<table>
<thead>
<tr>
<th>NAME OF DOCUMENT</th>
<th>Neonatal Observations Following Assisted Vaginal Birth</th>
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<td>SUMMARY</td>
<td>A guide to additional scalp observations and appropriate referral pathways for neonates at risk.</td>
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1. **POLICY STATEMENT**
   To ensure consistent and high quality observations and documentation for babies following an assisted vaginal birth procedure, with the exception of simple lift out forceps undertaken at Caesarean section.

2. **BACKGROUND**
   The rate of vacuum delivery has surpassed that of forceps delivery over the past two decades. Local tissue injuries to the scalp are usually of limited significance and comprise scalp abrasions and cephalohæmatoma. Extracranial, Intracranial and subgaleal haemorrhages (SGH) can be a serious complication following assisted vaginal births. There needs to be a high index of suspicion in the ‘at risk’ newborn.

   SGH most frequently occurs following vacuum assisted birth, the incidence has been estimated at up to 6/1000 of vacuum assisted births, when bleeding occurs into the subaponeurotic space, it is potentially life threatening for the neonate. The vast majority can be detected within the first hour after delivery. Visual inspection alone without palpation may miss a SGH because the blood loss moulds to the shape of the scalp leading to the potential for late detection.

3. **RESPONSIBILITIES**
   **3.1 Employees and Medical Staff will:**
   - Ensure familiarity with the policy and the procedure and any related local business rules.

   **3.2 Network Managers/Service Managers and Line Managers will:**
   - Ensure that staff are familiar with the Local Health District policies and procedures and the requirement for adherence.
   - Periodic (9/12) review of compliance, and take appropriate action if policies are breeched.

4. **PROCEDURE**
   **4.1 Observations in the Delivery and Postnatal ward after assisted vaginal birth.**

   **All babies who have had an assisted vaginal birth should have: temperature, apex rate, respiration rate and colour and scalp observations at 1, 2, 4, 6, 8 and 12 hours of age**
   - Ensure that intramuscular vitamin K was given immediately following birth.
   - If consent for IM vitamin K is declined, parents should be counselled about all risks, including the risk of SGH.
   - Always inspect for a boggy swelling of the scalp, especially at the cup site.
   - Always palpate the scalp for a ballotable mass or movement of fluid in scalp, noting colour and head shape including displacement of ears or pitting oedema. (refer to diagram on Page 4)
   - Document all observations on the Standard Newborn Observation Chart (SNOC).
   - Be especially vigilant for these situations of increased risk:
     1. Failed vacuum extraction
     2. Use of two instruments ie vacuum and forceps to expedite birth
     3. Extraction taking more than 3 contractions, 20 minutes extraction time, or more than 2 cup detachments.
     4. Placement of the vacuum cup over the sagittal suture near the anterior fontanelle.
   - Babies should be transferred to postnatal ward if SGH is not suspected. Scalp observations and palpation will continue as per SNOC.
4.2 Recognition of subgaleal haemorrhage: Local signs
- The initial localised signs of a SGH are of vague, generalised scalp swelling with laxity of the scalp at the site of cup application. The chignon (caput) in contrast, is firm in consistency and usually resolves within one hour.
- If SGH haemorrhage progresses, the scalp feels fluctuant 'like a leather pouch filled with fluid' with free fluid between the scalp and skull and often irritability and pain on handling.
- Large blood loss can occur despite a small increase in head circumference.
- The haemorrhage is not contained by suture lines (see diagram below). In severe cases, ear lobes may be displaced or shifted downwards by mass effect and eyelids may appear puffy.

4.3 Recognition of hypovolaemia: Systemic signs
- Tachycardia (>160/min), poor peripheral perfusion (capillary refill > 3secs) and/or pallor (vasoconstriction and anaemia) are early signs of significant blood loss.
- Hypotension (mean BP <40 mmHg in a term infant) is a late sign of hypovolaemia and should not be relied upon for early recognition.
- Lethargy, tachypnoea, anaemia, acidosis and coagulopathy may ensue leading to circulatory collapse.

