



Renal Dosage Adjustment Guidelines for Antimicrobials, MP01 Attachment A

The pharmacists will automatically adjust the doses of any of the antimicrobials included in the protocol according to the estimated creatinine clearance (generally using the Cockcroft-Gault equation for patients ≥ 18 years old and the Schwartz equation for patients < 18 years old). This protocol does NOT include patients in the neonatal intensive care unit. For other pediatric patients less than 1 year of age the pharmacist must discuss the dose adjustment with the medical team who initiated the order. When a change is necessary, the pharmacist will modify the order in Epic and enter it as “Per protocol: cosign required”.

The adjustments listed in the dosing guidelines will be made unless the physician writes “Do not adjust” when ordering the antimicrobial. For vancomycin and the aminoglycosides, a pharmacokinetic consult will be performed by the pharmacist in accordance with IP 009 (Pharmacokinetics Service Policy).

The most current version of the Renal Dosage Adjustment Guidelines for Antimicrobials and associated antimicrobial policies can be found online at the Antimicrobial Stewardship Program (ASP) website:

www.unmc.edu/asp. A separate [guideline for renal adjustments in patients receiving continuous renal replacement therapy \(CRRT\)](#) can be found on the ASP website under “Dosing Protocols”.

Please note:

- If there are no clear recommendations available, the pharmacist will not perform any automatic dosage adjustment but will consult with the ordering physician.
- Accurate estimation of creatinine clearance and glomerular filtration rate from the Cockcroft-Gault and Schwartz equations require serum creatinine concentrations to be at steady-state. Acute changes in renal function (indicated by changes in urine output & serum creatinine) render the Cockcroft-Gault and Schwartz equations unreliable as serum creatinine is a delayed indicator of renal function. Furthermore, CrCl calculations may be significantly overestimated in patients with decreased muscle mass (e.g. elderly, paralysis). The pharmacist should use their clinical judgment regarding these changes and communicate their recommendations with the team as appropriate.
- Inclusion of an agent within this guideline does not necessarily indicate Nebraska Medicine formulary status.

Creatinine Clearance Estimation

Our version of Epic OneChart uses the Cockcroft-Gault equation to determine the estimated creatinine clearance (CrCl) for patients ≥18 years - following the rules below for body weight and not rounding Scr - while the Schwartz equation is used for patients < 18 years old.

If not displayed, online calculators for adults and pediatrics exist for estimating CrCl at [MDCalc](#) and [GlobalRPh](#). The MDRD and CKD-Epi equations are more appropriate measures for staging kidney disease progression and are rarely used for drug dosing.

Adults:

Cockcroft-Gault equation:

$$\text{CrCl (mL/min)} = \frac{(140 - \text{age}) * \text{IBW}}{72 * \text{Scr}} \times 0.85 \text{ (for females only)}$$

Scr Serum creatinine concentration in mg/dL
([Note](#): it is no longer customary to round Scr to 1 in the elderly)

IBW Ideal body weight
Males = 50 + (2.3 x inches > 5 feet)
Females = 45.5 + (2.3 x inches > 5 feet)

Use actual body weight if less than ideal body weight
Use [adjusted body weight](#) (AdjBW) if actual body weight is > 120% of ideal body weight

Adjusted body weight = ideal body weight + 0.4(actual body weight – ideal body weight)

Pediatrics:

Schwartz's equation:

$$\text{CrCl (mL/min)} = K \times L / \text{Scr}$$

K Constant of proportionality that is age specific

Age	K
Preterm infants up to 1 year	0.33
Full-term infants up to 1 year	0.45
1-12 years	0.55
13-17 years female	0.55
13-17 years male	0.70

L Length or height in cm

Scr Serum creatinine concentration in mg/dL



Antimicrobial Dosing Recommendations

Antimicrobial	Normal Dose	Renal Dosage Adjustment Based on CrCl Estimate (in mL/min)*
<p>Acyclovir</p> <p>Use Adjusted body weight for dosing obese patients</p>	<p><u>Adult</u> <i>PO</i> 200 mg PO 5x/day</p> <p>400 mg PO 5x/day</p> <p>800 mg PO 5x/day</p> <p>400 mg PO q12h</p> <p><i>IV</i> <i>Mucocutaneous:</i> 5 mg/kg (AdjBW) IV q8h</p> <p><i>HSV encephalitis or varicella zoster virus:</i> 10 mg/kg (AdjBW) IV q8h</p> <p>-----</p> <p><u>Pediatric</u> <i>PO</i> 6.25-20 mg/kg PO q6h</p> <p><i>IV</i> 15-20 mg/kg IV q8h</p>	<p>CrCl 0-10: Same dose q12h</p> <p>CrCl 11-25: Same dose q8h CrCl 0-10: Same dose q12h</p> <p>CrCl 11-25: Same dose q8h CrCl 0-10: Same dose q12h</p> <p>CrCl 0-10: 200 mg q12h</p> <p>CrCl 25-50: Same dose q12h CrCl 10-24: Same dose q24h CrCl <10: 2.5-3.1 mg/kg IV q24h</p> <p>CrCl 25-50: Same dose q12h CrCl 10-24: Same dose q24h CrCl <10: 5-6.2 mg/kg IV q24h</p> <p>HD: Dose as CrCl <10; give dose daily, after HD on dialysis days PD: Dose as CrCl <10</p> <p>-----</p> <p>CrCl 10-25: Same dose q8h CrCl <10: Same dose q12h</p> <p>CrCl 25-50: Same dose q12h CrCl 10-24: Same dose q24h CrCl <10: 50% IV q24h[†]</p> <p>HD/PD: No data</p>
<p>Amikacin</p> <p><i>Refer to PK training packet on ASP website[§]</i></p>	<p><u>Adult</u> <i>Extended interval dosing:</i> 15 mg/kg (AdjBW) IV q24h for most infections (Refer to PK training packet on ASP website for exclusions to extended-interval dosing)</p>	<p><i>Extended interval dosing:</i> Frequency adjusted by serum level 6-14 hours after start of infusion and Hartford nomogram (modified for Amikacin) or use random level with InsightRx</p>



	<p>20 mg/kg (AdjBW) IV q24h nosocomial pneumonia, especially with multi-drug resistance and young (< 40 years old) or trauma patients</p> <p>UTI 15 mg/kg IV x1 dose for cystitis or 10 mg/kg IV q24h for more complicated infection</p> <p>Mycobacterial infections 10 mg/kg IV q24h or 15 mg/kg IV three times weekly</p> <p>-----</p> <p><i>Traditional dosing (typically not needed):</i> 7.5 mg/kg IV q12h</p> <p>Monitoring of serum levels is recommended</p> <p>-----</p> <p>Pediatric <i>Traditional dosing:</i> 5 mg/kg IV q8h</p>	<p><i>Empiric adjustments-</i> CrCl >50-90: Consider dose adjustment by 20-25% (12 or 15 mg/kg/d) CrCl 30-50: Reduce dose by 50% (7.5 mg/kg q24h or 15mg/kg q48h) CrCl 10-30: Reduce dose by 67-75% (5 mg/kg q24h or 10mg/kg q48h) CrCl <10: 7.5 mg/kg q48h Dose according to levels (Trough <5 mg/L probably less nephrotoxic)</p> <p>HD/PD: 10 mg/kg x1, then 5mg/kg after each dialysis</p> <p>-----</p> <p>GFR >50 mL/min/1.73 m2: No adjustment needed</p> <p>GFR 30-50 mL/min/1.73 m2: Administer every 12-18 hours</p> <p>GFR 10-29 mL/min/1.73 m2: Administer every 18-24 hours</p> <p>GFR < 10 mL/min/1.73 m2: Administer every 48-72 hours</p> <p>HD/PD: 5 mg/kg/dose; redose as indicated by serum concentrations</p>
Amoxicillin	<p>Adult Standard dose: 875mg q12h or 500mg q8h</p> <p>High dose: 1000mg q8h (Pneumonia, uncomplicated bacteremia)</p> <p>-----</p> <p>Pediatric <i>Standard dose:</i> 12.5-25 mg/kg PO q8-12h (25-50 mg/kg/day)</p>	<p>CrCl 10-30: 500 mg q12h CrCl <10: 500 mg q24h</p> <p>CrCl 10-30: 1000 mg q12h CrCl <10: 500 mg q12h HD: Dose as CrCl <10; give daily, dose after HD on dialysis days PD: Dose as CrCl <10</p> <p>-----</p> <p>CrCl 10-29: 8-20 mg/kg/dose q12h CrCl <10: 8-20 mg/kg/dose q24h</p>



	<p><i>High-dose (Acute otitis media):</i> 90 mg/kg/day PO divided q8-12h</p>	<p>HD: dose as CrCl <10; dose after HD on dialysis days PD: dose as CrCl <10</p> <p>CrCl 10-29: 20 mg/kg/dose q12h CrCl <10: 20 mg/kg/dose q24h HD: dose as CrCl <10; give daily, dose after HD on dialysis days PD: dose as CrCl <10</p>
Amoxicillin/clavulanate	<p><u>Adult</u> Standard Dose: 875/125 mg PO q12h or 500/125 mg PO q8h</p> <p>High dose: 875/125 mg PO TID (preferred for bloodstream infection)</p> <p>2000/125 mg PO q12h (XR formulation^{NF})</p> <p>-----</p> <p><u>Pediatric</u> (based on amoxicillin component) <i>Standard dose:</i> 30-45 mg/kg/day divided q8-12h</p> <p><i>Acute otitis media and pneumonia:</i> -80-90 mg/kg/day divided q12h</p>	<p>CrCl 10-30: 500/125 mg q12h CrCl <10: 500/125 mg q24h</p> <p>CrCl 10-30: 875/125 mg q12h CrCl <10: 875/125 mg q24h</p> <p>XR formulation NOT recommended with CrCl <30</p> <p>HD: Dose as CrCl <10; give daily; dose after HD on dialysis days PD: 500/125 mg q12h</p> <p>-----</p> <p>CrCl 10-30 ml/min: 8-20 mg/kg/dose q12h CrCl < 10 ml/min: 8-20 mg/kg/dose q24h</p> <p>CrCl 10-30 ml/min: 20 mg/kg/dose q12h CrCl < 10 ml/min: 20 mg/kg/dose q24h</p> <p>HD/PD: Dose as CrCl <10; give daily, dose after HD on dialysis days</p>
Amphotericin B deoxycholate	<p><u>Adult & Pediatric</u> 0.7-1 mg/kg IV q24h</p>	<p>No adjustment necessary</p>
Amphotericin B liposomal	<p><u>Adult & Pediatric</u> 3 mg/kg IV q24h (Automatic dose substitution to 3 mg/kg, refer to policy on ASP website[§])</p> <p>5 mg/kg can be used for mucormycosis</p>	<p>No adjustment necessary</p>
Ampicillin	<p><u>Adult</u> <i>Endocarditis, meningitis</i></p>	<p>CrCl 30-49: 2 g q6h</p>



