



University
HOSPITAL

Newark, NJ

Antimicrobial Stewardship at University Hospital



University
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Newark, NJ

Objectives

- Define what antimicrobial stewardship (ASP) is and its role in improving antimicrobial use
- Discuss antibiotic overuse in areas of care and the consequences of antimicrobial misuse
- Review pertinent regulatory oversight regarding the use of antimicrobials
- Describe antimicrobial stewardship activities at UH to promote optimal antimicrobial use

What is Antimicrobial Stewardship (ASP)?

- ASP is a coordinated program that promotes the use of antimicrobials by:
 - Assisting in the selection, dosing, and duration of optimal antimicrobial therapy
 - Reducing antimicrobial resistance and spread of infections by multidrug-resistant organisms
 - Ultimately, improving patient outcomes and reducing length of stay and hospital costs
- Antimicrobial stewardship is about patient safety and delivering high-quality healthcare

ANTIBIOTIC STEWARDSHIP
IN YOUR FACILITY WILL

DECREASE (indicated by a green downward arrow)

- ANTIBIOTIC RESISTANCE
- C. DIFFICILE INFECTIONS
- COSTS

INCREASE (indicated by a yellow upward arrow)

- GOOD PATIENT OUTCOMES

ANTIBIOTIC STEWARDSHIP PROGRAMS ARE A "WIN-WIN" FOR ALL INVOLVED

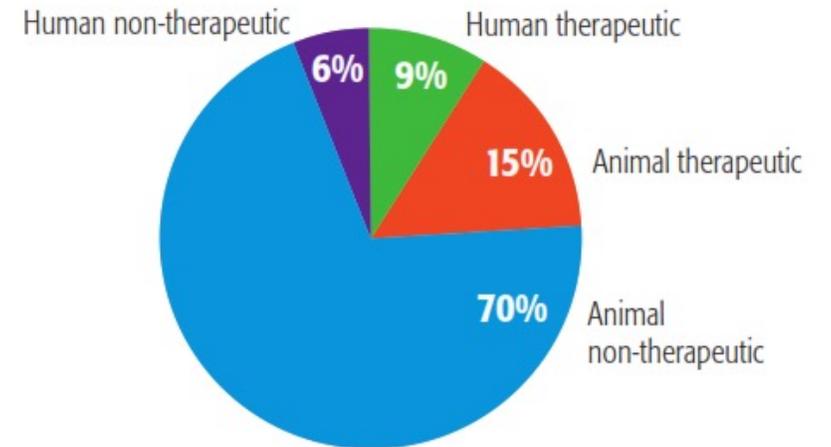
A UNIVERSITY OF MARYLAND STUDY SHOWED ONE ANTIBIOTIC STEWARDSHIP PROGRAM **SAVED A TOTAL OF \$17 MILLION** OVER EIGHT YEARS

ANTIBIOTIC STEWARDSHIP HELPS IMPROVE PATIENT CARE AND SHORTEN HOSPITAL STAYS, THUS BENEFITING PATIENTS AS WELL AS HOSPITALS

The Rising Threat of Antimicrobial Resistance Does Not Have One Single Fix!

- Antimicrobial prescribing facts: “The **30% Rule**”
 - ~ **30%** of all hospitalized inpatients at any given time receive antibiotics
 - Over **30%** of antibiotics are prescribed inappropriately in the community
 - Up to **30%** of all surgical prophylaxis is inappropriate
 - ~ **30%** of hospital pharmacy costs are due to antimicrobial use
 - **10-30%** of pharmacy costs can be saved by ASP

Figure 1. Current use of antibiotics in the United States.



Source: www.pewhealth.org

The full impact is unknown. There is no system in place to track antibiotic resistance globally



Without urgent action, many modern medicines could become obsolete, turning even common infections into deadly threats.

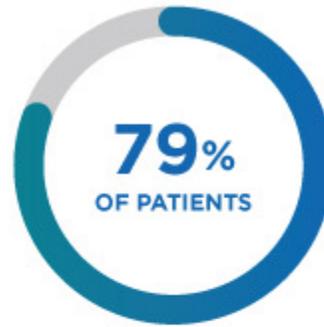


NEW CDC DATA

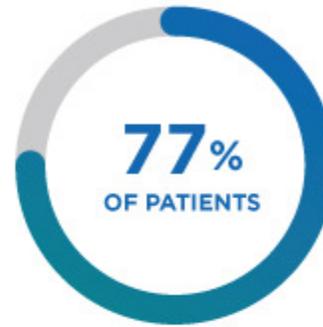
MORE THAN HALF OF ANTIBIOTIC PRESCRIBING FOR SELECTED EVENTS IN HOSPITALS WAS NOT CONSISTENT WITH RECOMMENDED PRESCRIBING PRACTICES



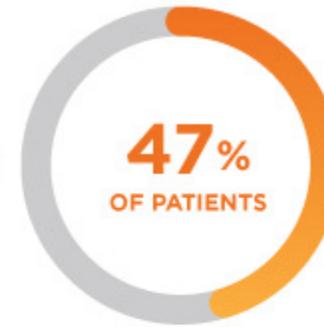
ANTIBIOTIC PRESCRIBING WAS NOT SUPPORTED IN:



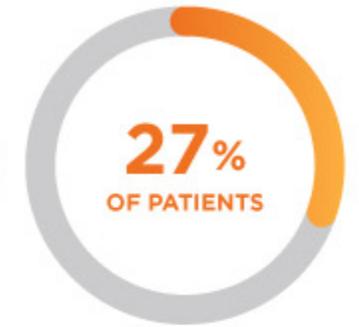
with community-acquired pneumonia



with urinary tract infections



prescribed fluoroquinolone treatment



prescribed intravenous vancomycin antibiotic

HOSPITAL PRESCRIBERS & PHARMACISTS CAN IMPROVE PRESCRIBING:



Optimize antibiotic selection



Re-assess antibiotic treatment when the results of diagnostic testing are available



Use the shortest effective duration of therapy

FIND RESOURCES ON HOW TO IMPROVE HOSPITAL ANTIBIOTIC USE AND HELP FIGHT ANTIBIOTIC RESISTANCE:
<https://bit.ly/HospitalCoreElements>

CDC Core Elements of Hospital ASP

- Provides a framework for implementation of ASP across the country
- Used by Joint Commission & CMS for quality improvement/assurance

CDC. Core Elements of Hospital Antibiotic Stewardship Programs. Atlanta, GA: US Department of Health and Human Services, CDC; 2014.

Core Elements of Hospital Antibiotic Stewardship Programs



Hospital Leadership Commitment

Dedicate necessary human, financial, and information technology resources.



Accountability

Appoint a leader or co-leaders, such as a physician and pharmacist, responsible for program management and outcomes.



Pharmacy Expertise (previously “Drug Expertise”):

Appoint a pharmacist, ideally as the co-leader of the stewardship program, to help lead implementation efforts to improve antibiotic use.



Action

Implement interventions, such as prospective audit and feedback or preauthorization, to improve antibiotic use.



Tracking

Monitor antibiotic prescribing, impact of interventions, and other important outcomes, like *C. difficile* infections and resistance patterns.



Reporting

Regularly report information on antibiotic use and resistance to prescribers, pharmacists, nurses, and hospital leadership.



Education

Educate prescribers, pharmacists, nurses, and patients about adverse reactions from antibiotics, antibiotic resistance, and optimal prescribing.

UH ASP - Examples of CDC Hospital ASP Core Elements



Hospital Leadership Commitment

Dedicate necessary human, financial, and information technology resources.

UH ASP has dedicated stewardship staffing and resources



Accountability

Appoint a leader or co-leaders, such as a physician and pharmacist, responsible for program management and outcomes.

UH ASP is led by a dedicated physician and 2 pharmacists



Action

Implement interventions, such as prospective audit and feedback or preauthorization, to improve antibiotic use.

UH ASP provides Prospective Audit & Feedback, Formulary Preauthorization, and provides Clinical Treatment Guidelines



Tracking

Monitor antibiotic prescribing, impact of interventions, and other important outcomes, like *C. difficile* infections and resistance patterns.

UH ASP tracks Antimicrobial Use data using CDC-NHSN antimicrobial surveillance module



The Core Elements of Outpatient Antibiotic Stewardship



Commitment

Demonstrate dedication to and accountability for optimizing antibiotic prescribing and patient safety.



Action for policy and practice

Implement at least one policy or practice to improve antibiotic prescribing, assess whether it is working, and modify as needed.



Tracking and reporting

Monitor antibiotic prescribing practices and offer regular feedback to clinicians, or have clinicians assess their own antibiotic prescribing practices themselves.



Education and expertise

Provide educational resources to clinicians and patients on antibiotic prescribing, and ensure access to needed expertise on optimizing antibiotic prescribing.

Joint Commission Requirements for Hospital Antibiotic Stewardship (MM.09.01.01)



Hospitals establish antibiotic stewardship as an organizational priority through support of ASP by adhering to below 12 elements of performance (EPs)

Inpatient ASP EPs	Inpatient ASP EPs
Allocates Resources	Strategies to Optimize Prescribing
Program Leaders with ASP/ID Training	Implement Guidelines
Program Leader Responsibilities	Evaluate Guideline Adherence
Multidisciplinary Committee	Collect, Analyze, and Report Data
Monitor Antibiotic Use	Act on Improvement Opportunities



Joint Commission Requirements for Ambulatory Antibiotic Stewardship (MM.09.01.03)



Effective January 1, 2020, antimicrobial stewardship requirements are applicable to ambulatory care settings that routinely prescribe antibiotics

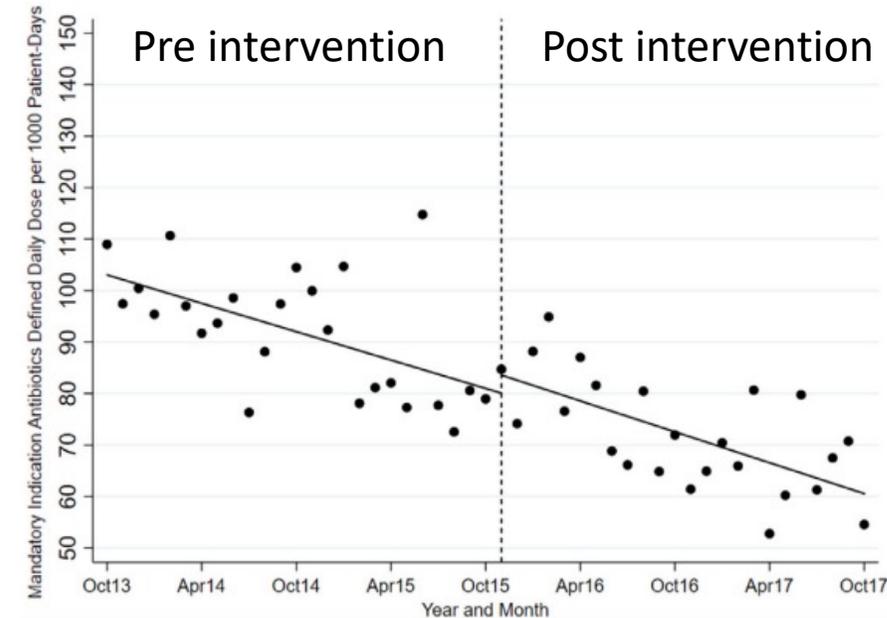
1. The organization identifies an individual(s) responsible for developing, implementing, and monitoring activities to promote appropriate antimicrobial medication prescribing practices.
2. The organization sets at least one annual antimicrobial stewardship goal.
3. The organization uses evidence-based practice guidelines related to its annual antimicrobial stewardship goal(s).
4. The organization provides all clinical staff and licensed independent practitioners with educational resources related to its antimicrobial stewardship goal(s) and strategies that promote appropriate antimicrobial medication prescribing practices.
5. The organization collects, analyzes, and reports data pertaining to the antimicrobial stewardship goal(s) to organizational leadership and prescribers.

