

NICU rotation

For residents and medical students

Updated on 6/24/2022

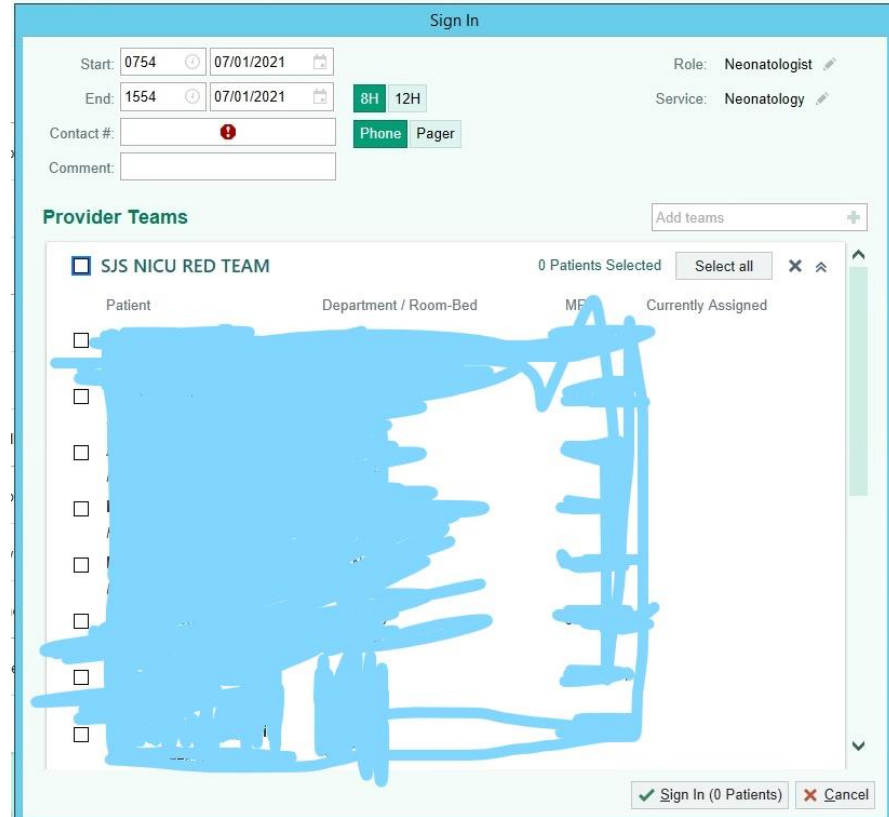
Rotation requirements

- Carol Jo Vecchie Women's Center - 4th floor
- Please try to get access to EPIC before starting your rotation

Resident

- Pediatric residents get sign out from NNP at 7 AM, please be in the room by 6:55 AM
 - Short call – 7 AM till 5 PM
 - Long call – 7 AM till & PM
- Make sure that you have at least 10 hours off between shifts
- Make sure that you have at least 24 hours off between rotations
- Please make sure to **continuously update** your patients' **discharge summary**, especially before signing off to the following residents

Residents have to sign in/out their names to the patients



Please use the below smart phrases in the NICU

- .DNHP – NICU H&P
- .NICUDISCHARGESUMMARYAPR21
- .NICUSJSDELIVERYATTENDANCENOTE
- .NICUSJSINTUBATION
- .NICUSJSLUMBARPUNCTURE
- .NICUSJSNEWBORNCONSULT
- .NICUSJSPROCEDURENOTE
- .NICUSJSPROGRESSNOTE
- .NICUSJSCIRCUMCISION
- .NICUSJSUMBILICALLINEINSERTION

Schedule

Monday	Tuesday	Wednesday	Thursday	Friday
7:00 Sign out from NNP	7:00 Sign out from NNP	7:00 Sign out from NNP	7:00 Sign out from NNP	7:00 Sign out from NNP
8:00 Resident Round or Pediatric/NICU M&M	8:00 Journal club (third Tuesday of the month)	8:00 Resident Round	8:00 Pediatric grand round	8:00 Resident Round
9:30 - 12:00 NICU Round	9:30 - 12:00 NICU Round	9:30 - 12:00 NICU Round	9:30 - 12:00 NICU Round	9:30 - 12:00 NICU Round
	14:30 Discharge Round	12:30 MFM/NICU meeting	12:30 - 1500 Resident Core Conferences	

Bedside nurse starts with overnight events and social concerns

Then, your presentation should be in this following format ...

