

INDIVIDUAL SUBMISSION

To: The Secretary, House Standing Committee on Health and Ageing

Re: Parliamentary Inquiry into Breastfeeding

From: Julieanne Hensby, Lactation Consultant, IBCLC

This submission will address Terms of Reference (a), (b), (c), (d), (e) & (f) with a focus on:

Human Rights
Gender Equity
Education
Values & Ethics
Economics

Kangaroo Mother Care
Behavioural Neuroscience
Brain Development
Human Milk-Banking
Home-Based Intervention



FEED A BABY IN HERE? OUT OF THE QUESTION!

(All cartoons reproduced from CD: *Neil Matterson's Breastfeeding Art*)

SUMMARY LETTER

Dear Representatives of the Australian People

This inquiry has the capacity to effect positive adjustments to our breastfeeding duration rates and thus greatly improve *'the health of the Australian population'*. We have the means and opportunity to lead the world by example. Question is, do we have the collective will?

Dr Edward de Bono (originator of 'lateral thinking') was once asked to describe his 'ideal' country. He replied:

It would have a population of less than 25 million, be somewhere in the Pacific Basin, have the English language and reasonably articulate, literate and clever people. With that going for it we could create the most astonishing country. But actually it already exists – it's called Australia - it has the ability and the will to look ahead and to design the future. This is exactly the special nature of Australia that I so admire and the basis for it becoming the leading country in the world; a country of fresh ideas and new ways of doing things. Australia should be looking to design economic and business solutions that are unique.

Any 'design' in terms of increasing breastfeeding duration rates will require a long-term commitment and a 'whole of society' approach. I am confident that we can engender a national 'show of strength' that will make obvious our resolve.

To our credit, Australia has built a large part of the scaffolding that now supports the overarching framework of the World Health Organisation's Global Strategy for Infant and Young Child Feeding. We are already moving in a positive direction, but progress has been slow. The strategy contains a blueprint for governments wishing to work towards full implementation.

I believe the most crucial determinant of change lies in the degree of our willingness to explore current societal belief systems. Such beliefs have, to a large extent, arisen from a false paradigm of irrational science. They abide through the anecdotal language of conjecture and the complacent 'sacred cows' of institutionalism. If left unchallenged, these 'popular' beliefs will persist in undermining any progressive shift towards the original paradigm and continue to permeate emerging generations.

Our propensity to subject ourselves to such scrutiny could be initially encouraged with mass-media campaigns to inform the general public – like we do for heart disease, diabetes and obesity. Broadening the societal knowledge base will allow opportunities for individual and organisational re-evaluation. Learning about human lactation, hence the 'value' of breastfeeding, needs to be integrated into all levels of mainstream curricula – a good place to start.

Relevant articles in the Convention on the Rights of the Child can only be fully realised when respected by everyone.

During my twenty-three years of assisting mothers and babies in both voluntary and professional capacities, I have observed many instances of the enduring and unresolved grief associated with mothers' perceptions of premature weaning. More often than not the loss of such a quintessential relationship has far-reaching effects, especially in terms of postnatal depression and subsequent 'quality' of mother/child interactions.

Ethical dilemmas often arise when attempting to apply 'best practice' principles in assisting mothers. The acquisition and utilisation of counselling skills peculiar to human lactation form the foundation of clinical competency. Non-judgmental acceptance of an individual's past and current circumstances requires a genuine desire to establish rapport and hence, an atmosphere of trust. Failure to invest the time to do this negates effectiveness and therefore, best outcomes.

Increases in economic status and the mobility of our population have led to geographic fragmentation of family networks.

Qualities that make countries rich also make having children tougher...after all, the baby bust hasn't been caused by war, famine, plague or depression; it's been accompanied by economic opportunity, lifestyle freedoms and self-development.

(Deirdre Macken, in her book: *Oh No, We Forgot to Have Children*)

I see these as major contributors to the decline in breastfeeding rates. New mothers often lack the support that is so vital during the first few weeks after giving birth. It is during this time that things can go very 'wrong' and ironically, also when those 'things' are most easily resolved, given adequate levels of short-lived but intensive home-based intervention.

In terms of sensitivity, the most difficult area to address is the innate sexuality and sensuality of breastfeeding.

