ASCENSION VIA CHRISTI
ADULT EMPIRIC ANTIMICROBIAL THERAPY GUIDE

Empiric antimicrobial guidelines are based on the most likely organisms responsible for infection and Ascension Via Christi susceptibilities. Specific patient information should always be considered when making therapy decisions. Therapy may need to be adjusted once identification and susceptibility are determined.

The Antimicrobial Stewardship Team can be paged through the hospital operator "0"

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	Anatomic Site/Diagnosis
Febrile Neutropenia	
Sepsis (Source Unknown)	
Central Nervous System Infections	Community-Acquired Meningitis Healthcare-Associated Meningitis
Acute Sinusitis	
Lower Respiratory Tract Infections	Community-Acquired Pneumonia (CAP) CAP with Risk Factors for Multidrug Resistant Organisms (MDRO) Hospital-Acquired Pneumonia (HAP) & Ventilator-Associated Pneumonia (VAP) Aspiration COPD Exacerbation
Gastrointestinal Infections	*H. pylori* *C. difficile*
Intra-abdominal Infections	Intra-abdominal Infection Spontaneous Bacterial Peritonitis (SBP)
Urinary Tract Infections	Asymptomatic Bacteriuria Cystitis Pyelonephritis
Sexually Transmitted Infections	Syphilis Gonorrhea Chlamydia Trichomoniasis Bacterial Vaginosis Acute Epididymitis Pelvic Inflammatory Disease (PID)
Skin & Soft Tissue Infections	Non-Purulent Cellulitis Purulent Cellulitis Necrotizing Skin & Soft Tissue Infection Diabetic Foot Infection (DFI) Bites (animal, human)
Bone & Joint Infections	Septic Arthritis Prosthetic Joint Infection Vertebral Osteomyelitis Non-Vertebral Osteomyelitis

Febrile Neutropenia				
Anatomic Site/Diagnosis		**Common Pathogens**	**Preferred Therapy**	**Suggested Treatment Duration/Notes**
Febrile Neutropenia	Fever defined as single oral temp ≥38.3°C or ≥38°C sustained over 1h Neutropenia defined as ANC <500 or ANC expected to decrease <500 during next 48h	*GNR* *Pseudomonas* *S. aureus*	Cefepime 1 g IV q6h **OR** Piperacillin/Tazobactam 4.5 g IV q8h *Confirmed allergy to penicillin & cephalosporins or known history of ESBL:* Meropenem 500 mg IV q6h **Known history MRSA, infiltrates on CXR/pneumonia, suspected line infection, SSTI, hemodynamic instability:** **+** Vancomycin IV (D/C in 48h if no resistant gram-positive organisms isolated)	For documented infections, adjust antibiotics to target culture results; durations vary depending on infectious syndrome For unexplained fever, continue empiric regimen until ANC >500 Alternatively, if all s/s of infection resolved (afebrile for 72h) but neutropenia persists, may de-escalate to PO FQ prophylaxis
Sepsis (Source Unknown)				
Anatomic Site/Diagnosis		**Common Pathogens**	**Preferred Therapy**	**Suggested Treatment Duration/Notes**
Sepsis	**Risk factors for MDRO** • Hospitalization with IV antibiotics within 90 days • Prior *Pseudomonas* or other GNR within 12 months	N/A	**Community-acquired:** Ceftriaxone 2 g IV q24h **High risk for MDRO and/or Septic Shock:** Cefepime 1 g IV q6h *Confirmed cephalosporin allergy:* Piperacillin/Tazobactam 4.5 g IV q8h **Known history MRSA, hospitalization with IV antimicrobials within 90 days, suspected line infection, person who injects drugs, SSTI:** **+** Vancomycin IV	Stop antibiotics at 48 hours if no source of infection identified
Central Nervous System Infections				
Anatomic Site/Diagnosis		**Common Pathogens**	**Preferred Therapy**	**Suggested Treatment Duration/Notes**
Meningitis	Community-Acquired	*N. meningitidis* *S. pneumoniae* *Listeria (>50 y/o)*	**Bacterial Meningitis:** Ceftriaxone 2 g IV q12h **+** Vancomycin IV (to cover resistant *S. pneumoniae*) **+/-** Ampicillin 2 g IV q4h (>50 y/o or immunocomp) *Confirmed penicillin & cephalosporin allergy:* Vancomycin IV **+** Meropenem 2 g IV q8h **Suspicion for HSV and/or severely immunocompromised:** Acyclovir 10 mg/kg IV q8h	If *S. pneumoniae* suspected, administer dexamethasone 0.15 mg/kg IV/PO q6h x4 days before or with initial dose of antibiotics
	Healthcare-Associated (post-neurosurgery, penetrating trauma, CSF shunt)	*S. aureus* *S. epidermidis* *GNR (including Pseudomonas)*	Vancomycin IV **+** Cefepime 2 g IV q8h **OR** Vancomycin IV **+** Meropenem 2 g IV q8h	Duration dependent on pathogen & clinical course

