**Swaddling: A Historical, Cultural, and Lactational Perspective**

Linda J. Smith, BSE, FACCE, IBCLC, FILCA

February 2011
lindaj@bflrc.com

---

**Why I’m doing this talk**

- I wasn’t breastfed – I was early & breech; mom smoked, got bad advice, had good instincts
- 1st career: physical education & sports
- Found LLL shortly before 1st child’s birth
- Advocate for women and babies – healing
- Three children, 4 grandchildren, 13 houses in 9 cities / 2 countries
- MPH candidate – in the home stretch now

---

**Objectives**

- Discuss historic and current beliefs and practices regarding infant swaddling
- Discuss ethical, political and cultural issues related to swaddling
- Discuss research on benefits and harms of infant swaddling

---

**Questions asked**

- Historically, why was swaddling done?
  - What is the current appeal of swaddling?
  - When and where is swaddling combined with cradleboards or cradles?
  - What were common objections to swaddling?
  - What alternatives have been used instead of swaddling for similar purposes?
  - What are the evidence-based benefits to PARENTS? Or STAFF?
- How is swaddling done?
  - What variations exist, and why?
  - How long does the baby remain swaddled? (per session, per day, total in months or years)
  - Who decides when to end swaddling? (per session, per day, total in months or years)
- What are the evidence-based responses of the INFANT to being swaddled?
  - What is the relationship between swaddling and SIDS?
  - What is the impact of swaddling on BREASTFEEDING?

---

**Origins: transportation**

- Archaeological records suggest that swaddling first developed around 4000 B.C. in Central Asia with use of the back-pack cradle board by migrating peoples
- As desertification progressed, migration from region to region became a relatively permanent way of life
Origins: warmth & limb growth
- "Swaddling clothes described in the Bible consisted of a cloth tied together by bandage-like strips.
- After an infant was born, the umbilical cord was cut and tied, and then the baby was washed, rubbed with salt and oil, and wrapped with strips of cloth.
- These strips kept the newborn child warm and also ensured that the child's limbs would grow straight."

Swaddling was meant to bind
- "A child lying stiff in swaddling clothes was unable to wave its hands and feet in the air, incapable of reaching out to grasp some dangled object, forbidden by its bonds to respond to maternal playfulness.
- And if mothers tied their children from head to feet so that they couldn't respond to tickling, clucking, and caressing, it must mean the mothers had little interest in such things in the first place."
  - Shinnar, Edward. The Making of the Modern Family. 1975

Beliefs about babies
- Before 1700's, parents barely raised their children (by our standards) – neglect was rampant
- Infant mortality was high
- Names given to infants were "temporary" until the child reached ~2 years then "really" named
- Upbringing was based on fear
  - Note the skull next to the baby

Galen's advice: toughen the baby
- "The newborn infant, then, free from defect in his entire constitution, should first be powdered moderately and wrapped in swaddling-clothes, in order that his skin may be made thicker and firmer than the parts within.
- For during pregnancy everything was equally soft, since nothing of a harder nature touched it from without, and no cold air came in contact with it, whereby the skin would be contracted and thickened, and would become tougher and denser than it was before and than the other parts of the body.
- But when the baby is born, it is necessarily going to come in contact with cold and heat and with many bodies harder than itself. Therefore it is appropriate that his natural covering should be best prepared by us for exposure."
- The newborn was also "salted" with soda ash to harden his skin for the strange extraturine life. Swaddling and infant salting after the manner of the Greeks and Romans served as the model of infant care practice for some 1,500 or more years.

Tudor times: for limb growth
- "During Tudor times, swaddling involved wrapping the new baby in linen bands from head to foot to ensure the baby would grow up without physical deformity.
- A stay band would be attached to the forehead and the shoulders to secure the head.
- Babies would be swaddled like this until about 8 or 9 months."

17th century: Assoc. with neglect
- "There was an association of neglect with swaddling, especially in regard to wet-nurses who would leave babies in their care swaddled for long periods without washing or comforting them"
- "All the doctors complain about how parents permit children to stew in their own excrement for hours on end, tightly wound in swaddling clothes; about how children left unattended before the hearth perish when their garments catch fire; and about how unguarded infants would be attacked and eaten by the barnyard hogs."
  - The Making of the Modern Family, Edward Shorter 1975
Late 18th century: Enlightened parenting

- Swaddling diminished in England & France
  - Replaced by alcohol and opium to sedate infants
- Persisted in Eastern Europe, Middle East, Lapland, Japan, North American Indians
- More common in cold and/or dry climates
- Rare in warm, humid climates (↑ infections)

> Replaced by alcohol and opium to sedate infants

1693: John Locke objects

- “John Locke, in his 1693 publication Some Thoughts Concerning Education, became a lobbyist for not binding babies at all.
- This thought was very controversial during the time, but slowly gained ground, first in England and later elsewhere in Europe.”

