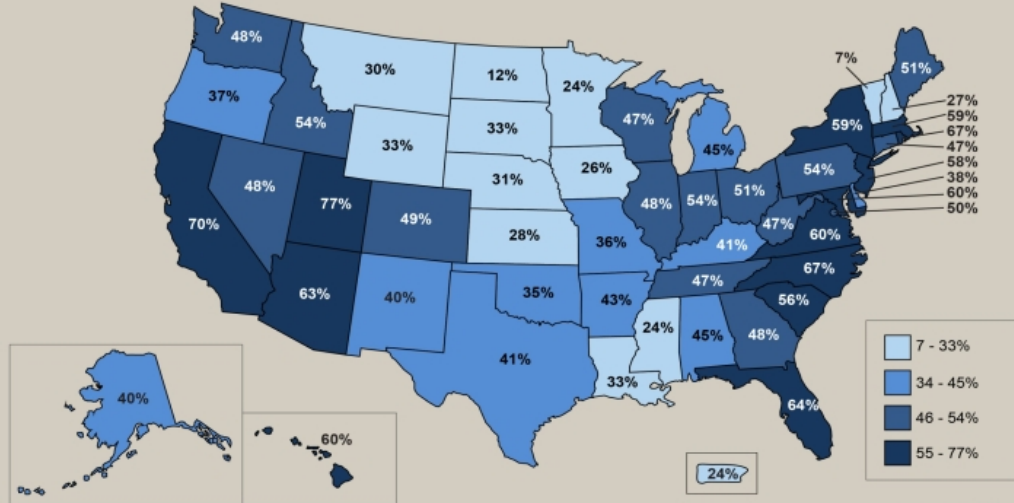
Why do we need an ASP?

- CDC called for all U.S. hospitals to have an ASP by 2020
- January 1, 2017 – The Joint Commission (TJC) requires that all hospitals seeking accreditation have an active ASP
- CMS is tracking ASP actions with plans to tie money to ASP-related items in near future

Why do we need an ASP?

Percent of Hospitals with Antibiotic Stewardship Programs by State, 2015*

Nationally, 48.1% of all hospitals have stewardship programs (2,199 of 4,549); the national goal is 100% of hospitals by 2020.

