NICU

Emergency Management of the Neonate

1) UVC AND UAC LINES

o Placement calculation and size:

UAC = 3 * Wt (kg) +9; T6-T9

("T7 if heaven, T8 is great, T9 is fine")

(downward turn w/upward turn at internal iliac/hypogastric)

UVC = 0.5 * UAC depth +1

(IVC and right atrium at level of the diaphragm)

o Double lumen preferred for UVC and single lumen for UAC

<1000grams – 3.5F UVC and 2.5 or 3.5F UAC

>1000grams – 5F UVC and 3.5 UAC (5F UAC if term)

2) INTUBATION: ET tube guidelines

Age	Wt	Size	Depth	Blade
<28wks	<1kg	2.5	7cm	00 or 0 Miller
28-34	1-2	3.0	8cm	0 Miller
34-38	2-3	3.5	9cm	1 Miller
>38	>3	3.5-4	9-10cm	1 Miller

3) INITIAL VENTILATOR SETTING

Conventional: PIP 20, PEEP 5, Rate 40, FiO2 100% (wean to 40% ASAP)

4) PROSTAGLANDIN (Alprostadil)

Emergency dosing: 0.1 mcg/kg/min

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Neonatal Ventilator Tips

Vent Types and Modes

AC: set pressure and pattern of ventilation (guaranteed It) delivered with every spontaneous breath; pt determines rate.
Set PIP, PEEP, IT.

PSV: set pressure delivered with every spontaneous breath; pt determines rate. Set PIP, PEEP, IT.

ACVG: ventilator varies pressure to deliver set volume, fixed It ventilation pattern as with AC. Set VT, PEEP, IT, Rate.

PSVG: ventilator varies pressure to deliver set volume, variable It ventilation pattern as with PC. Set VT, PEEP, IT, Rate.

Minute Ventilation = RR x volume (TV or PIP)

Pressure can indicate compliance

Physiologic TV: 4-6 mL/kg

Adjusting Ventilation

To ↓CO2: ↑rate or ↑PIP/TV

To ↑CO2: ↓rate or ↓PIP/TV

Adjusting Oxygenation

To ↑O2: ↑MAP (↑PIP, ↑PEEP, ↑It), ↑FiO2

To ↓O2: ↓MAP (↓PIP, ↓PEEP), ↓FiO2

Blood gases

pH/CO2/O2/Bicarb/Base excess or deficit

Respiratory acidosis (retaining CO2 – slow respirations)

pH↓, CO2↑, bicarb normal

Metabolic acidosis

pH↓, CO normal, bicarb↓

Respiratory alkalosis

pH↑, CO2↓, bicarb normal

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Neonatal TPN

Common calculations:

GIR = (%dext x mkd)/144 = (%dextrose x rate in mL/hr)/(wt x 6)

Kcal/kg/day = mL in 24hrs/(30 x kcal/wt)

Kcal from glucose = (D x mkd x 4)/100

TPN ordering:

Day 1: Protein 1.5-2g/kg, GIR of 4-6, Calcium 2mEq/kg

Day 2: Add lipids 0.5-1g/kg/day

Nutrition Goals:

Kcals: Term 100-120, Preterm 120-140, Malnourished 120-160

Protein: 3-3.5g/kg/day (10-20% kcals)

Lipid 3g/kg/day (40-50% kcals)

Glucose (40-45%kcals)

Calcium 3mEq/kg with ratio of Phos 1.3-1.7:1

Sodium 3-6mEq/kg

Potassium 2-4mEq/kg

Mag, only if levels <2.0 (normal 1.8-2.2), add at 0.2-0.4mg/kg

Indicators of too much

BUN can indicate increased protein breakdown, high CO2 can also indicate excess

CO2 (retention) can indicated too much glucose

Too much lipid can result in free fatty acids binding to albumin and offsetting bilirubin

TPN Complications:

Cholestatic liver disease, hold copper and manganese

Osteopenia, rickets

Zinc deficiency (increased with ostomy)

NICU

NICU Health Maintenance

Retinopathy of Prematurity

- GA <30 weeks and/or BW <1500g -> 31wga at first exam, 28-30wga after birth

Head Ultrasound

- GA <32 weeks and/or BW <1500g -> HUS in first week of life, more frequently if abnormal or monthly if normal

