Tõendusmaterjali kokkuvõte - EvSu

Kliiniline küsimus nr 12
Kas nabaväädi klemmimise ajastamine ja meetodi valik esmase stabiliseerimise käigus kõikidel enneaegsetel vastsündinutel mõjutab ravitulemusi?

- varane klemmimine võrreldes hilise klemmimisega
- nabaväädi lüpsmine võrreldes nabaväädi mittelüpsmisega

Kriitilised tulemusnäitajad: Lapse peamised tulemusnäitajad, erütrotsüütide suspensiooni ülekannet vajavate laste osakaal, doonorite arv lapse kohta, ravi vajava rauavaegus-aneemia esinemine

Süstemaatilised ülevaated

Kokkuvõte süstemaatilistest ülevaadetest: Pubmedi otsingut tehes tuli 14 vastet, millest sobivaid oli 10. Neist 1 oli ravijuhis ((European Resuscitation Council guidelines for resuscitation 2010) ja teine RCOC Committee Opinion – mõlemad on kirjeldatud ravijuhiste tabelis.
Süstemaatilistest ülevaadetest 2 olid väga hea kvaliteediga ning ülejäänud hea/keskmise kvaliteediga. Kokkuvõtvalt võiks neist välja tuua järgnevad punktid:

1) Oodates nabaväädi klemmimisega 30-120 minutit, saab vastsündinu platsentast lisaverd ning seda seostatakse kõrgenenud hemoglobiini väärtustega, vähenenud vajadusega transfusiooniks, parema vereringluse stabiilsusega, vähenenud intraventrikulaarse hemorraagia esinemisega (kõikide astmete osas) ja vähenenud riskiga nekrotiseeruva enterokoliidi esinemise suhtes. (1, 2, 4, 6, 7, 10)
2) Ühes hea kvaliteediga uuringus seostati nabaväädi lüpsmist (vastsündinutel gestatsioonivanuses <33rn) kõrgemate algsete hemoglobiini väärtustega, vähenenud vajadusega hapniku järele postmenstruaalvanuses 36 nädalat ja vähenenud IVH riskiga kõikides astmetes ning kõrvaltoimeid sel ei täheldatud. (3)
3) On leitud, et nabaväädi lüpsmine annab sarnaseid tulemusi hilinenud nabaväädi klemmimisega – kõrgem algne hemoglobiini ja hematokriti väärtus ja vähenenud vajadus transfusiooniks neonataalses perioodis, vähenenud nekrotiseeriva enterokoliidi esinemissagedus. On leitud ka vähenenud intraventrikulaarse hemorraagia esinemist, millel võiks olla oluline mõju ka lapse tervise kaugtulemitele, kuid see vajab täpsemaid lisauuringuid. (4,7, 8)
4) Leiti, et vastsündinutel, kel oli rakendatud hilist nabaväädi klemmimist või lüpsmist, olid kõrgemad bilirubiini väärtused. Uuringute alusel esines trend suurenenud vajaduse järele fototeraapiaks, kuid see ei olnud statistiliselt oluline. (1),
5) Üks uuring, mis hõlmas väga väikese sünnikaaluga vastsündinuid (<1000g) leidis, et nabaväädi hilinenud klemmimine või lüpsmine võib parandada lühiajalisi tervisetulemeid, kuid puuduvad sellekohased sobivad uuringud hilisemate tervisetulemite osas (eeskätt neuroloogilise arengu ja ohutuse osas). (5)
6) Puuduvad usaldusväärsed uuringud, mis analüüsiks eraldi lapse asetust võrreldes platsentaga peale sündi. Enamustes uuringutes oli vaginaalse sünnituse puhul laps asetatud introituse kõrgusele, ühel juhul sellest 20cm allapoole ja ühel juhul ema kõhule (1).
7) Enamuses ülevaadetes ei toodud välja võimalikke riske emale. Kahes ülevaates küll aga mainiti, et üheski uuringus ei olnud alust seostata nabaväädi hilisemat klemmimist suurenenud sünnitusjärgse verejooksuga ega muude riskidega emale (üks neist oli küll aga täiskantud raseduste kohta) (2, 4)

