

# Guidelines for Prophylactic Antibiotic Therapy for Trauma Laparotomies

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## BACKGROUND

Blunt and penetrating abdominal trauma results in a wide range of injuries with various degrees of microbial contamination of the peritoneal cavity. Operative management should focus on rapid control of hemorrhage and contamination with restoration of tissue perfusion as quickly as possible. Various studies have demonstrated the benefit of limited perioperative antibiotics that cover aerobic and anaerobic organisms to minimize the risk of surgical site infections (SSI) in this population.<sup>1</sup>

Studies evaluating antibiotic selection in colorectal literature demonstrate reduced risk of SSI with ceftazidime and metronidazole when compared to 2<sup>nd</sup> generation cephalosporins (i.e. cefotetan and ceftiofuran).<sup>2-4</sup> The increased rates of SSI with cefotetan may be explained by increasing resistance to 2<sup>nd</sup> generation cephalosporins seen in *Bacteroides fragilis*.<sup>5</sup>

UAB Hospital 2020 antibiogram demonstrates superior coverage of common Enterobacterales (i.e. *Citrobacter spp*, *Morganella spp*, *Proteus spp*, *Providencia spp*, *Salmonella spp*, *Serratia spp*, *Shigella spp*) with ceftazidime compared to ceftazidime.

## CLINICAL PRACTICE GUIDELINES

- I. Indications for Therapy
  - a. A single preoperative dose of prophylactic antibiotics should be administered to all patients sustaining blunt or penetrating abdominal trauma who require exploratory laparotomy.
- II. Type of Therapy
  - a. Appropriate antibiotics should have broad-spectrum aerobic and anaerobic coverage:
    - i. Ceftriaxone 2 grams IV once + metronidazole 500 mg IV q8h
    - ii. For patients with a severe, type I penicillin allergy, replace ceftriaxone with aztreonam 2g IV q 6 + metronidazole 500 mg IV q8h
  - b. Aminoglycosides should be avoided because of suboptimal activity in patients with significant injuries.
- III. Duration of Therapy
  - a. Prophylactic antibiotics should be continued for no more than 24 hours in the presence of a hollow viscus injury in the acutely injured patient.<sup>5</sup>
  - b. Absence of a hollow viscus injury requires no further administration of antibiotics.
  - c. In patients with hemorrhagic shock, the dose of antibiotics should be repeated after transfusion of every 10 units of blood until there is no further blood loss.
- IV. Timing of Therapy
  - a. Antimicrobials should be administered prior to laparotomy for trauma or as soon as feasible following gross contamination.

- b. Antibiotics can be administered in MTC for any patient suspected to have a hollow viscus injury or requiring operative exploration but should not delay transport to the Operating Room for definitive management.

V. Special Cases

a. Damage Control Laparotomy

- i. There is no evidence to support extending antibiotic prophylaxis beyond 24 hours or until the abdomen is closed in this group of patients.

**REFERENCES**

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