Discharge MRI

- GA <30 weeks and/or BW <1500g, within one week of anticipated discharge

NICU Discharge Planning

[ ] Identify MTF and desired PCM for follow-up

[ ] Schedule PCM and specialty appointments (place consults in CHCS)

[ ] Hearing Screen

[ ] Car Seat Challenge

[ ] Newborn Screening status documented in DC Summary

[ ] Immunizations (including Synagis if applicable)

[ ] Discharge MRI (if applicable)

[ ] Pharmacy order for outpatient medications in CHCS (DC med request in Essentris)

[ ] EFMP enrollment completed (if applicable)

[ ] Early Intervention Services Referral (if applicable)

[ ] High Risk NICU Clinic follow up (if applicable)

[ ] Circumcision (if applicable)

[ ] DME orders and home services arranged (if applicable)

[ ] Discharge Instructions and education for parents

[ ] Fax or email discharge summary to PCM

[ ] Update immunizations in AHLTA record

SYNAGIS CRITERIA 2017-2018

(UNCHANGED SINCE 2015-16)

2015-2016 Synagis Guidelines: 7/28/14 (American Academy of Pediatrics) http://pediatrics.aappublications.org/content/134/2/415.full.html

Gestational Age:	
≤ 28 weeks and 6 days	• ≤ 12 months of age at the start of RSV season
CLD/CHD/Other:	
Chronic lung disease of prematurity (CLDP) defined as gestational age ≤ 31 weeks and 6 days and a requirement for > 21% oxygen for at least 28 days after birth	• ≤ 12 months of age at the start of RSV season **OR** • ≤ 24 months of age at the start of RSV season • Continue to require medical support (supplemental oxygen, chronic corticosteroid or diuretic therapy) during 6 month period before the start of RSV season.
Hemodynamically significant congenital heart disease (CHD)	• ≤ 12 months of age at start of RSV season • Diagnosis of at least one of the following: o Ayanotic heart disease with medication to control congestive heart failure and will require cardiac surgical procedures o Infants with moderate to severe pulmonary hypertension o Cyanotic heart defects and referred by pediatric cardiologist **OR** • ≤ 24 months of age at the start of RSV season • Cardiac transplantation during RSV season
Neuromuscular disorder or congenital anomaly that impairs the ability to clear secretions from the upper airway because of ineffective cough	• ≤ 12 months of age at start of RSV season
immunocompromised due to chemotherapy or other conditions	• ≤ 24 months of age at the start of RSV season • Profoundly immunocompromised during RSV season
Cystic Fibrosis (CF)	• Recommended if ≤ 12 months of age at start of RSV season and at least one of the following indications are present: o Evidence of CLD o Nutritional compromise **OR** • If ≤ 24 months of age at the start of RSV season with at least one of the following manifestations of severe lung disease: o Previous hospitalization for pulmonary exacerbation in first year of life o Abnormalities on chest radiography or chest computed tomography that persist when stable • Weight for length less than the 10th percentile
Clinicians may administer up to a maximum of five monthly doses of Palivizumab during the RSV season to infants who qualify for prophylaxis in the first year of life. Qualifying infants born during the RSV season will require fewer doses	