	<p>2 g IV q4h</p> <p>Other infections 2 g IV q6h For augmented renal clearance (CrCl >130), consider 2g IV q4h</p> <p>-----</p> <p><u>Pediatric</u> 25-100 mg/kg IV q6h</p>	<p>CrCl 15-29: 2 g q8h CrCl <15: 2 g q12h</p> <p>CrCl 30-49: 2 g q8h CrCl 15-29: 2 g q12h CrCl <15: 2 g q24h HD/PD: Dose as CrCl <15; give dose after HD on dialysis days</p> <p>-----</p> <p>CrCl <10: Same dose q12h</p> <p>HD/PD: Dose as CrCl <10; give dose every 12 hours, after HD on dialysis days</p>
Ampicillin/sulbactam	<p><u>Adult</u> <i>Standard dose:</i> 1.5-3 g IV q6h (3 g preferred for systemic infection)</p> <p><i>Acinetobacter infections</i> 4.5g IV q8h (4.5g sulbactam / day)</p> <p><i>Carbapenem (Multidrug)-resistant A. baumannii (CRAB) w/ MIC ≥ 8/4 mg/L:</i> 4.5 g IV q6h over 3h (6g sulbactam / day)</p> <p>-----</p> <p><u>Pediatric</u> (based on ampicillin component) 25-100 mg/kg IV q6h</p>	<p>CrCl 15-29: Same dose q12h CrCl <15: Same dose q24h HD: Dose as CrCl <15; give daily, dose after HD on dialysis days PD: Dose as CrCl <15</p> <p>-----</p> <p>CrCl 15-29: Same dose q12h CrCl <15: Same dose q24h</p> <p>HD: Dose as CrCl <15; give daily, dose after HD on dialysis days PD: Dose as CrCl <15</p>
<p>Artesunate</p> <p><i>Restricted to ID service</i> Call ASP pager (888-0349) for ordering</p>	<p><u>Adult</u> 2.4 mg/kg at 0 hours, 12 hours, and 24 hours. Additional doses once daily.</p> <p>-----</p> <p><u>Pediatric</u> <20 kg: 3 mg/kg at 0 hours, 12 hours, and 24 hours. Additional doses administered once daily.</p> <p>≥20 kg: 2.4 mg/kg at 0 hours, 12 hours, and 24 hours.</p>	<p>No adjustment necessary</p> <p>-----</p> <p>No adjustment necessary</p>



	Additional doses administered once daily.	
Atovaquone	<u>Adult</u> 1500 mg PO daily divided q12h for treatment or q24h for prophylaxis ----- <u>Pediatric</u> (<13 years old) 20 mg/kg PO q12h	No adjustment necessary
Azithromycin	<u>Adult</u> 250-500 mg PO/IV q24h ----- <u>Pediatric</u> 5-10 mg/kg PO/IV q24h	No adjustment necessary Caution advised if CrCl <10 (AUC increased by 35%)
Aztreonam	<u>Adult</u> <i>Moderate-severe infection, Pseudomonas:</i> 2 g IV q8hr ----- <u>Pediatric</u> 30-60 mg/kg IV q6-8h	CrCl 10-30: Same dose IV q12h CrCl <10: Same dose IV q24h HD: Dose as CrCl <10; give daily, dose after HD on dialysis days PD: Dose as CrCl <10 ----- CrCl 10-30: 50% IV at same interval ^F CrCl <10: 25% IV at same interval ^F HD: Dose as CrCl <10 with an extra 3.25-7.5 mg/kg dose after HD PD: Dose as CrCl <10
Cefadroxil	<u>Adult</u> Standard dose for complicated infections: 1000 mg q12h Uncomplicated infections or suppression: 500 mg q12h -----	CrCl 20-40: 500 mg q12h CrCl <20: 500 mg q24h HD: 1000 mg once, then 500 mg daily or 1000 mg three times weekly after HD on dialysis days PD: 1000 mg once, then 500 mg daily CrCl 20-40: 500 mg q24h CrCl <20: 500 mg q48h HD: 1000 mg once, then 500 mg three times weekly after HD on dialysis days PD: 500 mg once, then 500 mg q48h ----- GFR 10-29: 15 mg/kg/dose q24h



	<u>Pediatric</u> 30 mg/kg/day divided q12h	GFR <10: 15 mg/kg/dose q36h HD: 15 mg/kg/dose q24h PD: 15 mg/kg/dose q36h
Cefazolin	<u>Adult</u> <i>Standard dose:</i> 2 g IV q8h For patients with augmented renal clearance (CrCl>130) and systemic infections consider 2 g IV q6h <i>Simple UTI:</i> 1 g IV q8h <u>Surgical prophylaxis:</u> see policy MP49 ----- <u>Pediatric</u> 25-50mg/kg IV q8h	CrCl 10-30: Same dose q12h CrCl <10: 1 g q24h HD: 1 g q24h, dose given after HD on dialysis days For outpatient treatment of systemic infection: 2g after first two HD sessions then 3g after dialysis Fri/Saturday PD: 500 mg IV q12h ----- GFR 31-50: 25-50 mg/kg q12h (max 2 g/dose) GFR 10-30: 25-50 mg/kg q24h (max 2 g/dose) GFR < 10: 25-50 mg/kg q48h (max 2 g/dose) HD: 25-50 mg/kg given only after HD (e.g., three times weekly; max 2 g/dose) PD: 25-30 mg/kg q24-48h (max 1 g/dose)
Cefdinir	<u>Adult:</u> 300 mg PO q12h ----- <u>Pediatric</u> 7 mg/kg PO q12h (max 600/day)	CrCl <30: 300 mg q24h HD: 300 once, followed by 300 mg three times a week after HD on dialysis days PD: 300 mg q48h ----- CrCl <30: 7 mg/kg q24h (max 300 mg/day) HD/PD: 7 mg/kg q48h (max 300 mg)
Cefepime	<u>Adult</u> <i>Standard dose:</i> 1 g IV q6h Refer to dosing protocol on ASP website ^s	CrCl 30-50: 1 g IV q8h CrCl 10-29: 1 g IV q12h CrCl < 10: 1 g IV q24h HD: Dose as CrCl <10; give 1g daily, dose after HD on dialysis days. For outpatient treatment: 2g post-HD 3x/week. PD: 1 g q24h



	<p><i>Febrile neutropenia/meningitis:</i> 2 g IV q8h</p> <p>-----</p> <p><u>Pediatric</u> ≥ 40 kg: Refer to adult dosing</p> <p><40 kg: 50 mg/kg (max 2g) IV q8h</p>	<p>CrCl 30-60: 2 g IV q12h CrCl 10-29: 1 g IV q12h CrCl < 10: 1 g IV q24h</p> <p>HD: Dose as CrCl <10; give 1g daily, dose after HD on dialysis days. For outpatient treatment: 2g post-HD 3x/week. PD: 1 g q24h</p> <p>-----</p> <p>CrCl 30-60: 50mg/kg (max 2g) q12h CrCl 11-29: 50mg/kg (max 2g) q24h CrCl <11: 25 mg/kg (max 1g) q24h</p> <p>HD: Dose as CrCl <11; give daily, dose after HD on dialysis days. PD: 50 mg/kg IV q48h</p>
Cefiderocol ^{NF}	<p><u>Adult</u> 2 g IV q8h</p> <p>-----</p> <p><u>Pediatric</u> NA</p>	<p><u>CrCl ≥120: 2 g q6h</u> CrCl 30-59: 1.5 g q8h CrCl 15-29: 1 g q8h CrCl <15: 750 mg q12h HD: dose as CrCl <15; give dose immediately after HD on dialysis days</p> <p>-----</p> <p>NA</p>
Cefoxitin	<p><u>Adult</u> <i>Standard dose:</i> 2 g IV q6h</p> <p>-----</p> <p><u>Pediatric</u> 20-40 mg/kg IV q6h</p>	<p>CrCl 30-50: 2g q8h CrCl 10-30: 2g q12h CrCl <10: 1g q24h</p> <p>HD/PD: Dose as CrCl <10; give daily, dose after HD on dialysis days</p> <p>-----</p> <p>CrCl 51-90: Same dose q8h CrCl 10-50: Same dose q12h CrCl <10: Same dose q24-48h</p> <p>HD/PD: Dose as CrCl <10; give daily, dose after HD on dialysis days</p>
Ceftaroline ^{NF}	<p><u>Adult</u></p>	



	<p><i>Standard dose:</i> 600 mg IV q12h</p> <p><i>Salvage therapy, severe infections, S. aureus bacteremia:</i> 600 mg IV q8h</p> <p>-----</p> <p><u>Pediatric</u> Safety and efficacy not established</p>	<p>CrCl 31-50: 400 mg q12h CrCl 15-30: 300 mg q12h CrCl <15: 200 mg q12h HD: 200 mg q12h; give dose after HD on dialysis days PD: 200 mg q12h</p> <p>CrCl 31-50: 400 mg q8h CrCl 15-30: 300 mg q8h CrCl <15: 200 mg q8h HD: 200 mg q8h; give dose after HD on dialysis days PD: 200 mg q8h</p> <p>-----</p> <p>See Lexicomp</p>
Ceftazidime	<p><u>Adult</u> 2 g IV q8h</p> <p>-----</p> <p><u>Pediatric</u> 30-50 mg/kg IV q8h</p>	<p>CrCl 31-50: 2 g q12h CrCl 16-30: 2 g q24h CrCl ≤15: 1 g q24h</p> <p>HD: Dose daily as CrCl <15; give daily, dose after HD on dialysis days. For outpatient treatment: 2g 3x/week after HD. PD: 1 g q24h</p> <p>-----</p> <p>CrCl 30-50: Same dose q12h CrCl 10-29: Same dose q24h CrCl <10: Same dose q48h</p> <p>HD: Dose as CrCl <10; give daily, dose after HD on dialysis days PD: 30-75 mg/kg IV x1, then 50% q24h[†]</p>
Ceftazidime/avibactam ^R <i>Restricted to ID service</i> <i>Infuse all doses over 2 hours</i>	<p><u>Adult</u> 2.5 g IV q8h (ceftazidime 2000 mg + avibactam 500 mg)</p> <p>-----</p> <p><u>Pediatric</u> Infants ≥3 to <6 mo: 40 mg ceftazidime/kg/dose IV q8h</p> <p>Infants ≥6 months, children, and adolescents <18 years: 50 mg</p>	<p>CrCl 31-50: 1.25 g q8h CrCl 16-30: 0.94 g q12h CrCl 6-15: 0.94 g q24h CrCl ≤ 5: 0.94 g q48h HD/PD: 0.94g q24h (limited data). Give dose daily; administer after dialysis on HD days.</p> <p>-----</p> <p>Infants ≥3 mo and children <2 years: GFR <50: insufficient data; use with caution</p>



