Recommended Antimicrobial Dosage Schedules for Neonates

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Updated June 2020

<table>
<tr><th>Drug</th><th>Dosage</th><th>Major Indications/Remarks</th></tr>
<tr><td>Acyclovir</td><td>20mg/kg/dose q 8 h IV administered over 1 hour

In severe cases, will follow with 300mg/m^2/dose PO q 8 h x 6 months</td><td>Herpes Simplex encephalitis
Monitor LFTs and renal function (ie. SCr and UOP)
Treat localized infection for 14 days, disseminated or CNS infections for 21 days.</td></tr>
<tr><td>Amikacin*</td><td>Give IV or IM
<table>
<tr><th>PMA (weeks)</th><th>Postnatal (days)</th><th>Dose (mg/kg)</th><th>Interval (hrs)</th></tr>
<tr><td>≤29</td><td>0 to 7</td><td>14</td><td>48</td></tr>
<tr><td></td><td>8 to 28</td><td>12</td><td>36</td></tr>
<tr><td></td><td>≥29</td><td>12</td><td>24</td></tr>
<tr><td>30 to 34</td><td>0 to 7</td><td>12</td><td>36</td></tr>
<tr><td></td><td>≥8</td><td>12</td><td>24</td></tr>
<tr><td>≥35</td><td>ALL</td><td>12</td><td>24</td></tr>
</table>
Administer over 30 minutes.</td><td>Gram negative enteric bacteria. Usually used in combination with a beta-lactam antibiotic.

Peak 20-30 (drawn 30 minutes after end of infusion), Trough < 8 mcg/mL</td></tr>
<tr><td>Amoxicillin</td><td>20mg/kg/dose PO qhs</td><td>UTI prophylaxis. Do not administer at the same time as probiotics</td></tr>
<tr><td>Amphotericin B Conventional</td><td>1mg/kg IV q24hr
Administer over 4 hours

Interaction with NS! No NVN or NS can be given at the same time!!

Recommend to flush with D5W. Only information to support compatibility with D5W and D10W</td><td>Most systemic fungal infections and severe superficial mycoses.

Note SIGNIFICANT dosing difference between conventional and lipid complex dosing. Infuse over 4 hours. Administer through a central line. Do not premed or fluid bolus before. ADR: nephrotoxicity (Decreases renal blood flow/GFR), infusion-related (fever, rigors), hypokalemia, hypomagnesemia.

Note: In neonates, lipid formulations of amphotericin have limited penetration into the central nervous system, kidneys, urinary tract, and eyes than conventional amphotericin and are not preferred in most cases</td></tr>
<tr><td>Ampicillin</td><td>100mg/kg/dose IV
≤29 wks PMA: q12h (≤28d), q8h (>28d)
30-34 wks PMA: q12h(≤14d), q8h (>14d)
≥35 wks PMA: q8h
≥45 wks PMA: q6h

Ampicillin for GBS Meningitis:
300 mg/kg/day IV divided Q8h (≤7d) or Q6h (>8d)</td><td>Used empirically for neonatal sepsis to cover for GBS, listeria, enterococcus.

Providers in Newborn Nursery may choose to use Ampicillin 75 mg/kg q8h in neonates with ≥35 wks PMA without concern for meningitis

