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Day with the ID Pharmacist Pager

Antibiotic Awareness Week 2025

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11.19.2025

Disclosures

The planner(s) and speaker(s) have indicated that there are no relevant financial relationships with any ineligible companies to disclose.

Learning Objectives

At the end of this session, learners should be able to:

1. Identify the roles and responsibilities of the infectious diseases and clinical pharmacist within the acute care pharmacy practice model and their impact on antimicrobial use
2. Recognize common infectious diseases questions that arise throughout clinical practice
3. Recommend an appropriate antimicrobial duration for commonly encountered infectious syndromes

Abbreviation Key

- AAW: Antibiotic Awareness Week
- AE: Adverse Event
- AMR: antimicrobial resistance
- CAP: community acquired pneumonia
- CDC: Centers for Disease Control and Prevention
- CF: cystic fibrosis
- CRE: carbapenem-resistant Enterobacterales
- DTR: difficult-to-treat resistance
- ESBL: extended-spectrum β-lactamase
- HAP: hospital acquired pneumonia
- IDSA: Infectious Diseases Society of America
- KPC: *Klebsiella pneumoniae* carbapenemase
- MBL: Metallo-β-lactamase
- MDR: multidrug resistant
- NHSN: National Healthcare Safety Network
- OXA-48: oxacillinase-48
- MSSA: Methicillin Susceptible *Staphylococcus aureus*
- MRSA: Methicillin Resistant *Staphylococcus aureus*
- PTC: Pneumonia Short Treatment trial
- VAP: Ventilator associated pneumonia

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Antibiotic Awareness Week 2025

Global initiative highlighting the importance of antimicrobial resistance, its impact, and appropriate antimicrobial use

Why does it matter?

AMR responsible for 2.8 million infections and >35k deaths annually

> 50% of inpatients receive antimicrobials

At least **30%** require optimization

1 in 5 patients may experience an AE while on antibiotic therapy in the hospital

CDC. Antibiotic Resistance Threats in the United States, 2019.
Fridkin S et al. MMWR Morb Mortal Wkly Rep. 2014;63:194-200.
Tamma P et al. JAMA Intern Med. 2017;177:1308-1315.

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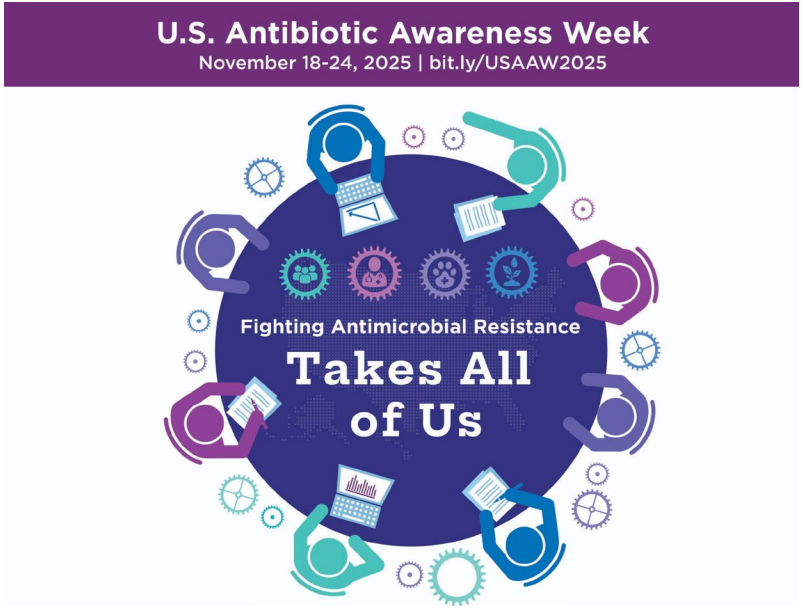
Antibiotic Awareness Week 2025



Everyone likely has at least one daily opportunity to optimize antimicrobial use:

- Right patient
- Right dose
- Right duration
- Right drug
- Right route

CDC. US AAW Toolkit. 2025

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Empiric Antibiotics – When to Go Broad?

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When you hear “broad-spectrum antibiotics,” which antibiotics come to mind?

- There’s no clear consensus and several different scoring systems to assess “broadness”
- NHSN, a CDC program, provides antimicrobial groupings to distinguish “narrow” from “broad” spectrum antimicrobials

CDC. *NHSN Guide to the SAAR*. 2025.

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NHSN Antimicrobial Groupers

Adults

- NHSN antimicrobial groupings are used to contextualize and report antimicrobial utilization data
- Examples of antimicrobial grouping designations:
  - **Narrow-Spectrum Beta-Lactams**: amoxicillin/clavulanate, ampicillin/sulbactam, cefazolin, penicillin
  - **Broad-Spectrum Community-Acquired**: ceftriaxone, fluoroquinolones, ertapenem
  - **Broad-Spectrum Hospital-Onset**: aztreonam, cefepime, ceftazidime, meropenem, piperacillin/tazobactam
  - **Extensively Broad-Spectrum**: ceftazidime/avibactam, ceftolozane/tazobactam, tigecycline, cefiderocol, meropenem/vaborbactam

CDC. NHSN Guide to the SAAR. 2025.