	<p>ceftazidime/kg/dose IV q8h (max: 2,000 mg ceftazidime/dose)</p>	<p>Children ≥ 2 years and adolescents < 18 years:</p> <p>GFR 31-50: 25 mg ceftazidime/kg/dose q8h (max: 1000 mg ceftazidime/dose)</p> <p>GFR 16-30: 19 mg ceftazidime/kg/dose q12h (max: 750 mg ceftazidime/dose)</p> <p>GFR 6-15: 19 mg ceftazidime/kg/dose q24h (max: 750 mg ceftazidime/dose)</p> <p>GFR < 6: 19 mg ceftazidime/kg/dose q48h (max: 750 mg ceftazidime/dose)</p> <p>HD: 19 mg ceftazidime/kg/dose q24h (max: 750 mg ceftazidime/dose). Give dose daily; administer after dialysis on HD days</p>
<p>Ceftolozane/tazobactam^R</p> <p><i>Restricted to ID service</i></p> <p><i>Infuse all inpatient doses over 4 hours</i></p>	<p><u>Adult</u></p> <p><i>Complicated Urinary Tract Infection or Intra-abdominal Infection</i> 1.5 g IV q8h (1000mg ceftolozane + 500mg tazobactam)</p> <p><i>Nosocomial Pneumonia (HAP/VAP) or Septic shock</i> 3 g IV q8h (2000mg ceftolozane + 1000mg tazobactam)</p> <p>-----</p> <p><u>Pediatric</u></p> <p><i>Complicated Urinary Tract Infection or Intra-abdominal Infection</i> Infants, children, adolescents < 18 years: 20 mg ceftolozane/kg/dose IV q8h (max 1000 mg ceftolozane per dose)</p> <p><i>Nosocomial Pneumonia (HAP/VAP)</i> Dosing has not been established but doubling the UTI dosing can be considered</p>	<p>CrCl 30-50: 750 mg q8h CrCl 15-29: 375 mg q8h HD: 750 mg x 1 dose, then 150 mg q8h</p> <p>CrCl 30-50: 1500 mg q8h CrCl 15-29: 750 mg q8h HD: 2250 mg x 1 dose, then 450 mg q8h</p> <p>-----</p> <p>Infants, children, adolescents < 18 years: GFR < 50: dose adjustments have not been established</p>
Ceftriaxone	<p><u>Adult</u></p> <p><i>Standard dose: 2 g IV q24h</i> Effective for complicated infections such as osteomyelitis, bacteremia,</p>	No adjustment necessary



	<p>or endocarditis (Streptococcal or Gram negative)</p> <p><i>Uncomplicated infections such as UTI: 1 g IV q24h</i></p> <p><i>Meningitis or Enterococcal endocarditis :</i> 2 g IV q12h</p> <p>-----</p> <p><u>Pediatric</u> 25-100 mg/kg IV q12-24h (50-100 mg/kg/day)</p>	<p>-----</p> <p>No adjustment necessary</p>
Cefuroxime	<p><u>Adult</u> <i>PO</i> 250-500 mg PO q12h</p> <p><i>IV</i> 1.5 g IV q8h</p> <p>-----</p> <p><u>Pediatric</u> <i>PO</i> 10-15 mg/kg PO q12h</p> <p><i>IV</i> 25-50 mg/kg IV q8h</p>	<p>CrCl 10-30: 250mg q12h CrCl <10: 250mg q24h</p> <p>CrCl 10-20: 1.5 g q12h CrCl <10: 1.5 g q24h</p> <p>HD: Dose as CrCl <10; give daily, dose after HD on dialysis days PD: Dose as CrCl <10</p> <p>-----</p> <p>CrCl<10: 15mg/kg daily HD/PD: 15mg/kg daily, give after HD on dialysis days</p> <p>CrCl 10-20: Same dose q12h CrCl <10: Same dose q24h HD/PD: Dose as CrCl <10; give daily, dose after HD on dialysis days</p>
Cephalexin	<p><u>Adult</u> Standard dose: 500mg PO q6h or 1000 mg q8h</p> <p>Uncomplicated urinary tract infection, cystitis: 500mg PO q12h</p> <p>-----</p> <p><u>Pediatric</u></p>	<p>CrCl 15-30: 500mg q8h CrCl <15: 500mg q12h</p> <p>HD: Dose as CrCl <15; give q12h, dose after HD on dialysis days PD: Dose as CrCl <15</p> <p>UTI: 500mg q24h if CrCl <15 or on HD/PD</p> <p>-----</p>



	6.25-37.5 mg/kg PO q6h	CrCl 10-40: Same dose q8h CrCl <10: Same dose q12h HD: Dose as CrCl <10; give 12h, dose after HD on dialysis days PD: Dose as CrCl <10
Ciprofloxacin ^{NF}	<u>Adult</u> <i>PO</i> 250-750 mg PO q12h (750 mg q12h for nosocomial pneumonia/severe infection or <i>Pseudomonas</i>) <i>IV</i> 400 mg IV q8-12h (400 mg q8h for pneumonia/severe infection or <i>Pseudomonas</i>) ----- <u>Pediatric</u> <i>PO</i> 10-20 mg/kg PO q12h <i>IV</i> 10-15 mg/kg IV q8-12h	CrCl <30: same dose q24h HD/PD: Dose as CrCl <30; give daily, dose after HD on dialysis days CrCl <30: Same dose q12h (for q8h regimen) or q24h (for q12h regimen) HD/PD: Dose as CrCl <30; give daily, dose after HD on dialysis days ----- No clear recommendations
Clarithromycin	<u>Adult</u> 500 mg PO q12h <u>Pediatric</u> 7.5 mg/kg PO q12h	<i>Same for Adult & Pediatric</i> CrCl <30: 50% PO q12h ^F HD: Dose as CrCl <30; give q12h, dose after HD on dialysis days PD: No adjustment necessary
Clindamycin	<u>Adult</u> <i>PO</i> 150-450 mg PO q6-8h 600 mg PO q8h (MRSA) <i>IV</i> <i>Standard dose:</i> 600 mg IV q8h <i>Necrotizing fasciitis:</i> 900 mg IV q8h ----- <u>Pediatric</u> <i>PO</i> 2.5-10 mg/kg PO q6-8h (10-30 mg/kg/day)	No adjustment necessary



	<p>IV 6.25-10 mg/kg IV q6-8h (25-40 mg/kg/day)</p>																							
<p>Colistimethate (Colistin methanesulfonate), IV^R</p> <p><i>Recommended only for urinary tract infections and inhaled therapy (see below for dosing). Polymyxin B preferred in other situations.</i></p> <p><i>Restricted to ID service and pulmonary service</i></p> <p>Doses expressed as colistin base activity. For more information see International Consensus Guidelines on Optimal Use of Polymyxins</p>	<p><u>Adult</u> Use loading dose of 300mg IV in all patients; start maintenance dose 12h after loading dose</p> <p>CrCl, mL/minute</p> <table> <tr> <td>≥90</td> <td>180mg q12h</td> </tr> <tr> <td>80 to <90</td> <td>170mg q12h</td> </tr> <tr> <td>70 to <80</td> <td>150mg q12h</td> </tr> </table> <p>-----</p> <p><u>Pediatrics</u> 5 mg/kg/day colistin base IV in 2-4 divided doses</p> <p><i>(See colistin dosing guidance on ASP website)</i></p>	≥90	180mg q12h	80 to <90	170mg q12h	70 to <80	150mg q12h	<p>Use loading dose of 300 mg IV in all patients; start maintenance dose 24 hours after loading dose in patients with diminished renal function</p> <p>Daily dose divided q12h (Doses can be rounded to the nearest 5mg or given q24h when <200 mg)</p> <p>CrCl, mL/minute</p> <table> <tr> <td>60 to <70</td> <td>275 mg/d</td> </tr> <tr> <td>50 to <60</td> <td>245 mg/d</td> </tr> <tr> <td>40 to <50</td> <td>220 mg/d</td> </tr> <tr> <td>30 to <40</td> <td>195 mg/d</td> </tr> <tr> <td>20 to <30</td> <td>175 mg/d</td> </tr> <tr> <td>10 to <20</td> <td>160 mg/d</td> </tr> <tr> <td>5 to <10</td> <td>145 mg/d</td> </tr> <tr> <td>0</td> <td>130 mg/d</td> </tr> </table> <p>HD: 130mg/d + 50 mg on dialysis days after typical 4-hr HD (40mg if 3-hr HD session) CRRT: 220mg q12h Slow-low efficiency dialysis (SLED): Usual dose per CrCL (typically 130mg/d) + 10%/hr. E.g. 10 hr nocturnal dialysis requires 130mg supplemental dose</p> <p>-----</p>	60 to <70	275 mg/d	50 to <60	245 mg/d	40 to <50	220 mg/d	30 to <40	195 mg/d	20 to <30	175 mg/d	10 to <20	160 mg/d	5 to <10	145 mg/d	0	130 mg/d
≥90	180mg q12h																							
80 to <90	170mg q12h																							
70 to <80	150mg q12h																							
60 to <70	275 mg/d																							
50 to <60	245 mg/d																							
40 to <50	220 mg/d																							
30 to <40	195 mg/d																							
20 to <30	175 mg/d																							
10 to <20	160 mg/d																							
5 to <10	145 mg/d																							
0	130 mg/d																							
<p>Colistin base, inhaled^R</p> <p><i>Restricted to ID service and pulmonary service</i></p>	<p><u>Adult</u> 75-150 mg inhaled q12h (Standard dose for tracheobronchitis and pulmonary exacerbations of cystic fibrosis)</p> <p>150 mg inhaled q8h (High dose for MDR pneumonia)</p> <p>-----</p> <p><u>Pediatric</u></p>	<p>No adjustment necessary</p>																						



	30-75 mg inhaled q12h	
Dalbavancin ^R <i>Restricted to ID service for outpatient infusion only</i>	<u>Adult</u> <i>Two-dose regimen for severe/bone and joint/endovascular infections:</i> 1500 mg IV once, repeated once in 1 week <i>Single-dose regimen for skin/soft tissue infections:</i> 1500 mg IV once ----- <u>Pediatric</u> Safety and efficacy not established	CrCl < 30, <u>not</u> on regular HD: 1125 mg each dose ESRD on HD: No adjustment necessary
Dapsone	<u>Adult</u> 50-100 mg PO q24h ----- <u>Pediatric</u> 1-2 mg/kg PO q24h	No clear guidelines, but adjustment recommended
Daptomycin ^R <i>Restricted to ID service when used for non-FDA-approved indications (FDA approved for skin/skin structure infections)</i>	<u>Adult</u> <i>Bacteremia, osteomyelitis and other severe infections:</i> 6 mg/kg IV q24h <i>UTI or skin/skin structure infection:</i> 4 mg/kg IV q24h <i><u>Refractory Staphylococcal</u> infections, or <u>VRE bacteremia</u>:</i> 8-12 mg/kg q24h ----- <u>Pediatric</u> Safety and efficacy not established	CrCl <30: Same dose q48h HD: Dose as CrCl <30; give dose after HD on dialysis days For outpatients: dose after each HD session 3x/week with a 50% increase in weekend dose (ie, 6 mg/kg, 6 mg/kg, and 9 mg/kg after Fri/Sat session). Generally max dose of 12mg/kg. If utilizing higher dosing, contact OPAT for post-HD regimen. PD: Dose as CrCl <30 (IV q48h)
Delafloxacin ^{NF}	<u>Adult</u> PO: 450 mg q12h IV: 300 mg q12h	CrCl 15-30 (PO): No adjustment necessary CrCl 15-30 (IV): 200 mg q12h CrCl < 15: Use not recommended ESRD on HD: Not recommended
Dicloxacillin	<u>Adult</u> 250-500 mg PO q6h	No adjustment necessary



