


Skin-to-skin for all mothers and term babies at birth

①

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Plan for the next hour

②

- ❖ Differentiate kangaroo and skin-to-skin
- ❖ Some little history
- ❖ Techniques for skin-to-skin
- ❖ How to get and find evidences
- ❖ Evidences: skin-to-skin at birth
- ❖ Conclusions
- ❖ Practices to adopt

I have no conflict of interest with this presentation

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Kangaroo or skin-to-skin ?

③

VERY important difference:

- ✓ Kangaroo:
 Prolonged abdomen to abdomen contact of premature baby
 with mother or father
Charpak et al., 2005
- ✓ Skin-to-skin:
 Nude abdomen to nude abdomen contact between mother
 and healthy term infant
Dumas, Lepage & Grondin, 2007; Cantilli et al., 2014; Widström, 2011 and videos


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Some history: kangaroo care

④

1978 : in Bogota, Colombia
 not enough spaces or incubators
 → nosocomial infections

24hr kangaroo, positive
 consequences on premature babies
 to stabilize homeostatic parameters.



Bogota Fundacion Canguro

Numerous evidences ...

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Links between kangaroo care and skin-to-skin care

⑤

Plenty of evidences were so clear for premature babies, it was thought that there should be some benefits for term babies also....

First, introduction in industrialized countries in order to

- ❖ facilitate mother's first attachment experiences
- ❖ encourage first close contacts between parents
- ❖ facilitate initiation of breastfeeding

But a lot more was found!!!....

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How to achieve skin-to-skin

⑥


- Nude newborn *directly* on mother's nude chest, *without drying*
- Newborn is completely nude
- Newborn is placed on mother's nude chest
- Newborn is *then* covered with a warm blanket
Widström et al. (2011)

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Skin-to-skin at vaginal birth

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Newborn is placed *vertically* between mother's breasts




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Skin-to-skin at caesarean section

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Newborn is placed *horizontally* just below or on mother's breasts




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To convince scientifically-driven professionals

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- ❖ We need the strongest evidences, as skin-to-skin care is still considered a "soft, nice thing to do".
- ❖ So we need evidences to demonstrate that skin-to-skin care is THE SAFEST transition to extrauterine life.



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How to convince: evidences

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Quantitative data from

- ✓ randomised controlled trials (RCT)
- ✓ systematic reviews
- ✓ meta-analyses
- ✓ cohort studies

NO impression, perception, feeling
NO qualitative data

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Important note

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We cannot directly apply research findings from kangaroo care to term infants and vice-versa

Be careful when reading or reporting literature


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Evidences: **skin-to-skin care**

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My choice of presentation for this review of literature:

- > Physiological benefits for mother and baby
- > Benefits on breastfeeding
- > Psychosocial benefits for mother and baby




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1. Physiological benefits for mother and term baby 13

- Baby's temperature
- Mother's temperature
- Expulsion of placenta
- Decreased vasoconstriction at feet
- Lower salivary cortisol
- Better oxygenation
- Better glycemia
- Better neuromotor organization
- Reduction of pain reaction during painful procedures



Picture by Dumas, Gattreau, post-caesarean section, with permission

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Baby's temperature 14

- Temperature: central, axillary, at foot
- ALWAYS within normal limits
- Temperature better than for
 - swaddled or bundled baby
 - baby with pyjamas in mother's arms
 - baby on warmer
 - swaddled baby in cot
- For babies born vaginally or by cesarean

Accolet et al., 1989; Anderson et al., 2003-Cochrane with 806 dyads, 17 studies; Christensson et al., 1992-1994; 1995a; Bystrova et al., 2003, 2008; Carfoot et al., 2005; Fardig, 1980; Fransson et al., 2005; Jonas et al., 2007; Kennel & McGrath, 2003; Marin et al., 2010; Nimbalkar et al., 2014; Nolan & Lawrence, 2009

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Baby's temperature 15

Skin-to-skin re-warms cold babies better than incubator or warmer (hypothermia ≤ 36.3 C)

Christensson et al., 1998; Huang et al., 2006; Huang et al., 2006; Mori et al., 2009-meta-analyses of 23 studies

