NICU rotation

For residents and medical students

Updated on 2/10/2020
Rotation requirements

- Carol Jo Vecchie Women’s Center - 4th floor
- The day starts at 7 AM and ends around 5 PM after the 4 PM sign out or at 8 PM if you are on call
- Make sure that you have at least 10 hours off between shifts
- Make sure that you have at least 24 hours off between rotations
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<thead>
<tr>
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<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
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<th>Friday</th>
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<tbody>
<tr>
<td>8:00</td>
<td>Resident Round or Pediatric/NICU M&amp;M</td>
<td>8:00 Journal club (third Tuesday of the month)</td>
<td>8:00 Resident Round</td>
<td>8:00 Pediatric grand round</td>
<td>8:00 Resident Round</td>
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<td>9:30 -</td>
<td>NICU Round</td>
<td>9:30 - 12:00 NICU Round</td>
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<td>12:00</td>
<td>NICU Round</td>
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<td>14:30</td>
<td>Discharge Round</td>
<td>12:30 MFM/NICU meeting</td>
<td>12:30 - 1500 Core Conferences</td>
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What do you need for the rotation....

- Purple book
  - Ask Elisia Hopkins, NICU office manager, about this book
- Rounding sheet
  - Present in NNP drawer in the NICU
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
Weight

- Current weight in grams (gm)
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
  - \[ \left( \frac{\text{birth weight} - \text{actual weight}}{\text{birth weight}} \right) \times 100 \]
  - Example
    - Newborn A has a birth weight of 2.6 Kg but current weight is 2.35 Kg. Calculate % of weight loss since birth.
    - \[ \left( \frac{2.6-2.35}{2.6} \right) \times 100 = 9.6\% \]
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 ml / 2.5 kg = 200 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
Enteral feeds

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

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

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 <33rd weeks GA. Transition from donor breast milk to formula at about 34th weeks PMA per RD recommendation.
Enteral feeds - 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:
    ■ \((120*26)/30 = 104\) 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 x 80/100 = 8 gm/kg/day → 8 x 3.4 = 27 Kcal/kg (CHO)
Glucose Infusion Rate (GIR)

- Every infant on continuous infusion that has dextrose should have a GIR calculated and presented during round
  - \( \frac{\text{Dextrose} \times \text{fluid intake (ml/kg/day)}}{144} = \text{GIR in mg/kg/min} \)
  - \( \frac{\text{Dextrose} \times \text{current IV rate}}{6 \times \text{weight}} = \text{GIR in mg/kg/min} \)
  - 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 accuchek
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 gm/kg/day x 10 = 25 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 gm/kg/day x 11 = 11 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 g/kg x 4 Kcal/g = 12 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?
    - $\frac{150}{2.5} = 60 / 24 = 2.5$ 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
Medications

- List all the medications that the patient is receiving
Assessment

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

- System based