Antimicrobial Stewardship Matters

Antimicrobial Stewardship | November 2024

No pus? No problem.

At a Glance:

It is important to differentiate bacterial **infection** (treat) from **colonization** (do not treat).

A positive culture, without neutrophils, from a non-sterile site usually represents colonization and may not warrant treatment.

The facts

- For non-neutropenic patients, always look at the neutrophils on culture reports of non-sterile sites.
- If none are present, the organism is likely a colonizer **not** a pathogen.
- Treating colonization exposes patients to harms of antibiotics without any benefits.

The next time you see a patient on antibiotics for a positive culture from a non-sterile site without neutrophils, think: *No pus? No problem.*

The human body contains an average of 39 trillion microbes

We live in a microbial world. For every cell in your patient's body, there is about one microbe living on their skin or in their respiratory, gastrointestinal, and genitourinary tracts. With modern culture techniques, it should not be surprising to recover organisms from nonsterile sites.

Editor & contributors Dr. Carsten Krueger, Trevor Toy (South Sector Pediatric Antimicrobial Stewardship Team)

Reviewed: Provincial AHS Antimicrobial Stewardship Committee

You can reach us at: ahs.antimicrobialstewardship@ahs.ca

Alberta Health Services
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Infection triggers inflammation

The body responds to infection by trafficking neutrophils to the source. If no neutrophils are present in a culture (or "swab") of a non-sterile site, the organism likely represents one of the multitudes of bacteria colonizing that area. Some examples include:

Sputum

The respiratory tract (including the lower tract in patients with tracheostomies or endotracheal tubes) is home to many bacteria.

When few or no neutrophils are present but epithelial cells are present, the sputum may be contaminated with saliva.

Ensure that patients are treated only when they have clinical signs of infection.

Wounds/Skin

Colonizing bacteria are often isolated from superficial skin swabs. Therefore, if signs of infection, cultures are only useful from deeper tissue.

Cellulitis of intact skin → don't swab, and treat empirically if clinically indicated.

Infected ulcers and wounds → clean or debride **before** cultures are taken.

Usual suspects

- Purulent cellulitis: *Staphylococcus aureus*
- Non-purulent cellulitis: Beta hemolytic *Streptococcus spp.*

Urine

A urine culture should only be sent if the patient has signs or symptoms of a urinary tract infection (UTI) and should always be paired with a urinalysis.

If there are not significant leukocytes on microscopy, the diagnostic criterion of a UTI is not met (no "itis" for "cystitis").

The diagnosis also requires significant growth of a uropathogen. Learn more.

Treating bacterial colonization can increase risk of symptomatic infection by depleting protective flora and can increase risk of resistant organisms in the future.

References are available upon request.

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