



**Milk Extraction
and
Kangaroo Care**



Neonatal Unit 12 de Octubre Hospital Madrid





Neonatal Unit 12 de Octubre Hospital Madrid

Level III C

- . 20 intensive care cots
- . 28 intermediate care cots

- . Approximately 5000 births
- . Approximately 1000 admissions

- . 120 babies below 1500g per year
- . 93% survival rate for those under 1500g in 2011



Neonatal Unit 12 de Octubre Hospital Madrid

Baby friendly hospital initiative since 2011





Neonatal Unit 12 de Octubre Hospital Madrid

NIDCAP training center since 2011



Hospital Universitario
12 de Octubre



Servicio de neonatología hospital 12 de Octubre



Neonatal Unit 12 de Octubre Hospital Madrid

Ayúdanos a cuidarlos

Dona tu leche a otros bebés

Cuando no se dispone de leche de la madre,
la leche pasteurizada de mujeres donantes
es la mejor opción, especialmente para
lactantes enfermos o de alto riesgo.

Declaración OMS / UNICEF 1980



Banco de Leche Humana
Servicio de Neonatología
Hospital Universitario 12 de Octubre
Avda. de Córdoba s/n
28041 Madrid

Teléfono de contacto: 91 390 88 11
Email: bancodeleche.hdoc@salud.madrid.org



Hospital Universitario
12 de Octubre
Comunidad de Madrid



Hospital Universitario
12 de Octubre
Comunidad de Madrid



Neonatal Unit 12 de Octubre Hospital Madrid

Milk bank from 2008

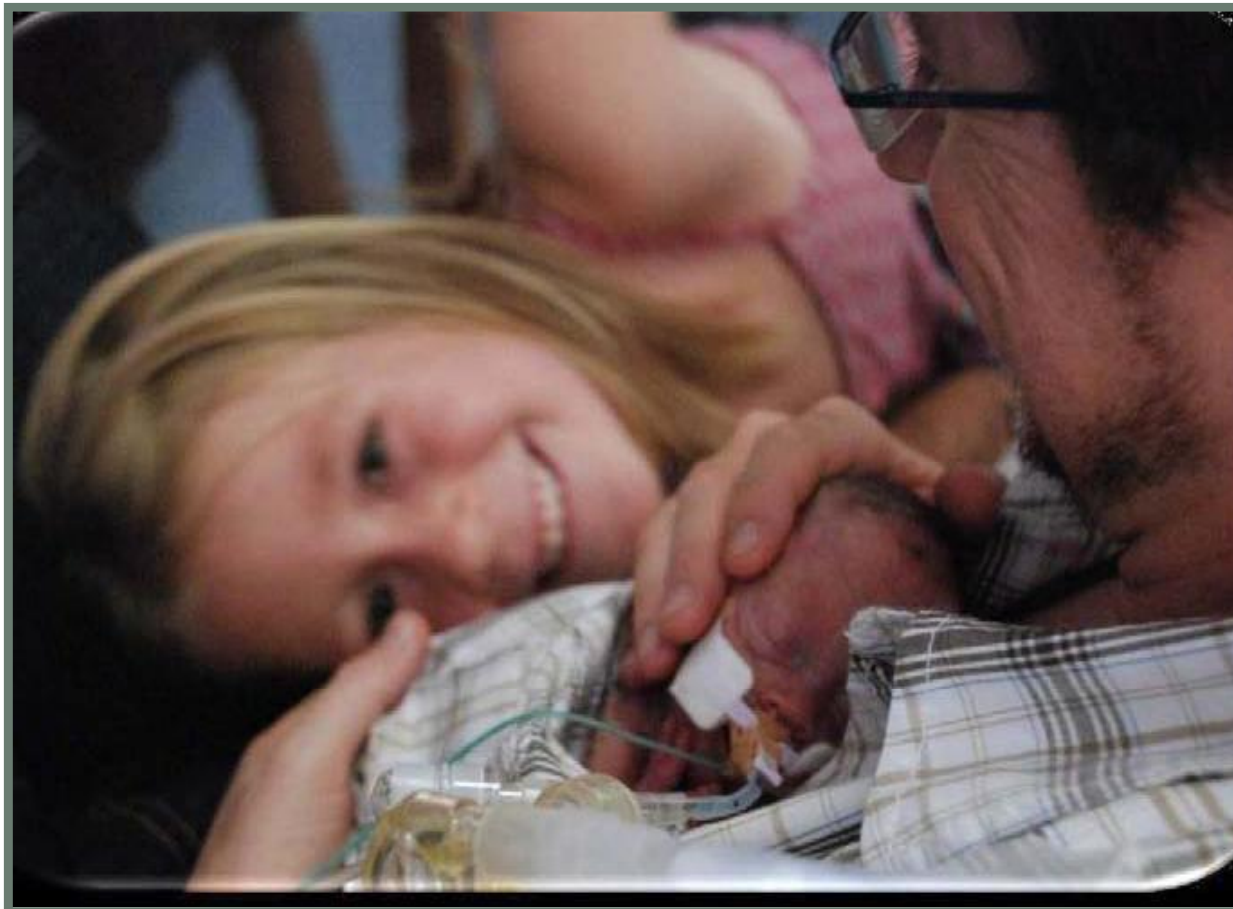
- . Over 100 donors a year
- . 1000 litres of milk donated annually
- . 300 recipients of donated milk annually



