

UF Health Jacksonville Medical Center
Neonatal / Pediatric Drug Recommendations (Rev. 06/23)

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Disclaimer: This list of medications was created for use by inpatient pharmacists but is open for all to use in addition to clinical picture and knowledge. Lexicomp is the reference unless otherwise noted.

Admission meds contained in Ped Newborn Admission Med Order set:

Vitamin K (bleed prevention within 1hr of birth): Neonates use the 1mg/0.5ml ampule.

1mg IM once for babies >1500g

0.5mg/kg IM once for babies ≤1500g. If IM refused, vit K can be given orally at 2.5mg PO at birth, at 2 weeks and 6 weeks. PO is not ideal, especially for preterm babies. (Canadian Paediatric Society Position Statement Guidelines for vitamin K prophylaxis in newborns, 2018) We use the 2.5mg tablets, have the RN triturate and give w feeds.

Erythromycin eye ointment & Hepatitis B Vaccine algorithm on page 13 if needed

PDA closure:

Ibuprofen (IV/PO):

Standard dose: 10mg/kg X 1 dose; followed 5mg/kg Q24hr x 2 doses. Second doses can be done if closure is not obtained

High dose: 20mg/kg X 1 dose; followed by two doses of 10mg/kg at 24 hour intervals. This may be used in older babies due to increased clearance and increased rates of success have been shown in some studies. (Mitra S 2018, Dani 2012)

Indomethacin: Initial dose = 0.2mg/kg, followed by 2 doses depending on post-natal age (PNA) and neonatologist:

Dose (mg/kg/dose q 12 – 24 hours)

Age at 1st dose	#1	#2	#3
< 48 hours	0.2	0.1	0.1
2 – 7 days	0.2	0.2	0.2
> 7 days	0.2	0.25	0.25

Indomethacin may also be given as a continuous infusion for 36 hours. The 1st 24 hour dose is usually 0.26 - 0.45mg/kg in 3ml syringe over 24 hours. The next 12 hours is 0.13 - 0.23mg/kg in 3ml syringe over 12 hours (see predefined orders in EPIC). Avoid administration in arterial catheter or vein emptying close to superior mesenteric artery. Syringe stable for 24 hours.

Acetaminophen: 15 mg/kg q6hr x 3-7 days. Use IV if feeds <100ml/kg/day and oral if above that threshold. (Lueke CM etal 2017)

Analgesia/sedation/anti-anxiety

Acetaminophen:

Neonates: 10 – 15 mg/kg/dose q 6 – 8 hours

Infants and children: 10 – 15 mg/kg/dose q 4 – 6 hours

Ibuprofen PO for pain in pediatric patients

10mg/kg/dose PO q 6 – 8 hours

May increase to 50 mg/kg/day for arthritic/sickle-cell pain (Pharmacists-Try to use standard Omnicell doses when possible)

Morphine: (IM/IV)

Neonates: 0.05 – 0.1 mg/kg/dose q 4 – 8 hours

Infants and children: 0.05 – 0.2 mg/kg/dose q 2 – 4 hours

Continuous Infusion: 0.01-0.03 mg/kg/hr

Dosing for **Neonatal Abstinence Syndrome**: adapted with professional experience from Kocherlakota P 2014 and McQueen K and Murphy-Oikonen 2016

-Symptoms may be greater if \geq 36 week GA (Logan BA 2013); <35 weeks gestation usually need less (ACP, Pediatrics June 1998)

Initiate:

- When Neonatal Abstinence Score (NAS) \geq 8 on two consecutive occasions
- Begin oral morphine solution at 0.24mg/kg/**day** divided every three hours (or 0.03mg/kg/**dose** every 3 hours) given with feedings.
- Doses may be increased by 0.01mg/kg/**dose** every 12 – 24 hours to a maximum daily dose of 1.2mg/kg/**day**.

Rescue dose = use 1x current PO dose

When to Augment:

- If the infant has not responded to a total daily morphine dose of 0.6mg/kg/day
- Clonidine augmentation (preferred): initiate clonidine at 0.5 – 2mcg/kg/dose every 6 hours. Can increase to a maximum of 1mcg/kg/dose every 3 hours.
- Phenobarbital augmentation 5 – 15mg/kg may be given in addition to morphine for poly-drug withdrawal or once the morphine and clonidine maximum doses are reached and the patient is still having significant withdrawal symptoms. Maintenance phenobarbital dose for this indication is 5mg/kg/dose, either daily or BID.

When to wean morphine and clonidine:

- When mean daily scores remain \leq 8
- Decreases should only be every 24 – 48 hours (not more rapidly)
- Using the final effective dose decrease the dosage of morphine by 10% and maintain the q3hr interval. However, if the baby is having an issue as the tapered dose becomes smaller, it is ok to use a smaller reduction.
- Continue until morphine is 0.05 **mg/kg/day** or 0.02**mg/dose**
- If the infant requires both morphine and clonidine therapy, weaning of morphine should commence first. Once morphine has been discontinued, wean clonidine to 1 mcg/kg q 6 for 24 hours. If scores & BP are acceptable then wean clonidine to 1 mcg/kg q12 hours for 24 hours. If BP and scores are acceptable then discontinue clonidine.