Improved Patient Outcomes Associated with Antimicrobial Stewardship – Example #1

Evaluating the impact of mandatory indications on antibiotic utilization

- Intervention
 - All adult electronic intravenous and enteral orders for targeted antibiotics had a mandatory indication field added
- Outcomes
 - Decreased usage of targeted antibiotics
 - 92.02 vs 72.07 DDD/1000-PD
 - Defined Daily Doses (DDD) per 1000 patient days (PD)

Chan AJ et al. Antimicrob Steward Healthc Epidemiol. 2022 Jul 1



Improved Patient Outcomes Associated with Antimicrobial Stewardship – Example #2

Swingler EA et al. Antimicrob Steward Healthc Epidemiol. 2022 Nov 16

Fluoroquinolone stewardship at a community health system:

- Interventions:
 - Guidelines for optimal antimicrobial use
 - Order-set updates
 - Provider and pharmacist education
 - Prospective audit and feedback for patients on broad-spectrum antimicrobials
- Outcomes
 - **74% decrease in inappropriate broad-spectrum agent use**
 - Improved antibiotic susceptibility for *Pseudomonas aeruginosa* and *E.coli*

ASPs decreased
inappropriate broad-spectrum agent use
→ Improved drug susceptibility!

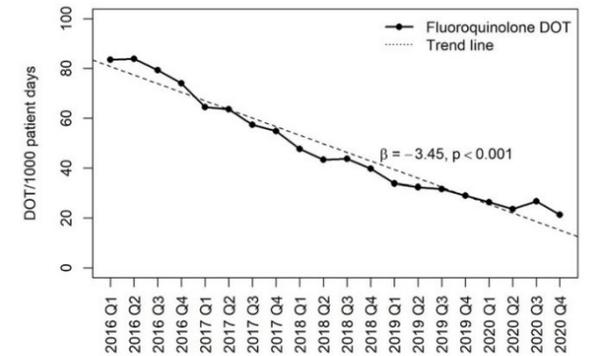


Fig. 1. Fluoroquinolone use in adult inpatients from 2016 to 2020.

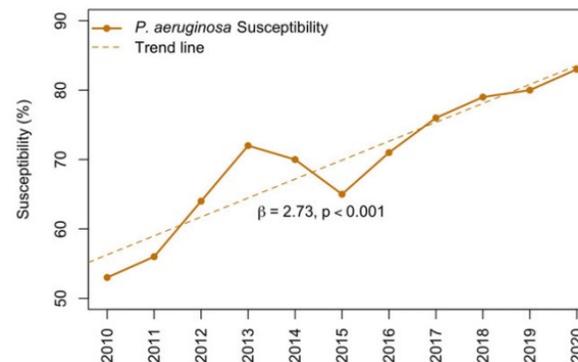


Fig. 2. *P. aeruginosa* levofloxacin susceptibility in adult inpatients from 2010 to 2020.

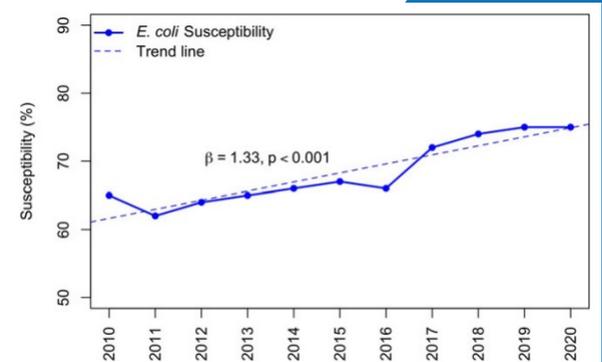


Fig. 3. *E. coli* levofloxacin susceptibility in adult inpatients from 2010 to 2020.

