

This quick reference guide describes the process of antibiotic de-escalation in patients with **positive bacterial cultures**. This guide is not intended for use in patients on empiric antibiotics with negative bacterial cultures. This 6-step process ensures that patients receive the narrowest-spectrum antibiotic to treat the infection.

➔ What is de-escalation?

As you know, we often prescribe broad-spectrum antibiotics because we don't have the full clinical picture. In many cases, the initial empiric antibiotic is not the best option for treatment of the patient's infection. De-escalation is when we switch to a narrower-spectrum antibiotic to target the causative pathogen(s) identified on culture.

Key Points

Switching to narrower spectrum antibiotics when clinically indicated can prevent adverse reactions and reduce antibiotic resistance.

➔ What is my role in de-escalation?

Every day, review all patients on broad-spectrum antibiotics in your patient care area and identify those with positive cultures. Review these patients using the 6-step process outlined in this guide to determine whether a narrower antibiotic would optimize therapy. If you feel a change in therapy is needed, work with the prescribing provider and recommend an alternate therapy.

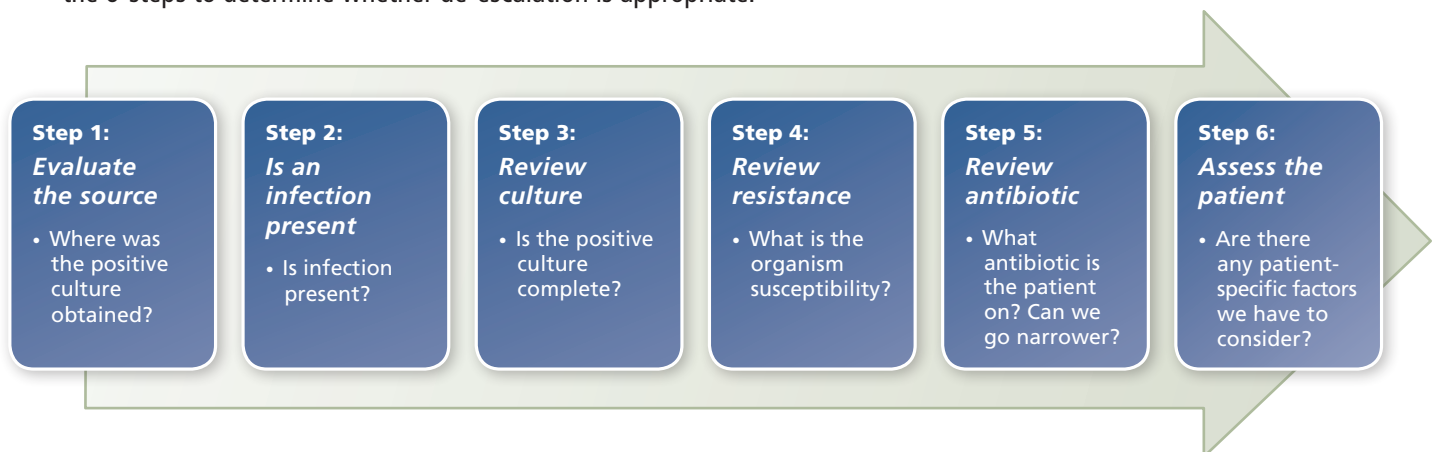
This process is designed for patients with positive cultures only!

Key Point:

The goal of de-escalation is to determine whether a narrower antibiotic would be more appropriate for each patient.

➔ What is the process?

For every patient on broad-spectrum antibiotics with a positive culture, review the 6-steps to determine whether de-escalation is appropriate.





Step 1: Evaluate the source

Where was the positive culture obtained? Positive cultures in sites considered sterile need to be taken very seriously. For positive cultures taken from non-sterile sites, use your clinical judgment to determine whether the culture represents an infection or colonization (step 2).

Review the **type**, **source**, and **status** of the culture.

Type of culture: Look here first. Here you can tell if it is a blood culture, a urine culture, or another type. A routine culture means it is from another source.

Source: This may provide additional, more specific information about the source.

Blood Culture ⓘ	Source: Blood	Accession#:
Comments: BICEP. SECOND SET. Body site modifiers: LEFT.		
Stain: GRAM STAIN, Gram Positive Cocci In pairs Aerobic bottle only Anaerobic bottle only Growth in 2 out of 2 bottles See critical value notification and read back comment below.		
Comments: CRITICAL VALUE GRAM STAIN CALLED TO		
PRELIMINARY	Result: Culture in progress.	Updated:
Currently Incubating: 2 days		

Status: This shows as PRELIMINARY until the culture is turned to FINAL. Clicking this shows you a detailed history of the microbiology updates.

