

ANTIBIOTICS

Acyclovir 20 mg/kg IV, <30wk: Q12h, >30wk: Q8h
Amoxicillin 20 mg/kg QHS for UTI prophylaxis
Ampho B 1 mg/kg IV Q24h over 4h (needs ID Approval)
Ampicillin 50 mg/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 or Meningitis:
300 mg/kg/day IV divided Q8h (≤7d) or Q6h (>8d)

Azithromycin (*Needs ID Approval)
General Dose: 10 mg/kg daily x 7 d
For Ureaplasma: 20mg/kg daily x 3 days

Cefazolin 25 mg/kg IV (*Ancef*) (intervals as for ceftazidime)
Cefepime (*Needs ID Approval)
50 mg/kg IV Q12h OR Q8h (“meningitis interval”)
Ceftazidime 50 mg/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: Q8h

Clindamycin 5-7.5 mg/kg IV
(*NEC w/pneumatois (Metronidazole preferred)*)
≤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

Fluconazole (*Needs ID Approval)

12 mg/kg LD, then 6 mg/kg IV
<30 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

Prophylaxis ≤ 24 wks PMA: 3 mg/kg Q72h x 14d

Gentamicin
√ Trough ā 2nd dose; if tr > 1, re√ in 12h, if <0.3, discuss with pharmacy.
≤29 wks PMA: **5 mg/kg** IV Q48h (≤7d)
4 mg/kg IV Q36h (8-28d), Q24h (>28d)
30-34 wks PMA: **4.5 mg/kg** IV Q36h (≤7d)
4 mg/kg IV Q24h (>7d)
≥35 wks PMA: **4 mg/kg** IV Q24h

Metronidazole (For all load w/15 mg/kg)

≤25 wks PMA 7.5 mg/kg Q 24h
26-27 wks PMA 10 mg/kg Q24h
28-33 wks PMA: 7.5 mg/kg Q12h
34-40 wks PMA: 7.5 mg/kg Q8h
≥40 wks PMA: 7.5 mg/kg Q 6h

Nafcillin 50 mg/kg IV (intervals as for Zosyn)
Nystatin 0.5 (PT) - 1 ml (T) PO QID
Vancomycin 15 mg/kg IV over 90 minutes
→Tr 5-15 (depending on target therapy) (√Tr ā 2nd (<30 wks)
OR 3rd dose (≥30 wks))

≤29 wks PMA: Q18h (≤14d), Q12h (>14d)
30-36 wks PMA: Q12h (≤14d), Q8h (>14d)
37-44 wks PMA: Q12h (≤7d), Q8h (>7d)with th
≥45 wks PMA: Q6h

Zosyn 100 mg/kg IV (Piperacillin-Tazobactam)
≤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 (Q6h: Piperacillin)

BLOOD PRODUCTS

Cryo 10 ml/kg IV over 1h (fibrinogen <100)
FFP 10 - 15 ml/kg IV over 1h (PT > 20, PTT >100)
pRBC 15 ml/kg over 4 hours
platelets 10 – 15 ml/kg IV over 1 hour
* depends on GA, if bleeding, if pre/post op, etc

CARDIAC MEDS

Adenosine(3mg/ml) 0.1 mg/kg IVP, ↑ by 0.1 mg/kg
Q 2 min PRN to 0.25 mg/kg
Amlodipine 0.05 mg/kg/BID starting dose
Atropine (0.1 mg/ml)0.02 mg/kg IV/IIM, may repeat
Bosentan 1 mg/kg PO Q12h (Needs pHTN team approval)
Captopril 0.01-0.05 mg/kg PO Q8-12h (initial dose)
Dobutamine drip 2 – 20 mcg/kg/min
Dopamine drip 2 – 20 mcg/kg/min
Digoxin 5 mcg/kg PO BID (4 mcg/kg IV)
Epinephrine **IV:** 0.01-0.03 mg/kg
ET 0.05-0.1 mg/kg
Epinephrine drip 0.02 – 1 mcg/kg/min
Esmolol 50 – 200 mcg/kg/min (↑ by 50)
Hydralazine 0.1-0.2 mg/kg IV Q4-6h PRN
Hydrocortisone