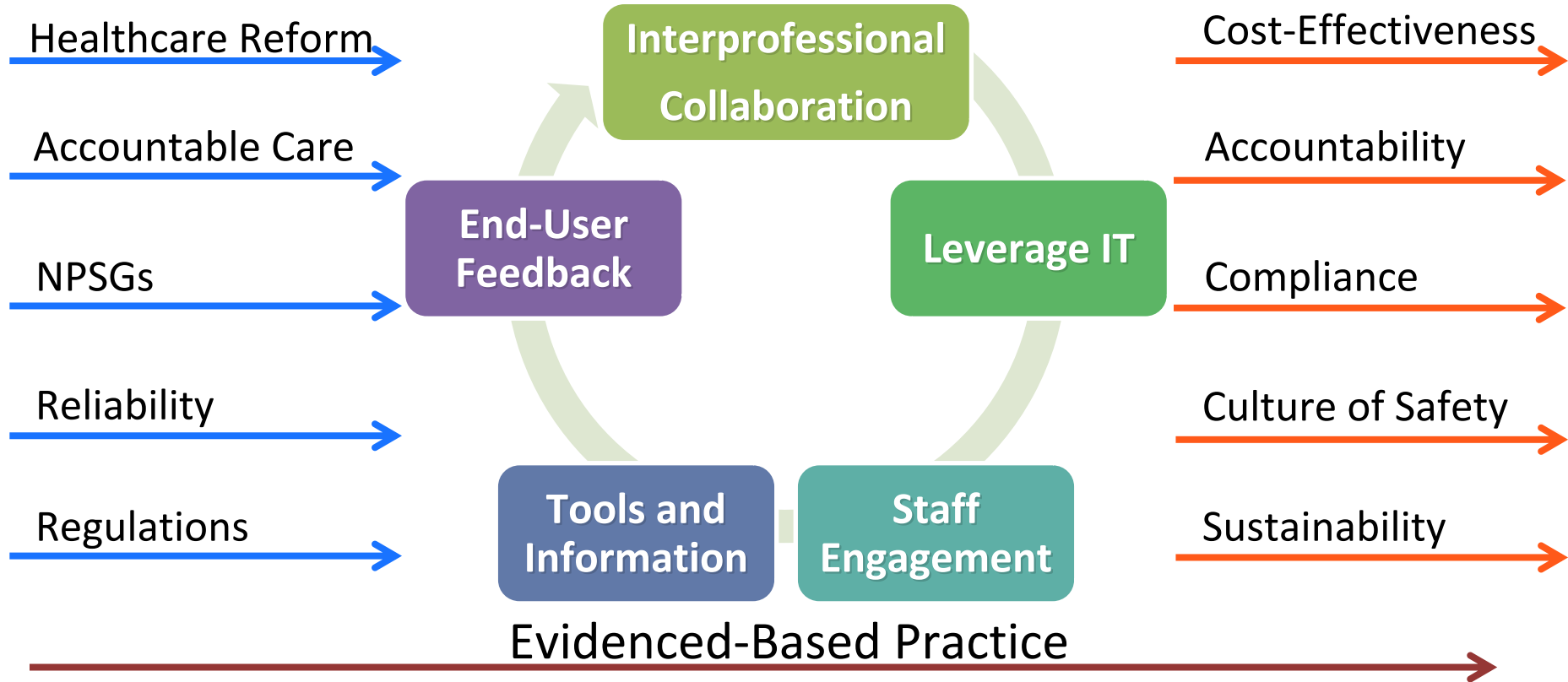


*A hospital stewardship program is defined as a program following all 7 of CDC's Core Elements of Hospital Antibiotic Stewardship Programs.

Source: CDC's National Healthcare Safety Network (NHSN) Survey



ASP Critical Success Factors



What is an ASP?

- Program outlining elements to facilitate appropriate antimicrobial use while mitigating inappropriate use
- No single template to optimize appropriate prescribing
 - Medical decision-making is complex
 - U.S. hospitals exist on a broad spectrum
- 7 Core Elements recommended by the CDC
 - Designed to be flexible and facilitate implementation in hospitals of any size

Core Elements

Leadership
Commitment

Accountability

Drug Expertise

Action

Tracking

Reporting

Education

Leadership Commitment

- Leadership support may take many forms
- Administration champions and values ASP
- Dedicates human, financial, and IT resources
- Ensures that staff have necessary time, education, competencies, and resources to succeed

Accountability

- Designated leader responsible for ASP outcomes
- Physicians highly effective in this role
 - Prescribing is a medical staff function
 - Often an ID physician or hospitalist
- Leadership by committee is not as effective

Drug Expertise

- Pharmacy leadership is a **MUST** for ASP success
 - Pharmacists are the “drug experts”
- Many ASPs are co-led by a physician and pharmacist
- Responsible for reviewing the appropriateness of an antimicrobial prescribed

Action

- Implement at least one recommended action at a time
- Implement policies that support optimal antimicrobial use
- Use interventions that can be divided into 3 categories:

Broad

**Infection-
Specific**

**Pharmacy-
Driven**

Tracking

- Monitoring prescribing and resistance patterns
- Identify opportunities for improvement
- Assess the impact of improvement efforts



Reporting

- **Patient Days of Therapy (DOT):**
 - 1 DOT = received at least one dose of a single agent on a given day regardless of number of doses or strength
 - Can be used in pediatrics
 - Insensitive to renal function and dosage
 - Simply one day of exposure
 - Can be adjusted to hospital census

Vancomycin 1 gram every 12 hours x 5 days = 5 DOT

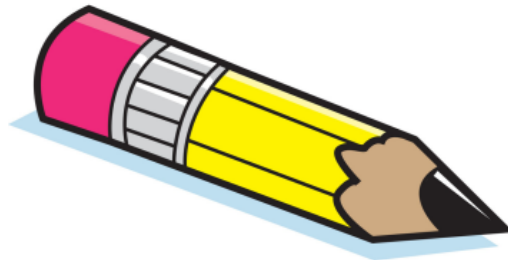
Education & Training

Core Competencies

- ASP Basics
- IV to PO Conversion
- Renal Dosing
- Pharmacokinetics

Advanced Training Courses

- Antimicrobial streamlining
- Developing an antibiogram
- Empiric guidelines



Facility Resources

- Newsletters
- Order Sets
- Empiric Dosing Guidelines
- Antimicrobial Streamlining
- Antibiograms
- Allergy Clarification