Skin-to-skin transfer (ambulance, helicopter) is better than transfer in warmed incubator (sick or premature babies)

Sonthheimer et al. 2004, cohort study

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Mother's temperature 16

- ✓ Mother's and baby's temperatures are in reciprocity so no "over-heating"
- ✓ Mother's axillary temperature stays linked directly to temperature of baby's feet

Christensson et al., 1998; Bystrova et al., 2003, 2008; Bergström et al., 2007, in Uganda

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Expulsion of placenta 17

Skin-to-skin decreases time for placental expulsion

- so less bleeding
- so less maternal anemia

Marin et al., 2010, 274 women

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Decreased vasoconstriction in baby's feet 18

Why this interest in baby's feet?

Skin-to-skin reduces the "stress of being born" (Bystrova, 2003)

More than if

- baby is swaddled
- baby is in mom's arms
- baby is in cot in nursery

Newborn's "self-regulation to stress"

Bystrova et al., 2003, 2008; Ferber and Makhoul, 2004; Lagercrantz & Slotkin, 1986

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Decreased salivary cortisol

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When skin-to-skin was immediate at birth, and prolonged for 60 to 120 minutes, salivary cortisol was low (indicating low stress)

and lower in the 120 minutes group compared to the 60 minutes group

Takahashi et al., 2011

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Better oxygenation

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- ✓ Baby placed skin-to-skin has better oxygen saturation than bundled baby in incubator
- ✓ Baby placed skin-to-skin have better arterial gases at 90 minutes of life than bundled baby in incubator

Accot et al., 1989; Christensson et al., 1992; Nolan & Lawrence, 2009; Takahashi et al., 2011

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Better heart rate

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When skin-to-skin is immediate, heart rate is stable

Even faster than if skin-to-skin is not immediate but around 30 minutes later (...argument for caesarean...)

Christensson, 1992, Takahashi et al., 2011

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Better glycemia

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Baby placed skin-to-skin has better glycemia at 90 minutes of life than bundled baby in cot

Moore et al., 2012 (Cochrane: 94 babies, 2 studies); Anderson et al., 2003 (Cochrane with 806 dyads, 17 studies); Christensson et al., 1992 — translated into ABM Clinical protocol 1: Guidelines for blood glucose monitoring and treatment in term and late-preterm neonates, 2014

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Neuromotor organization

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During first 4 hours of life

- ✓ More episodes of calm sleep
- ✓ Better scores for optimal flexion
- ✓ Less extension movements

→ So babies are more coordinated and more stable

Ferber and Makhoul, 2004

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Reduced reaction during painful procedures

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Objectively demonstrated analgesia during invasive procedures such as vitamin K injection and heel lance for PKU

→ less crying, less grimacing, ↓ heart rhythm,...

Blass and Watt (1999); Carbajal et al. (2003); Chermont et al. (2009); Gray et al. (2000); Gray et al. (2002); Ludington-Hoe et al. (2005); Weissman et al. (2009); Nishutani et al. (2009)

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In summary

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- Harmonizes baby's physiology to safely transfer from life in utero to life outside the uterus
- Maintains baby's energy
- Reduces the stress of birth

(expression «the stress of being born» from Lagercrantz & Slotkin, 1986 then used by Bystrova et al., 2003, 2008)




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2. Benefits on breastfeeding

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- Innate sequence of the human infant
- Initiation of breastfeeding, placement of tongue
- Breast massage by baby, ↑ maternal oxytocin
- Breast odours, baby's recognition of mom's milk
- Effective sucking, ↑ milk production
- Baby's weight and weight loss
- Exclusivity of breastfeeding
- Breastfeeding duration ad 6 months
- Breastfeeding difficulties



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Innate sequence of the human infant

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➢ Widström and colleagues (1993, 8 minutes video and 2011, article) :
Baby wakes up slowly, creeps towards breast, turns head towards mom's voice and breast, salivates when smelling nipple, licks nipple then attaches spontaneously


innate sequence of the human infant

➢ This predictable behavior starts around 10 minutes of life when baby is placed in uninterrupted skin-to-skin with mother

Observational studies: Widström et al. 1995, 2011 and videos 1993, 2010, 2011; Matthiesen et al., 2001

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Picture by Widström, Stockholm, with permission to Dumas



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Other practices also facilitate this innate behavior

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They are so usual that we forget about them....