Viited

Kokkuvõtte (abstract või kokkuvõtlikum info)	Viide kirjandusallikale

Fifteen studies (738 infants) were eligible for inclusion. Participants were between 24 and 36 weeks' gestation at birth. The maximum delay in cord clamping was 180 seconds. Delaying cord clamping was associated with fewer infants requiring transfusions for anaemia (seven trials, 392 infants; risk ratio (RR) 0.61, 95% confidence interval (CI) 0.46 to 0.81), less intraventricular haemorrhage (ultrasound diagnosis all grades) 10 trials, 539 infants (RR 0.59, 95% CI 0.41 to 0.85) and lower risk for necrotising enterocolitis (five trials, 241 infants, RR 0.62, 95% CI 0.43 to 0.90) compared with immediate clamping. However, the peak bilirubin concentration was higher for infants allocated to delayed cord clamping compared with immediate clamping (seven trials, 320 infants, mean difference 15.01 mmol/L, 95% CI 5.62 to 24.40). However, treatment (phototherapy) was reported by three studies (180 infants, RR 1.21, 95% CI 0.94 to 1.55) (Analysis 1.26) with no significant difference between the groups, although there was a non-significant trend towards more phototherapy for infants allocated more placental transfusion. For most other outcomes (including the primary outcomes infant death, severe (grade three to four) intraventricular haemorrhage and periventricular leukomalacia) there were no clear differences identified between groups; but for many there was incomplete reporting and wide CIs. Outcome after discharge from hospital was reported for one small study; there were no significant differences between the groups in mean Bayley II scores at age seven months (corrected for gestation at birth (58 children)). Hofmeyr 1988 had shown that there is no significant difference in the two groups allocated to delayed umbilical cord clamping with or without ergometrine. We have therefore not attempted a subgroup analysis on this variable. No studies reported outcomes for the women. Authors' conclusions Providing additional placental blood to the preterm baby by either delaying cord clamping for 30 to 120 seconds, rather than early clamping, seems to be associated with less need for transfusion, better circulatory stability, less intraventricular haemorrhage (all grades) and lower risk for necrotising enterocolitis. However, there were insufficient data for reliable conclusions about the comparative effects on any of the primary outcomes for this review.	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 Syst Rev 2012:CD003248.
Results of meta-analyses for16 outcomes in preterm deliveries are detailed in *Table* II. The findings suggest significantly reduced incidence of intraventricular hemorrhage in preterm neonates. Delayed clamping neither increases complications nor provides benefits for mothers delivering at term. Delayed clamping risks and benefits for mothers delivering prematurely have not been explored in the trials.	2. JOSEPH L MATHEW, Timing of Umbilical Cord Clamping in Term and Preterm Deliveries and Infant and Maternal Outcomes: *A Systematic Review of Randomized Controlled Trials,* INDIAN PEDIATRIcs VOLUME 48__FEBRUARY 17, 2011

