



UW/TASP
tele-antimicrobial stewardship program

echo

September 18th, 2025

Agenda

- Speaker: *Who, what, where, how and why: Prospective Audit and Feedback for AMS*
 - *Rupali Jain, PharmD*
- Facility Question

Disclosures

Today's speaker has no financial relationships with an ineligible company relevant to this presentation to disclose.

None of the planners have relevant financial relationship(s) to disclose with ineligible companies whose primary business is producing, marketing, selling, re-selling, or distributing healthcare products used by or on patients

All relevant financial relationships have been mitigated



Prospective Audit & Feedback (PAF)

Published evidence demonstrates that **prospective audit and feedback** (sometimes called post-prescription review) and **preauthorization** are the two most effective antibiotic stewardship interventions in hospitals ⁽¹⁶⁾. They are both strongly recommended in evidenced-based guidelines and can be considered “foundational” interventions for hospital stewardship programs.

Prospective audit and feedback is an external review of antibiotic therapy by an expert in antibiotic use, accompanied by suggestions to optimize use, at some point after the agent has been prescribed ⁽¹⁶⁾. Prospective audit and feedback is different from an antibiotic “timeout” because the stewardship program rather than the treating team conducts the audits.



PAF meets CORE elements

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

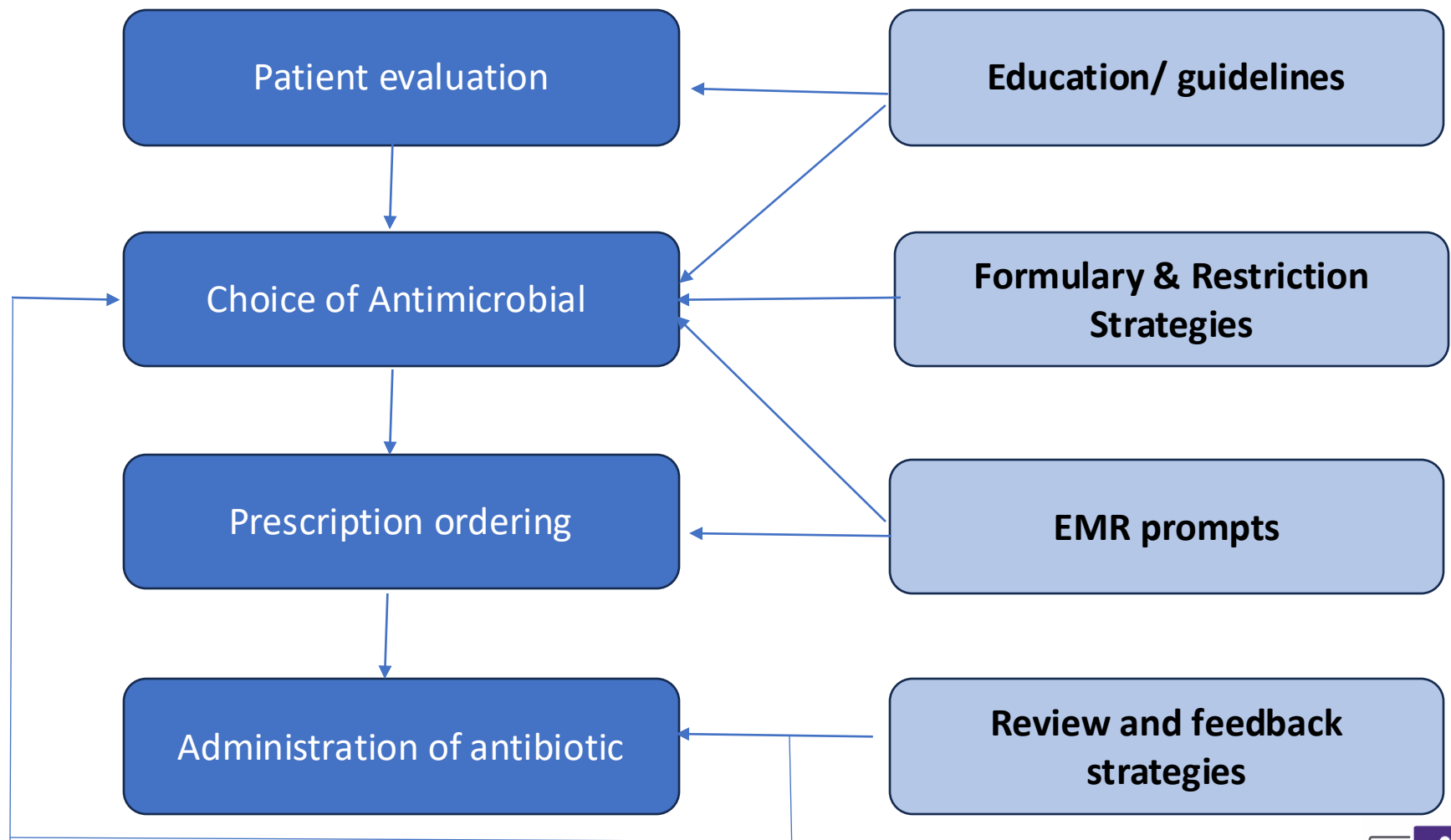
Regularly report information on antibiotic use and resistance to prescribers, pharmacists, nurses, and hospital leadership.



