Stanford Health Care Antimicrobial Dosing Reference Guide

This document is also located on the SHC Intranet (http://portal.stanfordmed.org/depts/AntimicrobialStewardshipProgram) and http://bugsanddrugs.stanford.edu ∴ ABX Subcommittee Approved: December 2022

Formulas for dosing weights: Ideal body weight IBW (male) = 50kg + (2.3 x height in inches > 60 inches) · Ideal body weight IBW (female) = 45kg + (2.3 x height in inches > 60 inches) · Adjusted Body Weight ABW (kg) = IBW + 0.4 (TBW – IBW)

<table>
<tr><th>Drug</th><th>CrCl > 50 mL/min</th><th>CrCl 10 – 50 mL/min</th><th>CrCl < 10 mL/min</th><th>Intermittent Hemodialysis (IHD)
Assumes thrice weekly dialysis</th><th>CRRT</th></tr>
<tr><td>Acyclovir (IV) [1–7]
(Use adjusted BW for obesity)</td><td colspan="5">
<table>
<tr><th></th><th>CrCL > 50</th><th>CrCL 25 – 50</th><th>CrCL < 25</th><th>CrCL < 10</th><th>IHD</th><th>CRRT</th></tr>
<tr><td colspan="7">Prophylaxis</td></tr>
<tr><td>BMT</td><td>250 mg/m^2 IV q12h</td><td>125 mg/m^2 IV q12h</td><td>125 mg/m^2 IV q24h</td><td>62.5 mg/m^2 IV q24h</td><td>62.5 mg/m^2 IV q24h</td><td>125 mg/m^2 IV q12h</td></tr>
<tr><td>Hematology/Oncology</td><td>2 mg/kg IV q12h</td><td>2 mg/kg IV q12h</td><td>2 mg/kg IV q24h</td><td>1 mg/kg IV q24h</td><td>1 mg/kg IV q24h</td><td>2 mg/kg IV q12h</td></tr>
<tr><td colspan="7">Treatment</td></tr>
<tr><td>General (e.g. mucocutaneous HSV)</td><td>5 mg/kg IV q8h</td><td>5 mg/kg IV q12h</td><td>5 mg/kg IV q24h</td><td>2.5 mg/kg IV q24h</td><td>2.5 mg/kg IV q24h</td><td>5 – 10 mg/kg IV q12h</td></tr>
<tr><td>Severe (e.g. CNS/ ocular/disseminated HSV infections, Zoster)</td><td>10 mg/kg IV q8h</td><td>10 mg/kg IV q12h</td><td>10 mg/kg IV q24h</td><td>5 mg/kg IV q24h</td><td>5 mg/kg IV q24h</td><td>10 mg/kg IV q12h</td></tr>
</table>
</td></tr>
<tr><td>Acyclovir (PO) [1,2,7]</td><td colspan="5">
<table>
<tr><th></th><th>CrCL > 50</th><th>CrCL 25 – 50</th><th>CrCL < 25</th><th>CrCL < 10</th><th>IHD</th><th>CRRT</th></tr>
<tr><td colspan="7">Prophylaxis</td></tr>
<tr><td>BMT</td><td>800 mg PO BID</td><td>400 mg PO BID</td><td>200 mg PO BID</td><td>200 mg PO daily</td><td>200 mg PO daily</td><td>No data</td></tr>
<tr><td>Hematology/Oncology</td><td>400 mg PO BID</td><td>400 mg PO BID</td><td>200 mg PO BID</td><td>200 mg PO daily</td><td>200 mg PO daily</td><td>No data</td></tr>
<tr><td colspan="7">Treatment</td></tr>
<tr><td>Mucocutaneous HSV</td><td colspan="2">400 mg PO q8h
Alt: 200 mg 5x daily</td><td>200 mg PO q8h</td><td>200 mg PO q12h</td><td>200 mg PO q12h</td><td>No data</td></tr>
<tr><td>VZV</td><td colspan="2">800 mg PO q4h (or 5x daily)
Consider valacyclovir for less frequent dosing</td><td>800 mg PO q8h</td><td>800 mg PO q12h</td><td>800 mg PO q12h</td><td>No data</td></tr>
</table>
</td></tr>
<tr><td>Amikacin (IV) [1,2,5,8,9]
(Use adjusted BW for obesity)

Refer to Aminoglycoside Dosing Guide</td><td colspan="3">
<table>
<tr><th></th><th>CrCl > 60</th><th>CrCl 40 – 60</th><th>CrCl 20 – 40</th><th>CrCl < 20</th></tr>
<tr><td>Conventional dosing</td><td>5 – 7.5 mg/kg IV q8h</td><td>5 – 7.5 mg/kg IV q12h</td><td>5 – 7.5 mg/kg IV q24h</td><td rowspan="2">5 mg/kg IV load, then by level

alt: 7.5 mg/kg IV q48–72h</td></tr>
<tr><td>High-dose extended-interval dosing</td><td>15 – 20 mg/kg IV q24h</td><td>15 mg/kg IV q36h</td><td>CrCl > 30: 15 mg/kg IV q48h
CrCl < 30: Not recommended</td></tr>
</table>
Timing of levels: Draw trough 30 min prior to 4th dose. Draw peak 30 min after infusion ends
Once daily dosing: goal peak 35 – 60 mcg/mL; goal trough < 4 mcg/mL
Conventional dosing: goal peak 25 – 35 mcg/mL for serious infections; 15 – 20 mcg/mL for UTI; goal trough < 4 – 8 mcg/mL
</td><td>5 – 7.5 mg/kg IV post HD only

consult pharmacist</td><td>10 mg/kg load, then 7.5 mg/kg IV q24–48h

Severe/MDR organism: 25 mg/kg IV q48h

consult pharmacist</td></tr>
<tr><td>Amoxicillin (PO)[1,2]</td><td>Usual dose: 500 mg PO q8h or 1,000 mg PO q8-12h