Normal IV concentration: 100mg/ml</td></tr>
</table>

		IM concentration: 333mg/ml In the presence of GBS sepsis and the treatment with ampicillin or PenG, the bacteria will release a phospholipid that can cause pulmonary hypertension. Goal is to start empiric antibiotics within 60 minutes of birth as bacteria double every 20 minutes.
Caspofungin	25mg/m^2 (or approximately 2mg/kg) IV per dose q 24 hours Administer over 1 hour Max. concentration of 0.4mg/ml diluted in NS.	Antifungal agent for refractory Candida or invasive Aspergillosis refractory or intolerant to other therapies. Antifungal of choice in systemic peritoneal fungal sepsis. Thrombocytopenia often seen in the presence of peritoneal fungal sepsis Incompatible with D5W. If infused with other drips, make sure they are prepared in NS. Flush with NS only
Cefazolin	25 mg/kg slow IV push or IM* ≤29 wks PMA: q12h(≤28d), q8h (>28d) 30-36 wks PMA: q12h(≤14d), q8h (>14d) 37-44 wks PMA: q12h(≤7d), q8h (>7d) ≥45 wks PMA: q8h *Use 30 mg/kg with surgical situation and 25 mg/kg all other times Adjust dosing frequency in renal insufficiency: https://kdpnet.kdp.louisville.edu/drugbook/pediatric	1st generation cephalosporin Gram + cocci (staph aureus); may cause false positive urine reducing substance. Poor CNS penetration.
Cefepime	50mg/kg/ IV q12h or q8h Adjust dosing frequency in renal insufficiency: https://kdpnet.kdp.louisville.edu/drugbook/pediatric	4th generation cephalosporin. Q8h dosing for meningitis. No anaerobic coverage. Preferred over gentamicin in cases with HIE N=1 have observed hypertension, seizure-like, dystonic activity when cefepime was given intraperitoneal in PD fluid while also receiving Zosyn. This would be consistent with the potential ADR of lowering seizure-threshold with double beta-lactam therapy.
Cefotaxime	50 mg/kg/dose IV or IM <32 wks PMA: q12h (<7d), q8h (≥7d) ≥32 wks PMA: q12h (<7d), q8h (≥7d) Meningitis: 50 mg/kg IV ≤7 days: 100 to 150 mg/kg/day IV divided every 8 to 12 hours.	3rd Generation; Treatment of gram negative enteric bacteria. Penetrates well across BBB and good for use in meningitis. Hepatically metabolized. Preferred agent in HIE Often on drug shortage and obtained from Canada. Check inventory before dispensing.

	>7 days: 150 to 200 mg/kg/day IV divided every 6 to 8 hours Administer of 30 minutes Adjust dosing frequency in renal insufficiency: https://kdpnet.kdp.louisville.edu/drugbook/pediatric	
Cefoxtin	30-33mg/kg/dose IV or IM q8h Administer IV over 30 minutes Adjust dosing frequency in renal insufficiency: https://kdpnet.kdp.louisville.edu/drugbook/pediatric	2nd generation cephalosporin. Enhanced activity against anaerobic bacteria. Poor CNS penetration. Treatment usually limited to skin, intra-abdominal and urinary tract infections.
Ceftazidime	30mg/kg IV or IM ≤29 wks PMA: q12h (≤28d), q8h (>28d) 30-36 wks PMA: q12h (≤14d), q8h (>14d) 37-44 wks PMA: q12h (≤7d), q8h (>7d) ≥45 wks PMA: q8h Meningitis: ≤7d: 100-150 mg/kg/day IV divided q8-12h >7d: 150 mg/kg/day IV divided q8h Adjust dosing frequency in renal insufficiency: https://kdpnet.kdp.louisville.edu/drugbook/pediatric	3rd generation cephalosporin. Gram negative converage, especially pseudomonas. Consider double coverage when positive pseudomonas cultures. Synergistic with aminoglycosides.
Ceftriaxone	DO NOT USE IN NEONATES For infants >28 days: Sepsis/Disseminated gonococcal infections: 50mg/kg q 24 h IV or IM Meningitis: 100mg/kg/day IV divided q12h Uncomplicated gonococcal ophthalmia: 50mg/kg once IV or IM. Administer IV over 30 minutes	3rd generation cephalosporin Concomitant use of ceftriaxone and IV calcium-containing (NVN) products at any time during the course of therapy is contraindicated in neonates (≤28d)
Cephalexin	No neonatal dosing available Treatment for skin/soft tissue infections (MSSA infections): 50 mg/kg/day divided q6-8 hours UT Prophylaxis: 10-20 mg/kg/dose PO QHS	1st generation cephalosporin Can alternate with or change to Bactrim at 2 months of life for UTI prophylaxis
Clindamycin	5 to 7.5mg/kg/dose IV, PO Administer IV over 30 minutes <29 wks PMA: q12h(<28d), q8h (>28d) 30-36 wks PMA: q12h(<14d), q8h (>14d) 37-44 wks PMA: q12h(<7d), q8h (>7d) >45 wks PMA: q6h	Gram positive cocci (group A streptococcus, staph) and anaerobic coverage (bacteroides). Widely distributes to most tissues, especially the lungs. Poor CSF penetration. Pseudomembranous colitis most serious adverse effect (bloody diarrhea, fever) Metronidazole preferred in NEC w/ pneumatosis
Fluconazole	Prophylaxis for ≤ 24 weeks: 3 mg/kg Q72 hours Treatment	Treatment of systemic fungal infections. If on fluconazole nystatin is not needed. However, may choose to use BOTH

