UCSF MEDICAL CENTER
ADULT ANTIMICROBIAL DOSING GUIDELINES 2022 – 2023

Approved by the Antimicrobial Subcommittee and the Pharmacy and Therapeutics Committee June 2022

These dosing recommendations are meant as guidance for initial dose selection based on available literature and should not replace clinical judgement. Antimicrobial dosing should account for patient (weight, renal function), antimicrobial (pharmacokinetics, pharmacodynamics, toxicity) and disease state.

UCSF ID Consult Services	Refer to Voalte	
UCSF Antimicrobial Stewardship Program	For assistance in antimicrobial dose/selection or authorization of ID-Restricted agents	443-9421 (Voalte: 628-248-5602)
ID Consult Pharmacist	For questions related to patients actively followed by the ID Consult Service	443-2151

Superscripts indicate ID-Restricted agents at respective sites **(UCSF-R, SFGH-R).** Restricted antimicrobial orders will **NOT** be processed without approving clinician's ID number (Exceptions noted in APeX). From 5pm to 8:30 am, a single restricted dose may be released without prior ID approval. Continued use will require ASP review and approval.

For additional drugs, doses, and details, visit https://idmp.ucsf.edu/antimicrobial-dosing-guidelines or scan QR code →

IV-PO= high oral bioavailability – Consider IV to PO Switch

Weight-Based Dosing: For antimicrobial listed below, if total BW < 120% IBW, use total BW. If total BW > 120% of IBW, use adjusted BW

Dialysis: HD=intermittent (high-flux) hemodialysis. **CRRT**= continuous renal replacement therapy (assumes CVVHD, ultrafiltration rate 2L/h, residual native GFR < 10 mL/min).

