



Montefiore
THE UNIVERSITY HOSPITAL

EINSTEIN
Albert Einstein College of Medicine
OF YESHIVA UNIVERSITY

Practically Implementing Antimicrobial Stewardship in an Evolving Landscape



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On behalf of the Montefiore ASP

May 2017

No financial disclosures

Objectives

- Review the data to support antimicrobial stewardship programs (ASP)
- Review evolving landscape in ASP
- Describe practical ASP of activities (“inside & outside the box”)

What is Antimicrobial Stewardship (ASP)?

- ✓ A healthcare institutional program to improve appropriateness of antimicrobial prescribing to:
 - Optimize clinical outcomes
 - Reduce adverse events
 - Reduce healthcare costs while maintaining quality of care
- ✓ Who are we?
 - Multidisciplinary team of ID trained physicians and pharmacists
 - Liaisons throughout the Healthcare System

Why Stewardship?

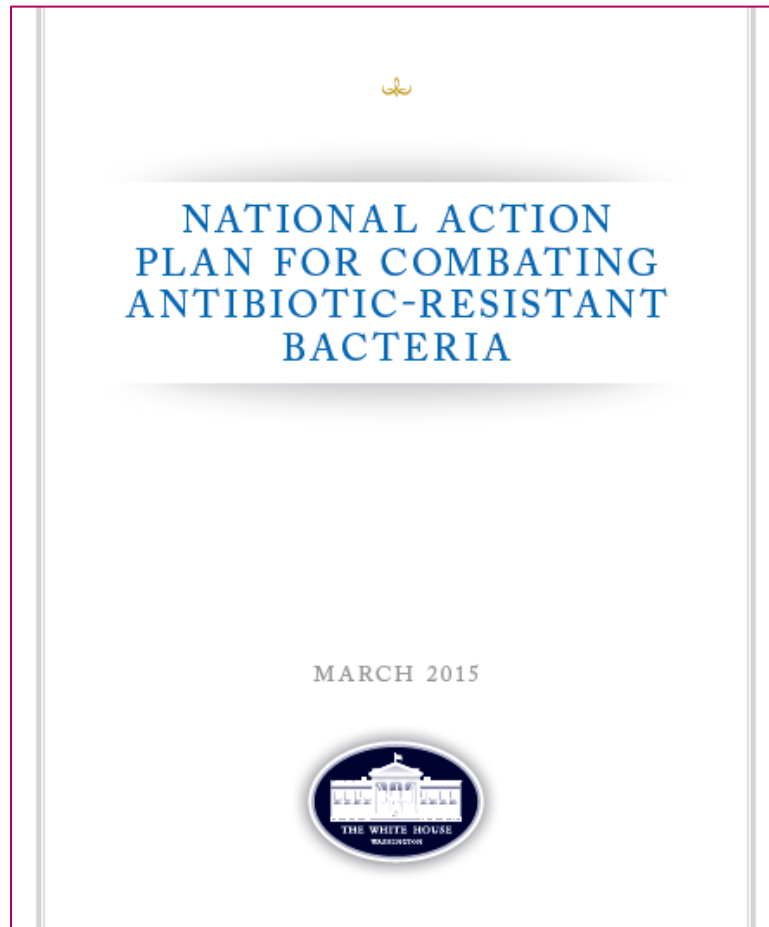
- Up to 50% of all human antibiotic use is unnecessary or “inappropriate”
- Drug-resistant bacteria cause 23K deaths and 2M illnesses per year in the US
- FY 2016 federal budget for combating antibiotic resistance = \$1.2 billion
- Goal by 2020:
 - All acute care hospitals will have ASP
 - ASP will cover all healthcare settings
 - 30% reduction of “Inappropriate” Abx use

“Meaningful Use” of Antibiotics

- “Appropriate” means...
 - Antibiotic Indicated?
 - Right Drug?
 - Right Dose and Interval?
 - Right Route?
 - Right Duration?

Combating Antibiotic Resistance

PCAST 9/2014



- 1) Slow the Emergence & Spread of Resistant Bacteria with help from **ANTIMICROBIAL STEWARDSHIP**
- 2) Strengthen National Surveillance Efforts
- 3) Advance Rapid Diagnostics
- 4) Research for New Antibiotics
- 5) Improve International Collaboration

CMS Infection Control Recent Worksheet

Centers for Medicare & Medicaid Services

Hospital Infection Control Worksheet



Name of State Agency:

Instructions: The following is a list of items that must be assessed during the on-site survey, in order to determine compliance with the Infection Control Condition of Participation. Items are to be assessed by a combination of observation, interviews with hospital staff, patients and their family/support persons, review of medical records, and a review of any necessary infection control program documentation. **During the survey, observations or concerns may prompt the surveyor to request and review specific hospital policies and procedures. Surveyors are expected to use their judgment and review only those documents necessary to investigate their concern(s) or to validate their observations.**

The interviews should be performed with the most appropriate staff person(s) for the items of interest, as well as with patients, family members, and support persons.

It is unclear how each will be interpreted

Hospital Characteristics

1. Hospital name:

2. CMS Certification Number (CCN):

3. Date of site visit: / / to / /

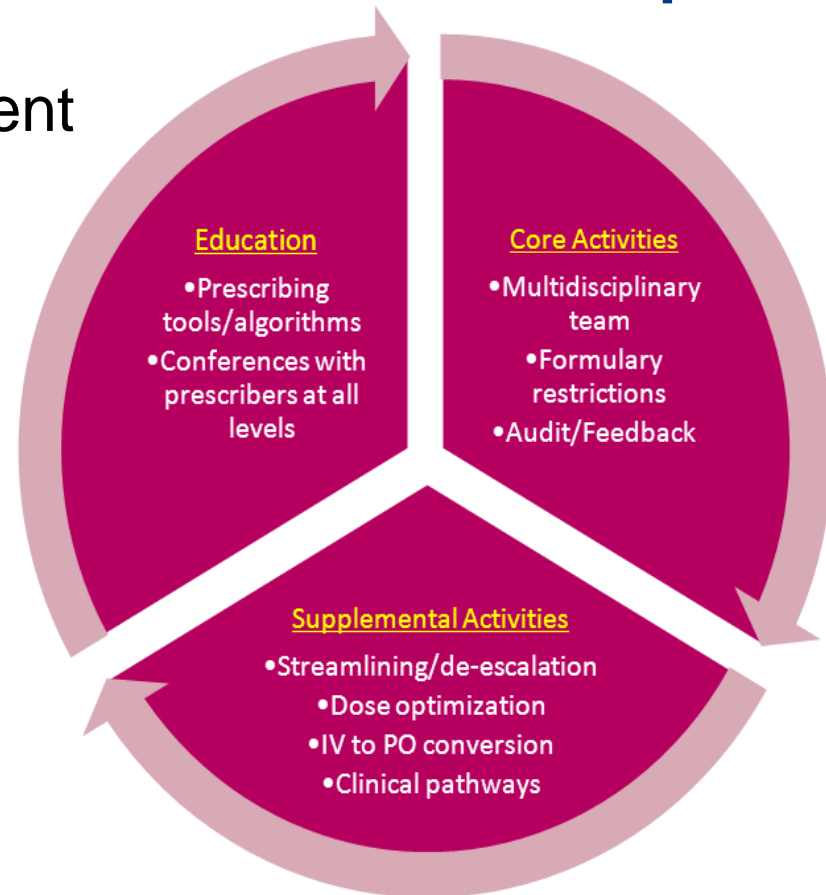
1.1212 The hospital monitors antibiotic use (consumption) at the unit and/or hospital level. Yes No

No citation risk for 1.C.9 through 1.C.13; for information only.



CDC's ASP Core Measures – How Do We Measure Up?