	12 mg/kg LD, then 6 mg/kg IV <29 wks PMA: q48h(<14d), q24h (>14d) 30-36 wks PMA: q48h(<7d), q24h (>7d) **25 mg/kg LD, then 12 mg/kg IV*** 37-44 wks PMA: q48h(<7d), q24h (>7d) >45 wks PMA: q24h *Higher loading dose should not be used when SCr>1 **Thrush** 6 mg/kg LD, then 3 mg/kg PO qd	fluconazole prophylaxis and nystatin for neonates < 24 weeks GA. IV doses ≥ 6 mg/kg (i.e. loading doses) should infuse over 2 hours while other doses can infuse over 1 hour. Monitor hepatic function with long courses. Monitor phenobarbital and phenytoin levels as fluconazole can increase levels. Rifampin decreases fluconazole. Fluconazole distributes widely into body tissues and fluids. **Avoid use with azithromycin** due to increased risk of QT prolongation. Recommend discontinuing azithromycin while on fluconazole For **uncomplicated candidemia**, length of therapy should be **21 days** after microbiological cultures are clear. If cultures are positive by Day 7, the addition of a second agent should be considered.
Ganciclovir	6mg/kg/dose q 12 h IV Treat for a minimum of 6 weeks if possible Length of therapy is usually 6 months of total therapy for CMV (IV + PO)	Treatment for CMV Infection Ganciclovir has the potential to improve or prevent hearing loss and improve cognitive development in the long term. Monitoring: • Baseline CBC with differential • Weekly for 6 weeks • Again at 8 weeks • Then monthly until treatment course is complete (likely 6 months) due to possible neutropenia associated with therapy. • Consider SCr on same monitoring schedule as CBC to monitor for chance of renal impairment with therapy. If SCr is stable on ganciclovir and no other renal issues can stop checking creatinine after a few weeks. • Obtain baseline hearing screen due to possible sensorineural hearing loss with CMV infection Dose Adjustments for ANC Drop • If ANC drops below 500, hold the dose until ANC reaches 750 and restart at full dose