When you hear “broad-spectrum antibiotics,” which antibiotics come to mind?

- For today’s presentation, we’ll largely focus on antipseudomonal agents and agents that cover MDR pathogens

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Assessment Question #1

A 35-year-old female patient was admitted from the community with septic shock in the setting of multifocal pneumonia. She has a history of basal cell carcinoma (stage 1 s/p excision) and no recent antibiotic exposure. The patient's provider contacts pharmacy for empiric antimicrobial recommendations.

Which antimicrobial regimen and rationale is most appropriate?

A. Ceftazidime/avibactam + vancomycin + azithromycin; to ensure any possible pathogen is covered given presence of septic shock

B. Ceftriaxone + azithromycin; standard CAP therapy should suffice

C. Cefepime + vancomycin; HAP-directed therapy should be utilized given history of immunocompromising condition

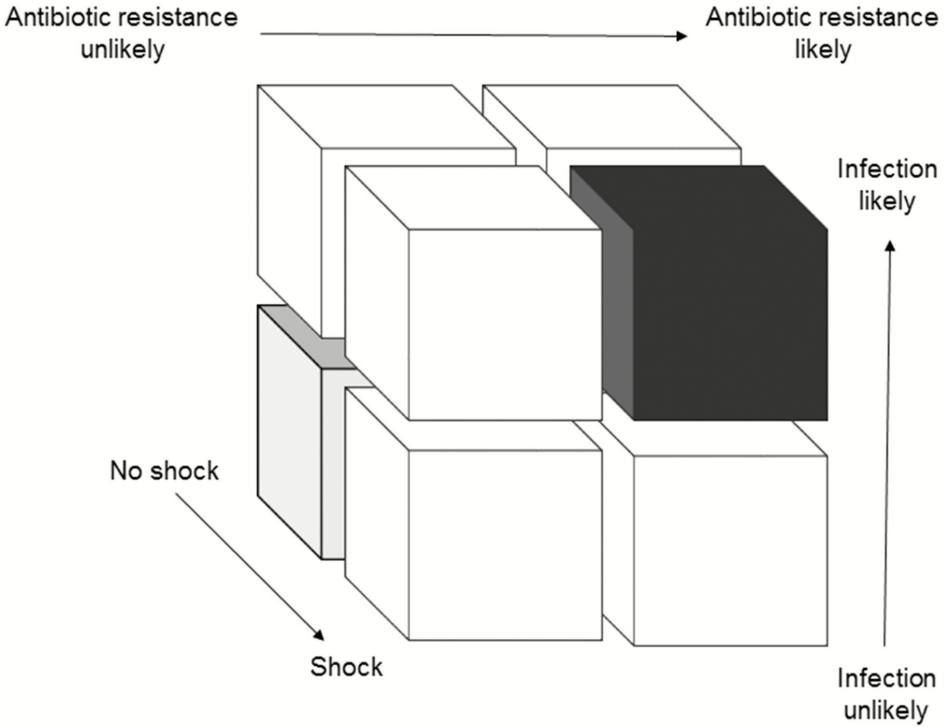
D. Antimicrobials are not necessary; this is likely viral pneumonia

Empiric Antimicrobial Selection in Sepsis & Septic Shock

- Before deciding on an empiric regimen for a patient presenting with sepsis/septic shock, the following must be considered:
  - What the likely source of infection is
  - What the likely pathogens are
    - Based on likely source, local resistance, and patient-specific history/microbiological history
  - How catastrophic the outcome would be if there was a delay in effective antimicrobials
    - Of note, the presence of septic shock in and of itself is NOT a risk factor for multidrug resistant infection and does NOT increase risk of inappropriate empiric treatment

Kollef MH. 2019. PMID:30535353.
Strich JR. 2020. PMID:32691833.