- BP support: Load: 1-2mg/kg, followed by Maintenance 0.5-2 mg/kg q6-8hr. *If < 5 days therapy, no need to wean
- Adrenal Insufficiency: discuss dosing with Endo.
Indomethacin (follow BUN/Cr, platelets; UOP >0.5 ml/kg/h)
(don’t give w/ steroids)
- IVH Prophylaxis 0.1 mg/kg IV q 24 h x 3 doses (birth weight less than or equal to 1000 g) if initiated within 6 hr of birth

-PDA Treatment: (DOL 2 – 7): 0.2 mg/kg IV Q12h x 3 doses
(>DOL 7): 1st dose 0.2 mg/kg, then 0.25 mg/kg for doses 2 & 3
Lidocaine 1 mg/kg IV, then drip 20mcg/kg/min (V-tach)
Milirnone 0.2 – 1 mcg/kg/min (start 0.2 if < 1 kg)
Norepinephrine 0.02 – 0.3 mcg/kg/min drip
Phenylephrine 0.1-2 mcg/kg/min drip
Propranolol 0.25 mg/kg PO Q6h OR 0.01 mg/kg IV Q6h for SVT

Prostaglandin E₁ 0.02 - 0.1 mcg/kg/min
Sildenafil (Revatio) start at 0.5 mg/kg PO Q8h
Sildenafil (IV) 0.06 mg/kg/hr(continuous infusion)
Vasopressin 0.1 - 1 milli-units/kg/min (start @ 0.3; Na q3 -4h); Titrate by 0. 1 – 0.2; limit up to 72 hours

DIURETICS

Acetazolamide 5 mg/kg PO daily
Chlorothiazide 10-40 mg/kg/day PO ÷ BID
5-20 mg/kg/day IV ÷ BID
Furosemide 1-2 mg/kg IV (OR drip 100-400 mcg/kg/hr)

Bumetanide **0.0025-0.0075 mg/kg/hr IV** (continuous infusion)

(Bumex)

PAIN / SEDATION MEDS

Acetaminophen 10-15 mg/kg PO (15-30 PR) Q6h PRN
Acetaminophen for PDA 15 mg/kg IV/ PO/PR q 6h x 12 doses
Acetaminophen IV PMA 28 -32wks: 7.5 mg/kg/dose Q8h
PMA 32 – 36wks: 7.5 mg/kg/dose Q6h
PMA ≥ 37 wks: 10 mg/kg/dose Q6h
0.05-0.1 mg/kg IV Q1-2h PRN **for Status Epileptics**
Scheduled 0.1 mg/kg Q 4h
Lorazepam 0.1 – 1 mcg/kg/hr
(Ativan)
Dexmedetomidine 0.5-2mcg/kg/hr
Fentanyl Drip 2-5 mcg/kg IV Q1h PRN
Fentanyl 5-10 mg/kg PO Q6-8h
Ibuprofen Not recommended < 32 wks
PMA ≥ 32 wks 0.01-0.12 mg/kg/hr
Midazolam 0.05-0.1 mg/kg q 2-4hr PRN
Midazolam 0.01-0.05 mg/kg/hr
Morphine drip 0.05-0.1 mg/kg IV Q1h PRN
Morphine 0.5-1 mg/kg IV Q1h PRN
Rocuronium 0.1 mg/kg IV Q1h PRN
Vecuronium 0.05 - 0.1 mg/kg/h
Vecuronium drip