1747: William Cadogan, MD

- Protested over-dressing of infants in many layers of tight swaddling blankets
- “[The mother who has only a few rags to cover her child loosely, and little more than her own breast to feed it, sees it healthy and strong, and very soon able to shift for itself, while the puny insect, the hair and hope of a rich family, lies languishing under a load of finery that overpowers his limbs, abhorring and rejecting the dainties he is crammed with, till he dies a victim to the mistaken care and tenderness of his fond Mother.”
- “…besides the mischief arising from the weight and heat of these swaddling-cloaths, they are put on so tight, and the Child is so cramped by them, that its bowels have not room, nor the limbs any liberty, to act and exert themselves in the free easy manner they ought.”

1762: Rosseau Emile: Or, On Education

- Warned against swaddling clothes
- Claimed the newborn baby needs freedom of movement
- Said infants who were not restrained became stronger and developed better bodily proportions

- Rosseau, Jean-Jacques. Emile: Or, On Education. 1762.

1762: Rosseau Emile: Or, On Education

- “...besides the mischief arising from the weight and heat of these swaddling-cloaths, they are put on so tight, and the Child is so cramped by them, that its bowels have not room, nor the limbs any liberty, to act and exert themselves in the free easy manner they ought.”

Rosseau, Jean-Jacques. Emile: Or, On Education. 1762.

© 2011 Linda J. Smith / BFLRC
**Swaddling: A Historical, Cultural, and Lactational Perspective**

---

**1971: Prevalence**
- 139 societies studied by Barry & Paxson
  - 51.8% practiced some form of infant restraint
  - 20.9% used cradleboards
- 19th and 20th century: drugs to pacify infants
  - Paregoric (Brand name: Camphorated Tincture of Opium)
  - Alcohol
  - Grip water
  - Antihistamines and children's cold medicines

---

**Cradleboards – North America**
- Navajo, Cree, Ojibway, Shoshone, others
  - "They were made for discipline, we would wrap the baby really tight, by doing so, and he learned not to cry so much."
  - Marla Lopez, Cheyenne badger woman, El Reno, Oklahoma
  - "It was common practice to cradleboard newborn children until they were able to walk, although many mothers continued to swaddle their children well past their first birthday."

---

**Sandbag babies – rural China**
- April 08, 1990 (By Cox News Service)
  - BEIJING — The practice is horrifying — but only to outsiders. Millions of babies along the Yellow River are tied up in bags of sand, only their heads peeping out, and left completely alone for most of each day.
  - A major reason the babies are kept in the sandbags, red sacks similar to flour bags, is to enable both parents to go out and work in the fields without having to worry about the infants. The family returns at midday to eat and the mother nurses the baby, still in the sandbag.
  - Otherwise, it is left alone from morning to evening. When the parents are at home the baby usually is taken out of the sandbag only when the sand is changed. When the baby is 1 to 1 1/2 years old the parents start taking it to the fields while they work.

---

**Effects of swaddling on adults**
- Who is willing to BE swaddled?
- Get a scarf/shawl and caregiver(s)
  - Swaddlee: put arms down at sides
  - Caregiver: wrap shawl snugly around her body, tie in back, stay nearby
- Swaddle: notice YOUR feelings
- Stay swaddled like this for 15 minutes or until...

---

**Research on effects of swaddling**

---

© 2011 Linda J. Smith / BFLRC
Maintain warmth?

- Swaddled VLBW babies in incubators were warmer than non-swaddled (no STS).
- "...can be helpful in regulating temperature but can also cause hyperthermia when misapplied"

Breastfeeding is more effective

- And many more...
What exactly IS “excess crying?”

- "Often, excessively crying infants are not used to falling asleep on their own. These infants need an opportunity to learn this and may need to cry themselves to sleep for 15 to 30 minutes.
- Some infants persist in crying for more than 30 minutes, and for these babies it is suggested that the parents offer some consolation without taking the child out of the bedroom.
- If an infant remains inconsolable, parents should begin again the cycle described previously (i.e. take the infant out of bed, feed them, and so forth).
- When this approach is used, the child soon recognizes that being picked up out of bed is followed by being fed, and being put into bed is followed by going to sleep.

Within this regular pattern, the infant is fed shortly after waking up, since a well-rested infant drinks adequately and a well-fed infant is able to play on their own contentedly until they become tired.


