| ANITMICROBIAL | CLCr 50—20 ml/min | CLCr 19—10 ml/min | CLCr <10 ml/min |
|---|---|---|---|
| Acyclovir<br>5—15 mg/kg Q8H^^^ | 5—15 mg/kg Q12H | 5—15 mg/kg Q24H | 2.5mg/kg Q24H<br>5 mg/kg Q24H (VZV) |
| Acyclovir-VZV<br>800 mg po q4 h (5x/day) | No change | 800 mg po Q8—12 H | 400—800 mg po Q12H |
| Ampicillin<br>2 gm Q6H / 2 gm Q4H~ | No Change | 1—2 gm Q6—**8**H | 1—2 gm Q**8—**12H |
| Amp/Sulbactam<br>3 gm Q6H | 3 gm Q8H | 1.5—3 gm Q12H | 1.5 gm Q12H, or<br>1.5—3 gm Q24H |
| Amox/clavulanate<br>875/125 mg Q12H | No Change | 875/125 mg Q24H | 500/125 mg Q24 |
| *Aztreonam*<br>1—2 gm Q6—8H | No Change | 1—2 gm Load then 0.5—1 gm Q8H | 1—2 gm Load then 125—500 mg Q8 H |
| Cefazolin<br>2 gm Q8H~ | 1 gm Q8 | 1—2 gm Q12H | 1—2 gm Q24H |
| Cefepime<br>1—2 gm Q12H / 2g Q8H* | 1 gm Q12H / 2 gm Q12H* | 1 gm Q24H (if MIC ≤ 2) / 1 gm Q12H* otherwise | 500 mg Q24H / 1 gm Q24H* |
| Cefixime<br>400 mg Q24H or 200 mg Q12H | No Change | 300 mg Q24H | 200 mg Q24H |
| Cefotetan<br>1—2 gm Q12H / ~ | No Change | 1—2 gm Q24H | 1—2 gm Load then 1 mg Q 48 (or 500 mg Q12) |
| Cefoxitin<br>1—2 gm Q6H / 2 gm Q4H~ | 1—2 gm Q8H | 1—2 gm Q12H | 0.5—1 gm Q12—24H |
| Ceftaroline fosamil<br>600mg Q12H | 400mg Q12H | 300mg Q12H | 200mg Q12H |
| Ceftazidime<br>1—2 gm Q8H | 1 gm Q12H | 1 gm Q24H | 0.5 gm Q24H |
| Ceftizoxime<br>1—2 gm Q8H | 1 gm Q12H | 0.5—1 gm Q12H | 0.5—1 gm Q24H |
| *Ceftriaxone*<br>1—2 gm Q12—24H | No Change | No Change | No Change, consider 2 gm Max/d if liver liver + renal |
| Cefuroxime<br>0.75—1.5 gm Q8H | No Change | 0.75 gm Q12H | 0.75 gm Q24H |
| Cephalexin<br>250—500 mg po Q6H | No Change | 250—500 mg po Q8—12 H | 250—500 mg po Q 12—24H |
| Cidofovir<br>5 mg/kg Q Week x2 (Induction) | Not Recommended | Not Recommended | Not Recommended |
| Ciprofloxacin<br>400 mg Q8—12H<br>500—750 mg po Q 12 H | No Change<br><br>500 mg po Q12H | 400 mg IV Q18H<br><br>500 mg po Q12H | 400 mg IV Q24H (Q18--20?)<br><br>500 mg po Q18H |
| Clarithromycin<br>250—500 mg po Q12H OR<br>1 gm po Q24H of XL | No Change | 250 mg po Q 12H | 250—500 mg q 24 |
| Colistin (colistin base activity in mg)~~~<br>load CBA (mg) = ($C_{ss,avg}$)*2*(weight in kg) | Daily dose CBA (mg) = ($C_{ss,avg}$)(1.5*CrCL+30)<br>Dose q12H. Start 24H after load | Daily dose CBA (mg) = ($C_{ss,avg}$)(1.5*CrCL+30)<br>Dose q12H. Start 24H after load | Daily dose CBA (mg) = ($C_{ss,avg}$)(1.5*CrCL+30)<br>Dose q12H. Start 24H after load |
| Colistin (alternate)~~~~<br>load 9 MU, then 24H after load start 4.5 MU q12H | 4.5 MU/day divided q12H | 4.5 MU q48H | 4.5 MU q48H |