RESPIRATORY MEDS

Caffeine citrate 20 mg/kg LD, then 5-10 mg/kg IV/PO Daily
Convert to PO when ≥ 40ml/kg feeds
Budesonide 0.25mg BID
Dexamethasone 0.1- 0.25 mg/kg IV/PO Q12h x 6 doses
- Air way edema
- For DART/BPD, discuss with attending
Duoneb 1.5 ml Q 12 (inhaled)
Inhaled NO Start at 20ppm. Wean to 15→ 10→ 5→ 4→ 3→2→1→ off
Pulmozyme 2.5 mL 1 -2 times per day x 3 days

SURFACTANTS

Infasurf (calfactant) 3 ml/kg ET in 2 aliquots
Curosurf (poractant) 2.5ml/kg x1, repeat 1.25 ml/kg q12hr (total 3 doses)

REPLACEMENT FLUIDS – NO HEPARIN IN THIS EVER

Replace losses > 30 ml/kg/day (12 ml/kg/12 hour shift)
VL output: ½ NS + 30 meq/L KCl
OTHER COMMON NICU MEDS
DEKAs plus 1 ml PO Q day
Afrin (0.05%) 2 gtts/nare BID x 3d
5% Albumin **0.5g/kg** (10 ml/kg) IV over 1h
25% Albumin **1g/kg** (4 ml/kg) IV over 4h
Amicar 100 mg/kg over 1 hr as load, then 25 mg/kg/hr x4 hr, extend as needed
PO, dose varies (1 ml = 1mEq Na citrate)
Bicitra 20 mg/kg IV over 30-60 min
Calcium chloride 100 mg/kg IV over 30-60 min (preferred)
Calcium gluconate
Cyclomydril 1 gtt OU Q 5 min x 2, 1h ā ROP exam
D₁₀W 2 ml/kg IVP, then 6 mg/kg/min
Elemental Fe 2 mg/kg elemental Fe PO Q day

Factor VIIa (Novo-7) 90 mcg/kg IV (refractory PT/bleeding) , may repeat every 2h until hemostasis achieved
* Needs CPCS approval
Famotidine 0.5 mg/kg IV daily
Fosphenytoin 15-20 mg **PE**/kg LD over 10 min
G-CSF 10 mcg/kg SQ Daily x1, then recheck
HBIG 0.5 ml IM within 12 hrs of birth
Hyaluronidase (Vitrase) 15 units/ml, SC injections, 0.2 ml for 5 injections around site of infiltrate, use up to 24 hr out
Insulin drip 0.01-0.1 units/kg/hour
Insulin
-Hyperglycemia: 0.05 to 0.1 units/kg infused over 3-5min
-HyperKalemia: 0.1 units/kg IV over 3-5 min, with dextrose (2-5 ml/kg of D10)

IVIG 500 mg/kg IV over 3h (*Needs CPCS Approval)
Metoclopramide 0.1 mg/kg PO/IV Q8H
Na bicarbonate 1-2 mEq/kg IV over 1h (OR 0.3(kg)(BD))
NaCl ≥0.5 mEq/kg PO QID
Normal Saline 10 ml/kg IV over 1h
Octreotide 2 – 10 mcg/kg/hour (titrate daily)
Pantoprazole 1.2 mg/kg PO DAILY
Pantoprazole 1 mg/kg daily IV
Phenobarbital 20 mg/kg LD over 15-20 min, then 1.5- 2.5 mg/kg IV/PO BID (level 20-40)

Phentolamine (for DA infiltrate) 1ml of 0.5mg/ml (max 5 mg) into existing IV or SC inj into affected area (typical amount 1-5 mg)
Potassium bolus 0.5 mEq/kg IV over 1 hour for K < 2.5, discuss with fellow prior to ordering!
< 5 kg 50 mg, ≥5 kg 100 mg
Beyfortus 10-15 mg/kg PO Q12h
Ursodiol 200 – 400 iu daily
Vitamin D (D-vi-sol)
Vitamin E 30 IU/kg in 2 ml SW NG (<1250g)
Vitamin K 0.5 (<1500g) - 1 mg (≥1500g) IM/SQ (IV)