TABLE II SUMMARY OF META-ANALYSIS OF DATA PERTAINING TO TERM DELIVERIES

Outcome	Trials (*N*)	Participants (*n*)	Effect size (95% CI)
Term Deliveries			
Initial hematocrit (%) at birth	6	1163	MD 2.38 (1.10, 3.67)
Initial hemoglobin (g/dL)	4	1059	MD 1.95 (0.81, 3.10)
Hematocrit (%) at longest follow-up	2	403	MD 1.72 (-2.00, 5.44)
Hemoglobin (g/dl) at longest follow-up	7	1318	MD 0.17 (-0.15, 0.49)
Anemia at follow-up	3	402	RR 0.85 (0.54, 1.35)
Ferritin level (mcg/L) at longest follow-up	4	857	MD 17.00 (12.15, 21.85)
Admission to NICU	2	1239	RR 0.96 (0.40, 2.33)
Respiratory distress	2	1008	RR 0.99 (0.35, 2.81)
Hyperbilirubinemia or jaundice	5	2210	RR 1.16 (0.92, 1.45)
Requirement of phototherapy	5	1974	RR 1.28 (0.48, 3.42)
Polycythemia	6	936	RR 1.22 (0.79, 1.87)
Maternal PPH >500 mL	4	1878	RR 0.82 (0.65, 1.04)
Severe Maternal PPH (>1000mL)	4	1684	RR 1.19 (0.67, 2.11)
Maternal blood loss (mL)	1	963	MD -6.36 (-47.66, 34.94)
Maternal hemoglobin (g/dL)	4	1175	MD 0.12 (-0.06, 0.30)
Maternal ferritin level (mcg/L)	2	154	MD -5.01 (-16.30, 6.28)
Need for manual removal of placenta	2	1315	RR 0.45 (0.22, 0.94)
Preterm Deliveries			
Mortality	9	503	RR 0.55 (0.21, 1.46)
Hematocrit at birth	9	457	MD 3.04 (2.58, 3.51)
Requirement for transfusions	6	358	RR 0.72 (0.54, 0.96)
Number of transfusions administered	4	144	MD -0.92 (-1.78, -0.05)
Peak serum bilirubin (mg/dL)	5	215	MD 0.91 (0.21, 1.60)
Requirement of phototherapy	3	180	RR 1.23 (0.94, 1.60)
Patent ductus arteriosus	4	183	RR 1.28 (0.62, 2.64)
Intraventricular hemmorhage	7	408	RR 0.49 (0.32, 0.74)
Respiratory distress syndrome	1	39	RR 1.84 (0.64, 5.30)
Requirement of ventilatory support	2	85	RR 1.09 (0.66, 1.81)
Mean blood pressure	2	97	MD 3.66 (0.74, 6.58)
Necrotizing enterocolitis	3	137	RR 0.47 (0.13, 1.69)
Hemoglobin at longest follow-up	1	34	MD 1.10 (0.35, 1.85)
Ferritin at follow-up	1	34	MD 19.00 (-60.93, 98.93)
Hematocrit at follow-up	1	34	MD 4.00 (0.53, 7.47)
Bronchopulmonary dysplasia	1	72	RR 1.33 (0.51, 3.46)

CI= confidence interval, MD= mean difference, RR= relative risk

There were included 7 randomized clinical trials involving 501 infants.Infants with a gestational age of less than 33 weeks allocated to UCM compared with control conditions showed no difference in the risk for mortality (risk ratio [RR], 0.75 [95% CI, 0.35 to 1.64]; risk difference [RD], −0.02 [95% CI, −0.09 to 0.04]), hypotension requiring volume expanders (RR, 0.71 [95% CI, 0.41 to 1.25]; RD, −0.09 [95% CI, −0.22 to 0.05]), or inotrope support (RR, 0.77 [95% CI, 0.51 to 1.17]; RD, −0.10 [95% CI, −0.25 to 0.05]). Higher initial levels of hemoglobin (mean difference, 2.0 [95% CI, 1.3-2.7] g/dL) and hematocrit (mean difference, 4.5% [95% CI, 1.5%-7.4%]) were identified in the UCM groups. We found a reduced risk for oxygen requirement at 36 weeks (RR, 0.42 [95% CI, 0.21 to 0.83]; RD, −0.14 [95% CI, −0.25 to −0.04]) and for intraventricular hemorrhage of all grades (RR, 0.62 [95% CI, 0.41 to 0.93]; RD, −0.12 [95% CI, −0.22 to −0.02]) in infants assigned to UCM. Among infants with a gestational age of at least 33 weeks, UCM was associated with higher hemoglobin levels in the first 48 hours in 224 infants (mean difference, 1.2 [95% CI, 0.8-1.5] g/dL) and at 6 weeks of life in 170 infants (mean difference, 1.1 [95% CI, 0.7-1.5] g/dL). CONCLUSIONS AND RELEVANCE Umbilical cord milking was associated with some benefits and no adverse effects in the

3. Heidi Al-Wassia, MD; Prakesh S. Shah, MD, MSc,
Efficacy and Safety of Umbilical Cord Milking at Birth
A Systematic Review and Meta-analysis

JAMA Pediatr. 2015;169(1):18-25. doi:10.1001/jamapediatrics.2014.1906 Published online November 3, 2014.