If an infant remains inconsolable, parents should begin again the cycle described previously (i.e. take the infant out of bed, feed them, and so forth).

- Some infants persist in crying for more than 30 minutes, and for these babies it is necessary to offer some consolation without taking the child out of the bedroom.

What exactly IS “excess crying?”

- When the child wakes up, after changing the diaper they are fed right away, and offered a quiet place from which they can see and hear their carers, until they are ready to sleep.
- Intervals between daytime feeds are preferably two to four hours.

- Infant swaddled for last sleep: 24% of cases, while more than four to six weeks old, plays on their own in a fixed place reaching the footboard.

- The newborn baby (if more than four to six weeks old) plays on their own in a fixed place.


STS and BF are more effective

- Babies kept in cots cried significantly more than those kept skin-to-skin with the mother.
- Keeping the baby skin-to-skin with the mother preserves energy and accelerates metabolic adaptation and may increase the well-being of the newborn.


Reduced arousal = ↑SIDS risk

- Breast fed infants are more easily aroused from AS at 2-3 months of age than formula fed infants. This age coincides with the peak incidence of SIDS.


- "Infants in the naive to swaddling group exhibited decreased spontaneous cortical arousal, similar to responses observed in future victims of sudden infant death syndrome." (27 breastfed male & female infants @ 3-4 weeks & 3 mos.)


Reduced arousal = ↑SIDS risk

- In both experiments the infant groups clearly slept more when swaddled and also showed fewer motor responses to the air stream stimulus. This decrease in motor responsivity occurred at all levels of prestimulus heart rate and was not simply a reflection of increased sleep when swaddled. Furthermore, in both studies there were more startle responses in the free condition.


- "Swaddling has a significant inhibitory effect on progression of arousals from brainstem to full arousals involving the cortex in QS. Swaddling decreases spontaneous arousals in QS and increases the duration of REM sleep, perhaps by helping infants return to sleep spontaneously, which may limit parental intervention." (N = 8 female formula-fed infants 2-5 days old)


- When the child wakes up, after changing the diaper they are fed right away, and offered a quiet place from which they can see and hear their carers, until they are ready to sleep.

- Intervals between daytime feeds are preferably two to four hours.

- Infant swaddled for last sleep: 24% of cases, while more than four to six weeks old, plays on their own in a fixed place reaching the footboard.

- The newborn baby (if more than four to six weeks old) plays on their own in a fixed place.


- "Swaddling has a significant inhibitory effect on progression of arousals from brainstem to full arousals involving the cortex in QS. Swaddling decreases spontaneous arousals in QS and increases the duration of REM sleep, perhaps by helping infants return to sleep spontaneously, which may limit parental intervention." (N = 8 female formula-fed infants 2-5 days old)
Breastfeeding is safer

- “overall risk of SIDS twice as great for formula-fed infants compared with breastfed infants”
- “This study shows that breastfeeding reduced the risk of sudden infant death syndrome by approximately 50% at all ages throughout infancy.”

Reduce Prone Sleep = (↓SID)

- “…swaddling may be protective for back-sleeping infants by preventing them from moving into dangerous situations (such as rolling to prone) but harmful for those who sleep on their stomach, restricting a prone infant from moving to a position of safety.
- “Older infants including usual prone sleepers generally accept swaddling while supine, including 78% of infants who slept prone at home.”

Breastfeeding works better

- “without instruction, the routinely bedsharing breast feeding mothers almost always placed their infants in the safe supine infant sleep position, probably because it is difficult, if not impossible, to breastfeed a prone sleeping infant”
- “Prospective studies have shown that 17% of newborns have some degree of “immaturity” or dysplasia of their hips according to ultrasound. Although this resolves untreated in most hips within the first 3 months of age, the hips are very susceptible to improper positioning that could lead to long-term dysplasia and early arthritis. This overlapping window of time in which infants are swaddled and their hips are susceptible to positioning is a potential concern.”

Risk: Neonatal weight loss

- “…swaddled babies who had experienced a 2-h separation period after birth and then were reunited with their mothers tended to have a delayed recovery of weight loss compared to those infants who were exposed to the same treatment but dressed in clothes.
- “…swaddling may be protective for back-sleeping infants by preventing them from moving into dangerous situations (such as rolling to prone) but harmful for those who sleep on their stomach, restricting a prone infant from moving to a position of safety.”