Education

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

What is PAF?



For your AMS program, are you conducting PAF?

- a. Yes
- b. No
- c. I don't know



If you are new to PAF...

- Review your trends (find your pain points!)
 - Start small!
- Engage stakeholders
- Create realistic goals and metrics and timeframe
- Set up a consistent system for tracking and documentation
- Let's go!



How does PAF work?

Antimicrobial Stewardship Workup Template																																							
Basic Info		DATE	LAST NAME/4				Age	Race	♂ ♀	HT	WT	Bed	Abx All																										
Admission Details		From Where			Date Admitted			Dx			Service			Att																									
CC		Past Hosp/Abx/ ster/immcomp:																																					
PMH		Days of Therapy <table border="1"> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>																																					
Additional HPI, Micro Hx, Imaging, Notes					Drug (route, dose, freq)			D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14																		
Cultures					Vancomycin Monitoring			Comments (Drawn Appropriately?)							Aminoglycoside Monitoring																								
Date	Source/Results				Date/Time/Level:										Date/Time/Level																								
					Date/Time/Level:										Date/Time/Level																								
Date	Source/Results				Date/Time/Level:										Date/Time/Level																								
					Monitoring																																		
Date	Source/Results				CrCl:		DATE																																
							WBC																																
Date	Source/Results				Baseline Cr:		SCR/ BUN																																
							Tmax																																
Date	Source/Results				Miscellaneous Labs Pertinent to Patient Diagnosis or Therapy																																		
IV to PO Conversion		Date of UA:		UTI		Y	N	Indwelling Foley: Y / N		C.Diff		Y	N	Tx, Mkt, Mod, Severe, Complicated																									
☐	Low WBC	☐	Bacteriuria					Chronic or Intermittent		☐		Initial:																											
☐	Afebrile	☐	Pyuria WBC	LE	Nitrite	+	-	Date Last Changed/Removed/Placed:		☐		1st Recurrence:																											
☐	Pt Improving	☐	Symptoms					IV Access		Date Placed/Removed/Location		☐		22 Recurrence:																									
☐	On PO medications	☐	MSSA																																				
☐	No GI problems	☐	Other																																				
Time	Recommendations	Accept	Admission Recommendations					Documentation		MRSA Nares		Y	N	Vaccination		DUE																							
D1		Y	N	☐	Vanc Dose/Mon			Date/Time		MRSA Risk factors		Y	N	Flu		Y		N																					
D2		Y	N	☐	Asx UTI			ID MD						PPSV23/PCV13		Y		N																					
D3		Y	N	☐	Surg			C / m																															
D4		Y	N	☐	IV to PO			Reason Not Accepted						Discharge or		Abx Discont.																							
D5		Y	N	☐	Drug optimization			☐ Unable to contact						Date/time:																									
				☐	De-escalation			☐ Loss to follow-up						LOS:																									
				☐	Stop Abx			☐ Clinical picture changed						Final Dx:																									
				☐	Other			☐ Other -						Abx on Discharge:																									
				☐	No rec																																		

CHOOSE your WAY!

