2. Forskning

What should guide neonatal care?

UNICEF convention on the rights of the child (Article 7)

"The child shall have the right from birth…, to know and be cared for by his or her parents."

But who is at risk to be separated?

Separation of newborn infants today

- Majority of infants are healthy at birth
  - albeit some are immature/preterm
  - Only in need of
    - Cleanliness, warmth, breastfeeding/milk
    - And "love"
      - » Essential care of the newborn, WHO 2012
- But 10-15 % are referred to a NICU
  - Prolonged hospitalization
  - Rooming-in / single family room uncommon
  - Visiting allowed, but restrictions common

Review

Eight principles for patient-centred and family-centred care for newborns in the neonatal intensive care unit

Jean-Michel Rouê,[1] Pierre Kuhn,[2] Maria Lopez Maestro,[3] Ragnhild Agnethe Maastrup,[4] Delphine Mitanchez,[5] Björn Westrup,[6] Jacques Sizun[7] 2017

1. Free 24 hours a day parental access with no limitations due to staff shift or medical rounds
2. Psychological support for parents
3. Pain management
4. Supportive environment
5. Postural support
6. Skin-to-skin contact
7. Breastfeeding and lactation support
8. Sleep protection

Review

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Implementation of these principles do not require additional research due to the body of evidence

Main arguments for separating 2- and 8-year-olds from their parents (Bowlby 1953)

- ”Lack of controlled scientific studies showing longterm impact of separation“
- “Risk of infections transferred from parents to their child".
- “Lack of space and appropriate localities“

Main arguments for separating infants from their parents at NICUs 2019

(personal experiences Thernström Blomqvist and Ewald 2019

- ”Lack of controlled scientific studies showing longterm impact of separation“
- “Risk of infections transferred from parents to their child".
- “Lack of space and appropriate localities“

Preterm and sick newborn infants

- Critical developmental period
- More vulnerable
- More medical complications
- Long hospital stay
- Most separated
- Risk of neurodevelopmental deficits
- Developmental origins of adult disease (Barker) – thrifty phenotype

Whishes from parents in hospital

- Be close to my child
- Participate and have influence
- Feel safe
- Qualified staff in a well-organized unit
- Have a good and open communication with the staff

Hallström 1998, Wigert 2008

We no longer accept these explainations for separation when it comes to older children.

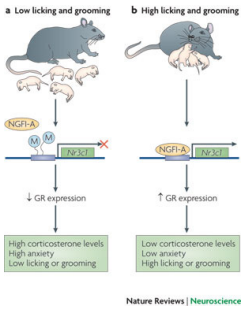
But when it comes to newborn infants, we tend to still believe them.

Sensory input close to the parent

- Auditory input
- Smells
- Eye contact
- Body movement
- Healthy bacteria

(Perry BD, 2002)
(Maitre et al, 2017)

Closeness during and after stress is crucial and reverses epigenetic change



Effects of prenatal and postnatal depression, and maternal stroking, at the glucocorticoid receptor gene

C Murgatroyd, et al 2015

- Physical closeness between parent and child has crucial regulatory aspects for both parent and child
- It reverses epigenetic change caused by perinatal stress in human infants

Murgatroyd C, 2015

Closeness vs routine separation

- Affects maternal depression rates
- Length of the hospital stay
- Protect and regulate potentially traumatic stress
- Hence, providing emotional support and practical help in a way that facilitates closeness between parent and child, strengthens innate resilience in both parent and child

Flacking R et al 2012

Physiological effects of closesness

- Closeness vs separation affects the infant's temperature, blood glucose levels, breathing patterns
- Less risk of hypothermia
- Less risk of severe infection

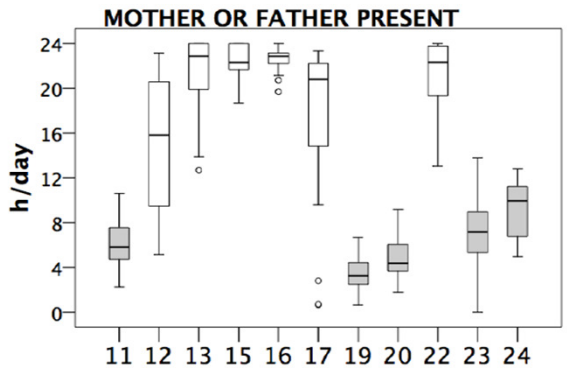
Chi Luong K et al 2016

”Closeness is nice, but our localities are too small to work for closeness”

