

Pinçament del cordó umbilical: immediat o retardat



Albert Balaguer
2010

Noutats a terme

Prematurs

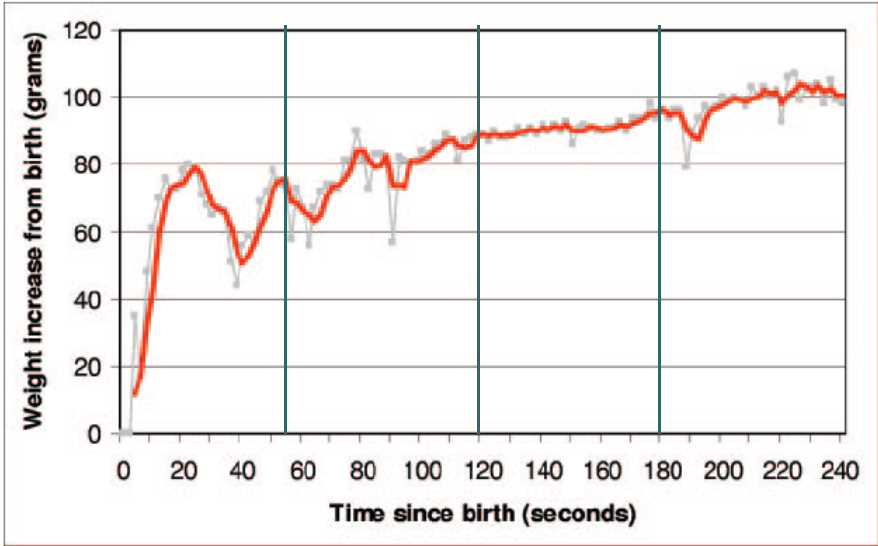


Figure 2. Net weight accumulated from birth every 2 seconds (smoothed) in an infant of 38 weeks of gestational age whose birthweight was 2,865 g before clamping the cord. Unpublished data of the author.

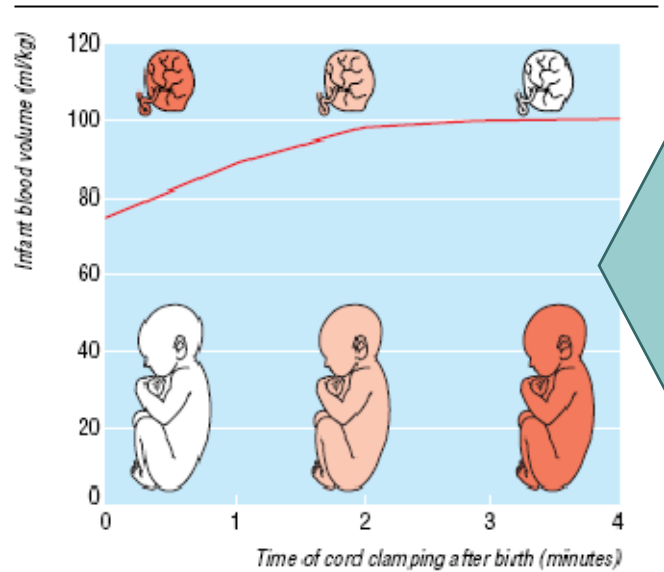


Fig 1 Distribution of blood between infant and placenta depending on time of cord clamping after birth (adapted from Linderkamp⁶⁴ and Yao et al⁶⁵). The term infants are at the level of the introitus, about 10 cm below the placenta

+/- 20 ml/kg a los 2 min
+/- 35 ml/kg a los 5 min

Redistribución: aprox 75-125 ml



● ● ● Para RNAT

Resultados en la madre

- Hemorragia posparto (≥ 500 ml)
 - No diferencia (4 ECAs: 1878 mujeres) RR: 1,22; (IC del 95%: 0,96 a 1,55)
- Hemoglobina materna posparto (entre 24 y 72 horas después del parto)
 - No diferencia (3 ECAs: 1128 mujeres) WMD: -0,12 g/dl; (-0,30 a 0,06)
- Necesidad de extracción manual de la placenta
 - No diferencia (2 ECAs: 1515 mujeres) RR: 1,59; (IC del 95%: 0,78 a 3,26)
- Media de la pérdida de sangre
- Necesidad de transfusión sanguínea
- Duración del expulsivo
- Necesidad de administración terapéutica de uterotónicos



