Hull University Teaching Hospitals NHS Trust

DELAYED/DEFERRED CORD CLAMPING- A GUIDE TO MANAGEMENT

Broad Recommendations / Summary
1. Delaying umbilical cord clamping by 3 minutes confers benefits to mother and baby. 2. The greatest benefit is to preterm babies with improved outcomes for very and extremely preterm infants. 3. Babies 32+6 weeks' gestation and under should be placed on the Lifestart platform for resuscitation/stabilisation so active management of the baby can be commenced with the cord intact.

1 BACKGROUND

There is accumulating evidence that delaying umbilical cord clamping by up to 3 minutes or longer to allow time for placental transfusion results in significant benefits for the newborn baby.[1,2] This practice is endorsed by the World Health Organisation, European Resuscitation Council, the International Federation of Gynaecology and Obstetrics, the RCOG, the RCM and NICE, and is now taught as routine practice in Newborn Life Support.

A delay of at least 60 seconds and up to 3 minutes is recommended. This results in an increased blood volume of around 19ml/kg (21% of the babies total blood volume).[3]

Benefits for term babies include a better iron status during the first few months of life.[4]

The benefits for preterm infants are even more important. Delayed cord clamping in preterm infants reduces the risk of dying in the neonatal period.[2] Fewer babies have hypotension, intraventricular haemorrhage, necrotizing enterocolitis and anaemia requiring transfusion.[5-8]

Delayed cord clamping does not interfere with the management of the third stage of labour, nor operative delivery. It does not increase the risk of postpartum haemorrhage. It does not cause significant delays to neonatal resuscitation.[9-11]

It is associated with a small increased risk of jaundice requiring phototherapy and asymptomatic polycythaemia.[1,4]

Delayed clamping reduces pH and increases base deficit values in umbilical artery

blood samples. The changes at thirty to sixty seconds after birth are small but this effect should be considered if unexpected cord gases are obtained.[12,13]

Umbilical cord 'stripping' or 'milking' techniques, which result in rapid placental transfusion, should not be done. These techniques have previously been used in place of delayed cord clamping but there is not enough evidence of benefit and there is evidence such techniques may increase the risk of severe IVH in preterm infants.[2, 14]

Delayed cord clamping is contraindicated in cases where the placental circulation is not intact, such as placental abruption with APH or umbilical cord avulsion.

The presence of maternal antibodies is not a contraindication for DCC.

In twin/multiple pregnancy delayed cord clamping is not associated with adverse maternal outcomes, and can be done safely in dichorionic twins.[15] Monochorionic twins have been excluded from trials of delayed cord clamping due to concerns about twin to twin transfusion and the risks of harm to the recipient twin that may come from further placental transfusion. Delayed cord clamping therefore cannot currently be recommended for these infants.

2 GUIDELINE DETAILS

Babies over 36+0 weeks of gestation

Parents are to be informed of the benefits of delayed cord clamping. They should be told that the cord will not be clamped immediately unless the health professionals present at delivery deems it appropriate.

Normal delivery

If the mother is well and her condition allows cord clamping to be delayed the newborn infant is to be assessed by the midwife/ obstetrician/ neonatal staff (if they are present) and triaged into one of two categories:

1.) Baby appears well

- The infant is dried and placed on the maternal abdomen or on/between the mothers legs and kept warm.
- Care should be taken not to raise the infant much above the level of the placenta until the cord is clamped.
- The baby can be put to the breast straight away if wished, the mother can be lying down, semi-recumbent at this time.

- The cord is not clamped and cut for at least one minute and ideally for 3 minutes.

- **Should the baby deteriorate (assessment as per NLS with tone, breathing, heart rate and colour) and require resuscitation then clamp the cord immediately and take baby to the resuscitaire.**

2.) Baby appears to be in need of resuscitation. **(Any of the features below are cause for concern in the newborn)**

- No/poor respiratory effort
- Poor colour
- Poor tone
- HR <100 after drying

Be aware that breathing may not start immediately if placental respiration is still taking place. **Monitoring the baby's heart rate is key during delayed cord clamping.**

Do not palpate the cord for pulsation as a measure of heart rate, this is not accurate and a stethoscope should be used.

