

Double Coverage for Anaerobes
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Anaerobic bacteria make up normal GI flora (*Bacteroides fragilis*, *Prevotella melaninogenica*, and *Fusobacterium*) and mouth flora (*Peptostreptococcus*). Antimicrobial coverage for these organisms can be indicated in certain infections such as intraabdominal infections, aspiration pneumonia, diabetic foot infections/osteomyelitis, and gynecologic infections. Typically, anaerobic pathogens are difficult to isolate in culture, so treatment is usually empiric when anaerobes are suspected.^{1,2}

Antibiotics with anaerobic coverage⁷:

- Amoxicillin/clavulanate
- Ampicillin/sulbactam
- Piperacillin/tazobactam
- Cefotetan and Cefoxitin
- Carbapenems (meropenem, ertapenem, imipenem)
- Metronidazole
- Clindamycin
- Tigecycline
- Moxifloxacin

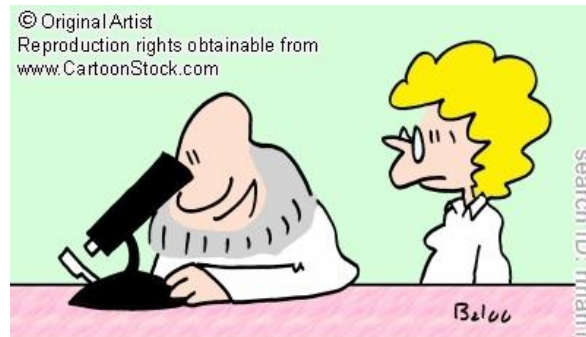
Double coverage occurs when any of the antibiotics listed above are used in combination. The redundancy of anaerobic coverage occurs frequently in the hospital setting, and it can lead to antimicrobial resistance. There was a retrospective study through the Veteran Affairs health system. This study looked at 128 different hospitals and their use of metronidazole, and it showed that the hospitals studied used metronidazole with a second agent to redundantly treat anaerobes. The most common combination was with piperacillin/tazobactam and metronidazole.⁵

Another study was performed in pediatrics to determine the efficacy of combination therapy in patients with broad spectrum antibiotics and metronidazole who had perforated appendicitis. This study showed that there were no beneficial clinical effects of adding metronidazole to drugs such as piperacillin/tazobactam.⁶

Double coverage is NOT RECOMMENDED per guidelines and clinical data. *Bacteroides fragilis* is usually the most common anaerobic pathogen, and the above listed antibiotics are all effective in treating this pathogen. The current guidelines for intraabdominal infections recommend a single agent be used for anaerobic coverage.³

Exceptions to double covering for anaerobes:

- Clindamycin can be given in combination with another agent that covers anaerobes when it is being used to treat necrotizing fasciitis. Clindamycin is used in this situation to reduce the production of toxins that are produced by staphylococcus and streptococcus.⁴



"The anaerobic ones are just sitting there, but the aerobic bacteria are doing jumping jacks, sit-ups, leg lifts...."

<https://dumielauxepices.net/bacteria-clipart/bacteria-clipart-anaerobic-bacteria>

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