

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/pneumotaxis (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

(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

(Ativan) Scheduled 0.1 mg/kg Q 4h

Dexmedetomidine 0.1 – 1 mcg/kg/hr

Fentanyl Drip **0.5-2mcg/kg/hr**

Fentanyl 2-5 mcg/kg IV Q1h PRN

Ibuprofen 5-10 mg/kg PO Q6-8h

Midazolam drip 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

Morphine drip 0.01-0.05 mg/kg/hr

Morphine 0.05-**0.1** mg/kg IV Q1h PRN

Rocuronium 0.5-1 mg/kg IV Q1h PRN

Vecuronium 0.1 mg/kg IV Q1h PRN

Vecuronium drip 0.05 - 0.1 mg/kg/h

RESPIRATORY MEDS

Caffeine citrate 20 mg/kg LD, then 5-10 mg/kg IV/PO

Daily

Convert to PO when ≥ 40ml/kg feeds

0.25mg BID

Budesonide 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

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 1 gtt OU Q 5 min x 2, 1h ā ROP exam

Cyclomydril 2 ml/kg IVP, then 6 mg/kg/min

D₁₀W 2 mg/kg elemental Fe PO Q day

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 (Vitraxe) 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)

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) 30 IU/kg in 2 ml SW NG (<1250g)

Vitamin E 0.5 (<1500g) - 1 mg (≥1500g) IM/SQ (IV)

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

Levodopamine (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

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

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)	90-95% (27-31 wks)
		55-70 (≥7d)	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)