Risk: Hip dysplasia

- Although we appreciate that swaddling may sometimes be an effective technique to decrease crying and promote sleep in newborns, there is concern that it may lead to an increase in hip dysplasia. “…swaddling has been found to be a risk factor for DDH.
- “Prospective studies have shown that 17% of newborns have some degree of “immaturity” or dysplasia of their hips according to ultrasound. Although this resolves untreated in most hips within the first 3 months of age, the hips are very susceptible to improper positioning that could lead to long-term dysplasia and early arthritis. This overlapping window of time in which infants are swaddled and their hips are susceptible to positioning is a potential concern.”

Accept supine sleep?

- “The majority of infants accepted swaddling while supine, including 78% of infants who slept prone at home. Acceptance decreased with increasing age.”
- “Older infants including usual prone sleepers generally accept a form of swaddling that has minimal respiratory effects. The reintroduction of swaddling, without restricting hip movement or chest wall excursion, combined with supine sleeping, may promote further sudden infant death syndrome reduction.”

Breastfeeding works better

- “Physiologic studies on swaddling: an ancient child care practice, which may promote the supine position for infant sleep.”
- “Prospective studies have shown that 17% of newborns have some degree of “immaturity” or dysplasia of their hips according to ultrasound. Although this resolves untreated in most hips within the first 3 months of age, the hips are very susceptible to improper positioning that could lead to long-term dysplasia and early arthritis. This overlapping window of time in which infants are swaddled and their hips are susceptible to positioning is a potential concern.”

- “Prospective studies have shown that 17% of newborns have some degree of “immaturity” or dysplasia of their hips according to ultrasound. Although this resolves untreated in most hips within the first 3 months of age, the hips are very susceptible to improper positioning that could lead to long-term dysplasia and early arthritis. This overlapping window of time in which infants are swaddled and their hips are susceptible to positioning is a potential concern.”
- “Prospective studies have shown that 17% of newborns have some degree of “immaturity” or dysplasia of their hips according to ultrasound. Although this resolves untreated in most hips within the first 3 months of age, the hips are very susceptible to improper positioning that could lead to long-term dysplasia and early arthritis. This overlapping window of time in which infants are swaddled and their hips are susceptible to positioning is a potential concern.”
- “Prospective studies have shown that 17% of newborns have some degree of “immaturity” or dysplasia of their hips according to ultrasound. Although this resolves untreated in most hips within the first 3 months of age, the hips are very susceptible to improper positioning that could lead to long-term dysplasia and early arthritis. This overlapping window of time in which infants are swaddled and their hips are susceptible to positioning is a potential concern.”
Risk: Chest/respiratory restriction

- "The incidence of pneumonia and upper respiratory infections (URI) was assessed by retrospective chart review in hospitalized Turkish infants. They found that infants who were completely swaddled for 3 months had a 4-fold increased incidence of pneumonia and URI. Tight binding could restrict chest wall excursion, resulting in more frequent or complicated pneumonia.
- We do not have comparison data on unswaddled infants.
- Long-term studies, including overnight sleep studies of swaddled infants and respiratory effects, would be beneficial, since grunting and increased respirations did appear at higher pressures."

Touch and Proximal Care

- Babies need to be touched – a LOT
- Separating babies increases stress in both mother and baby
- "Proximal care parents held infants for 15 to 16 hours per 24 hours and coslept with them through the night more often than other groups...Infant demand care, as practiced by proximal care...is associated with less overall crying per 24 hours in the early weeks."

Do the “5 S’s” actually work?

- "One method for calming infants, referred to as The Happiest Baby (THB) method, is based on the hypothesis that actions mimicking conditions in the womb will trigger a calming reflex"
- "The behavioral intervention, when provided via videotape, does not seem to be efficacious in decreasing total crying among normal infants."

Why swaddle at all?

- "Breastfeeding to comfort a crying infant is a strong predictor of partial (overall) duration and is rated as a highly effective calming method by parents."

Breastfeeding works better!

- TOUCHING is vital to babies
- Soothes pain (mom, breastfeeding, milk)
- Accepts supine sleep next to BF mother
- Normal respiratory function esp. in STS
- crying if nursed to sleep
- colic with exclusive breastfeeding
- arousal protects against SIDS
Routine vs. last-resort strategy?

- “Advice for routine care of healthy babies must have as strong an evidence base as for babies who are ill, since healthy babies are far more common and the potential for unsuspected harm is relatively great – a lesson bitterly learned for infant sleeping position.”
  - Peter Fleming

Summary

- Swaddling was used for transportation, bone development, reduced arousal, suppression of crying, warmth, restriction of movement
- Swaddling has documented risks
- Swaddling is an independent risk factor for SIDS – Overheating, reduced arousal
- Swaddling deprives baby of skin / human contact

Thank You!