Drug	CrCl > 50 mL/min	CrCl 10 – 50 mL/min	CrCl < 10 mL/min	Dialysis (HD or CRRT) *Confirm dose with ICU or ID pharmacist
Acyclovir See IDMP for further discussion of dosing weights.	Non-CNS HSV infections: 5mg/kg IV Q8h	25 – 50 mL/min: 5mg/kg IV Q12h	10 – 25 mL/min: 5mg/kg IV Q24h; < 10 mL/min: 2.5mg/kg IV Q24h	**HD:** 2.5mg/kg IV x1 now, then QPM **CRRT:** 5 mg/kg IV Q24h
	HSV encephalitis/ Disseminated VZV: 10mg/kg IV Q8h	10mg/kg IV Q12h	10mg/kg IV Q24h; 5mg/kg IV Q24h	**HD:** 5mg/kg IV x1 now, then QPM **CRRT:** 10mg/kg IV Q12h
AmBisome UCSF-R, SFGH-R (Liposomal amphotericin B)	Invasive fungal infections: 5 mg/kg IV Q24h Mold prophylaxis (heme/BMT): 3 mg/kg IV Q24h			No renal dose adjustment
Amoxicillin/clavulanate	≥ 30mL/min: 875 mg PO Q12h	10 – 30 mL/min: 500 mg PO Q12h	< 10 mL/min: 500 mg PO Q24h	**HD:** 500 mg PO x1 now, then QPM **CRRT**: 500mg PO Q12h
Ampicillin	Uncomplicated Infection: 2g IV Q6h	1g IV Q6h	1g IV Q12h	**HD:** 2g IV x1 now, then QPM **CRRT:** 2g IV Q8h
	Meningitis or endovascular infection: 2g IV Q4h	2g IV Q6h	1g IV Q8h	**HD:** 2g IV Q12h **CRRT:** 2g IV Q6h
Ampicillin/sulbactam	≥ 30mL/min: 3g IV Q6h	15 – 30 mL/min: 3g IV Q12h	< 15 mL/min: 3g IV Q24h	**HD:** 3g IV Q12h **CRRT:** 3g IV Q6h
Azithromycin IV-PO	Community-acquired pneumonia ICU: 500mg IV/PO Q24h Non-ICU: 500mg IV/PO x 1 then 250mg IV/PO Q24h x 4 more days			No renal dose adjustment
Aztreonam SFGH-R *For allergies, refer beta-lactam allergy guideline on IDMP	2g IV Q8h Meningitis: 2g IV Q6h	2g IV Q12h	1g IV Q12h	**HD:** 2g IV x1 now, then QPM **CRRT:** 2g IV Q12h
Cefazolin	Uncomplicated Gram (+) Infection: 1g IV Q8h	10 – 30 mL/min: 1g IV Q12h	1g IV Q24h	**HD:** 2g IV x1 now, then post-HD Alt: 2g / 2g / 3g post-HD (for stable HD schedule) **CRRT:** 2g IV Q12h
	Gram (-) or Complicated Gram (+) Infection: 2g IV Q8h	2g IV Q12h		
Cefepime	Severe infections including febrile neutropenia, meningitis, *Pseudomonas aeruginosa*: >60 mL/min: 2g IV Q8h	30 – 60 mL/min: 2g IV Q12h	10 – 29 mL/min: 2g IV Q24h; < 10 mL/min: 1g IV Q24h	**HD:** 2g IV x1 now and post-HD **CRRT:** 1g IV Q8h
	Non-severe infections including cystitis: >60 mL/min: 2g IV Q12h	30 – 60 mL/min: 2g IV Q24h	10 – 29 mL/min: 1g IV Q24h; < 10 mL/min: 500mg IV Q24h	
Ceftriaxone	Standard Dose: 1g IV Q24h Serious Infections; Non-Enterococcal Endocarditis & Osteomyelitis: 2g IV Q24h Meningitis & Enterococcal Endocarditis (with ampicillin): 2g IV Q12h			No renal dose adjustment
Cefuroxime axetil	>30 mL/min: 500 mg PO BID	10-29 mL/min: 250 PO BID	250 mg PO daily	**HD**: 250 mg PO daily **CRRT**: No data
Cephalexin	>30 mL/min: 500 mg PO QID or 1000 mg PO TID	15-29 mL/min: 250-500 mg PO TID	<15 mL/min: 250-500 mg PO BID	**HD**: 250 mg PO BID **CRRT**: No data
	Uncomplicated Cystitis or Streptococcal Pharyngitis: 500 mg PO BID	250 mg PO BID	250 mg PO daily	**HD**: 250 mg PO daily **CRRT**: No data
Ciprofloxacin IV-PO	400 mg IV Q12h 500 mg PO Q12h	30 – 50 mL/min: 400 mg IV Q12h 500 mg PO Q12h	< 30 mL/min: 400 mg IV Q24h 500 mg PO Q24h	**HD**: 400mg IV QPM/500mg PO QPM **CRRT:** 400mg IV Q12h/500 mg PO Q12h