START SMALL

CHOOSE ONE AREA

- FQ
- MRSA
- IV to PO
- Duration
- Syndrome



UWMED way: TMI

AMS Radar Sidebar ▾

Broad Spectrum Antibiotic Filters

Last Refresh: 01:22:21 PM

🕒 Data collected: Mon 6/5 01:22 PM

Antimicrobial Stewardship

ertapenem	3
imipenem	-
meropenem	1
ciprofloxacin	4
levofloxacin	8
moxifloxacin	3
pip/tazo	9
aztreonam	-
cefepime	29
ceftazidime	-
daptomycin	3
linezolid - IV and PO	6
fosfomycin PO	-
vanco IV (last 24hrs)	40
rifampin IV	-

Positive Blood Culture Filter

Last Refresh: 01:22:35 PM

🕒 Data collected: Mon 6/5 01:22 PM

Antimicrobial Stewardship

Positive blood culture in last 7 days

22

Restricted Antimicrobial Filters

Last Refresh: 01:22:23 PM

🕒 Data collected: Mon 6/5 01:22 PM

Antimicrobial Stewardship

ceftaroline	2
ceftazidime-avibactam	-
ceftolozane-tazobactam	-
fidaxomicin	-
dalbavancin	-



Meropenem / Imipenem

BestPractice Advisory - [REDACTED]

Important (1) ⤴

Meropenem and Imipenem: restricted use

Restricted for patients with suspected or confirmed multi-drug resistant infections.

Use beyond **72 hours** must be approved by Infectious Diseases Consults or (NICU and CF patients)

❗ **REMOVE** order and click "accept" if patient does not require meropenem or imipenem antibiotic

OR

KEEP order and click "dismiss" if patient requires meropenem/imipenem. ID/AMS consult beyond 72 hours.

Remove the following orders?

 meropenem (Merrem) in sodium salt form
Intravenous, at 200 mL/hr, Administer over 3 hours

- ✓ The provider sees this alert initially.
- ✓ NO follow-up alert occurs at 72 hours
- ✓ Clinical pharmacist/AMS to suggest ID consult at 72 hours



How did we do?

Clinical Infectious Diseases

MAJOR ARTICLE



Postprescription Review With Threat of Infectious Disease Consultation and Sustained Reduction in Meropenem Use Over Four Years

Nandita S. Mani,¹ Kristine F. Lan,¹ Rupali Jain,^{1,2} Chloe Bryson-Cahn,¹ John B. Lynch,¹ Elizabeth M. Krantz,² Andrew Bryan,⁴ Catherine Liu,^{1,3} Jeannie D. Chan,^{1,5} Paul S. Pottinger,¹ and H. Nina Kim¹