Improved Patient Outcomes Associated with Antimicrobial Stewardship in the Ambulatory Care Setting

Impact of Implementation of the Core Elements of Outpatient Antibiotic Stewardship Within Veterans Health Administration Emergency Departments and Primary Care Clinics on Antibiotic Prescribing and Patient Outcomes

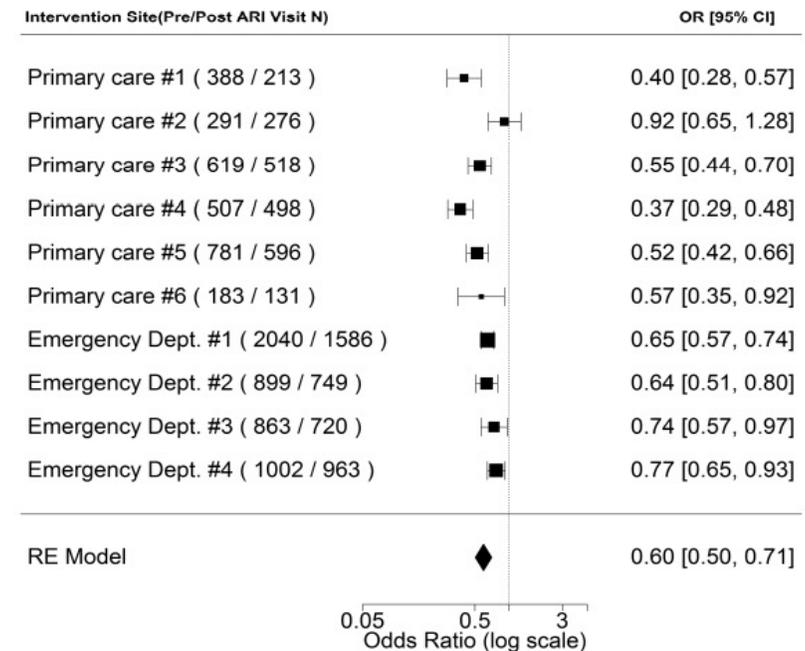
Study design and Intervention:

- Quasiexperimental controlled study
- Compared pre- and post implementation of outpatient CDC core elements in selected sites and assessed outcomes for acute respiratory tract infections
- 10 intervention and 40 control sites

Outcomes (Pre- vs Post- Implementation):

- Decreased rate of antibiotic prescribing (59.7% and 41.5%) with the intervention sites (difference-in-differences, $P < .001$)
- Appropriate therapy increased (OR 1.67; 95% CI, 1.31–2.14) with intervention sites
 - No difference in control sites
- All-cause hospitalizations lower with intervention sites (–0.5% vs –0.2%; difference-in-differences $P = .02$)

Odds ratio Pre- and Post-implementation of Outpatient CDC Core Elements to Receive Antibiotics



Significant **reduction** in antimicrobial prescribing for acute respiratory tract infections

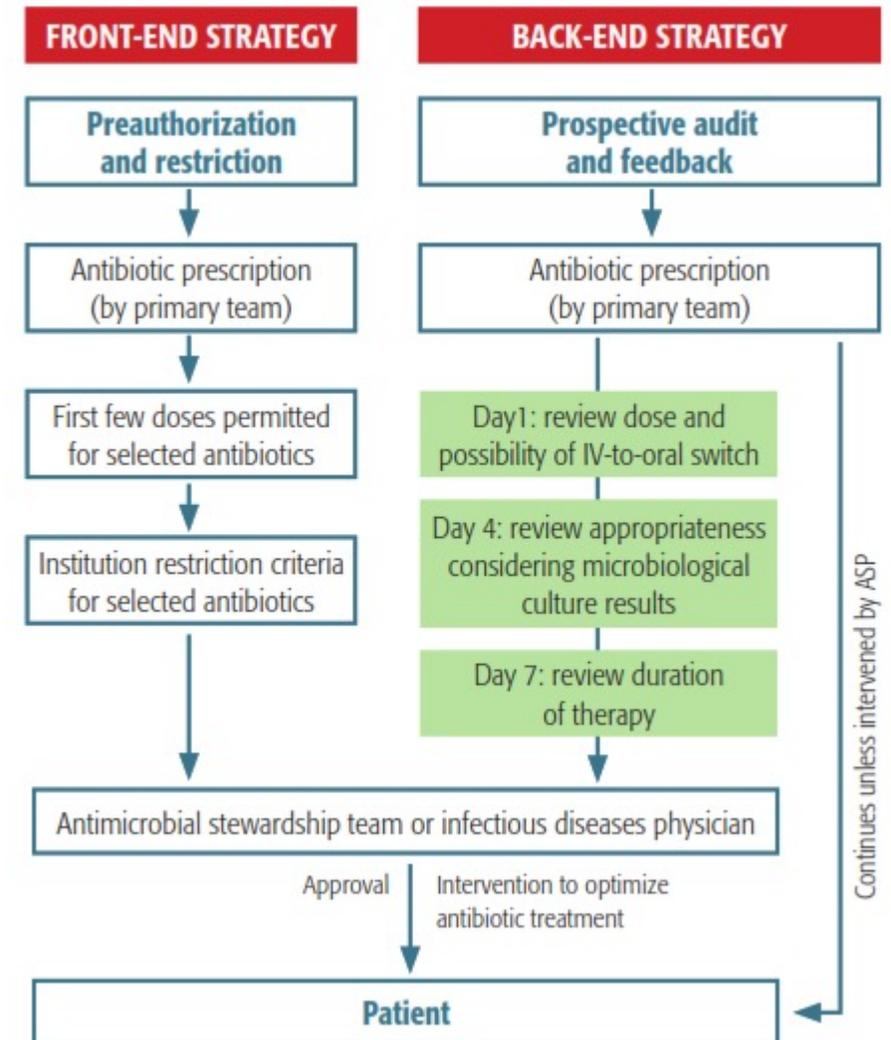
How Can UH Antimicrobial Stewardship Team Help You?