Our unwillingness to acknowledge the innate sexuality of childbearing [and breastfeeding] has been a major factor in the continued denigration and humiliation of women when they give birth. (Andrea Robertson, Childbirth Educator, Sydney)

I have many more questions than answers. For example, why is exposure of female breasts, in general more culturally acceptable 'on the beach' than when breastfeeding in public? Is it a sign of sexual immaturity when non-specific references to breastfeeding are so often met with jokes and sniggering? How do we differentiate between the sexuality/sensuality in the act of a baby's suckling and a similar act between adults? How do we conceptualise our responses to such questions?

Among others, issues of gender are relative in such a discussion. Research shows that fathers have a major influence on their partner's decision about whether or not to initiate and/or continue breastfeeding. Fathers need adequate opportunities to make what is their unique contribution to parenting. Countries such as Norway, Finland and Sweden, where family-friendly workplace policies are robust, benefit from both high breastfeeding duration rates and low rates of expenditure on problem-issues such as crime and mental health. Perhaps it is academically naïve to infer a consequential relationship, but I'm prepared to take that risk.

Every citizen has the 'right to know' about how breastfeeding works and its role in the human reproductive cycle. After many years of contemplating how to most effectively 'fill' the current societal knowledge-gap, I have come to the conclusion that integration of 'human lactation' as a subject area into mainstream curricula is of the utmost importance. It may take a couple of generations, but such education, if made valid by institutional endorsement, would facilitate societal acceptance of breastfeeding as the 'norm' for infant-feeding.

Along with the 4000 or so other species on the planet, we do best when born into a habitat that provides our immediate needs. In simple terms, mothers are the habitat and breastfeeding a developmental niche thereof.

Unnecessary interventions that separate mothers from their newborns effectively 'deconstruct' the biologically pre-programmed processes that are primed for stimulation during a 'window of time' following birth. Adherence to protocols that separate the mother/baby dyad is akin to shooting ourselves in the proverbial before learning how to walk.

I say first things first. We are inextricably mammalian. Accepting this as a premiss for our reproductive 'nature' will increase the potential to achieve best outcomes for our 'nurturing'. Harmonious breastfeeding relationships are 'best practice' for optimal population health.

Yours sincerely
Julieanne Hensby
Lactation Consultant, IBCLC

February 2007

Women stand at the crossroads between production and reproduction, between economic activity and the care of human beings, between economic growth and human development. Women are workers in both spheres—the most responsible and therefore with the most at stake, those who suffer most when the two spheres meet at cross-purposes, and those most sensitive to the need for better integration between the two. (Gita Sen, Development Alternatives with Women for a New Era (DAWN))

SUGGESTIONS FOR ACTION

- Adoption of the new WHO Growth Standards for Infant and Young Child Feeding ASAP

Comment: Despite endorsement by the International Paediatric Association who will:

...offer educational sessions on the standards and their implementation at country and regional levels; lobby for their inclusion in paediatric, medical schools and other health care curricula and training modules; and promote advocacy for their adoption by government Ministries of Health...

there has been no official endorsement by the Paediatrics and Child Health Division of the Royal Australian College of Physicians. In the face of the evidence, one is left to wonder why.

- Full implementation of the International Code of Marketing of Breastmilk Substitutes

Comment: Voluntary adherence is not adequate to counteract multinational marketing. I suggest seeking EOIs from other like-minded countries with an aim to forming a 'legal' alliance. The primary purpose would be to create a first-class legal team and level up the playing field. Geoffrey Robertson QC comes to mind.

** See the WHO guidelines for governments wishing to fully implement the Code: www.who.int/child-adolescent-health/New_Publications/NUTRITION/ISBN_92_4_159120_X.pdf

- Mandatory implementation of Baby Friendly Health Initiative (hospitals and community health centres)
- Amend 'eligibility criteria' to include certified lactation consultants in the list of 'allied health' professionals under the Practice Nurse/Allied Health Worker Incentive - See IBCLC 'Scope of Practice' www.ilca.org/certification/Scope_of_Practice110906.pdf
- Replace 'maternity' and 'paternity' leave with paid 'parental' leave – 6 months in total and able to be used solely (when that individual is the mother/father/legal guardian) and/or shared by the primary caregiver/s and 'significant' others eg relatives/trusted friends

Comment: It takes 6-10 weeks to establish a milk supply - when 'supply' efficiently meets 'demand' (appetite/growth). To my knowledge the current maternity leave maximum is 12 weeks. This is the worst possible time in terms of 'maintaining' the milk supply because mothers are just beginning to 'find their feet' in this major new role. From my experience, there is usually a large component of guilt/sadness/stress/anxiety surrounding the transition of returning to paid work. By about 16 weeks the mother/baby dyad have 'learnt' to breastfeed together – the mother usually confident in her ability to meet her baby's appetite and babies very efficient in getting the required volume.