Neonatal Unit 12 de Octubre Hospital Madrid



Neonatal Unit 12 de Octubre Hospital Madrid



Neonatal Unit 12 de Octubre Hospital Madrid



Neonatal Unit 12 de Octubre Hospital Madrid



Neonatal Unit 12 de Octubre Hospital Madrid



Neonatal Unit 12 de Octubre Hospital Madrid



The study



Milk Extraction and Kangaroo Care





Introduction

Milk Extraction and Kangaroo Care

Benefits of mother's milk

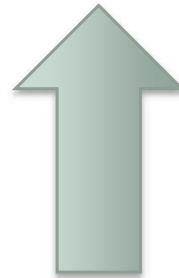
Benefits of Kangaroo Mother Care



Introduction

Milk Extraction and Kangaroo Care

Benefits of mother's milk



Benefits of Kangaroo Mother Care

Renfrew MJ, Craig D, Dyson L, et al. Breastfeeding promotion for infants in neonatal units: a systematic review and economic analysis. Health Technology Assessment. NIHR HTA programme 2009;13(40):1-146, iii-iv.

<http://www.hta.ac.uk/project/1611.asp>



Introduction

Milk Extraction and Kangaroo Care

- KMC increases the duration of breastfeeding and the rate of preterm babies exclusively breastfed at discharge.
- KMC is a simple and low cost intervention with a consistently beneficial effect on maternal breastfeeding.

Hake–Brooks S. Kangaroo care and breastfeeding of mother-preterm infant dyads 0-18 months: a randomized, controlled trial. *Neonatal network* 2008; 27: 151.

Blaymore Bier JA, Ferguson AE, Morales Y, et al. Comparison of skin-to-skin contact with standard contact in low-birth-weight infants who are breast-fed. *Arch Pediatr Adolesc Med* 1996; 150: 1265-69.

Rojas MA, Kaplan M, Quevedo M, et al. Somatic growth of preterm infants during skin-to-skin care versus traditional holding: a randomized, controlled trial. *J Dev Behav Pediatr* 2003; 24: 163-8.

Charpak N, Ruiz-Pelaez JG, Figueroa de CZ, Charpak Y. Kangaroo mother versus traditional care for newborn infants < 2000 grams: a randomized, controlled trial. *Pediatrics* 2001; 108:1072-9.



Hospital Universitario
12 de Octubre

Comunidad de Madrid



Introduction

Milk Extraction and Kangaroo Care

Milk extraction is a very difficult task for mothers

Sweet L. Breastfeeding a preterm infant and the objectification of breast milk. *Breastfeed Rev.* 2006; 14: 5-13.

Sisk P. Breast milk expression and maintenance in mothers of very low birth weight infants: supports and barriers. *Journal Human Lactation.* 2010; 26: 368



Introduction

Milk Extraction and Kangaroo Care

Milk extraction is a very difficult task for mothers

- Early and frequent breast milk expression.
- Commencing milk expression before 6 hours post-delivery,
- Expression of milk more than 5 times per day,

Furman L, Minich N, Hack M. Correlates of lactation in mothers of very low birth weight infants. *Pediatrics* 2002; 1009: e57.

Introduction

Milk Extraction and Kangaroo Care

The most efficient strategies for extracting mother's milk should be identified



Hypothesis

- When milk is extracted with the child in kangaroo care, the amount of milk obtained is greater than when extracted under other circumstances.



Objective

- Compare the volume of milk extracted by mothers whose infants are in KMC during the extraction with the volume obtained under other circumstances.

Method

- Time period of study: March, 2011 to June, 2012



Method

- 36 mothers of babies under 1500g agreed to participate.
- When the child was stable and the mother had established a breast feeding routine, she was given a notebook in which she wrote down the place of extraction, the amount of milk extracted and her feelings..
- They had to collect the information for at least ten days.

Method

Inclusion Criteria

- Baby under 1500g, admitted to the NICU and intermediate care.
- Physiological stability.
- Option for breastfeeding.
- Well established lactation
- At least 5 days in Kangaroo Mother Care.
- Consentment accepted.