immediate postnatal period in preterm infants (gestational age, <33 weeks); however, further studies are warranted to assess the effect of UCM on neonatal and long-term outcomes.	
ABULATION, INTEGRATION, AND RESULTS: We identified 12 eligible studies describing a total of 531 neonates with an average gestation of 28 weeks. Benefits of greater placental transfusion were decreased mortality (eight studies, risk ratio 0.42, 95% confidence interval [CI] 0.19–0.95, 3.4% compared with 9.3%, P5.04), lower incidence of blood transfusions (six studies, risk ratio 0.75, 95% CI 0.63–0.92, 49.3% compared with 66%, P,.01), and lower incidence of intraventricular hemorrhage (nine studies, risk ratio 0.62, 95% CI 0.43–0.91, 16.7% compared with 27.3%, P5.01). There was a weighted mean difference of 21.14 blood transfusions (six studies, 95% CI –2.01– 0.27, P,.01) and a 3.24-mmHg increase in blood pressure at 4 hours of life (four studies, 95% CI 1.76–4.72, P,.01). No differences were observed between the groups across all available safety measures (5-minute Apgar scores, admission temperature, incidence of delivery room intubation, peak serum bilirubin levels). No studies reported on incidence of maternal complications, including postpartum hemorrhage. As a result of lack of data provided in the reports, subgroup analysis of potential antenatal (treatment with uterotonic agents or antenatal steroids, position of the neonate during the placental transfusion, timing of the intervention) and postnatal confounders (treatment with antibiotics, exposure to indomethacin or ibuprofen) was not possible. CONCLUSIONS: Results of this meta-analysis suggest that enhanced placental transfusion (delayed umbilical cord clamping or umbilical cord milking) at birth provides better neonatal outcomes than does early cord clamping, most notably reductions in overall mortality, lower risk of intraventricular hemorrhage, and decreased blood transfusion incidence. The optimal umbilical cord clamping practice among neonates requiring immediate resuscitation remains uncertain.	4. Carl H. Backes, MD, Brian K. Rivera, MS, Urbee Haque, MS, Jeffrey A. Bridge, PhD, Charles V. Smith, PhD, David J. R. Hutchon, MB, FRCOG, and Judith S. Mercer, PhD, CNM, FACNM Placental Transfusion Strategies in Very Preterm Neonates A Systematic Review and Meta-analysis (Obstet Gynecol 2014;124:47–56) DOI: 10.1097/AOG.0000000000000324
RESULTS: We found 19 studies of which 10 studies could be included (n = 199). Three reported neurodevelopmental outcomes, none of which showed significant rates of disability. Two reported these at 18 to 24 months (n = 42) but used different scales preventing pooling. Secondary outcomes could be extracted from 10 studies (Table 1, n = 199). Short-term outcomes favored DCC or UCM (Fig. 2). DCC at birth significantly reduced the number of blood transfusions given (95% CI −2.52 to −1.92; $p < 0.001$; n = 149) in ELBW patients. Mean blood pressure 4 hours upon admission (95% CI, 4.22-5.58; $p < 0.001$; n = 113) was higher with DCC or UCM. Hct (95% CI, 2.12-6.44; $p < 0.001$; n = 118) and initial Hb (95% CI, 3.11-3.74; $p < 0.001$; n = 137) were also higher after DCC or UCM. Infants exposed to DCC or UCM had lower rates of sepsis (95% CI, 0.18-081; p = 0.01; n = 154),8,23,24,26-28 and	5. Sarvin Ghavam et al. Effects of placental transfusion in extremely low birthweight infants: meta-analysis of long- and short-term outcomes, July 26, 2013. doi: 10.1111/trf.12469