| Ertapenem<br>1gm Q24H | 500 mg Q24H Clcr < 30 | 500 mg Q24H | 500 mg Q24H |
| Erythromycin<br>0.5—1 gm Q6H | No Change | No Change | 0.5 gm Q6H |
| Ethambutol (E)<br>15—25 mg/kg Q day | No Change | 15—25 mg/kg Q 36 | 15—25 mg/kg Q 48 |
| Ethionamide<br>0.5—1 gm Q24H | No Change | No Change | No Change |
| Fluconazole<br>12 mg/kg IV load on day one, 400 mg Q 24H | 200—400 mg Q 24 | 200 mg q 24 | 100—200 mg Q24H |
| Foscarnet~~<br>60 mg/kg Q8H / 90 mg/kg Q12H (I)<br>90 mg/kg Q24H (M) | Complicated | | |
| Flucytosine<br>25—37.5 mg/kg Q 6H | 25 mg/kg Q12H | 25 mg/kg mg/kg Q24H | 25 mg/kg Q24—48H (adjust using Cp) |
| Ganciclovir (IV)<br>5 mg/kg Q12H induction (I)<br>5 mg/kg Q24H maintanence (M) | 50—70=> 2.5 mg/kg Q12(I) 2.5 mg/kg Q24(M)<br>20—50=>2.5 mg/kg Q24H (I) 1.25 mg/kg Q24H (M) | 1.25 mg/kg Q24H (I)<br>0.625 mg/kg Q24H (M) | 1.25 mg/kg TIW (I)<br>0.625 mg/kg TIW (M) |
| Ganciclovir (PO) maintenance<br>1000 mg Q8H | 50—70=> 1000 mg Q12H<br>25—50=> 1000 mg Q24H | 10—25=> 500 mg Q24H | 500 mg TIW |
| Gatifloxacin<br>400 mg Q24H | < 40—400 mg load then 200 mg Q24H | 400 mg load then 200 mg Q24H | 400 mg load then 200 mg Q24H |
| Imipenem<br>0.5 gm Q6H | 500 mg Q8 OR 250 mg Q6H<br>20—40=> 250 mg Q6—8H | 0.25—0.5 gm Q8—12H | 0.25 gm Q12H |
| Isoniazid (H)<br>300 mg po q 24 | No Change | No Change | 150 mg in slow acetylators |
| *Itraconazole*<br>200 mg Q12H PO OR<br>IV Q12H x 4 doses then Q24H | No Change | No Change (IV not recommended Cr Cl < 30 (cyclodextrin)) | IV not recommended Cr Cl < 30 (cyclodextrin) |
| Levofloxacin<br>500—750 mg Q24H | 500—750 mg x1, then 250—375 mg Q24H or 750 mg Q48H | 500—750 mg x1, then 250 mg Q24H | 500—750 mg x1, then 250—500 mg Q48H |
| Linezolid<br>600 mg Q12H + pyrimidine | No Change | No Change | No Change |
| Meropenem<br>1—2 gm Q8—12H / 2 gm Q8H (meningitis)~ | 1 gm Q8—12H | 1 gm Q12H | 0.5 Q24H |
| Penicillin G<br>1—4 MU Q4H | 40—60 =1—2 MU Q4<br>20—40 =1—2 MU Q6 | 1 MU Q6 | 1 MU Q6—8H |
| Pentamidine<br>4 mg/kg/d Q24H | 4 mg/kg Q24 | 4 mg/kg Q36H | 4 mg/kg Q48H |
| Piperacillin<br>3—4 gm Q 4 H | 4 gm Q6H | 3—4 gm Q8H | 3 gm Q8H or 3—4 gm Q12 |
| Pip/Tazo<br>3.375—4.5 gm Q6H / Pseudomonas—3.375 gm Q4H | 2.25—3.375 gm Q6H or 4.5 gm Q8 H | 3.375 gm Q8H or 4.5 gm Q12 | 2.25 gm Q8H |
| Quinine<br>7.5—10 mg/kg Q8H<br>(650 mg po Q8H) | No Change | 7.5—10 mg/kg Q12H<br>Metabolic Cl; inc binding to AAP; 3OH accumulates—dec dose by 1/3 after 3 day | 7.5—10 mg/kg Q24H<br>Metabolic Cl; inc binding to AAP; 3 OH accumulates —dec dose by ½ after 3 days |