CAP: 1,000 mg PO q8h

H pylori: 1,000 mg PO q12h

Procedural ppx: 2,000 mg PO x 1</td><td colspan="3">
<table>
<tr><th>Normal Dose</th><th>CrCL 10-30</th><th>CrCL <10</th><th>IHD</th></tr>
<tr><td>1,000 mg PO q8h</td><td>1,000 mg PO q12h</td><td>500 mg PO q12h</td><td>500 mg PO q12h</td></tr>
<tr><td>875 - 1,000 mg PO q12h</td><td>500 mg PO q12h</td><td>500 mg PO q12-24h</td><td>500 mg PO q12-24h</td></tr>
<tr><td>500 mg PO q8h</td><td>500 mg PO q12h</td><td>500 mg PO q12-24h</td><td>500 mg PO q12-24h</td></tr>
</table>
</td><td>No data</td></tr>
<tr><td>Amoxicillin/clavulanate (PO)[1,2,10–12]</td><td>Usual dose: 500 mg PO q8h or 875 mg PO q12h

CAP: 875 mg PO q12h

IAI / Uncomplicated GNR bacteremia (oral step-down alternative): up to 875 mg PO q8h</td><td>CrCl 10 – 30: 500 mg PO q12h

IAI / Uncomplicated GNR bacteremia (oral step-down alternative): up to 875 mg PO q12h</td><td>CrCl < 10: 500 mg PO q24h

IAI / Uncomplicated GNR bacteremia (oral step-down alternative): up to 875 mg PO q24h</td><td>500 mg PO q24h; For q24h regimen, dose after dialysis or administer additional dose at the end of dialysis</td><td>No data</td></tr>
<tr><td>Amphotericin B Liposomal (IV)[1,2]</td><td>3 – 5 mg/kg/day</td><td>No change</td><td>No change</td><td>No change</td><td>No change</td></tr>
<tr><td>Ampicillin (IV)[1–3]</td><td>Mild/uncomplicated: 1 – 2 g IV q6h

Meningitis/endovascular/PJI: 2 g IV q4h</td><td>Mild/uncomplicated: 1 g IV q6–8h

Meningitis/endovascular /PJI: 2 g IV q6–12h</td><td>Mild/uncomplicated: 1 g IV q12h

Meningitis/endovascular /PJI: 2 g IV q12–24h; or 1 g IV q8h</td><td>Mild/uncomplicated: 1 g IV q12h

Meningitis/endovascular/PJI: 2 g IV q12–24h</td><td>CVVH: 2 g IV q8–12H
CVVHDF: 2 g IV q6–8h

Meningitis/endovascular /PJI: 2 g IV q6h</td></tr>
<tr><td>Ampicillin/sulbactam (IV)[1–3,5,13]</td><td colspan="5">
<table>
<tr><th></th><th>CrCl >30:</th><th>CrCl 15-30:</th><th>CrCl < 15:</th><th>IHD</th><th>CRRT</th></tr>
<tr><td>Mild/uncomplicated</td><td>1.5 g IV q6h</td><td>1.5 g IV q12h</td><td>1.5 g IV q24h</td><td>1.5 g IV q24h</td><td>3 g IV q12h</td></tr>
<tr><td>Systemic</td><td>3 g IV q6h</td><td>3 g IV q12h</td><td>3 g IV q24h</td><td>3 g IV q24h</td><td>3 g IV q8h</td></tr>
<tr><td>Acinetobacter baumannii
For more resistant Acinetobacter baumannii infections, consider higher dosing regimens</td><td>3 g IV q4h</td><td>3 g IV q8h</td><td>3 g IV q12h</td><td>3 g IV q12h</td><td>3 g IV q6h</td></tr>
</table>
</td></tr>
<tr><td>Azithromycin (IV/PO)[1,2]</td><td>500 mg IV/PO q24h</td><td>No change</td><td>No change</td><td>No change</td><td>No change</td></tr>
<tr><td>Aztreonam (IV)[1–3,14]</td><td>1 – 2 g IV q8h

Severe/Meningitis: 2 g IV q6–8h</td><td>CrCl < 30: 1 g IV q8h

Severe/Meningitis: 1 g IV q6–8h</td><td>500 mg IV q8h

Severe/Meningitis: 1g IV q12h</td><td>1 g IV q24h

Severe/Meningitis: 1 g IV q12h</td><td>2 g IV load, then 1 g IV q8h
– or –
2 g IV q12h</td></tr>
</table>