there was a trend toward less IVH (95% CI, 0.29-1.07; p = 0.08; n = 196). There was no significant difference between the groups for number of days on ventilator. Funnel plots of studies reporting secondary outcomes suggested no clear publication bias. **CONCLUSIONS:** Strategies to enhance placental transfusion may improve short-term outcomes of ELBW infants. However, paucity of data on neurodevelopmental outcomes and safety concerns tempers enthusiasm for these interventions. Appropriately designed RCTs to assess short-term and long- term outcomes are needed in ELBW infants.	
There is insufficient evidence for reliable conclusions about the comparative effects on any of the four primary outcomes in the systematic review. Nevertheless, the evidence is promising that deferring umbilical cord clamping at preterm birth may be beneficial. There is a reduction in the risk ratio of intraventricular haemorrhage (all grades), transfusion for anaemia, and necrotising enterocolitis. However, even when taking all trial results together, most outcomes were reported by only a subset of trials and had wide confidence intervals, and so results should be interpreted with caution. Despite the concern that deferring cord clamping might lead to colder babies at birth and delays in initiating respiratory support, these outcomes are not reported by most trials. Equally surprising is that treatment for jaundice is also not reported by most trials. To understand whether there is any substantive impact on outcome after discharge from hospital, we need a follow-up of the children to assess whether timing of cord clamping impacts on neurodevelopment or on disability-free survival in childhood.	6. Lelia Duley , Natalie Batey Optimal timing of umbilical cord clamping for term and preterm babies, Early Human Development 89 (2013) 905–908

Table 2
Deferred versus immediate cord clamping for preterm births: effects for infants.

Outcome	Number of trials	Number of participants	Risk ratio	95% confidence interval
Death	13	668	0.63	0.31 to 1.28
Intraventricular haemorrhage				
Any (grades 1 to 4)	10	539	0.59	0.41 to 0.85
Severe (grade 3 or 4)	6	305	0.68	0.23 to 1.96
Periventricular leukomalacia	2	71	1.02	−0.52 to 5.56
Temperature on SCBU admission (°C)	3	143	0.14	−0.03 to 0.31[a]
Transfusion				
For anaemia	7	392	0.61	0.46 to 0.81
For hypotension	4	130	0.52	0.24 to 1.11
Number of transfusions (mean)	5	210	−1.26	−1.87 to −0.64[a]
Mean arterial pressure				
At birth	2	97	3.52	0.60 to 6.45[a]
At 4 h	2	111	2.49	0.26 to 4.72[a]
Inotropes for low blood pressure	4	158	0.42	0.23 to 0.77
Necrotising enterocolitis	5	241	0.62	0.43 to 0.90
Serum bilirubin peak (mean)	7	320	15.01	5.62 to 24.40[a]
Jaundice requiring phototherapy	3	180	1.21	0.94 to 1.55
Oxygen supplementation at 36 weeks	5	209	0.69	0.42 to 1.13

SCBU = special care baby unit.
[a] Mean difference.

Many studies show that there are several advantages to delaying cord clamping by more than 30 seconds in preterm infants. Importantly, doing so does not affect their Apgar scores significantly, nor does it increase the risk of other poor neonatal outcomes such as respiratory distress syndrome, jaundice requiring phototherapy, and mortality. The benefits of DCC in this population include decreasing the need for and the number of blood transfusions for anemia by increasing blood volume and hemoglobin concentration at birth, decreasing the risk of intraventricular hemorrhage, and decreasing the risk of late- onset sepsis. The proposed reason for the decreased incidence of late-onset sepsis after DCC is that cord blood contains a high concentration of hematopoietic progenitor cells. Thus, increasing neonatal blood volume with DCC leads to more of these cells in the neonatal circulation, resulting in less immunosuppression and consequently in less infection. In addition, milking of the umbilical cord may be an appealing alternative strategy for increasing placental transfusion in the preterm baby. In a recent study, milking the cord and DCC led to similar results in terms of hemoglobin concentration, need for transfusions, and other secondary outcomes such as intraventricular hemorrhage, sepsis, necrotizing enterocolitis, and death. Further research is needed. In light of the evidence regarding the advantages of DCC in preterm infants, we can state that this practice is beneficial and should be considered whenever possible. However, there is insufficient