● ● ● En RNAT

Resultados en el recién nacido

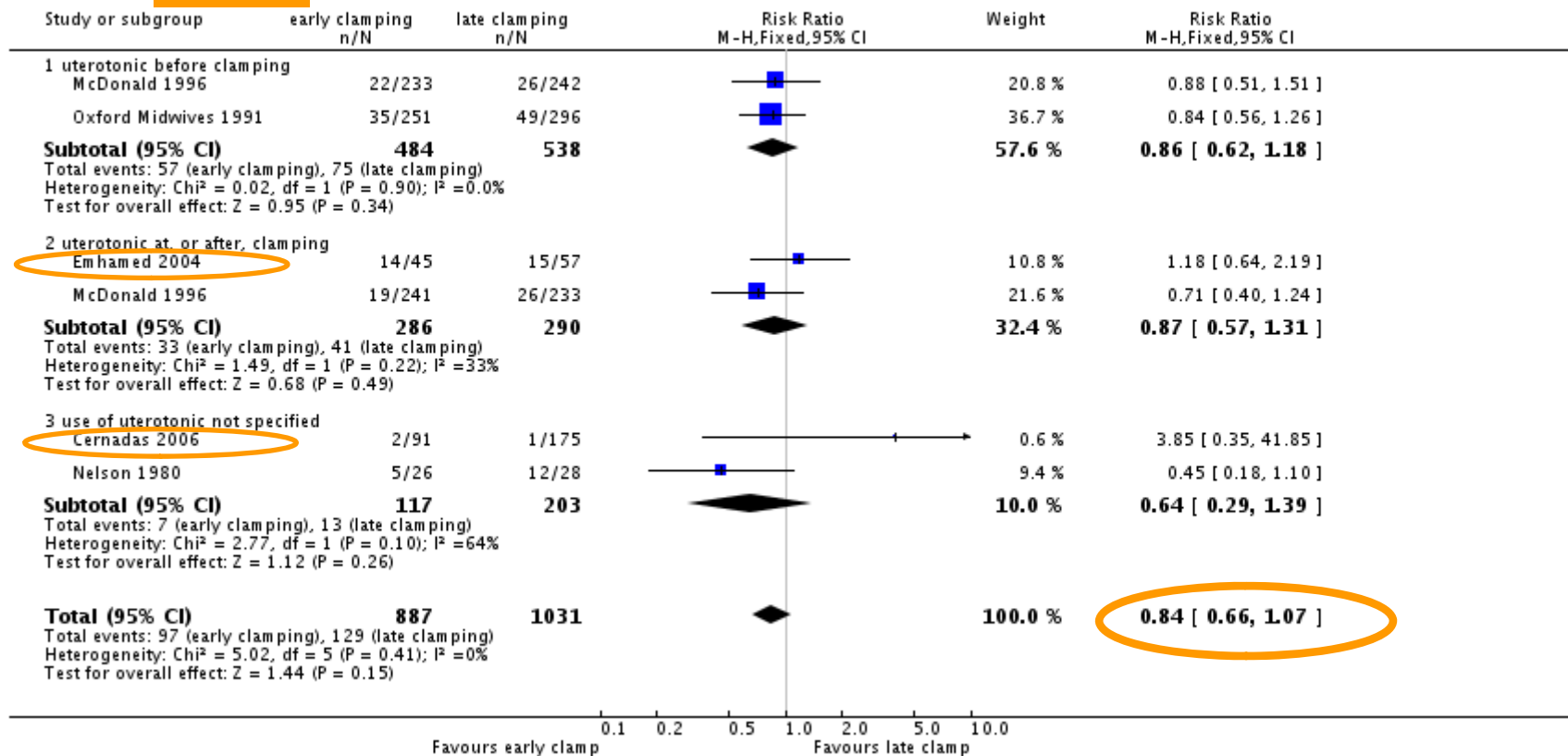
- **Hto y Hb ↑ medidos entre horas y 3 meses; (a los 6 meses no se detectaron diferencias)**
 - Hb: WMD 2,17 g/dL; (95% CI 0.28 a 4.06) (3 ECA con 671 nn) ($I^2 = 96,5\%$).
 - Con > diferencia si anemia materna
- **No diferencias en policitemias: Hto > 65% (a 24-48hr)**

- **Bili e ictericia**
 - > Uso de Fototerapia (6 ECA con 910 nn) RR: 0,6; (IC del 95%: 0,38 a 0,92)
 - No casos de exanguino

- **A los 3 y 6 m**
 - Mayor VCM y Mayores niveles de ferritina
 - DMP: 17,90 ug/l; (IC del 95%: 16,59 a 19,21) a los 3 m.
 - DMP: 11,80 ug/l; (IC del 95%: 4,07 a 19,53) a los 6 m.

Ictericia neonatal

Review: Effect of timing of umbilical cord clamping of term infants on maternal and neonatal outcomes
 Comparison: 1 Early versus late cord clamping
 Outcome: 16 Clinical jaundice