- ✓ Leadership commitment
- ✓ Accountability
- ✓ Drug Expertise
- ✓ Action
- ✓ Tracking & Reporting
- ✓ Education



Stewardship Interventions



- Dose optimization
- IV to PO conversion
- Streamlining & de-escalation
- Adjusting durations in accordance with guidelines
- Clinical pathways and treatment algorithms
- Maximizing functionality of electronic medical record (EMR)

Guidelines, Not One Size Fits All



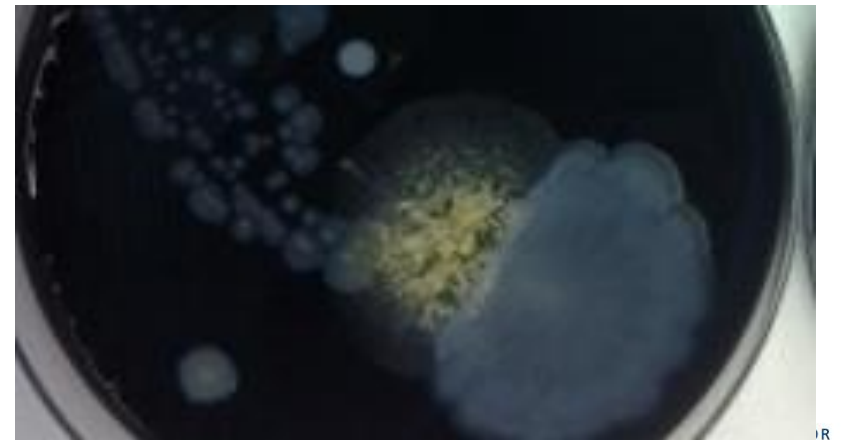
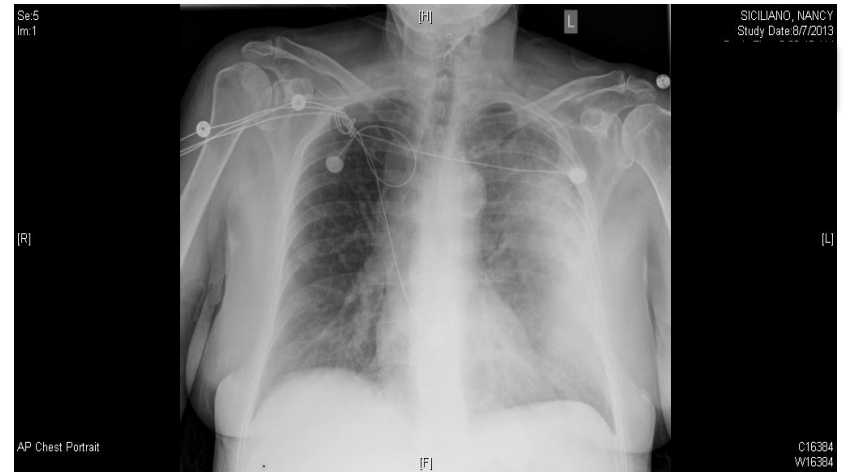
“Tailor” to your own reality (needs, size and resources)

ASP Strategies Varies By Campus

Campus	Resources	Restrictions*	Audit**	Highlights
Moses (2008-)	✓✓✓	✓✓	✓✓	-ER (CAP, Sepsis) -Zosyn Time Out
Einstein (2008-)	✓✓✓	✓✓	✓✓	-ER ID Consults - Surgical prophylaxis bundles
Wakefield (2013-)	✓✓ No fellows	✓ Modified at 72 hrs	✓✓✓	-Hospitalist De-escalation
Children's (2013-)	✓✓ shared ID PharmD	✓ Peds List	✓✓✓	-Antiviral/antifungal appropriateness, -Dosing
Ambulatory (2016)	✓	N/A	✓	-Pilot for adult respiratory

Case #1:

58 y.o. female smoker from with habitual alcohol intake presents to the ER in August with fever to 102F, myalgias, and diarrhea for 4 days. She is found to have a large left sided consolidation on X-ray. Urine Legionella antigen is positive as is culture of bronchial fluid.



Which interventions can facilitate appropriate antibiotic management of patients with community acquired pneumonia (CAP)?

- a) Placement of PO azithromycin in ER Pyxis MedStation™
- b) Automated stop duration of 14 days for CAP regimens
- c) Upfront restriction of IV piperacillin/tazobactam
- d) Developing CAP order sets in EMR

 All but b)

Volume 34, Issue 6 June 2013, pp. 566-572

Cited by 7

Antimicrobial Stewardship and Automated Pharmacy Technology Improve Antibiotic Appropriateness for Community-Acquired Pneumonia

Belinda Ostrowsky ^(a1) ^(a2), Shweta Sharma ^(a1), Maryrose DeFino ^(a1), Yi Guo ^(a1) ^(a2) ... 

DOI: <https://doi.org/10.1086/670623> Published online: 02 January 2015

- Multidisciplinary task force to improve compliance with CMS CAP measures (QI, ASP, ED)
- Quasi-experimental, before-and-after study, QI methodology (“plan, do, check, act”) w/ a **bundled intervention**:
 1. Treatment algorithm for ED providers
 2. “CAP Kit” with first line antibiotics and dosing
 3. Preloaded ER Pyxis with regimens, access audited

Results

Site	Appropriateness Before (2008)	Appropriateness After (2011)	P- value
Pilot ED	54.9%	93.4%	P = .001
2 nd ED	64.6%	91.3%	P = .004

- In an interrupted time-series logistic regression analysis, **intervention was statistically associated with improved prescribing**
- Antibiotic administration w/in 6 hours not statistically different before and after

Ostrowsky, B., et al. (2013). Antimicrobial Stewardship and Automated Pharmacy Technology Improve Antibiotic Appropriateness for Community-Acquired Pneumonia. *Infection Control & Hospital Epidemiology* (6), 566-572. doi:10.1086/670623

Interventions for CAP

Pre-authorization

Upfront restriction of IV azithromycin and fluoroquinolones

72h authorization of IV vancomycin

Formulary Restriction

Levofloxacin as Respiratory Fluoroquinolone of choice

Ceftaroline non-formulary, restricted to ID consultation

Audit & Feedback

Antibiotic orders by medicine house staff and hospitalist services

Ambulatory antibiotic prescriptions for acute respiratory tract infections

Education

First line CAP regimens

Allergy regimens


Newer literature on durations

Case #2

A 75-year-old female with COPD and active tobacco use presents with 3 days of productive cough and fevers. The patient has a remote history of rash due to penicillin given for an STD at age 18. She was hospitalized 6 weeks ago for community acquired pneumonia (CAP) and treated with levofloxacin. On exam, she is febrile and tachycardic. She is also frail, weighing only 45kg. CXR shows a right sided consolidation. WBC count is 13. Serum creatinine is 1.6mg/dL.

The patient is started on broad spectrum antibiotics and feels much improved 48 hours later.

Identify opportunities for pharmacy-driven interventions presented in the scenario

- a) Debunking allergy history
- b) Optimizing dose for host factors
- c) Duration adjustment per newer guidelines
- d) Bug-drug match by respiratory culture
- e) De-escalation from broad spectrum regimen
- f)  All of the above

Management of Adults With Hospital-acquired and Ventilator-associated Pneumonia: 2016 Clinical Practice Guidelines by the Infectious Diseases Society of America and the American Thoracic Society

- 1 in 10 ventilated patients get VAP,
 - 13% mortality rate
 - Increases ventilator days and LOS \geq 3 days
- 7 day course of therapy for hospital-acquired or ventilator-associated pneumonia (HAP, VAP) is sufficient
- Shorter course does not reduce benefits or therapy and may reduce antibiotic-associated adverse events

Penicillin Allergies



- Only **2-15%** of patients with reported penicillin allergy have a **positive skin test**
- **80% loss of IgE occurs after 10 years**
- These patients receive suboptimal, more broad, and more toxic agents
 - Associated with increased resistance, cost, hospital LOS, and mortality
 - In matched cohort study – higher rates of *C. diff*, MRSA, and increased hospital LOS

Using Antibiogram Data for Teaching

Campus 1 & 2

Inpatient Isolates (% susc.)	Cipro (or Levo)	Cefepime	Gentamicin	Aztreonam
<i>Escherichia coli</i>				
Campus 1	52	90	80	69
Campus 2	55	93	83	73
<i>Klebsiella pneumoniae</i>				
Campus 1	63	61	75	56
Campus 2	67	65	75	59
<i>Pseudomonas aeruginosa</i>				
Campus 1	75	93	92	69
Campus 2	76	95	91	75

Educational Intervention: Cases and Prescribing Tools

70 year old male with DM, active tobacco and EtOH use presents with 48 hours of cough with dark sputum, fevers up to 101F and rigors. On exam, he appears ill and has rhonchi at the R. base. CXR confirms an infiltrate. He reports a remote penicillin allergy when he was treated for syphilis in the army. **Which of the following is true about penicillin allergies?**

- Up to 10% of patients report penicillin allergies
 - Skin testing shows that most are not IgE mediated
 - Loss of IgE titers occurs with each decade of life
 - Most patients can be successfully challenged with Beta-lactam antibiotics
- e.** All of the above

Aspiration
Serial CXR, CBC, sputum culture

If treatment required
Amoxicillin/clavulanate 1.5-3g OR Ceftriaxone 600mg IV

Community Acquired Pneumonia
CBC, CXR, Urine Ag for Legionella/S. pneumoniae, sputum culture, influenza swab if in season

Hospitalized, non-severe
Ceftriaxone 1g IV + Azithromycin 500mg PO (stop if legionella Ag neg); levofloxacin 500mg PO if anaphylaxis to Penicillin

