CORD BLOOD FOR ANALYSIS

CLINICAL GUIDELINE MCSA.MBC.2.1

Based on the recommendations of the South African Society of Obstetricians and Gynaecologists (SASOG) cord blood for blood gas analysis needs to be routinely collected on:

- All vaginal births
- All emergency caesarean sections
- All compromised pregnancies, even if delivered by elective caesarean section

As umbilical cord blood gas sampling is the most objective determinant of the fetal metabolic condition at birth.

This recommendation replaces the list of selected indications for cord gas analysis (compromised pregnancies)[4]:

- Preterm gestation
- Meconium-stained liquor
- Assisted emergency delivery (i.e. ventouse, forceps, emergency caesarean section)
- Vaginal breech delivery
- Shoulder dystocia
- Intrapartum fever (≥ 38°C)
- Maternal thyroid disease
- Multiple pregnancy
- Small for gestational age baby
- Growth restricted infants
- Intrapartum haemorrhage
- Fetal distress
- Any significant intrapartum cardiotocography abnormality
- Planned neonatal nursery admission
- Any other clinical condition that necessitates a Paediatrician to be present at a normal delivery

Technique and Timing

- For all cases arterial and venous cord blood could be aspirated immediately after birth (vaginal or caesarean deliveries) directly from the unclamped pulsating cord to still allow for the beneficial effects of placental transfusion occurring with delayed cord clamping (after 30 – 60 seconds)[5].
- If urgent handover of the baby (fetal distress) to the paediatrician is indicated, then 3 times "milking" of 10cm of the cord towards the infant is advised as this method ensures the same benefits as 30 seconds of delayed clamping.
- Alternatively delayed double clamping can be performed in cases where immediate attention to the newborn is not indicated.
- All neonates should get the benefit of delayed cord clamping[6].

  The obstetrician or general practitioner should take the cord blood sample and the midwife should ensure that the lab collects it promptly, or alternatively run the sample at the nearest blood gas machine, as per hospital setup.

Management of abnormal results

Abnormal (indicative of possible acute intrapartum hypoxia):

- pH <7.0
- base excess < -12mmol/l

Make detailed case notes

Inform Paediatrician immediately of all abnormal results – to escalate care and to consider MRI of the brain to identify possible intrapartum hypoxia

Send placenta for histology in all cases with abnormal results as well as those where other indications are present that would necessitate the histological evaluation of the placenta (refer to Placental Histopathology guideline).

References

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2. Adam, S. Soma-Pillay, P. Obstetric Essentials. (2018). 3rd Edition. University of Pretoria, pp152.
3. Higgins, C. (2014) Umbilical-cord blood gas analysis. [online] Acucaretesting.org. Available at https://acutecaretesting.org/en/articles/umbilical-cord-blood-gas-analysis [Accessed 24 Oct 2017]
4. South Australian Maternal & Neonatal Clinical Network, (2014). SA Perinatal Practice Guidelines - Umbilical cord blood gas sampling, [online] Available at: https://www.sahealth.sa.gov.au/wps/wcm/connect/e5394200440146a2a060ac1013b2c54b/Umbilical+cord+blood+gas+sampling_May2014.pdf?MOD=AJPERES&CACHEID=ROOTWORKSPACE-e5394200440146a2a060ac1013b2c54b-mMyPxtn [Accessed 31 Oct 2017]
5. Andersson O, Hellström-Westas L, Andersson D, Clausen J, Domellöf M. (2013) Effects of delayed compared with early umbilical cord clamping on maternal postpartum hemorrhage and cord blood gas sampling: a randomized trial. Acta Obstet Gynecol Scand.; 92:567–574
6. American College of Obstetricians and Gynecologists, 2017. Delayed umbilical cord clamping after birth committee opinion no: 684. Obstet Gynecol, 129, pp.e5-10.

Authorship

These guidelines were drafted by a clinical team from Mediclinic and were reviewed by a panel of experts from SASOG and the BetterObs™ clinical team in 2018 and revised by the scientific committee of BetterObs™ in 2022. All attempts were made to ensure that the guidance provided is clinically safe, locally relevant and in line with current global and South African best practise. Succinctness was considered more important than comprehensiveness.

All guidelines must be used in conjunction with clinical evaluation and judgement; care must be individualised when appropriate. The writing team, reviewers and SASOG do not accept accountability for any untoward clinical, financial or other outcome related to the use of these documents. Comments are welcome and will be used at the time of next review.

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History and version control

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Approval and sign-off

Approved by

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