St. Louis Children's Hospital Antimicrobial Stewardship Program
Antimicrobial Stewardship Guidelines

PEDIATRIC EMPIRIC TREATMENT RECOMMENDATIONS FOR SELECT INFECTIONS

BONE AND JOINT
Acute bacterial arthritis (ABA, septic joint)
Acute hematogenous osteomyelitis (AHO)
Open fracture prophylaxis / lawnmower accident

CENTRAL NERVOUS SYSTEM
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CSF shunt infections
Meningitis, patient ≤28 days of age
Meningitis, patient ≥29 days of age
Meningoencephalitis, Herpes Simplex Virus (HSV)

GASTROINTESTINAL / ABDOMINAL
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Button battery ingestion prophylaxis
Cholangitis
Clostridioides difficile infection (CDI)
Gastroenteritis, bacterial
Intra-abdominal infection (community-acquired)
Necrotizing enterocolitis (NEC) / spontaneous intestinal perforation (SIP)
Spontaneous bacterial peritonitis (SBP)

GENITORURINARY TRACT
Bacterial vaginosis
Epididymitis
Genital herpes
Pelvic inflammatory disease (PID)
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Urinary tract infection

HEENT
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Dental abscess
Mastoiditis
Orbital cellulitis (post-septal)
Preseptal cellulitis (periorbital)
Retro- or parapharyngeal abscess
Sinusitis, acute bacterial
Streptococcal pharyngitis
Tonsillar or peritonsillar abscess

RESPIRATORY TRACT
Chemical (aspiration) pneumonitis
Community-acquired pneumonia (CAP), uncomplicated
Complicated pneumonia
Hospital/Ventilator-associated pneumonia
Influenza
Tracheitis (intubated / tracheostomy)
Tracheitis (native airway)

SKIN AND SOFT TISSUE INFECTIONS
Cellulitis
Human bite / Animal bite
Lymphadenitis, suppurative
Necrotizing fasciitis
Pyomyositis
Staphylococcal scalded skin syndrome

MISCELLANEOUS
Central line-associated bloodstream infection
Febrile infant, admitted from community
Fever and neutropenia
Lemierre syndrome
Sepsis rule-out in infant hospitalized since birth
Sickle cell disease with fever
Tickborne infections
Toxic shock syndrome

This guidance provides **empiric** recommendations. Therapy should be modified as appropriate based on patient-specific data and culture results (when available). When doses are provided, they assume normal renal and hepatic function. When durations are provided, they are based on the available medical literature or agreed upon by the ID division. Some durations have large variability and are dependent on clinical course. These recommendations do not establish a standard of care to be followed in every case. Each case is different and the individuals providing health care are expected to use their judgement in determining what is in the best interests of the patient based on the circumstances at the time.

Last updated on 3/5/26 by Christine Lockowitz, PharmD; Matthew Sattler, MD; Valerie Yuenger, PharmD; and Alexander Plattner, MD, MBA.

Diagnosis	Common Pathogens	Preferred Empiric Drug(s)	Alternative Drug(s) for Allergy or Special Circumstances	Duration	Comments
BONE AND JOINT					
Acute bacterial arthritis (ABA, formerly known as septic joint)[1-9]	*S. aureus* *S. pyogenes* (GAS) *N. gonorrhoeae* *K. kingae* (patients 6 months to 4 years)	*In clinically stable patients, recommend delaying antibiotics until operative/biopsy cultures are obtained* Cefazolin 33 mg/kg/dose IV q8h (max: 2000 mg/dose) **Risk factors for MRSA are unclear. If recent prior history of MRSA infection (i.e. past 6 months), or if toxic, consider empiric therapy with vancomycin.**	IF GRAM-NEGATIVES SEEN ON GRAM STAIN OR GONORRHEA SUSPECTED: Ceftriaxone 50 mg/kg/dose IV q24h (max: 2000 mg/dose) If gonorrhea is confirmed, consider workup for other STIs	10 days – 3 weeks (duration to be determined in collaboration with ID and ortho based on clinical course)	Recommend ID Consult See Guidelines for the Evaluation and Management of AHO and ABA for additional information. ORAL DOSING FOR MSSA BONE/JOINT INFECTIONS: Cephalexin 40 mg/kg/dose PO q8h (max: 1500 mg/dose) OR Cefadroxil 40 mg/kg/dose PO q12h (max: 1500 mg/dose)
Acute hematogenous osteomyelitis (AHO)[2-10]	*S. aureus* *S. pyogenes* (GAS) *K. kingae* (patients 6 months to 4 years)	*In clinically stable patients, recommend delaying antibiotics until operative/biopsy cultures are obtained* Cefazolin 33 mg/kg/dose IV q8h (max: 2000 mg/dose) **Risk factors for MRSA are unclear. If recent prior history of MRSA infection (i.e. past 6 months), or if toxic, consider empiric therapy with vancomycin.**	IN PATIENTS WITH SICKLE CELL DISEASE: Ampicillin/sulbactam 50 mg/kg/dose (ampicillin component) IV q6h (max: 2000 mg/dose)	3 weeks minimum (duration to be determined in collaboration with ID and ortho based on clinical course)	Recommend ID Consult See Guidelines for the Evaluation and Management of AHO and ABA for additional information. ORAL DOSING FOR MSSA BONE/JOINT INFECTIONS: Cephalexin 40 mg/kg/dose PO q8h (max: 1500 mg/dose) OR Cefadroxil 40 mg/kg/dose PO q12h (max: 1500 mg/dose)

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Open fracture prophylaxis / Lawnmower accident[11-13] Excludes injuries and fractures involving the skull and CNS.	**Type I-II^** Common skin flora (*S. aureus*, *S. pyogenes*) **Type III^ or with Significant Contamination** Polymicrobial, including common skin flora as well as environmental organisms	**EXTREMITY OPEN FRACTURE** Type I-II: • Preferred: Cefazolin • Severe cefazolin allergy*: Vancomycin Type III, significant contamination, or from high-velocity ballistic injury^ • Preferred: Cefazolin • Severe cephalosporin allergy (but tolerates penicillins): Piperacillin-Tazobactam • Severe cephalosporin AND penicillin allergies: Levofloxacin **FACIAL OPEN FRACTURE** Fractures of the frontal sinus that involve the posterior table, contaminated fractures, and open mandible fractures. (Antibiotics should not be administered for closed, non-operative orbital, upper face, midface, or mandibular fractures.) • Preferred: Ampicillin-Sulbactam OR Ceftriaxone • Severe penicillin and cephalosporin allergy: Levofloxacin **ANIMAL BITE ETIOLOGY REGARDLESS OF TYPE OR LOCATION** • Preferred: Ampicillin-Sulbactam • Alternative: Ceftriaxone • Severe cephalosporin AND penicillin allergies: Clindamycin PLUS TMP/SMX **OPEN FRACTURE WITH EXTENSIVE SUBMERGED FRESH WATER EXPOSURE (e.g., river)** • Preferred: Cefepime • Severe cephalosporin allergy: Levofloxacin (preferred) or Piperacillin-Tazobactam *Standard dosing should be used and is provided in Epic upon ordering. Call pharmacy with questions.*		Prophylaxis: **≤24 hours** **For Type III, may go up to 72 hours, or 24 hours after skin closure, whichever comes first.** There is no benefit to longer courses, even if additional procedures are planned or wound remains open. Prolonged courses may select out for more resistant bacteria implicated in a potential future infection. **Exception:** for **Seymour fractures,** reasonable to give oral antibiotics until surgical follow-up Treatment: Consult ID	Consider ID consult if concerned for infection. Verify tetanus vaccine status. See Appendix 2 below or the Red Book Tetanus Section for recommendations. Do not routinely obtain operative cultures unless intraoperative findings are suggestive of infection. If concerned for infection, send routine, fungal, and acid-fast cultures. *Cefazolin has a unique side chain and can be used safely unless patient has a specific cefazolin allergy or a Type 3-4 allergic reaction to any beta-lactam (e.g., DRESS, SJS). ^ See Appendix 3 for additional details.