INTUBATION PREMEDICATION

1. Morphine 0.05 - 0.2mg/kg IV (if ≤ 1.5 kg use 0.05)
2. Fentanyl 2mcg/kg IV
Wait 5 – 10 minutes, then
3. Atropine 0.02 mg/kg IV, (0.1 mg/ml)
Also consider having at bedside:
4. Vecuronium **0.1mg/kg (1mg/ml) IV**
5. Rocuronium **0.6-1.2 mg/kg IV**
Ostomy output: NS + 20 meq/L KCl

NEONATAL REFERENCE CARD

NICU Front Desk: 916-703-3050
NICU Fax: 916-703-3055
Radiology: 4-2125
Transfer Bridge: 916-703-6865
Transfer Center: 916- 734-8200
NICU Attending Pager: 916-456-7146
Anesthesia Board Runner: 4-6506

TPN

	Unit	Initiate (Preterm /Term)	Advance	Goal (Preterm/Term)
Fluid	ml/kg/d	80-100 / 60-80	prn	100-160 / 80-150
Dextrose	mg/kg/min	6-8/4-6	1-2	10-12/8-11
Protein	g/kg/d	2-3	1	3.5-4 / 2-3
Lipid	g/kg/d	2		2-3
Ca	mEq/kg/d	1-2	0.5-1*	3-4 / 0.5-4
	mg/kg/d			60-80 / 9-80
Phos**	mmol/kg/d	0.5	0.3-0.5	1.2-2.2 / 0.5-2.0
	mg/kg/d			39-67 / 15.5-62

*Advance as long as iCa < 1.45. **Optimal Ca:Phos ratio is 2:1
“Standard” PPN: D10 + 2% AA
“Standard” TPN: D12.5 + 3% AA + 2 g/kg IL
Additives
Cysteine (preterm < 2.5 kg) – 40 mg per gram AA
Zinc (preterm) – 50 mcg/kg
Levocarnitine (to aid in TG clearance) – 10-20 mg/kg/d

Reporting TF:

Goal TF= what you are planning to target
Actual TF = (TPN/IL or Enteral Feeds) + Meds/Side
Drips/flushes+ Boluses/Blood Products/Replacement Fluids

UVC fluids:

Starter TPN (D10, 3% AA) for Infants < 30 weeks GA
Goal blood sugar 50 – 150
UAC ½ NS with Hep (if < 1500g, use 0.25u/ml Hep, if >1500gn use 0.5 unit/ml Hep)
PAL ½ NS with 0.5 unit/ml Hep and Lidocaine 4mg/100ml
Keep total daily heparin <100 units/kg/day

LINES, CATHETERS AND TUBES

** All central lines need a Xray confirmation at time of placement and repeat at 8 hours later**
UVC 5 Fr OR 3.5 Fr (<500g); Single, double OR triple lumen
Depth: 2/3 shoulder to umbilicus, want at RA-IVC junction (want to terminate at T7-T9, above diaphragm)
UAC 5 Fr, 3.5 Fr (<1500g) OR 2.8 Fr (<500g); Single lumen
Depth: Shoulder to umbilicus + 1 (PT) - 2 cm (T) (OR 3(kg)+9) want at T6-10 (High position)
PICC 26g/2 Fr (<60 ml/h) OR 28g (<12 ml/h)
PAL ½ NS with 1unit/ml Hep and Lidocaine 4mg/100ml
CHEST TUBE 12 Fr (T), 10 Fr (PT, 8 Fr (micropremie). 8.5 Fr pigtail
FOLEY 8 Fr (T) OR 5 Fr (PT)
MISCELLANEOUS 24g thoracentesis/bladder tap, 22g LP/pericardiocentesis, 20g paracentesis, 18g IO