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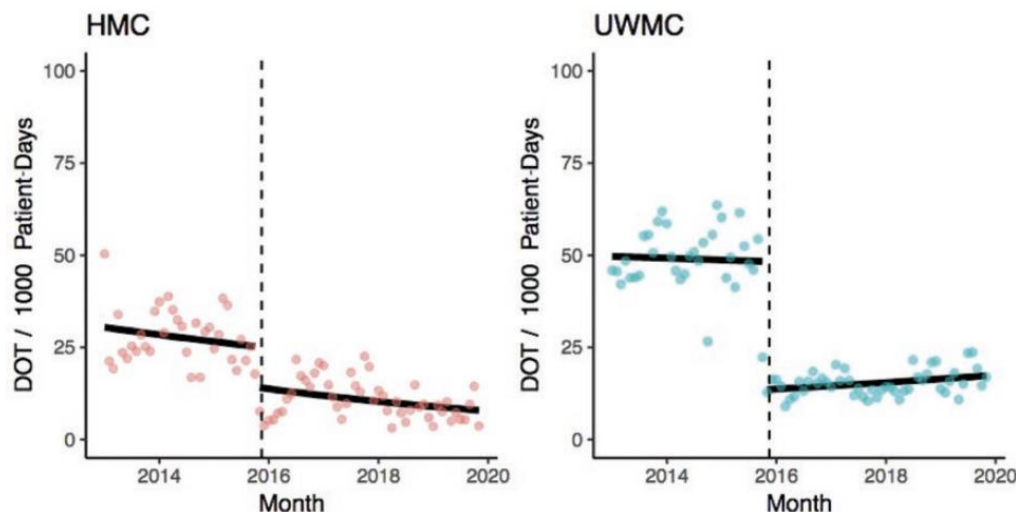


Figure 1. Meropenem and imipenem DOT (January 2013–November 2019). Intervention on 15 November 2015 shown as vertical dashed line. Filled circles represent observed data, and solid lines represent model fits from negative binomial segmented regression model. Abbreviations: DOT, days of therapy; HMC, Harborview Medical Center; UWMC, University of Washington Medical Center.



How often do we intervene?

AMS Assessment and Recommendation

Time taken: 9/2/2025 1331

Responsible More

Show Row Info Show Last Filed Value Show Details ☒ Show All Choices

Antimicrobial Stewardship

Treatment Indication

☐ CAP ☐ HAP/VAP ☐ GU infection ☐ SSTI ☐ Intra-abdominal infection ☐ Sepsis, source unknown ☐ Bacteremia ☐ Endocarditis ☐ Osteomyelitis ☐ Meningitis ☐ Neutropenic fever ☐ CDI ☐ Prophylaxis ☐ Fungal infection ☐ Viral infection ☐ Other (comment)

Interventions

☐ Regimen reviewed ☐ Shorten duration ☐ Discontinue therapy ☐ Adjust dose ☐ Change medication ☐ Order lab ☐ Broaden therapy ☐ IV to PO ☐ De-escalate therapy ☐ Allergy assessment ☐ DDI assessment ☐ Monitoring/TDM ☐ Rec ID consult ☐ Rec Allergy consult ☐ Other (comment)

Source of Intervention

☐ Clinical Rounding ☐ AMS Review ☐ Questions ☐ ID Team ☐ Micro Rounds ☐ Handshake Ste... ☐ Other (Comment)

Overall Recommendations

Current Medications

Recommended Medications

Provider Action

Accepted

Accepted with modification

Rejected

Canceled

No call-back

Pending

Restore

Close

Cancel

Previous

Next



How are you doing PAF?

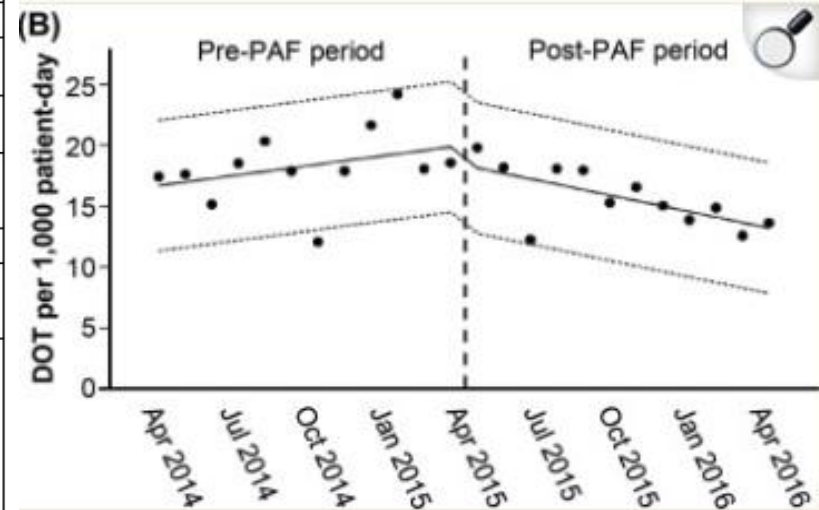
- a. Review specific drugs prescribed
- b. Review specific syndromes
- c. Review based on specific lab ordered
- d. Other



PAF for MRSA agents

Fig 1. Check sheet for the use of anti-MRSA agents (English translation).