| Quinupristin/Dalfopristin<br>7.5 mg/kg Q8—12H | No Change | No Change | No Change |
| *Ticarcillin/Clavulanate*<br>3.1 gm Q4—6H | 2 gm Q4H OR<br>3.1 gm Q6H | 2 gm Q8H OR<br>3.1 gm Q12H | 2 gm Q12H |
| *Tigecycline*<br>100 mg x1, then 50 mg Q12H | No Change | No Change | No Change |
| Trimethoprim/Sulfa **<br>10 mg TMP/kg/d divided Q8H | < 30 => 7.5 mg TMP/kg/d divided Q12H<br>< 30 => PCP 12 mg TMP/kg/d divided Q12H | 5 mg TMP/kg/d Q24H<br>PCP 7.5 mg/kg TMP Q24H | 3 mg TMP/kg/d Q24H<br>PCP 5—7.5 mg/kg TMP Q 24 |
| *Trimetrexate*<br>1.2 mg/kg Q24H/ 45 mg/m2 Q24H +Leucovorin | 100% | 50-100% | No Data; ? avoid |
| Valacyclovir | No Change | 0.5—1 gm Q12—24H | 500 mg Q24H |

| ANITMICROBIAL | CLCr 50—20 ml/min | CLCr 19—10 ml/min | CLCr <10 ml/min |
|---|---|---|---|
| variable | | | |
| Valganciclovir – Induction<br>900 mg BID x 3 wks | Normal to ¾ Dose | ½ Dose | 450 mg Q48H x3 wks, then 450 mg BIW |
| Valganciclovir – Maintenance<br>900 mg Q24H | 40—59=> 450 mg Q24H<br>25—39=> 450 mg Q48H | 10—24=> 450 BIW | Use ganciclovir PO dosing for CLCr < 10 |
| Vancomycin<br>1—1.5 gm Q12H (based on TBW, 15—25 mg/kg) | 40—60=> 15 mg/kg Q24H<br>20—40=> 15 mg/kg load then 7.5 mg/kg Q24H | 15 mg/kg Q48—72H | 15 mg/kg Q4—7d |
| *Voriconazole*<br>4—6 mg/kg Q12H (6 mg/kg load) | No Change (IV NOT recommended for CLcr < 50, cyclodextran) | No Change (IV NOT recommended for CLcr < 50, cyclodextran) | No Change (IV NOT recommended for CLcr < 50, cyclodextran) |

The following drugs do NOT need dosage adjustment in renal failure: amphotericin B (any formulation), atovaquone, azithromycin, caspofungin, chloramphenicol (increased bioavailability of chloramphenicol from succinate ester, target 5—20µg/mL), clindamycin, clofazamine dapsone, dicloxacillin, dirithromycin, doxycycline, linezolid, mefloquine, metronidazole, micafungin, miconazole, minocycline, moxifloxacin, nafcillin, oxacillin, primaquine, pyrimethamine, quinupristin/dalfopristin, rifampin, rifabutin, rifapentine, tigecycline

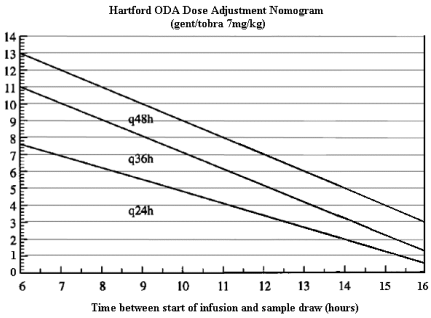
*Neutropenic Dosing. Pip/tazo 3.375 gm Q4H better than continuous infusion (CI) of 13.5 gm (PMID: 16029947). Cefepime 4 gm CI > 1 gm Q8H (2 gm Q8H not assessed, use for CNS & ESBL with ≤ 16 mg/L)
**TMP/SMX listed dosing is for GNR infections other than Stenotrophomonas. Pneumocystis treatment dose is 15 mg TMP/kg/d divided Q6-8H. Stenotrophomonas infection dose is 15-20 mg TMP/kg/d divided Q6H.