Severe CAP/ICU
Ceftriaxone 1g IV + Azithromycin 500mg IV + Vancomycin 1g IV

Severe CAP, Anaphylaxis to Penicillin
Azithromycin 500 mg IV + Aztreonam 1-2g IV + Vancomycin 1g IV (Azithromycin can be replaced with Levofloxacin 500mg IV/PO)

COPD Exacerbation

Criteria for Antibiotics
1) 3 cardinal symptoms (increased sputum volume, purulent sputum, dyspnea) OR
2) 2/3 cardinal symptoms (including sputum purulence) OR
3) Severe disease requiring positive pressure ventilation

Mild: Doxycycline OR Azithromycin

Moderate: PO Amoxicillin/clavulanate OR IV Amoxicillin/clavulanate, Ceftriaxone, Levofloxacin (severe Penicillin allergy)

Severe + RF for WRODs: Anti-pseudomonal β-lactam (i.e. Ceftazidime, PiperTaz; see below), OR levofloxacin 750mg IV (severe Penicillin allergy)

Healthcare Associated Pneumonia
Sputum culture, serial CXR, +/- Legionella Ag (if nosocomial outbreak suspected)

ATS-OSA Risk Factors for WRODs:

- Abx in preceding 90d
- current inpatient stay of at least 5d
- hospitalized at least 2d in prior 90d
- White/red care residence
- immunosuppressive disease or therapy

Mild Disease/Limited Healthcare Exposure
Ceftriaxone 1g +/- Vancomycin 1g IV

Severe Disease/VAP
Vancomycin 1g IV + either Ceftazidime 1-2g IV OR Piperacillin/tazobactam 2.25-4.5g IV; can add aminoglycoside for severe sepsis or to MDRO

Anaphylaxis to Penicillin: start Vancomycin 1g IV + either Aztreonam 1-2g IV OR Ciprofloxacin 400mg IV; can add aminoglycoside for severe sepsis or to MDRO

Influenza
Rapid influenza swab, +/- RVP and PCR, CXR

Treatment: Oseltamivir 75mg PO (Q12h dosing if QD of 30 and above)

Intra-abdominal infection
CBC, abdominal exam, US or CT, LFTs, amylase/lipase, stool C diff and culture if diarrhea

Community Acquired/Non-severe Healthcare Acquired
Ceftriaxone 1g IV OR Cefazolin 1g IV OR Ciprofloxacin 500mg PO/400mg IV + Metronidazole 500mg PO/IV

*Ciprofloxacin reserved for severe allergy to Penicillin

Severe healthcare acquired
Ceftazidime 1g IV + Metronidazole 500mg IV, OR Piperacillin/tazobactam 2.25-4.5g IV (add Metronidazole 500mg IV/PO only if C. difficile is a concern)

Evidence Based Antibiotic Durations

Syndrome	Duration
COPD flare with criteria for antibiotics	3-7 DAYS
Uncomplicated CAP	5-7 days
Complicated CAP (empyema, bacteremic, S. aureus, PNA, abscess, legionella)	Duration variable (ID consult recommended)
HCAP/VAP (not MRSA, P. aeruginosa, A. baumannii, Legionella)	7 days 7-10 days for legionella but can vary ≥ 14 days for MRSA, Pseudomonas, Acinetobacter (ID consult recommended)
HCAP/VAP w/ MRSA, P. aeruginosa, A. baumannii	14 days due to increased risk of recurrence (ID consult recommended)
Bacterial Meningitis	7-21 days depending on organism isolated (ID consult recommended)
HSV Encephalitis	14-21 days
Catheter-related Bloodstream Infection (catheter removal recommended for source control)	CoNS: 5-7 days S. aureus: 4-6 weeks, shorter if certain criteria met (ID consult recommended) CAB: 7-14 days Cardiac spp.: 14 days from first negative BCs
Influenza	5 days
Pyelonephritis	7-14 days
Uncomplicated UTI	3-5 days
Intra-abdominal	4-7 days if source controlled
SSTI	Pathogen/species specific; for non-healing lesions, unusual exposure, atypical organisms, compromised host – ID consult recommended
Neutropenic fever	Hold Abx once absolute > 48h with negative cultures and resolving neutropenia; if documented source, treat accordingly for site and organism
C. difficile colitis	Initial episode: 10-14 days 1st recurrence: 10-14 days 2nd recurrence: PO Vancomycin x 10-14 days, then taper up to 8 weeks – see ID homepage for details

Results

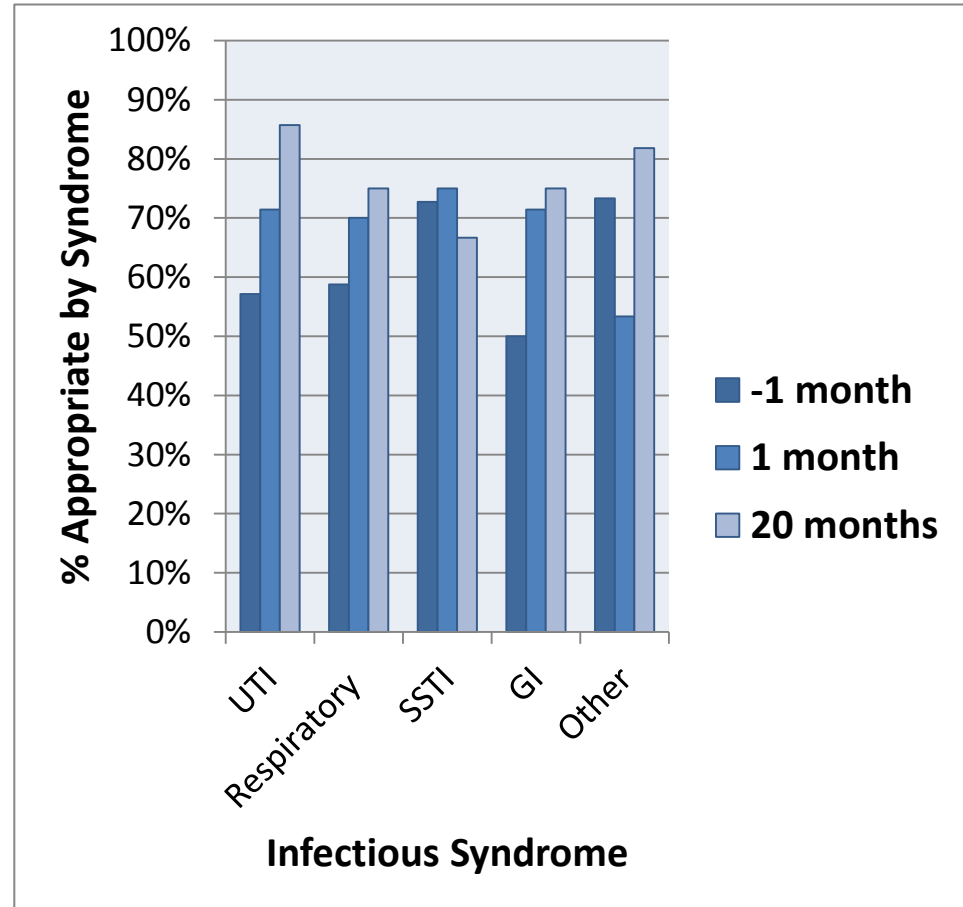
Time frame	Antibiotics Indicated	Appropriate Regimen by Syndrome	P-value
Pre-intervention (-1 month)	87% (n = 187)	60% (n = 187)	--
Post-intervention (1 month)	85% (n = 163)	70% (n = 163)	0.0496
Post- intervention (20 months)	80% (n = 75)	80% (n = 75)	P < 0.01

- ✓ At 20 months: **92% of doses and 86% of durations** were correctly chosen by house staff
- ✓ >90% of house staff were analyzed only once
- ✓ Positive impact on house staff prescribing sustained almost two years after introduction of intervention

Antibiotic Prescribing by Syndrome

Pre-intervention vs. 20 month Post-intervention by Syndrome

	-1 month	20 months	P value
UTI	57% (n=42)	86% (n=28)	0.011
Respiratory	59% (n=80)	75% (n=20)	0.001
SSTI/OM	73% (n=22)	67% (n= 12)	0.001
GI	50% (n=28)	75% (n= 4)	0.34
Other	73% (n=15)	82% (n= 11)	0.61



Antibiotic Regimens - EPIC Order Sets

Non-severe

Dept/Room/Bed: MOSES KLAU 7 / K737 / ... Attending: Rondinel, Evely... Pt Loc: MOSES DI... Allergies: Glyburide

Admit Date/Time: 02/08/2017 2340 Service: Internal Medicine... Height: 1.778 m (5'... Weight: 112.5 kg (...)

Day #: 33 Patient Class: Inpatient BMI: 35.59 kg/m²

Bronx RHIO: Gave Consent Treatment Team: NEURO...