Drug	CrCl > 50 mL/min	CrCl 10 – 50 mL/min	CrCl < 10 mL/min	Intermittent Hemodialysis (IHD) *Assumes thrice weekly dialysis*	CRRT
Caspofungin (IV)[1,2,15,15–17]	70 mg IV x 1, then 50 mg IV q24h 70 mg IV q24h if on phenytoin, rifampin, other strong enzyme inducers Endocarditis/Endovascular: 150 mg IV q24h Dosage adjustments are not required for Child-Pugh B or C cirrhosis			No change	No change
Cefazolin (IV)[1–5,18–20]	CrCl ≥ 35 mL/min: Mild/moderate: 1 g IV Q8H Severe: 2 g IV Q8H	CrCl 10 – 34 mL/min: Mild/moderate: 1 g IV Q12H Severe: 2 g IV Q12H	Mild/moderate: 1 g IV Q24H Severe: 2 g IV Q24H	1 g IV Q24H *Dose daily, but after HD on HD days* alt: 2g/2g/3g IV post-HD only	2 g IV Q12H
Cefepime (IV)[1–3,5,21–23]	Extended Infusion (4-hour infusion) CrCl > 60: General: 1 g IV Q8H or 2 g IV Q12H; Pulmonary/ Neutropenic Fever/ CNS/ confirmed Pseudomonal infection/ Severe infections: 2 g IV Q8H CrCl 30 – 60: General: 1 g IV Q12H or 2 g IV Q24H; Pulmonary/ Neutropenic Fever/ CNS/ confirmed Pseudomonal infection/ Severe infections: 2 g IV Q12H CrCl < 11-29: General: 1 g IV Q24H; Pulmonary/ Neutropenic Fever/ CNS/ confirmed Pseudomonal infection/ Severe infections: 1 g IV Q12H CrCl < 10: General: 500 mg IV Q24H; Pulmonary/ Neutropenic Fever/ CNS/ confirmed Pseudomonal infection/ Severe infections: 1 g IV q24h			0.5 – 1 g IV Q24H *Dose daily, but after HD on HD days* alt: 2 g IV post-HD only	2 g IV load, then 1 g IV Q8H (4-hour infusion)
Cefiderocol (IV)[1,2] **(SHC Restriction)**	CrCL> 120: 2 g IV q6h CrCL 60 -120: 2 g IV q8h	CrCL 30 – 60: 1.5 g IV q8h CrCL 15 – 30: 1 g IV q8h	CrCL < 15: 750 mg IV q12h	750 mg IV q12h	Effluent Flow Rate / Dose: ≤ 2L/hr: 1.5 g IV q12h 2.1–3 L/hr: 2 g IV q12h 3.1–4 L/hr: 1.5 g IV q8h ≥4.1 L/hr: 2 g IV q8h Shown as Effluent Dose (**mL/kg/hr**) in Epic
Cefpodoxime (PO)[1,2]	Uncomplicated cystitis: 100 mg PO q12h CAP/bronchitis: 200 mg PO q12h Skin/soft tissue: 400 mg PO q12h	CrCl < 30: same dose q24h		Same dose, administered post-HD only	No data
Ceftaroline (IV)[1,2,24] **(SHC Restriction)**	CrCl > 50: General: 600 mg IV q12h; Endocarditis/ *S.aureus* bacteremia, Susceptible-dose dependent (SDD): 600 mg IV q8h administered over 2-hr CrCl 30 – 50: General: 400 mg IV q12h; Endocarditis/ *S.aureus* bacteremia, Susceptible-dose dependent (SDD): 400 mg IV q8h administered over 2-hr CrCl 15 – 30: General: 300 mg IV q12h; Endocarditis/ *S.aureus* bacteremia, Susceptible-dose dependent (SDD): 300 mg IV q8h administered over 2-hr CrCl < 15: General: 200 mg IV q12h; Endocarditis/ *S.aureus* bacteremia, Susceptible-dose dependent (SDD): 200 mg IV q8h administered over 2-hr			200 mg IV q8–12h Endocarditis/*S.aureus* bacteremia/ SDD: 200 mg IV q8–12h administered over 2-hr	No data
Ceftazidime (IV)[1–3,25]	Usual dose: 1 – 2 g IV q8h Severe: 2 g IV q8h	CrCl 30 – 50: 1 – 2 g IV q12h CrCl 16 – 30: 1 – 2 g IV q24h CrCl 6 – 15: 0.5 – 1 g IV q24h	CrCl < 5: 0.5 g IV q24h	0.5 – 1 g IV q24h *Dose daily, but after HD on HD days* alt: 1 – 2 g IV q48–72h or 1 g IV post-HD only TIW	2 g IV load, then 1 g IV q8h – or – 2 g IV q12h
Ceftazidime/avibactam (IV) [1,2,26–29] **(SHC Restriction)**	2.5 g IV q8h	CrCl 31 – 50: 1.25 g IV q8h CrCl 16 – 30: 0.94 g IV q12h CrCl 6 – 15: 0.94 g IV q24h	CrCl < 5: 0.94 g IV q48h	0.94 g IV q24–48h *Dose daily, but after HD on HD days*	1.25 g IV q8h 2.5g IV q8h if MIC > 4 mcg/mL or deep-seated
Ceftolozane/tazobactam (IV)[1,2,30–33] **(SHC Restriction)**	CrCl > 50: Cystitis: 1.5 g IV q8h; HAP, VAP, Systemic pseudomonal infection, CF exacerbation: 3 g IV q8h CrCl 30 – 50: Cystitis: 750 mg IV q8h; HAP, VAP, Systemic pseudomonal infection, CF exacerbation: 1.5 g IV q8h CrCl 15 – 29: Cystitis: 375 mg IV q8h; HAP, VAP, Systemic pseudomonal infection, CF exacerbation: 750 mg IV q8h CrCl < 15: Cystitis: 750 mg IV load, then 150 mg IV q8h; HAP, VAP, Systemic pseudomonal infection, CF exacerbation: 2.25 g IV load, then 450 mg IV q8h IHD: Cystitis: 750 mg IV load, then 150 mg IV q8h; HAP, VAP, Systemic pseudomonal infection, CF exacerbation: 2.25 g IV load, then 450 mg IV q8h CRRT: Cystitis: 1.5 g IV q8h; HAP, VAP, Systemic pseudomonal infection, CF exacerbation: 3 g IV q8h				
Ceftriaxone (IV)[1,2,34]	1 – 2 g IV q24h Endovascular/osteomyelitis/PJI: 2 g IV q24h Meningitis, *E. faecalis* endocarditis: 2 g IV q12h		No change	No change	No change
Cephalexin (PO)[1,2,35]	250 – 1000 mg PO Q6H Uncomplicated cystitis: 500 mg PO Q12H Complicated cystitis/ Cellulitis/ SSTI: 500 mg PO Q6H	CrCl 15 – 29: 250 mg PO Q8–12H CrCl 5 – 14: 250 mg PO Q24H		500 mg PO Q24H *Dose daily, but after HD on HD days*	No data
Ciprofloxacin (IV/PO)[1–4,28,36]	CrCl > 50: General infections: 400 mg IV q12h 500 mg PO q12h; Pseudomonas, severe: 400 mg IV q8h 750 mg PO q12h CrCl 30 – 50: General infections: Same; Pseudomonas, severe: 400 mg IV q8–12h 500 mg PO q12h CrCl < 30: General infections: 400 mg IV q24h 500 mg PO q24h; Pseudomonas, severe: 400 mg IV q24h 500 mg PO q24h			200 – 400 mg IV q24h 250 – 500 mg PO q24h *Dose daily, but after HD on HD days*	400 mg IV q12h 500 mg PO q12h Severe infection with *A.baumannii* or *P.aeruginosa*: 400 mg IV q8-12h
Clindamycin (IV/PO)[1,2]	600 – 900 mg IV q8h 150 – 450 mg PO q6h	No change	No change	No change	No change

