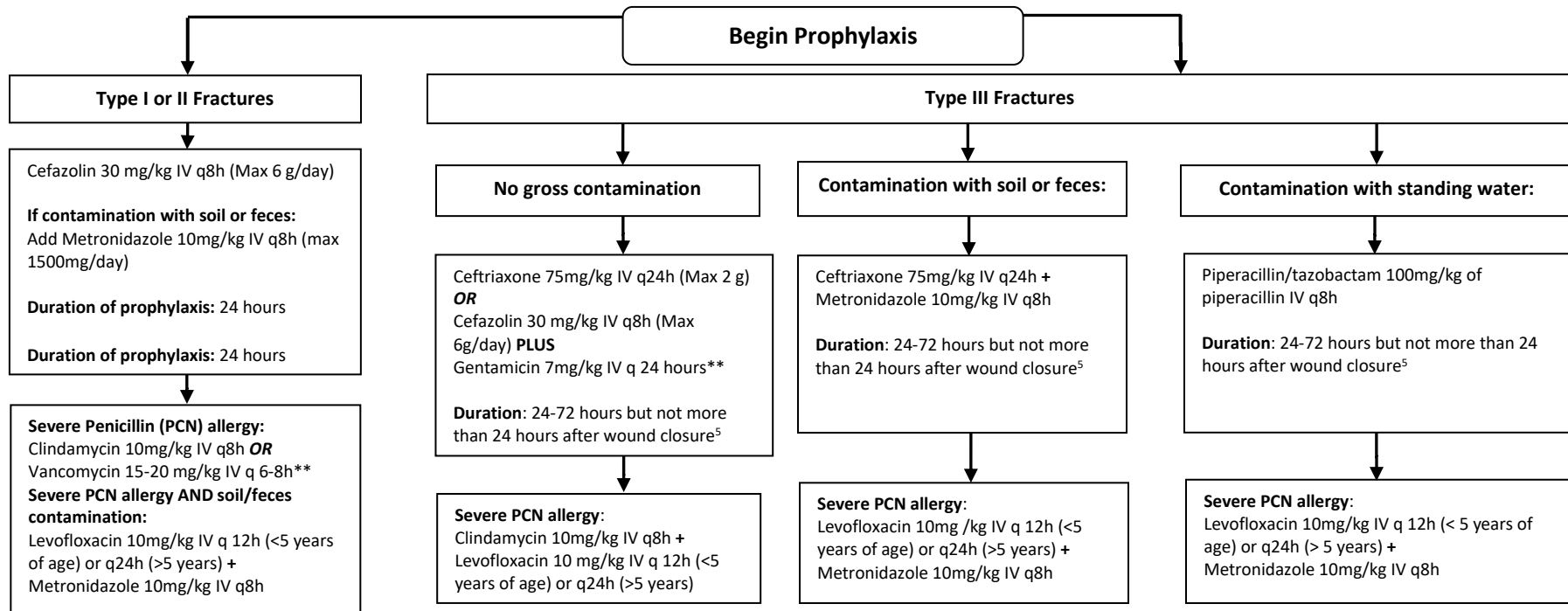# Trauma Center Practice Management Guideline

Iowa Methodist Medical Center — Des Moines

Open Fracture Clinical Pathway for Pediatric Trauma Patients *Blank Pediatrics*	
PEDIATRIC **Practice Management Guideline**	**Effective:**
Contact: **Trauma Center Medical Director**	**Initiated: 07/2017, Reviewed 04/24**

Open Fracture Gustilo Classification	
Type I Fracture	Open fracture with clean wound <1 cm long
Type II Fracture	Open fracture with laceration >1 cm but < 10 cm long without extensive soft tissue damage
Type III Fracture	Open segmental or comminuted fracture, open fracture with extensive soft tissue damage, >10 cm wound or traumatic amputation

Begin Prophylaxis

Type I or II Fractures

Cefazolin 30 mg/kg IV q8h (Max 6 g/day)

If contamination with soil or feces:
Add Metronidazole 10mg/kg IV q8h (max 1500mg/day)

Duration of prophylaxis: 24 hours

Duration of prophylaxis: 24 hours

Severe Penicillin (PCN) allergy:
Clindamycin 10mg/kg IV q8h **OR**
Vancomycin 15-20 mg/kg IV q 6-8h**
Severe PCN allergy AND soil/feces contamination:
Levofloxacin 10mg/kg IV q 12h (<5 years of age) or q24h (>5 years) +
Metronidazole 10mg/kg IV q8h

Type III Fractures

No gross contamination

Ceftriaxone 75mg/kg IV q24h (Max 2 g) **OR**
Cefazolin 30 mg/kg IV q8h (Max 6g/day) **PLUS**
Gentamicin 7mg/kg IV q 24 hours**

Duration: 24-72 hours but not more than 24 hours after wound closure[5]

Severe PCN allergy:
Clindamycin 10mg/kg IV q8h +
Levofloxacin 10 mg/kg IV q 12h (<5 years of age) or q24h (>5 years)

Contamination with soil or feces:

Ceftriaxone 75mg/kg IV q24h +
Metronidazole 10mg/kg IV q8h

Duration: 24-72 hours but not more than 24 hours after wound closure[5]

Severe PCN allergy:
Levofloxacin 10mg /kg IV q 12h (<5 years of age) or q24h (>5 years) +
Metronidazole 10mg/kg IV q8h

Contamination with standing water:

Piperacillin/tazobactam 100mg/kg of piperacillin IV q8h

Duration: 24-72 hours but not more than 24 hours after wound closure[5]

Severe PCN allergy:
Levofloxacin 10mg/kg IV q 12h (< 5 years of age) or q24h (> 5 years) +
Metronidazole 10mg/kg IV q8h

For known MRSA colonization in all fracture types: Utilize Vancomycin 15 mg/kg IV q6-8h**
**Pharmacy will adjust doses if indicated based on renal function and are available to manage vancomycin or gentamicin therapy when consulted.

Antibiotic Considerations:
- Prophylaxis should begin as soon as possible and within 3 hours of injury because infection risk increases significantly beyond this time frame.[5]
- Cultures immediately post-injury are not useful in directing antimicrobial prophylaxis.[5]
- Type I or II fractures necessitate gram positive coverage while Type III fractures require the addition of gram negative coverage.[2]
- Studies have found similar efficacy with ceftriaxone as compared with cefazolin plus gentamicin in Type III Fractures.[1]
- Fluoroquinolones may be detrimental to fracture healing[5] and may result in higher infection rates in Type III Fractures.[2]
- Aminoglycosides should be dosed once daily as this may decrease side effect risk.[2]
- Even for Type III Fracture, 1 day of antibiotics may be as effective as longer courses[4]
- All patients should be evaluated for Tetanus prophylaxis.

Irrigation, debridement and skin closure[6]:
- Patients with open fractures should be taken to the operating room for irrigation and debridement within 24 hours of initial presentation whenever possible.
- Patients with severe fractures associated with gross wound contamination should be brought to the operating room more quickly, and as soon as clinically feasible, based on the patient's condition and resources available.
- Whenever possible, skin defects overlying open fractures should be closed at the time of initial debridement.
- Soft tissue coverage should be completed within seven days of injury for open fractures associated with wounds requiring skin grafting or soft tissue transfers.

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