Fentanyl:

Neonates and infants:

Slow IV push: 1 – 4 mcg/kg/dose q 2 – 4 hours.

Continuous infusion: Initial IV bolus: 1 – 2 mcg/kg, then 0.5 – 1 mcg/kg/hour; titrate upward

Children 1 – 12 years: IM/IV: 1 – 2 mcg/kg/dose; may repeat at 30 to 60 min intervals.

Fentanyl intranasal (use parenteral preparation) for children \geq 10 kg: 1.5 mcg/kg once divided between the two nares. At UFH Jax we do not use an atomizer to deliver.

Lorazepam (oral/IV): not preferred for multi-dosing due to benzyl alcohol

Usual: 0.05-0.1mg/kg/dose q 4 – 8 hours; range: 0.02 – 0.1mg/kg/dose

Midazolam (IV):

Bolus dose: 0.05-0.1mg/kg/dose q 2 - 4 hours Neonates: IV

continuous infusion:

<32 weeks: Initial: 0.5 mcg/kg/min (0.03 mg/kg/hour)

>32 weeks: Initial: 1 mcg/kg/min (0.06 mg/kg/hour)

Titrate drip for usual range of 0.5-4mcg/kg/min

Midazolam intranasal:

Infants 1 – 5 months of age: 0.2 mg/kg, usually done as a single dose divided between the two nares. At UFH Jax we do not use an atomizer to deliver.

Infants \geq 6 months and children: 0.2 – 0.3 mg/Kg (max single dose of 10 mg) may repeat in 5 – 15 min to a maximum of 0.5 mg/Kg (max total dose = 10 mg).

Dexmedetomidine:

HIE cooling (O'Mara 2018): 0.3 mcg/kg/hr and titrated by 0.1 mcg/kg/hr, usual max 0.6 mcg/kg/hr

Anticonvulsants (Also see Management of ICP in Peds Trauma section if appropriate)

Phenobarbital:

Loading dose: 15 – 20 mg/kg in a single or divided dose. This dose may be repeated if needed. Maintenance dose (usually started 12 hours after loading dose): 3 – 5 mg/kg/day given once or twice daily. Dose may be increased to 6-8mg/kg/day based on response and levels or allowed to "grow out" of dose.

If used for hyperbilirubinemia: See under ursodiol

Phenytoin (IV) and fosphenytoin (IV/IM): 15 – 20 mg/kg loading dose; followed by 5 – 10 mg/kg/day divided q 6 – 12 hours. For patients on phenobarbital, doses in the higher range are usually needed.

Levetiracetam: refractory seizures 40-60 mg/kg load with 10-20mg /kg Q12hr. Higher doses have been used (Venkatesan 2017)

Respiratory Agents

Calfactant (Infasurf): 3mL/kg/dose once or q 12 hours for 2-3 doses. Do not warm or agitated prior to administration. First doses of surfactant may be given already in L & D. Should be entered into EPIC as "already given in L&D". If not, check with NICU nurse if given already or needs to be sent from Central.

Caffeine citrate (oral/IV, consider transition to PO caffeine when PO feeds >60 ml/kg/day):

Loading dose: 10 – 20 mg/kg (Usually 20 mg/kg).

Maintenance dose: 5 – 10 mg/kg/dose every 24 hours starting 24 hours after loading dose

Neonatal epinephrine for pulmonary hemorrhage (second line after iced saline): Use 0.1 mg/ml epinephrine product via the ET at dose of 0.01 mg/kg (Bhandari V 1999)

Racemic Epinephrine for stridor (decr fluid via constriction), EPIC build for 0.25ml of 2.25% vials

Neonatal tobramycin nebs 60mg (dose expert opinion) nebulized q12hr. Levels can be monitored by taking 1-2hrs after administration. Note: this is not treatment, but to help with colonization.

Budesonide has studies to possibly prevent BPD in preterm neonates as an alternative to steroids to preventing BPD. At UFH, neonatologists primarily use when there is a concern of pulmonary inflammation and may be used in conjunction with systemic steroids. Dose is 0.25-0.5 mg inhaled Q12hr. (Bassler 2010)

When on a jet or oscillator, nebs cannot be used so if needed, fluticasone HFA is available to use 110 mcg inhaled Q12hr.

Neonatal nasal vasoconstrictors: phenylephrine in the infant strength=0.125%, do not mix up with 0.5% "regular" strength. The order is *not* NICU specific.

Neonatal nasal steroid: beclomethasone nasal drops (usual 1 drop each nare BID). Specific NICU order and compounded in central pharmacy.

Steroids:

Conversion dexamethasone: prednisone/prednisolone/methylprednisolone is 1:5 (i.e. 1mg dex = 5mg prednisone).

Hydrocortisone oral solution is a compounded product.