<table>
<tr><th>Drug</th><th>CrCl > 50 mL/min</th><th>CrCl 10 – 50 mL/min</th><th>CrCl < 10 mL/min</th><th>Intermittent Hemodialysis (IHD)
Assumes thrice weekly dialysis</th><th>CRRT</th></tr>
<tr><td>Dalbavancin (IV)[1,37]
(SHC Restriction)</td><td colspan="5"><table>
<tr><th>Indication</th><th>CrCL > 30</th><th>CrCl < 30</th><th>IHD</th><th>CRRT</th></tr>
<tr><td>Skin/Soft Tissue</td><td><u>Preferred:</u>
1,500 mg IV x 1
<u>Alternative:</u>
1,000 mg IV x 1 followed by 500 mg x1 1-week later</td><td><u>Preferred:</u>
1,125 mg IV x 1
<u>Alternative:</u>
750 mg IV x 1 followed by 375 mg x1 1-week later</td><td><u>Preferred:</u>
1,500 mg IV x 1
<u>Alternative:</u>
1,000 mg IV x 1 followed by 500 mg x1 1-week later</td><td>No data</td></tr>
</table></td></tr>
<tr><td>Daptomycin (IV)[1,2,23,38–45]
(SHC Restriction)
(Use adjusted BW for obesity)</td><td colspan="5"><table>
<tr><th>Indication</th><th>CrCL > 30</th><th>CrCl < 30</th><th>IHD</th><th>CRRT</th></tr>
<tr><td>Skin/Soft Tissue</td><td>4 – 6 mg/kg IV q24h</td><td>4 – 6 mg/kg IV q48h</td><td>6 mg/kg post-HD only or 6/6/9 mg/kg post-HD only
<u>alt</u>: 4 – 6 mg/kg IV q48h</td><td>6 mg/kg IV q24h</td></tr>
<tr><td>Bacteremia/Endovascular</td><td>8 mg/kg IV q24h</td><td>8 mg/kg IV q48h</td><td>8 mg/kg post-HD
<u>alt</u>: 8 mg/kg IV q48h</td><td>6 – 8 mg/kg IV q24h</td></tr>
<tr><td>E. faecium Infection – consult ID</td><td>10 – 12 mg/kg IV q24h</td><td>10 – 12 mg/kg IV q48h</td><td>8 – 10 mg/kg post-HD
<u>alt</u>: 8 – 10 mg/kg IV q48h</td><td>8 mg/kg IV q24h
Doses > 8 mg/kg q24h increase the risk of CPK elevations and myopathy. Caution, clinical judgment, and frequent CPK monitoring, including a baseline value, should be used if pursuing as high as 10 to 12 mg/kg every 24 hours (Hoff 2020)</td></tr>
</table></td></tr>
<tr><td>Doxycycline (IV/PO)[1,2]</td><td>Load: 200 mg x 1 for severe infections
100 mg IV/PO q12h</td><td>No change</td><td>No change</td><td>No change</td><td>No change</td></tr>
<tr><td>Ertapenem (IV/IM)[1,2,46–48]</td><td>1 g IV q24h</td><td><u>CrCl <30</u>: 500 mg IV q24h</td><td>500 mg IV q24h</td><td>500 mg IV q24h
Dose daily, but after HD on HD days
<u>alt</u>: 500 - 1000 mg IV post-HD (low vs. high-flux HD, degree of renal failure, residual UOP)</td><td>1 g IV q24h</td></tr>
<tr><td>Ethambutol (PO)[1,5,49,50]
(Use lean BW for obesity)
(See footnote for lean BW equation)</td><td><u>Dose range</u>:
15 – 25 mg/kg/day
(max dose: 1,600 mg/day)<table><tr><th>Lean body weight</th><th>Dose</th></tr><tr><td>40 – 55 kg</td><td>800 mg</td></tr><tr><td>56 – 75 kg</td><td>1,200 mg</td></tr><tr><td>76 – 90 kg</td><td>1,600 mg</td></tr></table></td><td><u>CrCl 10 – 50</u>:
15 – 25 mg/kg PO q24–36h</td><td><u>CrCl < 10</u>:
15 – 25 mg/kg PO q48h</td><td>15 – 25 mg/kg PO 3 times per week post-HD
Administer after HD only</td><td>15 – 25 mg/kg PO q24–36h</td></tr>
<tr><td>Fidaxomicin (PO)[1,2]</td><td>200 mg q12h x 10 days</td><td>No change</td><td>No change</td><td>No change</td><td>No change</td></tr>
<tr><td>Fluconazole (IV/PO)[1–4,17,28,51]</td><td colspan="5"><table>
<tr><th>Indication</th><th>CrCL > 50</th><th>CrCL ≤ 50</th><th>HD</th><th>CRRT</th></tr>
<tr><td>Mucocutaneous candidiasis (e.g. oropharyngeal, esophageal candidiasis)
See below for C. glabrata</td><td>200 – 400 mg IV/PO Q24H</td><td>100 – 200 mg IV/PO Q24H</td><td>200 – 400 mg IV/PO post-HD
