



Strategies for implementing placental transfusion at birth

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Background:

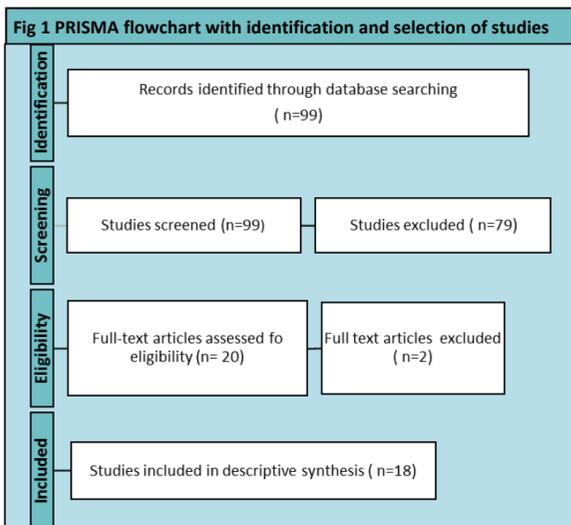
Enhanced placental transfusion reduces adverse neonatal outcomes, including death. Despite being endorsed by the World Health Organization in 2014, PT at birth has not been adopted in practice. The aims of our review were to explore methods of implementation, identify barriers and strategies to facilitate PT at birth. (see table 1 for stakeholders endorsements)

Organization	Preterm <37 weeks	Term = > 37 weeks
WHO 2012, 2014	Delay of umbilical cord clamping for 1-3 minutes is recommended for all births with simultaneous essential newborn care	
ILCOR 2015	Delay umbilical cord clamping for at least 1 minute in both term and preterm infants who do not require resuscitation at birth. Evidence does not support or refute delayed cord clamping when resuscitation is needed	
RCOG 2016	Routine early clamping of the umbilical cord no longer recommended. Umbilical cord should not be clamped earlier than 1 minute if there are no concerns over cord integrity or the baby's well-being	In healthy term babies, practice "deferred" cord clamping (delay clamping for at least 2 minutes)
SOGC 2016	Delayed cord clamping by at least 60 seconds is recommended irrespective of mode of delivery	The risk of jaundice is weighed against the physiological benefits of delayed cord clamping
AAP 2017	Endorse recommendations of ACOG 2017	
ACOG 2017	At least 30 – 60 second delay in cord clamping in vigorous term and preterm infant	

Abbreviations: AAP- American Academy of Pediatrics, ACOG- American College of Obstetricians and Gynecologists, ILCOR- International Liaison Committee on Resuscitation, RCOG- Royal College of Obstetricians and Gynecologists, SOGC- Society of Obstetricians and Gynecologists of Canada, WHO- World Health Organization

Methods:

- **Systematic literature search** on E-pub Ahead of Print, In-Process & Other Non-Indexed Citations (OVID), MEDLINE (OVID). MEDLINE Daily (OVID) and The Cochrane Library (Wiley).
- **Inclusion criteria:**
 - Quality improvement projects on placental transfusion at birth and studies on barriers to implementation
 - Published in the last ten years, no language restrictions
 - See fig 1 a flowchart with identification and selection of studies



- **Data extracted** in Excel table producing a summary of review studies
 - ✓ General information: country, publication year, study setting, study type, study aims, population (gestation age, sample size)
 - ✓ Intervention: methods of placental transfusion, type of professional involved
 - ✓ Methods of evaluating intervention, obstacles and strategies to overcome obstacles
- **Analysis:** Excel table with summary of studies was analysed using descriptive statistics

References:

1. Rabe H, Diaz-Rossello JL, Duley L, Dowswell T. Effect of timing of umbilical cord clamping and other strategies to influence placental transfusion at preterm birth on maternal and infant outcomes. Cochrane Database Systematic Rev. 2012(8):CD003248.
2. Backes CH, Rivera BK, Haque U, Bridge JA, Smith CV, Hutchon DJ, et al. Placental transfusion strategies in very preterm neonates: a systematic review and meta-analysis. Obstetrics & Gynecology. 2014;124(1):47-56.
3. Fogarty M, Osborn DA, Askie L, Seidler AL, Hunter K, Lui K, et al. Delayed vs early umbilical cord clamping for preterm infants: a systematic review and meta-analysis. American Journal of Obstetrics & Gynecology. 2018;218(1):1-18.
4. WHO. Guideline: Delayed umbilical cord clamping for improved maternal and infant health and nutrition outcomes. Geneva, World Health Organization; 2014 (http://www.who.int/nutrition/publications/guidelines/cord_clamping/en/).

