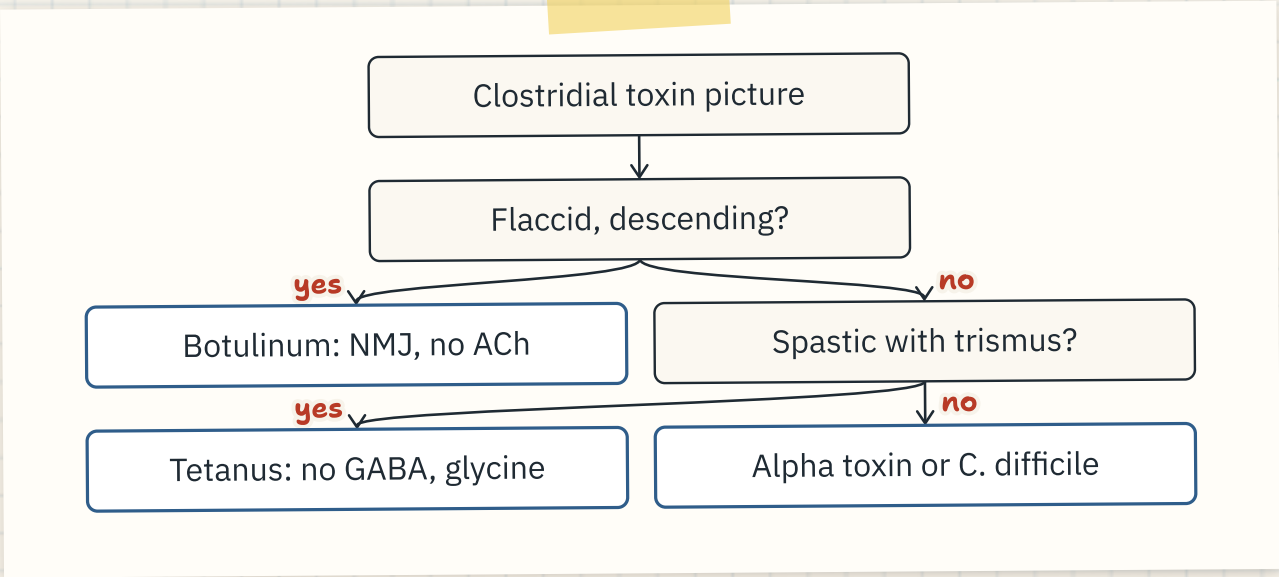
Clostridial toxins compared

Target and clinical picture of four toxins



Step by step

1. Botulinum and tetanus toxins cut SNAREs: transmitter not released.
2. Ask where the toxin acts: NMJ nerve ending or cord interneuron.
3. Alpha toxin and C. difficile toxins leave SNAREs alone.

Toxin	Target / action	Picture
Botulinum	SNAREs at NMJ; no ACh	Flaccid, descending
Tetanus	SNAREs in inhibitory interneurons; no GABA or glycine	Spastic; trismus
C. perfringens alpha	Phospholipase C (lecithinase)	Gas gangrene
C. difficile A and B	Glucosylate Rho proteins	Pseudomembranous colitis

Four clostridial toxins

Brakes versus signal

Botulinum blocks the signal at the muscle: flaccid.

Tetanus blocks the brakes in the cord: spastic.

Exam traps

- Same SNARE mechanism does not mean the same picture: the target cell differs.
- Alpha toxin is a lecithinase and makes gas gangrene.
- C. difficile toxins A and B glucosylate Rho proteins.

Clostridial toxins compared: tetanus, botulinum, alpha, C. difficile
Video, written lesson, practice question and sources: medservatory.com/usmle-step-1/microbiology/clostridial-toxins-compared

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