Triple clamp and cut cord and take the baby to the resuscitaire.

Details of the timing of cord clamping and the decisions made around this MUST be clearly documented in the birth notes.

Babies 33+0 to 35+6 weeks gestation.

The baby is likely not to require respiratory support and so the lifestart platform is not indicated.

1.) Baby appears well

- The baby is dried and wrapped in a warm dry towel and given upto 3 minutes of DCC while on Mum's legs or skin to skin
- Use a hat
- Care must be taken with the babies airway
- DCC is continued for 3 mins unless the baby becomes bradycardic or apnoeic

- **Should the baby deteriorate (assessment as per NLS with tone, breathing, heart rate and colour) and require resuscitation then clamp the cord immediately and take baby to the resuscitaire.**

2.) Baby appears to be in need of resuscitation. **(Any of the features below are cause for concern in the newborn)**

- No/poor respiratory effort
- Poor colour
- Poor tone
- HR <100 after drying

Be aware that breathing may not start immediately if placental respiration is still taking place. **Monitoring the baby's heart rate is key during delayed cord clamping.**

Do not palpate the cord for pulsation as a measure of heart rate, this is not accurate and a stethoscope should be used.

Triple clamp and cut cord and take the baby to the resuscitaire.

Details of the timing of cord clamping and the decisions made around this MUST be clearly documented in the birth notes.

Babies 32+6 weeks gestation and under

The baby is more likely to require respiratory support and the lifestart platform should be prepared for use.

- The infant is placed on the Lifestart platform and kept warm.
    - Use plastic bag if <32 weeks OR if in theatre
    - Always use a Hat
    - In theatre a sterile plastic bag must be used. The baby's head can be covered with a sterile CPAP hat, sterile blanket or the sterile plastic bag.
        - **Please see Appendix 1 for information regarding use of the platform in theatres**
    - **If it is not possible to use the Lifestart (eg the cord will not reach) then the baby can be wrapped in the plastic bag and placed on a transwarmer between the mother's legs or, if in theatre, on a transwarmer sealed in a sterile bag.**
        - **Care should be taken with positioning the baby's airway.**

- Care should be taken not to raise the infant much above the level of the placenta until the cord is clamped.