		• If ANC drops below 500 again, give ½ dose until ANC reaches 750 then increase back to full dose • If ANC drops below 500 again, consider discontinuation of therapy
Gentamicin*	**≤29 wks PMA**: 5 mg/kg IV q48 (≤7d) 4 mg/kg IV q36h (8-28d), q24h (>28d) **30-34 wks PMA:** 4.5 mg/kg IV q36 h(≤7d) 4 mg/kg IV q24h (>7d) **≥35 wks PMA:** 4 mg/kg IV q24h **For GI overgrowth:** PO: 10-20 mg/kg/day divided every 6-8 hours. Start at every 8 hours.	Aminoglycoside used for gram-negative organisms. Follow troughs. Adjust frequency based on troughs. Frequency never less than 24 hours. May cause nephro- and ototoxicity. Check trough before 2nd dose. Concentration or peak-dependent for bactericidal killing. Trough should be ≤ 1, if >1, then increase the interval. If trough is <0.3 make sure dosing and interval is correct. Check peak only if septic/bacteremia. Goal peak 5-12 mcg/mL Normal IV Concentration: 10mg/ml IM concentration: 40mg/ml Goal is to start empiric antibiotics within 60 minutes of birth as bacteria double every 20 minutes.
Lamivudine	≥32 weeks gestation: ≤ 28 days: 2 mg/kg/dose PO BID > 28 days: 4 mg/kg/dose PO BID *No safety data available for high-risk infant dosing of lamivudine in PMA <32 weeks*	High-Risk Infants: Born to mothers with (a) acute or primary HIV infection during pregnancy or breastfeeding, (b) received neither antepartum or intrapartum antiretroviral drugs, (c) received only intrapartum antiretroviral drugs, or (d) received antepartum and intrapartum antiretroviral drugs but who have detectable viral load near delivery (>400 copies/mL), particularly if delivery was vaginal. They will receive one of the following: 3-drug regimen: zidovudine + lamivudine + nevirapine from birth to 6 weeks **OR** zidovudine + lamivudine + raltegravir from birth to 6 weeks 2-drug regimen: zidovudine for 6 weeks + nevirapine for 3 doses (given within 48 hours of birth, 48 hours after first dose, and 96 hours after second dose)
Linezolid	GA <34 weeks and DOL <7 : 10mg/kg/dose q12 hours PO or IV over 60 minutes GA >34 weeks or ≥7 DOL: 10 mg/kg/dose q 8 hours PO or IV over 60 minutes.	Bacteriostatic. Treat non-CNS infections caused by Gram-positive organisms, including MRSA, resistant to vancomycin and other antibiotics. Not used for empiric therapy. Not first line therapy

		PO formulation contains benzyl alcohol. Better penetration to well-perfused tissues than vancomycin. Monitor CBC weekly for platelets and hemoglobin. Caution when used with vasopressors (dopamine, epinephrine) as linezolid increases the vasopressor effects.
Meropenem	Sepsis: 20mg/kg/dose IV 20 mg/kg/dose IV over 30 minutes < 32 weeks GA and < 14 days: q12h < 32 weeks GA and ≥ 14 days: q8h ≥ 32 weeks GA and < 14 days: q8h ≥ 32 weeks GA and ≥ 14 days: 30 mg/kg q8h Meningitis/Pseudomonas: 40mg/kg/dose q 8 h Administer IV over 30 minutes Adjust dosing frequency in renal insufficiency: https://kdpnet.kdp.louisville.edu/drugbook/pediatric	Multidrug-resistant gram-negative, gram-positive, and anaerobic organisms. NOT first line.
Metronidazole	Loading Dose: 15mg/kg IV/PO Maintenance dose (Given over 1 hour): 24-25 wks PMA: 7.5mg/kg q24h 26-27 wks PMA: 10mg/kg q24h 28-33 wks PMA: 7.5mg/kg q12h 34-40 wks PMA: 7.5mg/kg q8h >40 wks PMA: 7.5mg/kg q6h OR 10mg/kg q8h Dosing in Hirschsprungs: 7.5mg/kg q8h (consensus with surgery and APSA Guidelines) Adjust dosing frequency in renal insufficiency: https://kdpnet.kdp.louisville.edu/drugbook/pediatric	Anaerobic coverage. Drug with long half-life. Give loading dose. Drug choice for anaerobic coverage. Should only be used for 7 days on a baby with NEC. Literature shows that risk for post-NEC strictures increases with use of metronidazole for > than 7 days.
Mupirocin	Apply small amount topically to affected area q 8 h x 5-14 days	MRSA topical infections. Do not apply to the eyes. May cover with gauze.
Nafcillin	Usual dose: 25 mg/kg/dose IV Meningitis: 50mg/kg/dose IV ≤29 wks PMA: q12h(≤28d), q8h (>28d) 30-36 wks PMA: q12h(≤14d), q8h (>14d) 37-44 wks PMA: q12h(≤7d), q8h (>7d) ≥45 wks PMA: q6h Administer IV over 15 minutes Adjust for hepatic and renal failure. See Renal Dosing Guidelines: Adjust dosing frequency in renal insufficiency: https://kdpnet.kdp.louisville.edu/drugbook/pediatric	Penicillinase-producing staph aureus. Use nafcillin for renal dysfunction pts. Drug of choice for MSSA Used in neurosurgery cases Vesicant. Central line preferred when available
Nevirapine	HIV Infection, Treatment or Empiric Therapy 34 to < 37 weeks gestation:	High-Risk Infants: Born to mothers with (a) acute or primary HIV infection during