7. Milena Garofalo, Haim A. Abenhaim, MD, MPH2
Early Versus Delayed Cord Clamping in Term and Preterm Births: A Review
J Obstet Gynaecol Can 2012;34(6):525–531

evidence to date to support a recommendation to delay cord clamping in non-vigorous infants requiring resuscitation.	
Six studies were included in this meta-analysis. In total, 292 preterm infants were treated with UCM, while 295 received ICC. Compared to ICC, UCM increased initial Hb significantly by 1.84 g/dL (weighted mean difference; 95%CI: 0.91–2.76; P < 0.0001) and decreased the incidence of transfusion with a pooled risk ratio of 0.74 (95%CI: 0.61–0.90; P = 0.002). Incidence of necrotizing enterocolitis (NEC), intraventricular hemorrhage (IVH) and mortality were significantly lower with UCM compared with ICC. Apgar score and temperature were not significantly different between the two groups. Conclusions: By facilitating the early stabilization of blood pressure, UCM at preterm birth was found to be comparatively safe and associated with lower blood transfusion exposure and lower incidence of IVH, NEC and death.	8. D. Dang et al. Umbilical cord milking reduces need for red cell transfusions and improves neonatal adaptation in preterm infants: Meta-analysis doi:10.1111/jog.12657 J. Obstet. Gynaecol. Res. 2015

Ravijuhendid

Nabaväädi hilisemat klemmimist käsitlesid kolm kvaliteetset AGREEga hinnatud ravijuhendit. Ravisoovitus: Kui võimalik, siis oodata nabaväädi klemmimisega vähemalt 1minut (30 sekundit kuni 3 minututit), hoides last emast allpool või platsenta kõrgusel. Vastsündinutel, kes vajavad kiiret vahelesekkumist, on esmased elupäästvad võtted siiski prioriteediks. Võmalusel rakendada enne kiiret nabaväädi klemmimist nabaväädi lüpsmist (9, 10, 11)

Agree 88% For uncompromised babies, a delay in cord clamping of at least 1 min from the complete delivery of the infant, is now recommended for term and preterm babies. As yet there is insufficient evidence to recommend an appropriate time for clamping the cord in babies who require resuscitation at birth. Studies of delayed clamping have shown an improvement in iron status and a number of other haematological indices over the next 3–6 months and a reduced need for transfusion in preterm infants. They have also suggested greater use of phototherapy for jaundice in the delayed group but this was not found in a randomised controlled trial. A systematic review on delayed cord clamping and cord milking in preterm infants found improved stability in the immediate postnatal period, including higher mean blood pressure and haemoglobin on admission, compared to controls. There were also fewer blood transfusions in the ensuing weeks. Some studies have suggested a reduced incidence of intraventricular haemorrhage and periventricular leukomalacia as well as of late-onset sepsis. Umbilical cord milking may prove an alternative in these	9. Jonathan Wylliea, Jos Bruinenberg et al European Resuscitation Council Guidelines for Resuscitation 2015 Section 7. Resuscitation and support of transition of babies at birth. Resuscitation 95 (2015) 249–263

infants although there is currently not enough evidence available to recommended this as a routine measure. Umbilical cord milking produces improved short term haematological outcomes, admission temperature and urine output when compared to delayed cord clamping (>30 s)in babies born by caesarean section, although these differences were not observed in infants born vaginally.	
Agree 84% There is evidence supporting a clinical benefit of delayed umbilical cord clamping (30–60 s) in preterm infants. About half of the blood volume of preterm babies is contained in the placenta, and delaying cord clamping can result in an increase in blood volume, particularly after vaginal birth. Meta-analysis of fifteen trials of delayed cord clamping in preterm babies showed that this practice results in higher haematocrit, less need for later transfusion, less NEC and an almost 50% reduction in intraventricular haemorrhage. A large multicentre trial is underway to determine if this practice genuinely improves short- and long-term outcome. Umbilical cord milking in preterm babies of 24–33 weeks' gestation also results in similar effects on haemoglobin (Hb) levels to delaying cord clamping by 30 s. Recommendation: If possible delay clamping of the umbilical cord for at least 60 s with the baby held below the mother to promote placento-fetal transfusion (GRADE A).	10. David G. Sweet et al, European Consensus Guidelines on the Management of Neonatal Respiratory Distress Syndrome in Preterm Infants – 2013 Update, Neonatology 2013;103:353–368 DOI: 10.1159/000349928

Agree 98%
• If a preterm baby needs to be moved away from the mother for resuscitation, or there is significant maternal bleeding:
  ○ consider milking the cord and
  ○ clamp the cord as soon as possible.
• Wait at least 30 seconds, but no longer than 3 minutes, before clamping the cord of preterm babies if the mother and baby are stable.
• Position the baby at or below the level of the placenta before clamping the cord.
	11 National Institute for Health and Care Excellence. Preterm labour and birth. London, 2015.