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CENTRAL NERVOUS SYSTEM					
Brain abscess[14-16]	*S. anginosus* group Gram-negatives Anaerobes *S. aureus*	Vancomycin (see Appendix 1) **PLUS** Ceftriaxone 50 mg/kg/dose IV q12 (max: 2000 mg/dose) **PLUS** Metronidazole 10 mg/kg/dose IV q8h (max: 500 mg/dose)	CEPHALOSPORIN ALLERGY: Vancomycin (see Appendix 1) **PLUS** Meropenem 40 mg/kg/dose IV q8h (max: 2000 mg/dose)	At least 4 weeks	Recommend ID Consult
CSF shunt infections[17,18]	Coagulase-negative staphylococci (CoNS) *S. aureus* Aerobic Gram-negative bacilli (including *P. aeruginosa*) *Cutibacterium acnes*	Vancomycin (see Appendix 1) **PLUS** Cefepime 50 mg/kg/dose IV q8h (max: 2000 mg/dose)	CEPHALOSPORIN ALLERGY: Vancomycin (see Appendix 1) **PLUS** Meropenem 40 mg/kg/dose IV q8h (max: 2000 mg/dose)	See Guidelines for the Evaluation and Management of Pediatric Ventriculoperitoneal Shunt Infections for additional information.	Recommend ID Consult
Meningitis, patient ≥29 days old[9,19] See Febrile Infant guidance for patients ≤28 days old with fever and/or concern for meningitis.	*S. pneumoniae* *N. meningitidis* *S. agalactiae* (GBS) *H. influenzae*	Ceftriaxone 50 mg/kg/dose IV q12h (max: 2000 mg/dose) **PLUS** Vancomycin (see Appendix 1) Consider addition of Acyclovir in patients 29-60 days old as described in Febrile Infant guidance. In patients >60 days, see Meningoencephalitis, HSV.	CEPHALOSPORIN ALLERGY: Vancomycin (see Appendix 1) **PLUS** Meropenem 40 mg/kg/dose IV q8h (max: 2000 mg/dose)	Durations are pathogen-specific. Consult ID. *N. meningitidis*: 5-7 days *H. influenzae:* 7-10 days *S. pneumoniae*: 10-14 days *S. agalactiae* (GBS): 14-21 days	Recommend ID Consult.

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Meningoencephalitis, Herpes Simplex Virus (HSV), >60 days old[20,21] Consider in infants undergoing evaluation for meningitis or encephalitis with: • Focal neurologic exam • Altered mental status • Temporal lobe abnormalities • Unexplained seizure-like activity For patients ≤60 days old, see Febrile Infant guidance.	HSV1 or HSV2	IN ADDITION TO EMPIRIC ANTIBIOTICS FOR MENINGITIS: < 3 months: Acyclovir 20 mg/kg/dose IV q8h 3 months – 11 years: Acyclovir 15 mg/kg/dose IV q8h ≥12 years: Acyclovir 10 mg/kg/dose IV q8h		Durations vary outside of neonatal period. Consult ID.	Recommend ID Consult Ideal body weight (IBW) should be used for dosing in obese patients. Neonatal HSV suppressive therapy: Acyclovir 300 mg/m^2/dose PO TID
GASTROINTESTINAL / ABDOMINAL					
Appendicitis[22-24]	Enteric Gram-negative bacilli *S. anginosus* group Anaerobes	Ceftriaxone 50 mg/kg/dose IV q24h (max: 2000 mg/dose) **PLUS** Metronidazole 30 mg/kg/dose IV q24h (max: 1500 mg/dose)	CEPHALOSPORIN ALLERGY: Ciprofloxacin 10 mg/kg/dose IV q12h (max 400 mg/dose) **PLUS** Metronidazole 30 mg/kg/dose IV q24h (max 1500 mg/dose)	Antibiotics are not indicated post-operatively for uncomplicated appendicitis.	

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Button battery ingestion prophylaxis[25-28]	*S. pyogenes* (GAS) *S. anginosus* group *Haemophilus* spp. Oral anaerobes *S. aureus* Polymicrobial	*Most button battery ingestions do not require antimicrobial prophylaxis.* CONSIDER PROPHYLAXIS FOR ADMITTED PATIENTS WITH ESOPHAGEAL INJURY AND RISK FACTORS (SEE COMMENTS): Amoxicillin-Clavulanate (see Appendix 4) OR Ampicillin-Sulbactam 50 mg/kg/dose (ampicillin component) IV q6h (max 2000 mg/dose)	ALLERGY: Clindamycin 13 mg/kg/dose PO q8h (max 600 mg/dose)	3-5 days	Would consider broad spectrum antibiotic coverage in those patients who have been identified in studies to have highest risk of developing significant complications: • Ingested large-diameter lithium cells ≥ 20mm • Esophageal exposure time >2 hours • Children < 4 years of age • Unwitnessed ingestions (unknown time of exposure)
Cholangitis[29,30]	Enteric Gram-negative bacilli *Enterococcus* spp. Anaerobes (may be implicated in patients s/p Kasai or other enterohepatic connection)	PATIENTS WITHOUT KASAI: Ceftriaxone 50 mg/kg/dose IV q24h (max: 2000 mg/dose) PATIENTS WITH KASAI: Ceftazidime 50 mg/kg/dose IV q8h (max: 2000 mg/dose) ± Metronidazole 10 mg/kg/dose PO/IV q8h (max: 500 mg/dose) OR Monotherapy with Piperacillin-Tazobactam 100 mg/kg/dose (piperacillin component) IV q6h (max 4000 mg/dose)	ALLERGY: Ciprofloxacin 10 mg/kg/dose PO/IV q12h (PO max: 500 mg/dose, IV max: 400 mg/dose) +/- Metronidazole 10 mg/kg/dose PO/IV q8h (max: 500 mg/dose)		

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Clostridioides difficile infection (CDI)[31-37] Patients under 2 years old should not be tested for CDI, as testing is commonly positive due to asymptomatic colonization. **Defining Disease Severity:** NON-SEVERE: Positive *C. difficile* test and diarrhea but no manifestations of severe disease. SEVERE: Not well defined in children, but many consider positive *C. difficile* test and diarrhea with at least one of the following: • WBC count ≥15,000 cells/mm^3 or leukopenia • Serum creatinine >50% above baseline FULMINANT: Severe disease plus any of the following: • Hypotension • Toxic megacolon • Ileus • Colonic ischemia **ID consult recommended RECURRENCE: Relapse of symptoms within 2-8 weeks of successful treatment of initial episode.		*See Peds* C. difficile *focused order set.* NON-FULMINANT (INITIAL EPISODE): Vancomycin 10 mg/kg/dose PO q6h (max: 125 mg/dose) FULMINANT (INITIAL EPISODE OR RECURRENCE): Vancomycin 10 mg/kg/dose PO q6h (max: 500 mg/dose) If ileus: Add rectal vancomycin as retention enema q6h [a] **PLUS** Metronidazole 10 mg/kg/dose IV q8h (max: 500 mg/dose) [b] SECOND OR SUBSEQUENT RECURRENCE (NON-FULMINANT): Vancomycin 10 mg/kg/dose PO q6h (max: 125 mg/dose) OR Vancomycin pulse and taper (see alternative therapies) OR Fidaxomicin [c] ≥6 months to 5 years: 16 mg/kg/dose PO BID (max: 200 mg/dose) ≥6 years: 200 mg PO BID	Note: There is no distinction in therapy between initial non-severe and severe but non-fulminant disease. VANCOMYCIN PULSE AND TAPER REGIMEN: 10 mg/kg/dose PO q6h (max: 125 mg/dose) for 10-14 days THEN 10 mg/kg PO q12h (max: 125 mg/dose) for 7 days THEN 10 mg/kg PO q24h (max: 125 mg/dose) for 7 days THEN 10 mg/kg PO q2-3 days (max: 125 mg/dose) for 2–8 weeks.	10 days for all therapies except for vancomycin pulse and taper regimen. 6-14 weeks for vancomycin pulse and taper.	[a] Vancomycin enema volumes are age dependent • 1-3 years: 250 mg in 50 mL normal saline q6h • 4-9 years: 375 mg in 75 mL normal saline q6h • ≥10 years: 500 mg in 100 mL normal saline q6h [b] Efficacy of IV metronidazole is unclear. It may be use as an adjunct in severe or fulminant disease, particularly in the setting of critical illness and/or ileus, but should not be used as primary agent for treatment of *C. difficile* [c] Fidaxomicin considerations (order a la carte): • Please call ID if you think your patient is a good candidate for fidaxomicin as any PO vancomycin prior to receiving fidaxomicin may eliminate the benefit of fidaxomicin (narrower spectrum, less dysbiosis) • Not indicated for fulminant disease • Restricted to certain use criteria and requires an ID consult and second-sign approval. Typically reserved for patients with multiple risk factors for recurrent CDI or upon a recurrent CDI infection. • Insurance coverage is challenging in children. If initiated, start outpatient approval process if expecting discharge prior to course completion.