Check sheet for use of anti-MRSA agents			
Date of submission:			
Name of physician:			
Phone number:			
Patient ID	Clinical department	Clinical ward	Date of admission
Anti-MRSA agents (select from list)	☐ Teicoplanin ☐ Vancomycin ☐ Arbekacin ☐ Linezolid ☐ Daptomycin		
Initial dosage	_____ g every _____ hours		
TDM schedule (if applicable)			
Scheduled duration of treatment	_____ days from _____		
Blood culture tests	☐ Submitted: ☐ 2 sets ☐ 1 sets ☐ Not submitted		
	Culture result: _____		
(Speculated) Source of infection	☐ Source of infection: _____ ☐ Unknown source		
Reason(s) for use of anti-MRSA agents (select form list)	☐ Confirmed diagnosis of MRSA infection		
	☐ Suspect MRSA infection		
	☐ Infection with gram-positive bacteria other than MRSA (e.g., methicillin resistant <i>S. epidermidis</i> , ampicillin resistant Enterococci)		
	☐ Other reason: _____		



Why should I try PAF?

- Can increase visibility of antimicrobial stewardship program and build collegial relationships
- Greater flexibility in timing of recommendations
 - Can be done on less than daily basis if resources are limited
 - Can address de-escalation of antibiotics and duration of therapy
 - Prescriber autonomy maintained
- Provides educational benefit to clinicians
- More clinical data available for recommendations, enhancing uptake by prescribers

PMID: [27080992](#)

Disadvantages

- Compliance voluntary
- Labor-intensive
- Success depends on delivery method of feedback to prescribers
- Prescribers may be reluctant to change therapy if patient is doing well
- Identification of interventions may require information technology support and/or purchase of computerized surveillance systems
- May take longer to achieve reductions in targeted antibiotic use

Willing to share your success or failure?



Where can PAF occur?



Hospitals:

Pediatric, ICU,
Neonatal, OB, you
name it!

Other sites:

Outpatient, prison
clinics, transitions
of care, LTCs,
dialysis centers



Who conducts PAF?



PHARMACIST



RNS



PROVIDERS



Does PAF actually work?

8 year study (2014-21)