Key Point:

- **Sterile sites:** blood, CSF, bone, pleural fluid, synovial fluid, and other deep surgical sites.
- **Non-sterile sites:** urine, skin, wounds, sputum, etc.



Step 2: Is an infection present

Is an infection present? The positive culture may represent any one of the following:

- **Infection:** The presence of pathogenic microorganisms that invade a body part or tissue to cause symptomatic disease.
- **Colonizer:** The presence of microorganisms in a non-sterile site that is not causing infection. These are typically commensal organisms belonging to normal flora and harmless to healthy people; sometimes they perform a vital function (e.g., gut bacteria aid in digestion).
- **Contaminant:** The unintentional or accidental introduction of microorganisms into a culture, either when the culture was obtained or in the microbiology laboratory.

If a colonizer or contaminant is the cause of the positive culture, **discuss the clinical significance with the provider.**

Key Point:

If the culture shows a colonizer or a contaminant is present, suggest that the provider stop or adjust the patient's antimicrobials.

Example colonizer: A superficial wound swab grows coagulase-negative staphylococci and *Enterococcus* spp. The site is not sterile, and these bacteria can colonize human skin. In the absence of signs and symptoms of infection, this culture likely represents colonization.

Example contaminant: A female patient with a yeast infection provides a midstream urine culture. Yeast from the urine culture would not represent a *Candida* UTI.



Step 3: Review culture

Is the positive culture complete? Ask yourself:

- Is the culture finalized? Are other cultures pending?
- Are there other organisms on the Gram stain that didn't grow?
- **Does the infectious syndrome warrant broader therapy than the culture would suggest? Do you need to cover more than just the positive culture?** For example, if the patient has an intra-abdominal abscess and the blood culture grows *E coli*, anaerobic coverage is still required even though the culture didn't grow anaerobes.
- Does the patient have a comorbid infectious syndrome that warrants broader therapy?

Key Point:

If all cultures aren't final, consider waiting on giving the provider a recommendation for de-escalation.



Step 4: Review resistance

What is the organism's susceptibility profile?

Always review the susceptibility profile to determine what antibiotics will be active. If there is an antibiotic you would like to use that isn't listed on the culture, call your microbiology laboratory for more information.

Key Point:

Talk to the microbiology lab or refer to GermWatch on intermountainphysician.org for regional antibiogram information.



Step 5: Review antibiotic

What antibiotic is the patient on? Can we go any narrower?

After you've assessed the culture and susceptibility profile, ask yourself:

- Is there a narrower antibiotic that will better meet the needs of the patient?
- What exactly should I recommend?

Key Point:

When you are ready to make a de-escalation recommendation, be specific (e.g., include patient-specific dosing).

Narrower		Broader		
<ul style="list-style-type: none"> • Penicillin • Oxacillin (nafcillin) • Dicloxacillin • Ampicillin • Amoxicillin • Cefazolin • Cephalexin • Nitrofurantoin 	<ul style="list-style-type: none"> • Doxycycline • Trimethoprim/sulfamethoxazole • Cefoxitin • Cefuroxime • Azithromycin • Clindamycin 	<ul style="list-style-type: none"> • Amoxicillin/clavulanate • Ampicillin/sulbactam • Ceftriaxone 	<ul style="list-style-type: none"> • Aztreonam • Levofloxacin • Ciprofloxacin • Cefepime • Ceftazidime • Ertapenem • Vancomycin • Ceftaroline 	<ul style="list-style-type: none"> • Imipenem • Meropenem • Piperacillin/tazobactam • Daptomycin • Linezolid



Step 6: Assess the patient

Are there any patient-specific factors we have to consider?

Consider the following patient-specific factors before making your recommendation:

- Convenience (e.g., dosing interval, IV and PO, side effects, etc.)
- Allergies*
- Drug-drug interaction
- IV or oral conversion*

* Allergies and IV or PO conversions have their own Quick Reference Guides for your reference. These are included in your training, and you can access them here at any time: intermountain.net/qpsafety/Pages/SCORE.aspx.

Key Point:

Individualize your recommendation to the patient.