CAP (Community Acquired Pneumonia)	
Antibiotics - (First dose NOW if not given in ED)	
Option 1 - Ceftriaxone and Azithromycin (Select BOTH)	
<input type="checkbox"/> cefTRIAXone SOD (ROCEPHIN) 1 GRAM IVP daily	Edit
DOSE INSTRUCTIONS: Concentration: 1gm/10mL Administration Rate: Over 3-5 minutes	
<input type="checkbox"/> Azithromycin (Zithromax) 500 MG IV daily in Sodium Chloride 0.9%(Sodium Chloride 0.9%) 250 ML	Edit
Option 2 - Levofloxacin (For penicillin allergy)	
<input type="checkbox"/> Levofloxacin/Dextrose (Levaquin 750 Mg/150 ML) 750 MG IV daily	Edit

Quiz Time!!!



Interprofessional Approach to Antimicrobial Stewardship



ASP Team Composition

- **TJC MM 09.01.01 EP 4**
 - The hospital has an antimicrobial stewardship multidisciplinary team that includes the following members, when available in the setting:
 - **ID Physician**
 - **Infection Preventionist**
 - **Pharmacist**
 - **Practitioner**

ASP Team Composition

Essential

- ID physician, Pharmacist, Administration, Other Providers

Optimal

- Microbiologist, Epidemiologist, Infection Preventionist, IT Specialist

Ideal

- Nursing, Clinical Education, Environmental Services, Quality Control

Administrative Leadership

- Examples of leadership commitment:
 - Accountability documents
 - Budget plans
 - Infection prevention plans
 - Performance improvement plans
 - Using the EHR to collect antimicrobial stewardship data



Provider Leadership

- Single leader for program outcomes
- Peer to Peer discussions
- Order set development
- Formulary recommendations
- Approval of reserved antimicrobials
- Education including to other providers



Pharmacy Leadership

- Co-lead the ASP
- Serve as subject-matter expert on ASP Team



PHARMACIST
WE SOLVE PROBLEMS
YOU DIDN'T KNOW YOU HAD
IN WAYS YOU DON'T
UNDERSTAND

Pharmacy Leadership

- “Reserved” Medications
- Formulary substitution
 - Therapeutic interchange, IV to PO, cost-effective
- Purchase plans
 - Negotiate for better pricing on antimicrobials



Medical Staff Leadership

- As the prescribers of antimicrobials, providers must be fully engaged in and supportive of ASP efforts



Medical Staff Leadership

- Techniques for winning over providers:
 - Education
 - “Odd Man Out”
 - Patient / Peer Feedback
 - Best Practice

“Optimizing” NOT “Restricting”

Specific Provider Groups

- Include champions in the ASP team who represent high-impact areas for stewardship
 - **Critical Care / Intensivists**
 - **Surgery**
 - **Internal Medicine / Hospitalists**
 - **Emergency Medicine**
 - **Pediatrics**
 - **NPs, PAs, Residents, etc.**



Specific Provider Groups

- Support for Hospitalist Model
 - Ideal physician leaders
 - Increasing presence in inpatient care
 - Frequently order antibiotics
 - Committed to quality improvement
 - 2/3 of US hospitals have hospitalists
 - Numbers are growing (30,000 in 2010)