Method

Notebook on Extraction:

- Participants informed on how to fill in the notebook.
- Possible doubts cleared up.
- All extractions done throughout the day are noted.
- A minimum of one extraction daily in kangaroo care is required.
- The data must be recorded in the notebook for at least 10 days.

Date:

Time of extraction	6h	11h								
Quantity of milk extracted in ml	93	110								
Sensation of emptyng	yes	yes								
In Kangaroo care (lenght of time)										
Kangaroo with father/family member										
Next to the incubator	X									
In Hospital, away form the baby										
At home										
Other places (specify)										
After Kangaroo		X								

Time of extraction	Observations: lighting, atmosphere, mood

Fecha:

Hora de la extracción	07:00	12:00	15:00	19:00	23:00	03:00		
Cantidad de leche en mililitros	100 cc	120 cc	60 cc	145 cc	110 cc	135 cc		
Sensación de vaciado completo del pecho	si	si	NO	si	si	si		
Haciendo canguro con el niño (especificar tiempo)	NO	NO	NO	2 1/2	NO	NO		
Cerca del niño en canguro con su padre/familiar	NO	NO	NO	NO	NO	NO		
Cerca del niño en la incubadora	NO	si	si	NO	NO	NO		
En el hospital lejos del niño	NO	NO	NO	NO	NO	NO		
En casa	si	NO	NO	NO	si	si		
Otros lugares	-	-	-	-	-	-		
Después de realizar canguro (especificar tiempo)	-	2H	-	-	-	-		

Method

Types of extraction:

- Kangaroo Mother . KM
- Kangaroo with father. KF
- Next to the incubator, near the baby, not in kangaroo. BC
- After Kangaroo. AKM
- In hospital away from the baby. OR
- At home. AH

Method



Variables

Gathered variables:

- Date of birth.
- Gestational age and corrected age at the beginning of the study.
- Weight at birth and at beginning of study.
- Multiple gestation.
- Pathology of child.
- General situation of neonate.
- Mother's age.
- Age when studies completed.
- Previous children.
- Previous lactations.
- Current medication for mother.
- Person informing and in charge of follow-up.

Results



- 26 women finished the study
- Weight of the children 1166g (± 306)
- Gestational age, 28.7 w (± 2.41)

Results

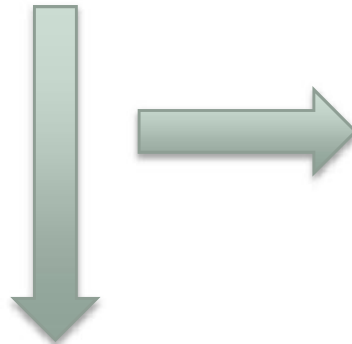


1731 extractions

Results



1731 extractions

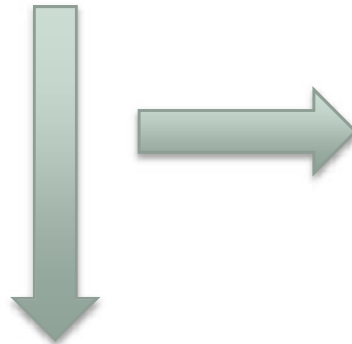


88 (5%)
extractions
No place

Results



1731 extractions



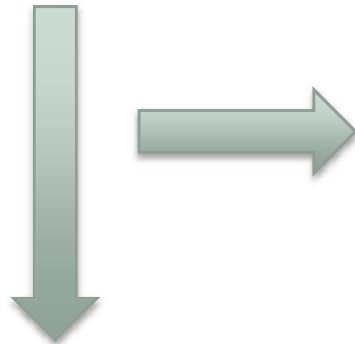
88 (5%)
extractions
No place

1643 extractions
In the analysis

Results



1731 extractions



88 (5%)
extractions
No place

1643 extractions
In the analysis

- 66.7 (\pm 23.7) extractions per woman
- 5.8 (\pm 1.35) extractions/woman/day
- 1.2 (\pm 0.5) extract.KMC/woman/day

Results



Place of the extraction	Number of Extractions (%)	volume of milk cc mean (SD)
Kangaroo Mother	218 (13.3%)	104.3 (55.1)
Kangaroo Father	96 (5.8%)	96.2 (42.5)
After Kangaroo Mother	36 (2,2%)	120.8 ((28.6)
Beside the child	273(16.6%)	99.4 (54.1)
Hospital. Other room	28 (1.7%)	74.8 (48.6)
At home	992 (60.3%)	116.7 (55.3)
total	1643	111 (56.1)

Results



Place of the extraction	Number of Extractions (%)	volume of milk cc mean (SD)
Kangaroo Mother	218 (13.3%)	104.3 (55.1)
Kangaroo Father	96 (5.8%)	96.2 (42.5)
After Kangaroo Mother	36 (2,2%)	120.8 ((28.6)
Beside the child	273(16.6%)	99.4 (54.1)
Hospital. Other room	28 (1.7%)	74.8 (48.6)
At home	992 (60.3%)	116.7 (55.3)
total	1643	111 (56.1)