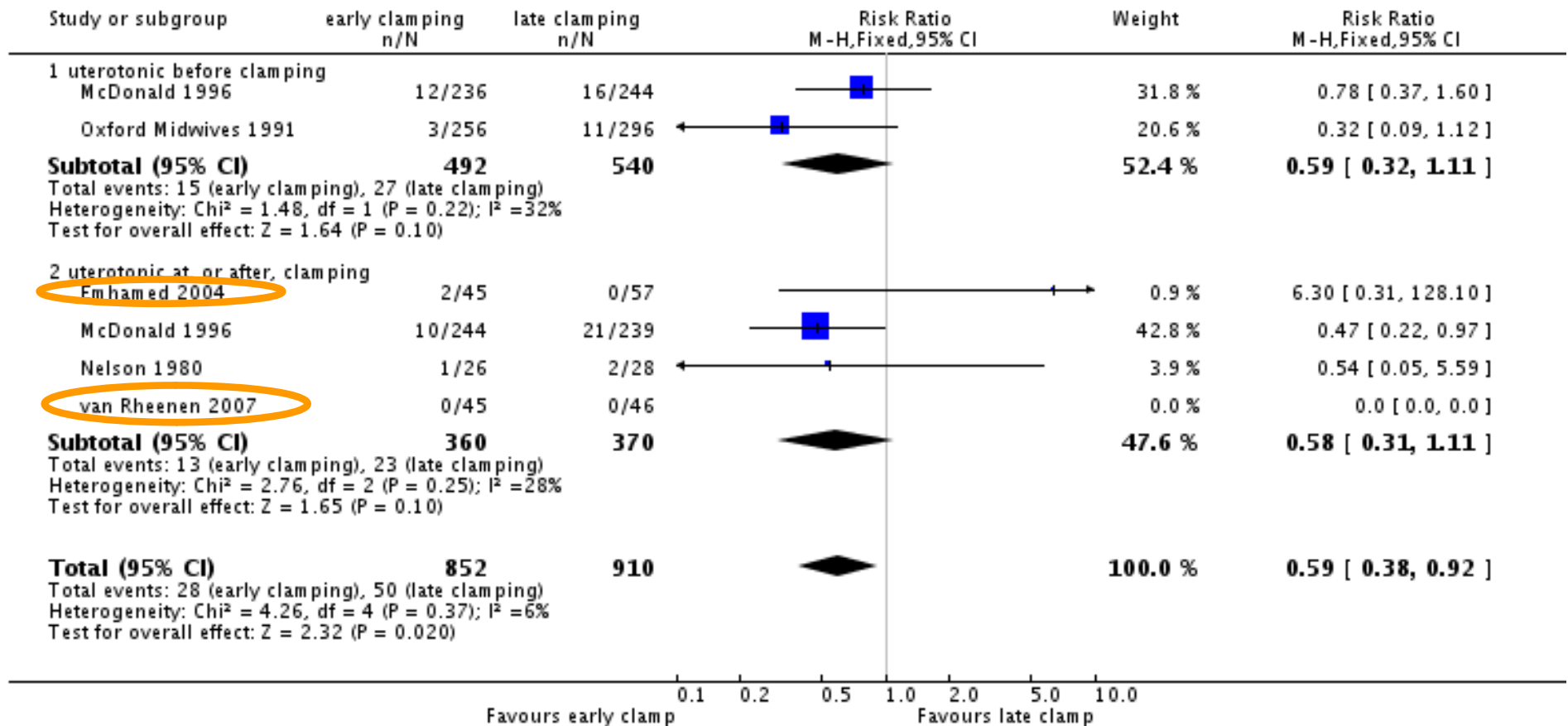




Ictericia + fototerapia



Review: Effect of timing of umbilical cord clamping of term infants on maternal and neonatal outcomes
 Comparison: 1 Early versus late cord clamping
 Outcome: 15 Jaundice requiring phototherapy





...¿y en el prematuro?





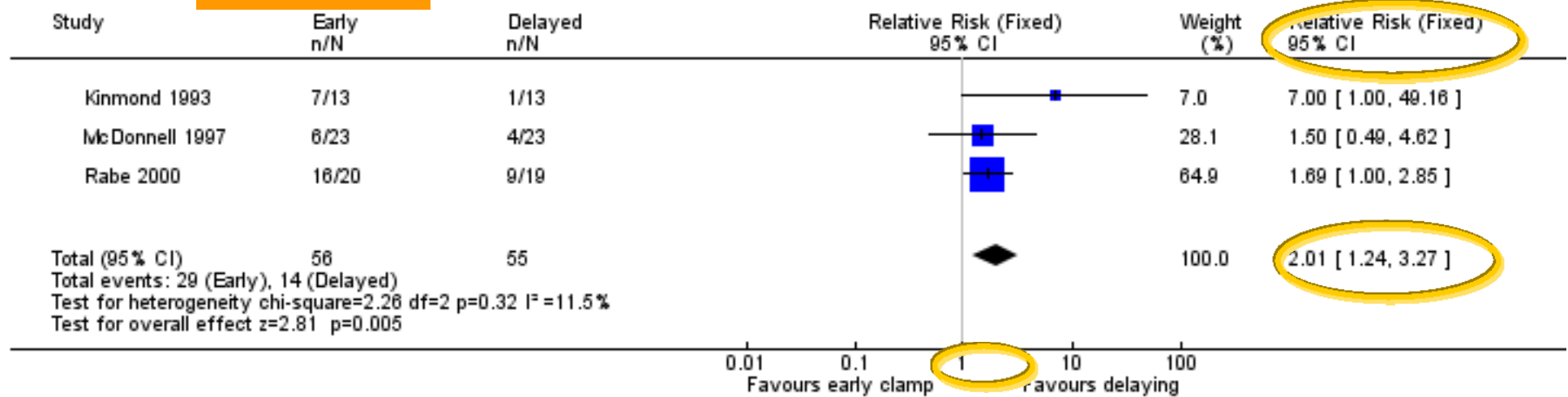
...¿y en el prematuro?

Rabe H, Reynolds G, Diaz-Rossello J. Early versus delayed umbilical cord clamping in preterm infants. Cochrane Database Syst Rev. 2004 Oct 18;(4):CD003248.

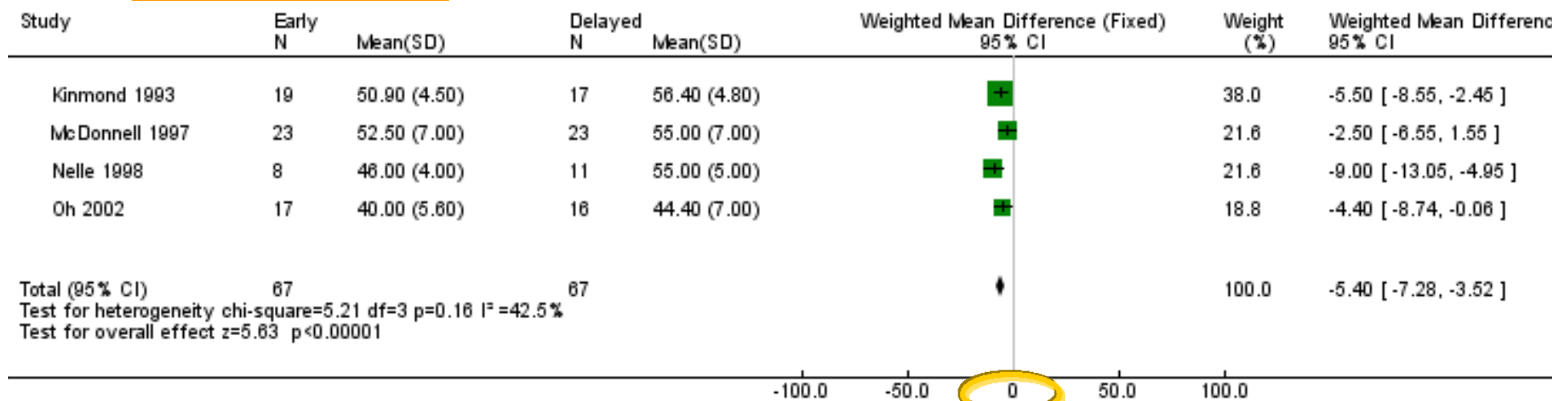
“Precoz” (< 30 seg) vs “Tardío” (≥ 30) en RN < 37 SG
7 RCT (297 NN). máximo retraso de 120 segundos.