- We can help you with...
 - Antibiotic coverage, spectrum, or indications
 - Issues with adverse effects, drug monitoring, or allergies
 - Antimicrobial dosing, pharmacokinetics, or pharmacodynamics, including dosing of vancomycin and aminoglycosides
 - Interpretation of microbiology results including susceptibility testing
 - Antibiotic drug interactions (e.g. Linezolid and SSRIs, amiodarone)
 - Approval with restricted antibiotics

UH ASP Interventions

- Oversee antimicrobial formulary restrictions – “preauthorization and restriction” (front-end strategy)
- Perform daily review of antimicrobial use and microbiologic susceptibilities
- Perform prospective audit/feedback to providers on antimicrobial use (back-end strategy)
- Develop evidence-based clinical practice guidelines
- Review pharmacy dose optimization
- Provide education related to antimicrobial use
- Evaluate and report antimicrobial usage trends with annual antibiograms and antimicrobial use tracking
- Leverage EPIC EMR to optimize appropriate antimicrobial use and improve patient safety

Figure 9. Front- and Back-end Antimicrobial Stewardship Strategy.



Adapted from Chung GW et al. *Virulence* 2013; 4:1-7.

“One-stop shop” for ALL
REAL-TIME ASP within EMR

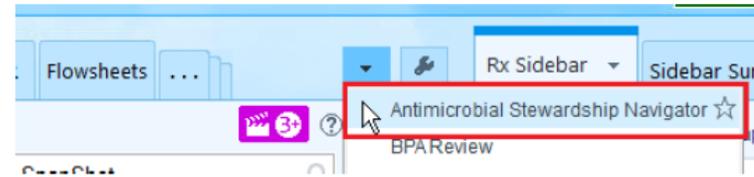
Antimicrobial Stewardship Navigator in UH EMR (Epic™)

Antimicrobial Stewardship Navigator is a module created within EPIC for real-time ASP related information and functionality

The navigator has **Clinical Review sections** to make it easy to jump to the information that you are looking for:

- Summary (Encounter specific)
- Micro (Past 7 days)
- Susceptibility History (Past 365 days)
- Drug Levels (Encounter specific)
- Drug-Bug Events (Encounter specific)
- Renal Dosing (Encounter specific)
- ID Clinical Guidelines (Facility specific)

The **Antimicrobial Stewardship Navigator** can be found via your **More Activities** dropdown in a patient chart:



The full navigator has many **Clinical Review** sections to make it easy to jump to the information that you are looking for:

Antimicrobial Stewardship

[Click Below for Antimicrobial Monitoring Sheet](#)

Antimicrobial Monitoring

[Jump to Results Review activity](#)

Micro

Microbiology Results (Last 7 days)

Updated	Collected	Procedure	Abnormal?	Component	Value
03/17/2023 1527	03/17/2023 1254	Blood Culture [128275189] Blood from Peripheral Venipuncture		Component	No component results
03/17/2023 1526	03/17/2023 1254	Blood Culture [128275190] Blood from Peripheral Venipuncture		Component	No component results
03/17/2023 0744	03/16/2023 0318	Urine Culture [128220226] CLEAN CATCH URINE		Culture	Mixed Flora colony count between 10 mixed flora generally results from spe repeat specimen recommended.
03/16/2023 2257	03/16/2023 0316	Blood Culture [128222130] (Abnormal) Blood from Peripheral Venipuncture	!	Culture	Positive ! ^P Culture Gram-Variable Coccoid Bacilli ^P [i]
03/16/2023 2253	03/16/2023 0316	BCID2 [128260523] [i] (Abnormal)	!	Component	***Antimicrobial Resistance Genes (Header)*** —

Antimicrobial Stewardship Patient Lists within UH EMR (Epic™)

Available Lists

- ▶ ASP Antimicrobial Lists (Antimicrobial Stewardship)
- ▶ ASP BPA/Lab Lists (Antimicrobial Stewardship)
- ▶ ASP Vancomycin Lists (Antimicrobial Stewardship)

These are Epic™ patient lists which show ASP-related patient events including patients:

- Receiving broad spectrum antibiotics
- New Positive Blood Cultures
- At risk for AKI & on IV Vancomycin

All clinicians have access to these lists within EHR

Available Lists

- ▶ ASP BPA/Lab Lists (Antimicrobial Stewardship)
 - De-Escalation of Therapy (Last 7 days)
 - Generic Bug-Drug Mismatch (Last 7 days)
 - GPP PCR (Last 14 days)
 - HIV Screen Results (Last 72 hrs)
 - Inpatient Active CDI (Last 14 days)
 - Inpatient History of CDI (Last 1 Year)
 - Insufficient Coverage (Last 7 days)
 - Malaria Testing Results (Last 21 days)
 - Micro Results (Abnormal Flag) Last 24 hrs
 - MTB Results (Last 7 days)
 - Positive Blood Culture (Last 72 hrs)
 - Positive Urine Culture (Last 72 hrs)
 - RESPAN Results (Last 14 days)
 - Specific Bug-Drug Mismatch (Last 7 days)
 - Strep/Legionella Urine Antigen Tests (Last 7 days)

Available Lists

- ▶ ASP Vancomycin Lists (Antimicrobial Stewardship)
 - Abnormal Vanc Levels (Last 24 hrs)
 - Active Vanc + No MRSA by PCR ordered
 - IV Vancomycin
 - MRSA by PCR Not Detected + Active Vanc
 - Pharmacy To Dose and Monitor

Available Lists

- ▶ ASP Antimicrobial Lists (Antimicrobial Stewardship)
 - Azithromycin orders active >/ 2 days
 - Carbapenem orders
 - Ceftriaxone orders
 - Clindamycin orders
 - Fluoroquinolone orders
 - Inpatient ARV orders
 - IV to PO Conversions
 - Pip/Tazo and Cefepime orders
 - Renal Dosing Adjustments
 - Restricted anti-infectives