Acute Sinusitis				
Anatomic Site/Diagnosis		**Common Pathogens**	**Preferred Therapy**	**Suggested Treatment Duration/Notes**
Acute Sinusitis	Most sinusitis cases are viral (~98%)	*Viruses* *S. pneumoniae* *H. influenzae* *M. catarrhalis*	**1st line:** Watchful waiting + symptomatic relief **2nd line:** Amoxicillin/Clavulanate 875/125 mg PO q12h **3rd line:** Doxycycline 100 mg PO q12h **Antibiotics ONLY necessary if:** • Persistent symptoms ≥10 days • Severe symptoms (e.g. fever, purulent discharge, facial pain) ≥3-4 days • Worsening symptoms or "double sickening"	3-5 days Azithromycin NOT recommended for empiric therapy due to high resistance rates to common pathogens
Lower Respiratory Tract Infections				
Anatomic Site/Diagnosis		**Common Pathogens**	**Preferred Therapy**	**Suggested Treatment Duration/Notes**
Community-Acquired Pneumonia (CAP)	• Signs/symptoms prior to or within 48h of administration • Non-ICU or ICU admission	*Viruses* *S. pneumoniae* *M. pneumoniae* *C. pneumoniae* *H. influenzae* *M. catarrhalis*	Ceftriaxone 2 g IV q24h **+** Azithromycin 500 mg IV/PO q24h (x3 days only) **OR** **+** Doxycycline 100 mg IV/PO q12h *Confirmed cephalosporin allergy:* Levofloxacin 750 mg IV/PO q24h	5 days Switch to PO therapy as tolerated & with clinical improvement
CAP with Risk Factors for Multidrug Resistant Organisms (MDRO) **Hospital-Acquired Pneumonia (HAP)** **AND** **Ventilator-Associated Pneumonia (VAP)**	**Risk factors for MDRO** • Hospitalization with IV antibiotics within 90 days • Prior MRSA or *Pseudomonas* in respiratory cultures within 12 months	*CAP pathogens* *PLUS* *K. pneumoniae* *S. aureus* *Pseudomonas* *Acinetobacter*	***Pseudomonas* Risk Factors:** Cefepime 1g IV q6h **OR** Piperacillin/Tazobactam 4.5 g IV q8h **MRSA Risk Factors:** **+** MRSA nasal screen (Vancomycin IV or Linezolid 600 mg IV/PO q12h if positive) *Atypical coverage for CAP only:* **+** Azithromycin 500 mg IV/PO q24h (x3 days only)	7 days MRSA nasal screen has high NPV but low PPV: • If negative, likely does NOT have MRSA pneumonia - D/C vancomycin or linezolid • If positive, MRSA colonizer but unable to determine if pneumonia due to MRSA
Aspiration	Distinguish from aspiration pneumonitis that resolves in 24-48h WITHOUT antibiotics	*CAP pathogens* *PLUS* *Oral & enteric flora*	Ceftriaxone 2 g IV q24h *Confirmed cephalosporin allergy:* Amoxicillin/Clavulanate 875 mg/125 mg PO q12h **OR** Ampicillin/Sulbactam 3 g IV q6h	5 days Only cover anaerobes in cases of abscess or empyema
Acute Bacterial Exacerbation of COPD	**Severe exacerbation:** • Requiring hospitalization • Acute respiratory failure	*Viruses* *H. influenzae* *S. pneumoniae* *M. catarrhalis* *Pseudomonas*	Amoxicillin/Clavulanate 875/125 mg PO q12h *Confirmed allergy to penicillin or risk for Pseudomonas*: Levofloxacin 750 mg IV/PO q24h **Antibiotics ONLY necessary if:** • Increased dyspnea, increased purulence of sputum, increased volume of sputum (at least 2) • Ventilator support	5 days

