

## Appendix

### ***MEDLINE Title and Abstract Search Strategy for the Effects of Antibiotic Prophylaxis in Patients with Open Fracture***

1. antibiotics.mp. or exp anti-bacterial agents/
2. antibiotic prophylaxis.mp. or exp antibiotic prophylaxis/
3. (anti-microb\* or anti bact\* or antibact\*).mp.
4. (antibiotic\* or antimicrob\*).mp.
5. cephalothin.mp.
6. antibioprohylaxis.mp.
7. cloxacillin.mp.
8. exp amoxicillin/or amoxicillin.mp.
9. exp ampicillin/or ampicillin.mp.
10. clavulanic acid.mp.
11. amoxiclav.mp.
12. augmentin.mp.
13. ticarcillin.mp.
14. exp cephalosporins/or cephalosporin\*.mp.
15. (keflex or cefamandole or kefadol or cefazolin\* or kefzol or cefixime or suprax).mp.
16. (cefotaxime or claforan or cefoxitin or mefoxin or cefpirome or cefrom or cefpodoxime).mp.
17. (orelox or cefprozil or cezil or cefradine or velosel or ceftazidim or ortum or kefadim).mp.
18. (ceftriaxone or rocephin or cefuroxime or zinacef or zinnat or cefonicid or aztreonam).mp.
19. (azactam or imipenem or ilastatin or primaxin or meropenem).mp.
20. (tetracycline\* or deteclo or demecleocyclin or ledermycin or doxycycline or vibramycin).mp.
21. (minocycline or minocine or oxytetracycline or terramycin or macrolide\*).mp.
22. (erythromycin or erymax or erythrocin or erythroped or azithromycin or zithromax).mp.
23. (clarithromycin or klaricid or telithromycin or ketek or trimoxazole or septrin).mp.
24. (trimethoprim or monotrim or trimopan or metronidazole or flagyl or metrolyl).mp.
25. (phenoxymethylpenicillin or sulfamethoxazole or oxacillin or cephalothin or sulbactam).mp.
26. (ofloxacin or clindamycin or gentamycin or vancomycin).mp.
27. (cefaclor or distaclor or cefadroxil or baxan or cefalexin or ceporex).mp.

28. (timentin or flucloxacillin or fluampicil or magnapen or piperacillin or tazocin).mp.
29. (streptomycin or cefalotin or dicloxacillin).mp.
30. or/1-29
31. exp fractures, open/
32. (orthopaedic adj2 surg\*).mp.
33. (open adj9 fracture\*).mp.
34. ((open adj2 reduction) and fracture\*).mp.
35. (gustilo or gustillo).mp.
36. anderson type\*.mp.
37. (compound adj9 fracture\*).mp.
38. ununited fractures.mp. or exp fractures, ununited/
39. fracture fixation.mp. or exp fracture fixation/
40. fracture\*.mp. or exp fractures, bone/
41. (infect\$ adj3 (bone\$ or fracture\$)).mp.
42. ((nonunion or nonunion) adj9 fracture\*).tw.
43. or/31-42
44. 30 and 43
45. animals/not humans/
46. 44 not 45

TABLE E-1 Regimen in Practice for Prophylactic Antibiotics Systematically Given to Patients with Open Fractures of Lower Extremities by Injury Severity\*

Antibiotic Regimen in Practice†	Lower-Extremity Injury Severity Not Specified or for All Levels‡	Lower-Extremity Gustilo Type‡		
		I and II	II and III	III
Gram-positive coverage§	3 (17.6%)	3 (42.9%)		1 (7.7%)
Gram-negative# and anaerobic** coverage				1 (7.7%)
Broad coverage††	2 (11.8%)	4 (57.1%)		6 (46.2%)
Broad and anaerobic coverage	1 (5.9%)			1 (7.7%)
Broad, MRSA‡‡, and anaerobic coverage	1 (5.9%)			1 (7.7%)
Drug name not specified	10 (58.8%)		1 (100%)	3 (23.1%)
Total	17 (100%)	7 (100%)	1 (100%)	13 (100%)

\*The practice was determined from multicenter or single-center randomized controlled trials (RCTs), cohort studies, case-control studies, single-arm studies (including case series), and surveys of surgeons that indicate use of antibiotic prophylaxis among patients with open fracture; lower-extremity fractures include open fractures of the tibia, femur, ankle, and calcaneus. †Clindamycin was used in patients with beta-lactam/penicillin allergies. ‡The values are given as the number of publications, with the percentage in parentheses. §Gram-positive coverage includes first and second-generation cephalosporins (e.g., cefazolin, cephalexin, cefacidal, cefadroxil, cefuroxime), macrolide, ampicillin or amoxiclav, amoxicillin or co-amoxiclav, penicillin, and any combination of these drugs. #Gram-negative coverage, in this case, refers to aminoglycosides (e.g., gentamicin, tobramycin, amikacin). \*\*Anaerobic coverage includes metronidazole, clindamycin, beta-lactam/beta-lactamase inhibitors (e.g., ampicillin/sulbactam, piperacillin/tazobactam), and carbapenems. ††This refers to broad-spectrum antibiotic coverage, including both gram-positive and gram-negative coverage. Such antibiotics include carbapenems (e.g., ertapenem, meropenem), piperacillin/tazobactam, third or/and fourth-generation cephalosporins (e.g., ceftriaxone), and any combination of antibiotics that include both gram-positive and gram-negative coverage. ‡‡MRSA (methicillin-resistant *Staphylococcus aureus*) coverage includes vancomycin or teicoplanin.