Review: Early versus delayed umbilical cord clamping in preterm infants
 Comparison: 01 Early versus delayed cord clamping
 Outcome: 02 Transfused for anaemia

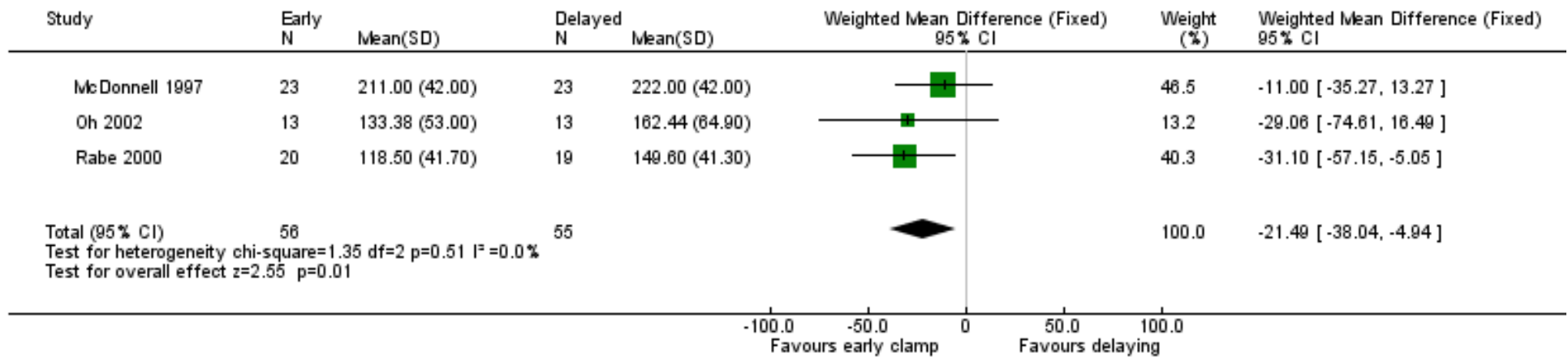
RNPT



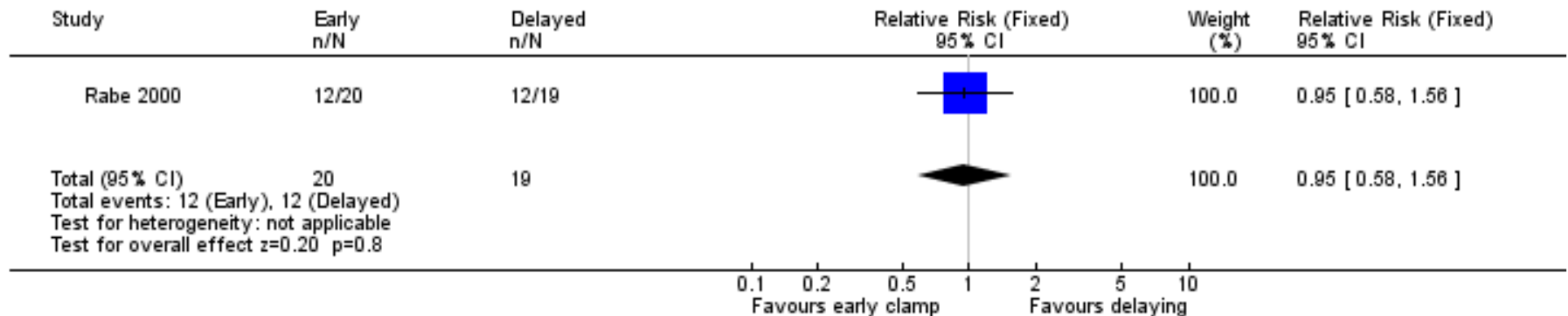
Review: Early versus delayed umbilical cord clamping in preterm infants
 Comparison: 01 Early versus delayed cord clamping
 Outcome: 06 Haematocrit at 4 hours of life (%)



Review: Early versus delayed umbilical cord clamping in preterm infants
 Comparison: 01 Early versus delayed cord clamping
 Outcome: 08 Serum bilirubin peak (mmol/litre)