Empiric Antimicrobial Selection in Sepsis & Septic Shock



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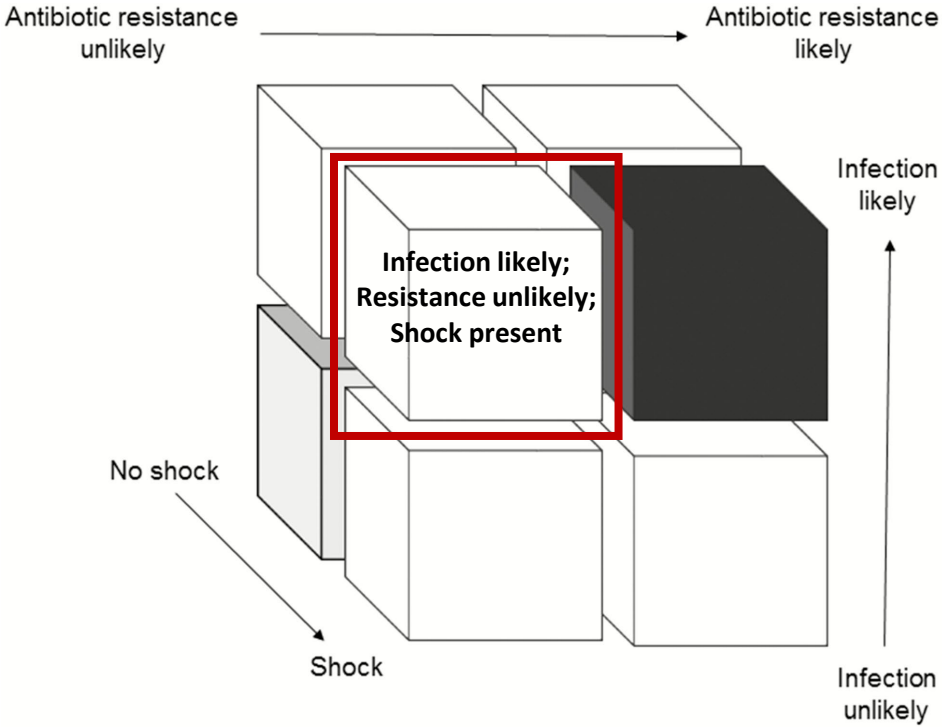
Empiric Antimicrobial Selection in Sepsis & Septic Shock



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A 65-year-old female patient was admitted with septic shock in setting of multifocal pneumonia. She has a history of bronchiectasis and colonization with MDR *P. aeruginosa*.

Does this patient warrant “broad-spectrum” (e.g. antipseudomonal or MDR-active) empiric therapy?

YES – select agent based on prior susceptibility data; if no agent covers all prior pathogens, consider combination therapy

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Empiric Antimicrobial Selection in Non-Septic Patients

- FOMO (Fear of Missing Organisms) often results in the use of overly broad-spectrum antimicrobials
- In non-septic patients, the risks associated with use of broad-spectrum antimicrobials often outweighs potential benefit
- Common infectious disease states that often include unnecessarily broad-spectrum treatment:
  - Diabetic foot infection: *P. aeruginosa* is not as common as once thought, new guidelines do not recommend empiric antipseudomonal coverage in most cases
  - CAP: empiric antipseudomonal therapy is typically not required, but still often utilized

Baghdadi JD. 2025. PMID:39874272.
Morelli MK. 2023. PMID:38028912.

Empiric Antimicrobial Selection if Prior MDR Pathogen

- For patients with a history of MDR organisms (CRE, DTR Pseudomonas, etc.) that may require empiric coverage of those organisms:
  - Consider consultation of an ID physician and pharmacist
  - Evaluate prior susceptibility information and carbapenemase gene detection, if applicable
  - Evaluate which antimicrobial agent the patient received for that organism previously
  - Review institutional guidance document(s)
    - These documents largely align with the IDSA Guidance on the Treatment of Antimicrobial-Resistant Gram-Negative Infections

Tamma PD. 2024. PMID:39108079.

Empiric Antimicrobial Selection if Prior MDR Pathogen

- Newer β-lactam/β-lactamase inhibitor combinations are often preferred empiric and targeted options for MDR pathogens

	KPC	MBL	OXA-48	DTR Pseudomonas
Cefiderocol				
Ceftazidime/avibactam				
Ceftolozane/tazobactam				
Imipenem/relebactam				
Meropenem/vaborbactam				
Aztreonam/avibactam				

Tamma PD. 2024. PMID:39108079.
Hsu AJ. 2025. PMID:39976357.

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Common Empiric Antimicrobial Pitfalls

- Broadening coverage after < 24 hours of an antimicrobial agent
  - May not be enough time to see an adequate response to therapy
- Initiating antipseudomonal antibiotics for all patients with any immunocompromising condition
  - Assess degree of immunosuppression, risk factors for resistance, healthcare exposure, etc.
- Initiating a carbapenem for any patient with prior ESBL isolation
  - If ESBL was isolated a long time ago (especially if repeat cultures from the same site have not grown ESBL), can likely forego ESBL coverage
  - If ESBL was isolated from a site that is different from the current infectious site, may be able to forego ESBL coverage
- Failure to adjust empiric therapy once additional data becomes available
  - Once susceptibilities are confirmed or infection is ruled out, antimicrobials should be targeted

Empiric Antimicrobial Selection Take-Home Points

- Empiric antimicrobial selection is based on several factors
- Individually assess patients to determine antimicrobial spectrum appropriateness
- Optimizing antimicrobials from the get-go is the best way to impact therapy
  - Once antimicrobial agents are started, it's harder to de-escalate
- At Advocate, we have several resources available to support pharmacists when assessing empiric antimicrobial regimens
  - Institution-specific empiric antimicrobial guidelines
  - ID pharmacists are available for secondary review/questions

Strich JR. 2020. PMID:32691833.