Results



Place of the extraction	Number of Extractions (%)	volume of milk cc mean (SD)
Kangaroo Mother	218 (13.3%)	104.3 (55.1)
Kangaroo Father	96 (5.8%)	96.2 (42.5)
After Kangaroo Mother	36 (2,2%)	120.8 ((28.6)
Beside the child	273(16.6%)	99.4 (54.1)
Hospital. Other room	28 (1.7%)	74.8 (48.6)
At home	992 (60.3%)	116.7 (55.3)
total	1643	111 (56.1)

Results



Place of the extraction	Number of Extractions (%)	volume of milk cc mean (SD)
Kangaroo Mother	218 (13.3%)	104.3 (55.1)
Kangaroo Father	96 (5.8%)	96.2 (42.5)
After Kangaroo Mother	36 (2,2%)	120.8 ((28.6)
Beside the child	273(16.6%)	99.4 (54.1)
Hospital. Other room	28 (1.7%)	74.8 (48.6)
At home	992 (60.3%)	116.7 (55.3)
total	1643	111 (56.1)

Results



place	KM+KF+AKM+BC	Other Room	p
Volume of milk	104.7 (55.3)	74,8 (48.2)	<0,001

Results



place	KMC, KF, BC, OR	AKM	p
Volume of milk	102.3 (57.2)	120.8 (28.6)	<0,001

Results



Place of the extraction	volume of milk cc	Standard Error	p
Beside the child	96.8	8.6	
After Kangaroo Mother	+ 20.9	5.8	0.0004
Kangaroo Mother	+ 11.06	3.1	0.0005
Kangaroo Father	+ 6.1	4.1	0.138

Adjusted results per woman

Results



At home	volume of milk cc	Standard Error	p
Extractions after the first	97	7.5	
First extraction (mornig)	+ 38.4	2.7	0.001

Adjusted results per woman

Results



Place of the extraction	volume of milk cc	Standard Error	p
Other Room	84.7	10.7	
KM+KF+AKM+BC	+ 16.7	8.2	0.05
At home *	+ 12.7	8.3	0.1

Adjusted results per women

*At home without the first extraction in the morning

Results



At home	volume of milk cc/day	Standard Error	p
No university education	564	76	
University education	+ 134	10	0.01

Adjusted results per woman

Results



- No effect of gestational age and weight of the child
- No effect of previous lactations
- No effect of the duration of the previous lactation
- No effect of the country of birth of mother

Conclusions



- Extraction in KMC is possible and is a reasonable option for mothers who may not have a lot of time
- The extractions in hospital, outside of the room where the child was, produced a significantly lower volume of milk than when the extractions took place either near the child or with the child in KC

Conclusions



- Of all the extractions in hospital, those which produced the highest volume of milk were the ones done immediately after kangaroo care with the child close by. This leads to the conclusion that this may be the choice method for recommendation.
- The first extraction in the morning has more volume than the other extractions at home.

Mothers' Feelings



Mothers' Feelings



- I could continue pumping my milk; I still have more to give, but what I really want now is to hold my baby.



Mothers' Feelings



- When I pump milk at home, I don't feel as motivated as when I am in the hospital. I feel sad.



Mothers' Feelings



- When I have to leave the hospital to go home (I have another little girl), I feel stressed and I am incapable of pumping another drop of milk.



Mothers' Feelings



- Pumping milk with the baby in Kangaroo care is difficult because it's hard to find a comfortable position for me and the baby.



Mothers' Feelings



- When I have the baby in Kangaroo Care, I cannot give my self breast massages before extracting the milk.



Mothers' Feelings



- At home, when I am pumping milk, I always feel a little nervous because I want to hurry to be with the baby. .



Mothers' Feelings



- When the baby is in Kangaroo Care with his father, I feel calm and full of emotion. I forget all of my problems and my milk flows freely.



Mothers' Feelings



- When I pump milk at home, I cry.



Mothers' Feelings



- When I am trying to pump my milk and I see my baby breathing with difficulty, my milk does not flow.



Mothers' Feelings



- I am holding him in Kangaroo, I feel full and my milk comes out on its own.



Mothers' Feelings



- When I am in the hospital, pumping my milk with my baby in Kangaroo Care, I feel happy because I have him bound to me skin to skin the whole time.



Thank you

Rocio Sanchez-Martinez.
Eugenia Miranda-Casabona.
Almudena Miguel-Trigoso.
Rosa Maria Ballesteros-Lopez.
Juliana Acuña-Muga.
Lidia García-San José

.....And all the mothers and
babies