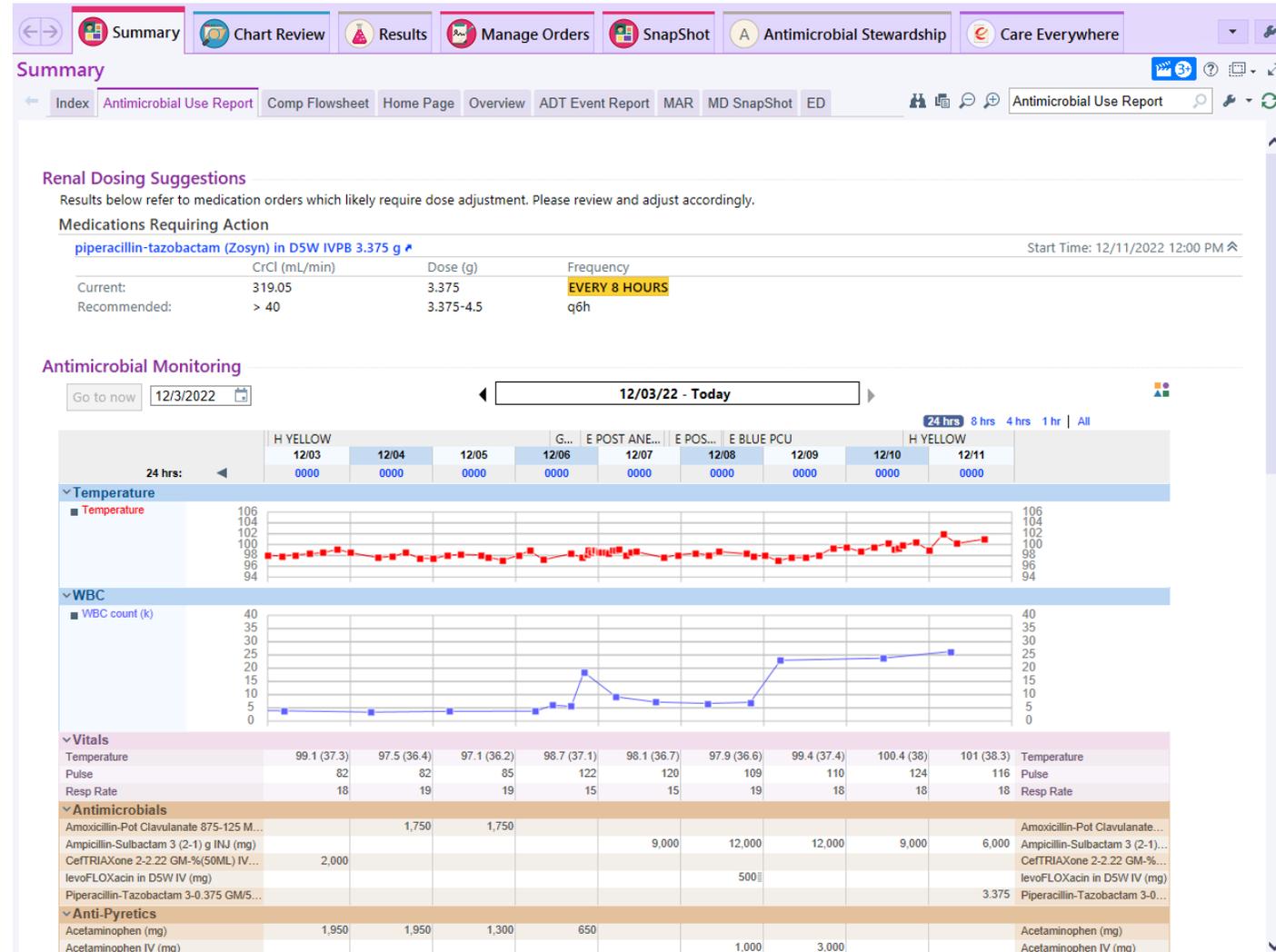
Antimicrobial Stewardship Accordion Report in UH EMR (Epic™)

REAL-TIME information including renal dosing suggestions

Antimicrobial Accordion Report

With this report, a clinician can see:

- Detailed information about the antibiotics administered, as well as the times of those administrations.
- Lab values, such as the patient's white blood cell count (WBC) and microbiology data.
- Hemodynamics, clinical flowsheet documentation, imaging results.
- Related medications, such as anti-pyretics to treat a fever.
- Renal dose adjustments for antibiotics



Drug-Bug Mismatch BPA within UH EMR (Epic™)

Drug Bug Mismatch BPA

- A drug-bug mismatch occurs when a patient's antimicrobial agent does not effectively cover the organism isolated by microbiological susceptibilities
- A REAL TIME BPA fires an alert to the clinician about the mismatch

BestPractice Advisory - Alpha One, Alpha

High Priority (1)

This patient is found to have a multi-drug resistant fungal infection. Current anti-fungal therapy is **NOT EFFECTIVE** against this pathogen.

Please contact the UH Antimicrobial Stewardship Team or ID Consult service for treatment options.

Contact Information:
UH Antimicrobial Stewardship Team **Available Mon-Fri 7 AM - 5 PM**

- Epic Chat: UH Infectious Disease Pharmacists
- Call: 973-856-0347 or 973-800-2189
- Email: UHASP@uhnj.org

Infectious Diseases Fellow/Attending On-call **Available 24/7**

An **ACKNOWLEDGEMENT REASON** is required for this notification.