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Gastroenteritis, bacterial[38-42]	*Aeromonas* *Pleisomonas* *Campylobacter* *E. coli* *Salmonella* *Shigella* *Yersinia* **Antibiotics should only be utilized for specific bacteria after a positive culture (see comments)**	<u>*SALMONELLA* < 3 MONTHS OLD (WITHOUT MENINGITIS):</u> Ceftriaxone 50 mg/kg/dose IV q24h (max: 2000 mg/dose)*	<u>ALLERGY:</u> Azithromycin 10 m/kg (max: 500 mg/dose) If susceptible to ampicillin: Amoxicillin 20 mg/kg/dose PO BID (max: 500 mg/dose) OR Ampicillin 50 mg/kg/dose IV q6h (max: 2000 mg/dose)	Azithromycin: 3 days All other regimens: 7 days If immuno-compromised: 10 days regardless of regimen	Routine treatment for healthy children >3 months of age with uncomplicated gastroenteritis is not indicated except if caused by *Shigella*. Routine antibiotic treatment of *E. coli* gastroenteritis is not indicated. Antimotility agents should not be used because they have been shown to prolong symptoms and may be associated with an increased risk of death. Azithromycin increases the risk of pyloric stenosis when used in infants <6 weeks of age. * Consult ID for antibiotic recommendations in patients < 1 month of age.
		<u>*SHIGELLA*:</u> Azithromycin 10 mg/kg/dose PO daily (max: 500 mg/dose) OR Ceftriaxone 50 mg/kg/dose IV q24h (max: 2000 mg/dose)		Azithromycin: 3 days Ceftriaxone: 2-5 days	
		<u>*CAMPYLOBACTER* (IF SEVERE DISEASE OR IMMUNOCOMPROMISED):</u> Azithromycin 10 mg/kg/dose PO daily		3 days	
Intra-abdominal infection (community-acquired)[9,22,43]	Enteric Gram-negative bacilli Anaerobes	Ceftriaxone 50 mg/kg/dose IV q24h (max: 2000 mg/dose) **PLUS** Metronidazole 10 mg/kg/dose PO/IV q8h (max: 500 mg/dose)	Ciprofloxacin 10 mg/kg/dose PO/IV q12h (PO max: 500 mg/dose, IV max: 400 mg/dose) **PLUS** Metronidazole 10 mg/kg/dose PO/IV q8h (max: 500 mg/dose)		

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Necrotizing enterocolitis (NEC) / Spontaneous intestinal perforation (SIP)[44-48] See SLCH Necrotizing Enterocolitis Guideline in PolicyTech for proper staging and further management, which applies to neonates in NICU and Heart Center.	Polymicrobial Enteric Gram-negative bacilli Coagulase-negative staphylococci (CoNS) in very premature infants	*For all dosing, see NICU Drug Book.* MODIFIED BELL'S STAGE IA/IB: Ampicillin **PLUS** Gentamicin STAGE IIA/IIB (Medical NEC): Ampicillin **PLUS** Gentamicin STAGE IIIA/IIIB (Surgical NEC): Ampicillin **PLUS** Cefepime **PLUS** Metronidazole	IF H/O MRSA COLONIZATION/ INFECTION : Use Vancomycin in place of Ampicillin. De-escalate vancomycin to ampicillin after 24-48 hours if cultures are negative and clinical status is improving.	STAGE I: 48 hours (rule out) STAGE II: 7 days STAGE III: 10 days from source control (in coordination with surgical team)	If blood culture positive, a lumbar puncture is indicated and should be utilized in conjunction with organism identification to determine duration of antibiotic therapy.
Spontaneous bacterial peritonitis (SBP)[49-51]	*S. pneumoniae* Enteric Gram-negative bacilli	Ceftriaxone 50 mg/kg/dose IV q24h (max: 2000 mg/dose)	ALLERGY: Piperacillin-Tazobactam 100 mg/kg/dose (piperacillin component) IV q6h (max: 4000 mg/dose)	5 days	
GENITOURINARY TRACT					
Bacterial vaginosis[52,53]	*G. vaginalis* *Ureaplasma* *Mycoplasma* *Anaerobes*	Metronidazole • Wt ≥45 kg: 500 mg PO BID • Wt <45 kg: 10 mg/kg PO BID (max: 500 mg/dose)		7 days	See CDC guidelines (2021)

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Epididymitis[52]	*N. gonorrhoeae* *C. trachomatis* Enteric Gram-negative bacilli (MSM and pre-pubescent children)	Ceftriaxone • Wt <45 kg: 25-50 mg/kg IM/IV x1 (max: 250 mg/dose) • Wt 45-150 kg: 500 mg IM/IV x1 • Wt ≥150 kg: 1000 mg IM/IV x1 **PLUS** Doxycycline 2.2 mg/kg/dose PO q12h (max: 100 mg/dose) x 10 days	MEN WHO HAVE SEX WITH MEN (MSM): Consider ceftriaxone (dosing as described under empiric therapy) **PLUS** Levofloxacin x10 days • 6 mo-4 years: 10 mg/kg/dose PO q12h • ≥ 5 years: 10 mg/kg/dose IV/PO q24h (max: 500 mg/dose) PRE-PUBESCENT CHILDREN WITHOUT CONCERN FOR STI: Levofloxacin (dosing as above) x10 days		See CDC guidelines (2021)
Genital Herpes[21,52]	Herpes simplex virus (HSV1 or HSV2)	ADOLESCENT/ADULT FIRST EPISODE: Valacyclovir 20 mg/kg/dose PO BID (max: 1000 mg/dose) OR Acyclovir 20 mg/kg/dose PO TID (max: 400 mg/dose) RECURRENT EPISODE: Valacyclovir 20 mg/kg/dose PO daily (max: 1000 mg/dose) OR Acyclovir • <12 years: 20 mg/kg/dose PO TID (max: 400 mg/dose) • ≥12 years: 800 mg PO BID		FIRST EPISODE: 7-10 days RECURRENT EPISODE: 5 days	See CDC guidelines (2021)

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Pelvic inflammatory disease (PID)[52,54]	*N. gonorrhoeae* *C. trachomatis* Enteric Gram-negative bacilli Anaerobes	OUTPATIENT: Ceftriaxone • Wt <45 kg: 25-50 mg/kg IM/IV x1 (max: 250 mg/dose) • Wt 45-150 kg: 500 mg IM/IV x1 • Wt ≥150 kg: 1000 mg IM/IV x1 **PLUS** Doxycycline 2.2 mg/kg/dose PO q12h (max: 100 mg/dose) **PLUS** Metronidazole • Wt ≥45 kg: 500 mg PO BID • Wt <45 kg: 10 mg/kg PO BID (max: 500 mg/dose) INPATIENT: Ceftriaxone 50 mg/kg/dose IV q24h (max: 1000 mg/dose) **PLUS** Doxycycline 2.2 mg/kg/dose PO q12h (max: 100 mg/dose) **PLUS** Metronidazole • Wt ≥45 kg: 500 mg PO BID • Wt <45 kg: 10 mg/kg PO BID (max: 500 mg/dose)	ALTERNATIVES FOR PATIENTS UNABLE TO TOLERATE METRONIDAZOLE DUE TO SEVERE NAUSEA/VOMITING: Cefoxitin 40 mg/kg/dose IV q6h (max: 2000 mg/dose) **PLUS** Doxycycline 2.2 mg/kg/dose (PO) q12h (max: 100 mg/dose) ALLERGY: Clindamycin 13 mg/kg/dose PO/IV q8h (max: 900 mg/dose) **PLUS** Gentamicin (see Appendix 1)	14 days	For inpatients, after clinical improvement, transition to oral therapy with doxycycline and metronidazole at doses indicated in previous column. See CDC guidelines (2021)
Sexually Transmitted Infections (STIs): Gonorrhea[52,55]	*N. gonorrhoeae*	Ceftriaxone • Wt <45 kg: 25-50 mg/kg IM/IV x1 (max: 250 mg/dose) • Wt 45-150 kg: 500 mg IM/IV x1 • Wt ≥150 kg: 1000 mg IM/IV x1	SEVERE CEPHALOSPORIN ALLERGY: Gentamicin 240 mg IM x1 dose **PLUS** Azithromycin 2 g PO x1 dose	Single dose	See CDC guidelines (2021)

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Sexually Transmitted Infections (STIs): Chlamydia[52,56]	*C. trachomatis*	NOT RECTAL: Recommended: Doxycycline 2.2 mg PO BID x7 days (max: 100 mg/dose) Alternative: Azithromycin 1 g PO x1 RECTAL: Doxycycline 100 mg PO BID x7 days (for children <8 years old, see CDC guidelines)		Azithromycin: 1 dose Doxycycline: 7 days	See CDC guidelines (2021) CDC recommends doxycycline x7 days first-line for *C. trachomatis*. Doxycycline has dramatically increased efficacy against rectal chlamydia (cure rate 100% vs. 74%). For non-rectal chlamydia, it is reasonable to offer either doxycycline x7 days or azithromycin x1 dose based on shared decision making.