	<u>Pediatric</u> 6.25-12.5 mg/kg PO q6h	
Doxycycline	<u>Adult</u> 100 mg PO/IV q12h ----- <u>Pediatric</u> (not to be used in children <8 years) 1-4 mg/kg PO/IV q12-24h (2-4 mg/kg/day)	No adjustment necessary
Ertapenem	<u>Adult</u> 1 g IV q24h ----- <u>Pediatric</u> 15 mg/kg IV q12h	CrCl < 30: 500 mg IV q24h HD/PD: Dose as CrCl <30; give daily, dose after dialysis on dialysis days. For outpatients: limited experience with 1g post-HD 3x/week ----- No clear recommendations
Ethambutol Doses based on estimated lean body weight. Optimal doses for obese patients are not established.	<u>Adult</u> 15-20 mg/kg PO q24h (round to nearest 400mg, max dose 2.4 g) 40 to 55 kg: 800 mg (14.5 to 20 mg/kg) 56 to 75 kg: 1,200 mg (16 to 21.4 mg/kg) 76 to 90 kg: 1,600 mg (17.8 to 21.1 mg/kg) 30 mg/kg PO three times weekly is alternative for continuation phase <u>Pediatric</u> 15-25 mg/kg PO q24h (max dose 2.4 g)	<i>Same for Adult & Pediatric</i> CrCl <30: 20-25 mg/kg three times weekly HD: Same as <30. Give dose only after dialysis on HD days PD: Dose as CrCl <30
Famciclovir	<u>Adult</u> 500mg PO q12h for herpes simplex 500 mg PO q8h for varicella zoster ----- <u>Pediatric</u>	CrCl 40-59: 500mg q12h CrCl 20-39: 500mg q24h CrCl <20: 250mg q24h HD: 250mg after each dialysis session PD: No clear recommendations



	<u>Pediatric</u> 25-37.5 mg/kg PO q6h	CrCl 10-19: Same dose q24h CrCl <10: Same dose q48h HD/PD: Give dose only on dialysis days after dialysis
Foscarnet Use Adjusted Body Weight for Dosing in Obese Patients	<u>Adult</u> <i>Mucocutaneous HSV:</i> 40 mg/kg IV q8h <i>Disseminated CMV, induction:</i> 90mg/kg IV q12h <i>Disseminated CMV, maintenance:</i> 90-120 mg/kg IV q24h ----- <u>Pediatric</u> <i>CMV Induction:</i> 60 mg/kg IV q8h or 90 mg/kg IV q12h (preferred)	CrCl as ml/min/kg body weight CrCl >1.0-1.4: 30 mg/kg q8h CrCl >0.8-1.0: 35 mg/kg q12h CrCl >0.6-0.8: 25 mg/kg q12h CrCl >0.5-0.6: 40 mg/kg q24h CrCl 0.4-0.5: 35 mg/kg q24h CrCl <0.4: Use not recommended CrCl >1.0-1.4: 70mg/kg q12h CrCl >0.8-1.0: 50 mg/kg q12h CrCl >0.6-0.8: 80mg/kg q24h CrCl >0.5-0.6: 60 mg/kg q24h CrCl 0.4-0.5: 50 mg/kg q24h CrCl <0.4: Use not recommended CrCl >1.0-1.4: 70-90 mg/kg IV q24h CrCl >0.8-1.0: 50-65 mg/kg IV q24h CrCl >0.6-0.8: 80-105 mg/kg IV q48h CrCl >0.5-0.6: 60-80 mg/kg IV q48h CrCl 0.4-0.5: 50-65 mg/kg IV q48h CrCl <0.4: Not recommended. HD: 40-60 mg/kg after each HD session ----- CrCl as ml/min/kg body weight CrCl 1-1.4: 70 mg/kg q12h CrCl 0.8-<1: 50 mg/kg q12h CrCl 0.6-<0.8: 80 mg/kg q24h CrCl 0.5-<0.6: 60 mg/kg q24h CrCl 0.4-<0.5: 50 mg/kg q24h CrCl <0.4: Use not recommended CrCl 1-1.4: 70-90 mg/kg q24h CrCl 0.8-<1: 50-65 mg/kg q24h



	<p><i>CMV Maintenance or HSV Treatment:</i> 90-120 mg/kg IV q24h</p>	<p>CrCl 0.6-<0.8: 80-105 mg/kg q48h CrCl 0.5-<0.6: 60-80 mg/kg q48h CrCl 0.4-<0.5: 50-65 mg/kg q48h CrCl <0.4: Use not recommended</p> <p>HD/PD: No data</p>
<p>Fosfomycin^R</p> <p><i>Restricted to ID service (exception: single dose for uncomplicated cystitis)</i></p>	<p><u>Adult</u> (≥ 12 years) <i>Uncomplicated cystitis:</i> 3 g PO x 1 dose <i>Complicated cystitis:</i> 3 g PO q48h (3 doses)</p> <p>-----</p> <p><u>Pediatric</u> Age >1 year to <12 years: <i>Uncomplicated cystitis:</i> 2 g PO x 1 dose <i>Complicated cystitis:</i> 2 g PO q48h</p> <p>Age ≤1 year: <i>Uncomplicated cystitis:</i> 1 g PO x 1 dose <i>Complicated cystitis:</i> 1 g PO q48h</p>	<p>CrCl <50: No adjustment required</p> <p>CrCl <50: 3 g q72h</p> <p>-----</p> <p><i>If uncomplicated and CrCl <50:</i> No adjustment required</p> <p><i>If complicated and CrCl <50:</i> Age >1 year to <12 years: 2 g q72h Age ≤1 year: 1 g q72h</p>
<p>Ganciclovir</p> <p>Use Adjusted Body Weight for Dosing in Obese Patients</p>	<p><u>Adult</u> PO: use valgancyclovir</p> <p><i>IV</i> <i>Induction:</i> 5 mg/kg IV q12h</p> <p> <i>Maintenance:</i> 5 mg/kg IV q24h</p> <p>-----</p> <p><u>Pediatric</u> <i>PO</i> 30 mg/kg PO q8h</p> <p><i>IV</i> <i>Induction:</i> 5 mg/kg IV q12h</p>	<p>CrCl 50-69: 2.5 mg/kg q12h CrCl 25-49: 2.5 mg/kg q24h CrCl 10-24: 1.25 mg/kg q24h CrCl <10: 1.25 mg/kg 3x/week</p> <p>CrCl 50-69: 2.5 mg/kg q24h CrCl 25-49: 1.25 mg/kg q24h CrCl 10-24: 0.625 mg/kg q24h CrCl <10: 0.625 mg/kg 3x/week</p> <p>HD: Dose as CrCl <10 given after HD sessions</p> <p>-----</p> <p>No clear recommendations</p> <p>CrCl 50-69: 2.5 mg/kg q12h CrCl 25-49: 2.5 mg/kg q24h CrCl 10-24: 1.25 mg/kg q24h CrCl <10: 1.25 mg/kg 3x/week</p>



	<p><i>Maintenance:</i> 5 mg/kg IV q24h</p>	<p>CrCl 50-69: 2.5 mg/kg q24h CrCl 25-49: 1.25 mg/kg q24h CrCl 10-24: 0.625 mg/kg q24h CrCl <10: 0.625 mg/kg 3x/week</p> <p>HD: Dose as CrCl <10; give dose only after HD sessions</p>
<p>Gentamicin</p> <p><i>Refer to PK training packet on ASP website^s</i></p> <p>Use Adjusted Body Weight for Dosing in Obese Patients</p>	<p><u>Adult</u> <i>Extended interval dosing:</i> 7 mg/kg AdjBW once daily</p> <p>5 mg/kg/day may be used for UTIs</p> <p>Refer to PK training packet on ASP website^s for dosing recommendations and exclusions to extended-interval dosing</p> <p>-----</p> <p><i>Synergy dosing:</i> 1mg/kg IV q8h</p> <p>Monitoring of serum levels (peak/trough) is recommended</p> <p>-----</p> <p><u>Pediatric</u> <i>Traditional dosing:</i> 1.5-2.5 mg/kg IV q8h</p> <p><i>Synergy dosing:</i> 1mg/kg IV q8h</p> <p>Monitoring of serum levels (peak/trough) is recommended</p> <p>Neonates: Refer to NEOFAX</p>	<p><i>Extended interval dosing:</i> Frequency adjusted by serum level 6-14 hours after start of infusion using Hartford nomogram or AUC 80-110 using InsightRx</p> <p>-----</p> <p><i>Synergy dosing (empiric):</i> CrCl 51-90: same dose q12h CrCl 10-50: same dose q24h CrCl <10: same dose q48h HD/PD: Same dose TIW Dose according to levels or AUC 30-50 using InsightRx</p> <p>-----</p> <p><i>Empiric adjustments:</i></p> <p>GFR 30-50 mL/minute/1.73 m2: same dose q12h GFR 10-29 mL/minute/1.73 m2: same dose q24h GFR <10 mL/minute/1.73 m2: same dose q48-72h HD/PD: 1-2mg/kg/dose; redose according to levels</p> <p>Using InsightRx target AUC 80-110 for traditional dosing and 30-50 for synergy</p>
<p>Imipenem/cilastatin^{NF}</p>	<p><u>Adult</u> 500 mg IV q6h</p>	<p>CrCl 30-< 60 ml/min: 250mg q6h or 500mg q8h CrCl 15-< 30 ml/min: 250mg q8h or 500mg q12h CrCl < 15: not recommended unless HD HD: 250-500mg q12h; give dose after dialysis on dialysis days PD: 250-500mg q12h</p>