Gastrointestinal Infections				
Anatomic Site/Diagnosis		**Common Pathogens**	**Preferred Therapy**	**Suggested Treatment Duration/Notes**
H. pylori	Bismuth quadruple therapy may be preferred over clarithromycin triple therapy due to increasing rates of resistance	*Helicobacter pylori*	Bismuth subsalicylate 2 tabs (262 mg each) PO q6h **+** Metronidazole 500 mg q6h **+** Tetracycline 500 mg PO q6h **+** Pantoprazole 40 mg PO q12h **OR** Amoxicillin 1000 mg PO q12h **+** Clarithromycin 500 mg PO q12h **+** Pantoprazole 40 mg PO q12h	14 days If no enteral route available, consider deferring treatment until such route available - *H. pylori* eradication provides predominantly long-term benefit, rather than acute
***C. difficile* Colitis**	**Non-severe:** WBC ≤ 15 & SCr <1.5 **Severe:** WBC > 15 or SCr ≥1.5 **Fulminant:** Hypotension/shock, ileus, megacolon	*Clostridiodes difficile*	**Initial episode, non-fulminant:** Vancomycin 125 mg PO q6h **Initial episode, fulminant:** Vancomycin 500 mg PO/NG-tube q6h **+** Metronidazole 500 mg IV q8h **If ileus present:** **+** Vancomycin 500 mg q6h rectally **First recurrence** Fidaxomicin 200 mg PO q12h **OR** Vancomycin PO taper	10 days Discontinue all unnecessary antibiotics
Intra-Abdominal Infections				
Anatomic Site/Diagnosis		**Common Pathogens**	**Preferred Therapy**	**Suggested Treatment Duration/Notes**
Intra-abdominal Infection	**Mild/Moderate** Ruptured appendicitis Abscess Cholecystitis Secondary peritonitis	*E. coli* *Klebsiella* *Proteus* *Bacteroides* *Enteric strep*	Ceftriaxone 2 g IV q24h **+** Metronidazole 500 mg IV/PO q12h	4 days after source control achieved Empiric *Enterococcus* coverage NOT recommended for community-acquired intra-abdominal infections Empiric antifungal therapy NOT recommended EXCEPT in high-risk patients: critically ill with upper GI source, recurrent bowel perforation, heavy colonization
	Severe/High Risk Patient requiring ICU admission	*Above pathogens* *PLUS* *Enterococcus* *Pseudomonas* *S. aureus*	Piperacillin/Tazobactam 4.5 g IV q8h *Confirmed penicillin allergy :* Cefepime 1 g IV q6h **+** Metronidazole 500 mg IV/PO q12h **Known history MRSA or surgical wound infection:** **+** Vancomycin IV	
Spontaneous Bacterial Peritonitis (SBP)	Secondary to: Ascites Cirrhosis	*Typically monobacterial:* *E. coli* *Klebsiella* *Enteric strep*	Ceftriaxone 2 g IV q24h *Confirmed penicillin & cephalosporin allergy :* Ciprofloxacin 400 mg IV q12h	5-7 days With active GI bleeding & cirrhosis, ceftriaxone x5-7 days indicated to prevent SBP