Age in days and gestational age (GA)

- Age in days
 - Example: 2 days old, 5 days old ...
- Corrected Gestational Age (cGA) or Post Conceptual Age (PCA) or Postmenstrual Age (PMA)
 - Example: Newborn born at 30 weeks and 5 days. Newborn is 4 days old. Newborn's cGA is 31 weeks and 2 days
 - PS: Epic may have a different calculation

Apnea, Bradycardia and Desaturation

- Bedside nurse
- Charted in epic
 - Summary → Apnea/Bradycardia tab
 - Flowsheets → PICU/NICU VS → Apnea and Bradycardia

The screenshot shows the 'Summary' page in Epic. The left sidebar contains navigation options: Summary, Chart Review, Results Revi..., Problem List, Intake/Output, Flowsheets, Notes, Growth Chart, Care Everywh..., Manage Orders, and History. The main content area is titled 'Apnea/Bradycardia' and includes a 'Select Font Size' dropdown. Below this, there is a section for 'Apnea/Bradycardia Events (last 14 days)'. A table displays event data for 06/11/19 0540.

Date/Time	Apnea	Apnea (secs)	Bradycardia Rate	Bradycardia (secs)	Event SpO2	Color Change	Intervention	Activity Prior to Event	Position Prior to Event	Choking	New Intervention
06/11/19 0540	Apnea (no respirations for 20 sec)	20 secs	68	20 secs	---	Dusky/Pale	Vigorous tactile stimulationOther (Comment)	Active alert	Supine	No	None

Event SpO2: wasn't picking up at time of event at 06/11/19 0540
Intervention: bagging at 06/11/19 0540

The screenshot shows the 'Flowsheets' menu in Epic. The menu is open, showing a list of tabs: VS, PICU/NICU VS, and Infant/NICU. Below the tabs is a 'Jump To (Alt+Comma)' search box. The main list of flowsheet categories includes: Vitals, Apnea and Bradycardia, Oxygen Therapy, Art Line (1), Invasive Hemodynam..., ICP/Pressure, CPP Calculations by ..., and RASS (Richmond Agit...). Each category has a checkbox to its right, all of which are checked.

Weight

- Current weight in grams (gm)

The screenshot shows a 'Summary' page in a medical software interface. The left sidebar contains navigation options: Summary, Chart Review, Results Revi..., Problem List, Intake/Output, Flowsheets, Notes, Growth Chart, Manage Orders, History, and Rounding. The main content area has a 'Select Font Size' dropdown and a table titled 'Weights (last 14 days)'. The table has two columns: 'Date/Time' and 'Weight'. The data rows are as follows:

Date/Time	Weight
06/15/19 0000	2485 g (5 lb 7.7 oz)
06/14/19 0000	2540 g (5 lb 9.6 oz)
06/13/19 0000	2480 g (5 lb 7.5 oz)
06/12/19 0000	2460 g (5 lb 6.8 oz)
06/11/19 0000	2500 g (5 lb 8.2 oz)
06/10/19 0000	2500 g (5 lb 8.2 oz)
06/09/19 0000	2550 g (5 lb 10 oz)