SAFETY OF SPECIFIC MEDS GIVEN THROUGH UAC

Safe	Discuss w/Staff	Not Recommended
≤D _{12.5} Heparin Na ≤154 mEq/L Na acetate Morphine	≥D ₁₅ Lipids PGE ₁ Caffeine Ampicillin/ Gent Fentanyl K ≤40	K >40 mEq/L high dose Ca Na bicarbonate pressors Vancomycin Ativan anticonvulsants Paralytics

TRANSFUSION GUIDELINES

Postnatal Age	Respiratory Support	No Respiratory Support
Hemoglobin g/dl (Hematocrit %)		
Week 1	11.5 (35%)	10.0 (30%)
Week 2	10.0 (30%)	8.5 (25%)
Week 3	8.5 (25%)	7.5 (23%)

PHOTOTHERAPY/Exchange Transfusion INFANTS ≥35 wks

-Use Bili Tool Bhutani Curve (also in EMR)

PHOTOTHERAPY: INFANTS <35 wks (NEJM 2008)

-Use Stanford Premie Bili Recs

PARTIAL VOLUME EXCHANGE TRANSFUSION

Volume (ml) =
$$\frac{(80 \times \text{wt (kg)}) \times (\text{Hct}_{\text{actual}} - \text{Hct}_{\text{desired}})}{\text{Hct}_{\text{actual}}}$$

Est. Blood Volume = 80 ml/kg; Hct_{desired} = 50-55%

ET TUBE SIZES (depth = 6 + wt (kg))

Wt (g)	GA	ETT
< 500	< 24 wks / IUGR	2.0 (or 2.5)
500 – 1000	24 - 28 wks	2.5
1000 – 2000	28 – 34 wks	3.0 (or 2.5)
2000 – 3000	34 – 38 wks	3.5 (or 3.0)
> 3000	> 38 wks	3.5 (or 4.0)

VENTILATION GOALS

	pH	pCO ₂	SaO ₂
RDS	≥7.25	45-55/60	90-95% (≤26 wks)
BPD/ airleak	≥7.25	50-65 (<7d) 55-70 (≥7d)	90-95% (27-31 wks) 90-95% (≥32 wks)
PPHN	≥7.40-7.55	35-50	≥90% (≥32 wks on NC)

Note: pCO₂ <35 ↑↑ risk of PVL, airleak; ΔpCO₂ 5 = ΔpH 0.04

INITIAL RESP SETTINGS

High-flow NC (1 – 6 lpm) to generate CPAP 6 cm:

flow (L/min) = 0.92 + 0.68 (wt in Kg)

NIPPV: PIP = PEEP + 10, Rate 20-40, IT 0.3 – 0.4

SIMV PC/PS: PIP = 14-28(22), PEEP = 4-6(5), Rate = 30-40 (15-30 in apnea; minimal rate = 10), IT 0.4-0.5, PS 6-10
SIMV PRVC/PS: TV = 7-10 cc/kg, PEEP = 4-6(5), Rate = 30-40 (15-30 in apnea; minimal rate = 10), IT 0.4-0.5, PS 6-10
HFJV (Jet):

Initial Jet settings for pt < 1000 g for RDS

Jet PIP 22 – 24, Jet Rate 360 bpm (300 bpm if < 600 g) Jet IT 20 msec. IMV PEEP 5, IMV PIP 8+PEEP, Rate 0-4, IT 0.4
Conversion from SIMV to JET
Set Jet PIP = SIMV PIP + (0 to 4)
Set PEEP = SIMV PEEP + 1 to 4 (adjust to maintain MAP post-conversion), Jet Rate 420 bpm, Jet IT 20 msec
Conventional PIP = PEEP + 6, Rate 4, IT 0.4
Airleak Settings