Sets

Pneumonia: Community Acquired

Antibiotic Recommendations

Hospitalized (non severe):
Ceftriaxone 1gm IV + Azithromycin 500mg PO

For anaphylaxis to Penicillin (non severe):
Levofloxacin 500mg po(IV if unable to tolerate po or per tube)

For severe CAP/ICU:
Ceftriaxone 1gm IV + Azithromycin 500mg IV + Vancomycin 1gm IV

For severe CAP/ICU and anaphylaxis to penicillin:
Levofloxacin 500mg IV + Aztreonam 1-2gm IV + Vancomycin 1gm IV

- cefTRIAXone IV 1 gram, intravenous, once
- azithromycin tablet 500 mg, oral, once
- azithromycin IV 500 mg, intravenous, once
- vancomycin IV 1 gram, intravenous, once
- levofloxacin tablet 500 mg, oral, once
- levofloxacin IV 500 mg, intravenous, once
- aztreonam IV 1 gram, intravenous, once
- aztreonam IV 2 gram, intravenous, once

Pneumonia: Health Care Associated

Severe sepsis/shock

Order Sets

These regimens are for intial regimen adult severe sepsis/septic shock patients only. Restrictions apply on subsequent doses.

The regimens can not cover all clinical situations. Use clinical judgement and call ID for assistance.

Orders will be audited.

- Pregancy with Severe Sepsis/Septic Shock
- CV Catheter Associated
- Intra-abdominal
- Meningitis
- Neutropenic Fever
- Out of Hospital Cardiac Arrest
- Pneumonia: Community Acquired

Antibiotic Recommendations (Use Clinical Judgment)

For severe CAP/ICU:

- Ceftriaxone 1gm IV + Azithromycin 500mg IV + Vancomycin 1gm IV

For severe CAP/ICU and anaphylaxis to penicillin:

- Levofloxacin 500mg IV + Aztreonam 1-2gm IV + Vancomycin 1gm IV

- cefTRIAXone IV 1 gram, intravenous, once
- azithromycin IV 500 mg, intravenous, once
- vancomycin IV 1 gram, intravenous, once
- levofloxacin IV 500 mg, intravenous, once
- aztreonam IV 1 gram, intravenous, once
- aztreonam IV 2 gram, intravenous, once



Maximizing Use of EMR

CSN: 372811283 | Broth KHIO, Gave Consent | Treatment Team: NEPHROLOG | (Wt: 32.43 kg/m²) | Precip

Antimicrobial Stewardship

- Bug-Drug Mismatch Assessment
New Reading
No data found.
- De-Escalation
New Reading
No data found.
- Drug-Lab Mismatch Assessment
New Reading
No data found.
- IV to PO Conversion Assessment
New Reading
No data found.
- Duplicate Coverage Assessment
New Reading
No data found.
- Restricted Therapy Assessment
New Reading
No data found.
- Antibiotic Approval Note
Create Note | Go to Notes | Refresh

All Antibiotic Approval Notes

Author	Notes
Priya Nori, MD	
Peter Lawrence Alpert, MD	
Peter Lawrence Alpert, MD	
Peter Lawrence Alpert, MD	
Jung Won Kim, PharmD	
Alexander C Drelick, MD	

Priya Nori, MD
Add | Delete

Antimicrobial Stewardship Team Note

Antibiotic Approval Note

Drug: IV cefepime 2g post HD x 7 doses

Approving MD/PharmD

Stewardship Dashboard

STILL A WORK IN PROGRESS

AS Tab

Educational Tools Evolved Over Time

Enter Order Set

COMMUNITY ACQUIRED PNEUMONIA ABX

Ordered By: HEAD, MICHAEL J. RN Order Mode: Order Set Reference: Antibiotic recommendations (use clinical judgment)

Signed By: SEE PAPER, RECORD

Change Start Date/Time in this box:

X Order Description

- Adult ED CAP Abx OS
- AZITHROMYCIN 500MG TABLET
- AZITHROMYCIN 500MG IVPB
- AMMON CHL/DM HB/PPA/CP SYRP P
- CEFTRIAXONE 1GM/ISO DEXTOSE 5
- LEVOFLOXACIN/D5W 500MG/100ML
- VANCOMYCIN 1G IVPB

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Antimicrobial Stewardship Program:
Initial Empiric Regimens for Infectious Syndromes in Admitted Adult Patients

Disclaimer:

- ▶ Common inpatient syndromes only
- ▶ Prior microbiology/MONs are not accounted for
- ▶ Non-organism, immune-compromised hosts only
- ▶ Does not replace clinical judgment
- ▶ Dosing/frequency may depend on renal function and weight (beta-lactams, IV vanis, gentis, streptomis, beta-lactams, etc.)
- ▶ Reassess antibiotics daily and streamline when possible
- ▶ Can always call ID/pharmacy for help!

Aspiration: Serial CXR, CBC, sputum culture
*If treatment required: Ampicillin/sulbactam 1.5-3g OR Clindamycin 600mg IV

Community Acquired Pneumonia: CBC, CXR, Urine Ag for Legionella/S. pneumoniae, sputum culture, influenza swab if in season

-Hospitalized, non-severe: Ceftriaxone 1g IV + Azithromycin 500mg PO (stop if legionella Ag neg); levofloxacin 500mg PO if anaphylaxis to Penicillin

-Severe CAP/ICU: Ceftriaxone 1g IV + Azithromycin 500mg IV + Vancomycin 1g IV

-Severe CAP, Anaphylaxis to Penicillin: Azithromycin 500 mg IV + Aztreonam 1-2g IV + Vancomycin 1g IV (Azitra can be replaced with Levofloxacin 500mg IV/PO)

COPD Exacerbation:

Criteria for Antibiotics: 1) 3 cardinal symptoms (increased sputum volume, purulent sputum, dyspnea), OR 2) 2/3 cardinal symptoms (including sputum purulence), OR 3) severe disease requiring positive pressure ventilation

Treatment: Oseltamivir 75mg PO (Q12h dosing if CrCl of 30 and above)

Intra-abdominal Infection: CBC, abdominal xray, U/S or CT, LFTs, amylase/lipase, stool C.diff and culture if diarrhea

-Mild: Doxycycline OR Azithromycin
-Moderate: PO Amoxicillin/clavulanate, OR IV Ampicillin/sulbactam, Ceftriaxone, Levofloxacin (severe beta-lactam allergy)

-Community acquired/non-severe healthcare acquired: [Ceftriaxone 1g IV OR Cefoxitin 1g IV OR Ciprofloxacin 500mg PO/400mg IV] + Metronidazole 500mg PO/IV
*Levofloxacin reserved for severe allergy to

call ID!!!

-Neurosurgery related: Vancomycin 1g IV + Cefepime 2g IV; call ID!!!

Neutropenic Fever: look for focal sx/signs or exam and history, blood cultures, UA/UCx, CXR

Treatment: Cefepime 2g IV

-Criteria for adding Vancomycin 1g IV:
-blood cultures positive for GP organisms
-clinical concern antibiotic resistance

Antimicrobial Stewardship - Windows Internet Explorer

http://intranet.montefiore.org/intranet/25168/body.cfm?id=4974

File Edit View Favorites Tools Help

Google

Search Share More

Belinda Ostrowsky

Antimicrobial Stewardship

Montefiore

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- Electronic Occurrence Reporting
- CHAM Website

Antimicrobial Stewardship

The Antimicrobial Stewardship Program (ASP) and Pediatrics, and Department of Pharmacy, with microbiology, infection prevention, safety prescribing across the Montefiore Medical Center. The goal is improve patient care.

We look for ASP physician champions in every area.