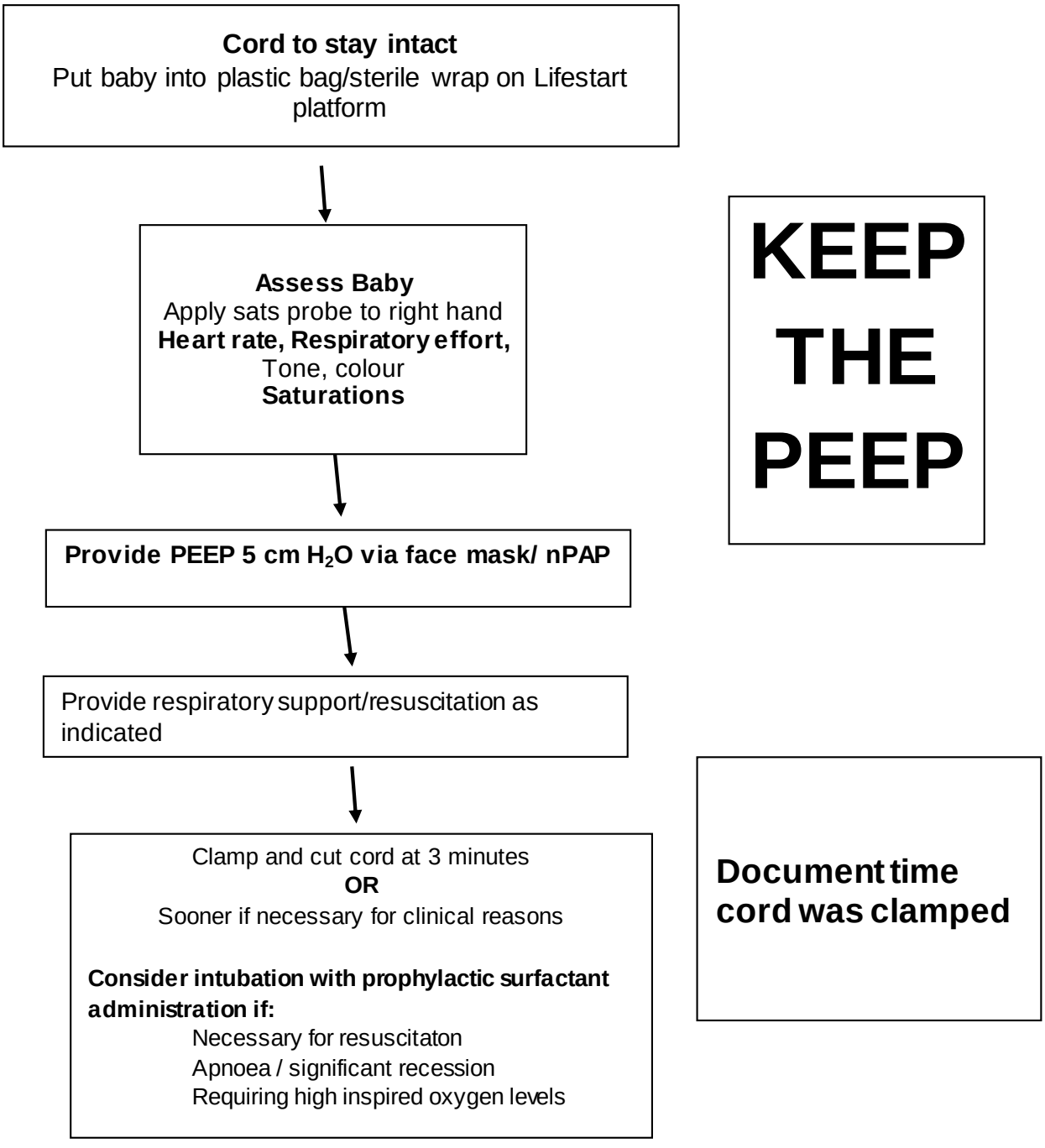
- Assess the baby and provide respiratory support/resuscitation as needed on the lifestart platform.
    - Please see: Flowchart 1 for further information regarding preterm babies <32 weeks.
    - If the baby is being kept warm but not on the Lifestart platform they can still be given respiratory support with PEEP or IPPV using the Lifestart equipment.

- The cord can be cut after 3 minutes while resuscitation/stabilisation continues. The cord is likely to stop pulsating during this time**, this is not an indication to clamp the cord.**

- When using the Lifestart platform in theatre the sterile field must be maintained. If the baby is on the platform a team member can use a cleaned stethoscope to listen for the heart rate and a sterile sats probe may be applied provided these actions do not compromise the sterile field.

Details of the timing of cord cutting and the decisions made around this MUST be clearly documented in the birth notes. If delayed cord clamping is not achieved the reasons for this need to be documented.

Flowchart for management of baby under 32 weeks



3 PROCESS FOR MONITORING COMPLIANCE

Monitoring of this policy will occur through the neonatal audit programme where appropriate. Any audits undertaken will be reported through the paediatric audit meeting where actions are also listed for regular review.

4 REFERENCES

1) Effect of timing of umbilical cord clamping of term infants on maternal and neonatal outcomes. McDonald SJ, Middleton P, Dowswell T, Morris PS. Cochrane Database of Systematic Reviews 2013. Issue 7. Art No. CD004074.

2) Effect of timing of umbilical cord clamping and other strategies to influence placental transfusion at preterm birth on maternal and infant outcomes. Rabe H, Gyte GML, Díaz- Rossello JL, Duley L. Cochrane Database of Systematic Reviews 2019, Issue 9. Art. No.: CD003248.