Urinary Tract Infections				
Anatomic Site/Diagnosis		**Common Pathogens**	**Preferred Therapy**	**Suggested Treatment Duration/Notes**
Asymptomatic Bacteriuria	Foul smelling and/or cloudy urine alone are not indications for treatment		Patients with asymptomatic bacteriuria should NOT be treated with antimicrobials Exceptions are pregnancy & patients undergoing GU procedures that break the mucosal barrier	Observe patients with AMS and bacteriuria without urinary symptoms OFF antibiotics while pursuing other diagnoses
Cystitis	Urinary catheters should be removed whenever possible	*E. coli* *Klebsiella* *Proteus* *Enterococcus*	**1st line:** Macrobid 100 mg PO q12h x5 days **2nd line:** Cephalexin 1000 mg PO q12h x5 days **3rd line:** TMP/SMX 1 DS tab PO q12h x3 days **4th line:** Fosfomycin 3 g PO x1 **Empiric IV Therapy**: Ceftriaxone 2 g IV q24h	3-5 days for uncomplicated 7 days for complicated (male, pregnant, catheter, altered urologic anatomy)
Pyelonephritis			Ceftriaxone 2 g IV q24h Switch to PO when susceptibilities known & patient stable	7-10 days depending on response Do not use nitrofurantoin or fosfomycin as they do not reach therapeutic concentrations outside the urine
Sexually Transmitted Infections				
Anatomic Site/Diagnosis		**Common Pathogens**	**Preferred Therapy**	**Suggested Treatment Duration/Notes**
Syphilis	All persons seeking evaluation for STIs should be screened for concomitant STIs & HIV	*Treponema pallidum*	**Primary, Secondary, and Early Latent Syphilis:** Benzathine Penicillin G 2.4 million units IM x1 **Late Latent Syphilis:** Benzathine Penicillin G 2.4 million units IM weekly x3 weeks **Neurosyphilis:** Aqueous Penicillin G 18-24 million units daily as a continuous IV infusion x10-14 days	Penicillin G is the preferred drug in all stages of syphilis - limited data to support alternatives To minimize disease transmission, abstain from sex x7 days after treatment & until all partners treated
Gonorrhea	All persons seeking evaluation for STIs should be screened for concomitant STIs & HIV	*Neisseria gonorrhoeae*	Ceftriaxone 500 mg IM x1 If weight >150 kg, 1g IM x1 If chlamydial infection not excluded, treat for chlamydia: **+** Doxycycline 100 mg PO q12h x7 days *Confirmed cephalosporin allergy:* Gentamicin 240 mg IM x1 **+** Azithromycin 2 g PO x1	To minimize disease transmission, abstain from sex x7 days after treatment & until all partners treated
Chlamydia	All persons seeking evaluation for STIs should be screened for concomitant STIs & HIV	*Chlamydia trachomatis*	Doxycycline 100 mg PO q12h x7 days *Alternative* Azithromycin 1 g PO x1	If patient non-adherence a substantial concern, treatment with azithromycin is an alternative but follow-up testing may be warranted To minimize disease transmission, abstain from sex x7 days after treatment & until all partners treated