- Do not interrupt skin-to-skin for at least one hour (WHO, 2009)
- Do not suction unless medically justified (Cantrell et al., 2014)
- Wait for eye prophylaxis/vitamin K at the end of the one hour and do it while baby is in skin-to-skin (Dumas, Sivole, Landry, 2001)

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Influence on initiation of breastfeeding

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When baby is placed skin-to-skin with mother, **uninterrupted:**

- * spontaneously attaches to breast
- * sucking is more effective

Any interruption lengthens process significantly

Carfoot, 2003, 2005; Matthiesen et al., 2001; Mikiel-Kostyra et al. 2005-meta-analysis; Moore, 2012; Nakao et al., 2008; Nolan & Lawrence, 2009; Righard & Alade 1990; Srivastava et al., 2014; Widström et al., 1990, 1995, 2011

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What has been demonstrated

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Factors negative for initiation of breastfeeding:

- Lack of *immediate* skin-to-skin at birth
- Drying baby before skin-to-skin
- First suckling *after* 2 hours of life
- Force baby to the breast

Cantrill et al., 2014; Mikkel-Kostyra et al. 2005-meta-analysis; Nakao et al., 2008; Widstrom, et al., 1990, 1993, 2011; Svensson et al., 2013

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Massage of breast by baby

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Massage-touching of breast by baby (chin, hands) increases :

- * oxytocin production
- * number of suckings
- * milk production

Cantrill et al., 2014; Matthiesen et al., 2001; Widström et al., 1993, 2011

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Breast odours, baby's recognition of mom's milk

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If immediate skin-to-skin at birth and uninterrupted for at least 50 minutes,

2 to 4 days old babies recognize their mother's milk by movements of the mouth and tongue

Bartocci, 2000; Christensson, Porter & Varendi, 1998; Mizuno et al., 2004; Porter & Varendi, 1999; Varendi & al., 1994; Varendi, Porter & Wilberg, 1997; Varendi & Porter, 2001

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Effectiveness of suckings, milk production

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Early sucking (< 2hrs) shows positive effect on milk production at day 3 and 4

- ✓ more suckings at day 3 and 4
- ✓ less engorgement
- ✓ more milk ingested

Bystrova et al., 2007a, 2007b, 2008; Cantrill et al., 2014


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Baby's weight and weight loss

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Babies who had skin-to-skin and were not separated from their mothers:

- re-gain their weight loss 3 to 5 days faster than swaddled babies in nursery
- even if babies in nursery received more supplements with formula



Bystrova et al., 2007c, 2008

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Exclusivity of breastfeeding

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Babies who had skin-to-skin and were not separated from their mothers:

- receive less supplement of formula than swaddled babies in nursery

Significative link between duration of skin-to-skin and exclusivity of breastfeeding at discharge

Bystrova et al., 2007c, 2008

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Duration of breastfeeding

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Babies who had skin-to-skin
and were not separated from their mothers:

are breastfed longer

Aghdas et al., 2013; Anderson et al., 2003-Cochrane : 17 studies, 806 dyads; Cantrill et al., 2014; Mikkel-Kostyra et al., 2002-1250 babies followed during 3 years; Mizuno et al., 2004; Moore et al., 2007-Cochrane : 10 studies, 552 dyads; Thomson et al., 1979; Vaidya et al., 2005-92 dyads followed during 6 months; Moore et al., 2012 Cochrane; Srivastava et al., 2014; Thukral et al., 2012


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In summary

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Immediate and uninterrupted skin-to-skin facilitates:

- first sucking
- exclusivity
- duration of breastfeeding
- solving of major breastfeeding difficulties




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3. Psychosocial benefits for mother and baby

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- Baby cries less
- Early mother-infant interaction: bonding
- Maternal well-being-attachment
- Less infant abandonment, maltreatment
- Mother-infant interaction at one year old



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Baby cries less

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Babies who had skin-to-skin at birth:

- cry less at birth
- cry less during the first 90 minutes of life
- cry less during first 3 days and first 3 months of life