3) Umbilical cord clamping after birth – better not to rush Weeks A. BMJ editorial 2007; 335:312-3

4) Late vs early clamping of the cord in full term neonates: Systemic review and metaanalysis of controlled trials. Hutton E and Hassan E. JAMA 2007;297:1241 – 1252

5) Seven month developmental outcomes of VLBW infants enrolled in a randomized controlled trial of delayed vs immediate cord clamping Mercer JS et al. J Perinatol 2010. 30; 11-16

6) Umbilical cord milking reduces the need for red cell transfusions and improves neonatal adaptation in infants born at less than 29 weeks gestation: a randomised controlled trial. Hosono S et al. Arch Dis Chld Fetal Neonatal Ed 2008; 93:F14 -19

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8) Umbilical cord clamping and preterm infants : a randomised trial BMJ 1993; 306:172 – 175

9) Why do obstetricians and midwives still rush to clamp the cord? Hutchon D. BMJ 2010;341:c5447

10) Delayed cord clamping should be more widely practised Gallagher A and Hutchon D. Arch Dis Child eletter Feb 2010 95; F59 – F63

11) Delayed cord clamping with full neonatal resuscitation at caesarean section British international congress of obstetrics and gynaecology 2007; Oral abstract FC4.15

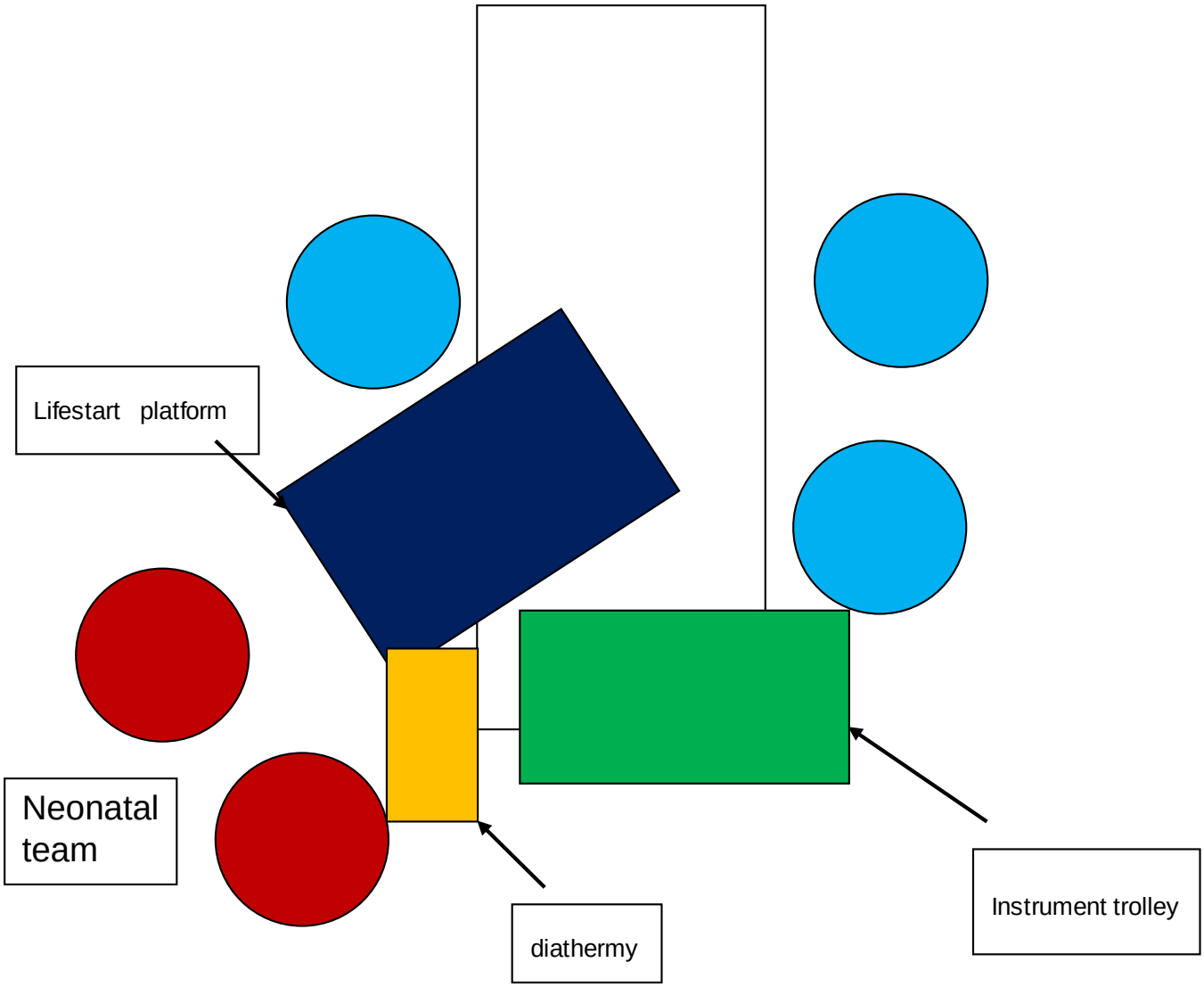
12) Acid base equilibrium in umbilical cord blood and time of cord clamping. Obstet Gynaecol 1984; 63(1) p 44 – 47