ⓘ Acknowledge Reason _____

Other options... ▾

✓ Accept Cancel

Acknowledge Reason	
1	Will reach out UH Antimicrobial Stewardship Service for assistance
2	Will reach out to ID Consult Service for assistance
3	I am aware of this result and will continue to monitor patient's clinical status
4	I am not managing this patients antibiotic regimen

Patient Specific Antibigram within UH EMR (Epic™)

Patient Specific Antibigram

- To help guide empiric therapy, it is helpful to review the patient's prior cultures and susceptibilities with "patient specific antibiogram"
- Scroll to the bottom of any Microbiology result

📄 Susceptibility History

Collected	Specimen Source	Order name	Organism	AMOXICILLIN/CLAVULANATE BKR	AMPICILLIN	AMPICILLIN/SULBACTAM	AZTREONAM	CEFZOLIN	CIPROFLOXACIN	CLINDAMYCIN	ERTAPENEM	ERYTHROMYCIN	GENTAMICIN	Inducible Clindamycin	LEVOFLOXACIN	MEROPENEM	Nafcillin	PENICILLIN	RIFAMPIN	TETRACYCLINE	TRIMETHOPRIM/SULFAMETHOXAZOLE	VANCOMYCIN
06/28/19	PLEURAL FLUID	Body Fluid Culture	Coagulase Positive Staphylococcus species Gram Negative Rods																			
06/27/19	BLOOD	Blood Culture	Candida (Torulopsis) glabrata Methicillin/Nafcillin Resistant Staphylococcus Aureus																			
06/27/19	BLOOD	Blood Culture	Candida (Torulopsis) glabrata Gram Positive Cocci In Clusters																			
06/26/19	BLOOD	Blood Culture	Methicillin/Nafcillin Resistant Staphylococcus Aureus																			
06/26/19	BLOOD	Blood Culture	Candida (Torulopsis) glabrata Methicillin/Nafcillin Resistant Staphylococcus Aureus																			
06/26/19	SPUTUM	Sputum Culture	Citrobacter koseri(diversus)	S	R	S	S	S	S		S		S			S						S
			Methicillin/Nafcillin Resistant Staphylococcus Aureus	R	R	R			S		R	S	NEG	R		R	R		S	S	S	S
			Candida albicans																			
06/25/19	BLOOD	Blood Culture	Methicillin/Nafcillin Resistant Staphylococcus Aureus																			
06/25/19	BLOOD	Blood Culture	Methicillin/Nafcillin Resistant Staphylococcus Aureus	R	R	R			S		R	S	NEG	R		R	R		S	S	S	S
			Citrobacter koseri(diversus)	S	R	S	S	S	S		S		S		S							S

Restricted Anti-Infective Alert within UH EMR (Epic™)

Restricted Anti-Infective Alert

- Several anti-infective agents are restricted at UH
- This alert is issued upon order entry & subsequent verifications for restricted agents
- First-time doses will be release **without** approval, barring no medical contraindication
- Subsequent doses require approval from ASP Team or ID Service

The screenshot displays the Epic EMR interface. At the top right, there are buttons for 'Place new orders or order sets' (with a '+ New' button) and 'Select order mode' (with a dropdown arrow and a '+ Next' button). Below these is a 'New Orders' section with a green header. It lists a medication order: 'meropenem (Merrem) in Sodium Chloride 0.9 % 50 mL IVPB'. The order details are: 'Intravenous, at 100 mL/hr, EVERY 8 HOURS, 21 doses, with the First Dose today at 2200, Last dose on Fri 7/16 at 1400'. In the center, a 'BestPractice Advisory' window is open. The window title is 'BestPractice Advisory -'. The alert has a yellow header with a warning icon and the text 'Restricted Anti-Infective'. The main text of the alert reads: 'This medication is a restricted anti-infective. Approval for use must be obtained, unless the order is exempt per [UH policy \(click here\)](#). The first dose will be dispensed, if there are no contra-indications/issues with this Medication order. To obtain approval, contact the UH Antimicrobial Stewardship Team (Call: 973-856-0347 or 973-800-2189, TigerConnect: UH ASP, Email: UHASP@uhnj.org available Mon-Fri 7 AM - 5 PM) or the Infectious Diseases fellow/attending on-call (available 24/7).'. At the bottom right of the alert window is a '✓ OK' button. Below the alert window, the text 'No Orders' is visible in a light blue font.

Renal Dosing Context Rule within UH EMR (Epic™)

- Renal Dosing Context Rule in EMR provides automatic renal dosing suggestions for commonly used anti-infective agents

- This includes:

- Ampicillin
- Ampicillin/sulbactam
- Trimethoprim/Sulfamethoxazole
- Cefazolin
- Acyclovir
- Ertapenem
- Levofloxacin
- Piperacillin/Tazobactam
- Cefepime
- Meropenem

sulfamethoxazole-trimethoprim (Bactrim) 520 mg in D5W 500 mL iv solution Accept Cancel

Order Instructions: The below dosing is recommended for patient's calculated renal function. Consider further dose adjustments if on dialysis or C...