The screenshot shows a 'Flowsheets' page in a medical software interface. The left sidebar contains navigation options: Summary, Chart Review, Results Revi..., Problem List, Intake/Output, Flowsheets, Notes, Growth Chart, Manage Orders, History, Rounding, Admission, Transfer, Discharge, Procedure, Consult, and Medications. The main content area has a 'Jump To (Alt+Comma)' search box and a list of vital signs and assessment tools. The list items are: VITALS, OXYGEN, PAIN, POSS, RASS, HEIGHT/WEIGHT, Height and Weight, Patient Observation, and OTHER. The 'Height and Weight' section is expanded, showing a list of assessment tools: Behavior State, Facial Expression, Extremities Tone, Vital Signs, Premature Pain Assessment, N-PASS Score, POSS (Pasero Opioid-Induced Sedation Scale), POSS (Pasero Opioid-induced Sedation), RASS (Richmond Agitation and Sedation Scale), RASS (Richmond Agitation and Sedation), Height and Weight, Height, Height Method, Weight, Weight Method, Scale Type, and Scale ID Number.

Compare weights

- Change per day

- Example

- Newborn gained 30 gm compared to yesterday's weight
- Newborn lost 10 gm compared to yesterday's weight

- Change from birth or per week

- Example

- Newborn gained 30 gm compared to birth weight
- Newborn gained 200 gm over a week

- You compare the weight to birth weight for the first week of life than per week

- Always calculate the % of weight loss compared to birth weight

- **= [(birth weight - actual weight) / birth weight] * 100**

- Example

- Newborn A has a birth weight of 2.6 Kg but current weight is 2.35 Kg. Calculate % of weight loss since birth.
- $[(2.6-2.35)/2.6] \times 100 = 9.6\%$

Use birth weight until newborn attains
birth weight or passes it

Total fluids in ml/kg/day

- Total fluid (ml/kg/day) = total enteral volume (ml/kg/day) + total parenteral volume (ml/kg/day)

Total Enteral Volume

Newborn could be

- NPO
- Receiving expressed breast milk and/or donor breast milk and/or formula
- Fortified or not fortified
- Oral and/or feeding tube
- Don't forget to mention if breastfeeding was attempted

Total Enteral Volume

- Ad lib (as needed)
 - You get the total enteral volume in 24 hours from Intake/Output tab in Epic and divide this number by weight
 - Example: newborn is 2.5 kg and ate 500 ml in the last 24 hours. The volume is $500 \text{ ml} / 2.5 \text{ kg} = 200 \text{ ml/kg/day}$
- Oral and feeding tube
 - You get the total enteral volume in 24 hours from Intake/Output tab in Epic and divide this number by weight
 - You get the total enteral volume in 24 hours from Intake/Output tab that was given orally and divide this number by total enteral volume and multiply it by 100 = percent of oral intake
 - Example: newborn is 1.35 kg and ate 216 ml in the last 24 hours. 100 ml were orally. Total oral intake is: $(100/216)*100 = 46\%$
 - **PS: always use birth weight until newborn gains it**

Neonatal Enteral Nutrition Guidelines

Always try to follow the feeding protocol (advancement and fortification per dosing weight and taking gestational age into consideration)

It is present in your purple book page

PS: in certain situations, the rounding neonatologist deviate from the protocol

Minimal clinical requirements for initiation of enteral feeding are usually as follows:

- Stable cardio-respiratory status
- Absence of bilious or non-bilious emesis
- Absence of significant abdominal distention
- Absence of clinically significant patent ductus arteriosus
- Absence of umbilical arterial catheter
- At least 24 to 48 hours from last dose of ibuprofen/indomethacin

Feeding Advancement Schedule:

Dosing Weight (grams)	Initial Volume Advancement Volume	When to Advance	Initial Product	Fortification
< 1250	20 ml/kg/day (q3h)	<750 gm: hold at 20 ml/kg x2 days, then advance daily 750 – 1249 gm: advance daily	MBM or DBM	ProLacta +6 (at 80 ml/kg)
1250 – 1499	20 ml/kg/day (q3h)	Advance daily	MBM or DBM	Fortify to 24 kcal/oz w/Similac HPCL (at 80 – 100 ml/kg)
1500 – 2499	30 ml/kg/day (q3h)	Advance daily	MBM or DBM if <33 ⁰⁷ weeks GA or Similac Special Care 24 High Protein Formula	MBM or DBM: fortify to 24 kcal/oz w/Similac HPCL or Similac Special Care 24 High Protein Formula (at 80 – 100 ml/kg)
≥ 2500	≤ 40 ml/kg/day (q3h)	Advance daily	MBM	GA at birth <37 ⁰⁷ weeks: fortify to 24 kcal/oz with Similac HPCL or GA at birth ≥37 ⁰⁷ weeks: fortify per RD recommendation (at 80 – 100 ml/kg)
			NeoSure 22 kcal/oz (if GA at birth <37 ⁰⁷ weeks) or Similac Advance 19 kcal/oz formula (if GA at birth ≥37 ⁰⁷ weeks)	Increase calorie concentration per RD recommendation

Note: Above guidelines should not replace clinical judgment.

General Enteral Nutrition guidance:

1. Use birthweight as dosing weight until birthweight is regained, then use current weight.
2. Do not fortify and advance feeding volume on the same day.
3. Initial enteral feeding goal is 150 – 160 ml/kg/day (preterm infants) or 170 – 180 ml/kg/day (term infants) unless contraindicated.
4. If patient does not tolerate bolus feedings consider continuous or transpyloric feeds.
5. Donor breast milk: Use for all infants with birthweight <1500 gm and at physician discretion for infants with birthweight ≥1500 gm born <33⁰⁷ weeks GA. Transition from donor breastmilk to formula at about 34⁰⁷ weeks PMA per RD recommendation.

Enteral nutrition - calories

- Breast milk calories is 20 Kcal/oz
 - PS: the actual breast milk calories is unknown
- Fortification could be 22 Kcal/oz, 24 Kcal/oz, 26 Kcal/oz, 28 Kcal/oz, 30 Kcal/oz
 - Sometimes we add prolacta cream to increase the calories more
 - 2.5 Kcal per 1 ml of prolacta cream - approximately 2 Kcal/oz
- Calculation in Kcal/kg/day
 - 20 kcal → 1 oz → 30 ml
 - Multiply the enteral fluid volume (in ml/kg/day) by calories and divide by 30 ml
 - Baby B is 12 day old. He is a former 29 weeker. He is getting 120 ml/kg/day of prolacta 26 Kcal/oz. His calories are:
 - $(120 \times 26) / 30 = 104$ Kcal/kg/day

Parenteral volume

- Intravenous fluid options
 - D5W or D10W
 - D5 ¼ NS or D10 ¼ NS
 - Total Parenteral Nutrition (TPN)
 - Others
- Central line (PICC line, Umbilical lines, Broviac)
 - Add heparin
- Start total parenteral volume between 60 ml/kg/day and 100 ml/kg/day depending on the initial diagnosis, gestational age and weight

Parenteral volume - calculation

- Glucose concentration

- Dextrose in percent = glucose in gm in 100 ml
- Example: D5 = 5% = 5 gm of glucose in 100 ml

- Calories from dextrose

- **1 gm CHO give 3.4 Kcal**
- (Dextrose % x total fluid in ml/kg/day) / 100 ml of water = # in gm/kg/day
- # in gm/kg/day x 3.4 Kcal/gm = calories from dextrose

- Example

- Newborn is 2.5 kg on D10 water at 80 ml/kg/day. Calculate the calories from dextrose
- D10 = 10 gm in 100 ml water
- $10 \times 80/100 = 8 \text{ gm/kg/day} \rightarrow 8 \times 3.4 = 27 \text{ Kcal/kg (CHO)}$

Glucose Infusion Rate (GIR)