13) Delayed umbilical clamping at birth has effects on arterial and venous blood gases and lactate concentrations. Wiberg N, Kallen K and Olofsson P. BJOG 2008;115:697 – 703

14) Umbilical cord milking in preterm infants: a systematic review and meta-analysis. Balasubramanian H, et al. Arch Dis Child Fetal Neonatal Ed 2020;105:F572–F580.

15) Maternal bleeding complications following early versus delayed umbilical cord clamping in multiple pregnancies. Ruangkit C et al. BMC Pregnancy Childbirth. 2018; 18(1):131.

Appendix 1 Schematic for using the Lifestart platform in theatre

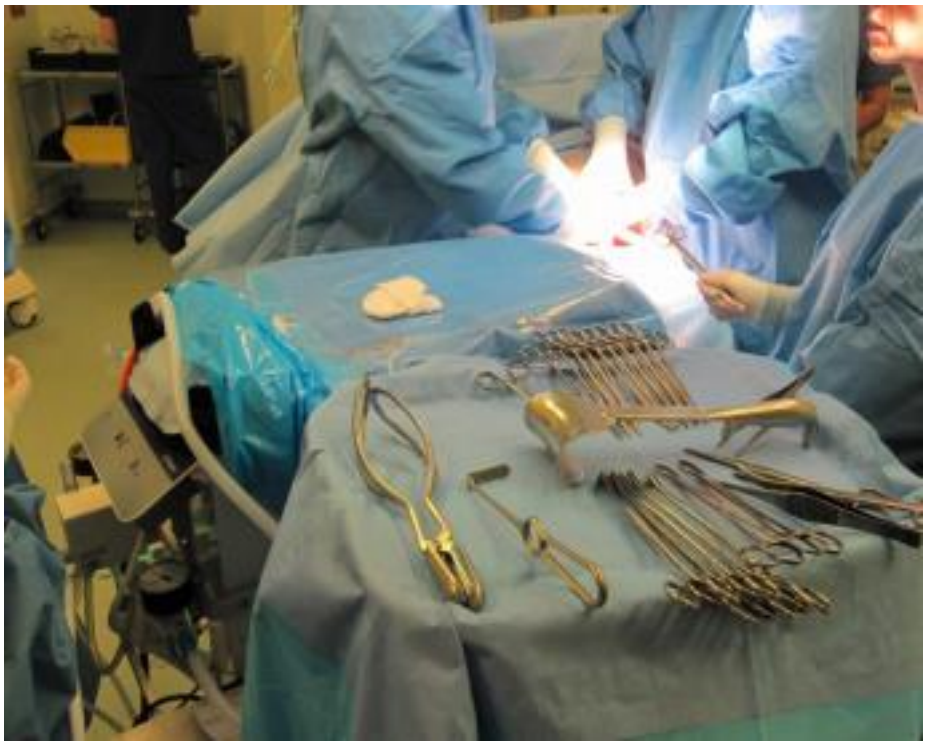


Appendix 1.) <u>Using the Lifestart platform for preterm babies delivered by C-section</u>

1) At least 1 and preferably 2 Neonatal team members to scrub/gown. Scrubbed team members to be assisted by unscrubbed staff in setting up the platform. 1st Cover platform in a sterile mayo trolley drape.