Lisamaterjal

Nabaväädi hilisemat klemmimist või nabaväädi lüpsmist käsitlesid lisaks veel AGOG Commitee Opinion (2012) ja RCOG Scientific Impact Paper No. 14 (2015)

Kokkuvõte:

1. Uuringud toetavad nabaväädi hilist klemmimist enneaegse sünnituse korral. Oodates nabaväädi klemmimisega 30-60 sekundit vastsündinu asetsedes kas platsenta kõrgusel või sellest allpool (Siiski, RCOG ülevaates leiti, et kui ema on sünnihetkel saanud oksütotsiini, siis lapse paiknedes ema kõhul ei ole erinevust platsentaarse transfusiooni mahus), paraneb loote vereringe, punavererakkude maht on suurem ja väheneb vajadus veretransfusiooni järele. Kõige olulisem kasu vastsündinutele on võimalik kuni 50% ulatuses vähenenud IVH esinemine. (12)

2. Nabaväädi lüpsmine (ühes uuringus 4 korda, RCOG ülevaates 3 korda) annab sarnaseid tulemusi võrreldes nabaväädi hilinenud klemmimisega ja võiks olla nabaväädi hilinenud klemmimisele alternatiiviks, kuid see vajab lisauuringuid hindamaks potensiaalset kasu ja kahju. Hetkel puuduvad põhjapanevad uuringud, et seda igapäevapraktikasse rakendada. (12, 13)

In a systematic review of 10 trials of early umbilical cord clamping versus delayed umbilical cord clamping in 454 preterm infants (at less than 37 weeks of gestation), no statistically significant differences were found between the groups for cord blood pH (mean difference, 0.01; 95% CI, –0.03–0.05), Apgar scores (RR for 5-minute Apgar score of less than 8; 95% CI, 0.62–2.2), and body temperature at admission (mean difference, 0.14 °C; 95% CI, –0.31–0.03). Benefits of delayed umbili- cal cord clamping included a reduced need for blood transfusions for low blood pressure (RR, 0.39; 95% CI, 0.18 to 0.85) and anemia (RR, 0.49; 95% CI, 0.31–0.81). No significant differences were noted for infant deaths (RR, 0.71; 95% CI, 0.3–1.69), but a significant reduction in the incidence of intraventricular hemorrhage with delayed umbilical cord clamping was reported by 7 of the 10 published studies (RR, 0.53; 95% CI, 0.35–0.79). Another systematic review on this topic analyzed the results from 15 eligible studies (738 premature infants). Infants were born between 24 weeks of gestation and 36 weeks of gestation. The maximum delay in umbilical cord clamping was 180 seconds. Delaying umbilical cord clamping was associated with fewer infants who required transfusion for anemia (seven trials, 392 infants; RR, 0.61; 95% CI, 0.46–0.81) and for low blood pressure (four trials with estimable data for 90 infants; RR, 0.52; 95% CI, 0.28–0.94); and less intraventricular hemorrhage (ultrasound diagnosis all grades) (10 trials, 539 infants; RR; 0.59; 95% CI, 0.41–0.85) compared with immediate umbilical cord clamping. For other outcomes (infant death, severe [grade3–4] intraventricularhemorrhage, and periventricular leukomalacia), no clear differences were identified between groups; however, many trials were affected by incomplete reporting and wide confidence intervals. Outcome after discharge from the hospital was reported for one small study, and no significant differ- ences were reported between the groups in mean Bayley II scores at age 7 months (corrected for gestation at birth and involved 58 children).	12. Committee on Obstetric Practice, American College of Obstetricians and Gynecologists: Committee Opinion No. 543. Timing of umbilical cord clamping after birth. Obstet Gynecol 2012;120:1522–1526.