Optimal Duration of Therapy – Pneumonia

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Shorter is “Better”

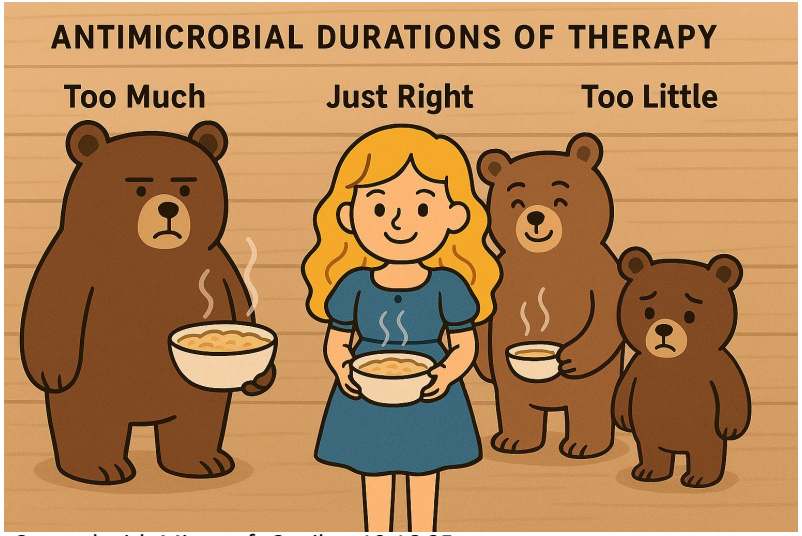
Duration=powerful tool to curb antimicrobial resistance

- Prolonged antimicrobial exposure/overall antimicrobial exposure consistently linked to increased AMR
- Underexposure may also increase risk

Shift from standard “Constantine” units to patient-oriented duration

Randomized control data to support shorter durations for:

- Bacteremia
- Pyelonephritis
- Skin and soft tissue infection
- **CAP? HAP/VAP?**



Created with Microsoft Copilot. 10.16.25

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Spellberg B et al. Ann Intern Med. 2019;171:210-211.

The Case for CAP: PTC

*Stability
- Afebrile
- HR <100 BPM
- RR<24
- SBP>90
- O2>90
- Normal mentation

Pneumonia Short Treatment (PTC): 3 vs 5 Days of Therapy	
Design	Double Blind, placebo-controlled, multi-center, non inferiority randomized control trial Non-ICU, Adults with moderately severe CAP Meet stability criteria* at day 3
Intervention **Comparator**	3 days: Placebo to complete 5 days 8 days: Amoxicillin/Clavulanate 500/62.5 mg TID x 5days

Baseline, n (%)	3 days (n=152)	8 days (n=151)
Age, avg yr (IQR)	72.5 (54.0-85.3)	74.0 (58.0-83.0)
Comorbidities	34 (22)	39 (26)
PSI 3 -5	96 (63)	96 (64)
O2 therapy	60 (39)	59 (39)

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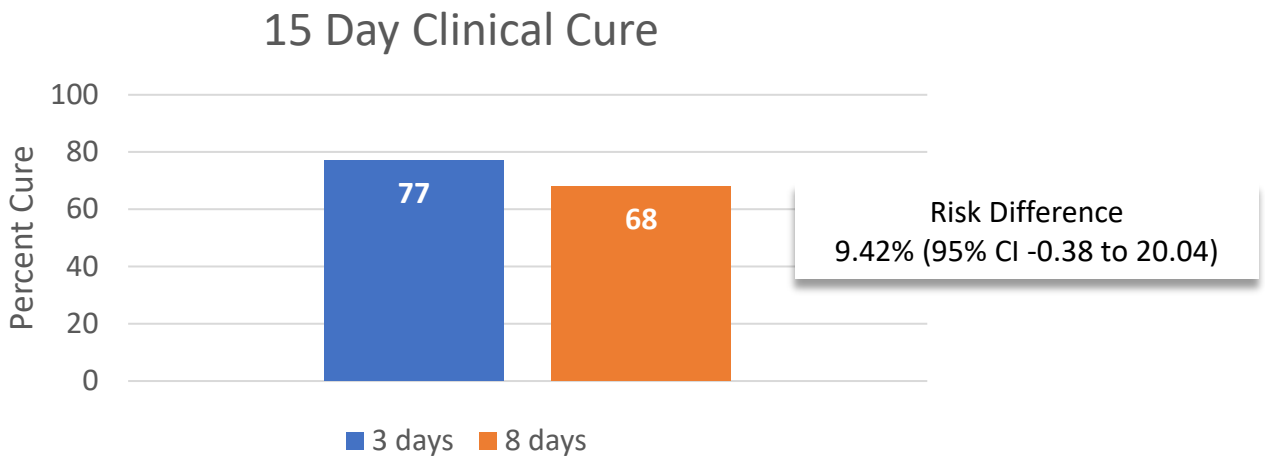
Dinh A, et al. Lancet. 2021;397:1195-203.