Protocols:

Early Prophylaxis of Bronchopulmonary Dysplasia (BPD) (PREMILOC Study for those \leq 28 wk GA):

Neonates: Hydrocortisone 0.5 mg/kg q12hr x 14 doses, then 0.5 mg/kg Q24hr x 3 doses

Late Prophylaxis / Tx of BPD from NIH/NICHHD Study (unpublished) and SToP-BPD, usually started DOL 7-28):

Hydrocortisone (IV, Oral):

1 mg/kg/dose q 6 h x 2 days (8 doses) followed by

0.5 mg/kg/dose q 6 h x 3 days (12 doses) then

0.5 mg/kg/dose q 12 hrs x 3 days (6 doses) then

0.5 mg/kg/dose q 24 hrs x 2 days (2 doses)

DART Protocol (patients on chronic vent) for facilitation of ventilator wean in BPD: initial dexamethasone dose of 0.15 mg/kg tapered over 10 days. EPIC has an order panel already built. (Also listed in MD Resident NICU Survival Guide)

Dexamethasone for with acute laryngeal edema or extubation:

Neonates: 0.25 mg/kg/dose starting ~4 hours prior to extubation, then every 8 hours for a total of 3 doses.

Pediatric patients: 0.5 mg/kg/dose starting ~6 hours prior to extubation, then every 6 hours for a total of 6 doses.

Dexamethasone for croup: 0.6mg/kg once or daily

Hydrocortisone for vasopressor re-calcitrant hypotension secondary to adrenal deficiency. Dose varies, but is usually 0.5 – 4 mg/kg/day divided q 6 to q 12 hours.

Acute asthma in pediatrics:

Prednisone/prednisolone (oral): Infants and children <12 years: 1 – 2mg/kg/day q 12 – 24 hours (max daily dose = 60-80 mg)

Methylprednisolone succinate (IV): Infants and children <12 years: 1 - 2mg/kg/day q 12 hours (max daily dose = 60-80 mg)

Sickle cell painful crisis in pediatrics: Methylprednisolone 15mg/kg/dose q 24 hours x 2 doses

LVP Fluids

- A one hour turn-around time on these fluids may be required, however often the intended fluid is needed when TPN is discontinued in the afternoon, the correct LVP start time is 1700.

For Pharmacy-The short-cut in EPIC for entry is "NICU Variable Parenteral Infusion" (preference list).

- The TPN Pharmacist will enter all TPNs and lipids into Abacus. TPNs and LVPs contain an extra 100-250 ml

Arterial line fluids which contain only sodium (NS, 1/2 sodium acetate) with heparin and are listed under the heparin options in EPIC, and are floor-stocked items in NICU and *usually* in NICU Stepdown.

Premade "Vanilla TPN" (but it is clear fluid) is a predefined order in EPIC and a bridge fluid for LVP/TPN.

Is comprised of Amino Acid (34 gm/L)/Dextrose (7.5%) /Calcium (15 mEq/L) is available in EPIC

Electrolyte replacement

Sodium replacement:

Sodium bicarbonate (IV) for metabolic acidosis:

HCO_3^- (mEq) = $0.6 \times \text{wt (kg)} \times \text{base deficit (mEq/L)}$ (full correction but some practitioners use 1/2 that amount, then recheck labs.)

Sodium chloride (3%, IV)

To correct acute serious hyponatremia (serum sodium less than 125mEq/dl): dose in mEq sodium = [desired sodium (mEq/L) – actual sodium (mEq/L)] x 0.6 x wt (kg)

Remember: 3% NaCl = 513 mEq/L. Infuse hypertonic solutions via central line or slowly through peripheral line when other fluids co-infused; max rate of infusion = 1 mEq/kg/hour.

EPIC standardized dose increments of oral NaCl soln: 0.5, 1 & 2 mEq

Rarely used for metabolic alkalosis: acetazolamide IV / PO 5 – 10 mg/kg q8hr

Maintenance bicarb replacement

Bicitra: 2 - 4 mEq/kg/day q 3 - 6 hours given in feedings (Osmolality ~1870). 1 ml = 1 meq of sodium bicarbonate.

For sodium bicarb boluses: utilize 4.2% however, for infusions in code situations use the 1meq/mL fluid restricted infusion in EPIC; it is okay to reduce the bag size to 50 meq/50 ml.

Phosphate replacement (IV):

Ordered through supplemental page in Companion program

For serum phos < 1.5:	2 mmol phos/kg
For serum phos 1.5 - 1.9:	1.5 mmol phos/kg
For serum phos 2 - 2.4:	1 mmol phos/kg
For serum phos 2.5 - 3.4:	0.75 mmol phos/kg
For serum phos >3.5:	0.5 mmol phos/kg

If need oral, use "NICU phosphate supplement" in EPIC. Usually 1x dose.

Generally, if serum potassium is < 4, suggest Kphos; if > 4, use sodium phos for replacement.

Potassium phos (IV): For each 1 mmol of phos, there is 1.5 mEq of potassium

Sodium phos (IV): For each 1 mmol of phos, there is 1.3 mEq of sodium.

IV potassium bolus can be run at 1-2 mEq / kg/hr

EPIC standardized dose increments of oral KCl soln: 0.5 & 1 mEq

IV Calcium Gluconate: Use supplemental page of TPN program.