	Pseudomonas & Bloodstream Infections: 400 mg IV Q8h 750 mg PO Q12h	400 mg IV Q12h 500 mg PO Q12h	400 mg IV Q24h 500 mg PO Q24h	
Clindamycin	600 mg IV Q8h/450 mg PO Q8h Necrotizing Soft Tissue & Group A *Streptococcus* Infection: 900 mg IV Q8h			No renal dose adjustment
Daptomycin UCSF-R, SFGH-R Not effective in treatment of pneumonia	≥ 30mL/min: 8 – 10* mg/kg IV Q24h * Doses up to 12 mg/kg may be indicated in treatment of some VRE infections; contact ID pharm for dosing in renal dysfunction	< 30 mL/min: 8 – 10* mg/kg IV Q48h		**HD:** 8 – 10mg/kg IV x1 now and post-HD **CRRT:** 6mg/kg IV Q24h Alt: 8 – 10mg/kg IV Q48h
Doxycycline IV-PO	100 mg IV/PO Q12h			No renal dose adjustment
Ertapenem	≥ 30mL/min: 1g IV Q24h	< 30 mL/min: 500mg IV Q24h		**HD:** 500mg IV x1 now, then QPM *For outpatient post-HD dosing, contact ID/ASP **CRRT:** 1g IV Q24h
Fidaxomicin SFGH-R	200 mg po BID			No renal dose adjustment
Fluconazole IV-PO *Select dose based on indication	Target Dose* IV/PO Q24h Oropharyngeal: 100mg Esophageal: 200mg Systemic/Severe Infection: ≤ 80 kg: 400mg 81 – 100 kg: 600mg > 100 kg: 800mg	50% of target dose* IV/PO Q24h	25% of target dose* IV/PO Q24h	**HD:** 100mg-400mg* IV/PO x1 now & post-HD **CRRT:** 200mg-800mg* IV Q24h Severe, CRRT: 800mg - 1200mg IV divided q12h-24h
Ganciclovir SFGH-R	> 70 mL/min CMV treatment: 5 mg/kg IV Q12h	50 – 69 mL/min: 2.5 mg/kg IV Q12h	25 – 49 mL/min: 2.5 mg/kg IV Q24h	10 – 24 mL/min: 1.25 mg/kg IV Q24h	**HD:** 1.25 mg/kg IV x1 now and post-HD **CRRT:** 2.5-5 mg/kg IV Q12h – 24h
	CMV prophylaxis: 2.5 mg/kg IV Q12h	2.5 mg/kg IV Q24h	1.25 mg/kg IV Q24h	0.625 mg/kg IV Q24h	**HD:** 0.625 mg/kg IV x1 now and post-HD
Isavuconazole UCSF-R, IV-PO	372 mg IV/PO Q8h x 6 doses (48h), then 372 mg IV/PO Q24h			No renal dose adjustment
Isoniazid	300 mg PO Q24h			**HD:** 300 mg PO QPM **CRRT**: 300 mg PO Q24h
Levofloxacin IV-PO	> 50 mL/min Urinary Tract Infections: 500mg IV/PO Q24h	20 – 49 mL/min: 500mg x1, then 250mg IV/PO Q24h	< 20 mL/min: 500mg x1, then 250mg IV/PO Q48h	**HD:** Dose for CrCl < 20 mL/min **CRRT:** 750mg IV/PO x1, then 250 – 500mg Q24h
	750mg IV/PO Q24h	750mg IV/PO Q48h	750mg x1, then 500mg IV/PO Q48h	
Linezolid SFGH-R, IV-PO	600 mg IV/PO Q12h			No renal dose adjustment
Meropenem SFGH-R	> 50 mL/min: 1g IV Q8h	26 – 50 mL/min: 1g IV Q12h	10 – 25 mL/min: 500mg IV Q12h	< 10 mL/min: 500mg IV Q24h	**HD:** 500mg IV x1 now, then QPM **CRRT:** 1g IV Q8h Meningitis, CF for CRRT: Consult ID pharmacy
	Meningitis, Cystic Fibrosis: 2g IV Q8h	2g IV Q12h	1g IV Q12h	1g IV Q24h	
Metronidazole IV-PO	500 mg IV/PO Q8h		500 mg IV/PO Q12h	500 mg IV/PO Q8h
Micafungin UCSF-R	Prophylaxis against Candida infection: 50-100 mg IV Q24h Candidemia, Invasive candidiasis, Empiric treatment, Febrile neutropenia, Empiric treatment, non-neutropenic ICU patients: 100 mg IV Q24h Esophageal candidiasis: 150 mg IV Q24h			No renal dose adjustment
Molnupiravir	800 mg PO q12h			No renal dose adjustment