The Case for CAP: PTC Results



No significant difference seen in 30d cure, mortality, length of stay, time to recovery, or any subgroup of interest (age, severity)

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Dinh A, et al. Lancet. 2021;397:1195-203.

CAP Guideline Updates

IDSA 2019

- 5 days if meeting clinical stability criteria
- 7 days MRSA or Pseudomonas

ATS 2025

- **3-5 days** if meeting clinical stability criteria

IDSA 2025 ???

Clinically Stable
- Afebrile
- HR <100 BPM
- RR<24
- SBP>90 mmHg
- SpO2≥90%
- Normal mentation

Metlay et al. Am J Respir Crit Care Med. 2019;200:e45-e67.
Jones B et al. Am J Respir Crit Care Med. 2025.

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Hospital Acquired Pneumonia/Ventilator associated Pneumonia

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Shorter durations for HAP/VAP

1995: Typically recommended 14-21 days

2003: PneumA 8d vs. 15d RCT shows non-inferiority

2005: Guidelines updated to reflect 7-8d duration (excluding *P. aeruginosa*)

2016: Methodologically flawed meta-analysis of available data shows no difference for *P.aeruginosa* outcomes > Guidelines updated to 7-8d for all

Is there any room to optimize?

A Case for HAP/VAP?

*Stability
- Afebrile
- SBP> 90 mmHg without inotropic support

Reducing Antibiotics Treatment Duration for Ventilator-Associated Pneumonia (REGARD-VAP)		
Design	Single blind, multi-center, hierarchical non-inferiority-superiority, randomized control trial in southeast Asia Adult, ICU, VAP (CDC), **met pre-defined stability criteria** at randomization	
Intervention Comparator	Individualized short course (at least 3-5 days) Usual care determined by physician	
Baseline, n (%)	**Short Course (n=231)**	**Usual Care (n=229)**
Age, median yr(IQR)	63 (50-73)	64.0 (52-75)
SOFA, median(IQR)	6 (4-8)	6 (4-8)
Time to therapy, d	0 (0-3)	0 (0-2)
Surgical ICU	160 (69)	156 (68)
Carbapenem-R	76 (33)	65 (28)
Fever	176 (76)	189 (83)
Inotropes	40 (17)	47 (21)

Ma Y et al. Lancet Respir Med. 2024;12:399-408.

A Case for HAP/VAP?

Primary Outcome, n(%)	Short Course (n=231)	Usual Care (n=229)
All Cause Mortality or Recurrence at 60 days	95 (41)	100 (44)
	Adjusted Absolute Risk -2% (95% CI -∞ to 5%)	
All cause mortality	81 (35)	33 (14%)
Recurrence	33 (14)	30 (13)

Duration of Antimicrobials

- Short Course: 6d (IQR 5-7)
- Usual care: 14d (IQR 10-21)

Fewer overall side effects short course group (AKI), no difference Hospital/ventilator duration

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Ma Y et al. Lancet Respir Med. 2024;12:399-408.

Conclusions

Patient specific durations may be more appropriate for pneumonia duration

If clinically improved

- Consider 3 days in non-sever CAP
- Consider 5-7 days for HAP/VAP

Each day does matter! May not need to stick to “standard” duration buckets – 7 vs 5 vs 4 vs 6

Assessment Question #2

Al is a 55 year old male with uncontrolled type 2 diabetes and COPD he presents with productive cough, fever, and shortness of breath on exertion over the past 3 days. Chest Xray reveals dense lobar infiltrate in left lower lobe. AL is started on ceftriaxone and admitted to the hospital.

It is day 3 of ceftriaxone and AL will be discharged

Which recommendation best reflects the clinical pharmacist's responsibility in optimizing antimicrobial use for this patient upon discharge?