But in reality:

- Large variation in parent-infant closeness/parental participation between units and countries.
- Some units with single rooms and rooming in provided only 0.3 h/d whereas some units with limited space provided as much as 22 h/d
- Factors such as culture, policy making and leadership may be more central to a modernized approach, rather than localities alone

Raiskila S 2017



The units with the opportunity for parents to stay overnight are indicated as white boxplots.


ORIGINAL ARTICLES

www.jpeds.com • The Journal of Pediatrics

Early Skin-to-Skin Care in Extremely Preterm Infants: Thermal Balance and Care Environment

Victoria Karlsson, RN, Ann-Britt Heinemann, RN, Gunnar Sjörs, MD, PhD, Kerstin Hedberg Nykvist, RN, PhD, and Johan Ågren, MD, PhD

J Pediatr 2012;161:422-6

Becoming a mother – in a NICU

- Thrown into a situation not prepared for
- Experiences of loss
- Separation
- Life on hold
- Public environment
- Roles are non-negotiable: ”Watchers–learners–doers”
- Conform to the perceived norm of ”good mothering”

Bruschweiler Stern 1998; Fenwick1999, 2001; Lupton2001; Flacking 2006; Wigert 2006

Closeness vs separation

- Mother infant interaction - offspring variation in phenotype – epigenetics Meaney 2005
- Better sleep - brain development Morrissey 2004
- Attachment – relieve pain/stress Axelin 2009
- Physical contact enhance development Treyvaud 2009
- Parenting intervention – better cognitive outcome Nordhov 2010
- Parental presence – more vocalization Caskey 2011

Separation vs closeness

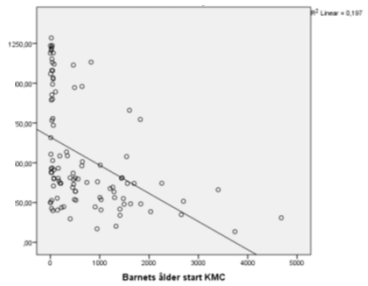
- Maternal depression de Alencar 2009
- Incompetence of parental role Muller-Nix 2004
- Bonding requires close physical contact Klaus & Kennel 1976
- More guilt/shame Flacking 2007
- Less breastfeeding Flacking 2011

Promoting factors for implementing closeness

- Early start
- Space - place, privacy, environment
- Staff attitude and care culture
- Support (parental leave, social network)

....But, much more to be done

Blomqvist et al 2012



The sooner that skin-to-skin contact started after birth, the more skin-to-skin contact the infant received each day of their hospital stay

Blomqvist et al 2013

First-time events (see, smell, kiss…)

The timing of parents' first-time events with their infants and their involvement in their infants' care appeared to depend on the NICU environment and routines.

One simple strategy for involving parents early in their preterm infants' care is to allow them to see and touch their infant in the delivery room and have skin-to-skin contact there if possible.

Baylis et al 2014

Family Centered Care

Providing facilities for parents to infants born prematurely to stay in the neonatal unit from admission to discharge reduce the total length of stay by 5.3 days reduced risk of moderate-to-severe bronchopulmonary dysplasia.

Örtenstrand et al 2010

Physical contact between mother and infant after birth – less behavioral problems at 5-6 years of age

	CBCL total score Median	Lower quartile	Upper quartile	P=0.024
Physical contact +	24	17	32	
Physical contact -	35	29	41	