Nafcillin	Uncomplicated infection: 1g IV Q6h Meningitis, osteomyelitis, bloodstream infection, or endovascular infection: 2g IV Q4h			No renal dose adjustment
Nirmatrelvir/ritonavir Review medications for potential drug interactions.	>60 mL/min 300/100 mg PO BID	30-60 mL/min 150/100 mg PO BID	<30 mL/min Not recommended	**HD:** No data **CRRT**: No data

Drug	CrCl > 50 mL/min	CrCl 10 – 50 mL/min	CrCl < 10 mL/min	Dialysis (HD or CRRT) *Confirm dose with ICU or ID pharmacist
Oseltamivir For prophylaxis dosing see IDMP	Influenza treatment > 60 mL/min 75 mg PO BID	31 – 60 mL/min 30 mg PO BID	10 – 30 mL/min 30 mg PO Q24H	**HD:** 30 mg PO x1 now, then post-HD **CRRT:** 75 mg PO BID
Penicillin G MU = million units	Neurosyphilis/meningitis 4 MU IV Q4h	3 MU IV Q4h	3 MU IV Q6h	**HD:** 2 MU IV Q6h **CRRT:** 3 MU IV Q4h
	Endovascular/bacteremia 3 MU IV Q4h	3 MU IV Q6h	2 MU IV Q6h	**HD:** 2 MU IV Q8h **CRRT:** 3 MU IV Q6h
	Less serious infections 3 MU IV Q6h	2 MU IV Q6h	1 MU IV Q6h	**HD:** 2 MU IV Q12h **CRRT:** 2 MU IV Q6h
EXTENDED infusion (EI) Piperacillin/tazobactam Exclusion criteria for EI: Resistant or intermediate organism, cystic fibrosis, peri-procedural areas, insufficient IV access	CrCl > 20 mL/min or CRRT LD = 4.5g IV over 30 min x1, then 4.5g IV over 4h every 8h starting 4h after LD		**CRRT:** Use EXTENDED infusion piperacillin/tazobactam **CrCl ≤ 20 mL/min or HD:** Use SHORT infusion piperacillin/tazobactam	
SHORT infusion (SI) Piperacillin/tazobactam (ONLY for patients excluded from EI dosing) SFGH-R	3.375g IV Q6h	3.375g IV Q8h	2.25g IV Q8h	**HD:** 2.25g IV Q8h
	Documented/suspected *Pseudomonas* ≥ 20mL/min: 4.5g IV Q6h		< 20 mL/min 3.375g IV Q8h	
Posaconazole UCSF-R, SFGH-R IV-PO DR tablet: take with food	300mg IV/PO Q12h x 2 doses, then 300mg IV/PO Q24h *Avoid IV formulation if possible in patients with CrCl < 50 mL/min due to accumulation of IV vehicle			No renal dose adjustment*
Remdesivir	CrCl >30 ml/min 200 mg IV x1 then 100 mg IV q24h		No adjustment required; vehicle may accumulate in renal dysfunction – consider risk/benefit	
Rifampin SFGH-R Review medications for potential drug interactions.	Prosthetic device infections: 300mg PO Q12h Endocarditis: 300mg PO Q8h Mycobacterial infections (including TB): 600mg PO Q24h			No renal dose adjustment
TMP/SMX IV-PO SS Tablet: 80mg TMP DS Tablet: 160mg TMP	>30 mL/min Systemic GNR or *Nocardia* infections 10mg TMP/kg/day divided in 2-4 doses	15-30 mL/min 5mg TMP/kg/day divided in 2-4 doses	<15 mL/min 2.5mg TMP/kg Q24h	**HD:** 2.5 – 5mg TMP/kg x1 now and QPM **CRRT:** 5 – 7.5mg TMP/kg/day divided in 2 doses
	P. jirovecii pneumonia, CNS infections: 15 – 20mg TMP/kg/day divided in 2-4 doses	7.5 – 10mg TMP/kg/day divided in 2-4 doses	4 – 5 mg TMP/kg Q24h	**HD**: 5 – 10mg TMP/kg x1 now and QPM **CRRT**: 10 – 15 mg/TMP/kg/day divided in 2-4 doses
Tobramycin & Gentamicin	See IDMP for detailed dosing recommendations			

Valganciclovir Take with food *IV ganciclovir preferred for induction in dialysis	≥ 60 mL/min CMV treatment 900mg PO Q12h	40 – 59 mL/min 450mg PO Q12h	25 – 39 mL/min 450mg PO Q24h	10 – 24 mL/min 450mg PO Q48h	**HD:** 450mg PO x1 now and post-HD* **CRRT:** 450mg PO Q24h
	CMV prophylaxis 900mg PO Q24h	450mg PO Q24h	450mg PO Q48h	450mg PO twice weekly	**HD:** 450mg PO twice weekly **CRRT**: 450mg PO Q48h
	CMV prophylaxis: Refer to individual service protocol				

Vancomycin IV Round to nearest 250mg increment. Max: 2g/dose **Complicated infections = endocarditis, meningitis, sepsis, documented MRSA pneumonia, or MRSA osteomyelitis	CrCl (mL/min)	Body Weight (kg)			
		< 60 kg	60 – 80 kg	81 – 100 kg	> 100 kg
	> 90 (complicated** for age < 65)	750mg Q8h	1000mg Q8h	1250mg Q8h	1500mg Q8h
	> 90 (other infections or complicated** & age ≥ 65)	1000mg Q12h	1250mg Q12h	1500mg Q12h	1750mg Q12h
	50 – 90 mL/min	750mg Q12h	1000mg Q12h	1250mg Q12h	1500mg Q12h Complicated** & < 65 1000mg Q8h
	15 – 49 mL/min	750mg Q24h	1000mg Q24h	1250mg Q24h	1500mg Q24h
	< 15 mL/min	10 – 15 mg/kg x1 then re-dose according to levels			
	CRRT	10 – 15 mg/kg Q24h			
	HD	15 – 20 mg/kg x1 then 500 mg post-HD only			

Vancomycin PO	Initial episode, non-fulminant *C. difficile*: Vancomycin 125 mg PO QID x 10 days Fulminant *C. difficile*: 500 mg PO QID and consider rectal instillation *See IDMP for detailed information regarding treatment of fulminant or recurrent *C. difficile* infection	
Voriconazole UCSF-R, SFGH-R, IV-PO Review medications for potential drug interactions. Consult ID or ASP for assistance.	IV: 6 mg/kg IV Q12h x 2 doses, then 4 mg/kg IV Q12hr PO: 400mg PO Q12h x 2 doses, then 200mg PO Q12h* *In obese patients consider a weight-based PO regimen (4 mg/kg Adj BW Q12h) Recommend monitoring trough levels	No renal dose adjustment (Avoid IV formulation if possible in patients with CrCl < 50 mL/min due to accumulation of IV vehicle) Mild-to-moderate hepatic dysfunction: Consider reduction of maintenance dosage by 50%