Anderson et al., 2003-Cochrane of 806 dyads, 17 studies ;Christensson et al., 1992, 1995b; De Château & Wiberg, 1977a, 1977b; Ludington-Hoe, 2002; Matthiesen et al., 2001; Moore et al., 2007; Moore et al., 2012-Cochrane

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Early mother-infant interaction: bonding

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Mother:

- More visual contacts, more touching
- Looks at her baby in *en face* position
- More verbal communications
- Keep her baby with her longer, tends to follow whoever takes her baby away from her
- More affectionate during suckings; keeps baby closer to her

Ali & Lowry ,1981; Anderson et al., 2003- Cochrane 806 dyads, 17 studies; De Château & Wiberg, 1977, 1988; Hales et al., 1977; Klaus et al., 1972; Matthiesen et al., 2001; Moore et al., 2012-Cochrane ;Velandia et al., 2010; Wiberg ,1990; Widstrom et al., 1990


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Early mother-infant interaction: bonding

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Baby:

- More alert after first cry
- Focuses on mother's face and breast
- More vocalisations



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Ali et Lowry ,1981; Anderson et al., 2003-Cochrane 806 dyads, 17 studies; De Château & Wiberg, 1977, 1988; Hales et al., 1977; Klaus et al., 1972; Matthiesen et al., 2001; Velandia et al., 2010; Wiberg ,1990; Widstrom et al., 1990

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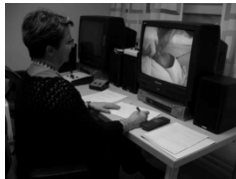
Early mother-infant interaction: bonding

43

Dumas and colleagues, RCT, 151 dyads videotaped at day 4 during breastfeeding session:

Mothers are *significantly* softer and more patient

- if had 2 hours uninterrupted skin-to-skin care at birth
- if non separated from birth



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Dumas et al., 2013

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Early mother-infant interaction: bonding

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During a breastfeeding episode filmed on video, at day 4:

- swaddled babies are *abnormally* calmer, sleep more
- mother demonstrates clear tendency to be rougher with her swaddled baby in :
 - * her attempts at latch
 - * her movements to and from baby
 - * her type of stimulation to wake up baby or to latch
 - * her general affective response to baby

Dumas et al., 2013

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Maternal well-being-attachment

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Skin-to-skin:

- Less maternal stress: reduce gastrin blood level
- Better maternal well-being: increased oxytocin

Early breastfeeding:

- Significant less depressive symptoms
- Increased mother's socialization
- Better maternal well-being: bf doubles plasma endorphins

If mom's well-being is repeated frequently → attachment by repeated activation of opioids and oxytocin

All et Lowry, 1981; Anderson et al., 2003-Cochrane: 806 dyads, 17 studies; Bystrova et al., 2007b, 2008; Carfoot et al., 2005; De Chateau et Wiberg, 1977a, 1977b; Hales et al., 1977; Kennel et Klaus, 1998; Klaus et al., 1972; Klaus et Kennel, 1976; Moore et al., 2007-Cochrane: 4 studies, 314 dyads; Widstrom et al., 1990, 1995-2010; Winberg, 2005

And many qualitative studies on mother's satisfaction

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Less infant abandonment, maltreatment

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- ❖ Significantly reduced parental negligence and maltreatments in socially vulnerable families
- ❖ Less infant early abandonment in postnatal period

? animals

Anderson et al., 2003-Cochrane: 806 dyads, 17 studies; Lvoff et al., 2000; Strathearn et al., 2009 (bf); Wiberg & Christensson, 1995

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Mother-infant interaction at one year


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Positive influence on:

- * mother's sensitivity
- * ability of child to calm self
- * mutual reciprocity (PCERA)

when child is one year old

and benefited from immediate uninterrupted 2 hours of skin-to-skin with mother, all confounding variables taken into account



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Bystrova et al., 2008, 2009

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Also very important

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A 2 hour separation at birth followed by reunion and rooming-in **DID NOT compensate** for the lack of skin-to-skin at birth

Sensitive period**
Not enough evidences to call it critical period

Bystrova, et al. 2007a, 2007b, 2007c, 2008; Dumas et al., 2013; Kennel et al., 1975; Nissen et al., 1995

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Reuniting mothers and babies after 2 hours
DO NOT compensate for the 2 hour separation from birth

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SO...

