Optimal cord clamping.
Whose blood is it anyway?

Presenter: Amanda Burleigh
Frequently the child appears to be born dead or it is feeble but before the tying of the cord, a flux of blood occurs into the cord and adjacent parts. Some nurses squeeze the blood back out of the cord, into the baby’s body and at once the baby, who had previously been as if drained of blood, comes to life again.
Another thing very injurious to the child is the tying and cutting of the navel string too soon, which should always be left till the child has not only repeatedly breathed but till all pulsation in the cord ceases. Otherwise the child is much weaker than it ought to be, a part of the blood being left in the placenta which ought to have been in the child. At the same time the placenta does not so naturally collapse, and withdraw itself from the sides of the uterus, and is not therefore removed with so much safety and certainty.
How the Cord Clamp Injures Your Baby’s Brain (2002)

By George M. Morley, M.B., Ch. B., FACOG

• Cerebral Palsy
• Learning Disorders and Mental Deficiency
• Respiratory Distress Syndrome
• Intra - Ventricular Haemorrhage (IVH) (Brain Haemorrhage)
• Necrotising Entero-Colitis (NEC)
History

• 1960-70’s. Oxytocic drugs were introduced and Immediate Cord Clamping became routine practice.
• No thought was given to the effect of immediate cord clamping on the fetus.

• There is no evidence to support immediate/early cord clamping.
Cord Clamping the Evidence
Diane Farrar et al 2010

Weighing babies to assess placental transfusion
Studies on Infants with delayed cord clamping

Increased red cell volume
Increased Haematocrit
Increased Perfusion
Increased Temperature
Increased Blood Volume
Increased Urine output
Increased Renal flow
Increased Pulmonary vasodilation

Decreased Hypovolaemia
Decreased Iron deficiency Anaemia
Decreased heart murmurs
Decreased umbilical infections
Decreased risk maternal fetal transfusion
Professor Judith Mercer Emeritus Midwife and Lead expert OCC
Benefits for DCC for Premature babies

- Decreased Intraventricular Haemorrhage
- Decreased Necrotising Enterocolitis
- Decreased Late onset Sepsis
- Decreased Blood Transfusions
- Decreased need for Ventilation

- Increased haemocrit
- Increased Haemoglobin
- Increased Blood Pressure
- Increased Cerebral, Lung + Organ oxygenation
Delayed vs early umbilical cord clamping for preterm infants: a systematic review and meta-analysis. 2018

• Globally, around 15 million children each year are born before 37 weeks gestation, and of these around one million do not survive.

• The study involved 2800 babies born before 37 weeks.

• It revealed that delayed cord clamping reduced the relative risk of death in hospital by one third.
Ola Andersson

**2011 RCT:** 382 full term infants.

- DCC resulted in a reduction of iron deficiency anaemia with improved ferritin levels at 4 months of age.
- No increase in phototherapy or respiratory symptoms.
- Iron deficiency even without anaemia has been associated with impaired development among infants.

**2015:** 263 children from the initial study

- Males in the ICC group had decreased fine-motor and social domains at 4 years of age, especially in boys.
Factors associated with timing of umbilical cord clamping in Nepal

• Iron deficiency is associated with impaired neuro development – affecting genitive, motor + behavioural abilities.
• Globally 43% of children below age of 5 are anaemic. (WHO)
• Research showed lack of uniformity in the timing of cord clamping revealing poor translation of clinical guidelines into clinical practice.
• Babies born at night more likely to receive dcc.
• Milli Hill’s Positive Birth survey showed 20% of babies in UK still receive ICC (3500 women)
Effects of DCC on 4 month ferritin levels, brain myelin content, + neurodevelopment: A RCT

• DCC at birth supports a transfer of blood from the placenta to the infant resulting in 30% increase in blood volume + 50% increase in iron rich cell volume.
• ICC decreases early iron stores + may contribute to IDA in infancy. ID can adversely effect cognitive, motor, social-emotional + behavioural development.
• Myelin producing cells require iron for both maturation + function. Studies in animals link hypomyelination with ID + neurodevelopment.
• Abnormal myelination is associated with childhood developmental disorders – dyslexia + autistic spectrum disorders.
• Results – At 4 months infants receiving DCC = greater ferritin levels + increased brain myelin in areas important for early life functional development.
Changes in guidelines – Timeline

• **WHO 2007 (Updated 2012)** - The World Health Organisation (2012) states delayed cord clamping (performed 1 to 3 minutes after birth) is recommended for all births, preterm and term, while initiating essential neonatal care.

• **RCOG 2009**

• **Royal College of Midwives 2012**

• **NICE Guidelines 2014**
Optimal Cord Clamping/#Wait for White
#Wait for White - Global Campaign
What’s the rush?
No resus, No bleeding, No rush!
Informed Choice
Active Management

When to give oxytocic?