<table>
<tr>
<td></td>
<td>DOL 0-7: 4 mg/kg/dose PO BID
DOL 8-28: 6 mg/kg/dose PO BID
DOL > 28: 200 mg/m2/dose PO BID

≥37 weeks gestation:
DOL 0-28: 6 mg/kg/dose PO BID
DOL > 28: 200 mg/m2/dose PO BID

<u>Perinatal HIV Prophylaxis</u>
8 mg/dose (1.5–2 kg) or 12 mg/dose orally (> 2 kg) on days 1, 3, and 7

Give first dose within 48 hours of birth (start as close to time of birth as possible, preferably within 6 to 12 hours of delivery), second dose 48 hours after first dose, and third dose 96 hours after second dose. Must be given with zidovudine

No safety data available for high-risk infant dosing of nevirapine in PMA <34 weeks. Consider ID consult for HIV medication recommendations for these age groups.</td>
<td>pregnancy or breastfeeding, (b) received neither antepartum or intrapartum antiretroviral drugs, (c) received only intrapartum antiretroviral drugs, or (d) received antepartum and intrapartum antiretroviral drugs but who have detectable viral load near delivery (>400 copies/mL), particularly if delivery was vaginal.
They will receive one of the following:

3-drug regimen: zidovudine + lamivudine + nevirapine from birth to 6 weeks OR zidovudine + lamivudine + raltegravir from birth to 6 weeks

2-drug regimen: zidovudine for 6 weeks + nevirapine for 3 doses (given within 48 hours of birth, 48 hours after first dose, and 96 hours after second dose)</td>
</tr>
<tr>
<td>Nystatin</td>
<td>Preterm: 0.5mL PO q 6 h
Term: 1mL Po q 6 h
Apply topically with swab to each side of mouth. Use for length of antibiotic therapy and continue for 24 hours after discontinuation of antibiotic therapy, especially in infants <1500 grams.</td>
<td>Mucocutaneous candida infections. Prophylaxis against invasive fungal infections in VLBW infants. Do not need if using fluconazole.</td>
</tr>
<tr>
<td>Penicillin G</td>
<td><u>GBS Bacteremia:</u> ≤ 7 days: 50,000 units/kg/dose IV q12h
≥8 days: 50,000 unit/kg/dose IV q8h
<u>GBS Meningitis</u>: ≤ 7 days: 150,000 units/kg/day IV divided q8h
≥8 days: 125,000 units/kg/day IV divided q6h

Other susceptible organisms
<u>Bacteremia</u>: 25,000 to 50,000 units/kg/dose IV over 15 minutes or IM
<u>Meningitis</u>: 75,000 to 100,000 units/kg/dose IV over 30 minutes
<table>
<tr><th>PMA (weeks)</th><th>Postnatal (days)</th><th>Interval (hours)</th></tr>
<tr><td>≤ 29</td><td>0 to 28
>28</td><td>12
8</td></tr>
<tr><td>30 to 36</td><td>0 to 14
>14</td><td>12
8</td></tr>
<tr><td>37 to 44</td><td>0 to 7
>7</td><td>12
8</td></tr>
<tr><td>≥45</td><td>ALL</td><td>6</td></tr>
</table>
</td>
<td>Treatment of susceptible organisms: streptococci, congenital Syphilis, gonococci