	<p>-----</p> <p><u>Pediatric</u> 15-25 mg/kg IV q6h</p>	<p>-----</p> <p>GFR 30-50 mL/min/1.73 m²: 7-13 mg/kg/dose q8h GFR 10-29 mL/min/1.73 m²: 7.5-12.5 mg/kg/dose q12h GFR < 10 mL/min/1.73 m²: 7.5-12.5 mg/kg/dose q24h HD: 7.5-12.5 mg/kg/dose q24h; give dose after dialysis on dialysis days PD: 7.5-12.5 mg/kg/dose q24h</p>
<p>Isavuconazonium sulfate (Isavuconazole)^R</p> <p><i>Restricted to ID services</i></p>	<p><u>Adult</u> 372 mg IV/PO q8h x 6 doses followed by 372 mg IV/PO q24h (start 12-24 hours after last loading dose)</p> <p><i>(372 mg isavuconazonium sulfate = 200 mg isavuconazole)</i></p> <p>-----</p> <p><u>Pediatric</u> Safety and efficacy not established</p>	<p>No adjustment necessary</p>
<p>Isoniazid</p>	<p><u>Adult</u> 5 mg/kg PO q24h (usual dose 300mg daily)</p> <p>-----</p> <p><u>Pediatric</u> 10-15 mg/kg PO q24h (maximum dose: 300mg daily)*</p> <p>*Pediatric dosing recommended for children < 15yrs AND weighing ≤40kg. Otherwise, see adult dosing.</p>	<p>No adjustment necessary</p> <p>HD/PD: Give daily, dose after HD on dialysis days</p>
<p>Itraconazole</p>	<p><u>Adult</u> 100-200 mg PO q12h</p> <p><i>Endemic fungi (Histoplasma sp., Coccidioides sp., Blastomyces sp.):</i> 200 mg PO q8h load x 3 days then 200 mg PO q12h</p> <p>-----</p> <p><u>Pediatric</u> 3-5 mg/kg PO q24h</p>	<p>No renal adjustment necessary</p> <p>Therapeutic drug monitoring is suggested; target trough at steady-state (10-14 days) is >1 mg/L (sum of hydroxy-itraconazole and itraconazole)</p>
<p>Letermovir^R</p>	<p><u>Adult</u> 480 mg IV/PO once daily</p>	<p>CrCl <50: use IV with caution due to risk of accumulation of IV vehicle (hydroxypropyl betadex)</p>



	<p>-----</p> <p><u>Pediatric</u> No data</p>	<p>CrCl \leq10 and ESRD on HD: insufficient data to make dosage recommendations</p> <p>-----</p> <p>No data</p>
Levofloxacin	<p><u>Adult</u> Standard dose: 750 mg PO/IV q24h <i>Recommended for most infections, especially Pseudomonas</i></p> <p>Alternate dose, neutropenic host prophylaxis: 500 mg PO/IV q24h</p> <p><i>Uncomplicated urinary tract infection, cystitis:</i> 250 mg PO/IV q24h</p> <p>-----</p> <p><u>Pediatric</u> < 6 mo: Use not recommended \geq 6 mo to <5 yrs: 10 mg/kg PO/IV q12h \geq 5 yrs: 10 mg/kg PO/IV q24h (max 750 mg/day)</p>	<p>CrCl 20-49: 750 mg q48h CrCl <20 or HD/PD: 750 mg x 1 dose, then 500 mg q48h</p> <p>CrCl 20-49: 500 mg x 1 dose, then 250 mg q24h CrCl <20, HD/PD: 500 mg x 1 dose, then 250 mg q48h</p> <p>CrCl \leq20: 250 mg q48h (if ordered for \leq3 days, then no adjustment needed)</p> <p>-----</p> <p><i>All Ages:</i> CrCl 10-29: 10mg/kg q24h CrCl <10, HD/PD: 10 mg/kg q48h</p>
Linezolid	<p><u>Adult</u> 600 mg PO/IV q12h</p> <p>-----</p> <p><u>Pediatric</u> 10 mg/kg PO/IV q8-12h</p>	<p>If duration >14 days, consider therapeutic drug monitoring and/or contact ID pharmacist to discuss</p>
Maribavir ^R <i>Restricted to ID services</i>	<p><u>Adults</u> 400 mg PO q12h</p> <p>-----</p> <p><u>Pediatric</u> Children \geq12 years and adolescents weighing \geq35kg: 400 mg PO q12h</p>	<p>ESRD and HD: has not been studied</p> <p>-----</p> <p>ESRD and HD: has not been studied</p>
Meropenem <i>Refer to dosing protocol on ASP website^s</i>	<p><u>Adult</u> Standard dose: 500 mg IV q6h</p> <p><i>Meningitis, cystic fibrosis, or MIC of 4 mcg/mL:</i></p>	<p>CrCl 25-49: 500 mg q8h CrCl 10-24: 500 mg q12h CrCl <10: 500 mg q24h</p> <p>CrCl 25-49: 2 g q12h CrCl 10-24: 1 g q12h</p>



	<p>2 g IV q8h</p> <p>3-hour infusion of 2g can be considered for organisms with MIC up to 8 mcg/mL which do not produce carbapenemases</p> <p>-----</p> <p><u>Pediatric</u> 20-40 mg/kg IV q8h (Use q12h for neonates ≤7 days old)</p>	<p>CrCl <10: 1 g q24h</p> <p>HD/PD: Dose as CrCl < 10; Give daily (after HD on dialysis days)</p> <p>-----</p> <p>No clear recommendations for neonates ≤7 days old. For neonates >7 days old: CrCl 10-24: Same dose q12h CrCl < 10: Same dose q24h</p> <p>HD/PD: Dose as CrCl <10; give daily, after dialysis on dialysis days</p>
Metronidazole	<p><u>Adult</u> Standard dose: 500 mg PO/IV q8h</p> <p>Alternate dose: 500-750 mg PO/IV q12h</p> <p>-----</p> <p><u>Pediatric</u> 3.75-16.7 mg/kg PO/IV q6-8h (15-50 mg/kg/day)</p>	<p><i>Same for Adult & Pediatric</i> CrCl <10, HD, or severe hepatic dysfunction: consider 50% at same interval if >14 day duration[†]</p>
Micafungin	<p><u>Adult</u> <i>Standard dosing:</i> 100 mg IV q24h</p> <p><i>Endocarditis/endovascular infection,azole-resistant Candida esophagitis, combination therapy for invasive Aspergillosis:</i> 150 mg IV q24h</p> <p><i>Hematopoietic stem cell transplant prophylaxis:</i> 50 mg IV q24h</p> <p>-----</p> <p><u>Pediatric</u> 1-4.5 mg/kg IV q24h</p>	<p>No adjustment necessary</p> <p>-----</p> <p>No adjustment necessary</p>
Minocycline PO & IV ^{NF}	<p><u>Adult</u> 100 mg IV/PO q12h</p> <p>For severe infections, consider 200 mg x 1 loading dose</p> <p>-----</p> <p><u>Pediatric</u> (do not use in children <8 years) 2 mg/kg IV/PO q12h</p>	<p>No adjustment necessary</p>



	For severe infections, consider 4 mg/kg x 1 loading dose	
Nirmatrelvir/ritonavir	<p><u>Adult</u> Nirmatrelvir 300 mg with ritonavir 100 mg, administered together, q12h</p> <p>-----</p> <p><u>Pediatric</u> Children ≥ 12 yrs and adolescents ≥ 40 kg: Nirmatrelvir 300 mg with ritonavir 100 mg, administered together, q12h</p>	<p>CrCl 30-59: Nirmatrelvir 150 mg with ritonavir 100 mg, administered together, q12h CrCl < 30: use is not recommended; however risk of toxicity is likely minimal with a 5-day course. Nirmatrelvir 150 mg with ritonavir 100 mg, administered together, q12h</p> <p>HD/PD ≥ 40 kg: Nirmatrelvir 300 mg and ritonavir 100 mg once on day 1, then nirmatrelvir 150 and ritonavir 100 mg once daily for 4 days. Give after HD on dialysis days HD/PD < 40kg: Nirmatrelvir 150 mg and ritonavir 100 mg once on day 1, then nirmatrelvir 150 and ritonavir 100 mg every 48 hours for 2 more doses. Give after HD on dialysis days</p> <p>-----</p> <p>Children ≥ 12 and adolescents ≥ 40 kg: GFR 30-59: nirmatrelvir 150 mg and ritonavir 100 mg, administered together q12h GFR < 30: use not recommended</p>
Nitrofurantoin	<p><u>Adult</u> Standard dose: 100 mg PO q12h (long-acting monohydrate/macrocystals) or 50 mg per FT q6h (use immediate release microcrystal formulation for administration via enteral feeding tube)</p> <p>-----</p> <p><u>Pediatric</u> 1.25-1.75 mg/kg PO q6h (immediate release)</p>	<p><u>CrCl < 30</u>, HD/PD: Use not recommended (will not reliably reach useful concentrations in urine and may increase risk of toxicity)</p>
Omadacycline ^R <i>Restricted to ID service</i>	<p><u>Adult</u> IV: 200 mg IV once, or 100 mg twice daily on day 1, then 100 mg daily</p>	No dosage adjustment needed



<p>Penicillin G</p>	<p><u>Adult</u> 2-4 million units IV q4h</p> <p>-----</p> <p><u>Pediatric</u> 25,000-100,000 units/kg IV q4-6h (100,000-400,000 units/kg/day)</p>	<p>CrCl 10-50: 75% dose, same interval^F CrCl <10: 2-4 million units q8h</p> <p>HD: Dose as CrCl <10; give dose q8h, dose after HD on dialysis days PD: Dose as CrCl <10</p> <p>-----</p> <p>CrCl 10-30: Same dose q8h CrCl <10: Same dose q12h</p> <p>HD: Dose as CrCl <10; give dose q12h, after HD on dialysis days PD: Dose as CrCl <10</p>
<p>Penicillin VK</p>	<p><u>Adult</u> 250-500 mg PO q6-8h</p> <p>-----</p> <p><u>Pediatric</u> 6.25-16.7 mg/kg PO q6-8h (25-50 mg/kg/day)</p>	<p>No adjustment necessary</p> <p>HD: Give dose after dialysis on dialysis days</p>
<p>Pentamidine</p>	<p><u>Adult</u> 4 mg/kg IV q24h</p> <p>-----</p> <p><u>Pediatric</u> 4 mg/kg IV q24h</p>	<p>No adjustment necessary</p> <p>-----</p> <p>CrCl 10-30: Same dose q36h CrCl <10: Same dose q48h</p>
<p>Peramivir^R <i>Restricted to ID service</i></p>	<p><u>Adult</u> 600 mg IV x 1 dose</p> <p><i>Hospitalized patients with severe influenza:</i> 600 mg IV q24h x 5 days</p> <p>-----</p> <p><u>Pediatric</u> Safety and efficacy not fully established. See guidance on Protected Antimicrobials page</p>	<p>CrCl 30-49: 200 mg x 1 dose CrCl 10-29: 100 mg x 1 dose HD: 100 mg x 1 dose administered after a dialysis session</p> <p>CrCl 30-49: 200 mg q24h CrCl 10-29: 100 mg q24h ESRD: See guidance on Protected Antimicrobials page</p>