^Dosages are not necessarily appropriate for Endocarditis.
^^Dosages given are for parenteral therapy unless otherwise specified.
^^^Acyclovir dose is for HSV infections. VZV dose is 12.5-15 mg/kg Q8H. Infectious Disease Consultation is recommended for disseminated disease or encephalitis.
~Maximum recommended dose is 12gm per day [CID;52:917—924, doi:10.1093/cid/cir031]
~~Foscarnet hydration: 1 L NS + 10 gm mannitol, 250 mL pre-Rx, 500 mL with-Rx (over 1.5—2H), 250 mL post-Rx hydration.
~~~Colistin dosing as "colistin base activity" (CBA) in mg rather than international units. For colistin base 1mg = 30,000 IU. CMS 1mg = 12,500 IU. $C_{ss,avg}$ = target blood level [AAC;55:3284, doi:10.1128/AAC.01733-10]
~~~~Colistin dosing based on prior data. No PK evaluation, but validated in [CID;54:1720. 2012]
The following drugs may require dosage adjustment in *hepatic* failure: aztreonam (20—25% reduction +/-), carbenicillin (2g/d max ren+hep), caspofungin (35 mg Q24H moderate disease), cefoperazone (max 4g/d or monitor lvl, 2g/d ren+hep), ceftriaxone (2g/d ren+hep), chloramphenicol (target 5—20µg/mL), clindamycin (+/- if severe), itraconazole (caution, 2-fold increased T½), metronidazole (+/-, target peak 10—20 µg/mL), mezlocillin (dec 50%), nafcillin (+/- if ren+hep), rimantidine (max 100mg/d), ticarcillin (2g/d if ren+hep), tigecycline (100mg load, then 25mg q12H), voriconazole (6mg/kg Q12H x2, then 2 mg/kg Q12H).

Intraperitoneal Dosing. Dose per each 2 liter exchange, IP unless otherwise noted.