Congenital syphilis: if 24 or more hours of therapy is missed, entire course must be restarted</td>
</tr>
</table>

	Congenital Syphilis: 50,000 units/kg/dose over 15 minutes q12 hrs for the first 7 days of life and then every 8 hours thereafter for a total of 10 days Aqueous: short-acting IV/IM formulation • PCN G Sodium: 2 mEq Na/1 MU • PCN G Potassium: 1.68 mEq K/1 MU	
Penicillin G Benzathine	50,000 IU/kg for one dose, IM only Benzathine: long-acting IM formulation *Benzathine/Procaine given IV has been shown to cause cardiopulmonary arrest and death*	Syphilis (no clinical findings and only if follow-up cannot be ensured)
Penicillin G Procaine	50,000 units/kg once daily for 10 days, IM only Procaine: intermediate-acting IM formulation *Benzathine/Procaine given IV has been shown to cause cardiopulmonary arrest and death*	Syphilis Congenital syphilis: if 24 or more hours of therapy is missed, entire course must be restarted
Piperacillin-tazobactam (Zosyn)	100 mg/kg IV ≤29 wks PMA: q12h(≤28d), q8h (>28d) 30-36 wks PMA: q12h(≤14d), q8h (>14d) 37-44 wks PMA: q12h(≤7d), q8h (>7d) ≥45 wks PMA: q8h Administer IV over 30 minutes Adjust dosing frequency in renal insufficiency: https://kdpnet.kdp.louisville.edu/drugbook/pediatric	Gram-positive, gram-negative, anaerobic, including pseudomonas and GBS. Poor CNS penetration. Extended-spectrum piperacillin and beta-lactamase inhibitor tazobactam antibiotic used for double-coverage. Piperacillin in metabolized renally and tazobactam hepatically
Raltegravir	HIV infection, Treatment and Empiric Therapy ≥37 weeks gestation and weighing > 2 kg: DOL 0-7: 1.5 mg/kg/dose PO once daily DOL 8-28: 3 mg/kg/dose PO twice daily DOL ≥ 28: 6 mg/kg/dose PO twice daily Oral suspension and chewable tablets are not bioequivalent and not substitutable on mg/mg basis. Consult Lexi-Comp for dosage form specific dosages (fixed doses). ***No safety data available for high-risk infant dosing of raltegravir in PMA <37 weeks and weight <2 kg. Consider ID consult for HIV medication recommendations for these age groups.***	High-Risk Infants: Born to mothers with (a) acute or primary HIV infection during pregnancy or breastfeeding, (b) received neither antepartum or intrapartum antiretroviral drugs, (c) received only intrapartum antiretroviral drugs, or (d) received antepartum and intrapartum antiretroviral drugs but who have detectable viral load near delivery (>400 copies/mL), particularly if delivery was vaginal. They will receive one of the following: 3-drug regimen: zidovudine + lamivudine + nevirapine from birth to 6 weeks **OR** zidovudine + lamivudine + raltegravir from birth to 6 weeks 2-drug regimen: zidovudine for 6 weeks + nevirapine for 3 doses (given within 48 hours of birth, 48 hours after first dose, and 96 hours after second dose)
Rifampin	Usually have an ID consult for dosing, however, a general guideline would be neonates 10-20	Mycobacteria; causes red/orange discoloration of body secretions. Must be

