

**VANDERBILT UNIVERSITY MEDICAL CENTER
DIVISION OF TRAUMA AND SURGICAL CRITICAL CARE**

PERIOPERATIVE ANTIBIOTIC PROPHYLAXIS IN TRAUMA

PROTOCOL AND ORDER SETS: (see Trauma pre-Op prophylaxis order set)

Clean cases and chest tubes:

➤ Clean Operative cases:

Non-penicillin allergic:

1. Cefazolin 2 gms IV now X 1, “to OR with patient”, given prior to incision.

Penicillin allergic:

2. Clindamycin 900 mg IV now X 1, “to OR with patient”, given prior to incision.

➤ Chest tubes – adequate data supports the benefit of a single dose of narrow, gram positive coverage.

Non-penicillin allergic:

1. Cefazolin 1 gm IV X 1.
 - a. Emergent – IV stat for “chest tube insertion”
 - b. Non-emergent – IV 30 minutes prior to insertion

Penicillin allergic:

2. Clindamycin 900 mg IV X 1, administered as in a and b above.
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Abdominal trauma and all clean contaminated, contaminated, and dirty cases:

For patients sustaining abdominal trauma that requires surgical therapy or are undergoing non-clean procedures, the following antibiotic prophylaxis is indicated:

Non-penicillin allergic:

1. Cefoxitin 2 gm IV now X 1, “to OR with patient” given prior to incision.
 - a. Hollow viscus injury identified – 2 gm IV q 8 hrs X 2 doses only post-op
 - b. No hollow viscus injury identified – discontinue antibiotic post-op

Penicillin allergic:

2. Clindamycin 900 mg and Aztreonam 1 gm IV now X 1, “to OR with patient” given prior to incision.
 - a. Hollow viscus injury identified – continue dosing q 6 hrs X 3 doses only post-op
 - b. No hollow viscus injury identified – discontinue antibiotic post-op
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Rationale:

The post-operative infection rate following surgery for abdominal trauma with hollow viscus injury is between 7 and 16%¹. Demonstrated risk factors for infection include hollow viscus injury, presence and degree of intestinal contamination, patient age, transfusion requirement, and shock. The microbiology and bacterial load differ throughout the gastrointestinal tract; the concentration of bacteria increases in proximal to distal direction.

Broad spectrum antibiotic coverage should be directed against including gram positive, enteric gram-negative and anaerobic bacteria². Common pathogens include:

- Streptococcus
- Enterobacteriaceae
- Peptostreptococcus
- Enterococcus
- Bacteroides
- Clostridium

Many regimens have been proven to be efficacious in this setting. Second-generation cephalosporins and extended spectrum penicillins are as effective as regimens which include aminoglycosides and in addition, offer the convenience of single agent therapy. Agents whose spectra include coverage of enterococcus species may be more efficacious than those that do not³.

Antibiotic administration should be initiated as soon as possible after wounding and continue for **no longer than 24 hours**. Antibiotic prophylaxis beyond 24 hours is **not** associated with a reduction of surgical site infections but is associated with an increase in nosocomial infectious complications and resistant infections^{4,5}. Hospital policy mandates discontinuation of perioperative prophylaxis within 24 hours for all non-cardiac cases (see Clinical Policy Manual - CL 30-06.17, Surgical Prophylactic Antibiotic Protocol)

References

1. Griswold JA, Muakkassa FF, Betcher E et al. Injury severity dictates individualized antibiotic therapy in penetrating abdominal trauma. *Am Surg* 1993; 59:34-39.
2. Fabian TC. Prevention of infections following penetrating abdominal trauma. *Am J Surg* 1993; 165:14S-19S.
3. Weigelt JA, Easley SM, Thal ER et al. Abdominal surgical wound infection is lowered with improved perioperative enterococcus and bacteroides therapy. *J Trauma* 1993; 34:579-584.
4. Fabian TC, Croce MA, Payne LW et al. Duration of antibiotic therapy for penetrating abdominal trauma: a prospective trial. *Surgery* 1992; 112:788-794.
5. Velmahos GC, Toutouzas KG, Sarkisyan G et al. Severe trauma is not an excuse for prolonged antibiotic prophylaxis. *Arch Surg* 2002; 137:537-541.

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