A. Amoxicillin/Clavulanate 875mg/125mg PO BID x 2 days
B. Ciprofloxacin 500mg BID x 5 days
C. Keep inpatient to complete 5 days of IV therapy
D. Amoxicillin/Clavulanate 875mg/125mg PO BID x5 days
E. No further antibiotics at discharge

Temp: 98°F
BP: 150/95 mmHg
HR: 75 BPM
RR: 20
Oxygen Saturation: 95% on room air

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Culture Interpretation – Common Contaminants

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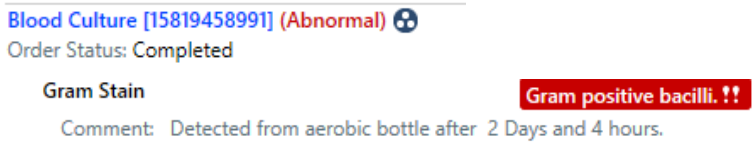
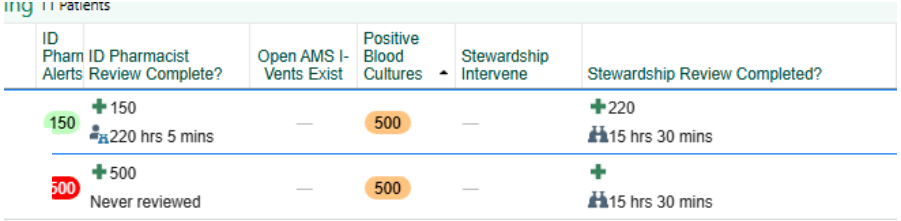
Help!

- You are staffing and get notified of a positive blood culture for patient MB:





- Gram positive bacilli present in 1 out of 2 cultures, Biofire did not identify an organism
- Patient is currently not on any antibiotics and is clinically stable

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Contaminant?

- Contaminant = presence of an organism in a culture that is typically acquired during acquisition or processing of the specimen that is not causing an infection

- Blood cultures may be contaminated by a limited range of Gram-positive commensal organisms
  - Ex. coagulase-negative staphylococci, *Corynebacterium* spp., *Bacillus* spp.
    - *S. epidermidis, S. saprophyticus, S. hominis, S. haemolyticus, S. capitis, S. warneri, S. simulans*

- Determination of the likelihood of contamination versus true bacteremia is based on clinical judgement when a blood culture grows a gram-positive skin commensal

When a commensal skin organism causes an actual infection, it is often related to an indwelling catheter or device

Contaminant?

Factor	Contaminant	True Bacteremia
Number of positive sets of blood cultures	Usually only one*	two or more cultures
Time to positive culture	Often slower (>2 days)	Usually rapid
Central venous catheter, prosthetic heart valve or other clinical risk	Often absent	Usually present
Patient-related risk for contaminants (ex. difficult stick)	Can be present	Often absent

*One positive blood culture for a possible contaminant with an alternate explanation for the symptoms that prompted the culture is almost always a contaminant. However, if patients have prosthetic material, careful assessment is advised as they may be pathogenic.

Contaminant?

- **Gram-negatives, yeast, *S. aureus* (MSSA or MRSA) *S. lugdunensis*, most *Streptococcus spp*. and most anaerobes** are almost **NEVER** contaminants

- A diagnosis of contamination should not be invoked to justify withholding antimicrobial therapy for patients with a blood culture growing one of these organisms unless under the guidance of Infectious Diseases consultation

Remember MB?

- Gram positive bacilli present in 1 out of 2 cultures

Follow a step-wise approach:

1. Are there two cultures showing growth of the same organism?

2. Is the organism identified as a gram-negative bacilli or yeast?

3. Is the organism a gram-positive cocci in pairs or chains? i.e., *Streptococcus spp.?*

4. Is the organism gram positive cocci in clusters, identified as *Staphylococcus aureus*?

Remember MB?

- Consider patient risk factors associated with poor outcome
    - Risk factors include:
        - Immunocompromised
        - Internal hardware (artificial heart valve, pacemaker, prosthetic joints),
        - Suspicion/history of endocarditis
        - Central line
        - Concern for osteomyelitis/discitis
- Consider which is showing growth
    - Anaerobic vs aerobic

Remember MB?

What if…

- The chart describes a 70-year-old male who presented with alerted mental status concerning for meningitis. Blood cultures were drawn as sepsis was on the differential and he is pending a lumbar puncture. Empirically started on vancomycin, ceftriaxone, and acyclovir.

VS

- The chart describes a healthy 20-year-old non-pregnant female presenting for respiratory symptoms who has no concerning past medical history.

Stratify the Bacteria by Risk

Find the bacteria below and determine if it is HIGH, INTERMEDIATE, or LOW risk.