Dose Range: 0.5-1 mEq/kg (108 mg/kg to 217 mg/kg of calcium gluconate) to run over 10-30 minutes for urgent EKG changes or 60 min for supplementation.

Dose Conversion: Calcium gluconate 1 mL = 9 mg of elemental calcium or 0.46 mEq of elemental calcium or 100mg calcium gluconate.

Oral Calcium Carbonate:

1 mEq = 50 mg calcium carb = 20 mg elemental calcium

Maintenance dose for neonatal hypocalcemia / rickets: *elemental calcium* 50-200 mg/kg/day in 4-6 divided doses (watch units with EPIC depending on product).

Diuretics

Furosemide:

Oral: 1 – 4 mg/kg/dose q 12 – 24 hours

IV: 1 – 2 mg/kg/dose q 12 – 24 hours

Furosemide can be ordered as continuous infusion via EPIC at 0.05-0.2 mg/kg/hr (it is not in Companion)

Bumetanide (IV):

Neonates: 0.01 – 0.05 mg/kg/dose q 24 – 48 hours

Infants: 0.015 – 0.1 mg/kg/dose q 6 – 24 hours

Chlorothiazide (oral): 10 – 40 mg/kg/day q 12 – 24 hours

Spironolactone (oral): 1 – 3 mg/kg/day q 24 hours

Gastrointestinal

Famotidine: bleed / reflux (preferred agent, however efficacy not established 0.5 – 1 mg/kg/day q24hr

Pantoprazole: bleed 1 mg/kg/day IV

Metoclopramide: reflux 0.4 – 0.8 mg/kg/day divided every 6 – 8 hrs. A good regimen is 0.2 mg/kg/dose every 8 hours.

Sucralfate for Pediatric Trauma patients who are NPO.

For stress ulcer prophylaxis: 40 – 80 mg/kg/day divided q 6 hours. If patient is adult size (≥ 60 kg), then dose is 1 gram q 6 hours.

Hematology agents

Oral iron (as ferrous sulfate drops) 3 – 6 mg elemental iron/kg/day. (EPIC will standardize dose as Elemental iron in these Omni syringes sizes of: 1.5, 3, 3.75, 4.5, 6, 7.5 & 9 mg, but may need to dose as 2-3 times a day)

Granulocyte colony stimulating factor CSF: Neupogen/filgrastim 10mcg/kg/dose IV daily for 2 – 5 days to treat severe neonatal neutropenia (ANC<1000). Medication continues until ANC steadily >1000 for 2 days. Albumin is added for increased bioavailability, as per EPIC order.

Hyperbilirubinemia:

Ursodiol for cholestatic jaundice 30mg/kg/day in 2 to 3 divided doses

Phenobarbital augmentation: No loading dose needed. 3-8 mg/kg/day in 2 to 3 divided doses

Phenobarbital prior to HIDA scan: 5mg/kg/day for 5 days prior to scan.

IVIG (for hemolytic blood incompatibility): 0.5-2 gm/ kg per dose usually given over 4-6 hrs.

Insulin: All EPIC orders will indicate NICU specifically if utilizing the "Facility List" not "Preference List"

Hyperglycemia: FYI-neonates may take several hours to respond (~2-3 hrs)

Bolus dose: 0.1 – 0.2 units/kg/dose

Infusion: 0.05 – 0.2 units/kg/hr. There are 2 standard NICU concentrations: 50 units/50 mL (preferred) and 100 units/50 mL in D5W. Should be compounded into a 50 ml PVC free bag.

Insulin for hyperkalemia (is regular insulin in D10W): 0.1 unit/kg once.

Nutrition supplements

MCT oil is about 8 K calories/mL (to raise the caloric density of feeding by 3 – 4 K calories/oz. add 0.5mL MCT oil/30mL of feeding). EPIC standardized doses without pharmacy verification: MCT oil: 0.5 & 1 ml

Protein supplement: 1 – 2 grams/kg/day given in feeds 3 – 6 times per day. Supplied by milk lab, not pharmacy.

Iodine to prevent brain damage in babies ≥ 1 kg (entered via TPN PharmD) = 30 mcg/kg daily while on TPN. Not done in younger due to povidone-iodine skincare.

Vitamin D for metabolic bone disease (MBD): doxercalciferol 0.25-0.5mcg oral daily using Dr. Nandula's protocol until alkphos level <300 (expert opinion). Some babies require ergocalciferol in doses of 200-400 units (5-10 mcg). If cannot tolerate PO, then can give Doxercalciferol 1mcg/0.5mL IV 3 times a week (Mon, Wed, Fri) in TPN.

MVI does not contain iron (see heme section for dosing) 1ml PO daily is usual dose, however some attending may prefer 0.5ml dose if baby is ≤ 1.5 kg.

-timing of initiation will differ per attending; possible at 14 DOL, 21 DOL or when at full feeds

PO iron-usually initiated at DOL 14.

Ophthalmology:

Eye dilation for Ophthalmology exams are time sensitive. If not entered through NICU admit order set be sure admin instructions are for "RN to administer."