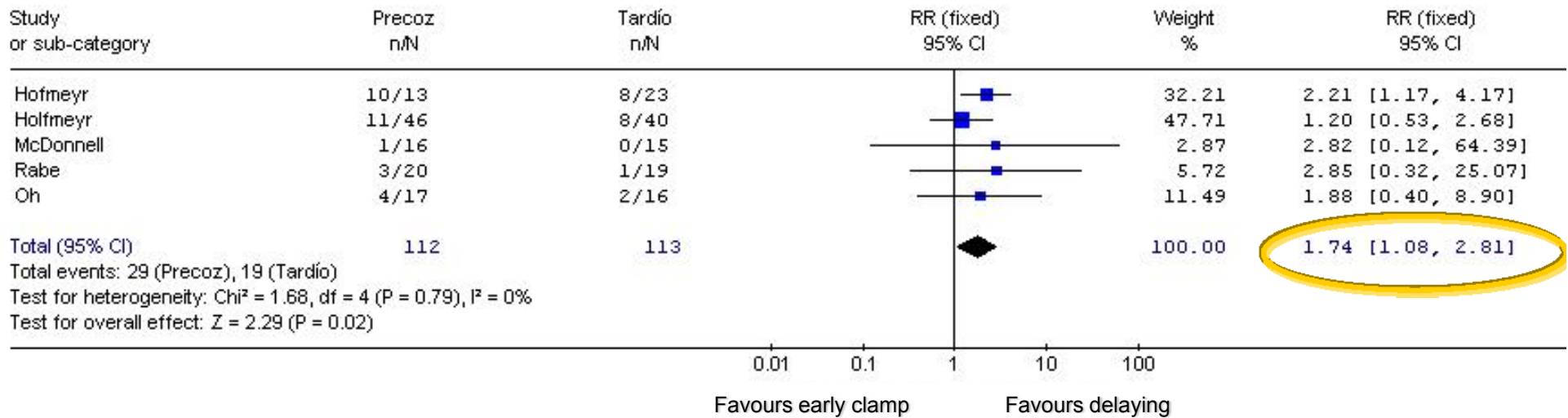


Review: Early versus delayed umbilical cord clamping in preterm infants
 Comparison: 01 Early versus delayed cord clamping
 Outcome: 09 Hyperbilirubinemia (treated)





Review: Prueba ClampajeCordon
 Comparison: 01 Precoz contra Tardío (Pinzamiento de cordón en RNPT)
 Outcome: 01 Hemorragia IntraVentricular





Un nuevo estudio (no incluido en el metanálisis)

72 RNPT entre 24 y 31+6/7 SG. (1151 - 1175 g.)

No diferencias

- DBP: **8 (22%)**
- Sospecha de ECN: **14 (39%)**
- ROP: **10 (28%)**
- N° transfusiones: **1,94 (+/- 3,1)**
- (+): **0**
- Tampoco diferencias en necesidad de surfactante (24 vs 27), días de VM (35 vs 39) y necesidad de O2 a los 28 días.

tardío

inmediato

TABLE 4 IVH and LOS in Study Infants

	DCC (n = 36), n (%)	ICC (n = 36), n (%)
IVH		
All IVH	5 (14)	13 (36)
Grade 1	3 (8)	4 (11)
Grade 2	2 (6)	8 (22)
Grade 4	0 (0)	1 (3)
Sepsis	1 (3)	8 (22)

○ HIV	5 (14%)	13 (36%) OR: 0,10 (1,1 - 11,1) con grados de HIV similares en ambos grupos.
○ Hemocultivos positivos	3%	22% OR: 0,10 (0,01 - 0,84)

NNT: sería de 4,5 (IC 95%: 2 a 34)

Mercer JS, et al. Delayed cord clamping in very preterm infants reduces the incidence of intraventricular hemorrhage and late-onset sepsis: a randomized, controlled trial. **Pediatrics**. 2006;117(4):1235-42.



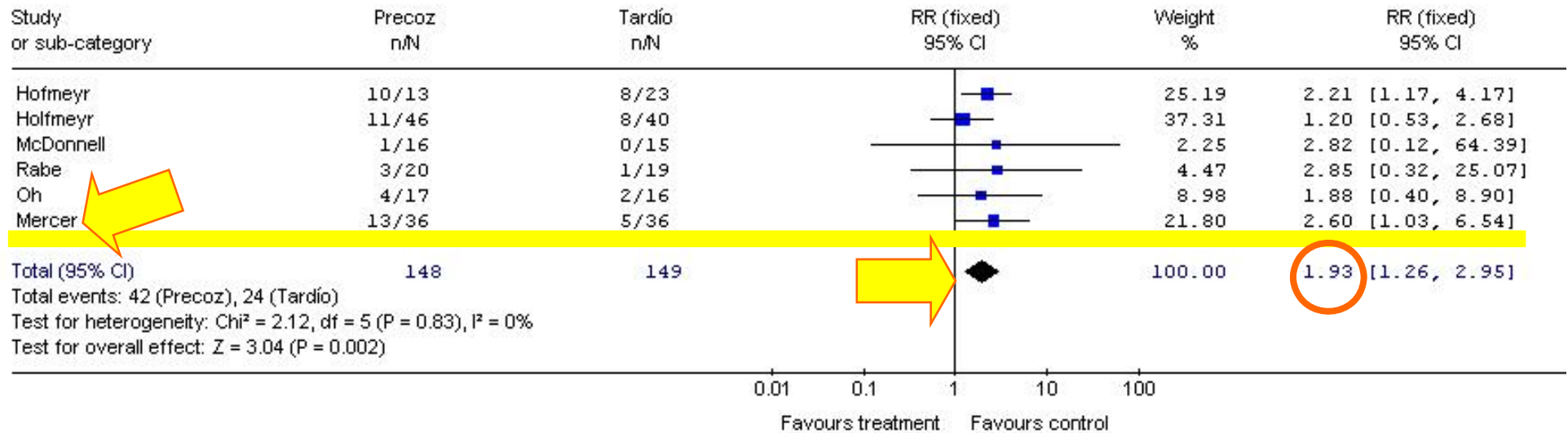
Podemos ahora incluirlo en el metanálisis anterior

(usando el mismo programa estadístico)



RNPT

Review: Prueba ClampajeCordon
 Comparison: 01 Precoz contra Tardío (Pinzamiento de cordón en RNPT)
 Outcome: 01 Hemorragia IntraVentricular





Un último estudio (no incluido en el metanálisis)

65 NN (media +/- 32 SG [$<30\text{SG} = 12$]). (PN media +/- 1650 g.)



No diferencias	tardío	inmediato	
● ECN:	0	1 (NS)	
● TA Inicial (media)	43 (+/-3)	36 (+/-7)	(p=0.06)
● N° transfusiones (total dosis)	6	11 (NS)	
● (+):	0	1 (sepsis)	
● HIV	2	4 (NS)	

Subgrupo < 1500 g. (29 nn)

- Necesidad de Surfactant	2/15	7/14; (p=0,05).
- Necesidad de VA :	2/15	7/17 (p=0,05).