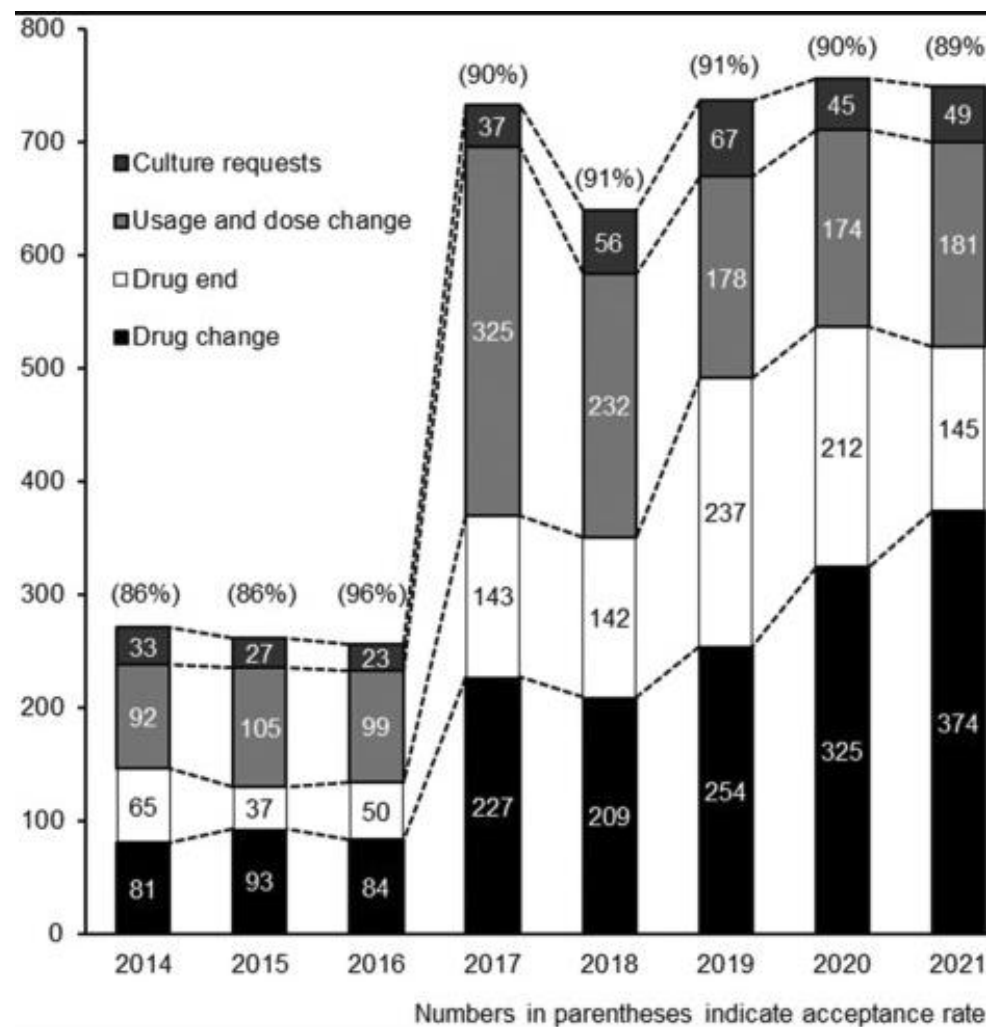
- Prescription improvement suggestion via EMR, phone or in person

2014-16:

- PAF MSRA drugs, carbapenems, etc
- 0.36 FTE

2017 – 21

- PAF: All IV abx
- 0.9 FTE (2 pharmacists)



Culture request: ID of organism

Usage and dose change: dose elevation, dose reduction, change in infusion time;