Results

The studies included in this review had different designs (see table 2)

Data available	Only on barriers to placental transfusion		Implementation methods and barriers		
Study design	Qualitative study questionnaires	Quality improvement study	Quality improvement study	Retrospective cohort study	Audit of practice
Number of studies	2	1	10	3	1

The preferred methods of implementation were protocol development, targeted education, multidisciplinary team involvement and audit of clinical practice (see Table 3).

The top barriers to implementations were: neonatal concerns (need for resuscitation , risk of jaundice and polycythaemia) , logistical difficulties (no guidance for resuscitation with the cord intact, ensuring normothermia and sterility of the environment) and obstetric concerns (risk of postpartum haemorrhage) (see table 4 for details).

Main strategies to facilitate placental transfusion at birth included: targeted education (58% of studies), protocol development (50% of studies) and constructive feedback sessions(33% of studies).

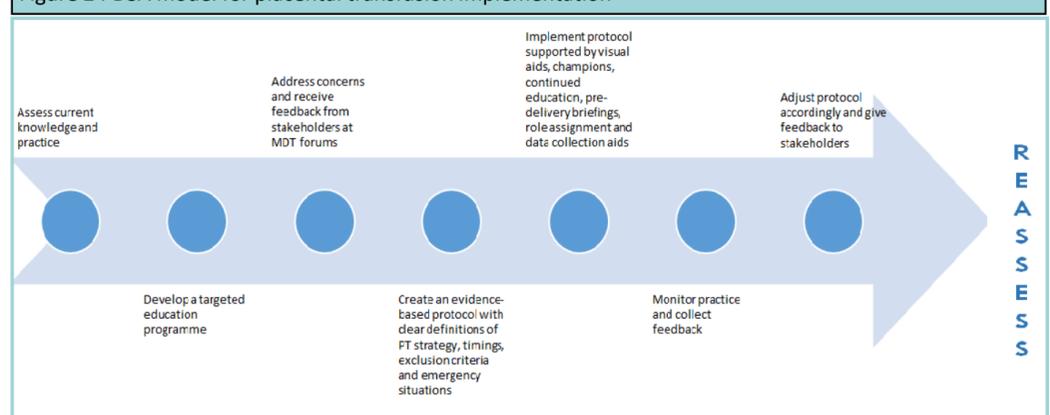
Method of Implementation	Number of studies
Protocol	12 (86%)
Education	9 (64%)
Multi-disciplinary team approach	6 (43%)
Audit/data collection on PT practice	4 (29%)
Simulation training	2 (14%)
Visual aids	3 (21%)
Addressing concerns	3 (21%)
Champions	2 (14%)
Targeted feedback	1 (7%)

Barrier	Number of studies
GENERAL FACTORS	
Knowledge of staff	5 (41%)
Professional resistance to change (obstetrician automated process of delivery, anxiety, fixed beliefs)	5 (41%)
Difficulty implementing change/lack of quality improvement experience	4 (33%)
Lack of guideline/exclusion criteria/delayed cord clamping definition	3 (25%)
OBSTETRICIAN CONCERNS	
PPH	3 (25%)
Caesarean section	3 (25%)
Uterotonic drug use	2 (16.6%)
Placental or cord disruption	2 (16.6%)
PAEDIATRICIAN CONCERNS	
Neonatal safety/need for resuscitation	5 (41%)
Jaundice	3 (25%)
Polycythaemia	2 (16.6%)
Preterm	1 (8.3%)
ENVIRONMENTAL CHALLENGE	
Logistics (equipment/practical procedures) during delayed cord clamping	3 (25%)
Delivery room temperature + neonatal hypothermia risk	2 (16.6%)

Discussion

- High level of overlap between strategies to implement , evaluate, improve compliance and overcome barriers
- High level of bias due to heterogeneity of studies
- Quality improvement projects are the most popular to implement placental transfusion
- We propose a stepwise approach to setting up implementation using a "Plan Do Study Act" (PDSA) see figure 2

Figure 2 PDSA model for placental transfusion implementation



Conclusions

- ✓ A successful placental transfusion strategy requires a multi-step approach
- ✓ The development of a protocol is vital to placental transfusion implementation, with clear definitions of timings, methods and exclusion criteria
- ✓ Placental transfusion implementation requires a multidisciplinary approach, with Obstetricians, Midwives, Nurses and Pediatricians central to adoption of practice
- ✓ Interventions must also be continually reassessed and supported
- ✓ To ultimately achieve a system change we stress the importance of continuous feedback to key stakeholders through debriefing, meetings and audit.