Kugelman A, et al. Immediate versus Delayed Umbilical Cord Clamping in Premature Neonates Born <35 Weeks: A Randomized, Controlled Study. *Am J Perinatol* 2007;24:307–316.

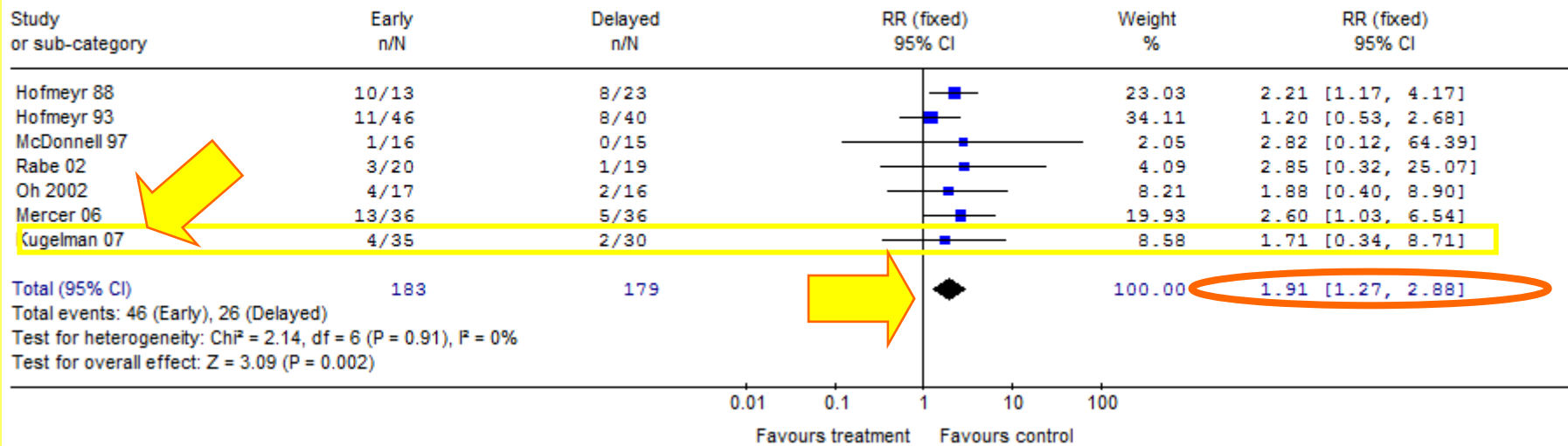


Podemos añadirlo al metanálisis anterior

RNPT



Review: umbilical cord delayed
 Comparison: 01 Hemorragia intraventr
 Outcome: 01 Hemorragia intraventr



Conclusiones en prematuros

- **Disminuye la necesidad de transfusiones**
- **Disminuye la hemorragia PIV**
- **No demostrado, pero probablemente disminuye:**
 - Hipotensión y necesidad de f. vasoactivos
 - Necesidad de Surfactante, VA y posterior DBP.
 - ECN.
 - ROP.
 - ¿Mortalidad?, ¿Infecciones?
 - Mejor Apgar y llanto inicial antes ¿??