Cyclomydril ophth drops: ordered as 1 drop ou q 5 min x 3 doses to be started 1 hr before for ophthalmology examinations. BUD is 28 days.

Tetracaine 0.5% ophth. drops: ordered for ophthalmology examinations. Once open, one time use only.

Avastin (bevacizumab) for treatment retinopathy of prematurity: there is an order panel in the pharmacist's preference list under "bevacizumab" that contains other medications needed.

SVT:

Adenosine 100-200 mcg/kg is the usual effective dose, may need repeating. Rapid push of NS *immediately* following. Significant drug interaction with caffeine, avoid concomitant use with caffeine.

Refractory: esmolol (If Pediatric Cardiology approves) - 50-100 mcg/kg bolus then 50-300 mcg/kg/min continuous infusion.

Propranolol

Oral: 0.5-1 mg/kg/dose q 6-8 hours. Usual max daily dose ~ 5 mg/kg/day.

IV: 0.01-0.15 mg/kg/dose q 6-8 hours. Max: 0.15 mg/kg/dose.

Miscellaneous:

Albumin 5% or 25% depending on indication

Albumin 5% is for volume expansion; and is stocked NICU Omnicell.

Dose is 10 - 20ml/kg.

Albumin 25% dose for hypoalbuminemia, nephrotic syndrome, or fluid restricted patients.

Dose = 1 - 2 grams/kg/dose (max of 6gm/kg/day). Enter as a syringe from IV Therapy.

Alprostadil: IV infusion: 0.05-0.1mcg/kg/min. It is stocked in Omnicell if RN needs to make the first bag. Standard concentration is 500mcg/50mL D5W.

Alteplase for Cath clearance: Dose is just enough to fill occluded catheter line, usually 0.3-0.5ml of 1mg in 1ml for neonates and infants. Slowly instill into occluded lumen over 1-2 min. Leave in lumen around clot for 15 min then aspirate out of catheter; do not infuse into patient. If clot is not dissolved instill additional volume of 0.3 - 0.5 mL slowly and leave for 2 hours. If clot dissolves, aspirate and flush catheter with NS. Of note: ineffective for blockages other than coagulation clots (i.e. will not work on calcium/phosphate precipitant).

Amlodipine for neonatal chronic hypertension usual starting dose is 0.05 - 0.1mg/kg/day q24hr. Dose is titrated to max of 0.3mg/kg/day.

Enalapril for neonatal chronic hypertension: 0.04-0.25 mg/kg PO once daily. Start at lower end due to reports of oliguria when start with higher doses, not recommended when eGFR ≤ 30 ml/min/1.73 m².

Epinephrine for "circumcision bleeding" = location in EPIC. 0.01-0.02 mg/kg of 0.1mg/ml concentration ordered and applied to gauze

Glycopyrrolate for excessive but thin pulmonary secretions

IV-0.005-0.01mg/kg/dose q 6-8 hrs, oral dose 0.1mg/kg/dose q6-8 hrs

Management of ICP in Peds Trauma:

23.4% sodium chloride: given as frequently as q 6 hours infused over 15 min.

Dosing is usually 20mL in patients weighing < 20kg

30mL for patients >20kg

3% sodium chloride bolus is usually 1.5 or 3 mEq/kg administered over 20-30 minutes

3% continuous infusion is usually 1-2 mEq/kg/hr

Mannitol: 0.25 – 1 gram/kg over 15 minutes. May be given every 4 – 6 hours.

Pentobarbital for combination ICP management with HTS

Loading dose: 10mg/kg over 30 minutes, then 5mg/kg every hour for three doses

Maintenance drip: 1 mg/kg/hour

Infantile Pulmonary hypertension:

Sildenafil 0.25-2 mg/kg/dose oral q6-8 hrs. Start low & titrate.

Vaccinations

Ordered from an Order set (Pediatric vaccination order) for neonatal/pediatric vaccinations.

2 and 4 month vaccines are: Pediarix[®], ActHIB[®] and Prevnar 13[®]

IVIG for Peds

Dose varies depending on indication and acuity. In general, dose will be between 500 – 2000mg/kg/dose.

For example, in patients with Kawasaki disease – dose is 2000mg/kg as a single dose given over 10 – 12 hours. This is will be given in combination with aspirin. If symptoms persist for >36 hours a second dose of IVIG (2000mg/kg) may be given.

FOR BABIES NOT ADMITTED INTO NICU:

Please use the downtime procedure to enter meds/fluids and dispense to NICU

NICU Standard Oral Doses

Acetaminophen: 15, 20, 25, 30, 35, 40 & 60 mg

Elemental iron: 1.5, 3, 3.75, 4.5, 6, 7.5 & 9 mg

MCT oil: 0.5 & 1 ml

Multi Vitamin drops: 0.5 & 1 ml

Potassium Chloride: 0.5 & 1 mEq

Sodium Chloride: 0.5, 1 & 2 mEq

Common Pediatric Antibiotic Errors

High dose amoxicillin/augmentin® oral: 80 - 90mg/kg/day div. bid for otitis media, resistant Strep. pneumo.

