

Early infection	Deep or late infection
Augmentin (oral) • Gram+ • Enterobacteriaceae • not <i>Pseudomonas aeruginosa</i> • anaerobes	Timentin (IV) or Tazocin (IV) • Gram+ • Enterobacteriaceae • some <i>Pseudomonas aeruginosa</i> • anaerobes
ciprofloxacin (oral) + clindamycin (oral) • broad Gram- (w/ <i>P. aeruginosa</i>) • Gram+ • anaerobes	meropenem (IV) - very broad spectrum • Gram+ • Gram- • some <i>Pseudomonas aeruginosa</i> • anaerobes
cephalexin (oral) + metronidazole (oral) • Gram+ • anaerobes (best) • some Enterobacteriaceae • not <i>Enterococci</i> , <i>P. aeruginosa</i> or β -lactamases	

Mechanisms of bacterial resistance:

1. Prevent influx of antibiotic - eg: mutate porins
2. Enhance efflux of antibiotic - eg: pumps
3. Enzymatic destruction of antibiotic - eg: β -lactamases
4. Mutate antibiotic target - eg: transpeptidases (PBPs)

MRSA - Methicillin Resistant *Staphylococcus aureus* - fairly common

- *mecA* (chromosomal gene) encodes PBP2a, a transpeptidase resistant to all β -lactams
- antibiotic susceptibility testing required
- for less serious infections give (oral) **erythromycin**, **clindamycin**, **co-trimoxazole**, **tetracyclines** or **ciprofloxacin**
- for more serious infections - **vancomycin**, **teicoplanin** (similar), or **fusidic acid** with **rifampicin** (oral combination)

Resistance to expanded spectrum cephalosporins (3rd gen)

- β -lactamase mediated resistance emerged after these drugs used heavily against Gram-

1. Class 1 β -lactamase production

- cephalosporinases
- chromosomal gene normally 'de-repressed' by inducers (other antibiotics, which may or may not be susceptible to destruction by class 1 cephalosporinase)
- Stably de-repressed mutants hyper-produce cephalosporinase, which destroy 3rd generation cephalosporins. These mutants have been selected through use of 3rd gen cephalosporins in hospitals
- Class 1 β -lactamases are not destroyed by clavulanic acid
- Bacteria capable of class 1 β -lactamase expression include:

E - *Enterobacter*

S - *Serratia*

C - *Citrobacter freundii*

A - *Acinetobacter*

P - *Pseudomonas aeruginosa*, *Proteus vulgaris*, *Providencia*

M - *Morganella*