***** Empiric therapy should be reassessed at 48-72 hours *****

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Sexually Transmitted Infections (Cont.)				
Anatomic Site/Diagnosis		**Common Pathogens**	**Preferred Therapy**	**Suggested Treatment Duration/Notes**
Trichomoniasis	All persons seeking evaluation for STIs should be screened for concomitant STIs & HIV	*Trichomonas vaginalis*	**Women:** Metronidazole 500 mg PO q12h x7 days **Men:** Metronidazole 2 g PO x1	Metronidazole gel not effective Consult ID in patients with reported metronidazole allergy To minimize disease transmission, abstain from sex x7 days after treatment & until all partners treated
Bacterial Vaginosis	Bacterial dysbiosis	*G. vaginalis* *M. hominis* *Prevotella* *Mobiluncus*	Metronidazole 500 mg PO q12h x7 days **OR** Metronidazole gel 0.75% intravaginally q24h x5 days **OR** Clindamycin cream 2% intravaginally qHS x7 days	5-7 days depending on therapy Refrain from sex during treatment
Acute Epididymitis	Pain, swelling, inflammation of epididymis <6 weeks Typically unilateral testicular pain	*C. trachomatis* *N. gonorrhoeae* *M. genitalium* *Enteric GNR*	**Likely caused by chlamydia or gonorrhea (<35 y/o):** Ceftriaxone 500 mg (≥150 kg, 1 g) IM x1 **+** Doxycycline 100 mg PO q12h **Likely caused by chlamydia, gonorrhea, or enteric organism (men who practice insertive anal sex):** Ceftriaxone 500 mg (≥150 kg, 1 g) IM x1 **+** Levofloxacin 500 mg PO q24h **Likely caused by enteric organisms only (≥35 y/o):** Levofloxacin 500 mg PO q24h	10 days
Pelvic Inflammatory Disease (PID)	Disorder of upper female genital tract May lead to inflammatory sequelae such as infertility	*Anaerobes* *Enteric GNR* *C. trachomatis* *N. gonorrhoeae* *G. vaginalis* *H. influenzae* *S. agalactiae*	**Mild-to-moderate disease:** Ceftriaxone 500 mg IM x1 **+** Doxycycline 100 mg PO q12h **+** Metronidazole 500 mg PO q12h **Severe disease or tubo-ovarian abscess:** Ceftriaxone 1 g IV q24h q24h **+** Doxycline 100 mg IV/PO q12h **+** Metronidazole 500 mg IV/PO q12h	14 days Switch to PO therapy after 24-48h of clinical improvement

Skin & Soft Tissue Infections				
Anatomic Site/Diagnosis		**Common Pathogens**	**Preferred Therapy**	**Suggested Treatment Duration/Notes**
Non-Purulent Cellulitis	Cellulitis Erysipelas	*ß-hemolytic strep* *S. aureus (less common)*	**Mild infection (no systemic signs):** Cephalexin 1000 mg PO q8h **Moderate infection (systemic signs):** Cefazolin 2 g IV q8h *Confirmed penicillin & cephalosporin allergy*: Clindamycin 300 mg PO q6h **Severe (systemic signs)** Evaluate for necrotizing infection Vancomycin IV **+** Piperacillin/Tazobactam 4.5 g IV q8h	5 days Consider alternative agent with MRSA activity for those who fail to respond to ß-lactam after 72h of treatment (e.g. TMP-SMX)
Purulent Cellulitis	Cutaneous Abscess Furuncle Carbuncle	*S. aureus (MSSA, MRSA)* *Streptococcus*	**Mild (no systemic signs):** I&D **Moderate (systemic signs):** I&D **+** C&S TMP/SMX 1-2 DS tabs PO q12h **OR** Doxycycline 100 mg PO q12h **Severe (systemic signs):** I&D **+** C&S Vancomycin IV	5-10 days, depending on response Local Clindamycin susceptibility only ~60% for MRSA **If C&S reports MSSA:** Cephalexin 1000 mg PO q8h **OR** Cefazolin 2 g IV q8h
Necrotizing Skin & Soft Tissue Infection	Necrotizing fasciitis Fournier's gangrene	*S. pyogenes* *S. aureus* *Clostridium* *GNR* *Pseudomonas*	Emergent surgical consultation Piperacillin/Tazobactam 4.5 g IV q8h **+** Linezolid 600 mg IV/PO q12h *Confirmed penicillin allergy:* Cefepime 1 g IV q6h **+** Metronidazole 500 mg IV/PO q12h **+** Linezolid 600 mg IV/PO q12h *Alternative* May use Vancomycin IV **+** Clindamycin 900 mg IV q8h in place of Linezolid	Duration variable, based on surgical intervention Narrow therapy based on C&S