↓JET Rate by 60 bpm to a low of 240 bpm as tolerated
↓Conventional rate to 0

Typical Adjustments on Jet

↑ Jet PIP by 1 - 2 ⇒ ↓ pCO₂ by 2 - 4 mmHg (& vice versa)
↑ Jet PIP by 2 - 4 ⇒ ↓ pCO₂ by 5 - 8 mmHg (& vice versa)
Jet Rate range: 240 – 660 bpm – increased rate can improve oxygenation and ventilation
↑ oxygenation by ↑ Jet PIP, Conv. PIP & PEEP by 1 -2 cm at the same time
HFOV MAP 2-4 >MAP on SIMV, IT 33% (30% OR 33%), Power start at 3, “↑ until shaking well” (1-10), 10 Hz (6-15; 15 in PT ≤2.5 kg) (settings w/airleak: minimal MAP, IT 30%, 15 Hz)
↑ Power by 0.3 ⇒ ↓ pCO₂ by 3-5 mmHg (& vice versa)
↓ Hz ⇒ ↑ TV (& ↑ V_A), ↑ IT (& vice versa)

MAP = (PIP - PEEP) x ((Rate)/(IT) ÷ 60) + PEEP
OI = (MAP)(FiO₂)(100) ÷ PaO₂ (≥40 “80% risk of mortality”)
AaDO₂ = (FiO₂)(713) - PaO₂ - PaCO₂ (≥500 “potential ECMO”)

SCREENING

HEAD U/S (≤32 wks OR 1500g) Initial U/S on DOL 7; if IVH present, repeat weekly until resolves. Late U/S at 36 wks PMA to assess for PVL. *Early (<72hrs) HUS per attending discretion.

INITIAL ROP EXAM

All infants with BW<1500g OR all infants with gestational age ≤ 30 6/7 weeks.
Plus, select infants 1500 to 2000 g who are ≥ 31 wks deemed at high risk by the staff neonatologist
Timing of first exam as follows:
If ≤ 27 6/7 wks: at 31 wks PMA
If > 27 6/7 wks: at 4 wks of age

FEEDING GUIDELINES FOR ELBW (< 1 kg) INFANTS

Advancing Feeds:
- Trophic Feeds (<1000g): 10-20cc/kg/day x 3 days
- Fortify with HMF to 24 kcal/oz when tolerating feeds at 40 mL/kg/d x 24 hr.
- Advancements by 20 mL/kg/d for infants <1 kg; 0
- Advancements by 15 mL/kg BID for infants 1-1.5 kg.
Donor Milk Guidelines for use:
- Birth weight <1500 gm
- <34 weeks gestation until 34 weeks gestation
- Multiple birth with at least 1 sibling qualifying for DBM
- Attending neonatologist discretion

→ type of donor breast milk provided will be prescribed based on the infant’s current weight:
• If <1000 gm will receive high protein DBM
• If >1000 gm will receive standard protein DBM

ROUTINE CONSULTS:

- STEPS team for diagnoses on Triggers list

SURGICAL INFANTS:

PRE-OP: Consider CBC, BMP, Coags, blood gas 12-24 hours before surgery. Determine goal Hct/Hgb.
*Anesthesia/NICU attending handoff to be completed

POST-OP: Perform post op multidisciplinary huddle at bedside, complete post-op note.

Discharge Criteria/Checklist:

-All PO feeding, or with Gtube/NGT home feeding plan
-No Significant Resp events in past 3-7 days?
-Stable temps x 72 in open crib
-Passed CCHD or had ECHO
-Passed Hearing Screen or has F/u
-Vaccines UTD?
-Social Clearance?
-DME and Follow Up Appointments/Referrals made?

Blood Pressure Thresholds (3rd percentile)

GA	Systolic	Mean	Diastolic
24	32	26	15
25	34	26	16
26	36	27	17
27	38	27	17
28	40	28	18
29	42	28	19
30	43	29	20
31	45	30	20
32	46	30	21
33	47	30	22
34	48	31	23
35	49	32	24
36	50	32	25

PREMATURE INFANT OUTCOMES AT UC Davis

GA	% Survival (2016-2021)
22	60
23	58
24	52
25	81
26	82
27	83

*Also can consider the www.nichd.nih.gov calculator (National data from 2006-2012)