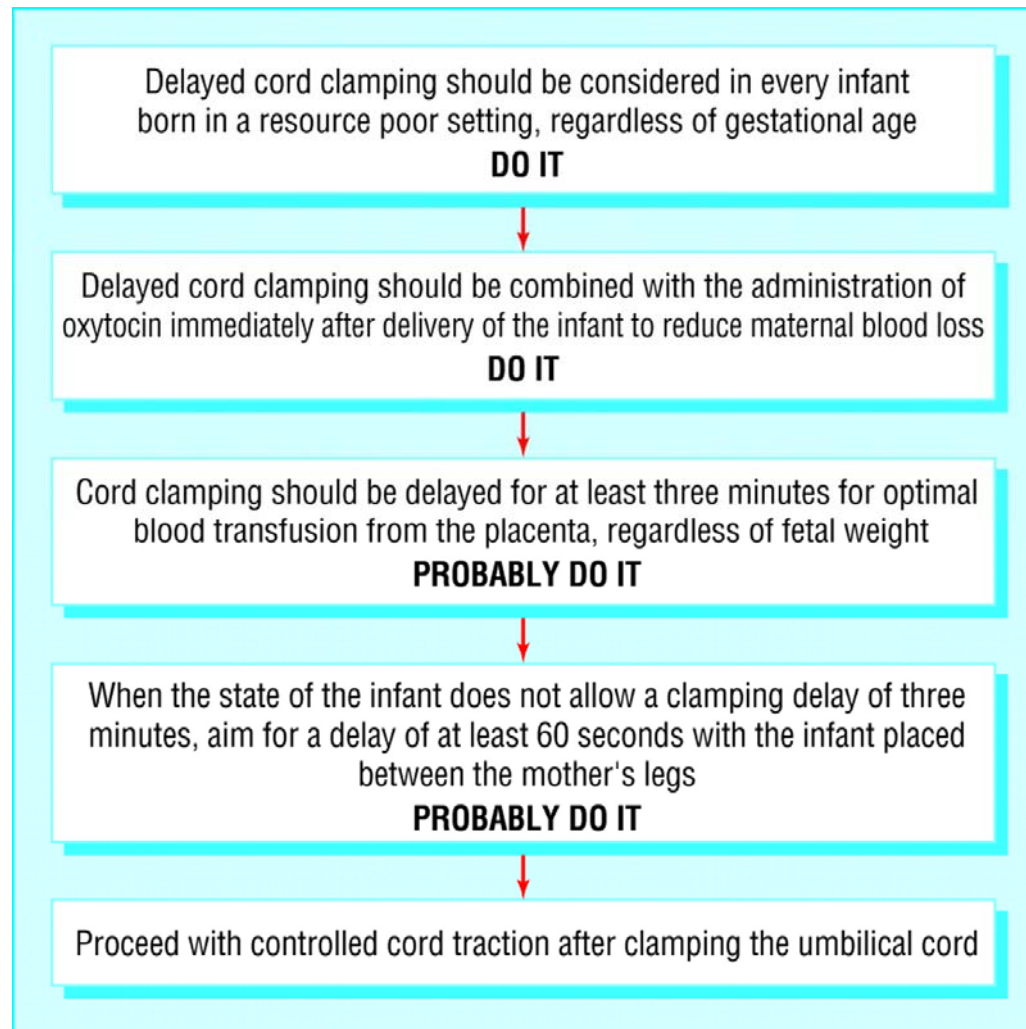
Parece seguro a la luz de los ensayos clínicos hasta hoy

Entonces, ¿porqué correr?

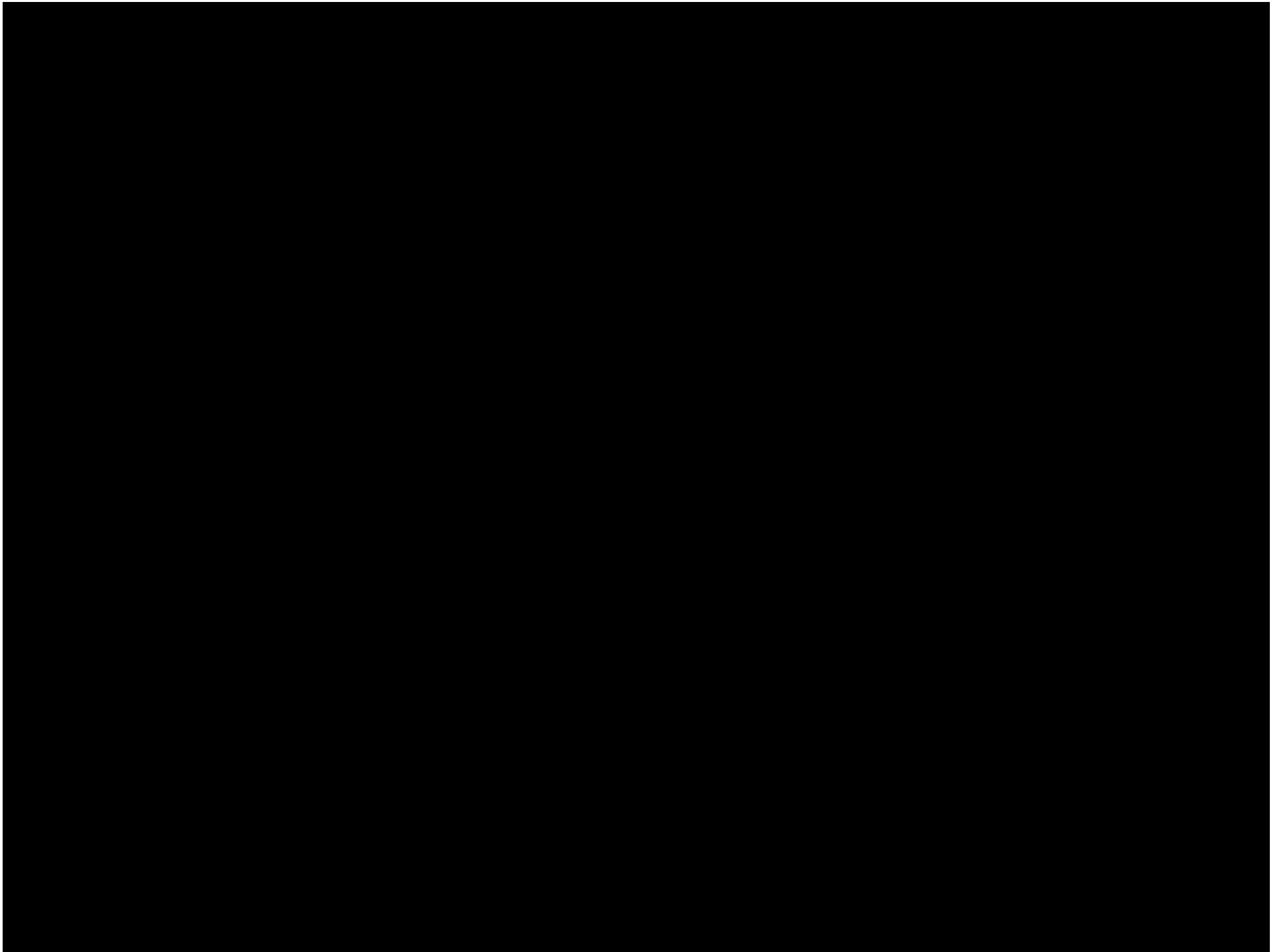
- Minimizar hemorragia de la madre → No
- Temor a policitemia o hiper-bilirrubinemia → No
- Inicio de piel-piel con madre → No
- Necesidad de “reanimar” al neonato
- Evitar que se enfríe
- Necesidad de obtener sangre:
 - Almacenaje SC cordon (En RNAT)