Ampicillin/Sulbactam –dose often confused-

*Textbook*IV/IM Dose is based on ampicillin component alone, BUT *EPIC* dose shows as Amp/sulbactam (2:1) and dispenses combination compound *not* just ampicillin component; you WILL need to do the conversion* (Example of 20 kg child that needs 50 mg/kg of ampicillin per dose will need to order in Epic as 1500 mg of ampicillin/sulbactam)

For mild/moderate infections: 150-300 mg/kg/day ampicillin component divided q6hr (need to EPIC adj dose)

For severe infections: 300-600 mg/kg/day ampicillin component divided q6hr (Need to EPIC adj dose)

Antibiotic Doses for Neonates ≤ 28 days old

***For patients > 29 days old consult Nelson/Bradley Pediatric Antimicrobial Therapy for dosing ***

Adapted from American Academy of Pediatrics Red Book 31st Edition

Dose is to be calculated per dose (not day)

Gestational Age (GA) • Postmenstrual Age (PMA) • Day of Life (DOL)

Medication	Route	Any postnatal age	
Amoxicillin	PO	15 mg / kg Q12hr If UTI ppx (hydronephrosis, vesicoureteral reflux) dose until 2 months is 10-15 mg/kg PO once daily in evening (to allow to dwell longer) Asplenic/Pneumococcal ppx treat from dx to 5 yo at 10mg/kg/dose PO Q12hr	
Azithromycin	IV, PO	10 mg/kg Q24hr	
Ceftriaxone	IV, IM	50 mg/kg Q24hr For congenital GC exposure: 50 mg/kg (max 250 mg) IV / IM once Contraindicated in with patient receiving IV infusion containing calcium Or hyperbilirubinemia if concern use ceftazidime 100mg/kg IV x one	
Erythromycin	IV, PO	10 mg/kg Q6hr not considered drug of choice, see azithromycin	
Penicillin G BENZATHINE	IM	Any age 50,000 units/kg x 1 dose	
Rifampin	IV, PO	10 mg/kg Q24hr	
		DOL ≤ 7 days old	DOL > 7 days old
Penicillin G	IV/IM	50,000 units/kg Q12hr	50,000 units/kg Q8hr

Penicillin aqueous crystalline IV dose for congenital syphilis is 50,000 unit/kg q 12 hours x 7 days, then on DOL 8, adjust frequency to 50,000 units/kg/dose q 8 hours until treatment complete.

		GA < 36 weeks		GA ≥ 36 weeks	
Cefepime^a	IV, IM	30 mg/kg Q12 hr		50 mg/kg Q12 hr	
		GA ≤ 34 weeks		GA >34 weeks	
		DOL ≤ 7 days old	DOL > 7 days old	DOL ≤ 7 days old	DOL > 7 days old
Aztreonam	IV	30 mg/kg Q12hr	30 mg/kg Q8hr	30 mg/kg Q8hr	30 mg/kg Q6hr
Ampicillin^b	IV, IM	50 mg /kg Q12hr	75 mg/kg Q12hr	50 mg / kg Q8hr	50 mg / kg Q8hr
Linezolid	IV, PO	10 mg/kg Q12hr	10 mg/kg Q8hr	10 mg/kg Q8hr	10 mg/kg Q8hr
Nafcillin^b	IV, IM	25 mg / kg Q12hr	25 mg/kg Q8hr	25 mg/kg Q8hr	25 mg/kg Q6hr
		GA < 32 weeks		GA ≥ 32 weeks	
		DOL <14 days old	DOL ≥14 days old	DOL ≤ 7 days old	DOL > 7 days old
Cefazolin Cefotaxime (shortage) Ceftazidime (for GC tx see ceftriaxone)	IV, IM	50 mg/kg Q12hr	50 mg/kg Q8hr	50 mg/kg Q12hr	50 mg/kg Q8hr
		DOL <14 days old	DOL ≥14 days old	DOL <14 days	DOL ≥14 days
Meropenem^a	IV	20 mg/kg Q12hr	20 mg/kg Q8hr	20 mg/kg Q8hr	30 mg/kg Q8hr
PMA					
		PMA ≤ 30 weeks		PMA > 30 weeks	
Piperacillin-tazobactam	IV	100 mg/kg Q8hr		80 mg/kg Q6hr	
		PMA ≤ 32 week	PMA 33-40 week	PMA > 40 week	
Clindamycin	IV, PO	5 mg/kg Q8hr	7 mg/kg Q8hr	9mg/kg Q8hr	
		PMA ≤ 34 week	PMA 35-40 week	PMA > 40 week	
Metronidazole	IV	7.5 mg/kg Q12hr	7.5 mg/kg Q8hr	10 mg/kg Q8hr	

^a=higher doses for meningitis may be utilized, consult Lexi-Drugs to verify

^b=higher doses for meningitis may be utilized, consult Nelson/Bradley (Yellow Book) to verify