UCSF ADULT INPATIENT SUSCEPTIBILITY DATA 2021[1]

For detailed results including ICU-specific and combination antibiograms visit https://idmp.ucsf.edu/antibiograms or scan QR code →

N/A-testing NOT APPLICABLE to organism. **AMP**-ampicillin, **AMP/SUL**-ampicillin/sulbactam, **CZOL**-cefazolin, **CTRX**-ceftriaxone, **CFPM**-cefepime, **CIP**-ciprofloxacin, **CLIN**-clindamycin, **DAP**-daptomycin, **DOX**-doxycycline, **LZD**-linezolid, **MER** –meropenem, **NAF**-nafcillin, **NTF**-nitrofurantoin, **PCN**-penicillin, **P/T**-piperacillin-tazobactam, **TOB**-tobramycin, **T/S**-trimethoprim/sulfamethoxazole, **VANC**-vancomycin

Total isolates include Floor Isolates and ICU Isolates from Parnassus (% Strains Susceptible, tested from all sites except as indicated)

Organism	Total Isolates	CTRX	ERTA	CTAZ	CFPM	TOB	CIP	P/T	MER
Gram-negative organisms									
Weighted average of all Gram-negative organisms	1477	64 (79)[2]	78 (98)[2]	86	87 (92)[3]	91	75	88	95
Citrobacter freundii	48	83	95	85	95	87	79	87	92
Enterobacter cloacae	126	N/A	92	73	88 (95)[3]	92	89	79	96
Escherichia coli	514	75	98	85	81 (87)[3]	87	63	92	98
Klebsiella aerogenes	49	N/A	97	77	97 (100)[3]	100	93	75	100
Klebsiella oxytoca	62	74	95	83	83 (87)[3]	80	74	83	100
Klebsiella pneumoniae	217	83	97	87	86 (91)[3]	89	81	90	98
Proteus mirabilis	115	93	99	97	96 (99)[3]	89	66	99	98
*Pseudomonas aeruginosa**	290	N/A	N/A	87	90	97	79	82	84
Serratia marcescens	56	98	98	98	98 (100)[3]	94	96	100	100

Gram-positive organisms	Total Isolates	PCN/ AMP	CTRX	NAF	CLIN	DOX	T/S	VANC	DAP	LZD
Staphylococcus aureus	526	N/A	N/A	69	73	90	96	99	100	100
MSSA	378	N/A	N/A	98	78	94	97	100	100	100
MRSA	162	N/A	N/A	N/A	57	80	91	99	100	100
Staphylococcus epidermidis	204	N/A	N/A	35	63	81	57	100	100	100
Enterococcus faecalis (bloodstream isolates only)[4]	79	100[5]	N/A	N/A	N/A	23	N/A	99	97	100
Enterococcus faecium (bloodstream isolates only)	40	8[5]	N/A	N/A	N/A	35	N/A	43	98[6]	98

[1]Adult inpatient susceptibilities include data from 4/20/2021 – 4/19/2022; [2]Parentheses excludes Pseudomonas *isolates; [3]Percent susceptibility including susceptibility dose-dependent isolates; [4]Isolates pooled from 4/1/2019-4/19/2022 given low number of yearly isolates*
[5]Results are for ampicillin; [6]Represents susceptible dose-dependent isolates only;

UCSF ADULT OUTPATIENT SUSCEPTIBILITY DATA 2021

	Total Isolates	NAF	CLIN	T/S	DOX	VANC	LZD
Staphylococcus aureus	385	85	74	97	92	100	100
MSSA	327	100	78	98	94	100	100
MRSA	58	N/A	51	86	82	100	100

	Total Isolates	AMP/ SUL	CZOL	T/S	CIP	NTF	CTX
E. coli, urine	733	62[1]	76[2]	74	78	98[3]	91

[1]Reasonable to extrapolate to PO amoxicillin/clavulanate; [2]Reasonable to extrapolate to PO cephalexin for lower urinary tract infections (cystitis); [3]Nitrofurantoin only achieves adequate concentrations in the bladder; not effective in pyelonephritis