Drug end: reduction in duration

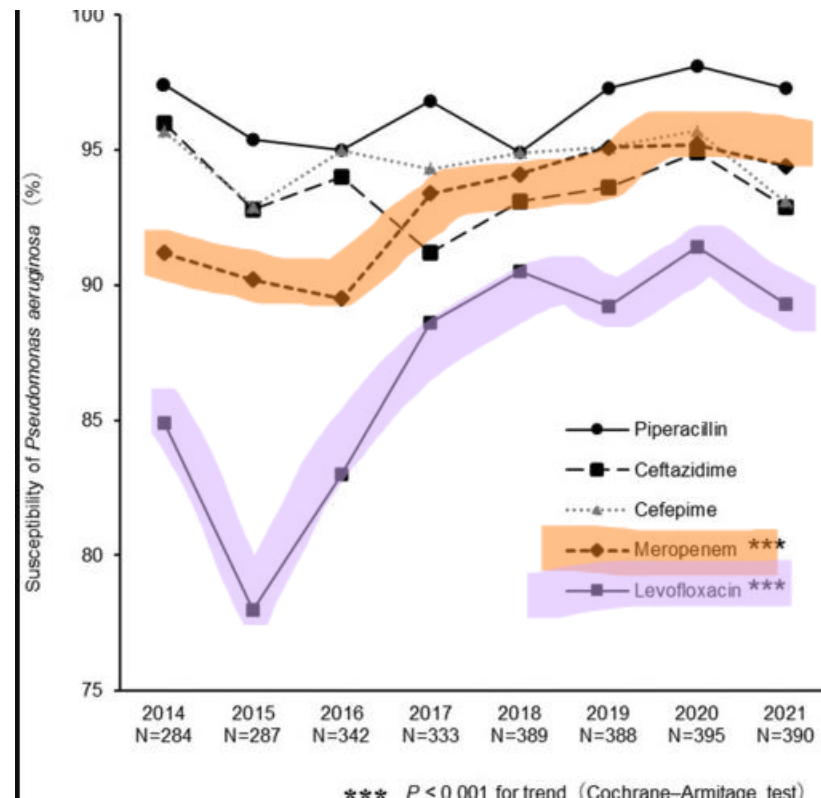
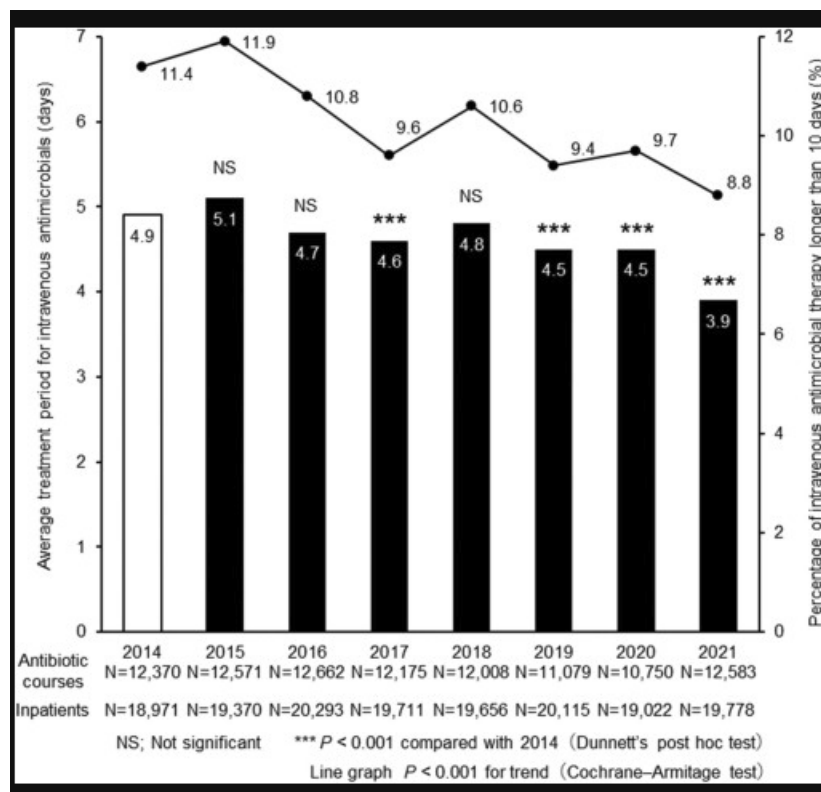
Drug change: escalation, de-escalation and oral switch

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Reduction in IV therapy & improvement in resistance



the length of hospital stay remained stable from 2017 onwards The in-hospital [mortality rate](#) of the patients who received IV antimicrobials did not change significantly ($P = .563$;)



Considerations

Advocacy. The *advocacy* statement highlights a discrepancy between a clinical situation and a perceived inconsistent clinical response with factual observations.

"I noticed..." or "I saw..."

Inquiry. The *inquiry* subsequently probes this discrepancy with an open-ended question to query the thought process yielding the colleague's decision or action.

"Can you help me understand...?" "Can you share more about...?" or "Can you teach me...?"

Identify. The third step, *identify*, is active listening. The goal of this step is to not simply hear the colleague's response, but to understand the thought process that yielded their clinical decision.

Correctly diagnosing the underlying reason guiding their actions allows the steward to identify what concepts to teach to specifically address the colleague's cognitive error(s).

Teach. In this final step, the steward provides targeted teaching to address the framework error. It is often helpful to offer an alternative path forward—as doing so opens the door to collaborative, shared decision-making and demonstrates shared investment in the patient's outcome.



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Questions