Guidelines for cord clamping in resource poor settings.



van Rheezen P F , Brabin B J BMJ 2006;333:954-958



● ● ● Posibles razones de la prisa en pinzar

- ¿Necesidad de “reanimar” al neonato?
- ¿Minimizar hemorragia de la madre?
- ¿Inicio de piel-piel con madre?
- ¿Necesidad de obtener sangre?:
 - Gases
 - Almacenaje SC cordon (no muestras < 75-100 ml ?)
- ¿Temor a policitemia o hiper-bilirrubinemia?
- ¿Evitar que se enfríe?





En RNAT

11 ECAs → Pinzamiento precoz vs “tardío”

Cernadas 2006{Solo datos publicados}

- Ceriani Cernadas JM, Carroli G, Otano L, Pellegrini L, Mariani GL, Ferreira M, et al. Effect of timing of cord clamping on postnatal hematocrit values and clinical outcome in term infants. A randomized controlled trial [abstract]. *Pediatric Research* 2004;55 Suppl:67.
- *Ceriani Cernadas JM, Carroli G, Pellegrini L, Otano L, Ferreira M, Ricci C, et al. The effect of timing of cord clamping on neonatal venous hematocrit values and clinical outcome at term: a randomized, controlled trial. *Pediatrics* 2006;117:779-86.
- Ceriani Cernadas JM, Carroli G, Otano L, Pellegrini L, Mariani GL, Ferreira M, et al. Effect of timing of cord clamping on postnatal hematocrit values and clinical outcome in term infants. A randomized controlled trial [abstract]. *Pediatric Research* 2004;55 Suppl:67.
- Ceriani Cernadas JM, Carroli G, Pellegrini L, Otano L, Ferreira M, Ricci C, et al. The effect of timing of cord clamping on neonatal venous hematocrit values and clinical outcome at term: a randomized, controlled trial. *Pediatrics* 2006;117:779-86.
- Chaparro 2006{Solo datos publicados}
- Chaparro CM, Fornes R, Neufeld LM, Alavez GT, Cedillo RE, Dewey KG. Early umbilical cord clamping contributes to elevated blood lead levels among infants with higher lead exposure. *Journal of Pediatrics* 2007;151:506-12.
- *Chaparro CM, Neufeld LM, Alavez GT, Cedillo RE-L, Dewey KG. Effect of timing of umbilical cord clamping on iron status in Mexican infants: a randomised controlled trial. *Lancet* 2006;367:1997-2004.Emhamed 2004{Solo datos publicados}
- Emhamed MO, van Rheenen P, Brabin BJ. The early effects of delayed cord clamping in term infants born to Libyan mothers. *Tropical Doctor* 2004;34:218-22.
- Geethanath 1997{Solo datos publicados}
- Geethanath RM, Ramji S, Thirupuram S, Rao YN. Effect of timing of cord clamping on the iron status of infants at 3 months. *Indian Pediatrics* 1997;34(2):103-6.
- Gupta 2002{Solo datos publicados}
- Gupta R, Ramji S. Effect of delayed cord clamping on iron stores in infants born to anemic mothers: a randomized controlled trial. *Indian Pediatrics* 2002;39(2):130-5.
- McDonald 1996{Datos publicados y no publicados}
- McDonald S. Timing of interventions in the third stage of labour. *International Confederation of Midwives 24th Triennial Congress; 1996 May 26-31; Oslo, Norway. 1996:143.*
- McDonald S. Timing of interventions in the third stage of labour. *Proceedings of the 14th Annual Congress of the Australian Perinatal Society in conjunction with the New Zealand Perinatal Society; 1996 March 24-27; Adelaide, Australia. 1996:A23.*
- *McDonald SJ. Management in the third stage of labour [dissertation]. Perth: University of Western Australia, 1996.
- Nelson 1980{Solo datos publicados}
- Nelson NM, Enkin MW, Saigal S, Bennett KJ, Milner R, Sackett DL. A randomized clinical trial of the Leboyer approach to childbirth. *New England Journal of Medicine* 1980;302(12):655-60.
- Oxford Midwives 1991{Solo datos publicados}
- Oxford Midwives Research Group. A study of the relationship between the delivery to cord clamping interval and the time of cord separation. *Midwifery* 1991;7:167-76.
- Saigal 1972{Solo datos publicados}
- *Saigal S, O'Neill A, Surainder Y, Chua LB, Usher R. Placental transfusion and hyperbilirubinemia in the premature. *Pediatrics* 1972;49:406-19.
- Saigal S, Usher RH. Symptomatic neonatal plethora. *Biology of the Neonate* 1977;32:62-72.
- van Phooen P, Brabin BJ. Late umbilical cord-clamping as an intervention for reducing iron deficiency anaemia in term infants in developing and industrialized countries: a systematic review. *Ann Trop Paediatr* 2004;24(1):3-16
- Spears R, Anderson GV, Brothman S, Farrier J, Kwan J, Masto A, et al. The effect of early vs late cord clamping on signs of respiratory distress. *American Journal of Obstetrics and Gynecology* 1966;95:564-8.
- Ceriani Cernadas JM, et al. J. The effect of timing of cord clamping on neonatal venous hematocrit values and clinical outcome at term: a

N= 8 ECAs

80s 10