

UMBILICAL CORD BLOOD GAS SAMPLING

This LOP is developed to guide clinical practice at the Royal Hospital for Women. Individual patient circumstances may mean that practice diverges from this LOP.

1. AIM

- To safely obtain arterial and venous umbilical cord blood samples

2. PATIENT

- A neonate with any of the following risk factors:
 - Lactate performed in labour
 - Expedited delivery for pathological fetal heart rate pattern
 - Instrumental delivery
 - Shoulder dystocia
 - Vaginal breech delivery
 - Apgars < 7 at 5 minutes
 - Emergency caesarean section
 - Small for gestational age baby <2.3kgs
 - Premature baby < 37 weeks gestation
 - Intrapartum haemorrhage
 - Planned admission to Newborn Care Centre (NCC)
 - Paediatrician present at birth
 - Meconium stained liquor during labour
 - Multiple birth

3. STAFF

- Medical and midwifery staff

4. EQUIPMENT

- 2 umbilical cord clamps
- Alcohol wipes
- 2 heparinised arterial blood gas syringes (size 30)
- 2 safety needles (21G)
- 2 pairs of gloves
- Personal Protective Equipment (PPE)
- Maternal identification labels
- Additional cord clamps, syringes and safety needles if multiple birth

5. CLINICAL PRACTICE

- Isolate a 10cm segment of umbilical cord between two clamps immediately after delivery, and before or as near the first breath as possible.
- Collect umbilical blood samples within one hour of clamping the cord for accurate analysis
- Attach 21G safety needles to heparinised arterial blood gas syringes
- Affix maternal label to each syringe
- Identify one cord artery and one cord vein

CLINICAL POLICIES, PROCEDURES & GUIDELINES

Approved by Quality & Patient Care Committee
20 April 2017

UMBILICAL CORD BLOOD GAS SAMPLING cont'd

- Insert needle and withdraw a minimum of 0.2 mLs of blood from the artery. The thickness of the vein will support the thinner artery aiding sample collection. If sample is smaller than 0.2 mLs consider performing lactate analysis
- Close safety shield over needle whilst withdrawing from vessel
- Remove safety needle and expel any air from syringe
- Cap with stopper provided
- Invert tube and mix specimen
- Repeat the procedure from the vein
- Analyse cord blood gases on blood gas analyser located in Delivery Suite according to manufacturer's instructions
- Print two copies of the cord gas results. One copy to be filed in the integrated clinical notes and the other sent to pathology
- Process paired cord samples in NCC or send to pathology if Delivery Suite blood gas analyser is unavailable
- Inform paediatric and obstetric registrars if arterial cord gas blood result is pH <7.1 or base excess > -10
- Include the cord blood gas results on the partogram and enter on obstetric database. Attach a copy of the cord blood gas results to a completed pathology request form

6. DOCUMENTATION

- Neonatal integrated clinical notes
- Maternal integrated clinical notes
- Partogram
- Obstetric database

7. EDUCATIONAL NOTES

- Arterial cord blood analysis provides objective information on the acid-base status of the neonate
- Venous cord blood analysis reflects a combination of maternal acid-base status and placental function
- Together, arterial and venous cord blood gases provide information on the occurrence, timing, and possible cause of oxygen deficiency
- It is imperative to clamp the cord immediately after delivery, and before or as near the first breath as possible. Umbilical blood acid-base values can change significantly within only 5 seconds of neonatal breathing after delivery
- Once the umbilical cord has been double clamped, it can be left at room temperature for 60 minutes without clotting or significant changes in pH, oxygen and carbon dioxide saturations
- A cord base excess of >-12 mmol/l is associated with encephalopathy in 10% of neonates

8. RELATED POLICIES/ PROCEDURES/CLINICAL LOPS

- Intrapartum fetal heart rate monitoring
- Fetal Blood Sampling – Intrapartum
- Neonatal Resuscitation at delivery

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9. RISK RATING

- Low

10. NATIONAL STANDARD

- CC – Comprehensive Care

11. REFERENCES

1. National Collaborating Centre for Women's and Children's Health. NICE Clinical Guideline 55 – *Intrapartum Care, 2007*. [Accessed July 2013.] Available from URL: <http://guidance.nice.org.uk/CG55>
2. Wong L, MacLennan A. *Gathering the evidence: cord gases and placental histology for births with low Apgar scores*. ANZJOG 2011; 51:17-21.
3. South Australian Perinatal Practice guidelines, *Umbilical cord blood gas sampling, 2014*, South Australian Maternal and Neonatal Network

REVISION & APPROVAL HISTORY

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Reviewed Maternity Services Clinical Committee 10/4/07
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