• NICE recommend immediate Oxytocic drug. Allow cord to pulsate (unclamped) for at least 1-5 minutes (or longer if the parents request/you practice). Controlled Cord Traction

• No bleeding, No resus, No rush - Assessing and managing the risk of pph is important

• Delayed Active Management – popular management

• 2010 –Cochrane review showed timing of oxytocic made no significant difference to risk of pph.

• New Zealand Guidance - No oxytocic before clamping.
Cord Clamping the Evidence
Nuchal Cord
Nuchal Cord Literature Review

- Evidence that cutting the Nuchal Cord before birth does cause HARM
- Birth weight reduction
- Hypovolemic
- Hypovolemia
- Hypotension and shock
- Anaemia
- Hypoxic-Ischemic-Encephalopathy
- Cerebral Palsy
- Neurodevelopment delay
Somersault Manoeuvre
Cord Clamping the Evidence

Taking blood gases + Kleihauer Bloods (K2 success)

- Cord Blood samples can still be taken from a pulsating Cord. There is no need to clamp and cut.
- After taking the samples, apply gentle but firm pressure to the needle entry site as you would if taking venous blood.
Northumbria

- Introduced DCC in 2009. Up to 3 minutes.
- Resuscitaire - 15% reduced to 4.08%
- Admissions to SCBU - 4.5% reduced to 2.5%

Increased Jaundice?

- In eight studies involving over 1000 neonates, there was no significant difference in risk of jaundice within 24–48 hours.
- In the most recent meta-analysis of 1828 infants in five studies, there were no significant differences in clinical jaundice.
Gentle Sections
Not so Gentle Section
Neurological development with DCC

• Recent animal and human studies suggest that early cord clamping before the onset of spontaneous respirations appears to adversely affect cerebral perfusion during fetal to neonatal transition.


• Rabe et al. 2016
Cord Milking - 2 review’s

• 6 RCTs* (*Katheria, March, Upadhyay, Erickson-Owens, Rabe, Hosono.)

• 8 CTs** (**McCausland, Siddall, Siddall, Colozzi, Whipple, Lanzkowsky,)

• Milking 2-4 times gave same benefits as dcc.
• Absence of harm with milking
• No increase in jaundice or polycythaemia
• Placental transfusion should be considered at every delivery as it can have a marked impact on the outcomes of newborns.
European Resuscitation guidelines 2015

• ERC Algorithm

Training recommendations:

• Dry baby

• Assess tone, breathing + HR. (30 seconds)

• If gasping or not breathing, give 5 inflation breaths. (30 seconds)

• Reassess + check HR. Transfer 1 minute.
Resuscitation

- **Currently Clamp – Airway -- Breathing**
- **A = Airway**
- **B = Breathing**
- **C = Circulation – then Clamp when stable or to transfer**

- **First 60 seconds can be achieved with intact cord**
Development of the ‘Bedside Assessment, Stabilisation & Initial Cardiorespiratory Support’ (BASICS) Trolley

Basics/Lifestart Trolley
Whose blood is it anyway?
Cord Blood Donation

- Ethical? Whose blood is it anyway?
- A good sample is the largest possible! (Saving lives v research)
- Theoretically it is possible to do both!
- Ethically parents should get informed choice about both Cord Blood Donation and Optimal cord clamping......but they don’t! (survey)
- Midwives (HCP) are at risk
Umbilical Cord Blood Stem Companies
Donation/Storage

• Private
• Public
  (New technology facilitates #waitforwhite)

Financial gain above evidence + informed consent(UK)

• Croydon £2,000,000 Package 2014.
• 2 Yorkshire Trusts ? Amount. Doctors + Midwives not consulted.
It’s my Blood
Please do not give it away
Please store it in me
Why on earth would you cut this cord?
Informed choice + Intervention

• Any cutting of the umbilical cord before physiology is complete is an intervention which needs parental consent.

• To gain parental consent they need to be fully informed.

• If any blood taken for storage or donation, parents need to be fully informed.

• Do you fully inform parents?

• Birth rights matter
TED talk by Dr Alan Greene

https://www.youtube.com/watch?v=Cw53X98EvLQ

**Ticc Tocc 90 seconds to change the world.**
Optimal Cord Clamping/#Wait for White

Contacts and Information

• Optimal Cord Clamping/#Waitforwhite (Facebook page)
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References

- Weeks, A. (2012). Early umbilical cord clamping increases the risk of neonatal anaemia and infant iron deficiency. Evidence-Based Medicine, 17(6), 179-180. http://dx.doi.org/10.1136/ebmed-2012-100557