alt: 200 – 400 mg x 1, then 100 – 200mg IV/PO Q24H</td><td>Load 800 mg x 1 dose, then 400mg IV/PO Q24H</td></tr>
<tr><td rowspan="2"><u>Severe Candidiasis</u>:
Candidemia/CNS/ endophthalmitis
Consider ID consult for cryptococcosis, coccidioidomycosis, etc.</td><td>Load 800 mg x 1 dose, then 400 – 800 mg IV/PO Q24H</td><td>Load 800 mg x 1 dose, then 200 – 400 mg IV/PO Q24H</td><td>Load 800 mg x 1 dose, then 400 – 800 mg post-HD
alt: 200 – 400 mg IV/PO Q24H</td><td>Load 800 mg x 1 dose, then 400 – 800 mg IV/PO Q24H</td></tr>
<tr><td><u>C. glabrata (SDD)*</u>:
800 mg IV/PO Q24H</td><td><u>C. glabrata (SDD)*</u>:
Load 800 mg x 1 dose, then 400 mg IV/PO Q24H</td><td><u>C. glabrata (SDD)*</u>:
800 mg post-HD
alt: 800 mg x 1, then 400 mg IV/PO Q24H</td><td><u>C. glabrata (SDD)*</u>:
800 mg IV/PO Q24H</td></tr>
</table>*SDD = susceptible-dose dependent; all C. glabrata isolates are considered SDD or resistant. Limited data on isolates with MIC ≥ 16, consider consultation with ID</td></tr>
<tr><td>Foscarnet (IV)[1,2,52–54]
(Use adjusted BW for obesity)
Adj CrCl (mL/min/kg)
$\left(\frac{140 - age}{SCr \times 72}\right)$ X (0.85 if female)</td><td colspan="5"><table>
<tr><th>CrCl (mL/min/kg)</th><th colspan="2">CMV induction</th><th colspan="2">CMV maintenance</th><th colspan="2">HSV</th></tr>
<tr><td>> 1.4</td><td>60 mg/kg IV q8h</td><td>90 mg/kg IV q12h</td><td>90 mg/kg IV q24h</td><td>120 mg/kg IV q24h</td><td>40 mg/kg IV q12h</td><td>40 mg/kg IV q8h</td></tr>
<tr><td>> 1.0 – 1.4</td><td>45 mg/kg IV q8h</td><td>70 mg/kg IV q12h</td><td>70 mg/kg IV q24h</td><td>90 mg/kg IV q24h</td><td>30 mg/kg IV q12h</td><td>30 mg/kg IV q8h</td></tr>
<tr><td>> 0.8 – 1.0</td><td>50 mg/kg IV q12h</td><td>50 mg/kg IV q12h</td><td>50 mg/kg IV q24h</td><td>65 mg/kg IV q24h</td><td>20 mg/kg IV q12h</td><td>35 mg/kg IV q12h</td></tr>
<tr><td>> 0.6 – 0.8</td><td>40 mg/kg IV q12h</td><td>80 mg/kg IV q24h</td><td>80 mg/kg IV q48h</td><td>105 mg/kg IV q48h</td><td>35 mg/kg IV q24h</td><td>25 mg/kg IV q12h</td></tr>
<tr><td>> 0.5 – 0.6</td><td>60 mg/kg IV q24h</td><td>60 mg/kg IV q24h</td><td>60 mg/kg IV q48h</td><td>80 mg/kg IV q48h</td><td>25 mg/kg IV q24h</td><td>40 mg/kg IV q24h</td></tr>
<tr><td>≥ 0.4 – 0.5</td><td>50 mg/kg IV q24h</td><td>50 mg/kg IV q24h</td><td>50 mg/kg IV q48h</td><td>65 mg/kg IV q48h</td><td>20 mg/kg IV q24h</td><td>35 mg/kg IV q24h</td></tr>
<tr><td>< 0.4</td><td colspan="2">Not recommended</td><td colspan="2">Not recommended</td><td colspan="2">Not recommended</td></tr>
<tr><td>IHD</td><td colspan="2">45 – 60 mg/kg/dose IV post-HD only</td><td colspan="2">No data</td><td colspan="2">No data</td></tr>
<tr><td>CRRT</td><td colspan="6">No data</td></tr>
</table></td></tr>
<tr><td>Ganciclovir (IV)[1,2]
(Use adjusted BW for obesity)</td><td colspan="3"><table>
<tr><th>CMV</th><th>CrCl >70*</th><th>CrCl >50</th><th>CrCl >25</th><th>CrCl >10</th><th>CrCl <10</th></tr>
<tr><td>Induction (I)</td><td>5 mg/kg IV q12h</td><td>2.5 mg/kg IV q12h</td><td>2.5 mg/kg IV q24h</td><td>1.25 mg/kg IV q24h</td><td>1.25 mg/kg IV 3x/week</td></tr>
<tr><td>Maintenance (M)</td><td>5 mg/kg IV q24h</td><td>2.5 mg/kg IV q24h</td><td>1.25 mg/kg IV q24h</td><td>0.625 mg/kg IV q24h</td><td>0.625 mg/kg IV 3x/week</td></tr>
</table>*Manufacturer's CrCl cutoffs. Please refer to BMT protocols if applicable</td><td>I: 1.25 mg/kg IV post HD only
M: 0.625 mg/kg IV post HD only</td><td>I: 2.5 mg/kg IV q12–24h
M: 1.25 – 2.5 mg/kg IV q24h</td></tr>
</table>