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Sexually Transmitted Infections (STIs): Syphilis[52,57]	*T. pallidum*	PRIMARY / SECONDARY / EARLY LATENT (<1 YR DURATION): Penicillin G Benzathine 50,000 units/kg/dose IM x 1 dose (max: 2.4 million units/dose) LATE LATENT / LATENT WITH UNKNOWN DURATION / TERTIARY WITH NORMAL CSF: Penicillin G Benzathine 50,000 units/kg/dose IM once weekly x 3 doses (max: 2.4 million units/dose) NEUROSYPHILIS/ OCULAR: Penicillin G (Aqueous/Parenteral) 50,000 units/kg/dose IV q4h (max: 4 million units/dose) CONGENITAL SYPHILIS: Penicillin G (Aqueous/Parenteral) ≤ 7 days of age: 50,000 units/kg/dose IV q12h 8 – 28 days of age: 50,000 units/kg/dose IV q8h ≥ 1 month of age: 50,000 units/kg/dose IV q4-6h	ALLERGY (IN NON-PREGNANT INDIVIDUALS): Doxycycline 100mg PO BID x 14 days		See CDC guidelines (2021) Recommend ID for suspected congenital syphilis.
Trichomoniasis[52,58]	*T. vaginalis*	<45 kg: Metronidazole 10 mg/kg/dose PO BID x 7 days (max: 2000 mg/day) >/= 45 kg: Women: Metronidazole 500 mg PO BID x 7 days Men: Metronidazole 2000 mg PO x1 dose	For adolescent women with significant barriers to adherence, can consider metronidazole 2000 mg PO as a single dose		See CDC guidelines (2021)

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Urinary tract infection[9,59-66] See Guidelines for the Evaluation and Management of Urinary Tract Infections at SLCH on the Antimicrobial Guidebook	Enteric Gram-negative bacilli	Cephalexin • Cystitis: 25 mg/kg PO BID (max: 500 mg/dose) • Pyelonephritis: 25 mg/kg PO TID (max: 500 mg/dose) OR Cefazolin 25 mg/kg/dose IV q8h (max: 1000 mg/dose)	Additional considerations and alternative options are discussed in the Guidelines for the Evaluation and Management of Urinary Tract Infections at SLCH on the Antimicrobial Guidebook.	Cystitis: • Ceftriaxone, fluoroquinolone, or TMP/SMX: 3 days • All other: 5 days Pyelonephritis • Fluoroquinolone: 5 days • All other: 7 days	Exclusive oral antibiotics are non-inferior to initial IV therapy for mild to moderate infections. If patients need IV therapy due to poor PO intake or for other reasons, consider cefazolin as first-line therapy.
HEENT Infections					
Acute otitis media (AOM)[9,67-74]	*S. pneumoniae* *M. catarrhalis* *H. influenzae* *S. pyogenes* (GAS)	*Consider watchful waiting, with treatment only if symptoms fail to improve within 2-3 days or if symptoms worsen. See comments for exclusion criteria for watchful waiting approach.* FIRST-LINE THERAPY: Amoxicillin 45 mg/kg/dose PO q12 (max: 2000 mg/dose) RECEIVED AMOXICILLIN FOR AOM WITHIN PAST 30 DAYS OR FAILS AMOXICILLIN: Amoxicillin-Clavulanate (see Appendix 4) IF FAILS AMOXICILLIN AND AMOXICILLIN-CLAVULANTE: Ceftriaxone 50 mg/kg (max: 2000 mg/dose) IM/IV for 1 or 3 consecutive days (lack of clinical data suggesting 3 days is superior to a single dose)	ALLERGY: Preferred: Cefdinir 7 mg/kg/dose PO q12h (max: 300 mg/dose) OR Cefdinir 14 mg/kg/dose PO q24h (max: 600 mg/dose) if q12 dosing not feasible OR Ceftriaxone 50 mg/kg/dose (max: 2000 mg/dose) for 1 dose (when using ceftriaxone for non-recurrent infection, no gained benefit to re-dosing based on serial ear exam)	<2 years old or severe symptoms (any age): 10 days ≥2 years old with mild to moderate symptoms: 5 days	Exclusion criteria for watchful waiting: 1. Age <6 months 2. Age 6-23 months with bilateral AOM 3. Moderate to severe otalgia for at least 48 hours 4. Otorrhea 5. Temperature ≥39°C (102.2°F) 6. Craniofacial abnormalities 7. Immunocompromised status 8. Uncertain access to follow-up

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Diagnosis	Common Pathogens	Preferred Empiric Drug(s)	Alternative Drug(s) for Allergy or Special Circumstances	Duration	Comments
Dental abscess[75]	Viridans group Streptococci *Eikenella* spp. Oral anaerobes (i.e., Veillonella, Actinomyces, *Peptostrepto-coccus*	*Amoxicillin/ampicillin alone cover the majority of oral anaerobes*. Amoxicillin 10 mg/kg/dose PO q8h (max: 500 mg/dose) OR Ampicillin 50 mg/kg/dose IV q6h (max: 2000 mg/dose) IF NO IMPROVEMENT ON AMOXICILLIN >48 HOURS: Amoxicillin-Clavulanate (see Appendix 4) OR Ampicillin-Sulbactam 50 mg/kg/dose (ampicillin component) IV q6h (max: 2000 mg/dose)	ALLERGY: Clindamycin 13 mg/kg/dose PO/IV q8h (max: 450-600 mg/dose) OR Azithromycin 10 mg/kg PO on day 1 (max: 500 mg/dose), followed by 5 mg/kg PO daily on days 2-5 (max: 250 mg/dose) OR IF NO SEVERE IgE-MEDIATED REACTION TO PENICILLINS: Cephalexin 25 mg/kg/dose PO q12h (max: 500 mg/dose)	3-7 days total 10 days in the absence of source control (if that would have been necessary), or if source control is delayed until after treatment course is completed.	
Mastoiditis[9,76,77]	*S. pneumoniae* *S. pyogenes* (GAS) *H. influenzae* *S. aureus*	ACUTE MASTOIDITIS: Ceftriaxone 50 mg/kg/dose IV q24h (max: 2000 mg/dose) CHRONIC MASTOIDITIS OR IN SETTING OF RECURRENT AOM: Cefepime 50 mg/kg/dose IV q8h (max: 2000 mg/dose) INTRACRANIAL EXTENSION: Ceftriaxone 50 mg/kg/dose IV q12h (max: 2000 mg/dose) **PLUS** Vancomycin (see Appendix 1)	ALLERGY: Clindamycin 13 mg/kg/dose PO q8h (max: 600 mg/dose) OR Doxycycline 2.2 mg/kg/dose PO q12h (max: 100 mg/dose) ALLERGY AND INTRACRANIAL EXTENSION: Meropenem 40 mg/kg/dose IV q8h (max: 2000 mg/dose) **PLUS** Vancomycin (see Appendix 1)		Consider ID consult.

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Diagnosis	Common Pathogens	Preferred Empiric Drug(s)	Alternative Drug(s) for Allergy or Special Circumstances	Duration	Comments
Orbital (post-septal) cellulitis[9,78-83]	Viridans group streptococci *S. aureus* *S. pyogenes* (GAS) *S. pneumoniae* Anaerobes	Ampicillin-Sulbactam 50 mg/kg/dose (ampicillin component) IV q6h (max: 2000 mg/dose) **Risk factors for MRSA are unclear. If recent prior history of MRSA infection (i.e. past 6 months), consider addition of vancomycin.** IF TOXIC OR SIGHT-THREATENING: Ceftriaxone 50 mg/kg/dose IV q24h (max: 2000 mg/dose) **PLUS** Vancomycin (see Appendix 1) IF CONCERN FOR CNS EXTENSION: Ceftriaxone 50 mg/kg/dose IV q12h (max: 2000 mg/dose) **PLUS** Vancomycin (see Appendix 1) **PLUS** Metronidazole 10 mg/kg/dose PO/IV q8h (max: 500 mg/dose)	ALLERGY: Clindamycin 13 mg/kg/dose PO/IV q8h (max: 600 mg/dose) OR Doxycycline 2.2 mg/kg/dose PO q12h (max: 100 mg/dose) CONCERN FOR SIGHT-THREATENING INFECTION OR CNS EXTENSION WITH CEPHALOSPORIN ALLERGY: Meropenem 40 mg/kg/dose IV q8h (max: 2000 mg/dose) **PLUS** Vancomycin (see Appendix 1)	14-21 days	Recommend ID consult, especially with bony involvement. If therapy active against MRSA is initiated, obtain MRSA nares PCR. A negative result supports discontinuation of MRSA-active therapy. See Appendix 4 for oral step-down dosing for Amoxicillin-Clavulanate.
Preseptal (periorbital) cellulitis[9,82,84] If orbital cellulitis is not ruled out, see section above for guidance.	*S. pyogenes* (GAS) *S. aureus*	Cephalexin 25 mg/kg/dose PO q12h (max: 500 mg/dose) OR Cefazolin 33 mg/kg/dose IV q8h (max: 2000 mg/dose) **Risk factors for MRSA are unclear. If recent prior history of MRSA infection (i.e. past 6 months), consider using prior susceptibility data to guide empiric therapy.**	ALLERGY: TMP/SMX 5 mg/kg/dose trimethoprim component IV/PO q12h (max: 800 mg SMX/160 mg TMP per dose) If BMI ≥ 30 in adolescents and adults, max dose of 1600 mg SMX/ 320 mg TMP/dose (i.e. #2 double-strength tablets)	5 days	