Skin & Soft Tissue Infections (Cont.)				
Anatomic Site/Diagnosis		**Common Pathogens**	**Preferred Therapy**	**Suggested Treatment Duration/Notes**
Diabetic Foot Infection (DFI)	**Mild/Moderate** (without systemic signs of infection)	*S. aureus* *ß-hemolytic strep*	Cephalexin 1000 mg PO q8h **OR** Amoxicillin/Clavulanate 875 mg/125 mg PO q12h **Known history MRSA within preceding 90 days, hospitalization or antimicrobials within 90 days:** TMP/SMX 1-2 DS tabs PO q12h **OR** Doxycycline 100 mg PO q12h	Mild/Moderate: 1-2 weeks Severe: 2-4 weeks Low incidence of MRSA isolated from DFI in US **Do NOT empirically target therapy against *Pseudomonas* due to low incidence in US** (unless previously isolated from wound within preceding 90 days)
	Severe (with systemic signs of infection)	*S. aureus* *ß-hemolytic strep* *Enterococcus* *GNR* *Anaerobes*	Ceftriaxone 2 g IV q24h **+** Metronidazole 500 mg IV/PO q12h **OR** Ampicillin/Sulbactam 3 g IV q6h **Known history MRSA within preceding 90 days, hospitalization or antimicrobials within 90 days:** **+** Vancomycin IV	
Bites	Dog/Cat	*Pasteurella* *Capnocytophaga* *S. aureus* *Viridans strep* *Anaerobes*	Amoxicillin/Clavulanate 875 mg/125 mg PO q12h **OR** Ampicillin/Sulbactam 3 g IV q6h *Confirmed penicillin allergy:* Doxycycline 100 mg IV/PO q12h Administer tetanus toxoid to patients without toxoid vaccination within 10 years & evaluate for rabies PEP	Consider prophylaxis in deep puncture/ severe crush injuries; involving hands, face, genitals, bone/joints; immunocompromised (including asplenia) Prophylaxis: 3-5 days Treatment: 5-10 days
	Human (including clenched-fist injury)	*Eikenella* *S. aureus* *Viridans strep* *Anaerobes*		
Bone & Joint Infections				
Anatomic Site/Diagnosis		**Common Pathogens**	**Preferred Therapy**	**Suggested Treatment Duration/Notes**
Septic Arthritis		*S. aureus* *Streptococcus* *N. gonorrhoeae*	Vancomycin IV **+** Ceftriaxone 2 g IV q24h	Narrow therapy based on C&S Extended antimicrobial duration dependent on pathogen & surgical intervention
Prosthetic Joint Infection		*S. aureus* *S. epidermidis* *Streptococcus*	If clinically stable & negative blood cultures, withhold antibiotics until joint cultures obtained & consult ID **If clinically unstable or once joint cultures obtained:** Vancomycin IV + Ceftriaxone 2 g IV q24h	
Vertebral Osteomyelitis		*S. aureus* *Streptococcus* *E. coli*	If clinically stable & negative blood cultures, withhold antibiotics until bone biopsy & consult ID **If clinically unstable or epidural abscess present:** Vancomycin IV **+** Ceftriaxone 2 g IV q24h	
Non-Vertebral Osteomyelitis	Hematogenous source vs. contiguous with vascular insufficiency	*S. aureus* *Streptococcus* *GNR*	If clinically stable & negative blood cultures, withhold antibiotics until bone biopsy **If clinically unstable or once biopsy obtained:** Vancomycin IV **+** Ceftriaxone 2 g IV q24h **+/-** Metronidazole 500 mg IV/PO q12h	