UC DAVIS HEALTH | CHILDREN'S HOSPITAL

Small Baby Golden Hour Guideline

Delivery preparation and initial care of the extremely preterm and/or extremely low birthweight infant (<29 weeks or <1000 grams)

Note: The electronic version of this document contains hyperlinks to additional resources.

PRE-DELIVERY PREPARATION

- Pre-brief and assign roles
  - Team lead (usually attending neonatologist or senior fellow)
  - Airway/HOB (see *NICU Intubation Guideline*)
    - Airway and HOB roles can be performed by one person or two separate people (when someone is designated as "Airway" for the sole purpose of intubation, another person must fulfill the other responsibilities of HOB)
  - Delivery RN
  - RT
  - Scribe (Cub/Admitting RN, if < 27 weeks GA; use "DR Scribe Worksheet")
  - Lines
- If time permits, fellow and/or attending to do perinatal consult and put consult note in chart
  - Discuss plan for antenatal steroids with OB team and patient
  - Discuss importance of early pumping and hand expression
  - Obtain assent for DBM, if applicable
  - Obtain and document assent for vitamin K and erythromycin eye ointment

- Delivery RN:
  - Communicate with OB team (GA, EFW, delivery indication, antenatal steroids, fetal or maternal risk factors, GBS status, ROM and fluid characteristics, plan for delayed cord clamping)
  - Ask L&D RN to PEND (NOT pre-admit) infant chart to designated space in NICU
  - Prepare DR for delivery and do equipment check (see *Standard Preterm Delivery Setup* checklist, contents of *Preemie Delivery Box*, and *Delivery Room updates* document)
  - Bring Code Cart to hallway outside of DR (and consider staging the shuttle outside of DR)

- NICU RN:
  - Ensure bedspace is prepared

        - Blended flowmeter with T-piece, mask, flow-inflating bag
        - Hats/procedure masks (and isolation gowns, if necessary)
        - IV pumps (2 fluid pumps, 2 syringe pumps)
        - Suction x 2; set up and confirmed
        - Line cart with 3.5 Fr UVC/UAC lines (if not already prepped by Provider)
    - If delivery anticipated within 12 hours, call Neonatal Pharmacist to alert to pending ELBW delivery

- RT:
    - Ensure bedspace is set up
        - Proper blended flowmeter with T-piece/mask/flow-inflating bag
        - Jet ventilator (for all infants < 24 weeks) and/or CPAP
    - Set up and check respiratory equipment in DR
        - For < 24 weeks, set up Hamilton T1 ventilator in invasive mode
        - Set blender to 50% for infants < 24 weeks, 30% for infants 24-28 6/7 weeks
        - Initial Neopuff settings: PIP 20, PEEP 5-6

- Airway/HOB:
    - Bring NeoView to DR
    - Prep intubation supplies (have 2.0 ETT with stylet available for infants < 24 weeks)

- Provider(s):
    - Place and SIGN (NOT pend) admission orders in pended chart (see *Small Baby Admission Guideline*)
        - Use the EFW as Dosing Weight (DW is necessary for surfactant)
        - Include orders for starter PN, UAC fluids, surfactant, vitamin K, and erythromycin eye ointment, but DO NOT order any weight-based medications that need to come from pharmacy (e.g., antibiotics, indomethacin, caffeine)
        - Include order for **Priority1 chest x-ray PRN x 1** (this will be used to check ETT placement prior to surfactant)
    - Prep umbilical lines in unit (can be delegated to any provider or transport RN)

WHEN CALLED FOR DELIVERY

- Delivery RN:
    - Vocera "Broadcast to High-Risk Delivery Team"
    - Pause briefly before stating "NICU Team to Room [ROOM NUMBER] for [TYPE OF DELIVERY]" and keep broadcast channel open
    - Bring IntelliVue portable monitor to DR

- Team lead:

- Use walkie-talkie feature (hold down button on Vocera) to notify that team is en route