Species	Gram Stain	Morphology	Subclassification	Approx % chance of true bacteremia if single bottle positive	Risk Group
Bacillus anthracis	Gram pos	bacilli		>80	High
Clostridium botulinum	Gram pos	bacilli	anaerobe	>80	High
Clostridium difficile	Gram pos	bacilli	anaerobe	>80	High
Clostridium spp. (except C. botulinum, C. difficile, C. tetani)	Gram pos	bacilli	anaerobe	64	High
Clostridium tetani	Gram pos	bacilli	anaerobe	>80	High
Corynebacterium jeikeinum	Gram pos	bacilli		>80	High
Listeria monocytogenes	Gram pos	bacilli		>80	High
Mycobacterium spp.	Gram pos	bacilli	Mycobacteria	100	High
Nocardia spp.	Gram pos	bacilli		>80	High
Clostiridium perfringens	Gram pos	bacilli	anaerobe	25	Intermediate
Lactobacillus spp.	Gram pos	bacilli	anaerobe	50	Intermediate
Bacillus spp. (except B. anthracis)	Gram pos	bacilli		<5	Low
Corynebacterium spp.(except C. jeikeium)	Gram pos	bacilli		<5	Low
Paenibacillus spp.	Gram pos	bacilli		<5	Low
Propionibacterium spp.	Gram pos	bacilli	anaerobe	3	Low
Rhodococcus spp.	Gram pos	bacilli		<5	Low

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Hall KK. 2006. *Clin. Microbiol. Rev.*

Culture Interpretation – Bug Drug Mismatch

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Help!

- You are staffing and are reviewing the following culture for NS:

Susceptibility

	Escherichia coli MIC (Preliminary)	
Amikacin	2 ug/mL	Susceptible
Ampicillin	>=32 ug/mL	**Resistant**
Ampicillin/Sulbactam	16 ug/mL	**Intermediate**
Cefazolin	>=32 ug/mL	**Resistant** [1]
Cefazolin (Urine)	>=32 ug/mL	**Resistant** [2]
Cefepime	8 ug/mL	**Susceptible dose dependent**
Ceftriaxone	>=64 ug/mL	**Resistant**
Ciprofloxacin	>=4 ug/mL	**Resistant**
Ertapenem	<=0.12 ug/mL	Susceptible
ESBL	Positive ug/mL	**Positive** [3]
Gentamicin	>=16 ug/mL	**Resistant**
Meropenem	<=0.25 ug/mL	Susceptible
Nitrofurantoin	<=16 ug/mL	Susceptible
Piperacillin/Tazobactam	<=4 ug/mL	Susceptible
Trimethoprim/Sulfamethoxazole	>=320 ug/mL	**Resistant**

- NS is admitted for community acquired pneumonia and is currently on ceftriaxone 2 g IV daily

Urine Cultures

- Pyuria **PLUS** symptoms = UTI
  - Asymptomatic treatment only in pregnancy and prior to urological procedures
- Altered mental status alone is not indicative of a UTI

Old Classifications	New Classifications
Uncomplicated UTI: Acute cystitis in afebrile nonpregnant premenopausal women with no diabetes and no urologic abnormalities 	**Uncomplicated UTI: Infection confined to the bladder** in afebrile women or men
Acute Pyelonephritis: Acute kidney infection in women otherwise meeting the definition of uncomplicated UTI above 	**Complicated UTI: infection beyond the bladder** in women or men • Pyelonephritis • Febrile or bacteremic UTI • Catheter-associated (CAUTI) • Prostatitis* (*not covered by these guidelines)
Complicated UTI: All other UTIs	

Trautner et al., Infectious Diseases Society of America, 2025

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Sputum Culture

- Colonization is common
  - Need clinical correlations for determination of treatment
- Some organisms virtually never considered pulmonary pathogens:
  - Coagulase negative *Staphylococcus*
  - *Enterococci*
  - Gram positive bacilli (except *Nocardia*)
- MRSA Nasal PCR – high negative predictive value
  - If negative: MRSA is NOT the cause of your pneumonia
- Aspiration pneumonia – no anaerobic coverage warranted

Shi et al., The Journal of Infectious Diseases, 2020
Mohanty et al., The Journal of Infectious Diseases, 2024

Remember NS?

ESBL producing *E. coli* in urine culture

Follow a step-wise approach:

1. Is treatment indicated?
2. Is current treatment effective?
3. Can coverage be narrowed?
4. Can I adjust to PO if improved? Does the dose need adjusted?
5. Can I define duration?

Remember NS?

What if…

- The chart describes a 70-year-old male who presented with alerted mental status, shortness of breath with chest x-ray findings consistent with pneumonia. Urine culture was drawn in the ED because of the altered mental status but his other urinary symptoms are unremarkable

VS

- A pregnant 24-year-old female with this positive culture who came in complaining of uncontrolled nausea and vomiting

Assessment Question #3

RK is a 76-year-old male with a past medical history of small bowel obstruction, chronically on TPN via a central line presenting with fevers, and chills. He has empirically been started on cefepime. His blood culture is 1 of 2 positive for a gram-positive cocci in clusters, identified as a *Staphylococcus spp.* Which recommendation best reflects the clinical pharmacist's responsibility in optimizing antimicrobial use for bacteremias?