<table>
<tr><td></td><td>mg/kg/day IV or PO divided Q12 hours with other antibiotics</td><td>used in combination with vancomycin or aminoglycosides (due to high chance to develop resistance without secondary agent on-board) for persistent staph infections. Potent inducer of P450</td></tr>
<tr><td>Trimethoprim-Sulfamethoxazole (Bactrim)</td><td>Prophylaxis: 2mg/kg qhs PO
Treatment: 6-12mg/kg/day PO divided q 12h</td><td>UTI caused by E.Coli, Klebsiella, Enterobacter, proteus

Do not use before 2 months of life due to increased risk of kernicterus. Use this as UTI prophylaxis at ≥ 3 months. Localizes in the urine.</td></tr>
<tr><td>Valganciclovir</td><td>16mg/kg/dose PO q 12 h
Treat for a minimum 6 weeks.

Prodrug of ganciclovir. See “ganciclovir” for additional information</td><td>Neutropenia common.
If ANC <500 hold until >750
If ANC <750 reduce dose by 50%
If ANC <500 again, discontinue.

CrCl <10ml/min, PD, HD: use not recommended; use renally adjusted IV ganciclovir</td></tr>
<tr><td>Vancomycin*</td><td>15 mg/kg IV
≤29 wks PMA: q18h(≤14d), q12h (>14d)
30-36 wks PMA: q12h(≤14d), q8h (>14d)
37-44 wks PMA: q12h(≤7d), q8h (>7d)
≥45 wks PMA: q6h

Renal impairment:
Adjust dose to 10 mg/kg

Administer IV over 90 minutes</td><td>Methicillin-resistant staph and penicillin-resistant pneumococci. Note: red man syndrome results from rapid IV infusion.
Need to monitor serum levels
Trough: 5-10mcg/mL for empiric therapy; 10-15 mcg/mL for positive CoNS, MRSA infection, bacteremia, pneumonia, and cellulitis; 15-20 mcg/mL for meningitis and bone/joint infections. Peak: 25-40 mcg/mL

Time-dependent drug. Bacteriocidal. Only good distribution to CSF when meninges are inflamed. Distribution to lungs ~1/6 of serum levels. Initial gram-positive antibiotic coverage for clinically septic infants and infants with indwelling lines (ie. Central line, VP shunt, etc) pending culture and sensitivity results. Antibiotic of choice for MRSA, Staph epidermidis, vancomycin – sensitive CoNS, and where indicated by sensitivities. However, consider suboptimal therapy for MSSA and treatment of choice for MSSA is nafcillin or cefazolin.</td></tr>
<tr><td>Zidovudine</td><td><u>HIV Perinatal Prophylaxis</u> (Low Risk, treatment duration 4 weeks)

<table><tr><td>Age</td><td>Dose</td></tr><tr><td>< 30 weeks gestation</td><td>2 mg/kg/dose PO BID</td></tr><tr><td>≥ 30 to < 35 weeks gestation</td><td>2 mg/kg/dose PO BID→ increase dose to</td></tr></table></td><td>Treatment of HIV infection in combination with other antiretroviral agents.
Begin treatment 6-12 hours after birth. Initiation of therapy after age 2 days is not likely to be effective.</td></tr>
</table>

	3 mg/kg/dose PO BID at 2 weeks of age
≥ 35 weeks gestation	4 mg/kg/dose PO BID

HIV Treatment or Empiric Therapy (High Risk – treatment duration 6 weeks; in combo w/ lamivudine + nevirapine, lamivudine + raltegravir, or nevirapine alone)

Age	Dose
< 30 weeks gestation	2 mg/kg/dose PO BID→ increase dose to 3 mg/kg/dose PO BID at 4 weeks of age
≥ 30 to < 35 weeks gestation	2 mg/kg/dose PO BID→ increase dose to 3 mg/kg/dose PO BID at 2 weeks of age
≥ 35 weeks gestation	4 mg/kg/dose PO BID→ increase dose to 12 mg/kg/dose PO BID at 4 weeks of age

For newborns who are unable to tolerate oral agents, the IV dose of zidovudine is 75% of the oral dose of zidovudine while maintaining the same dosing interval. Do not give IM