- NICU RN:
  - Release Admission Orders in Pended Chart
  - Sign out starter PN from Pyxis and prime fluids
  - Call x3-2125 to alert x-ray tech of potential need for Priority1 x-ray

DELIVERY ROOM (goal: out of DR by 15 minutes of life)

- Delivery RN:
  - Catch baby in plastic wrap (use chemical warmer if in OR)
  - Bring wrapped baby to Giraffe bed (leave chemical warmer behind)
  - When baby is placed on bed:
    - Place limb leads, temperature probe, and pulse ox on patient's right wrist
    - Connect pulse ox to monitor AFTER it is placed on patient
    - Check temperature within 10 minutes
    - Place OG tube, if needed
  - When ready to leave DR:
    - Obtain weight in the Giraffe bed before leaving DR
      - If excess fluid in bag, tear small hole and drain prior to obtaining weight
      - Do not remove CPAP head gear but make sure tubing is supported
    - Close isolette for transport (consider using shuttle for transport)
    - Call NICU Charge Nurse to report that team is leaving DR and type of respiratory support (intubated vs. CPAP) and weight
    - If patient is intubated, Charge RN should tell bedside RN to:
      - Release order for Priority1 chest x-ray to check ETT placement
      - Call radiology (x3-2125) and give them patient/bedspace information so they can meet the team in the NICU for Priority1 chest x-ray
      - Remove surfactant from Pyxis (if not already done so)

- RT:
  - If in DR:
    - Start Apgar timer when baby is delivered
    - Call out 30, 45, 60 seconds for DCC
  - Confirm ventilation and/or ETT position with CO_2 detector
  - For intubated patients:
    - Ensure ETT is properly secured
    - Place on Hamilton T1 ventilator (set up for invasive mode) in VG mode for transfer to NICU (set max PIP on vent)
  - For patients on non-invasive support:

        - Get head measurement and secure CPAP hat/mask
        - Place on Hamilton T1 ventilator (set up for non-invasive mode) for transport to the NICU

- Provider/Airway/HOB:
    - Confirm DCC plan with OB team
    - Oversee/direct DCC (usually HOB or team lead)
    - Proceed with airway management
        - All patients < 24 weeks are intubated in DR (no trial of CPAP)
        - ETT depth 5.5-6.0 cm for < 24 weeks
        - For ≥ 24 weeks, can consider trial of CPAP (start at 5-6 cm H_2O)

CUB ROOM/NICU

- RT:
    - Stabilize the patient on respiratory support
        - HFJV is the first-intention mode of ventilation for infants < 27 weeks birth GA or < 800 g BW
            - Initial HFJV rate for first-intention use for RDS (GA takes precedence for lung development):
                - < 24 weeks GA or < 600 grams 300 BPM (I:E 1:9)
                - 24-26 weeks or 600-1000 grams 360 BPM (I:E 1:7)
                - ≥ 27 weeks or ≥ 1000 grams 420 BPM (I:E 1:6)
            - Inspiratory time 0.02 seconds
            - PEEP 5 cm H_2O (set based on measured value on Jet)
            - PIP 22-24 cm H_2O to start (check chest wiggle)
        - For patients on conventional ventilation, Volume Guarantee (PRVC) A/C mode is preferred
        - Place non-intubated patients on CPAP (obtain OFC if not already done so in DR)
    - Calculate dose of surfactant and prep surfactant catheter
    - Assist RN in positioning patient for x-ray to confirm ETT placement
    - Surfactant should be given ASAP after x-ray confirmation of ETT placement (goal is to give surfactant within 10 minutes of x-ray confirmation of proper ETT placement)
        - Surfactant can be given while RN is checking blood glucose or placing PIV
        - If initial blood glucose is ≥ 40, proceed with surfactant administration prior to draping for umbilical line placement
    - Document time of surfactant administration

- Admission/Cub RN (to stay at bedside, if additional nurse is available for support):
    - Secure isolette in bedspace and plug in
    - Transition monitoring equipment to bedside monitor