Hospitalist Services



Microbiologist

- Proper tests & flow of results
- Present data to support optimal ASP



Microbiologist

- Antibiograms

2018 Antibiogram for OGH and CMH (% susceptibility)

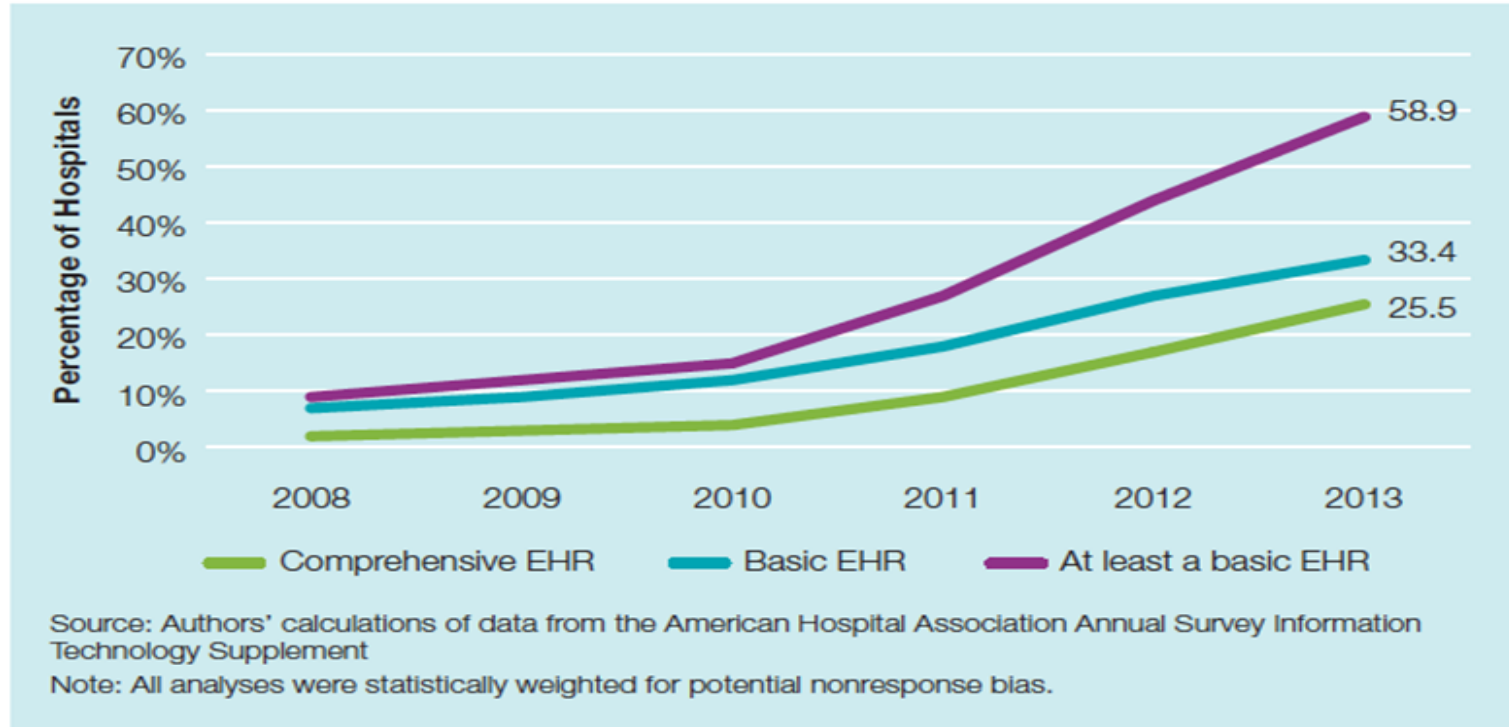
	# Isolates	Aminoglycosides			Cephalosporins					Carbapenem		Macrolides	Penicillins			Extended Spectrum PCN	Fluoroquinolones	Sulfonamides	Tetracyclines	Misc	Cyclic Lipopeptides		Orazolidone													
		Amikacin	Gentamicin	Tobramycin	Cefazolin 1st generation	Cefepime 4th generation	Ceftriaxone 3rd generation	Ceftazidime 3rd generation	Ceftioxcid 3rd generation	Ertapenem RESTRICTED	Imipenem RESTRICTED	Meropenem RESTRICTED	Erythromycin	Amoxicillin / Clavulanic acid	Ampicillin / Sulbactam	Ampicillin	Benzylpenicillin	Oxacillin	Piperacillin / Tazobactam		Ciprofloxacin NON-FORMULARY	Levofloxacin RESTRICTED	Trimethoprim / Sulfamethoxazole	Doxycycline	Tetracycline	Rifampin**	Nitrofurantoin	Aztreonam RESTRICTED	Clindamycin**	Daptomycin RESTRICTED	Vancomycin	Linezolid RESTRICTED				
GRAM NEGATIVE ORGANISMS																																				
Acinetobacter baumannii	22*		86	100		75		57	5			100						86								75	76	76	86							
Citrobacter freundii	37		89	89		100		89	86	100	97																89	89	89	70				93		
Enterobacter aerogenes	23*		86	96		100		87	87	100	87																87	96	96	96				5		
Enterobacter cloacae	71		97	98		97		90	86	97	94																86	90	100	86				59		
Escherichia coli	1,846	100	91	93		93	99	25	96	96	100	100		100				86	63	56						97	78	79	78				0	98	25	
Haemophilus influenzae	18*							100	100		100							93		50							95	99	99	99				85	43	
Klebsiella oxytoca	74		100	100		70	100		97	95	100	100						93	72	0						95	99	99	99				94			
Klebsiella pneumoniae	332	100	99	98		100	99	0	96	97	100	100						96	90	0						97	97	97	95				0	38	0	
Morganella morganii	28*		79	88		100		93	93	100	41							4	25	0						89	75	75	68				6			
Proteus mirabilis	222		95	95		96	100		100	100	100	0						100	95	81						100	51	55	54				0			
Pseudomonas aeruginosa	165	86	94	98		95		91			90		75					98	84	79						98	84	79				0		0		
Serratia marcescens	40		98			0	100		98	93	100	88						0									100	98	98	100				0		95