A. This is a contaminant given in 1 of 2, no additional therapy needed.

B. This is NOT a contaminant given presence of a central line, recommend the addition of vancomycin

C. This is unable to be interpreted given only 1 culture positive. Hold adding antibiotics and repeat blood cultures.

D. This is a contaminant, but we should add vancomycin anyways because there's no harm in adding a

BLOOD CULTURE, RAPID IDENTIFICATION

Status: **Final result** Visible to patient: **Yes (not seen)**

Specimen Information: Blood, Venous

0 Result Notes

Component	Ref Range & Units	5 d ago
Staphylococcus species	Not Detected	Detected!!
Staphylococcus aureus	Not Detected	Not Detected
Staphylococcus lugdunensis	Not Detected	Not Detected
Enterococcus faecalis	Not Detected	Not Detected
Enterococcus faecium	Not Detected	Not Detected
Streptococcus species	Not Detected	Not Detected
Streptococcus agalactiae	Not Detected	Not Detected
Streptococcus pneumoniae	Not Detected	Not Detected
Streptococcus pyogenes	Not Detected	Not Detected
Listeria monocytogenes	Not Detected	Not Detected
Enterobacterales	Not Detected	Not Detected
Enterobacter cloacae complex	Not Detected	Not Detected
Escherichia coli	Not Detected	Not Detected
Klebsiella aerogenes	Not Detected	Not Detected
Klebsiella oxytoca	Not Detected	Not Detected
Klebsiella pneumoniae	Not Detected	Not Detected
Proteus species	Not Detected	Not Detected
Salmonella species	Not Detected	Not Detected
Serratia marcescens	Not Detected	Not Detected
Acinetobacter baumannii	Not Detected	Not Detected
Pseudomonas aeruginosa	Not Detected	Not Detected
Stenotrophomonas maltophilia	Not Detected	Not Detected
Bacteroides fragilis	Not Detected	Not Detected
Haemophilus influenzae	Not Detected	Not Detected
Neisseria meningitidis	Not Detected	Not Detected
Candida albicans	Not Detected	Not Detected
Candida auris	Not Detected	Not Detected
Candida glabrata	Not Detected	Not Detected
Candida krusei	Not Detected	Not Detected
Candida parapsilosis	Not Detected	Not Detected
Candida tropicalis	Not Detected	Not Detected
Cryptococcus neoformans/gattii	Not Detected	Not Detected

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Summary

Everyone has a role in fighting antimicrobial resistance

Optimizing antibiotic use includes appropriate empiric therapy and limiting duration

Critical evaluation of cultures is necessary to determine need for therapy

Ask for help if unsure

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References

- Centers for Disease Control and Prevention. The NHSN Standardized Antimicrobial Administration Ratio (SAAR). Revised July 28, 2025. Accessed October 9, 2025. https://www.cdc.gov/nhsn/pdfs/ps-analysis-resources/aur/au-saar-guide-508.pdf
- Kollef MH, Burnham JP. Antibiotic thresholds for sepsis and septic shock. *Clin Infect Dis*. 2019 Aug 30;69(6):938-940. doi:10.1093/cid/ciy1035.
- Strich JR, Heil EL, Masur H. Considerations for empiric antimicrobial therapy in sepsis and septic shock in an era of antimicrobial resistance. *J Infect Dis*. 2020 Jul 21;222(Suppl 2):S119-S131. doi:10.1093/infdis/jiaa221.
- Baghdadi JD, Goodman KE, Magder LS, et al. Association between delayed broad-spectrum gram-negative antibiotics and clinical outcomes: how much does getting it right with empiric antibiotics matter. *Clin Infect Dis*. 2025 Jun 4;80(5):949-958. doi:10.1093/cid/ciaf039.
- Morelli MK, Son AH, Bitar Y, Hecker MT. Fear of missing organisms (FOMO): the discordance among broad-spectrum empiric antibiotic therapy, microbiologic results, and definitive antibiotic therapy for diabetic foot infections and lower extremity osteomyelitis. *Antimicrob Steward Healthc Epidemiol*. 2023 Oct 25;3(1):e186. doi:10.1017/ash.2023.467.
- Tamma PD, Heil EL, Justo JA, et al. Infectious Diseases Society of America 2024 guidance on the treatment of antimicrobial-resistant gram-negative infections. *Clin Infect Dis*. 2024 Aug 7:ciae403. doi:10.1093/cid/ciae403.
- Hsu AJ, Chiotos K, Heil EL, et al. The effectiveness of newer beta-lactams for the treatment of antimicrobial-resistant gram-negative meningitis. *Clin Infect Dis*. 2025 Jun 4;80(5):959-968. doi:10.1093/cid/ciaf071.
- Trautner BW, Lavergne V, et al. Complicated urinary tract infections (cUTI): clinical guidelines for treatment and management. Infectious Diseases Society of America, 2025 Jul 17.

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Questions?

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