<table>
<tr><th>Drug</th><th>CrCl > 50 mL/min</th><th>CrCl 10 – 50 mL/min</th><th>CrCl < 10 mL/min</th><th>Intermittent Hemodialysis (IHD)
Assumes thrice weekly dialysis</th><th>CRRT</th></tr>
<tr><td>Gentamicin (IV)[1,3,55]
(Use adjusted BW for obesity)

Refer to Aminoglycoside Dosing Guide</td><td colspan="5">
<table>
<tr><th></th><th>CrCl > 60</th><th>CrCl 40 – 59</th><th>CrCl 20 – 39</th><th>CrCl < 20</th><th>IHD</th><th>CRRT</th></tr>
<tr><td>Gram negative</td><td>1.7 mg/kg IV q8h
or
5 – 7 mg/kg IV q24h
(high-dose extended-interval)</td><td>1.7 mg/kg IV q12h
or
5 – 7 mg/kg IV q36h
(high-dose extended-interval)</td><td>1.7 mg/kg IV q24h
or
CrCl > 30: 5 – 7 mg/kg IV q48h
CrCl < 30: Not recommended
(high-dose extended-interval)</td><td>2 mg/kg IV loading dose, then per level</td><td>2 mg/kg IV loading dose, then 1.5 mg/kg IV post HD</td><td>1.5 – 2.5 mg/kg IV q24–48h</td></tr>
<tr><td>Gram positive synergy</td><td>1 mg/kg IV q8h**</td><td>1 mg/kg IV q12h</td><td>1 mg/kg IV q24h</td><td>1 mg/kg IV load, then by level</td><td>1 mg/kg IV q48–72h; consider redosing when level < 1 mcg/L</td><td>1 mg/kg IV q24h, then per level</td></tr>
</table>
Goal levels: Gram-negative infections: Goal peak for traditional dosing 4 – 8 mcg/mL; goal trough < 1 – 2 mcg/mL
Gram-positive synergy: Goal peak 3 – 4 mcg/mL; goal trough < 1 mcg/mL
Timing of levels: Draw peak 30 minutes after completion of 3rd dose. Draw trough 30 minutes prior to 4th dose (For CrCl < 20 mL/min, may check levels sooner than 3rd/4th dose)
For 7 mg/kg once-daily dosing, draw a single random level 8 – 12 hours after dose administration. Adjust based on Hartford nomogram
For HD, draw trough pre-HD (alternative: draw trough level 4-hr post-HD); and peak 30 minutes after end of each infusion
** Streptococci, Streptococcus gallolyticus (bovis), Streptococcus viridans endocarditis: optional dosing 3 mg/kg q24h for CrCl > 60 mL/min
** Staphylococci; Enterococcus spp (strains susceptible to PCN and gentamicin) endocarditis: optional dosing 3 mg/kg in 2 or 3 equally divided doses</td></tr>
<tr><td>Imipenem/Cilastatin (IV)[1]
(SHC Restriction)</td><td colspan="3">
<table>
<tr><th></th><th>CrCL >60</th><th>CrCL 30 – 59</th><th>CrCL 15 – 29</th><th>CrCL < 10</th></tr>
<tr><td>General</td><td>500 mg IV q6H
or
1g IV q8h</td><td>500 mg IV q8h</td><td>500 mg IV q12h</td><td rowspan="2">Not recommended unless dialysis initiated within 48-hrs</td></tr>
<tr><td>NTM</td><td>1,000 mg IV q12H</td><td>750 mg IV q12H</td><td>500 mg IV q12H</td></tr>
</table>
</td><td>250 – 500 mg IV q12h</td><td>1g load, then 500 mg IV q6h</td></tr>
<tr><td>Isavuconazole (IV/PO)[1,2]</td><td>Initial: 372 mg IV/PO q8h x 6 doses
Maintenance: 372 mg IV/PO q24h</td><td colspan="2">No change</td><td>No change</td><td>No change</td></tr>
<tr><td>Isoniazid (PO)[1,2,49,50]</td><td>300 mg PO q24h
(5 mg/kg/day)</td><td colspan="2">No change</td><td>No change</td><td>No change</td></tr>
<tr><td>Levofloxacin (IV/PO)[1–4]</td><td colspan="3">
<table>
<tr><th></th><th>CrCl ≥ 50</th><th>CrCl 20 – 49</th><th>CrCl < 20</th></tr>
<tr><td>General</td><td>250 – 500 mg IV/PO q24h</td><td>250 mg IV/PO q24h
- or -
500 mg IV/PO q48h</td><td>500 mg x1, then 250 mg IV/PO q48h</td></tr>
<tr><td>Severe/PNA/ Pseudomonas/ Stenotrophomonas:</td><td>750 mg IV/PO q24h</td><td>750 mg IV/PO q48h</td><td>750 mg x1, then 500 mg IV/PO q48h</td></tr>
</table>
</td><td>See CrCl < 20 ml/min
Dose q48h, but after HD on HD days</td><td>750 mg load, then 250 – 500 mg IV/PO q24h</td></tr>
<tr><td>Linezolid (IV/PO)[1,2]
(SHC Restriction)</td><td>600 mg IV/PO q12h</td><td colspan="2">No change</td><td>No change</td><td>No change</td></tr>