Infection Preventionist

- Develop policies and practices to prevent HAI transmission
- Educate healthcare personnel, patients, caregivers, & visitors about infection prevention strategies
- Investigate outbreaks of HAIs
- Monitor adherence to recommended prevention practices
 - Hand Hygiene, Isolation, etc.

IT Specialist

- **Electronic Health Record**



IT Specialist

- Integrating ASP into existing workflow

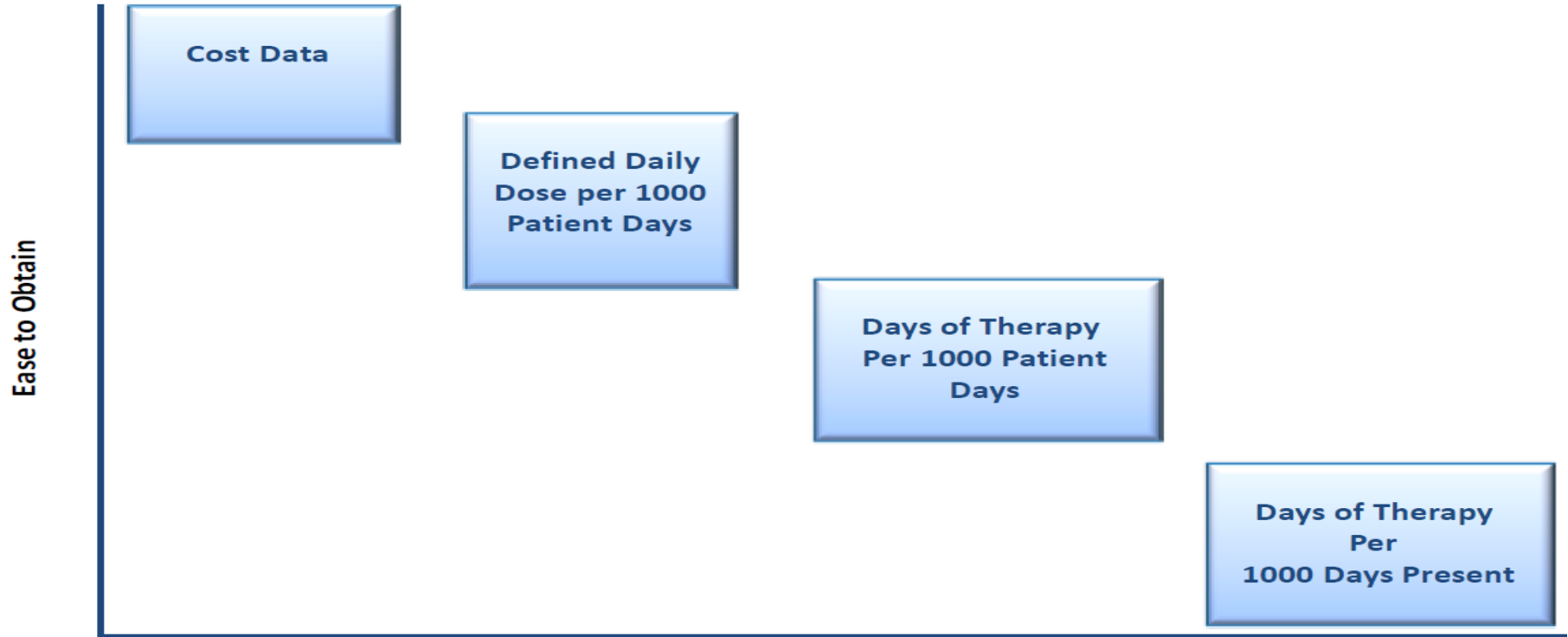


IT Specialist

- **TJC MM 09.01.01 EP 7**
 - Hospital collects, analyzes, and reports data on its ASP