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Retro- or parapharyngeal abscess[9,85-87]	Commonly polymicrobial *S. pyogenes* (GAS) *S. anginosus* group *Haemophilus* spp. *S. aureus* Anaerobes	Amoxicillin-Clavulanate (see Appendix 4) OR Ampicillin-Sulbactam 50 mg/kg/dose (ampicillin component) IV q6h (max: 2000 mg/dose) IF TOXIC: Vancomycin (see Appendix 1) **PLUS** Ceftriaxone 50 mg/kg/dose IV q24h (max: 2000 mg/dose)	ALLERGY: Clindamycin 13 mg/kg/dose PO/IV q8h (max: 600 mg/dose)	10-14 days	
Sinusitis, acute bacterial[9,88-91] **Most sinusitis is exclusively caused by viruses. See comments for diagnostic criteria for bacterial sinusitis.**	*S. pneumoniae* *H. influenzae* *M. catarrhalis* *S. pyogenes* (GAS)	Amoxicillin 45 mg/kg/dose PO q12h (max: 2000 mg/dose) OR Amoxicillin-Clavulanate (see Appendix 4)	ALLERGY: Clindamycin 13 mg/kg/dose PO q8h (max: 600 mg/dose) OR Doxycycline 2.2 mg/kg/dose PO q12h (max: 100 mg/dose)	5 days	Diagnostic for bacterial sinusitis (any of below): • Persistent illness without improvement for at least 10 days • Severe symptoms (i.e., temperature ≥39°C [102.2°F]) and purulent nasal discharge for at least 3 consecutive days • Worsening course after initial improvement (i.e., "double sickening")

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Diagnosis	Common Pathogens	Preferred Empiric Drug(s)	Alternative Drug(s) for Allergy or Special Circumstances	Duration	Comments
Group A Streptococcal (GAS) Pharyngitis[9,92-95] **The IDSA recommends using a clinical scoring system (e.g., Centor criteria, see comments) to determine whether testing for GAS in patients with pharyngitis is indicated.** **Testing in patients <3 years is not typically recommended outside of a known exposure to GAS pharyngitis or symptoms of streptococcocis (protracted nasal congestion, fever, and tender cervical lymphadenopathy). Positive results in patients <3 years outside of these scenarios are more consistent with colonization and treatment is generally not indicated.**	*S. pyogenes* (GAS)	Amoxicillin 50 mg/kg/dose PO once daily (max: 1000 mg/dose) ****Penicillin G Benzathine is currently NOT recommended** for GAS pharyngitis – BJC is experiencing a critical shortage and supply should be reserved for the treatment of syphilis	ALLERGY: Cephalexin 20 mg/kg/dose twice daily (max: 500 mg/dose) if non-anaphylaxis reaction to amoxicillin/penicillin OR Cefdinir 7 mg/kg/dose PO BID (max: 300 mg/dose)* IF AVOIDING BETA-LACTAMS: TMP/SMX 5 mg/kg/dose trimethoprim component PO q12h (max: 800 mg SMX/160 mg TMP per dose) If BMI ≥ 30 in adolescents and adults, max dose of 1600 mg SMX/ 320 mg TMP/dose (i.e. #2 double-strength tablets)	10 days *There are no data to indicate that patients who receive ceftriaxone as part of their initial therapy can receive a shorter course of therapy.*	Centor Criteria (1 point for each criterion): • Absence of cough • Swollen tender anterior lymph nodes • Temperature ≥38.0°C (100.4°F) • Tonsillar exudate or swelling **Only patients with a score of at least 2 without URI symptoms should be tested. Positive tests in patients with scores of 0-1 are more consistent with colonization, and treatment is generally not indicated.** Other signs/symptoms that may support testing include scarlatiniform rash, abdominal pain and vomiting in patients with pharyngitis, and palatal petechiae. *Cefdinir has a different R1 side chain than cephalexin and amoxicillin and is tolerated in most patients with true penicillin or cephalexin allergies.

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Tonsillar or peritonsillar abscess[79,96-98]	Commonly polymicrobial *S. pyogenes* (GAS) Oral anaerobes	Amoxicillin-Clavulanate (see Appendix 4) OR Ampicillin-Sulbactam 50 mg/kg/dose (ampicillin component) IV q6h (max: 2000 mg/dose)	ALLERGY: Clindamycin 13 mg/kg/dose PO/IV q8h (max: 600 mg/dose)	10 days	
RESPIRATORY INFECTIONS					
Chemical (aspiration) pneumonitis[99-102] Chemical pneumonitis results from lung irritation from gastric contents, which are typically sterile due to the low pH. Patients can be quite ill (e.g., fever, leukocytosis, oxygen requirement) and initial chest imaging can demonstrate focal consolidations, but patients improve within 24-48 hours of presentation.	N/A	*Antibiotics are not indicated. In the setting of diagnostic uncertainty and/or critical illness, it is reasonable to empirically initiate antibiotics targeting common causes of community-acquired pneumonia (see CAP). A return to pre-illness baseline within 24-48 hours of initiating therapy is generally inconsistent with bacterial pneumonia; if antibiotics were initiated empirically, no additional antibiotics are indicated for these patients.*		N/A	In contrast, aspiration pneumonia typically presents several days after a suspected aspiration event with a walled-off abscess (necessary for anaerobic bacteria to survive in an aerophilic space). If a pulmonary abscess is suspected, refer to Complicated Pneumonia and consult ID. Antibiotics following an aspiration event are not effective at preventing the development of pneumonia.

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Diagnosis	Common Pathogens	Preferred Empiric Drug(s)	Alternative Drug(s) for Allergy or Special Circumstances	Duration	Comments
Community-acquired pneumonia (CAP), uncomplicated[9,101-111]	Respiratory viruses *S. pneumoniae* *Mycoplasma pneumoniae*	Amoxicillin 45 mg/kg/dose PO q12h (max: 2000 mg/dose) OR (if cannot tolerate PO) Ampicillin 50 mg/kg/dose IV q6h (max: 2000 mg/dose) IF *MYCOPLASMA* OR C. *PNEUMONIAE* ARE DETECTED ON RPP, **OR** IF RESULTS ARE NOT AVAILABLE OR NEGATIVE BUT IMAGING IS CONSISTENT WITH ATYPICAL PNEUMONIA: **ADD** Azithromycin 10 mg/kg PO on day 1 (max: 500 mg/dose), followed by 5 mg/kg PO daily on days 2-5 (max: 250 mg/dose)	ALLERGY: Ceftriaxone 50 mg/kg/dose IV q24h (max: 2000 mg/dose) OR Clindamycin 13mg/kg/dose IV/PO q8h (max: 600 mg/dose) OR Levofloxacin • 6 mo-4 years: 10 mg/kg/dose IV/PO q12h • ≥ 5 years: 10 mg/kg/dose IV/PO q24h (max: 750 mg/dose) ALTERNATIVES FOR ATYPICAL PNEUMONIA: Doxycycline 2.2 mg/kg/dose PO q12h OR Levofloxacin (dosing above) – can be used as monotherapy	If treating patients with a virus detected on RPP for superimposed bacterial CAP, consider a 3-day duration if quick to improve. Other patients: 5 days	Children receiving antibiotics outpatient that are being admitted for uncomplicated CAP should still be started on first-line amoxicillin or ampicillin. Obtain MRSA nasal PCR if initiating anti-MRSA therapy. If RPP is negative for *Mycoplasma pneumoniae* but clinical suspicion is high, reasonable to obtain dedicated PCR for *M. pneumoniae*. If results are negative, no indication to continue therapy for atypical pneumonia.
Complicated pneumonia[9,109,110,112] See SLCH Guideline for Complicated Pneumonia Evaluation and Management on the Antimicrobial Guidebook	*S. pneumoniae* *S. pyogenes* (GAS) *S. aureus*	Ceftriaxone 50 mg/kg/dose IV q24h (max: 2000 mg/dose)	Other considerations and alternative options discussed in the SLCH Guideline for Complicated Pneumonia Evaluation and Management on the Antimicrobial Guidebook		Recommend ID Consult Complicated as defined by parapneumonic effusion, empyema, lung abscess, or necrotizing pneumonia.

