

Double Anaerobic Coverage

Anaerobic bacteria are normal GI flora (gram-negative rods *Bacteroides fragilis*, *Prevotella melaninogenica*, and *Fusobacterium*) and mouth flora (gram-positive pathogens *Peptococcus* and *Peptostreptococcus*). Anaerobic coverage may be indicated in various infections including but not limited to intra-abdominal infections, aspiration pneumonia, diabetic foot infections/osteomyelitis, and gynecologic infections.

Gram-positive oral anaerobes are covered by most beta-lactams including penicillin. The following antibiotics have good-excellent coverage of anaerobic gram-negative bacilli such as *B. fragilis*. Use of any combination of the agents below is considered double-anaerobic coverage, which is not necessary.

Antibiotics with anaerobic coverage

Ampicillin/sulbactam	Metronidazole
Piperacillin/tazobactam	Clindamycin
Cefotetan	Tigecycline
Cefoxitin	Moxifloxacin (<i>non-formulary</i>)
All Carbapenems (meropenem, ertapenem, imipenem)	

Guidelines as well as susceptibility and **clinical data DO NOT SUPPORT double-anaerobic coverage.** *B. fragilis*, the most common pathogenic anaerobe, has resistance rates of <1-5% to most beta-lactams including <1% to piperacillin/tazobactam, carbapenems, and metronidazole. Guidelines for intra-abdominal and gynecological infections **recommend anaerobic coverage with a single agent.** Adding metronidazole for anaerobic coverage to antibiotics already with anaerobic activity **HAS NOT** been shown to improve clinical outcomes in patients.

Conclusions: Use of multiple antibiotics with anaerobic activity is not recommended and increases patient risk for adverse drug effects from exposure to unnecessary drugs. **Please refrain from using multiple agents with anaerobic coverage except for the following clinical scenarios:**

EXCEPTIONS:

- Clindamycin can be added for anti-toxin effects in the treatment of necrotizing fasciitis
- Metronidazole can be added for the treatment of *C. difficile*
- Metronidazole can be added to gentamicin + clindamycin regimens for peri-operative prophylaxis for ~24 hours in GYN cytoreductive surgeries or surgeries involving the bowel or bowel contamination
- Clindamycin may be added for initial, adjunctive, short-term management of maternal sepsis presenting with toxic shock syndrome (TSS) or toxic shock like syndrome (TSLs) for toxin neutralization
- Metronidazole may be added to Clindamycin + Gentamicin in the management of Pelvic Inflammatory Disease +/- Tubo-ovarian abscess in the presence of anaphylaxis to cephalosporins

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