- Weigh patient, if not already weighed in DR
- Check blood glucose (goal is to do this within first 10 minutes of arrival in NICU)
  - *If BG ≥ 40:*
    - *Prioritize surfactant administration and umbilical line placement*
    - Recheck blood glucose every 30 minutes until dextrose-containing fluids are running and BG is within normal limits
  - *If BG < 40:*
    - *Place PIV (team can simultaneously proceed with surfactant administration for intubated patients)*
    - Run D5W or D10W (not starter PN) in PIV at 100 ml/kg/day → recheck BG after 15 minutes
- If x-ray tech is present or approaching, CXR should be obtained ASAP for intubated patients
- Secure infant for umbilical line placement (expose only umbilicus from plastic bag)
- Release lab slips while lines are being placed
- Start running starter PN through UVC, if directed to do so by provider (this can be done prior to x-ray confirmation of line placement)
  - *If not already done so, can pause here for surfactant administration*
- Run D5W solution to make up total IV fluid goal (TFG = starter PN + UAC fluid + D5W)
- Call x3-2125 for x-ray when umbilical lines are being sutured
- Secure umbilical lines using Comfeel transparent and Tegaderm (note depth at umbilicus and confirm with line team)
- After x-ray confirmation of UAC placement, run UAC fluids (0.45% sodium acetate with heparin) at 0.5 ml/hr
- **After isolette is closed** and reaches goal humidity and infant's temp is stable, begin slowly weaning out of plastic bag
- With next hands on, obtain measurements if needed (OFC, length, abdominal girth)

- NICU RN #2 (admission support nurse, if available; can circulate):
  - Call HUSC with time of admission and weight
  - Obtain first set of vital signs (HR, RR, BP, Temp, SpO_2)
  - Pull and warm surfactant (if not already done so)
  - Use weight to calculate fluid rates
  - Check temp every 5-10 minutes while isolette is open
  - Place Mepitel One under temperature probe when re-securing
  - Place OG tube (if not already done in DR) and secure prior to babygram
  - Provide line team with lab tubes and gas syringes for blood samples
  - At time of babygram:
    - Keep infant wrapped in plastic bag
    - Either remove chemical warmer prior to x-ray, or instruct x-ray tech to notate presence of chemical warmer (presence of the chemical warmer will interfere with radiographic assessment of lung fields but should not

interfere with verification of hardware placement, like ETT or umbilical lines)
        - Use x-ray tray
        - Ensure leads/lines are not obscuring field
    - Administer medications in the following order of priority (can be done after isolette is closed):
        - Vitamin K (if caregiver has assented)
        - Gentamicin (give after blood culture is sent)
        - Ampicillin (give after blood culture is sent)
        - Caffeine load
        - Erythromycin eye ointment (if caregiver has assented; do not attempt to open eyes if fused)
    - **Close isolette**, add water, and initiate humidity protocol (keep infant in plastic bag)
    - Print, review, and sign code sheet
    - Ensure proper identification (posey)

- Provider(s):
    - Once actual weight is known, place order for STAT meds using this actual weight (caffeine, antibiotics, and indomethacin, if indicated)
    - If decision is made to intubate infant after arrival in NICU, consider ordering/using RSI medications (see "NICU Intubation Sequence" order set in Epic)
    - Calculate anticipated depth for insertion of umbilical lines
    - Scrub and prep lines (if not already done so prior to delivery)
    - Place UVC first and start running IVF, then UAC (*lines should be placed by an experienced provider or transport RN*)
    - Tell RN to call for x-ray when suturing lines
    - Minimize fluctuations in blood pressure by slowly flushing/withdrawing from lines (max rate 1 ml per 40 seconds)
    - Order follow-up babygram for 6-12 hours after central line placement to confirm proper position

POST-GOLDEN HOUR

- Update parents, obtain assent for DBM (and consider obtaining consent for PICC and blood transfusion, if indicated), and give *Lactation Welcome Letter*
- Debrief with team
- Identify issues/concerns to discuss at next M&M or CQI meeting

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