Aminoglycoside Dosing

	GA <30 weeks		GA 30-34 weeks		GA ≥ 35 weeks	
Aminoglycoside IV, IM	DOL ≤14 days	DOL >14 days	DOL ≤14 days	DOL >14 days	DOL ≤ 7 days	DOL > 7 days
Amikacin ^b	15 mg/kg Q48hr	15 mg/kg Q24hr	15 mg/kg Q36hr	15 mg/kg Q24hr	15 mg/kg Q24hr	18 mg/kg q24hr
Gentamicin ^c Tobramycin ^c	5 mg/kg Q48hr	5 mg/kg Q36hr	5 mg/kg Q36hr	5 mg/kg Q24hr	4 mg/kg Q24hr	5 mg/kg Q24hr

^bDesired serum concentrations: 20-30 mcg/ml (peak), < 10 mcg/ml (trough)

^cDesired serum concentrations: 5-10 mcg/ml (peak), < 2 mcg/ml (trough)

Vancomycin^d Dosage (mg/kg/dose) by Gestational Age Plus SCR

All ages: Initial 20 mg/kg loading dose administered then

GA ≤ 28 weeks			GA > 28 weeks		
Scr (mg/dl)	Dose (mg/kg)	Frequency	Scr (mg/dl)	Dose (mg/kg)	Frequency
<0.5	15	Q12hr	<0.7	15	Q12hr
0.5-0.7	20	Q24hr	0.7-0.9	20	Q24hr
0.8-1	15	Q24hr	1-1.2	15	Q24hr
1.1-1.4	10	Q24hr	1.3-1.6	10	Q24hr
>1.4	15	Q48hr	>1.6	15	Q48hr

^dPeak of 20-40 mcg/ml, however troughs will vary due to condition and organism e.g. CONS, MSSA, MRSA 10-20 mcg/ml

Acyclovir for HSV suspected/infection: 10 day tx for exposure with a negative evaluation (S Pinninti 2018), 14 day tx for skin & mucus, and ≥21 day CNS/disseminated

Weight <1 kg
1-14 DOL = 20mg/kg Q12hr
15-28 DOL = 20mg/kg Q8hr

Weight 1-2 kg
1-7 DOL 20mg/kg Q12hr
8-28 DOL 20mg/kg Q8hr

Weight >2 kg
20mg/kg q8hr for all ages

Antifungal therapy:

Targeted fluconazole prophylaxis for neonates with a birth weight ≤ 1 Kg, GA ≤ 28w at birth, on broad spectrum antibiotics for >3 days with a central line: 3 mg/kg/dose given every 72 hours.

Infants ≥ 1.5 kg who are suspected to have late-onset sepsis and are on prolonged broad-spectrum antibiotic(s) with a central line may need fluconazole prophylaxis at the same dose (3 mg/kg q 72 hours) at the discretion of attending neonatologist.

Fluconazole prophylaxis should be discontinued with the conclusion of antibiotic administration.

Usual empiric antifungal in this age group starts with fluconazole, then caspofungin or if resistance is found, may use lipid amphotericin.

Gentian Violet: for stubborn thrush, we carry the 1% solution but it is 10% alcohol. Expert recommendation to use 1x. Lexi states daily-BID but max 3 day duration or can burn skin. Will stain.

Antiretroviral prophylaxis recommendations:

1 or 2 drug empiric therapies

Zidovudine (duration of therapy: 6 weeks): Note – for infants unable to tolerate oral ZDV, the IV dose is 75% of the oral dose while maintaining the same dosing interval.

≥35 weeks gestation at birth: 4mg/kg/dose PO twice daily. *Only if HIV is confirmed, at 4 weeks of life, dose will be increased to 12mg/kg/dose PO twice daily*

≥30 to <35 weeks gestation at birth

-Birth to age 2 weeks: 2mg/kg/dose PO twice daily

-Age 2 weeks to 6-8 weeks: 3mg/kg/dose PO twice daily.

-*Only if baby is confirmed HIV+, at ≥6 weeks dose will be increased to 12mg/kg/dose PO BID.*

<30 weeks gestation at birth

-Birth to age 4 weeks: 2mg/kg/dose PO twice daily

-Age 4 to 8-10 weeks: 3mg/kg/dose PO twice daily

-*Age >8 to 10 weeks: Only if baby is confirmed HIV+, dose will be increased to 12mg/kg/dose PO BID.*

Abacavir **Solution is non-formulary and would need to be ordered. Not recommended at this time unless child is having zidovudine associated toxicity. Please see guidelines for dosing.**

Lamivudine possible add-on to zidovudine (usual duration of therapy: 6 weeks)

≥32 weeks gestation at birth

-Birth to age 4 weeks: 2mg/kg/dose PO twice daily

-Age >4 weeks: 4mg/kg/dose PO twice daily

3-drug empiric therapy (Zidovudine and Lamivudine as above + EITHER Nevirapine or Raltegravir*)

Nevirapine (duration of therapy: 6 weeks)

≥37 weeks gestation at birth

-Birth to age 4 weeks: 6mg/kg/dose PO twice daily

- *Only if HIV is confirmed, at 4 weeks of life, dose will be increased to 200mg/m² of BSA/dose PO*

twice daily

≥34 to <37 weeks gestation at birth

-Birth to age 1 week: 4mg/kg/dose PO twice daily

-Age 1 to 4 weeks: 6mg/kg/dose PO twice daily

- *Only if HIV is confirmed, at 4 weeks of life, dose will be increased to 200mg/m² of BSA/dose*