<tr><td>Meropenem (IV)[1–4,56]</td><td colspan="3">
<table>
<tr><th></th><th>CrCl > 50</th><th>CrCl 26 – 50</th><th>CrCl 10 – 25</th><th>CrCl < 10</th></tr>
<tr><td>Usual dose (FN, PNA, Pseudomonas)</td><td>1 g IV q8h</td><td>1 g IV q12h</td><td>0.5 g IV q12h</td><td>0.5 g IV q24h</td></tr>
<tr><td>CF/Meningitis</td><td>2 g IV q8h</td><td>2 g IV q12h</td><td>1 g IV q12h</td><td>1 g IV q24h</td></tr>
</table>
Administered over a 3-hr extended infusion</td><td>500 mg IV q24h
CF/CNS: 1 g IV q24h
Dose daily, but after HD on HD days</td><td>1 g IV q8h
CF/CNS: 2 g IV q12h</td></tr>
<tr><td>Metronidazole (IV/PO)[1,2]</td><td>500 mg IV/PO q6–8h</td><td colspan="2">No change
Severe hepatic impairment: can consider 500 mg IV/PO q12h</td><td>500 mg IV/PO q8h</td><td>500 mg IV/PO q6–8h</td></tr>
<tr><td>Moxifloxacin (IV/PO)[1,2]</td><td>400 mg IV/PO q24h</td><td colspan="2">No change</td><td>No change</td><td>No change</td></tr>
<tr><td>Nafcillin (IV)[1,2]</td><td>2 g IV q4h
Mild infections: 1 g IV q4h</td><td colspan="4">No change for renal impairment.
Hepatic Impairment: No specific dose adjustment provided by manufacturer. Dosage adjustment may be necessary in the setting of concomitant renal impairment; nafcillin primarily undergoes hepatic metabolism.</td></tr>
<tr><td>Oseltamivir (PO)[1,2,57]</td><td colspan="3">
<table>
<tr><th></th><th>CrCl ≥ 60</th><th>CrCl 30 – 60</th><th>CrCl 10 – 30</th></tr>
<tr><td>Prophylaxis</td><td>75 mg PO q24h</td><td>30 mg PO q24h</td><td>30 mg PO q48h</td></tr>
<tr><td>Treatment</td><td>75 mg PO q12h</td><td>30 mg PO q12h</td><td>30 mg PO q24h</td></tr>
</table>
</td><td>Prophylaxis:
30 mg PO x 1, then 30 mg PO after every other HD session
Treatment:
30 mg PO x 1, then 30 mg PO post-HD only</td><td>Prophylaxis: 75 mg PO q24h
Treatment: 75 mg PO q12h</td></tr>
<tr><td>Penicillin G (IV)[1–3,5]</td><td>2 – 4 mu IV q4h
Dose range: 12 – 24 million units/day continuous infusion or in divided doses every 4 to 6 hours</td><td>2 – 3 mu IV q4h</td><td>1 – 2 mu IV q6h</td><td>Mild: 0.5 – 1 mu IV q4–6h; or 1 – 2 mu IV q8–12h
Severe: 2 mu IV q4–6h; or 4 mu IV q8–12h</td><td>4 mu IV q4–6h</td></tr>
<tr><td>Piperacillin/tazobactam (IV)[1–4,58,59]</td><td colspan="3">
<table>
<tr><th></th><th>CrCl > 40</th><th>CrCl 20 – 40</th><th>CrCl < 20</th></tr>
<tr><td colspan="4">Intermittent Dosing (30-minutes)</td></tr>
<tr><td>General</td><td>3.375 g IV q6h</td><td>2.25 g IV q6h</td><td>2.25 g IV q8h</td></tr>
<tr><td>Severe/sepsis/CF/ nosocomial PNA</td><td>4.5 g IV q6h</td><td>3.375 g IV q6h</td><td>2.25 g IV q6h</td></tr>
<tr><td colspan="4">Extended-Infusion Dosing (4-hr infusion)</td></tr>
<tr><td>General, CF Pseudomonas, nosocomial PNA:</td><td colspan="2">Extended infusion for CrCl > 20:
3.375 – 4.5 g IV q8h over 4h*</td><td>3.375 g IV q12h over 4h</td></tr>
</table>
*In select cases, higher piperacillin/tazobactam dosing may be warranted, e.g. sepsis, critically ill patients with severe or deep-seated infections, infections with MIC > 16 mg/L, obesity with weight > 120kg or BMI > 40, CrCl > 120 mL/min, or enhanced drug clearance such as those with cystic fibrosis: consider doses of 4.5 g IV q8h (infused over 4 hours) or q6h.</td><td>General: 2.25 g IV q12h
Severe infections:
3.375 g IV q12h over 4-hr
alt: 2.25 g IV q8h</td><td>3.375 g IV q6h over 30-minutes
Extended infusion:
3.375 – 4.5 g IV q8h over 4-hr</td></tr>
<tr><td>Polymyxin B (IV)[1,2,60,61]
(SHC Restriction)
(Use adjusted BW for obesity)</td><td colspan="3">Dosing presented as units (10,000 units = 1 mg)
20,000 – 25,000 units/kg IV load x 1, then 12,500 – 15,000 units/kg IV q12h
(maximum: 25,000 units/kg/day)</td><td>No data</td><td>No change</td></tr>
</table>