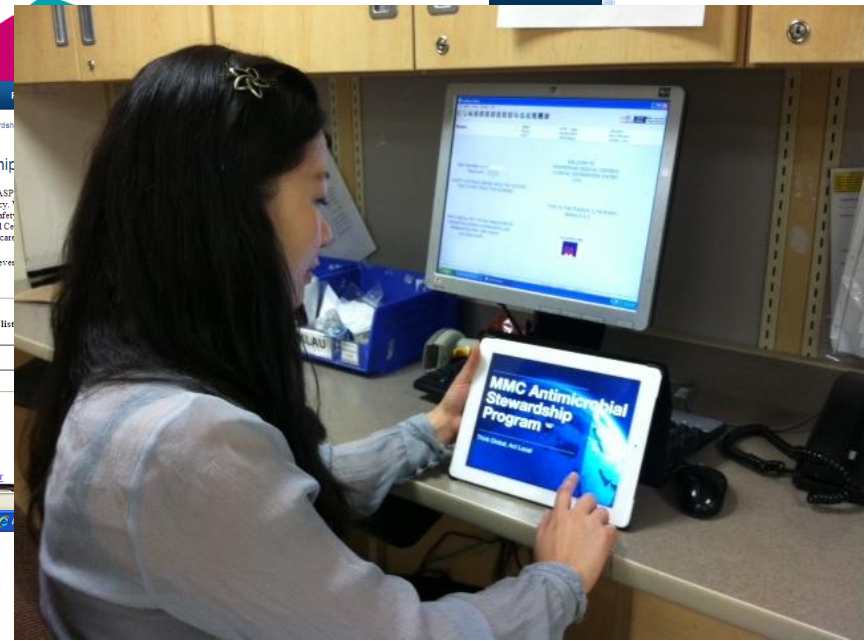
Please see below for restricted antibiotic list

Click to view LD text paging grid

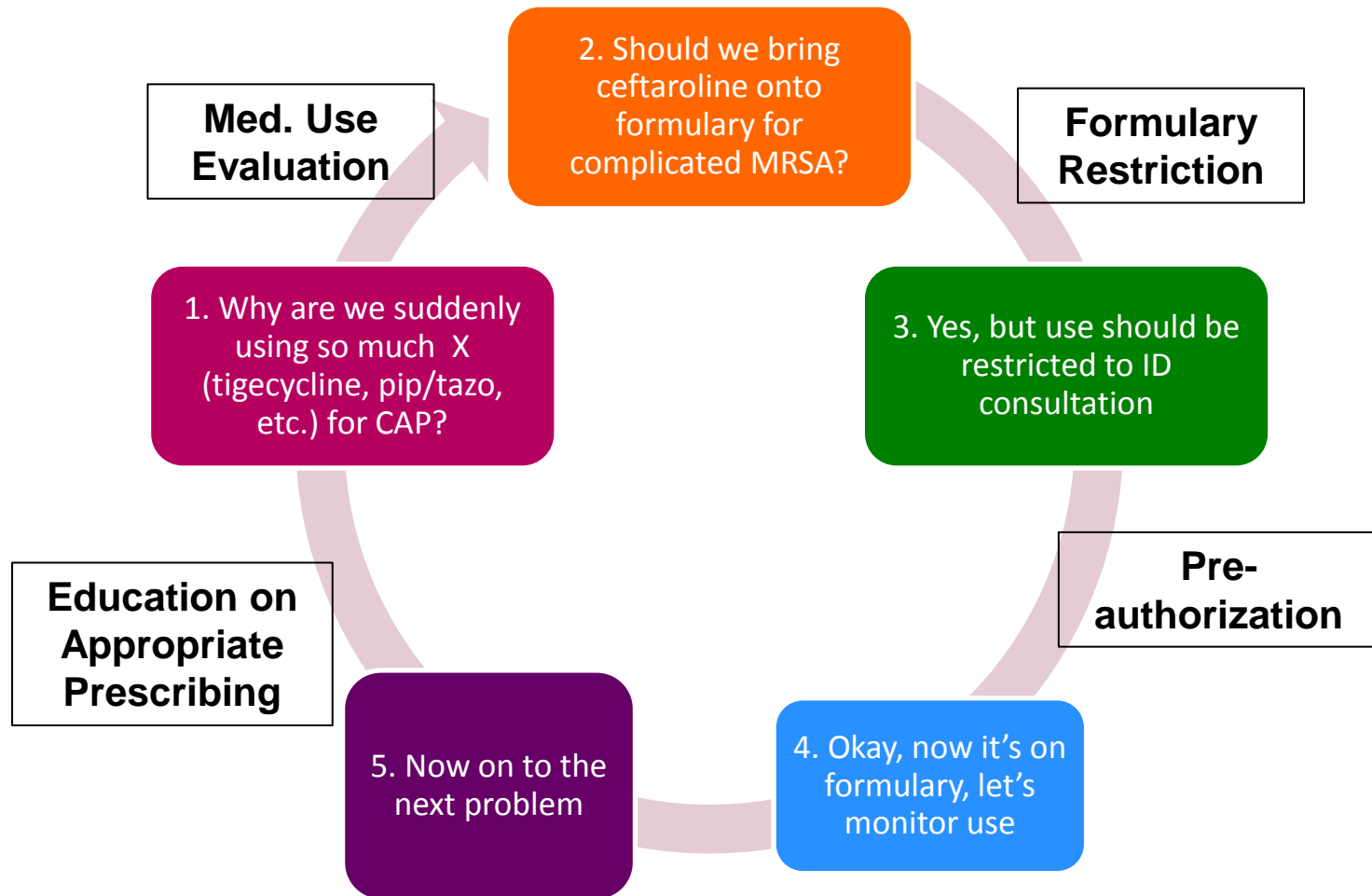
Adult Stewardship Approvals

Login ID:

start Inbox - BOSTROWS... materials for fellow's... Montefiore Medical C...



#Stewardship_Problems

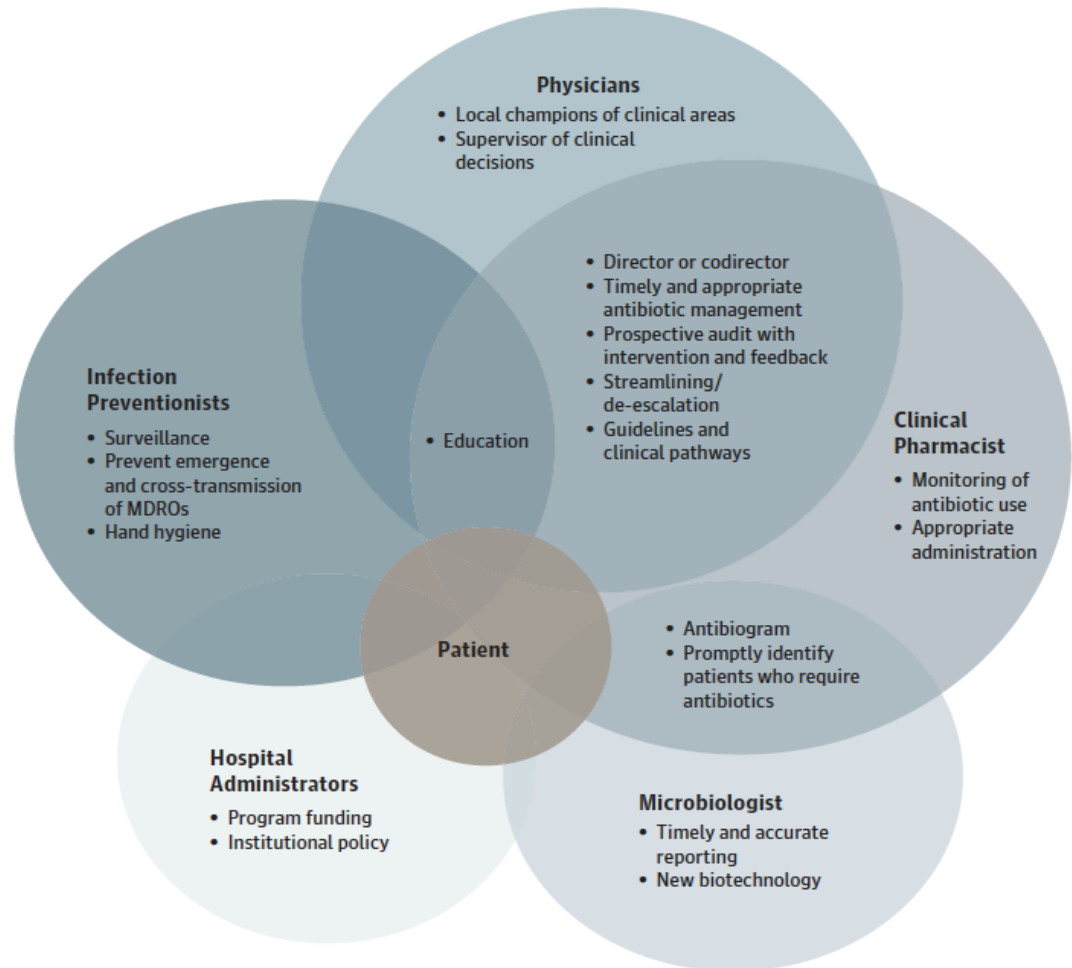


So Many MUEs, So Much to Do...