“we should respect baby and mother
instinctive
behavioral
and endocrine
interaction sequence”

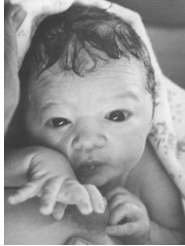
(Widström, 1988 and 2011)

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This is why....

51

- NO eye prophylaxis before first sucking. Need to facilitate bonding with eyes also.
- NO silver nitrate (Wahlberg, 1983)
- Postpone erythromycin, vit K



(Dumas, Savoie & Landry, 2001, 2002)

Picture in Vivian Wahlberg thesis, Stockholm, 1983

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Safe skin-to-skin practice

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- Inform parents of the safe practice of skin-to-skin, especially fathers
- Prepare mother's gown so to remove it completely at the time of birth
- Place baby on the mother's skin immediately at birth, without drying
- Expand baby's body as much as possible on mother's chest to avoid pressure on the thorax
- Wait to cut the umbilical cord shorter so baby doesn't lie on clamp
- Make sure the baby's nose and mouth are free to secure free airways. Baby should always be free to lift the head
- Dry the baby's back and head thoroughly. Remove all wet blankets. Cover baby with one dry blanket. Avoid overheating
- Ask father to firmly hold the baby's bottom or leg to avoid fall

- When in mother's room or home, make sure mother is lying at 30-45 degrees to avoid having baby flat on belly. Avoid overheating.

Unpublished document Dumas, 2014; Hestmark & Stenhammar, 2014

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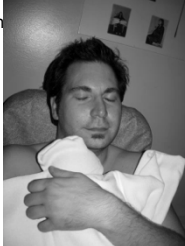
Skin-to-skin contact with the father???

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NOT MUCH EVIDENCE

“ In absence of the mother, thermoregulation with the father is better than baby bundling and placement in an isolette.”
Christensson et al. (1996):

- Colonisation with family bacteria??
- Ease to drowsiness, ↓ cry duration (Eriandsson, 2007)
- Attachment...vocalisations (Velandia, 2012)



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Are those evidences important???

YESSSSS!!

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We cannot talk about cultural or personal preferences ...

« it is not only nice to do »

We have demonstrated benefits for term babies ...

« so it must be done »



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Need more facts?

Recent informal survey in Canada and USA
(Dumas, Lepage & Grondin, 2007)

Show that:


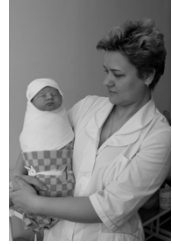
- Not all babies are placed skin-to-skin immediately at birth
- There are many unjustified interruptions to skin-to-skin at birth
- Many babies are brought to the nursery for unjustified reasons

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Importance of those results

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SWADDLING is BAD during the first hours of life

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Importance of those results

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Skin-to-skin has positive influence

- on physiological variables
- on psychosocial variables
- on breastfeeding

Non-separation has positive influence

- on psychosocial variables
- on breastfeeding


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Importance of those results

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So.....

What are the evidence-based practices to adopt?



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Practices to adopt

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Immediate and uninterrupted skin-to-skin from birth, with mother

NO swaddling, bundling, blanketing

No separation for at least 1-2 hours, even for short periods



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Practices to adopt

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Postpone vitamin K and erythromycin for at least one-two hour

Do not weigh/measure baby for at least until end of first feed



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Practices to adopt


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Encourage first suckling

Hands-off

Calm, respectful environment

Effective support



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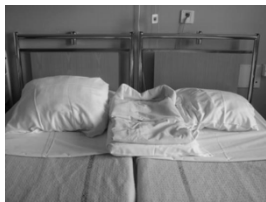
Practices to adopt

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Uninterrupted mother/baby rooming-in from birth

Interrupted as little as possible and only for major reasons noted in chart

Examinations, tests, etc... in mother's room




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Do we need to update our perinatal practices in Canada ?

Yes!!!!!!!!!!



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Questions?? Comments??

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