<p>Piperacillin/tazobactam</p> <p>Refer to dosing protocol on ASP website[§]</p>	<p><u>Adult & Pediatric (>40 kg)</u> <i>Extended 4-hour infusion (standard at NM):</i> 4.5 g IV q8h</p> <p>-----</p> <p><u>Pediatric</u> (based on piperacillin component) <i>Extended 4-hour infusion (>2 kg and ≤40 kg):</i> 0-7 days: 100 mg/kg IV q12h 8-28 days: 100 mg/kg IV q8h >28 days: 100 mg/kg IV q6h</p> <p>NOTE: All doses must be infused over 4 hours, except for NICU patients</p> <p><i>Traditional 30-minute infusion:</i> 50-133.3 mg/kg IV q6-8h (150-400 mg/kg/day)</p>	<p>CrCl <20, HD/PD: 4.5 g IV q12h, dose after dialysis on dialysis days</p> <p>-----</p> <p>CrCl 20-40: 70% dose, same interval[†] CrCl <20, HD/PD: 70% dose IV q12h[†]</p> <p>CrCl 20-40: 70% dose IV q6h[†] CrCl <20: 70% dose IV q8h[†] HD/PD: No recommendations</p>
<p>Polymyxin B^R</p> <p>Restricted to ID service and pulmonary service</p> <p>Do not use for urinary tract infection. Use Colistin instead. For more information see International Consensus Guidelines on Optimal Use of Polymyxins</p> <p><u>Use Adjusted Body Weight for Dosing Obese Patients</u></p>	<p><u>Adult & Pediatric</u> Loading dose for critically ill: 25,000 units/kg (range 20,000-30,000 units/kg)</p> <p>Maintenance dose starting 12-24h after load: 12,500 units/kg q12h for moderately severe infections 15,000 units/kg q12h for severe, life-threatening infections</p>	<p>No adjustments necessary.</p> <p>Note: Package insert was approved with renal dose adjustments prior to extensive pharmacokinetic evaluation. Subsequent literature found the drug is <u>not renally eliminated</u></p>
<p>Posaconazole^R</p> <p>Restricted to ID service and hematology/oncology service</p>	<p><u>Adult & Pediatric</u> (≥13 years for suspension and tablets, ≥18 years for injection)</p> <p><i>Suspension:</i> 200 mg q8h for prophylaxis 200 mg q6h for treatment</p> <p><i>Tablets & Injection:</i> 300 mg PO/IV q12h x 1 day then 300 mg PO/IV q24h</p>	<p>No adjustment necessary</p> <p>Therapeutic drug monitoring is suggested; target trough at steady-state (7-14 days) is 0.7 mg/L for prophylaxis and >1.25 mg/L for treatment</p>
<p>Primaquine</p>	<p><u>Adult</u> 15-30 mg (primaquine base) PO q24h</p> <p><u>Pediatric</u> 0.3 mg/kg (primaquine base) PO q24h</p>	<p>No clear recommendations, but adjustment probably not necessary (<1% renal elimination)</p>



<p>Pyrazinamide</p>	<p><u>Adult</u> 20-25 mg/kg PO q24h (Round to 500mg tablet) 40 to 55 kg: 1,000 mg once daily 56 to 75 kg: 1,500 mg once daily 76 to 90 kg: 2,000 mg once daily</p> <p>Based on estimated lean body weight. Optimal doses for obese patients are not established.</p> <p>-----</p> <p><u>Pediatric <15 years and <40kg</u> 30-40 mg/kg PO q24h</p>	<p>CrCl <30 or HD: 25-35 mg/kg three times weekly</p> <p>PD: No data</p> <p>-----</p> <p>CrCl <30, HD: 40-50 mg/kg 3x/week PD: No data</p>
<p>Pyrimethamine</p>	<p><u>Adult</u> 50-100 mg PO q24h</p> <p><u>Pediatric</u> 1 mg/kg PO q12h</p>	<p>No adjustment necessary</p>
<p>Remdesivir</p>	<p><u>Adult</u> 200 mg IV once, then 100 mg q24h</p> <p>-----</p> <p><u>Children and Adolescents 3-<40 kg:</u> 5mg/kg IV once on day 1, then 2.5 mg/kg q24h >40 kg: Use adult dosing</p>	<p>No adjustment necessary</p>
<p>Ribavirin^R</p> <p><i>Restricted for RSV treatment to ID and heme/onc services</i> <i>See MP13</i></p>	<p><u>Adult</u> 15-20 mg/kg PO divided q8h, rounded to nearest 200mg tablet</p> <p>-----</p> <p><u>Pediatric</u> 15-20 mg/kg PO divided q8h, rounded to nearest 200mg tablet</p>	<p>CrCl 30-50: 200 mg q8h CrCl 10-30: 200 mg q24h CrCl <10: Contraindicated</p> <p>-----</p> <p>Pediatric dose adjustments not well established CrCl 30-50: Consider 2mg/kg q8h CrCl 10-30: Consider 2mg/kg q24h CrCl <10: Contraindicated</p>
<p>Rifabutin</p>	<p><u>Adult</u> 300 mg PO q24h</p> <p><u>Pediatric</u> 5 mg/kg PO q24h</p>	<p>No adjustment necessary</p>
<p>Rifampin</p>	<p><u>Adult</u> <i>Mycobacterial disease:</i> 10 mg/kg (600 mg) PO daily</p> <p><i>Prosthetic joint infection:</i> 300 mg PO q12h</p>	<p>No adjustment necessary</p>



	<p><i>Prosthetic valve infective endocarditis:</i> 300 mg PO/IV q8h</p> <p>-----</p> <p><u>Pediatric</u> 10-20 mg/kg PO/IV q24h</p>	
Sulfadiazine	<p><u>Adult</u> 2-4 g PO in 3-6 divided doses</p> <p>-----</p> <p><u>Pediatric</u> 37.5 mg/kg PO q6h</p>	No data
Tedizolid ^{NF}	<p><u>Adult</u> 200 mg IV/PO once daily</p> <p>-----</p> <p><u>Pediatric</u> Safety and efficacy not established</p>	No adjustment necessary
Telavancin ^{NF}	<p><u>Adult</u> 10 mg/kg IV q24h</p> <p>-----</p> <p><u>Pediatric</u> Safety and efficacy not established</p>	<p>CrCl >50: No adjustment necessary</p> <p>CrCl 30-50: 7.5 mg/kg IV q24h</p> <p>CrCl 10-29: 10 mg/kg IV q48h</p> <p>CrCl <10: No data</p> <p>HD: No data</p>
Tigecycline ^R <i>Restricted to ID service</i>	<p><u>Adult</u> 100 mg IV load, then 50 mg IV q12h</p> <p>-----</p> <p><u>Pediatric</u> Safety and efficacy not established</p>	<p><i>Renal dysfunction:</i> No adjustment necessary</p> <p><i>Hepatic dysfunction (Child Pugh C):</i> 100 mg IV load then 25 mg IV q12h</p>
Tobramycin <i>Refer to PK training packet on ASP website[§]</i> <u>Use Adjusted Body Weight for Dosing</u>	<p><u>Adult</u> <i>Extended interval dosing:</i> 7 mg/kg once daily</p> <p>5 mg/kg/day may be used for UTIs</p> <p>(Refer to PK training packet on ASP website[§] for exclusions to extended-interval dosing)</p> <p>-----</p> <p><i>Traditional dosing:</i> 1.5-2.5 mg/kg IV q8h</p>	<p><i>Extended interval dosing:</i> Frequency adjusted by serum level 6-14 hours after start of infusion based on Hartford nomogram or AUC 80-110 using InsightRx</p> <p>-----</p> <p><i>Traditional dosing (empiric):</i> CrCl 51-90: 60-90% q8-12h[†] CrCl 10-50: 30-70% q12h[†]</p>



	<p>Monitoring of serum levels is recommended</p> <p>-----</p> <p><u>Pediatric</u> <i>Traditional dosing:</i> 1.5-2.5 mg/kg IV q8h</p>	<p>CrCl <10: 20-30% q24-48h[†] HD/PD: Dose according to levels</p>
<p>Trimethoprim/sulfamethoxazole (TMP/SMX)</p> <p>Use Adjusted Body Weight for Dosing</p> <p>1 DS tablet = 160 mg TMP/800 mg SMX</p> <p>Oral suspension (per 5 mL) = 40 mg TMP/ 200 mg SMX</p>	<p><u>Adult</u> PO <i>Pneumocystis prophylaxis: 1 DS daily or 3-4 doses per week</i></p> <p><i>Urinary tract, Skin/soft tissue or other less severe infections:</i> 1 Bactrim DS tablet PO q12h (equivalent to 4-5mg/kg/day for most patients) PO/IV <i>Systemic Gram Negative, Nocardia or other Moderate severity (non-CNS) infections such as Pneumonia other than Pneumocystis</i> 8-10 mg/kg/day (TMP) divided q8-12h</p> <p><i>Treatment of Pneumocystis Pneumonia (PCP or PJP), Central Nervous System or other life-threatening infection:</i> 10-15 mg/kg/day (TMP) divided q6-8h</p> <p>-----</p> <p><u>Pediatric</u> <i>Pneumocystis prophylaxis:</i> 5 mg/kg/day (TMP) PO divided q12h</p> <p>PO/IV <i>Urinary tract, Skin/soft tissue, and most other infections:</i> 8-10 mg/kg/day (TMP) divided q12h</p> <p><i>Pneumocystis pneumonia treatment:</i> 12-15 mg/kg/day (TMP) divided q6-8h</p>	<p><i>Adults & Pediatrics, PO/IV</i></p> <p>CrCl 15-30: Give 50% of usual daily dose. Can be divided q12-24h (rather than q6-12h) CrCl <15: Adjust to 25-50% of the total daily dose for indication. Use caution and monitor</p> <p>HD: Dose as CrCl <15; give dose daily, after HD on dialysis days</p>
<p>Valacyclovir</p>	<p><u>Adult</u> <i>Herpes Simplex single-day treatment: 2 g PO q12h</i></p> <p><i>Herpes Zoster or Varicella infection, Bell's palsy, Herpes Simplex</i></p>	<p>CrCl 30-49: 1 g PO q12h CrCl 10-29: 500 mg PO q12h CrCl <10: 500 mg PO q24h</p> <p>CrCl 30-49: 1 g PO q12h</p>



	<p><i>Meningitis or step-down from IV treatment for encephalitis</i> 1 g PO q8h</p> <p><i>Herpes simplex treatment</i> 1 g PO q12h</p> <p><i>Herpes simplex or zoster prophylaxis or maintenance</i> 500 mg PO q12h</p> <p>----- <u>Pediatric</u> Safety and efficacy not established</p>	<p>CrCl 10-29: 1 g PO q24h CrCl <10: 500 mg PO q24h</p> <p>CrCl 30-49: No adjustment necessary CrCl 10-29: 1 g PO q24h CrCl <10: 500 mg PO q24h</p> <p>CrCl 30-49: No adjustment necessary CrCl <30: 500 mg PO q24h</p> <p>HD: Dose as CrCl <10; give daily, dose after dialysis on dialysis days PD: 500 mg PO q24h</p>
<p>Valganciclovir</p> <p>Use Adjusted Body Weight for Dosing in Obese Patients</p>	<p><u>Adult</u> <i>Treatment, induction:</i> 900 mg PO q12h</p> <p><i>Treatment, maintenance:</i> 900 mg PO q24h</p> <p><i>Prophylaxis (dosing at NM):</i> 450 mg PO q24h</p>	<p><i>Treatment, induction:</i> CrCl 40-59: 450 mg PO q12h CrCl 25-39: 450 mg PO q24h CrCl 10-24: 450 mg PO q48h CrCl <10, HD/PD: 200 mg PO TIW after dialysis on HD days</p> <p><i>Treatment, maintenance:</i> CrCl 40-59: 450 mg PO q24h CrCl 25-39: 450 mg PO q48h CrCl 10-24: 450 mg PO twice weekly CrCl <10, HD/PD: 100 mg PO TIW after dialysis on HD days</p> <p><i>Prophylaxis:</i> CrCl 25-39: 450 mg PO q48h CrCl 10-24: 450 mg PO twice weekly CrCl <10, HD/PD: 50-100 mg PO TIW after dialysis on HD days</p> <p>-----</p>