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Hospital/Ventilator-associated pneumonia (HAP/VAP)[109,110,113]	Gram-negative organisms *S. aureus*	*Use prior microbiology data from the past 6 months to guide empiric antibiotic therapy*. NO RECENT PRIOR MICRO DATA: Ceftriaxone 50 mg/kg/dose IV q24h (max: 2000 mg/dose)	IF TOXIC (UNLESS PRIOR RECENT MICRO SUGGESTS BROADER THERAPY): Vancomycin (see Appendix 1) **PLUS** Cefepime 50 mg/kg/dose IV q8h (max: 2000 mg/dose)	7 days	Consider obtaining MRSA nares PCR if initiating anti-MRSA therapy.
Influenza[114,115]	Influenza virus	Oseltamivir (dosing per Oseltamivir Treatment Panel and Oseltamivir Prophylaxis Panel)		Treatment: 5 days Prophylaxis: 7 days	Regardless of duration of symptoms, treatment is recommended for patients with severe influenza requiring hospitalization and for those at high risk of complications. Treatment may be considered for low-risk outpatients if initiated within 48 hours of illness onset.

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Tracheitis (intubated/ tracheostomy)[116-119] Consider a diagnosis of tracheitis and send tracheal aspirate culture in patients who have increased quantity of secretions (not change in secretion color or thickness) and at least one of the following: • Sustained increase in ventilator settings (pressure or FiO2) due to poor oxygenation for at least 6 hours • Temperature >38°C or <36.0°C (sustained x2) • WBC count ≥12,000 or <4,000 • New opacity on CXR concerning for consolidation or pneumonia	Gram-negative bacilli *S. aureus*	Cefepime 50 mg/kg/dose IV q8h (max: 2000 mg/dose)	ALLERGY: Ciprofloxacin 10-15 mg/kg/dose PO q12h (max: 500-750 mg/dose) IF TOXIC: **Add** Vancomycin (see Appendix 1)	3-5 days	Empiric antibiotic selection should take into consideration prior recent tracheal aspirate cultures (i.e., within the past 6 months). Do **not** repeat a tracheal aspirate culture in patients who have previously had one ordered in the past 72 hours.
Tracheitis (native airway)[120]	*S. aureus* *S. pyogenes* (GAS) *S. pneumoniae* *H. influenzae*	Vancomycin (see Appendix 1) **PLUS** Ceftriaxone 50 mg/kg/dose IV q24h (max: 2000 mg/dose)		10 days	Recommend ID consult

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SKIN AND SOFT TISSUE INFECTIONS					
Cellulitis (both purulent and non-purulent)[9,79,121-127]	*S. aureus* *S. pyogenes* (GAS)	Cephalexin 25 mg/kg/dose PO q12h (max: 500 mg/dose) OR Cefazolin 33 mg/kg/dose IV q8h (max: 2000 mg/dose) **Risk factors for MRSA are unclear. If recent prior history of MRSA infection (i.e. past 6 months), consider using prior susceptibility data to guide empiric therapy.** PRIOR RECENT MRSA INFECTION OR HIGH CONCERN FOR MRSA BUT NO AVAILABLE SUSCEPTIBILITY DATA: TMP/SMX 5 mg/kg/dose (TMP component) PO q12h (max: 800 mg SMX/160 mg TMP per dose) If BMI ≥ 30 in adolescents and adults, max dose of 1600 mg SMX/ 320 mg TMP/dose (i.e. #2 double-strength tablets)	ALLERGY: TMP/SMX (see dosing under empiric therapy) OR Doxycycline 2.2 mg/kg/dose PO q12h (max: 100 mg/dose) IF TOXIC: Vancomycin (see Appendix 1)	5 days	Exclusive PO therapy is non-inferior to initial IV therapy for mild to moderate infections. For purulent SSTI, incision and drainage (I&D) is indicated if able. If performed, send cultures. When choosing an empiric antibiotic regimen, consider prior culture results and prior use of antibiotics, and see antibiogram for *S. aureus* susceptibility at SLCH. Clindamycin not recommended empirically given its lower susceptibility rate for MSSA, MRSA, and *S. pyogenes* unless other agents not indicated due to allergy/toxicity concerns.

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Human bite[125,128,129]	*E. corrodens* Oral anaerobes Polymicrobial *Streptococcus* spp. *S. aureus*	Amoxicillin-Clavulanate (see Appendix 4) OR Ampicillin-Sulbactam 50 mg/kg/dose (ampicillin component) IV q6h (max: 2000 mg/dose)	ALLERGY: Clindamycin 13 mg/kg/dose PO q8h (max: 450 mg/dose) **PLUS** TMP/SMX 5 mg/kg/dose trimethoprim component PO q12h (max: 800 mg SMX/160 mg TMP per dose) If BMI ≥ 30 in adolescents and adults, consider max dose of 1600 mg SMX/ 320 mg TMP/dose (i.e. double-strength tablet) OR Monotherapy with Doxycycline 2.2 mg/kg/dose PO q12h (max: 100 mg/dose)	Prophylaxis: 3 days Infection: 5 days PROPHYLAXIS INDICATIONS: • Moderate or severe bite wounds, especially if edema or crush injury is present • Puncture wounds, especially if penetration of bone, tendon sheath, or joint has occurred • Deep or surgically closed facial bite wounds • Hand and foot bite wounds • Genital area bite wounds • Wounds in patients with immunocom-promising conditions including asplenia • Cat bite wounds	Verify tetanus vaccine status. See the Red Book Tetanus Section for recommendations. Rabies Prophylaxis (consult ID or ASP with questions) • For bites caused by dogs, cats, and ferrets which are healthy* and able to be observed for 10 days, defer rabies prophylaxis and provide only if animal develops signs of rabies. • For bites caused by animals^ other than dogs, cats, or ferrets, or if animal is not healthy, initiate rabies prophylaxis with rabies immunoglobulin and rabies vaccine. • See Red Book Rabies Section for more information. *Animal vaccine status is not considered. ^Bites caused by livestock, rodents, and lagomorphs should be considered on a case-by-case basis.
Animal bite[125,128-131]	*P. multocida* Oral anaerobes *E. corrodens* *Capnocytophaga* spp. *Streptococcus* spp. *S. aureus*				

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Lymphadenitis, suppurative[9,132-134]	*S. aureus* *S. pyogenes* (GAS)	Cephalexin 25 mg/kg/dose PO q12h (max: 500 mg/dose) OR Cefazolin 33 mg/kg/dose IV q8h (max: 2000 mg/dose) **Risk factors for MRSA are unclear. If recent prior history of MRSA infection (i.e. past 6 months), consider using prior susceptibility data to guide empiric therapy.** PRIOR RECENT MRSA INFECTION OR HIGH CONCERN FOR MRSA BUT NO AVAILABLE SUSCEPTIBILITY DATA: TMP/SMX 5 mg/kg/dose (TMP component) PO q12h (max: 800 mg SMX/160 mg TMP per dose) If BMI ≥ 30 in adolescents and adults, max dose of 1600 mg SMX/ 320 mg TMP/dose (i.e. #2 double-strength tablets)	IF THOUGHT TO BE RELATED TO AN ANATOMIC ABNORMALITY (E.G., BRANCHIAL CLEFT CYST): Amoxicillin-Clavulanate (see Appendix 4) OR Ampicillin-Sulbactam 50 mg/kg/dose (ampicillin component) IV q6h (max: 2000 mg/dose)	5-7 days	Bilateral lymphadenitis is more likely to reflect a viral process.
Necrotizing fasciitis[125]	Polymicrobial *S. pyogenes* (GAS) *S. aureus*	Vancomycin (see Appendix 1) **PLUS** Cefepime 50 mg/kg/dose IV q8h (max: 2000 mg/dose) **PLUS** Clindamycin 13 mg/kg/dose IV q8h (max: 600-900 mg/dose)			Obtain ID and Surgery consults.

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Pyomyositis[125]	*S. aureus* *S. pyogenes* (GAS)	Cefazolin 33 mg/kg/dose IV q8h (max: 2000 mg/dose) **Risk factors for MRSA are unclear. If recent prior history of MRSA infection (i.e. past 6 months), consider using prior susceptibility data to guide empiric therapy.** PRIOR RECENT MRSA INFECTION OR HIGH CONCERN FOR MRSA BUT NO AVAILABLE SUSCEPTIBILITY DATA: TMP/SMX 5 mg/kg/dose (TMP component) PO q12h (max: 800 mg SMX/160 mg TMP per dose) If BMI ≥ 30 in adolescents and adults, max dose of 1600 mg SMX/ 320 mg TMP/dose (i.e. #2 double-strength tablets)	IF TOXIC: Vancomycin (see Appendix 1)	10-14 days	Recommend ID consult
Staphylococcal scalded skin syndrome[135-137]	*S. aureus* Nearly universally MSSA	Cephalexin 25 mg/kg/dose PO q12h (max: 500 mg/dose) OR Cefazolin 33 mg/kg/dose IV q8h (max: 2000 mg/dose)		5-7 days	Initial PO therapy is preferred, especially if patients have no other reason that a peripheral IV needs to be placed (e.g., dehydration).
MISCELLANEOUS					
Central line-associated blood stream infection (CLABSI)[9,138,139]	*S. aureus* Coagulase-negative *Staphylococcus* (CoNS) Enteric Gram-negative bacilli	Cefepime 50 mg/kg/dose IV q8h (max: 2000 mg/dose)	IF TOXIC: **ADD** Vancomycin (see Appendix 1)		Recommend ID consult

