# Antibiotics for Open Fractures

Objectives

This guideline was built to guide the appropriate use of antibiotic prophylaxis for patients seen in the emergency department, clinic or inpatient setting with an acute, traumatic open fracture of the long bones, hands or feet.

If a patient is diagnosed with an open fracture of the long bones, hands or feet, antibiotic prophylaxis to prevent infection is appropriate. Correct antibiotic prophylaxis depends on the severity of the injury and epidemiological risk factors. Combined with expert surgical technique, early administration of antibiotics is likely the most important factor in preventing infection.

In general, there appears to be good scientific support for no more than 24 hrs of antibiotic prophylaxis after injury, with possibly some nuance for Gustilo-Anderson type III fractures and for timing of closure for those specific types [[1]](https://paperpile.com/c/X7jju5/UTPD). More severe fractures (ex. type III with vascular injury) may need an individualized prophylaxis plan.

Many individuals with open fractures also have other injuries. If the patient is getting antibiotics for another indication, s/he may not need additional prophylactic antibiotics. The recommendation for antibiotic prophylaxis must be coordinated with the physician primarily responsible for the patient and with other consulting services. Giving antibiotics is associated with adverse effects and the development of drug-resistant organisms within individual patients. Given the often lengthy, complicated care required for trauma patients, what happens in the ED can negatively affect treatment options later.

Definitions [[2,3]](https://paperpile.com/c/X7jju5/6dC3+tRSE):

Type I open fracture: open fracture with skin wound <1cm in length and clean

Type II open fracture: open fracture with laceration >1cm in length without extensive soft tissue damage, flaps or avulsions

Type III open fractures: open segmental fracture or >10cm wound with extensive soft tissue injury or a traumatic amputation

The best information available for prophylaxis comes from the EAST Practice Management Guidelines [[4]](https://paperpile.com/c/X7jju5/Q6KC), including:

Level 1 support for:

- Prophylaxis for Gram-positive cocci immediately

- Prophylaxis for Gram-negative rods with type III fractures

- Anaerobic prophylaxis for fecal or clostridial contamination (farms, etc.)

Level 2 support for:

- Up to 72 hrs of antibiotics for type III fractures with no soft tissue coverage.

- Up to 24 hrs of antibiotics after soft tissue coverage for type III fractures.

Antibiotic prophylaxis recommendations:

NOTE: For surgeries performed on the same day as prophylaxis administered, please inform anesthesia provider that the patient is already on antibiotics for possible infection. If additional antibiotic doses are given as pre-operative prophylaxis, do not extend or shorten the total window of prophylaxis.

Type I and Type II open fractures:

For patients <80kg:

Cefazolin 1 gram IV q 8 hours x 3 doses (24 hours), first dose now

For patients >80kg:

Cefazolin 2 grams IV q 8 hours x 3 doses (24 hours), first dose now

If severe (ex. anaphylaxis) beta-lactam allergy:

For patients < 70kg: vancomycin 1 gram IV q 12 hours x 2 doses (24 hours), first dose now

For patients 71-100kg: vancomycin 1.5 gram IV q 12 hours x 2 doses (24 hours), first dose now

For patients >100kg: vancomycin 2 gram IV q 12 hours x 2 doses (24 hours), first dose now

If known history of MRSA colonization or infection (in addition to above):

For patients < 70kg: vancomycin 1 gram IV q 12 hours x 2 doses (24 hours), first dose now

For patients 71-100kg: vancomycin 1.5 gram IV q 12 hours x 2 doses (24 hours), first dose now

For patients >100kg: vancomycin 2 gram IV q 12 hours x 2 doses (24 hours), first dose now

If type III fracture:

If soft tissue closure is anticipated:

Ceftriaxone 1 gram IV x 1 now (24 hours)

If soft tissue closure of fracture not anticipated:

Ceftriaxone 1 gram IV x 1 now and daily for 2 additional days (72 hours)

NOTE: For surgeries after the 72-hour mark, use standard antibiotic prophylaxis (cefazolin or, for MRSA+ patients, vancomycin)

If known history of MRSA colonization or infection (in addition to above):

For patients < 70kg: vancomycin 1 gram IV q 12 hours x 2 doses (24 hours), first dose now

For patients 71-100kg: vancomycin 1.5 gram IV q 12 hours x 2 doses (24 hours), first dose now

For patients >100kg: vancomycin 2 gram IV q 12 hours x 2 doses (24 hours), first dose now

If fecal or farm soil exposure:

penicillin G 4 million units every 4 hours x 6 doses (24 hours) + clindamycin 900 mg IV every 8 hours x 3 doses (24 hours), MUST BE RE-ORDERED if wound is not closed