Drug	CrCl > 50 mL/min	CrCl 10 – 50 mL/min	CrCl < 10 mL/min	Intermittent Hemodialysis (IHD) *Assumes thrice weekly dialysis*	CRRT
Posaconazole (IV/PO)[1,2] **(SHC Restriction [IV])**	Formulation / Dose Oral Suspension (NF) *Suspension and Delayed-release tablets are not interchangeable*: Prophylaxis: 200 mg PO q8h; Treatment: 200 mg PO q6–8h Delayed-release tablet *Suspension and Delayed-release tablets are not interchangeable*: 300 mg PO q12h x 2 doses, then 300 mg PO q24h Intravenous solution: 300 mg IV q12h x 2 doses, then 300 mg IV q24h Refer to Antifungal TDM Guide			No change	No change
Pyrazinamide (PO)[1,2,49,50] (Use lean BW for obesity) (See footnote for lean BW equation)	Usual Dose: 25 mg/kg PO q24h (max dose: 2,000 mg/day) Lean body weight 40 – 55 kg: 1,000 mg; 56 – 75 kg: 1,500 mg; 76 – 90 kg: 2,000 mg	CrCl < 30: 25 mg/kg PO 3 times per week		25 mg/kg PO 3 times per week Administer after HD only	No data
Rifampin (IV/PO)[1,2,49,50,62–64] Capsule size: 150mg, 300mg	TB: 600 mg IV/PO q24h (≤ 45 kg: 10 mg/kg q24h) Endocarditis: 300 mg IV/PO q8h PJI: 300 – 450 mg IV/PO q12h Vertebral Osteomyelitis: 600 mg IV/PO q24h		No change	No change	No change
Tedizolid (IV/PO)[1,2,65] **(SHC Restriction)**	200 mg IV/PO q24h	No change	No change	No change	No change
Tobramycin (IV)[1,2,55]	**Refer to Gentamicin for dosing. See appendix for complete guidelines.**				
Trimethoprim (TMP)/ Sulfamethoxazole (IV/PO)[1,2,4,66] (Use adjusted BW for obesity) SS = 80 mg TMP = 10 ml po soln DS =160 mg TMP = 20ml po soln	Uncomplicated cystitis: 1 DS tab PO BID SSTI: 1 – 2 DS tab PO BID *S. aureus* (Bone/Joint): 8-10 mg/kg/day TMP in divided doses (2 DS tabs PO BID) Gram-negative bacteremia: 8-10 mg/kg/day TMP in divided doses (2 DS tab PO BID) *Stenotrophomonas*: 10-15 mg/kg/day TMP divided q8-12h PCP: 15 mg/kg/day TMP divided q8h (~2 DS tab TID)	CrCl 15 – 30: Administer 50% of recommended dose	CrCl < 15: Use is not recommended, but if needed for PCP: 5 – 7.5 mg/kg TMP q24h (25-50% of usual dose)	25-50% of usual dose 2.5 – 5 mg/kg TMP q24h *PCP, Stenotrophomonas* 5 – 7.5 mg/kg TMP q24h *Dose daily, but after HD on HD days* alt: 5 – 15 mg/kg TMP post-HD only	5 – 10 mg/kg/day TMP divided q12h *Stenotrophomonas* 10-15 mg/kg/day TMP divided q8-12h PCP 15 mg/kg/day TMP divided q8h (~2 DS tab TID)
Valacyclovir (PO)[1,2] Please refer to transplant protocols if applicable	VZV: CrCl >50: 1 g PO q8h; CrCl 30-50: 1 g q12h / CrCl 10 – 30: 1 g PO q24h / < 10: 500 mg PO q24h Genital herpes: Initial episode: 1 g PO q12h; Recurrent episode: 500 mg PO q12h / Initial episode: 1 g PO q24h; Recurrent: 500 mg PO q24h / Initial/recurrent episode: 500 mg PO q24h Herpes labialis: CrCl >50: 2 g PO q12h x 2 doses; CrCl 30 – 50: 1 g PO q12h x 2 doses / 500 mg PO q12h x 2 doses / 500 mg PO x 1 dose			500 mg PO q24h *Dose daily, but after HD on HD days*	No data
Valganciclovir (PO)[1,2] Please refer to transplant protocols if applicable	Induction (14-21 days): 900 mg PO q12h / 450 mg PO q12h / 450 mg PO q24h / 450 mg PO q48h / 200 mg PO 3x/week after HD only / No data Maintenance/ prophylaxis: 900 mg PO q24h / 450 mg PO q24h / 450 mg PO q48h / 450 mg twice/week / 100 mg PO 3x/week after HD only / No data				
Vancomycin (IV)[1,2,67,68]	**See Vancomycin Dosing Protocol**				
Vancomycin PO[1,2,69]	Poor systemic absorption- used for the treatment of *Clostridium difficile*-associated diarrhea Mild/moderate/severe: 125 mg PO q6h Severe complicated (CDI-related septic shock, ileus, toxic megacolon): 500 mg PO q6h			No change	No change
Voriconazole (IV/PO)[1,2,70,71] (Use adjusted BW for obesity)	IV: 6 mg/kg IV q12h x 2, then 4 mg/kg IV q12h PO: 400 mg PO q12h x 2, then 200 mg PO q12h	• IV→PO conversion 1:1 (round to nearest tablet size- available in 200 mg and 50 mg tablets) • Caution with IV: accumulation of IV vehicle cyclodextrin occurs. Consider PO if CrCl < 50 mL/min unless benefits justify risks of IV use. • Please refer to Antifungal TDM Guide			

Abbreviations: CAP = community acquired pneumonia; CRRT = continuous renal replacement therapy; FN = febrile neutropenia; HD = hemodialysis; LD = loading dose; MU = million units; PCP = pneumocystis jiroveci pneumonia; PNA = pneumonia; SCr = serum creatinine; TB = tuberculosis; TMP = trimethoprim; UF = ultrafiltration

CRRT dosing: doses listed are for CVVHDF and CVVHD modalities, which are the most common modes at SHC. Note that these are generally higher than doses used in CVVH.

LBW (men) = (1.10 x Weight(kg)) - 128 x (Weight^2/(100 x Height(m))^2)

LBW (women) = (1.07 x Weight(kg)) - 148 x (Weight^2/(100 x Height(m))^2)

LBW online calculator: http://www.empr.com/medical-calculators/lean-body-weight-calculator/article/170219/

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B. Gatekeeper

Stanford Antimicrobial Stewardship Safety and Sustainability Program

C. Review and Renewal Requirement

This document will be reviewed every three years and as required by change of law or practice

D. Revision/Review History

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E. Approvals

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