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Febrile infant, admitted from community[9,140-143]	*S. agalactiae* (GBS) *E. coli* Other Enteric Gram-negative bacilli (Rarely) *Listeria monocytogenes*	*For all dosing, see NICU Drug Book.* 0-7 DAYS OLD: Ampicillin **PLUS** Ceftazidime 8-21 DAYS OLD: Ampicillin **PLUS EITHER** Ceftriaxone (preferred, if criteria described in comments are met) OR Ceftazidime 21-28 DAYS OLD: Ceftriaxone ≥29 DAYS OLD: Ceftriaxone* *If concerned for meningitis (either based on CSF parameters [if LP performed] or patient symptoms), see Meningitis, ≥29 Days Old.	CONSIDER ADDITION OF ACYCLOVIR IF ANY OF THE FOLLOWING CRITERIA ARE MET: • Vesicular or pustular skin lesions (including mucous membrane ulcers) not characteristic of normal newborn skin findings • Critical illness (e.g., hypotension, respiratory failure, poor perfusion, lethargy, obtundation) • Hypothermia • Elevated ALT • Leukopenia • Thrombocytopenia • Coagulopathy • CSF pleocytosis without positive Gram stain • Seizures • Focal neurologic signs • Encephalopathy • Irritability without other explanation See NICU Drug Book for Acyclovir dosing. See Neonatal HSV Guidance Document in Antimicrobial Guidebook for additional information.		Patients meeting all the following criteria may safely receive ceftriaxone: • Age ≥7 days • Corrected (current) gestational age ≥35 weeks • Not currently receiving calcium-containing solutions or parenteral nutrition • Total serum bilirubin (Tbili) <5 mg/dL^ • Albumin within normal limits^ [A] In patients who qualify for ceftriaxone based on age and corrected GA, it is not always necessary to wait for Tbili and albumin to result before placing order. In most, the bilirubin-albumin binding capacity has matured, but clinical judgment is warranted.

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Fever and neutropenia (hematology/ oncology patients)[144-149] Does not apply to non-hematology/ oncology patients who are febrile and neutropenic for other reasons (e.g., viral infection)	Gram-positive pathogens (including *S. aureus,* CoNS, *Streptococcus* spp.) Enteric Gram-negative bacilli (including *P. aeruginosa*)	Cefepime 50mg/kg/dose IV q8h (max: 2000 mg/dose) *Patients without an oncologic diagnosis should receive antibiotic therapy targeting their known or suspected infectious syndrome, which may include observation off antibiotics.*	IF TOXIC, SEVERE PNEUMONIA, SEVERE MUCOSITIS, OR CELLULITIS WITH RISK FACTORS FOR MRSA: Add Vancomycin (see Appendix 1) IF ABDOMINAL SYMPTOMS/TYPHLITIS: Add Metronidazole 10 mg/kg/dose PO/IV q8h (max: 500 mg/dose)		
Lemierre syndrome (septic thrombo-phlebitis)[150,151]	*Fusobacterium necrophorum* *Bacteroides* spp. *Peptostrepto-coccus* *S. aureus* *Streptococcus* spp.	Ampicillin-Sulbactam 50 mg/kg/dose (ampicillin component) IV q6h (max: 2000 mg/dose)	IF CLINICAL CONCERN FOR CNS EXTENSION: Ceftriaxone 50 mg/kg/dose IV q12h (max: 2000 mg/dose **PLUS** Metronidazole 10 mg/kg/dose IV q8h (max: 500 mg/dose) IF TOXIC: **ADD** Vancomycin (see Appendix 1)		Recommend ID Consult

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Sepsis rule-out in infant hospitalized since birth[152-154]	*S. agalactiae* (GBS) *E. coli* *S. aureus* Other enteric Gram-negative bacilli (Rarely) *Listeria monocytogenes*	*For all dosing, see NICU Drug Book.* EARLY ONSET SEPSIS (≤3 DAYS OLD): Ampicillin **PLUS** Gentamicin LATE ONSET SEPSIS (>3 DAYS OLD): • <28 weeks GA OR BW < 1000 g AND <4 WEEKS AND INTUBATED: Vancomycin **PLUS** Gentamicin • <28 weeks GA AND EITHER >4 weeks PNA OR extubated: Oxacillin/Nafcillin **PLUS** Gentamicin • All other neonates: Oxacillin/Nafcillin **PLUS** Gentamicin	SEPTIC SHOCK: Vancomycin **PLUS** Cefepime PRIOR MRSA COLONIZATION: Vancomycin **PLUS** Gentamicin		Across all categories, ceftazidime is preferred to gentamicin in patients with encephalopathy or congenital renal disease.
Sickle cell disease with fever[155-159]	*S. pneumoniae* Enteric Gram-negative organisms Salmonella *S. aureus* *Mycoplasma*	Ampicillin-Sulbactam 50mg/kg/dose (ampicillin component) IV q6h (max: 2000 mg/dose) OR *Ceftriaxone 50 mg/kg/dose IV q24h (max: 2000 mg/dose)	IF ACUTE CHEST SYNDROME SUSPECTED: **ADD** Azithromycin: 10 mg/kg PO on day 1 (max: 500 mg/dose), followed by 5 mg/kg PO daily on days 2-5 (max: 250 mg/dose) IF TOXIC: **ADD** Vancomycin (see Appendix 1)		*Ceftriaxone may increase the risk of severe hemolysis in patients with sickle cell disease.

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Diagnosis	Common Pathogens	Preferred Empiric Drug(s)	Alternative Drug(s) for Allergy or Special Circumstances	Duration	Comments
Tickborne infections[160] Consider testing for tickborne infections in patients with presenting with fever during the summer or fall, suspected or confirmed tick exposure, and at least one of the following: • Compatible rash • Headache • Myalgia • GI symptoms Supportive laboratory findings include: • Hyponatremia • Leukopenia • Low platelets • Elevated AST/ALT	*Ehrlichia* *Rickettsia rickettsii*	Doxycycline 2.2 mg/kg/dose PO q12h (max: 1000 mg/dose)	Use of antimicrobial therapies other than doxycycline increases mortality in patients with Rocky Mountain Spotted Fever. The American Academy of Pediatrics notes that doxycycline can be administered without regard to a patient's age or duration of therapy.	5 days minimum, and at least 3 days after resolution of fever	Lyme disease is not endemic to our area. Do not send testing without a compatible travel history. See After Hours Guideline for Tickborne Illness Management on PolicyTech for additional information.
Toxic shock syndrome	*S. pyogenes* (GAS) *S. aureus*	Vancomycin (see Appendix 1) **PLUS** Ceftriaxone 50 mg/kg/dose IV q12h (max: 2000 mg/dose) **PLUS** Clindamycin 13 mg/kg/dose IV q8h (max: 600 mg/dose)			Recommend ID Consult

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APPENDIX 1: PEDIATRIC DOSING RECOMMENDATIONS FOR VANCOMYCIN AND AMINOGLYCOSIDES

For neonate-specific dosing recommendations, see NICU Drug Book.

Vancomycin Pediatric Dosing and Goal Troughs:

VANCOMYCIN EMPIRIC PEDIATRIC DOSING RECOMMENDATIONS (Patients previously therapeutic on vancomycin should be restarted on that dose as appropriate)	
1-3 months	15 mg/kg/dose q8h
4-11 months	15 mg/kg/dose q6h
1-8 years	20 mg/kg/dose q6h
9-13 years	20 mg/kg/dose q8h
≥14 years	15 mg/kg/dose q8h

- Exclusions to this dosing: Patients with renal or cardiac insufficiency, and patients receiving calcineurin inhibitors (i.e. cyclosporine, tacrolimus)
- Patients receiving ECMO: Increase empiric dosage by 5 mg/kg/dose, to be given at the indicated frequency based on age and renal function. Clinical judgment warranted.
- Vancomycin in Hemodialysis:
  - First dose: 15 mg/kg (max: 1000 mg)
  - Typical maintenance dose: 7.5-10 mg/kg (administer AFTER dialysis ends)
  - Consider increasing the dose 25% when there is more than one day between HD sessions (example: for a patient on chronic MWF HD, increase the Friday post-dialysis dose by 25% as compared to the Monday and Tuesday doses)
  - Note: HD dialyzer at SLCH is high permeability
  - Monitoring: obtain pre-dialysis random level
- Maximum: most children generally do not require >2,000 mg/dose, >3,600 mg/day or >100 mg/kg/day
- The above dosing recommendations are based on internal SLCH data and existing literature in children. See 2020 guidelines for therapeutic monitoring of vancomycin, endorsed by ASHP, IDSA, PIDS, and SIDP, for additional information.