TABLE E-2 Level of Recommendations About Prophylactic Systemic Antibiotic Therapy for Patients with Open Fractures of Extremities\*

Recommendation	Total	Injury Severity Not Specified or for All Injuries	Gustilo Type			Extremity†		Soil, Marine, or Severely Contaminated Wounds	Gun Velocity		
			I and II	II and III	III	Upper	Lower		Not Specified	Low	High
Must	252 (91.3%)	58 (80.6%)	47 (94.0%)	7 (100%)	43 (93.5%)	3 (75.0%)	33 (97.1%)	41 (100%)	2 (100%)	4 (66.7%)	14 (100%)
Probably should	14 (5.1%)	7 (9.7%)	3 (6.0%)		3 (6.5%)					1 (16.7%)	
Possibly should	2 (0.7%)	1 (1.4%)				1 (25.0%)					
Uncertain	1 (0.4%)									1 (16.7%)	
Probably should not	3 (1.1%)	2 (2.8%)					1 (2.9%)				
Certainly should not	2‡ (0.7%)	2‡ (2.8%)									
No opinion	2 (0.7%)	2 (2.8%)									
Total	276 (100%)	72 (100%)	50 (100%)	7 (100%)	46 (100%)	4 (100%)	34 (100%)	41 (100%)	2 (100%)	6 (100%)	14 (100%)

\*Recommendations refer to the level of recommendations about whether antibiotics should be systematically given to patients with open fractures of extremities, per article, book chapter, or guideline. The values are given as the number of publications, with the percentage in parentheses. †Upper-extremity fractures include open fractures of the radius, humerus, and ulna for all Gustilo types of injury severity. Lower-extremity fractures include open fractures of the tibia, femur, knee, foot and ankle, forefoot, phalanx, and calcaneus for all Gustilo types of injury severity. ‡These 2 review articles only refer to fluoroquinolone.

TABLE E-3 Regimen in Recommendations for Prophylactic Antibiotics Systematically Given to Patients with Open Fractures of Lower Extremities by Injury Severity\*

Recommended Drugs†	Lower-Extremity Injury Severity Not Specified or for All Levels‡	Lower-Extremity Gustilo Type‡	
		I and II	III
Gram-positive coverage§	6 (25.0%)	3 (60.0%)	
Gram-negative coverage#			1 (20.0%)
Broad coverage**	3 (12.5%)	2 (40.0%)	4 (80.0%)
Broad and anaerobic coverage††	1 (4.2%)		
Broad, MRSA‡‡, and anaerobic coverage	3 (12.5%)		
Drug name not specified	11 (45.8%)		
Total	24 (100%)	5 (100%)	5 (100%)

\*The practice was determined from multicenter/or single-center randomized controlled trials (RCTs), cohort studies, case-control studies, single-arm studies (including case series), and surveys of surgeons that indicate use of antibiotic prophylaxis among patients with open fracture; lower-extremity fractures include open fractures of the tibia, femur, knee, foot and ankle, forefoot, phalanx, and calcaneus. †Clindamycin was used in patients with beta-lactam/penicillin allergies. ‡The values are given as the number of publications, with the percentage in parentheses. §Gram-positive coverage includes first and second-generation cephalosporins (e.g., cefazolin, cephalexin, cefacidal, cefadroxil, cefuroxime), macrolide, ampicillin or amoxiclav, amoxicillin or co-amoxiclav, penicillin, and any combination of these drugs. #Gram-negative coverage, in this case, refers to aminoglycosides (e.g., gentamicin, tobramycin, amikacin). \*\*This refers to broad-spectrum antibiotic coverage, including both gram-positive and gram-negative coverage. Such antibiotics include carbapenems (e.g., ertapenem, meropenem), piperacillin/tazobactam, third or/and fourth-generation cephalosporins (e.g., ceftriaxone), and any combination of antibiotics that include both gram-positive and gram-negative coverage. ††Anaerobic coverage includes metronidazole, clindamycin, beta-lactam/beta-lactamase inhibitors (e.g., ampicillin/sulbactam, piperacillin/tazobactam), and carbapenems. ‡‡MRSA (methicillin-resistant *Staphylococcus aureus*) coverage includes vancomycin or teicoplanin.