	<p>-----</p> <p><u>Pediatric (usual dosing at NM)</u> <i>Treatment:</i> 14 mg/kg PO q12h</p> <p><i>Maintenance or prophylaxis:</i> 14 mg/kg PO daily</p>	<p><i>Treatment:</i> CrCl 40-59: 7 mg/kg PO q12h CrCl 25-39: 7 mg/kg PO q24h CrCl 10-24: 7 mg/kg PO q48h CrCl <10, HD/PD: Use not recommended</p> <p><i>Maintenance or prophylaxis:</i> CrCl 40-59: 7 mg/kg PO daily CrCl 25-39: 7 mg/kg PO q48h CrCl 10-24: 7 mg/kg PO twice weekly CrCl <10, HD/PD: Use not recommended</p>
<p>Vancomycin IV</p> <p><i>Refer to PK training packet on ASP website⁸</i></p>	<p><u>Adult</u> <i>Standard dose:</i> 15-20 mg/kg IV q12h</p> <p>Consider 25 mg/kg x 1 loading dose in critically ill patients</p> <p>-----</p> <p><u>Pediatric</u> 15mg/kg IV q8h</p>	<p>Dosing, therapeutic goals, and monitoring should be individualized for each patient to achieve AUC 400-600 (troughs typically 12-16 mcg/mL).</p> <p>CrCl < 15, PD: Measure serum levels to determine when to dose</p> <p>HD: Follow nephrology protocol on ASP Website</p> <p>-----</p> <p>Adjust based on AUC to target 400-600 using InsightRx</p> <p>CrCl <15, PD: Measure serum levels to determine when to dose. HD: Follow nephrology protocol on ASP Website</p>
<p>Vancomycin PO</p>	<p>Mild-Severe <i>C.difficile</i> infection: 125 mg PO q6h Severe-complicated <i>C.difficile</i> infection (with ileus): 500 mg PO q6h</p>	<p>No adjustment necessary</p>
<p>Voriconazole</p> <p>Use Adjusted Body Weight for Dosing in Obese Patients</p>	<p><u>Adult</u> <i>Active disease:</i> Loading dose of 6 mg/kg (AdjBW) PO/IV q12h x 2 doses, then 4 mg/kg PO/IV q12h</p> <p><i>Prophylaxis:</i> 200 mg PO q12h (100 mg q12h if <40 kg)</p> <p>-----</p> <p><u>Pediatrics</u> <i>Children Age 2-<12 years</i></p>	<p><i>Hepatic dysfunction (Child Pugh A-B):</i> 6 mg/kg q12h x 2 doses then 50% of normal daily dose</p> <p><i>Renal dysfunction:</i> No adjustment necessary</p> <p>Therapeutic drug monitoring is recommended; target trough at steady-state (7 days) is 2-5.5</p>



	<p>Loading Dose of 9mg/kg IV q12h x 2 doses then 8 mg/kg IV or 9 mg/kg oral suspension q12h</p> <p><i>Adolescents</i> <i>Age 12-14 years:</i> <50 kg: 9 mg/kg q12h x 2 doses, then 4-8 mg/kg q12h ≥50 kg: Refer to adult dosing</p> <p><i>Age ≥15 years:</i> Refer to adult dosing</p>	<p>mg/L, although 1–6 mg/L is acceptable.</p> <hr/> <p>No data</p>
Zanamivir ^{NF}	<p><u>Adult and Pediatric ≥7 years</u> <i>Treatment:</i> Two inhalations (10 mg total) twice daily for 5 days</p> <p><u>Adult and Pediatric ≥5 years</u> <i>Prophylaxis:</i> Two inhalations (10 mg total) once daily for daily for 10 days</p>	No adjustment necessary

^{NF} Non-formulary agent

^R Protected agent; refer to ASP website for formulary guidelines

* Use Cockcroft-Gault equation for patients ≥18 years old and Schwartz equation for patients <18 years old

§ ASP website: www.nebraskamed.com/asp



Antiretroviral Dosing Recommendations

The dosage recommendations for antiretrovirals (ARVs) listed in the table below are primarily directed at renal adjustments. The table below does not contain comprehensive information regarding dose adjustments for drug-drug or food-drug interactions. Please refer to detailed product information in other drug information sources as necessary.

Antiretroviral	Normal Dose	Renal Dosage Adjustment Based on CrCl Estimate (in mL/min)*
Combination Tablets		
Abacavir/dolutegravir/lamivudine (Triumeq)	<u>Adult</u> 1 tablet PO q24h <u>Pediatric</u> Safety and efficacy not established	No adjustment necessary
Abacavir/lamivudine (Epzicom)	<u>Adult & Pediatric >25 kg</u> 1 tablet PO q24h	No adjustment necessary
Abacavir/lamivudine/zidovudine (Trizivir) ^{NF}	<u>Adult</u> 1 tablet PO q12h <u>Pediatric (>40 kg)</u> 1 tablet PO q12h	No adjustment necessary
Atazanavir/cobicistat (Evotaz) ^{NF}	<u>Adult</u> 1 tablet PO q24h <u>Pediatric</u> Safety and efficacy not established	ESRD on HD: Use not recommended
Bictegravir, emtricitabine, tenofovir alafenamide (Biktarvy)	<u>Adult</u> 1 tablet PO q24h	CrCl ≥30mL/minute: no dosage adjustment necessary CrCl <30mL/minute: use is not recommended ESRD on HD: no adjustment necessary ; give daily after HD on dialysis days PD: Use not recommended
Darunavir/cobicistat (Prezcobix) ^{NF}	<u>Adult</u> 1 tablet PO q24h <u>Pediatric</u> Safety and efficacy not established	No adjustment necessary
Darunavir, cobicistat, emtricitabine, tenofovir alafenamide (Symtuza)	<u>Adult</u> 1 tablet PO q24h	CrCl ≥30mL/minute: no dosage adjustment necessary



		CrCl <30mL/minute: use is not recommended
Dolutegravir, Lamivudine (Dovato) ^{NF}	<u>Adult</u> 1 tablet PO q24h	No adjustment necessary
Dolutegravir, rilpivirine (Juluca)	<u>Adult</u> 1 tablet PO q24h	CrCl ≥30mL/minute: no dosage adjustment necessary CrCl <30mL/minute: no adjustment necessary, use with caution due to limited data ESRD on HD: has not been studied
Doravirine, lamivudine, tenofovir disoproxil fumarate (Delstrigo)	<u>Adult</u> 1 tablet PO q24h	CrCl ≥50mL/minute: no dosage adjustment necessary CrCl <50mL/minute: use is not recommended
Efavirenz/emtricitabine/tenofovir disoproxil fumarate (Atripla)	<u>Adult & Pediatric (>12 years & 40 kg)</u> 1 tablet PO q24h	CrCl ≥50: No adjustment necessary CrCl <50: Not recommended
Efavirenz, lamivudine, tenofovir disoproxil fumarate (Symfi, Symfi Lo)	<u>Adult</u> 1 tablet PO q24h <u>Pediatric</u> ≥ 35 kg: 1 tablet PO q24h (Symfi Lo) ≥ 40 kg: 1 tablet PO q24h (Symfi)	CrCl ≥50mL/minute: no dosage adjustment necessary CrCl <50mL/minute: use is not recommended ESRD on HD: use is not recommended
Elvitegravir/cobicistat/emtricitabine/tenofovir alafenamide (Genvoya) ^{NF}	<u>Adult & Pediatric (>12 years)</u> 1 tablet PO q24h	CrCl ≥30: No adjustment necessary CrCl <30: Not recommended ESRD on HD: no adjustment necessary; give daily after HD on dialysis days
Elvitegravir/cobicistat/emtricitabine/tenofovir disoproxil fumarate (Stribild)	<u>Adult</u> 1 tablet PO q24h <u>Pediatric</u> Safety and efficacy not established	Should not be initiated in patients with CrCl <70; discontinue if CrCl declines to <50 while on therapy
Emtricitabine/rilpivirine/tenofovir alafenamide (Odefsey) ^{NF}	<u>Adult & Pediatric (≥12 years & 35 kg)</u> 1 tablet PO daily	CrCl ≥30: No adjustment necessary CrCl <30: Use not recommended



Emtricitabine/rilpivirine/tenofovir disoproxil fumarate (Complera) ^{NF}	<u>Adult & Pediatric (≥12 years)</u> 1 tablet PO q24h	CrCl ≥50: No adjustment necessary CrCl <50: Not recommended
Emtricitabine, tenofovir alafenamide (Descovy)	<u>Adult</u> 1 tablet PO q24h <u>Pediatric</u> ≥25 kg: 1 tablet PO q24h	CrCl ≥30mL/minute: no dosage adjustment necessary CrCl <30mL/minute: use is not recommended
Emtricitabine/tenofovir disoproxil fumarate (Truvada)	<u>Adult & Pediatric (≥35 kg)</u> 1 tablet PO q24h ----- <u>Pediatric (≥17 kg & <35 kg)</u> Use low strength tablets based on weight 17-21 kg: 1 tablet (100 mg/150 mg) PO q24h 22-27 kg: 1 tablet (133 mg/200 mg) PO q24h 28-34 kg: 1 tablet (167 mg/250 mg) PO q24h	CrCl ≥50: No adjustment necessary CrCl 30-49: 1 tablet q48h CrCl <30: Not recommended ----- No data available
Lamivudine, tenofovir disoproxil fumarate (Cimduo)	<u>Adult</u> 1 tablet PO q24h <u>Pediatric</u> <35 kg: not recommended ≥ 35 kg: 1 tablet PO q24h	CrCl ≥50mL/minute: no dosage adjustment necessary CrCl <50mL/minute: use is not recommended ESRD on HD: use is not recommended
Lamivudine/zidovudine (Combivir)	<u>Adult & Pediatric (≥30 kg)</u> 1 tablet PO q12h	CrCl ≥50: No adjustment necessary CrCl <50: Not recommended
Single Agent Tablets		
Abacavir (ABC)	<u>Adult</u> 600 mg PO q24h or 300 mg PO q12h <u>Pediatric</u> 8 mg/kg PO q12h	No adjustment necessary
Atazanavir (ATV)	<u>Adult</u> <i>Treatment-naïve:</i> 300 mg (+ RTV 100 mg) PO q24h Unable to tolerate RTV: 400 mg PO q24h With EFV: 400 mg (+ RTV 100 mg) PO q24h <i>Treatment-experienced:</i> 300 mg (+ RTV 100 mg) PO q24h With both H2RA and TDF: 400 mg PO q24h + RTV 100 mg PO q24h	No adjustment necessary