4.4 When SGH is suspected
- Inform medical staff immediately for review or initiate a PACE call if required.
- Transfer to SCN for monitoring and management when: local signs are confirmed or there are any signs suggestive of significant blood loss.

4.5 Treatment in NICU/SCN - Observations in SCN for the first 12 hours
- Continuous pulse oximetry, cardiac monitoring, record observations, initially half hourly.
- Record admission blood pressure and initiate strict fluid balance documentation.
- Palpate scalp and measure head circumference at 1, 2, 4, 6, 8 and 12 hours.
- Initiate blood pressure monitoring between 1-4 hourly frequency depends on the presence of other signs of hypovolaemia (see 4.3 above).

4.6 Immediate Investigation and Management
- Stabilisation should not be delayed by investigation or imaging.
- Obtain FBC, BGL, Group and Cross match on admission.
- In symptomatic SGH, establish IV access and obtain coagulation profile, blood gases including lactate, and electrolytes.
- Prompt aggressive fluid resuscitation using normal saline and blood products (FFP and blood) to correct acidosis and coagulopathy is vital in the survival and outcome of SGH babies. It is important to assess the response to the fluid and blood product resuscitation.
- Choice of ultrasound (point of care ultrasound if available), CT scan or MRI may depend if other intracranial haemorrhages or cerebral ischaemic insults are also suspected and following discussion with the radiologist; which may confirm the diagnosis.
- Invasive blood pressure monitoring and transfer to tertiary neonatal units may be required in severe cases.

4.7 Continuing management in SCN
- In suspected but subsequently unconfirmed cases or in asymptomatic and small SGH, the baby may be discharged from SCN after 12 to 24 hours of stable observations and only following review by a consultant paediatrician.
- Babies should be reviewed regularly for hyperbilirubinaemia during the first few days of life.
5. OTHER POSSIBLE FORMS OF HEAD TRAUMA
Subdural and cerebral haemorrhage may occur after spontaneous delivery (0.4 per 1000) or caesarean section. The prevalence is increased equally with vacuum delivery or forceps (1 per 1000) but the highest (2 per 1000) following failed assisted vaginal delivery progressed to caesarean section or after combined vacuum and forceps delivery.

There are no other special observations after assisted vaginal delivery for subdural or other intracranial haemorrhages. These haemorrhages often present with neurological symptoms hours after delivery and not because of blood loss.

5.1 Management
- Apnoea and seizures are the common presentations.
- Clinical signs include unequal pupils, eye deviation, irritability, tense fontanelle and coma.
- Forceps associated local trauma may include skull fracture.
- Diagnosis is established by cranial CT or MRI. Small SDH may be missed by routine cranial ultrasound because of limited peripheral views.
- Subdural hematomas have been associated with coagulation disorder.
- Management is usually conservative.
- Consider transfer to tertiary neonatal unit for evaluation and surgical consideration.

6. DOCUMENTATION
- Standard Neonatal Observation Chart (SNOC) Neonatal care plan, clinical notes
- Refer deviations from the normal as per Recognition and Management of Patients who are Clinically Deteriorating - NSW Health PD 2013_049.

Differentiating between subgaleal haemorrhage and cephalohaematoma (confined by periosteum to midline)

- **Cephalohaematoma**
- **SubGaleal Haemorrhage**

7. REFERENCES
- NSW Ministry of Health PD2013_049 - Recognition and Management of Patients who are Clinically Deteriorating
- Royal Australian and New Zealand College of Obstetricians and Gynaecologists Prevention, Detection and Management of Subgaleal Haemorrhage in the Newborn 2009: C-Obs 28
- RPA Newborn Care Guidelines Observation of the Newborn following Vacuum Assisted Birth
• Identification and management of subgaleal haemorrhage December 2009


• Boo NY, Foong KW, Mahsy ZA, Yong SC, Jaafar R. Risk factors associated with subaponeurotic haemorrhage in full term infants exposed to vacuum extraction. BJOG, 2005: 112; 1516-21.


8. REVISION AND APPROVAL HISTORY

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<thead>
<tr>
<th>Date</th>
<th>Revision</th>
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