- Every infant on continuous infusion that has dextrose should have a GIR calculated and presented during round
 - $[\text{Dextrose \%} \times \text{fluid intake (ml/kg/day)}] / 144 = \text{GIR in mg/kg/min}$
 - $(\text{Dextrose \%} \times \text{current IV rate}) / 6 / \text{weight} = \text{GIR in mg/kg/min}$
 - Start GIR between 4 and 6 mg/kg/min
 - Advance by 1 to 2 mg/kg/min daily
 - Maximum 12 mg/kg/min
 - Monitor GIR by accucheck

Intralipid

- Every 1 gm of intralipid give 10 Kcal
 - Dietary fat: 9 Kcal/gm - the fat in intralipid has a glycerol molecule attached which adds 1 Kcal/gm
- Intralipid used in TPN is between 0.5 and 3 gm/kg/day
- Calories
 - Number of gm/kg/day x 10 = calories from intralipid
 - Example
 - Newborn weighs 0.98 kg. He is on 2.5 gm/kg/day intralipid. Calculate the calories from lipid?
 - $2.5 \text{ gm/kg/day} \times 10 = 25 \text{ kcal/kg}$

Omegaven

- It is 11 Kcal/gm
- Always dosed at 1 gm/kg
- Used for any infant with direct hyperbilirubinemia more than 2
- Calories
 - Number of gm/kg/day x 11 = calories from omegaven
 - Example
 - Newborn weighs 1.25 kg. He is on 1 gm/kg/day omegaven. Calculate the calories from omegaven?
 - $1 \text{ gm/kg/day} \times 11 = 11 \text{ kcal/kg}$

Protein

- Every 1 gm of protein give 4 Kcal
- Protein used in the TPN range between 2 and 4 gm/kg
- Calories
 - Number of gm/kg of protein x 4 Kcal = calories
 - Example
 - Newborn weighs 1.2 Kg. He is on TPN with 3 gm/kg protein. Calculate calories from protein?
 - $3 \text{ g/kg} \times 4 \text{ Kcal/g} = 12 \text{ kcal/kg}$

Urine output

- Get the total urine volume in 24 hours and divided it by weight and by 24 hours = urine output in ml/kg/hr
 - Example
 - Newborn weighs 2.5 kg. His urine in the last 24 hours measured 150. Calculate urine output?
 - $150/2.5 = 60 / 24 = 2.5$ ml/kg/hr
- If infant is on IVF, we measure total amount of urine
- If Infant is NOT on IVF, we measure total amount of void

Stool output

- You will find amount of stools in Input/Output tab
- For more details about stools, you will find those information in flow sheet under NICU/NURSERY I/O
- Some infant has stoma in place, you should calculate the output in ml/kg/day
 - Divide the total output in 24 hours by the weight

Flowsheets (completed rows are filtered out)

Summary | File | Add Rows | LDA Avatar | Cascade | Add Col | Insert Col | Hide Comp'd | Last Filed | Reg

VS | PICU/NICU VS | NICU Daily Cares/Safety | Blood Admin | IV Assess | NICU/NURSERY I/O | Infant/NICU Assess

Jump To (Alt+Comma) | Print Breast Milk Labels

Expanded | View All

2140 | 6/23/19 | 2246

Weights

Weight		
Estimated Dry Weight		
Drug Calculation Weight		
BSA (Calculated - sq m)		
Birth Weight		
Percent Weight Change Since Birth		

Intake

Breast Feeding Occurrence		
Wt Gained At Breast Feeding (gm)		
Amt Maternal Breast Milk/bottle		
Amt Formula/Bottle (mL)		
Amt Maternal Breast Milk/Gavage		
Amt Formula/Gavage (mL)		
Amt Donor Breast Milk/Bottle		
Amt Donor Breast Milk/Gavage		
I.V.		
Blood		
Other		

Output

Stool		
Urine		
Emesis		
Unmeasured		
NG/OG Tube (cm) Or...		

Medications

- List all the medications that the patient is receiving

Assessment

- Try to explain the major problems that the infants have in 1 sentence

Plan

- System based

- Pele Dina, MD
- pdina28@siumed.edu
- Office phone #:217-757-6428