Latva R et al, Early Human Development 2008

Visiting Less Than Every Day

A Marker for Later Behavioral Problems in Finnish Preterm Infants

Reija Latva, MD; Liisa Lehtonen, MD; Raili K Salmelin, PhD; Tuula Tamminen, MD

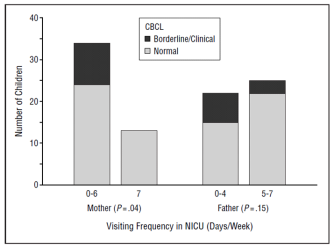
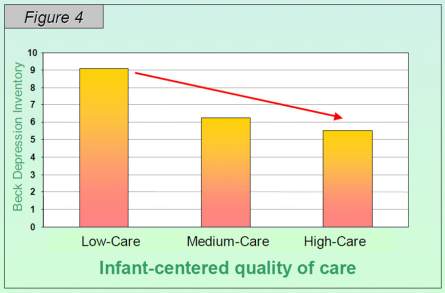


Figure 2. The association between parental visiting frequency in the neonatal intensive care unit (NICU) and later Child Behavior Checklist (CBCL) assessment at 7 to 8 years of age (n = 47)

Arch Dis Child Adolesc 2004

QUALITY OF CARE AND MATERNAL DEPRESSION AT 6 MONTHS AFTER DISCHARGE



Montirosso R et al, abstract in ICIS Meeting 2010.

THE JOURNAL OF PEDIATRICS • www.jpeds.com
ORIGINAL ARTICLES

18-Month Follow-Up of Infants Cared for in a Single-Family Room Neonatal Intensive Care Unit

Barry M. Lester, PhD[1,2,3,4], Amy L. Salisbury, PhD[1,2,4], Katheleen Hawes, PhD[1,2,4], Lynne M. Dansereau, MSPH[1,4], Rosemarie Bigsby, ScD[1,2,4], Abbot Laptook, MD[2,4], Marybeth Taub, RN[4], Linda L. Lagasse, PhD[1,2,4], Betty R. Vohr, MD[2,4], and James F. Padbury, MD[2,4]

Table III. Neurodevelopmental outcome scores at 18 months in the open-bay NICU and SFR-NICU by maternal involvement

	Mean (SD)										
	Open-bay NICU				SFR-NICU						
Bayley-III composite scores*	Low MI (n = 58)	High MI (n = 35)	Effect size	P value	Low MI (n = 50)	High MI (n = 73)	Effect size	P value	NICU P value	MI P value	Interaction P value
Cognitive composite	88.2 (12.0)	92.1 (12.8)	0.26	.14	87.8 (11.8)	93.8 (13.2)	0.40	.01	.44	.03	.46
Language composite	81.5 (13.2)	90.0 (18.4)	0.57	.01	82.9 (14.0)	93.7 (16.5)	0.72	<.001	.15	<.001	.77
Receptive communication	6.5 (2.4)	7.9 (3.5)	0.47	.03	6.9 (2.6)	8.6 (2.9)	0.57	<.001	.10	<.001	.83
Expressive communication	7.2 (2.6)	8.5 (3.1)	0.43	.03	7.2 (2.6)	9.4 (2.8)	0.73	<.001	.14	<.001	.31
Motor composite	90.9 (12.0)	93.0 (10.1)	0.14	.39	89.2 (14.0)	94.3 (11.1)	0.34	.03	.54	.19	.29
Fine motor	9.1 (2.4)	9.7 (2.0)	0.20	.22	9.1 (2.5)	10.0 (1.8)	0.30	.02	.29	.06	.62
Gross motor	7.7 (2.2)	8.0 (1.9)	0.10	.59	7.3 (2.6)	8.4 (2.1)	0.37	.01	.57	.16	.12

MI, maternal involvement.
*The Composite scores for the Cognitive, Language, and Motor scales are standardized with a mean (SD) score of 100 (15). The subtest scores are standardized with a mean (SD) score of 10 (3).

Evidence - Cochrane 2016

21 RCT, N=3042 infants

- Reduced mortality
- Reduced severe infections/sepsis
- Improved cardio-vascular postnatal adaption
- Less infant hypothermia
- Improved initiation + duration of breastfeeding
- Improved growth (w, l, h)
- Increased maternal satisfaction
- Better neurodevelopment at 12 moths.

WHO recommendation on skin-to-skin contact during the first hour after birth. 2018

Newborns without complications should be kept in skin-to-skin contact (SSC) with their mothers during the first hours after birth to prevent hypothermia and promote breastfeeding.