Reference Links: • Bactrim • D5W

Report:

Creatinine Clearance	Serum creatinine	Time Elapsed	Patient Height	Patient Weight
41.62 mL/min (A)	3.2 mg/dL (H)	22 hours (12/16/21 1124)	6' 3.25" (191.1 cm)	103.1 kg (227 lb 4.7 oz) (Adjusted)

Dose: 15 mg/kg/day 10 mg/kg/day 15 mg/kg/day 20 mg/kg/day

Weight:

Recorded	Ideal	Adjusted	Order-Specific
130 kg	85.1 kg	103.1 kg	Weight

Recorded weight: 130 kg (recorded 20 days 11 hours ago)
Recorded height: 75.3 in (recorded 20 days 11 hours ago)

Administer Dose: 520 mg

Route: Intravenous Intravenous

Rate: 532.5 mL/hr
532.5 mL / 1 hr
= 532.5 mL/hr

Frequency: EVERY 8 HOURS Q6H6 Q8H6 Q12H

UH ASP Contact Information

Call: 973-856-0347

EpicChat: UH Infectious Diseases
Pharmacists

Email: UHASP@uhnj.org

Available: Mon-Fri 7 AM - 5 PM



Arun Mattappallil, PharmD
Office: 973-972-1250
EpicChat: Type my name
Cell: 973-856-0347



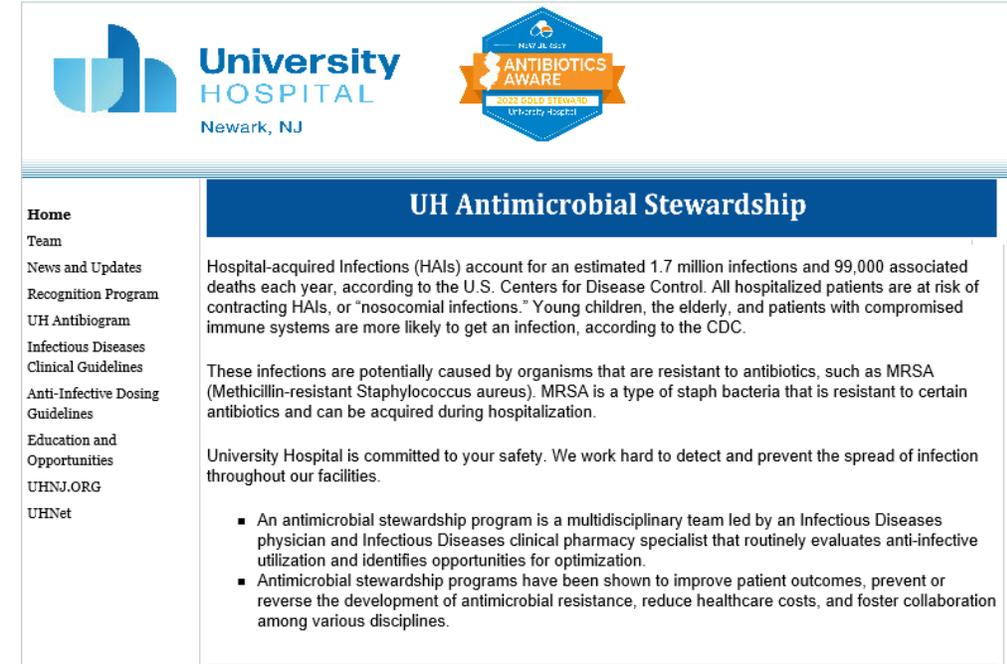
Nadeem Baalbaki, PharmD
Office: 973-972-4807
EpicChat: Type my name
Cell: 973-800-2189



Debra Chew, MD, MPH
EpicChat: Type my name

ASP Resources

- UH Antimicrobial Stewardship Website:
 - <http://uhclinicallinks.uhnj.org/AMBS/uhnj.html>
- [Joint Commission \(click here\)](#)
- [CDC Core Elements of Hospital Antibiotic Stewardship Programs \(click here\)](#)



University HOSPITAL
Newark, NJ

ANTIBIOTICS AWARE
2022 GOLD STEWARD
University Hospital

UH Antimicrobial Stewardship

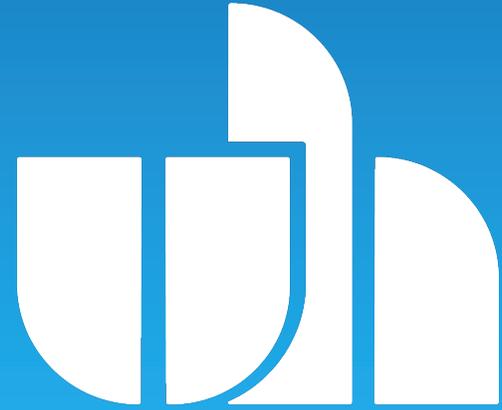
Home
Team
News and Updates
Recognition Program
UH Antibigram
Infectious Diseases
Clinical Guidelines
Anti-Infective Dosing Guidelines
Education and Opportunities
UHNJ.ORG
UHNNet

Hospital-acquired Infections (HAIs) account for an estimated 1.7 million infections and 99,000 associated deaths each year, according to the U.S. Centers for Disease Control. All hospitalized patients are at risk of contracting HAIs, or "nosocomial infections." Young children, the elderly, and patients with compromised immune systems are more likely to get an infection, according to the CDC.

These infections are potentially caused by organisms that are resistant to antibiotics, such as MRSA (Methicillin-resistant Staphylococcus aureus). MRSA is a type of staph bacteria that is resistant to certain antibiotics and can be acquired during hospitalization.

University Hospital is committed to your safety. We work hard to detect and prevent the spread of infection throughout our facilities.

- An antimicrobial stewardship program is a multidisciplinary team led by an Infectious Diseases physician and Infectious Diseases clinical pharmacy specialist that routinely evaluates anti-infective utilization and identifies opportunities for optimization.
- Antimicrobial stewardship programs have been shown to improve patient outcomes, prevent or reverse the development of antimicrobial resistance, reduce healthcare costs, and foster collaboration among various disciplines.



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