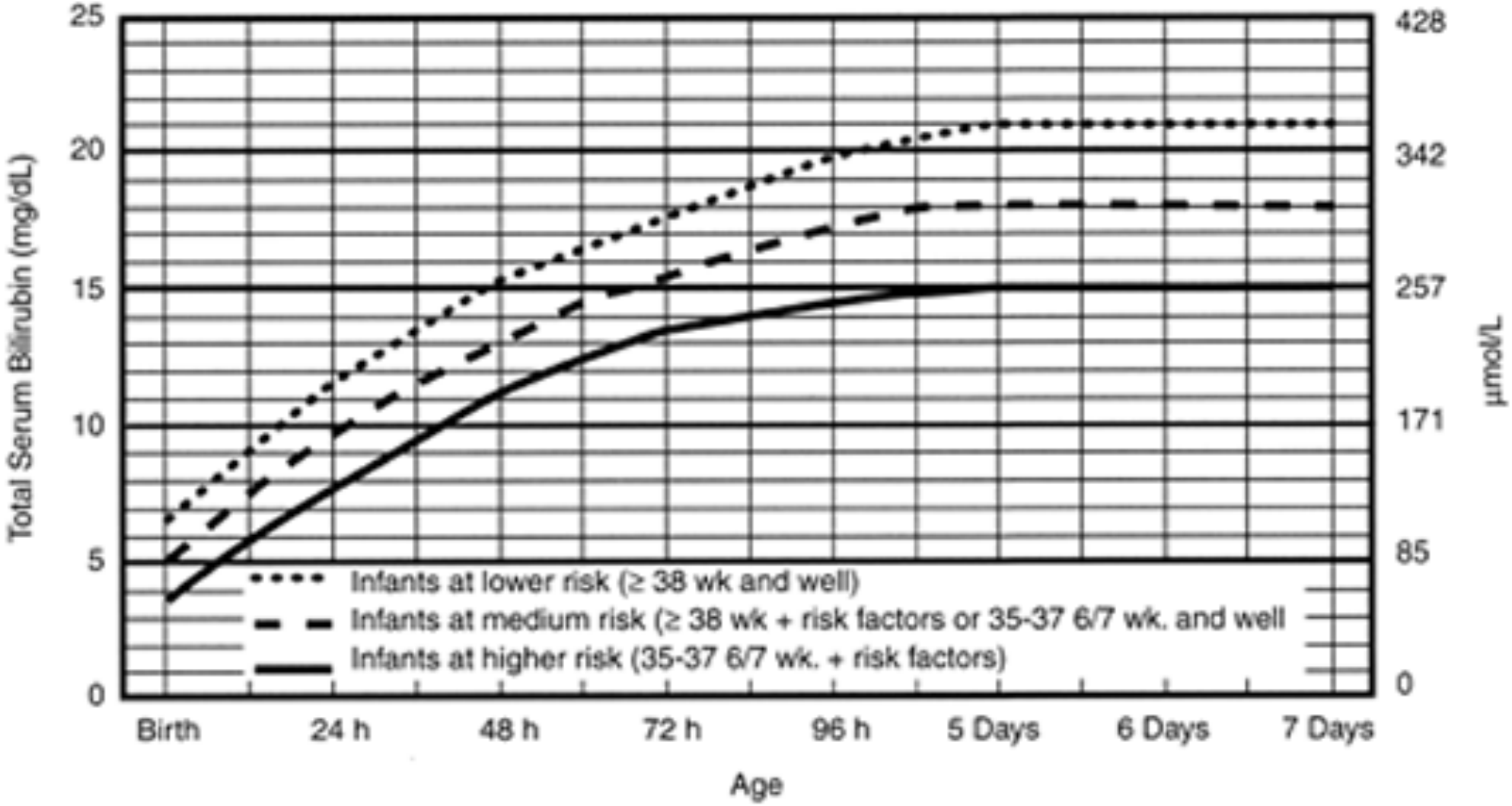
TABLE 1. Standard Recipe Charts for Powdered Formula