Problem/Antimicrobial	Action
Adult	
Quinolones	Restriction changes
Daptomycin	De-escalating to other alternatives
Ganciclovir/Foscarnet	Presenting institution specific data to oncology department
Ceftaroline	Monitor appropriateness
Ceftolozane/tazobactam, Ceftazidime/avibactam	Monitor appropriateness
Pediatric	
Palivizumab	Restriction/tracking/batching
Meropenem	Restricting to NICU
Antifungals	Ongoing monitoring
Others	
CAP Treatment guidelines	Reducing inappropriate antibiotic use
Surgical prophylaxis guidelines	Reducing inappropriate antibiotic use
High risk or last resort antimicrobials	Ongoing monitoring

Core Stewardship Team & Extended Family

1. ID pharmacy manager at each campus
2. Systems director, medical directors, ASP fellow
3. New ID/ASP - CCM service
4. Data analyst
5. On-site clinical microbiology lab



Hyun et al JAMA 2013

Partner with Microbiology

- **Early:**
 - Creation and dissemination of Antibigrams
 - Creation of testing and reporting cascades
- **Intermediate:**
 - New viral and influenza testing platforms
 - Sensitive *Clostridium difficile* testing
- **Complex:**
 - Introduction rapid diagnostics (e.g., MALDI-TOF)

Preliminary Outcomes for Severe Sepsis/Shock (conventional vs MALDI- TOF)

	March-April 2013 (n=96)	March-April 2014 (n=69)
Gram-negative + <i>S.aureus</i>*		
Time to Org ID (hours)	51.8	31.8
Time to Streamlined Susceptible Regimen (hours)	74.2	58.1
Time to ID consultation (hours)	35.1	16.3
Time to microbiological clearance (hours)	69.2	55.9
Unadjusted mortality (%)	23.9	18.8
Length of Stay (days)	10.6	10.1

Relationship holds when subgrouped by Gram-negative or *S.aureus*
 Park *et al.* IDweek abstract, 2015