Umbilical Cord Milking One clinical trial and a secondary analysis from the same trial have compared "milking" of a 20-cm segment of the umbilical cord versus immediate umbilical cord clamping in preterm singleton infants born between 24 weeks of gestation and 28 weeks of gestation. Significant findings in the clinical study included higher initial Hb concentration, higher mean systemic blood pressure, reduced need for blood transfusion, and higher urine output during the first 72 hours in the group that underwent umbilical cord milking compared with the group that underwent immediate umbilical cord clamping. The group that underwent umbilical cord milking also required a shorter duration of supplemental oxygen and mechanical ventilation. A 2011 randomized controlled trial of 58 preterm neonates (born at 24–32 6/7 weeks of gestation) randomized to receive either repeated milking of the umbilical cord (4 times) or delayed umbilical cord clamping of 30 seconds found that the two strategies had similar effects on Hb levels after birth. More studies are needed to evaluate the potential benefits and risks of umbilical cord milking, and at this time there is insuf- ficient evidence to support umbilical cord milking in preterm infants. Conclusion: Evidence supports delayed umbilical cord clamping in preterm infants. As with term infants, delaying umbilical cord clamping to 30–60 seconds after birth with the infant at a level below the placenta is associated with neonatal benefits, including improved transitional circulation, better establishment of red blood cell volume, and decreased need for blood transfusion. The single most important clinical benefit for preterm infants is the possibility for a nearly 50% reduction in intraventricular hemorrhage. It is important to note that the timing of umbilical cord clamping should not be altered for the purpose of collecting umbilical cord blood for banking .	
Cord 'stripping' or 'milking' either before or after the cord is clamped has been compared with immediate cord clamping in a number of recent trials of preterm births and of term or near term births. However, the greatest interest in this procedure is for preterm births. Although the studies were small, there is some evidence of improved early neonatal cardiovascular stability and reduced need for oxygen at 36 weeks of postmenstrual age, and reduced blood transfusion. With milking, the cord blood is pushed rapidly into the fetal circulation (typically, a 20 cm length of cord is stripped three times, each done for about 2 seconds, before clamping). Clearly cord milking impairs flow in the umbilical arteries, and may have other effects through stimulation of the	13. Royal College of Obstetricians and Gynaecologists Clamping of the Umbilical Cord and Placental Transfusion Scientific Impact Paper No. 14 February 2015

endothelium. This needs further randomised trials to evaluate the possible benefits and adverse effects. Administration of intramuscular uterotonic drugs before cord clamping is unlikely to have a major effect on placental transfusion. However, further research is merited to confirm whether there could be a clinically relevant effect on either duration or net volume. There are few data on how giving a uterotonic drug might interact with gravity on placental transfusion, but in women given oxytocin within a minute of birth, placing the baby on the mother's abdomen or chest at term vaginal birth had no impact on the volume of placental transfusion. There are no data for caesarean section or for preterm births. Kokkuvõtvalt: For preterm births the evidence is less clear than for term births, although data from the trials suggest potential benefit by deferred rather than immediate cord clamping. Strategies and equipment for providing initial neonatal care and resuscitation at the woman's bedside with the cord intact should be developed further and evaluated. Cord milking is an alternative to deferred cord clamping for preterm births, but requires further evaluation of its benefits and risks before entering routine practice.	

Otsingud:

Andmebaas	**Medline (PUBMED)**
Otsingustrateegia	(((cordclamping) OR cord milking)) AND ((((((((premature infants) OR premature labor) OR premature birth) OR premature delivery) OR preterm delivery) OR preterm infant) OR preterm labor) OR preterm birth)
Tulemustearv	14, neist sobivaid 10
Filtrid	Meta-Analysis,SystematicReview ,
Ajalinepiirang	5 years
Muudpiirangud	English language

Andmebaas	**RCOG Guidelines(Scientific Impact Papers)**
Otsingustrateegia	Key words: Placental transfusion
Tulemustearv	1