IT Specialist



Accurate reflection of actual antibiotic utilization

Nursing



Nursing

- Cultures before antibiotics
- Medication reconciliation
- Prompt discussions with providers and the healthcare team
- Instigate de-escalation and IV to PO
- Monitor for allergies and side effects
- Monitor therapeutic levels
- Ensure timely administration
- Following up on missed doses



Nursing

- **TJC MM 09.01.01 EP 3**

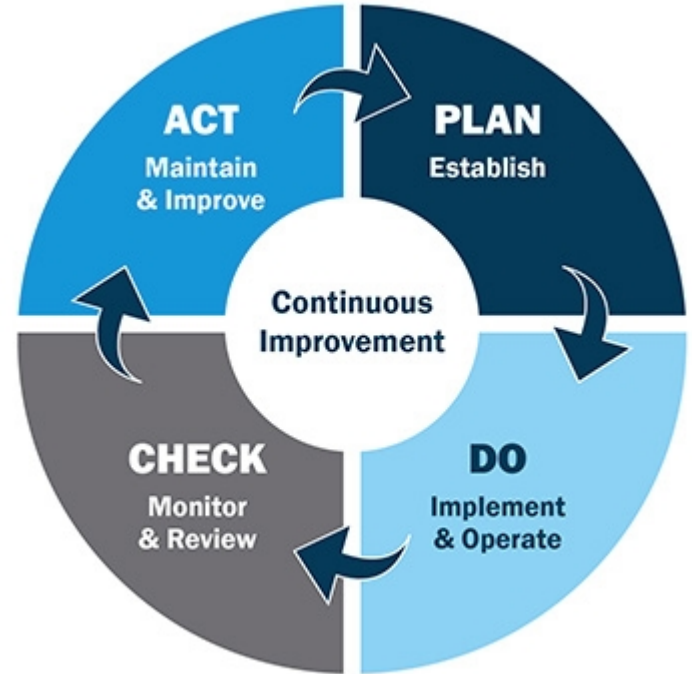
- The hospital educates patients, and their families, as needed, regarding the appropriate use of antimicrobial medications, including antibiotics



Clinical Education

- **TJC MM 09.01.01 EP 2**
 - The hospital educates staff & licensed independent practitioners involved in:
 - **Ordering (*Providers*)**
 - **Dispensing (*Pharmacy*)**
 - **Administration (*Nursing*)**
 - **Monitoring (*Many*)**
 - Education occurs upon hire or granting of initial privileges and periodically thereafter, based on organizational need

Clinical Education



Environmental Services



Quality Control

CMS

- Antibiotics for CAP
- Influenza Vaccination
- UTI – Long Stay
- Pneumonia mortality
- CLABSI
- CAUTI
- Surgical Prophylaxis
- Post-op Sepsis
- Surgical Site Infections
- Sepsis

AHRQ

- Pneumonia Admission
- Pneumonia Mortality
- UTI Admissions
- CAUTI
- CLABSI
- MRSA SSTIs

CDC

- BSI in Hemodialysis
- Hepatitis B Vaccine
- CLABSI Outcomes
- Hospital-onset CDI
- CAUTI Outcomes
- Hospital-onset MRSA
- Influenza vaccine

Quiz Number Two!!!



Putting it All Together



Key Takeaways

- The CDC's 7 Core Elements of an ASP are designed to be flexible enough to allow for implementation in hospitals of any size and acuity
- ASPs have been proven to be effective in mitigating the negative consequences of antimicrobial misuse (i.e., antimicrobial resistance, *C. diff.* infections, etc.)
- Education, coupled with corresponding interventions and outcomes measures, are the cornerstone of an effective ASP

THE FINAL ROUND





**AND THE
WINNER IS...**

QUESTIONS?