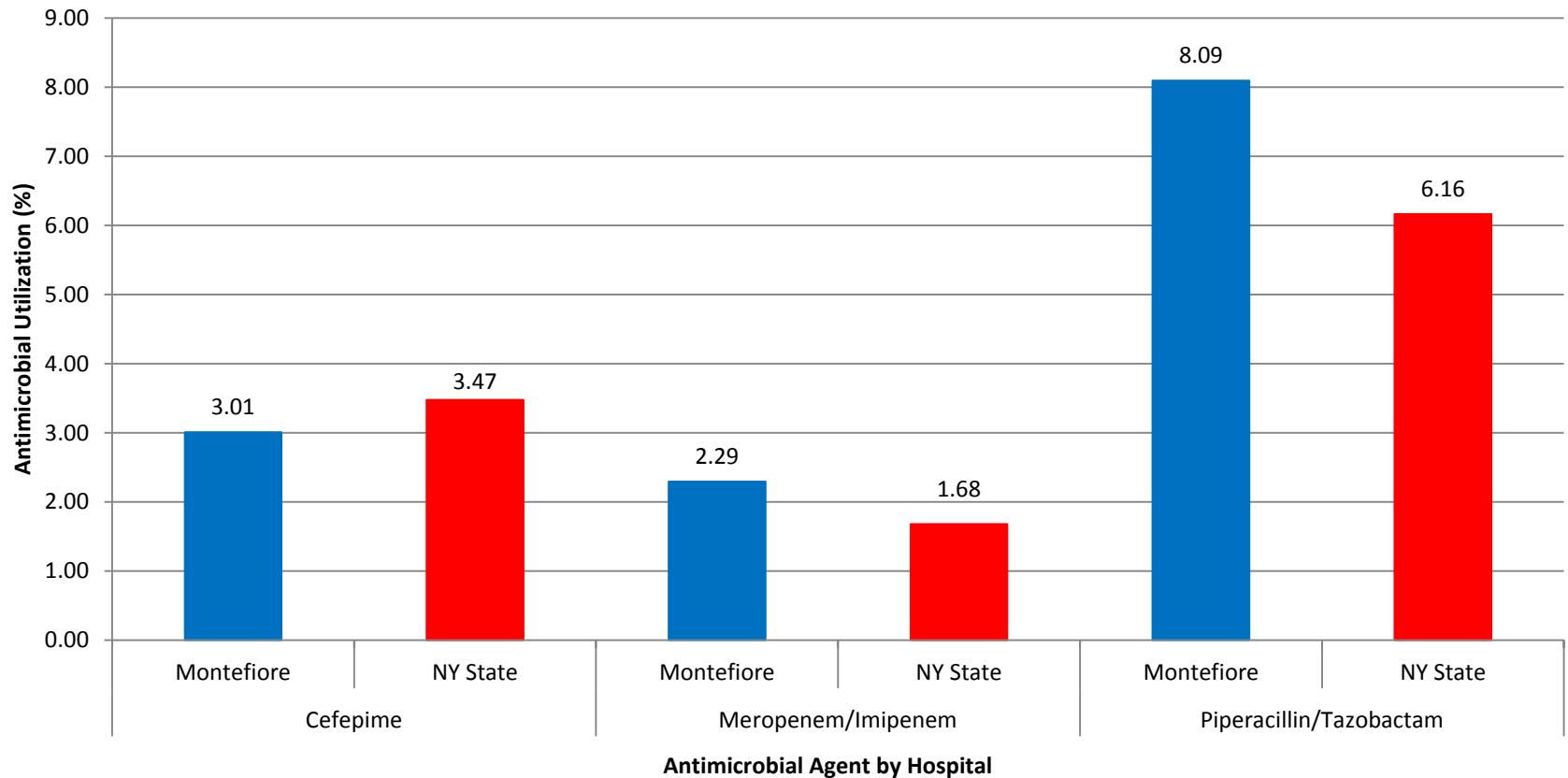
Let the Debate Begin... Use the Data

- Attended Hematology/Oncology QI meeting
- ASP and ID went as team with data

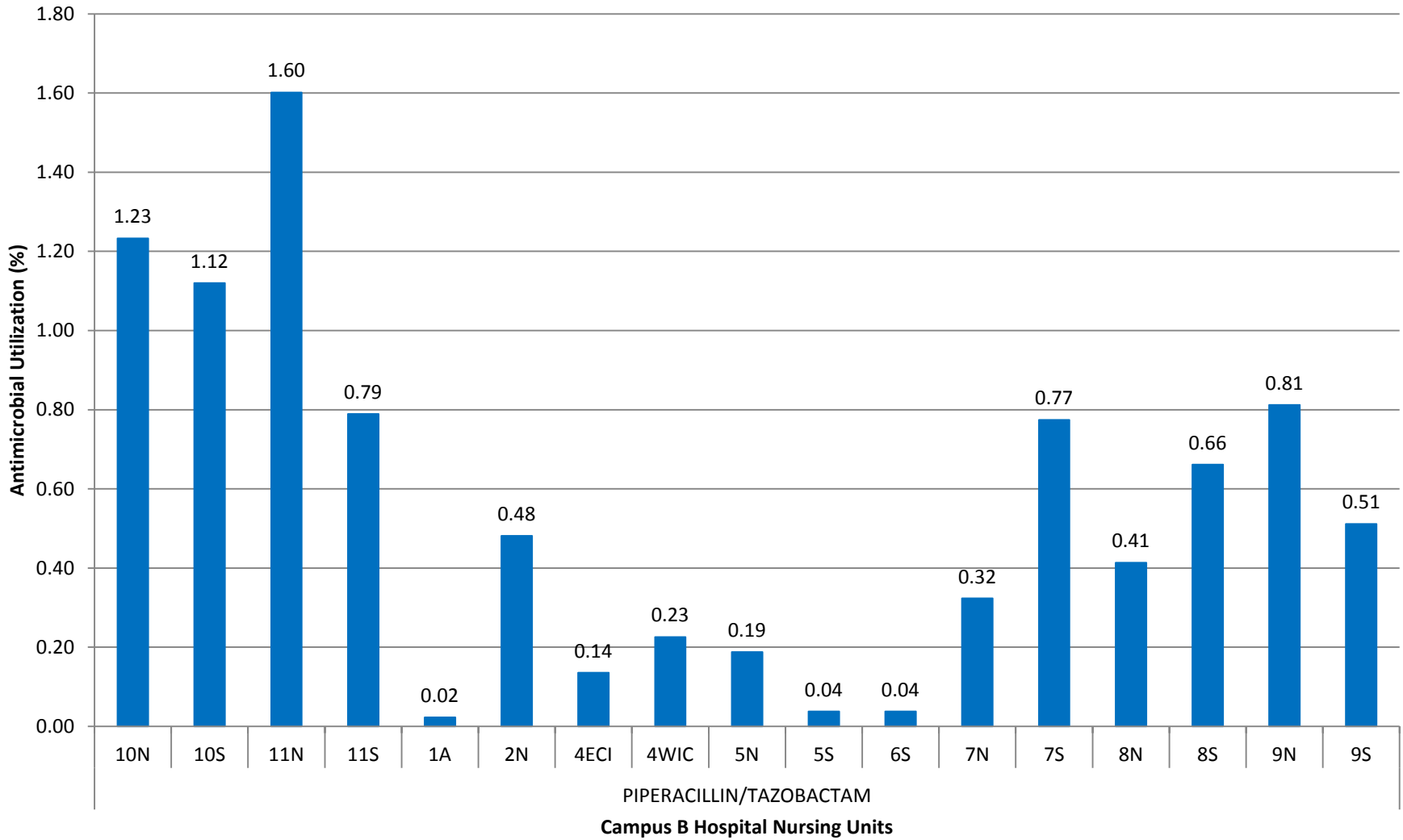


Making a Persuasive ASP Case Using Pilot days of therapy (DOT) data

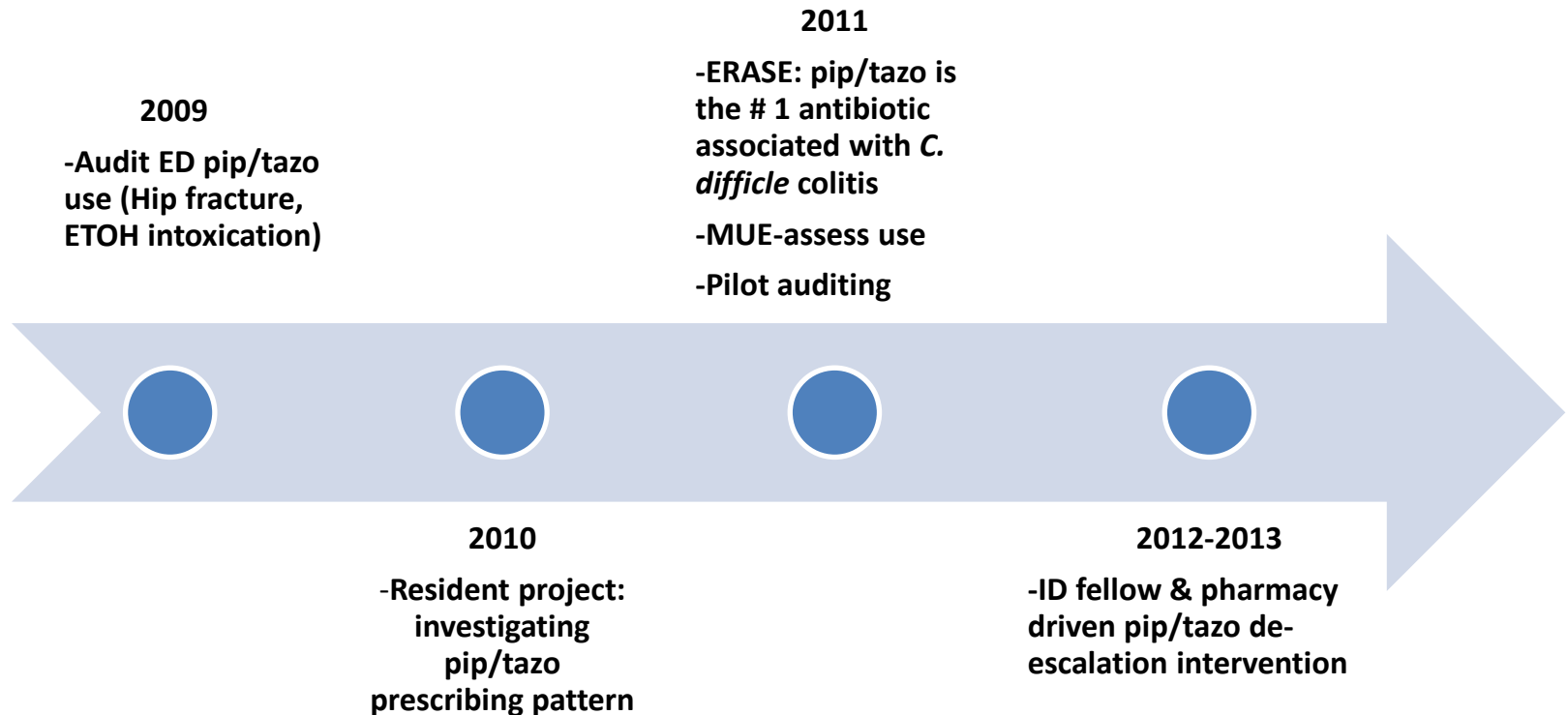
Antimicrobial Utilization by Agent and Hospital



Antimicrobial Utilization by Nursing Units



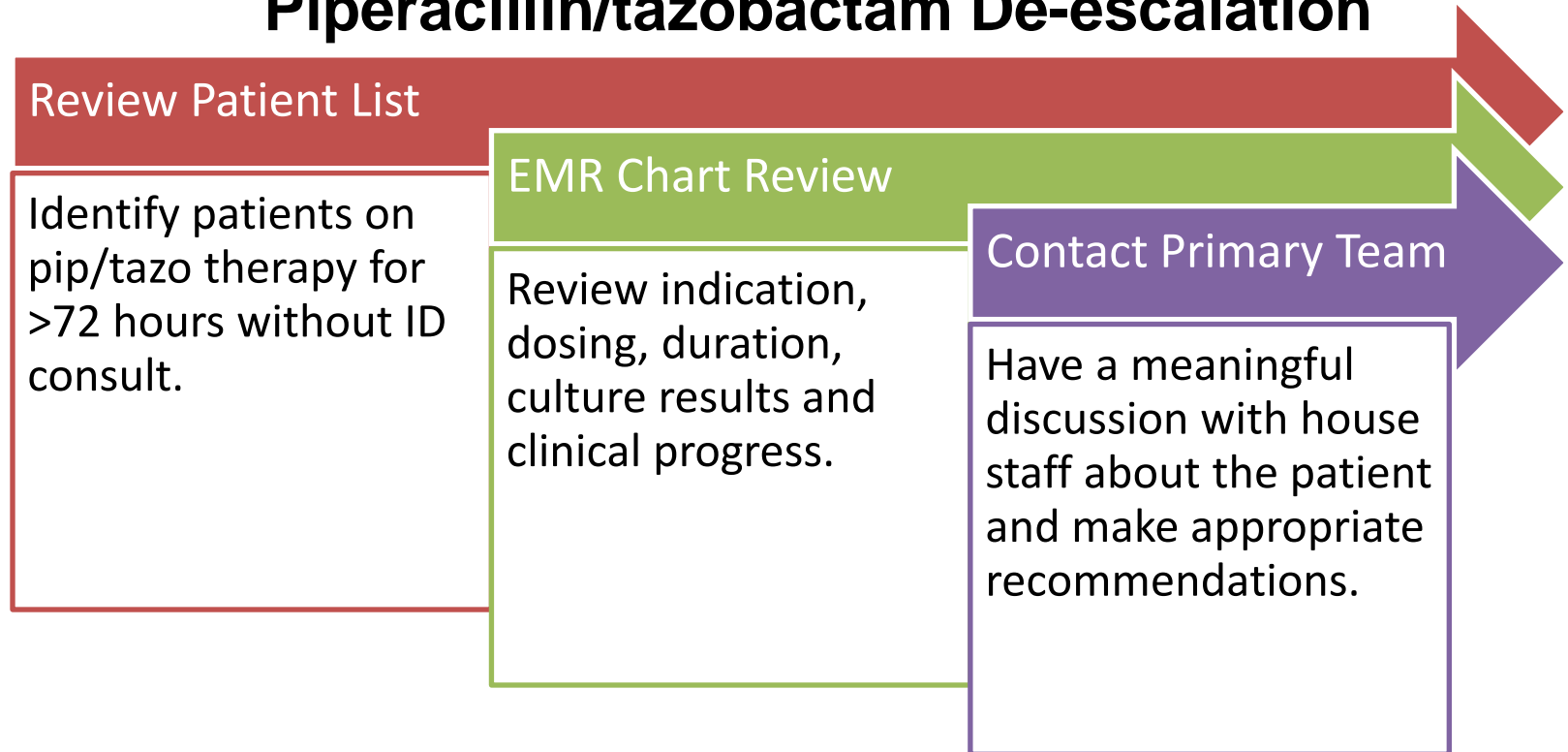
This is Not a New Finding...