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Goal Vancomycin Concentrations:

VANCOMYCIN GOAL TROUGH CONCENTRATIONS	
Central Nervous System Infections	15-20 mcg/mL
All other infections	10-15 mcg/mL
VANCOMYCIN PRE-HEMODIALYSIS CONCENTRATION	
All infections	15-20 mcg/mL

Additional considerations when adjusting vancomycin dosing in response to levels:

- For troughs near the desired trough range (i.e., 8-9 mcg/mL in a patient with a goal trough of 10-15 mcg/mL), strongly consider not increasing the dose, especially in patients at risk for further accumulation of vancomycin, after clinically evaluating the patient's status, microbiology data, etc. Clinical judgment warranted.
- The goal vancomycin pharmacodynamic (PD) target of AUC/MIC 400-600 is largely derived from studies of patients with MRSA bacteremia. In children, PK/PD data show that troughs as low as 7 mcg/mL correlate with AUC/MIC ratios of 400-600.
- In children, troughs >15 mcg/mL should generally be avoided (with CNS infections being an exception). Troughs >15 mcg/mL have not shown to improve outcomes in children with MRSA infections, but it is an independent risk factor for acute kidney injury (AKI).

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Aminoglycoside Use in Pediatrics:

Gentamicin Synergy Dosing for Staphylococcus or Enterococcus bacteremia/endocarditis:

Indication:

- As synergy with another cell-wall active antibiotic in the treatment of *Staphylococcus* or *Enterococcus* bacteremia/endocarditis

Dose: **Dosed based on adjusted body weight for obese patients**

Infants, children, adolescents: 1.5 mg/kg/dose IV q12h

Monitoring:

- Only need to obtain troughs to assess safety/clearance of gentamicin

Extended Interval Dosing for Gentamicin (for Enterobacterales) and Tobramycin (for Pseudomonas or Enterobacterales):

Indication:

- Preferred dosing for **critically ill patients** with concern for multidrug resistant gram-negative organisms (tobramycin often used empirically due to concern for Pseudomonas in this population)

Dose: **Dosed based on adjusted body weight for obese patients**

Neonates 35-44 weeks PMA: 5 mg/kg/dose IV q24h

Infants ≥45 weeks PMA, children, adolescents: 7 mg/kg/dose q24h

Infants ≥45 weeks PMA, children, and adolescents with CrCl 30 to <50 or CVVHDF: 7 mg/kg IV x1

- Patients with CrCl <30 ml/min, receiving intermittent hemodialysis or peritoneal dialysis: consult pharmacist to weigh risks vs. benefits, and to discuss appropriate dosing on a case-by-case basis.

Monitoring:

- Check 24-hour peak level 30 minutes AFTER the END of the infusion of the 1st dose and a random level 12-18 hours after the 1st dose
- Goal peak levels=20-30, goal trough level <0.5 mcg/mL

Conventional Dosing for the Treatment of Enterobacterales (gentamicin/tobramycin) and Pseudomonas (tobramycin):

Indication:

- Treatment of non-severe infections
- Open-fracture prophylaxis (gentamicin or tobramycin)
- Non-critically ill patients with CrCl <30ml/min

Dose: **Dosed based on adjusted body weight for obese patients**

4 mg/kg/dose IV q12h

- For neonate-specific dosing recommendations, see NICU Drug Book

Monitoring:

Check peak and trough with the 3rd dose generally, or earlier if warranted based on renal function.

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APPENDIX 2: TETANUS PROPHYLAXIS IN ROUTINE WOUND MANAGEMENT

History of Adsorbed Tetanus Toxoid (Doses)	Clean, Minor Wounds		All Other Wounds[a]	
	DTaP or Tdap[b]	TIG[c]	DTaP or Tdap[b]	TIG[c]
Fewer than 3 or unknown	Yes	No	Yes	Yes
3 or more	No if <10 y since last tetanus-containing vaccine dose	No	No[d] if <5 y since last tetanus-containing vaccine dose	No
	Yes if ≥10 y since last tetanus-containing vaccine dose	No	Yes if ≥5 y since last tetanus-containing vaccine dose	No

a – Such as, but not limited to, wounds contaminated with dirt, feces, soil, and saliva (eg, following animal bites); puncture wounds; avulsions; and wounds resulting from missiles, crushing, burns, and frostbite.
b – DTaP is used for children younger than 7 years. Tdap is used for children 7 years and older.
c – Immune Globulin Intravenous should be used when TIG is not available
d – More frequent boosters are not needed and can accentuate adverse effects

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APPENDIX 3: ADDITIONAL INFORMATION REGARDING OPEN FRACTURE PROPHYLAXIS

- Determine type of fracture using the **Gustilo-Anderson Classification System,** which evaluates the wound, specifically noting the size, the extent of soft tissue damage, the environment where the injury took place, and the presence of a vascular injury.

TABLE 1. Open Fractures—Gustilo Classification[1,2]

Type I	Open fracture with a skin wound <1 cm in length and clean.
Type II	Open fracture with a laceration >1 cm in length without extensive soft tissue damage, flaps, or avulsions.
Type III	Open segmental fracture with >10 cm wound with extensive soft tissue injury or a traumatic amputation (special categories in Type III include gunshot fractures and open fractures caused by farm injuries).
III_A	Adequate soft tissue coverage.
III_B	Significant soft tissue loss with exposed bone that requires soft tissue transfer to achieve coverage.
III_C	Associated vascular injury that requires repair for limb preservation.

- **High-velocity ballistic injury** is characterized by high kinetic energy, resulting in extensive tissue damage characterized by: 1) lacerated and crushed tissue in the wound tract, creating a permanent cavity often a few times greater in size than the projectile diameter, (2) damaged tissue adjacent to the wound tract caused by shearing and stretching, and (3) lack of small blood vessel filling and extravasation of blood surrounding the area.

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APPENDIX 4: PEDIATRIC DOSING RECOMMENDATIONS FOR AMOXICILLIN/CLAVULANATE (AUGMENTIN)

Standard Dose		
Indications	Bites (human or animal), retro- or para-pharyngeal abscess, tonsillar or peritonsillar abscess, dental abscess, button battery prophylaxis, mandible fracture prophylaxis, lymphadenitis	
<3 months		
Formulations	*All patients (4:1)*	
	Augmentin 50-12.5 mg/mL (250-62.5 mg/5 mL) suspension	
Typical Dosing	15 mg/kg PO BID	
≥ 3 months		
Formulations	*Preferred for most patients (7:1): twice daily dosing*	*Alternative (4:1): three times daily dosing*
	Augmentin 80-11.4 mg/mL (400-57 mg/5 mL) suspension Augmentin 875-125 mg tablet Augmentin 400-57 mg chewable tablet*	Augmentin 50-12.5 mg/mL (250-62.5 mg/5 mL) suspension Augmentin 500-125 mg tablet
Typical Dosing	20 mg/kg PO BID	10 mg/kg PO TID
Max Dosing	875 mg/125 mg PO BID	500 mg/125 mg PO TID
High Dose		
Indications	Acute otitis media (AOM), pneumonia, sinusitis, mastoiditis, orbital cellulitis	
AOM, Uncomplicated Pneumonia, Sinusitis		
Formulations	*Preferred for most patients (14:1): ES/XR formulations***	*Alternative (7:1): ≥25 kg unable to receive ES/XR formulations*
	Augmentin ES 120-8.6 mg/mL (600-42.9 mg/5 mL) suspension Augmentin XR 1000-62.5 mg tablet	Augmentin 80-11.4 mg/mL (400-57 mg/5 mL) suspension Augmentin 875-125 mg tablet
Typical Dosing	45 mg/kg PO BID	
Max Dosing	2000/125 mg PO BID	875/125 mg PO BID
Mastoiditis, Orbital Cellulitis, Complicated Pneumonia		
Formulations	*Preferred for most patients (14:1): ES/XR formulations***	*Alternative (7:1): ≥40 kg unable to receive ES/XR formulations****
	Augmentin ES 120-8.6 mg/mL (600-42.9 mg/5 mL) suspension Augmentin XR 1000-62.5 mg tablet	Augmentin 80-11.4 mg/mL (400-57 mg/5 mL) suspension Augmentin 875-125 mg tablet
Typical Dosing	45 mg/kg PO BID	Augmentin 875/125 mg PO TID *or* Augmentin 875/125 mg PO BID + amoxicillin 1000 mg PO BID
Max Dosing	2000/125 mg PO BID	

*Ongoing shortage/supply issues with no current availability at SLCH.

**Formulations may not be routinely stocked by all pharmacies and may require prior authorization.

***For patients with need for high dose who are unable to receive Augmentin ES/XR (14:1) formulation, amoxicillin can be added to Augmentin 7:1 formulation to achieve 45 mg/kg/dose of amoxicillin, not to exceed 10 mg/kg/day of clavulanate. Alternative dosing in patients ≥40 kg is Augmentin 875/125 mg TID.

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