	<p><u>Pediatric (> 6 years)</u> <i>Treatment-naïve and treatment-experienced:</i> 15-19 kg: 150 mg (+ RTV 100 mg) PO q24h 20-39 kg: 200 mg (+ RTV 100 mg) PO q24h >40 kg: 300 mg (+ RTV 100 mg) PO q24h</p> <p><i>Treatment-naïve, unable to tolerate RTV (>13 years, >40 kg):</i> 400 mg PO q24h</p>	
Darunavir (DRV)	<p><u>Adult</u> <i>ARV-naïve or ARV-experienced with no DRV resistance mutations:</i> 800 mg (+ RTV 100 mg) PO q24h</p> <p><i>ARV-experienced with >1 resistance mutation:</i> 600 mg (+ RTV 100 mg) PO q12h</p> <p><u>Pediatric</u> <i>ARV-naïve or ARV-experienced with no DRV resistance mutations:</i> 10-14 kg: 35 mg/kg (+ RTV 7 mg/kg) PO q24h 15-29 kg: 600 mg (+ RTV 100 mg) PO q24h 30-39 kg: 675 mg (+ RTV 100 mg) PO q24h >40 kg: 800 mg (+ RTV 100 mg) PO q24h</p> <p><i>ARV-experienced with >1 resistance mutation:</i> 10-14 kg: 20 mg/kg (+ RTV 3 mg/kg) PO q12h 15-29 kg: 375 mg (+ RTV 48 mg) PO q12h 30-39 kg: 450 mg (+ RTV 60 mg) PO q12h >40 kg: 600 mg (+ RTV 100 mg) PO q12h</p>	No adjustment necessary
Dolutegravir (DTG)	<p><u>Adult</u> <i>ARV-naïve or ARV-experienced, INSTI-naïve:</i> 50 mg PO q24h</p> <p><i>ARV-naïve or ARV-experienced, INSTI-naïve when coadministered with EFV, FPV/r, TPV/r, or rifampin:</i> 50 mg PO q12h</p> <p><i>INSTI-experienced with certain INSTI mutations or resistance:</i> 50 mg PO q12h</p> <p><u>Pediatric (>12 years & >40 kg)</u> <i>ARV-naïve or ARV-experienced, INSTI-naïve:</i> 50 mg PO q24h</p>	No adjustment necessary
Doravirine (DOR)	<p><u>Adult</u> <u>100mg PO once daily in combination with other antiretroviral agents</u></p>	No dosage adjustments necessary ESRD on HD: not studied



Efavirenz (EFV)	<u>Adult</u> 600 mg PO q24h <u>Pediatric</u> 200-600 mg PO q24h	No adjustment necessary
Elvitegravir (EVG)	<u>Adult</u> <i>With ATV/r or LPV/r:</i> 85 mg PO q24h <i>With DRV/r, FPV/r, or TPV/r:</i> 150 mg PO q24h <u>Pediatric</u> Safety and efficacy not established	No adjustment necessary
Emtricitabine (FTC)	<u>Adult</u> <i>Capsule:</i> 200 mg PO q24h <i>Solution:</i> 240 mg (24 mL) PO q24h ----- <u>Pediatric</u> <i>0-3 months:</i> Solution: 3 mg/kg oral PO q24h <i>3 months-17 years:</i> Solution: 6 mg/kg PO q24h (max 240 mg) Capsule (>33 kg): 200 mg PO q24h	CrCl >50: No adjustment necessary CrCl 30-49: 200 mg q48h CrCl 15-20: 200 mg q72h CrCl < 15, HD: 200 mg q96h; give dose after HD on dialysis days CrCl >50: No adjustment necessary CrCl 30-49: 120 mg q24h CrCl 15-20: 80 mg q24h CrCl < 15, HD: 60 mg q24h; give dose after HD on dialysis days ----- No clear recommendations
Enfuvirtide (T20) ^{NF}	<u>Adult</u> 90 mg subcutaneously q12h <u>Pediatric (6-16 years)</u> 2 mg/kg subcutaneously q12h	No adjustment necessary
Etravirine (ETV) ^{NF}	<u>Adults</u> 200 mg PO q12h <u>Pediatric (6-17 years)</u> 16-19 kg: 100 mg PO q12h 20-24 kg: 125 mg PO q12h 25-29 kg: 150 mg PO q12h >30 kg: 200 mg PO q12h	No adjustment necessary
Fosamprenavir (FPV)	<u>Adult</u> <i>Unboosted regimen:</i> 1400 mg PO q12h	No adjustment necessary



	<p><i>RTV-boosted regimen:</i> 1400 mg PO q24h (+ RTV 200 mg PO q24h) 1400 mg PO q24h (+ RTV 100 mg PO q24h) 700 mg PO q12h (+ RTV 100 mg PO q12h)</p> <p><u>Pediatric</u> <11 kg: 45 mg/kg (+ RTV 7 mg/kg) PO q12h 11-14 kg: 30 mg/kg (+ RTV 3 mg/kg) PO q12h 15-19 kg: 23 mg/kg (+ RTV 3 mg/kg) PO q12h >20 kg: 18 mg/kg (+ RTV 18 mg/kg) PO q12h</p>	
Lamivudine (3TC)	<p><u>Adult</u> 300 mg PO q24h or 150 mg PO q12h</p> <p>-----</p> <p><u>Pediatric</u> 2-4 mg/kg PO q12h</p>	<p>CrCl >5: No adjustment necessary CrCl <5: 150 mg q24h [Note: because lamivudine is well-tolerated, some practitioners will prescribe full dose (especially in combination products)]</p> <p>HD/PD: Dose as CrCl <5. -----</p> <p>No clear recommendations</p>
Lopinavir/ritonavir (LPV/r)	<p><u>Adult</u> 400/100 mg PO q12h or 800 mg/200 mg PO q24h</p> <p><u>Pediatric</u> (based on lopinavir component) 10-13 mg/kg PO q12h</p>	<p>No clear recommendations, but adjustment probably not necessary</p> <p>Avoid q24h dosing in HD patients</p>
Maraviroc (MVC) ^{NF}	<p><u>Adult</u> <i>With potent CYP3A4 inhibitor (with or without a potent CYP3A inducer):</i> 150 mg PO q12h</p> <p><i>With other concomitant medications (TPV/r, NVP, RAL, all NRTIs and enfuvirtide):</i> 300 mg PO q12h</p> <p><i>With potent CYP3A inducers (without a potent CYP3A inhibitor):</i> 600 mg PO q12h</p> <p><u>Pediatric</u> Safety and efficacy not established</p>	<p>CrCl >30: No adjustment CrCl <30, ESRD on HD: Use not recommended</p> <p>No adjustment necessary</p> <p>CrCl >30: No adjustment CrCl <30, ESRD on HD: Use not recommended</p>
Nelfinavir (NFV) ^{NF}	<p><u>Adult</u> 1250 mg PO q12h or 750 mg PO q8h</p> <p><u>Pediatric</u> 45-55 mg/kg PO q12h</p>	<p>No adjustment necessary</p>
Nevirapine (NVP)	<p><u>Adult</u></p>	<p>CrCl >20: No adjustment necessary</p>



	<p>200 mg PO q24h x 14 days then increase to 200 mg PO q12h (IR tab) or 400 mg PO q24h (ER tab)</p> <p><u>Pediatric (>15 days)</u> 150 mg/m² once daily x 14 days then increase to 150 mg/m² twice daily</p>	CrCl <20: No recommendation
Raltegravir (RAL)	<p><u>Adult & Pediatric (≥16 years)</u> 400mg PO q12h</p> <p><i>With rifampin:</i> 800 mg PO q12h</p> <p><u>Pediatric</u> Safety and efficacy not established</p>	No adjustment necessary
Rilpivirine (RVP) ^{NF}	<p><u>Adult & Pediatric (≥12 years & ≥35 kg)</u> 25 mg PO q24h</p> <p><u>Pediatric</u> Safety and efficacy not established</p>	No adjustment necessary
Ritonavir (RTV)	<p><u>Adult</u> <i>Pharmacokinetic booster for PIs:</i> 100-200 mg PO q12-24h (100-400 mg/day)</p> <p><u>Pediatric</u> 400 mg/m² PO q12h</p>	No adjustment necessary
Saquinavir (SQV) ^{NF}	<p><u>Adult</u> 1000 mg PO q12h</p> <p><u>Pediatric</u> Safety and efficacy not established</p>	No adjustment necessary
Stavudine (D4T)	<p><u>Adult</u> <60 kg: 30 mg PO q12h ≥60 kg: 40 mg PO q12h</p> <p>-----</p> <p><u>Pediatric (<30 kg)</u> 1 mg/kg PO q12h</p>	<p>CrCl 26-50: 50% q12h[†] CrCl 10-25 and HD: 50% q24h[†]; give dose after HD on dialysis days</p> <p>-----</p> <p>No recommendations</p>
Tenofovir alafenamide (TAF)	25 mg PO q24h	<p>CrCl >15: No adjustment necessary CrCl < 15: Not recommended HD: No adjustment necessary; On HD days, give dose after dialysis</p>
Tenofovir disoproxil fumarate (TDF)	<p><u>Adult</u> 300 mg PO q24h</p> <p><u>Pediatric</u> 8 mg/kg PO q24h</p>	<p><i>Same for Adult & Pediatric</i> CrCl 30-49: 300 mg q48h CrCl 10-29: 300 mg twice weekly CrCl <10: No data</p>



		HD: 300 mg once weekly, give dose after HD on dialysis days
Tipranavir (TPV) ^{NF}	<u>Adult</u> 500 mg PO q12h <u>Pediatric</u> Safety and efficacy not established	No adjustment necessary
Zidovudine (AZT)	<u>Adult</u> 300 mg PO q12h or 200 mg PO q8h <i>IV for intrapartum administration:</i> 2 mg/kg IV over 1 hour, followed by continuous infusion of 1 mg/kg/hour Refer to DHHS guidelines for dosage and duration for continuation post-partum ----- <u>Pediatric</u> PO: 160 mg/m ² PO q8h IV: 120 mg/m ² IV q6h	CrCl <15, HD/PD: 300 mg PO q24h or 100 mg PO q8h; give dose after dialysis on dialysis days CrCl <15, HD/PD: 1 mg/kg IV q6-8h; give dose after dialysis on dialysis days ----- No data

^{NF} Non-formulary agent

^R Restricted agent; refer to ASP website for restriction information

* Use Cockcroft-Gault equation for patients ≥18 years old and Schwartz equation for patients <18 years old

‡ ‡ When the recommended renal dosage adjustment is listed as a percentage change, this indicates that X% of the standard dose should be given, NOT that the ordered dose should be decreased by X%. For example, if an adult with a CrCl between 10-50 mL/min would receive 50% of the standard dose then compare the ordered dose to what is recommended for that infection and make sure it is 50% of that.

§ ASP website: www.nebraskamed.com/asp

Selected References (General Renal Dose Adjustments):

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