PO twice daily

≥32 to <34 weeks gestation at birth

-Birth to age 2 weeks: 2mg/kg/dose PO twice daily

-Age 2-4 weeks: 4mg/kg/dose PO twice daily

-Age 4-6 weeks: 6mg/kg/dose PO twice daily

- *Only if HIV is confirmed, at 4 weeks of life, dose will be increased to 200mg/m² of BSA/dose*

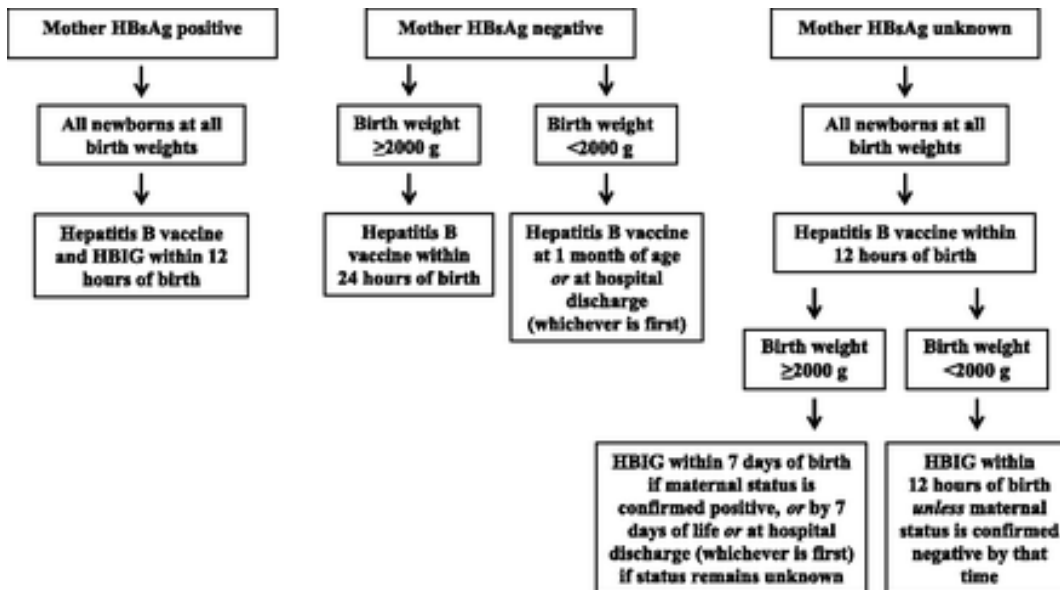
PO twice daily

Raltegravir (if mother has taken raltegravir 2 to 24 hours prior to delivery, the neonate's first dose of raltegravir should be delayed until 24-48 hours after birth) ≥37 weeks gestation at birth and weighing ≥2kg

Body Weight (kg)	Volume (dose) of suspension, raltegravir 10mg/mL to be administered
Birth to age 1 weeks: once daily dosing	Approximately 1.5mg/kg/dose
2 to <3kg	0.4mL (4mg) once daily
3 to <4kg	0.5mL (5mg) once daily
4 to <5kg	0.7mL (7mg) once daily
Age 1 to 4 weeks: twice daily dosing	Approximately 3mg/kg/dose
2 to <3kg	0.8mL (8mg) twice daily
3 to <4kg	1mL (10mg) twice daily
4 to <5kg	1.5mL (15mg) twice daily
Age 4 to 6 weeks: twice daily dosing	Approximately 6mg/kg/dose
3 to <4kg	2.5mL (25mg) twice daily
4 to <6kg	3mL (30mg) twice daily
6 to <8 kg	4 ml (40 mg) twice daily

Reference: Panel on Antiretroviral Therapy and Medical Management of Children Living with HIV. Recommendations for the Use of Antiretroviral Agents in Pediatric HIV Infection. Update of December 30, 2021. Accessed online May 11, 2022. pp. G 1-8

Neonatal Hepatitis B Vaccine Algorithm, AAP 2017



Epinephrine Comment:

- In emergent situations, for the NICU, epinephrine should be used out of omnicell, the 1 mg/10 ml product initially. If an epinephrine drip is continued after the emergent situation, the team should order an new bag of he same epinephrine concentration in a larger size, 5mg/50ml. FYI-several concentrations of epinephrine exist in EPIC.

NICU IV extravasation: Epic order reads for NICU product. Treatment is found in the Policy RX-11-059 with specific indications, directions on preparation, and administration for neonates included as below:

Product:	<i>Hyaluronidase (Vitrase™) 200 units/mL (Neonates)</i>
Preparation:	Dilute 0.07 mL of hyaluronidase with 0.93 ml of normal saline to make a 15 unit/mL solution.
Use:	Using a 25 gauge needle, inject 5 divided doses (0.2 mL per dose) subcutaneously or intradermally surrounding the extravasation site at the leading edge. Change the needle with each injection.