| | |
|---|---|
| Ampicillin | load 250 mg, maintenance 125 mg |
| Aztreonam | load 1 gm, maintenance 500 mg |
| Cefamandole | load 1 gm, maintenance 500 mg |
| Cefazolin | load 1 gm, maintenance 250—500 mg |
| Cefepime | load 1 gm, maintenance 250 mg |
| Cefoxitin | load 1 gm, maintenance 200 mg |
| Ceftriaxone | load 1 gm, maintenance 250—500 mg |
| Ciprofloxacin | load 0.5 gm PO, then maintenance 50 mg IP |
| Clindamycin | load 300 mg, maintenance 150 mg |
| Colistin | 2mg/kg/d |
| Fluconazole | 150 mg QOD |
| Flucytosine | load 2 gm PO, then maintenance 1 gm PO QD |
| Gentamicin | load 2 mg/kg, maintenance 8-12 mg |
| Nafcillin | load 250 mg(?), maintenance 125 mg |
| Imipenem | load 1 gm, maintenance 200 mg |
| Piperacillin | load 4 gm IV, then maintenance 500 mg |
| Vancomycin | 2 gm (30 mg/kg) Q5—7 days |

| ANTIMICROBIAL | INTRATHECAL DOSING |
|---|---|
| Amikacin | 5—7.5 mg Q24H |
| Colistin | 3.2—10 (20) mg Q24H |
| Gentamicin/Tobramycin | 4—8 mg Q24H |
| Vancomycin | 5—20 mg Q24H |

| Aminoglycoside Dosing CVVH/D/DF | Maintenance Dosage |
|---|---|
| Gentamicin / Tobramycin 3mg/kg load | 2 mg/kg Q24—48H |
| Amikacin 10 mg/kg load | 7.5 mg/kg Q24—48H |




| ANITMICROBIAL | HEMODIALYSIS (HD) DOSING | CVVH DOSING | CAVHD / CVVHD / CVVHDF DOSE | CAPD DOSING |
|---|---|---|---|---|
| Acyclovir | Supplement 2.5mg/kg AD | 5—7.5 mg/kg Q24H | 5—7.5 mg/kg Q24H | Dose for CLCr <10 |
| Aminoglycosides | ½ Full Dose AD & Follow Levels | | Follow Levels | Follow Levels |
| Ampicillin | Dose AD | | Dose for CLCr 20—50 | 250 mg Q12H |
| Ampicillin/Sulbactam | Dose AD | 3 gm Q12H | 3 gm Q8H | 1.5-3 gm Q24H |
| Amoxicillin/clavulanate | Dose AD | | Dose for CLCr 20—50 | 250/125 mg Q12H |
| Aztreonam | Supplement 0.5 gm AD | 1—2 gm Q12H | 2 gm Q12H or Dose for CLCr 20—50 | Dose for CLCr <10 |
| Cefazolin | Dose AD or Supplement with 1 gm AD | 1—2 gm Q12H | 2 gm Q12H or Dose for CLCr 20—50 | 0.5 gm Q12H |
| Cefepime | 2 gm load, then 0.5 gm Q24H; 2 gm AD supplement | 1—2 gm Q12H | 2 gm Q12H | Dose for CLCr <10 |
| Cefixime | Supplement 300 mg AD | | No Data | Dose for CLCr <10 |
| Cefotetan | Supplement 1 gm AD | | 0.75 gm Q12H | Dose for CLCr <10 |
| Cefoxitin | Dose AD or Supplement with 1 gm AD | | Dose for CLCr 20—50 | 1 gm Q24H |
| Ceftazidime | Supplement 1 gm AD | 1—2 gm Q12H | Dose for CLCr 20—50 | 0.5 gm Q24H |
| Ceftizoxime | Supplement 1 gm AD | | Dose for CLCr 20—50 | 0.5-1 gm Q24H |
| Ceftriaxone | No Change | No Change | No Change | No Change |
| Cefuroxime | Dose AD | | 1 gm Q12H | Dose for CLCr <10 |
| Cidofovir | No Data | | Avoid Use | No Data |
| Ciprofloxacin | Dose for CLCr <10 | 200 mg Q12H | 200—400 mg Q12H | Dose for CLCr <10 |
| Clarithromycin | Dose AD | | Dose for CLCr <10 | Dose for CLCr <10 |
| Colistin | $C_{ss,avg}$ each 1mg/L = 30 mg/day +30% on HD day | $C_{ss,avg}$ each 1mg/L = 192 mg/day divided q8—12H | $C_{ss,avg}$ each 1mg/L = 192 mg/day divided q8—12H | |