2) The Place the following onto the draped platform:
    a) sterile Neowrap/neohelp bag
    b) sterile Sats probe
    c) sterile face mask
    d) sterile rPAP circuit- (unscrubbed staff to connect to the rPAP driver)
    e) sterile suction tubing/catheter-(unscrubbed staff to connect suction)
    f) transwarmer secured in a sealable sterile yellow plastic bag (found in dressing pack)

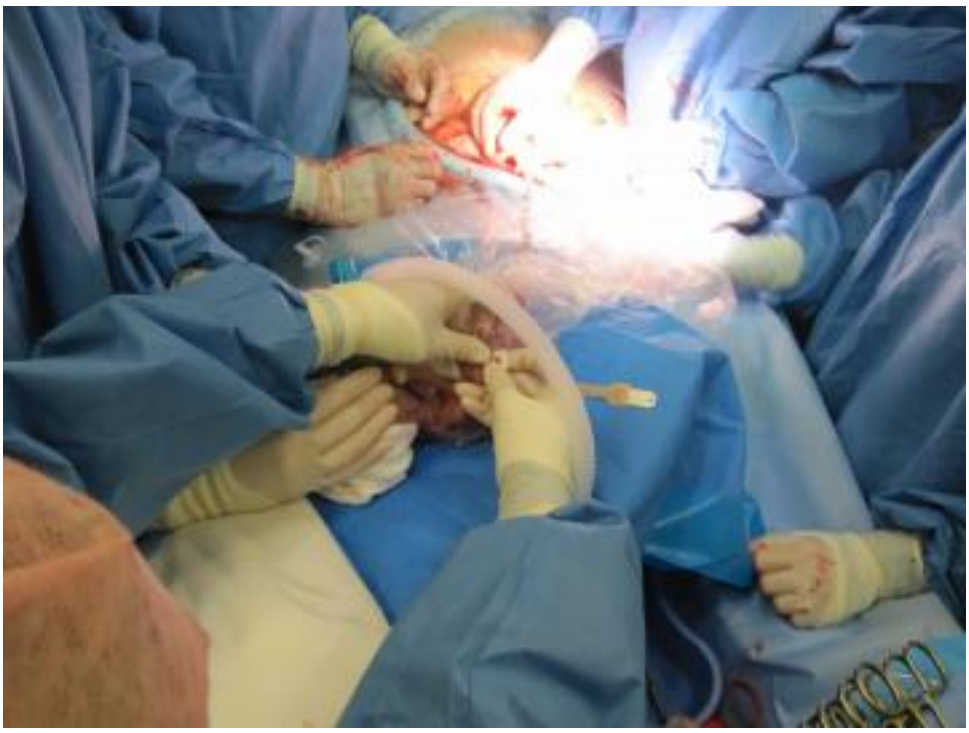
Push the platform into place next to the surgeon and over mother's legs **once diathermy pedals are in place**.



3) Person managing the airway must be scrubbed and gowned as per theatre standards. It is preferable to have 2 neonatal team members scrubbed and gowned. Midwife to scrub in as standard. Other operators are to have sterile gloves

4) Ensure the baby stays warm. The Lifestart platform is heated but a transwarmer is also be necessary. The transwarmer can either be placed under the mayo drapes (as in picture below) or in a sterile plastic bag from a dressing or cannulation pack and put on top of the mayo drapes and under the sterile blanket in the c section pack.

5) Gowned midwife to assist with neowrap and place sats probe on right wrist. Gowned assistant to auscultate baby as needed.



6) Delay cord clamping for 3 minutes unless there are contraindications to doing so. After a minimum of 1 and ideally 3 minutes clamp cord. Move backwards away from the operative field to overhead heat source while maintaining the airway .Continue resuscitation/stabilization as required.