* Serum drug level monitoring recommended

Table 1: Usual Therapeutic Range

	PEAK (µg/ml)	TROUGH (mcg/ml)
Gentamicin	5-12	0.2-1
Amikacin	20-30	< 8
Vancomycin	25-40	5-10 (up to 20 depending on organism and/or location of infection; See Table 2 and 3)

- These data represent usual starting and maintenance doses for seriously compromised infants or LBW weight premature infants (<2kg or <34 wk. gestation) and full-term infants.
- Monitoring of serum drug levels will assist in optimizing dosage adjustments, particularly with changing organ function as the newborn matures or recovers from the initial illness.
- Optimum time to obtain levels is 30 minutes prior to next dose for trough levels, and 30 minutes after completion of IV infusion for peak levels.
- With high serum levels, usually an increase in interval of administration is warranted rather than lowering of individual dose, although both may be necessary in some neonates.

Table 2: Vancomycin trough guidelines

	Trough Goals[1,2]	When to draw initial trough
Empiric therapy	5-10	

Treatment for positive CoNS, MRSA infection, bacteremia, pneumonia, and cellulitis	10-15	Just prior to the 2nd dose for < 30 weeks or just prior to the 3rd dose for ≥ 30 weeks
Treatment for severe invasive infections such as osteomyelitis, meningitis, or bone/joint infections	15-20	

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Table 3: Adjustment of therapy based on initial trough

	Initial Trough	When to draw next trough
Empiric Therapy		
	< 5	Do not adjust therapy dose or frequency. Recheck just before 4th dose.
	5-10	Obtain a follow-up trough on day 7 if continuing therapy > 7 days and then weekly thereafter. Draw earlier and/or more frequent if there is decreased urine output or other changes in renal function.
	>10	Extend frequency of dosing and recheck trough before next dose. Wait approximately **half of the initial dosing interval time** to recheck the trough.
Treatment for positive CoNS, MRSA infection, bacteremia, pneumonia, and cellulitis		
	< 10	Decrease frequency and recheck trough before next dose. Examples: q24h to q18 h, q18h to q12h, q12h to q8h
	10-15	Obtain a follow-up trough on day 7 if continuing therapy > 7 days and then weekly thereafter. Draw earlier and/or more frequent if there is decreased urine output or other changes in renal function.
	>15	Extend frequency of dosing and recheck trough before next dose. Wait approximately **half of the initial dosing interval time** to recheck the trough.
Treatment for severe invasive infections such as osteomyelitis, meningitis, or bone/joint infections		
	< 15	Decrease frequency and recheck trough before next dose. Examples: q24h to q18 h, q18h to q12h, q12h to q8h
	15-20	Obtain a follow-up trough on day 7 if continuing therapy > 7 days and then weekly thereafter. Draw earlier and/or more frequent if there is decreased urine output or other changes in renal function.
	>20	Extend frequency of dosing and recheck trough before next dose. Wait approximately **half of the initial dosing interval time** to recheck the trough.

References:

1.) Young TE, Mangum B. Neofax A manual of drugs used in neonatal care. 23rd edition. Columbus, Ohio; Ross Laboratories, 2010.
2.) Johnson KB. The Harriet Lane Handbook. 13th Edition. Mosby-Year Book, Inc., St. Louis, MO. 1993 Brown & Compoli-Richards, 1989; (4) Beretz & Tato, 1988; and (5) Remington & Klein, 1990.
3.) MICROMEDEX. Accessed online 2020. Updated annually.
4.) Taketomo CK. Hodding JH, Kraus DM. Lexi-Comp Pediatric Dosage Handbook. Accessed online 2020. Updated annually.
5.) Tierney S, Mentink M, Sabers E. NICU Pharmacist Guide; University Iowa Stead Family Children's Hospital. Accessed 2020. Updated May 2020.