



# Open Fracture Management Guideline

Revised September, 2020

Gustilo-Anderson Classification	
Grade 1	Clean skin opening of < 1 cm Minimal muscle contusion Simple, transverse, or short oblique fractures
Grade 2	Laceration > 1 cm Extensive soft tissue damage Mild to moderate crushing component Simple transverse or short oblique fractures with minimal comminution
Grade 3a	Extensive soft tissue laceration but adequate bone coverage Segmental fractures Gunshot injuries Minimal periosteal stripping
Grade 3b	Extensive soft tissue injury with periosteal stripping and bone exposure requiring soft tissue coverage Usually associated with massive contamination
Grade 3c	Concomitant vascular injury requiring repair

Management	
Tetanus Toxoid	Administer if > 10 years since last booster or unknown immunization status
Antibiotics	First dose within 1 hour of injury whenever possible
Operative irrigation and debridement	Earliest intervention possible, but must be within 24 hours Strongly consider good irrigation and clean dressing (or betadine-soaked gauze) in ED if operation not within 1-2 hours
Soft tissue coverage	Flap or STSG Coverage should be completed within seven days of injury

# Antibiotics

Gustilo-Anderson Classification	Antibiotic & Dosing	Frequency	Duration
Grade 1 & 2	Cefazolin (<120 kg = 2 g, ≥ 120 kg = 3g)	Every 8 hours	48 hours
	Alternative: Vancomycin (pharmacy consult) or Clindamycin 900 mg	Per pharmacy Every 8 hours	48 hours 48 hours
Grade 3	Same as Grade 1/2 + Gentamicin 5 mg/kg	Daily	48 hours 48 hours
Grade 3 w/ extensive organic contamination	Same as Grade 1/2 + Gentamicin 5 mg/kg + Penicillin G 2 million units	Daily Daily	48 hours 48 hours 48 hours

# References

- ACS TQIP Best Practices in the Management of Orthopaedic Trauma, 2015.
- Eastern Association for the Surgery of Trauma (EAST) guidelines: <https://www.east.org/education/practice-management-guidelines/open-fractures-prophylactic-antibiotic-use-in-update>
- Gustilo-Anderson Classification. Clin Orthop Relat Res. 2012 Nov;470(11):3270-4.