

Name of Procedure	Nursing Care Bundle to Decrease Intraventricular Hemorrhage (IVH) in Premature Infants
Procedure Code	WI/02- COP.3
Issue Date	20/07/2025
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Next Revision Date	20/07/2026

1.0 Purpose:

- 1.1 To provide evidence-based nursing practices aimed at reducing the incidence of intraventricular hemorrhage (IVH) in premature infants (<32 weeks' gestation and/or birth weight <1500g) during the first 72 hours of life.

2.0 Definitions:

- 2.1 IVH: Intraventricular hemorrhage – bleeding within the brain's ventricular system, the spaces that contain cerebrospinal fluid.
- 2.2 GA: Gestational Age: the duration of a pregnancy, measured in weeks, from the first day of the woman's last menstrual period (LMP) to the current date or the date of delivery
- 2.3 BW: Birth Weight: the first weight of a newborn baby taken immediately after delivery, ideally within the first hour

3.0 Responsibilities

3.1 NICU Nurses:

- Implement and document all elements of the care bundle.
- Record any deviations from the bundle along with a clear clinical rationale.
- Ensure the checklist is signed daily

3.2 Physicians:

- Review and verify the implementation of all care bundle elements.
- Sign the checklist daily to confirm compliance.

4.0 Policy:

- 4.1 The hospital adopts an evidence-based nursing care bundle to decrease the incidence of intraventricular hemorrhage (IVH) in premature infants, and considers it a highly crucial neonatal safety priority that all NICU nurses should follow strictly during the first 72 hours of life.
- 4.2 All premature infants born at gestational age less than 32 weeks and/or with birth weight less than 1500 grams must be managed according to the standardized IVH Prevention Bundle, as outlined in the attached checklist (Attachment 1), unless contraindicated.
- 4.3 The nursing care bundle includes interventions focused on head positioning, minimal stimulation, gentle handling, controlled fluid administration, respiratory stability, thermoregulation, and strict adherence to clinical protocol- all of which are proven to reduce cerebral blood flow fluctuations and improve neurological outcomes.

5.0 Procedure

5.1 Initiation of IVH Prevention Bundle:

- 5.1.1 All premature infants with gestational age less than 32 weeks and/or birth weight less than 1500 grams must be placed immediately under the IVH prevention care bundle upon admission to NICU.
- 5.1.2 The responsible nurse must verify eligibility based on gestational age and birth weight, and initiate the IVH bundle checklist within the first hour of admission.
- 5.1.3 The physician must review and co-sign the checklist daily to ensure clinical compliance with the bundle elements.
- 5.1.4 The checklist must be printed, labeled with the infants full identification data, and attached to the patients chart for daily follow-up.
- 5.2 Implementation of Bundle Elements:
 - 5.2.1 Maintain Neutral/Midline Head Positioning:
 - Head position should be maintained neutral/midline and to avoid prone positioning or lateral positioning.
 - During handling and procedures the head position should be maintained in neutral/midline position. Turning infant's head to the side effects jugular venous return and may affect intracranial pressure and cerebral blood flow.
 - After NICU admission the head of the bed should be elevated 30 degrees as this reduce ICP.
 - X-ray completion is a 2-person procedure and should be done with head of bed elevated.
 - 5.2.2 Thermoregulation:
 - Servo control mode: 36.5–37°C.
 - Avoid axillary measurements.
 - Apply humidity per protocol.
 - 5.2.3 Gentle Care:
 - Assessment and investigation should be clustered every 6 hours. Aim for “eyes on, hands off”.
 - Minimal and gentle handling should be maintained by avoiding routine abdominal girth and routine fontanelle assessment.
 - Use 2 people to transfer infant, weigh and change sheet under infant as needed.
 - Avoid changing bedsheet for 72 hours. A 2-person procedure if required before 72 hours.
 - Use skin probe temperature and avoid axillary temperatures unless correlation is needed for clinically unstable neonate.
 - Avoid routine weight for the first 3 days of birth, on conditions that weight is required, the process must be performed by 2 persons.
 - 5.2.4 Fluid Administration
 - Boluses over 30–60 min (except resuscitation).
 - D/W 10% bolus over 5 min if needed.
 - Avoid NaHCO₃. Maintain normal BP.
 - Withdraw/flush samples slowly (30 sec/ml).
 - 5.2.5 2.5 minimize hypoxemia and prevent hypocapnia.a:
 - Avoid hypocapnia < 35 mmHg. Moreover, PaCO₂ extremes and fluctuations associated with severe IVH.
 - Intubation should be done by expert.
 - After stabilization, target normal blood gas values (pH 7.20-7.40, PaCO₂ 40-50 mmHg).

- Timely adjustment of ventilation and volume guarantee ventilation as per blood gas result to achieve the targets and to minimize alterations in cerebral blood flow and hypoxemia.
- Monitor for apnea and possible complications e.g. pneumothorax

5.2.6 Gentle Diaper Changes:

The purpose is to reduce any stress (external or internal) that causes a sharp increase or decrease in blood pressure, which can result into an increase/decrease in cerebral blood flow and/or intracranial pressure (ICP).

- When changing diapers Do Not lift baby by their feet or raise the hips higher than the head, care should be taken by sliding the diaper under to avoid raising legs.
- For infants with birth weight less than 1000 gram, keep the diaper open for the initial 7 days in order to minimize groin irritation and potential skin breakdown. Genitalia should be covered by gauze to avoid any splash of urine.

5.2.7 Minimize Light:

- Prevent constant exposure to light by covering the incubator with large cover.
- No direct light in infants' eyes.

5.2.8 Minimize Noise:

- Reduce the alarms volume, and response to alarm immediately.
- Do not place objects at top of incubator.
- Speak softly at bedside.
- Prevent agitation and maneuvers that may fluctuate cerebral blood flow.

6.0 Attachment:

6.1 Attachment 1: COP.2 IVH bundle checklist for infants

7.0 References:

- 7.1 -JCI accreditation 8th edition. COP.2
- 7.2 -<https://moh.gov.om/media/in3cc5jr/care-bundle-to-reduce-intraventricular-hemorrhage-in-preterm-neonates.pdf>- <https://www.healthinnovationoxford.org/wp-content/uploads/2024/05/Jean-Yong-IVH-clinical-care-bundle-OxAHSN-shared-learning-event-1.pdf> 9. Attachments
- 7.3 <https://www.healthinnovationoxford.org/wp-content/uploads/2024/05/Jean-Yong-IVH-clinical-care-bundle-OxAHSN-shared-learning-event-1.pdf>

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