Calorie/Oz	Type of Formula LEGEND: WRNMMC Pediatric Formulary Substituions	Volume of Water	1 Scoop Level	Final Volume
20	Similac Advance, Alimentum, Similac Soy, Similac Sensitive, Similac PM60 40, Enfamil Gentlease, Enfamil Premium Infant, Enfamil Premium Newborn, Enfamil Prosobee, Enfagrow, Gentleease Toddler, Enfamil A.R., Elecare, Nutramigen AA	2oz/60ml	Unpacked	2.2oz/67ml
20	Neocate	1oz/30ml	Unpacked	1.1oz/33ml
20	Neosure, Enfacare	2.2oz/66ml	Unpacked	2.4oz/75ml
20	Pregestimil, Nutramigen with Enflora	2oz/60ml	Packed	2.2oz/67ml
22	Similac Advance, Alimentum, Similac Soy, Similac Sensitive, Similac PM60 40, Enfamil Gentlease, Enfamil Premium Infant, Enfamil Premium Newborn, Enfamil Prosobee, Enfagrow, Gentleease Toddler, Enfamil A.R., Elecare, Nutramigen AA	1.8oz/53ml	Unpacked	2oz/60ml
	Neocate	0.9oz/27ml	Unpacked	1oz/30ml
	Neosure, Enfacare	2oz/60ml	Unpacked	2.2oz/66ml
22	Pregestimil, Nutramigen with Enflora	1.7oz/53ml	Packed	2oz/60ml
24	Similac Advance, Alimentum, Similac Soy, Similac Sensitive, Similac PM60 40, Enfamil Gentlease, Enfamil Premium Infant, Enfamil Premium Newborn, Enfamil Prosobee, Enfagrow, Gentleease Toddler, Enfamil A.R., Elecare, Nutramigen AA	1.6oz/48ml	Unpacked	1.9oz/54ml
	Neocate	0.8oz/25ml	Unpacked	0.9oz/28ml
	Neosure, Enfacare	1.8oz/55ml	Unpacked	2oz/60ml
24	Pregestimil, Nutramigen with Enflora	1.6oz/48ml	Packed	1.8oz/54ml
26	Similac Advance, Alimentum, Similac Soy, Similac Sensitive, Similac PM60 40, Enfamil Gentlease, Enfamil Premium Infant, Enfamil Premium Newborn, Enfamil Prosobee, Enfagrow, Gentleease Toddler, Enfamil A.R., Elecare, Nutramigen AA	1.5oz/45ml	Unpacked	1.7oz/60ml
	Neocate	0.7oz/22ml	Unpacked	0.85oz/26ml
	Neosure, Enfacare	1.7oz/48ml	Unpacked	2oz/60ml
26	Pregestimil, Nutramigen with Enflora	1.5oz/45ml	Packed	2oz/60ml
27	Similac Advance, Alimentum, Similac Soy, Similac Sensitive, Similac PM60 40, Enfamil Gentlease, Enfamil Premium Infant, Enfamil Premium Newborn, Enfamil Prosobee, Enfagrow, Gentleease Toddler, Enfamil A.R., Elecare, Nutramigen AA	1.4oz/42ml	Unpacked	1.6oz/48ml
27	Neocate	0.7oz/21ml	Unpacked	0.8oz/25ml
27	Neosure, Enfacare	1.6oz/48ml	Unpacked	1.8oz/54ml
27	Pregestimil, Nutramigen with Enflora	1.4oz/42ml	Packed	0.8oz/25ml
28	Similac Advance, Alimentum, Similac Soy, Similac Sensitive, Similac PM60 40, Enfamil Gentlease, Enfamil Premium Infant, Enfamil Premium Newborn, Enfamil Prosobee, Enfagrow, Gentleease Toddler, Enfamil A.R., Elecare, Nutramigen AA	1.4oz/42ml	Unpacked	1.6oz/48ml
28	Neocate	0.7oz/21ml	Unpacked	0.8oz/24ml
28	Neosure, Enfacare	1.5oz/45ml	Unpacked	1.7oz/51ml
28	Pregestimil, Nutramigen with Enflora	1.4oz/42ml	Packed	1.6oz/48ml
30 (1cal/ml)	Similac Advance, Alimentum, Similac Soy, Similac Sensitive, Similac PM60 40, Enfamil Gentlease, Enfamil Premium Infant, Enfamil Premium Newborn, Enfamil Prosobee, Enfagrow, Gentleease Toddler, Enfamil A.R., Elecare, Nutramigen AA	1.3oz/39ml	Unpacked	1.5oz/45ml
30	Neocate	0.6oz/18ml	Packed	0.7oz/21ml
30	Neosure, Enfacare	1.4oz/42ml	Unpacked	1.6oz/48ml
30	Pregestimil, Nutramigen with Enflora	1.3oz/39ml	Packed	1.5oz/45ml
30	Elecare Jr	1.25oz/38ml	Unpacked	1.5oz/45ml
30	Neocate Jr	1.2oz/36ml	Unpacked	1.3oz/39ml

TABLE 2. Standard Recipe Charts for Diluting the 1.5cal/ml Liquid Formula

Calorie/Oz	Type of Formula: Using the 1.5cal/ml Liquid Formula as the main ingredient LEGEND: WRNMMC Pediatric Formulary Substituions	Volume of Water	Volume of Formula	Final Volume
36 (1.2cal/ml)	PediaSure 1.5, PediaSure Peptide 1.5, Boost Kid Essentials 1.5	25ml	100ml	125ml
40 (1.3cal/ml)	PediaSure 1.5, PediaSure Peptide 1.5, Boost Kid Essentials 1.5	15ml	100ml	115ml
42 (1.4cal/ml)	PediaSure 1.5, PediaSure Peptide 1.5, Boost Kid Essentials 1.5	7ml	100ml	107ml

Guidelines for phototherapy
(≥ 35 wk GA and≥2500 gm)



Guidelines for exchange transfusion
(≥ 35 wk GA and≥2500 gm)