| Daptomycin | 4—6 mg/kg Q48H | 4—6 mg/kg Q48H | 4—8 mg Q48H | |
| Ertapenem | 500mg Q24H, 150 mg AD supplement | | | 1 gm Q24H |
| Erythromycin | No Change | | No Change | No Change |
| Ethambutol | 25 mg/kg 4H before HD 3x/week | | Dose for CLCr 20—50 | Dose for CLCr <10 |
| Ethionamide | No Change | | No Change | No Change |
| Famciclovir | Dose AD | | Dose for CLCr 20—50 | No Data |
| Fluconazole | Dose AD | 200—400* mg Q24H | 200—800* mg Q24H | |
| Foscarnet | Dose AD | | Dose for CLCr 20—50 | Dose for CLCr <10 |
| Flucytosine | Dose AD; usual load, then follow levels | | Dose for CLCr 20—50 | 0.5—1 gm Q24H |
| Ganciclovir | Dose AD | | Dose for CLCr 20—50 | Dose for CLCr <10 |
| Gatifloxacin | Dose AD | | Dose for CLCr 20—50 | Dose for CLCr <10 |
| Imipenem | Dose AD/ Not Recommended | 250 mg Q6H or 500 mg Q8H | 500 mg Q8—6H | Dose for CLCr <10 |
| Itraconazole | Dose for CLCr <10 | | 100 mg Q12—24H | 100 mg Q12—24H |
| Levofloxacin | | 500 mg x1, then 250 mg Q24H | 500 mg x1, then 250 mg Q24H | |
| Linezolid | Supplement 200 mg AD | No Change | No Change | No Change |
| Meropenem | Dose AD | 1 gm Q12H or Dose for CLCr 20—50 | 1 gm Q12H or Dose for CLCr 20—50 | Dose for CLCr <10 |
| Metronidazole | Dose AD | | Dose for CLCr 20—50 | Dose for CLCr <10 |
| Mezlocillin | Supplement 3—4 gm AD | | Dose for CLCr 20—50 | 3 gm Q12H |
| Penicillin G | Supplement 0.5 MU AD | | Dose for CLCr 20—50 | Dose for CLCr <10 |
| Pentamidine | No Dosage Adjustment | | | |
| Piperacillin | Supplement 1 gm AD | | Dose for CLCr 20—50 | Dose for CLCr <10 |
| Pip/Tazo | Supplement 1/3 Dose AD | 2.25 gm Q6H | 2.25—3.375 gm Q6H or Dose for CLCr 20—50 | Dose for CLCr <10 |
| Quinine | Dose AD | | Dose for CLCr 20—50 | Dose for CLCr <10 |
| Quinupristin/Dalfopristin | No Dosage Adjustment | | | |
| Ticarcillin/Clavulanate | Supplement 3.1 gm AD | 2 gm Q6—8H | 3.1 gm Q6H or Dose for CLCr 20—50 | Dose for CLCr <10 |
| Trimethoprim/Sulfa ** | Dose AD | | No Data | 0.16/0.8 gm Q48H |
| Trimetrexate | No Data | | No Data | No Data |
| Vancomycin | Dose for CLCr <10 | 15—25 mg/kg load, 1 gm Q48H, check levels | 15—25 mg/kg load, 1 gm Q24H, check levels | Dose for CLCr <10 |
| Voriconazole | IV Not recommended, PO usual dose | 6 mg/kg Q12H x2, load, then 4 mg/kg PO Q12H | 6 mg/kg Q12H x2, load, then 4 mg/kg PO Q12H | Dose for HD |

*lower dose only if MIC ≤ 8 mg/L and not *C. krusei* or *C. glabrata*

JUNE 2002 ORIGINAL [A. Gregson]; JUNE/AUGUST 2006 Slight modifications (included updates from CID;41:1159—66, CID;40:1333—41, PMID: 12760858) [A. Gregson]; FEBRUARY 2007 (minor mod) [A. Gregson]; JANUARY 2008 (minor mod) [A. Gregson]; MARCH 2008 (updated colistin dosing RF & IT from G&G 4th Ed. 1970 p1290—1) [A. Gregson]; MARCH 2011 [A. Gregson]; March—May 2012 [A. Gregson]