Pip/tazo: Piperacillin/tazobactam

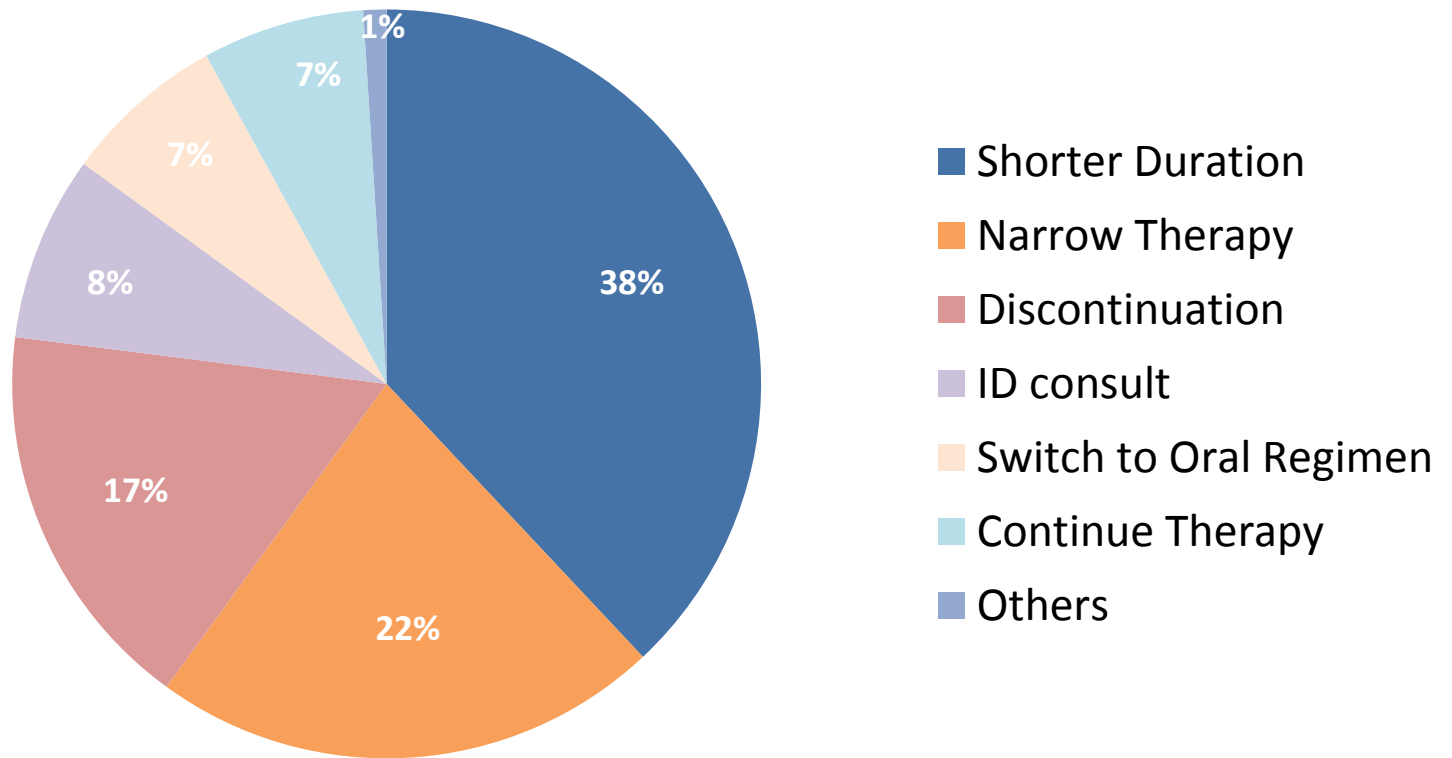
Action Plan

Piperacillin/tazobactam De-escalation



Results (May-July 2013, n=60)

Type of Intervention



Collaboratives—Working Together in NYS on CDI*

Dates	Facilities	Collaborators	Interventions	Outcomes
2008-2009 ¹	35	NYS DOH +GNYHA/ UHF	-IPC & Cleaning Bundles -Education	↓ Mean HO-CDI
2010-2012, ^{2,3}	10	GNYHA/ UHF + AHRQ/ CDC + Montefiore	-CDI directed ASP -Education	↓ CDI Targeted antibiotics AHRQ CDI Toolkit
2015- on	80	GNYHA/ UHF + NYSCHSP + Montefiore	-ASP Course -ASP survey -CDI Point Prevalence -CDI ASP Posters	<u>Facilities (n)</u> 80 61 53 16

GNYHA/ UHF=Greater NY Hospital Association/ United Hospital Fund, NYSCHSP= NYS Council Health Systems Pharmacists, HO-CDI= Hospital onset CDI

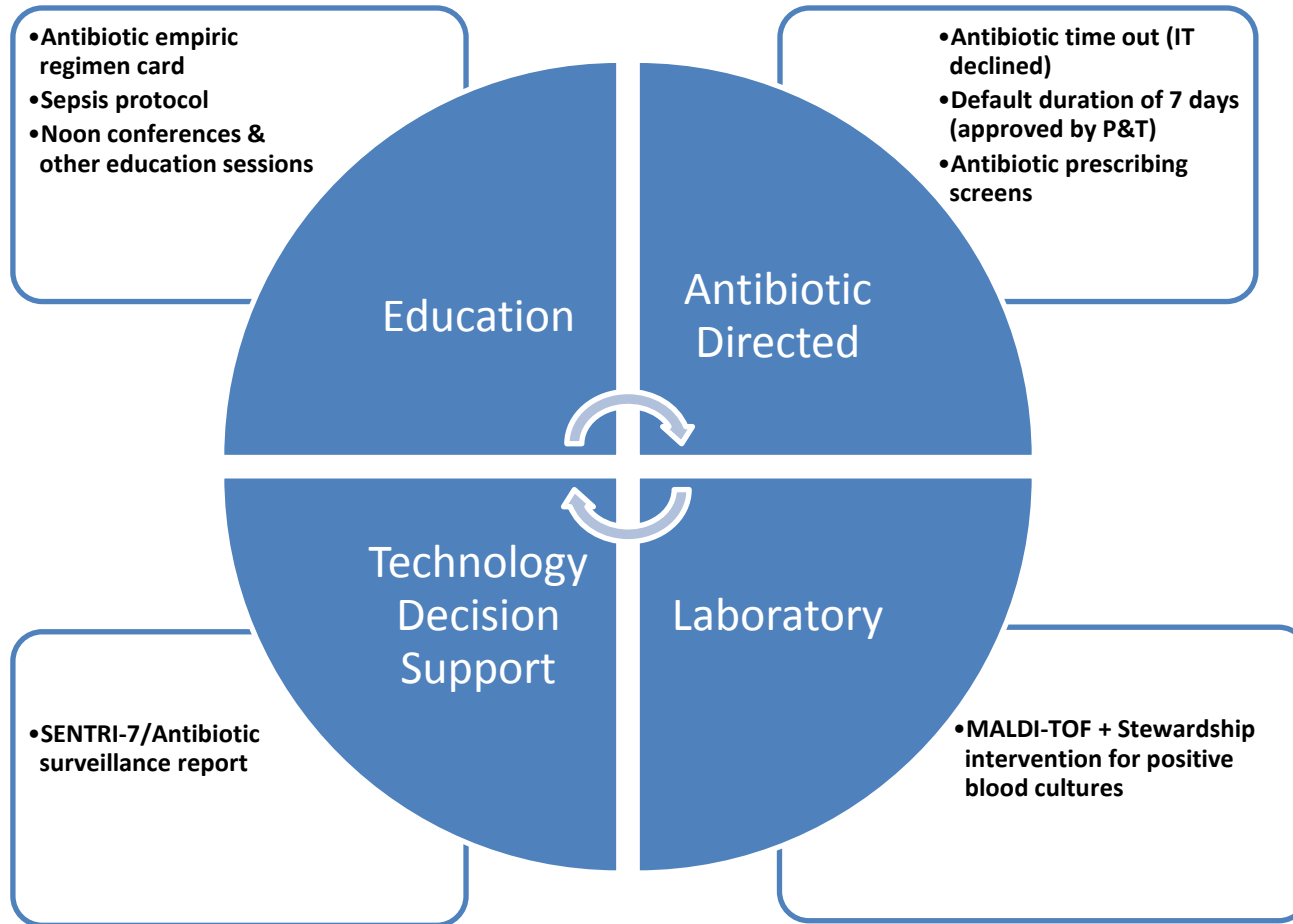
1) Koll. J. Healthcare Quality. 2013; 36 (3): 35-45.

2) Ostrowsky. ICHE. 2014: suppl 3:S86-95.

3) AHRQ Toolkit Available at: <http://www.ahrq.gov/professionals/quality-patient-safety/patient-safety-resources/resources/cdiff toolkit/index.html#>

* Addition NYSDOH collaborative LTCF and CDI

Additional Montefiore ASP Activities



Stewardship Program “Timeout”

1. Examine your **routine activities**
2. **Take credit** for strategies already in place
3. Address new federal regulations with well **documented policies**
4. Perform a needs assessment and ask **“what am I not yet doing?”**

Take Home Lessons

- CDC Core ASP Strategies are resources
- ASP needs to be tailored to your facility.
- ASP development & implementation takes time
- ASP is a team sport
- ASP activities:
 - Likely already exist
 - Can start simple, grow/ expand with the program
 - Must do because regulated (**should do because it is important for your patients**)
- Learn from other ASPs (we can be your resources)

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