If we truly 'value' parenthood, we need to invest the 'time & space' it takes to establish such relationships ie get fair-dinkum about it.

- Tax incentives for businesses to implement 'breastfeeding-friendly' workplace policies (including other than work-based crèches) and government-funded mass-media recognition for those that have/do.

Comment: Family/baby friendly workplaces are win-win (bottom-line improvement etc). I see the difficulty lying in the behavioural change required to create a 'whole staff' attitude of acceptance. Again, this gets down to values/beliefs clarification.

- Breastmilk to be counted in GDP

EDUCATION

Comment: It is my firm belief that unless we give priority to educational initiatives, all others will remain compromised in their efficacy.

Any tertiary education needs to include counselling skills (incorporating 'values clarification'). The Australian Breastfeeding Association (ABA) has recently gained RTO accreditation for TAA40104 Cert IV in Training & Assessment and are awaiting accreditation for Community Education and Breastfeeding Counselling.

I am currently involved in an ABA working group revising the 'Information Kit for Senior Students'. We have decided to align it to meet the outcomes of the NSW HSC Syllabus – Module 12 (Food & Nutrition) – Exploring Early Childhood. Evidence would provide a robust rationale for it to be a Core Module. I believe it to be essential knowledge for Yrs 10-12.

I applaud recent funding for 'early intervention' strategies. Nevertheless, given current evidence re brain development, I believe we need to also focus on 'learning concepts' in the 0-3 age group.

Getting it right from the start offers the best potential for both cognitive and social competence.

- Ongoing funding and DET awareness campaign for the '**Core of Life**' program – what a brilliant idea!
 - The 'Roots of Empathy' program has been successful in at least one public primary school in NSW
 - Articulation incentives for Yrs 10, 11 & 12 to move into TAFE and university – this would be easier with national systems in both education and health re AQF, although 'Human Lactation' subjects are sadly lacking in both these.
 - University curricula for all relevant disciplines and more universities to offer 'direct-entry' Bachelor of Midwifery degrees
 - Professional development courses for all staff (including volunteers) of government and non-government organisations coming into contact with mothers and babies
- Establishment of donor human milk banks in every capital city to complement the ones in Perth, Melbourne & Brisbane)
 - Establishment of a National Advisory Committee to set standards and streamline networking.

INTRODUCTORY READING

HISTORICAL CONTEXTS – GLOBAL & LOCAL

Global

(A summary of the foreword by Professor Peter Hartman - University of Western Aust – in *Breastfeeding with Confidence* by Sue Cox, Midwife, Lactation Consultant, IBCLC):

In 1748 William Cadogan published *An Essay Upon the Management of Children from their Birth to Three Years of Age*. This essay was written to the Governors of the Foundling Hospital in London. Cadogan observed that:

The mother who only had a few rags to cover her baby 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 heir and hope of the rich family lies languishing under a load of finery that overpowers his limbs, abhorring and rejecting the dainties he is cramm'd with, 'till he dies a victim of the mistaken care and tenderness of his fond mother.

At this time the poor women not only breastfed their own babies but many also wet-nursed the babies of rich parents. Indeed it is estimated at this time in London that less than 5 percent of rich mothers breastfed their babies.

Similarly, in the world today, poorly nourished mothers in developing countries successfully breastfeed their babies and produce as much milk each day as mothers in developed countries. These mothers often breastfeed quite frequently. For example, the Kung hunter-gatherers of Botswana and Namibia breastfeed for a few minutes at a time, several times each hour during the day, and probably also frequently at night, as they sleep with their babies. Furthermore, the average length of breastfeeding among primitive people appears to be about three to three- -and-a-half years.

During the twentieth century the average standard of living in developed countries increased and by the middle of the century more affluent parents constituted a much larger proportion of the population. They followed their forebears by choosing not to breastfeed their babies, but as the availability of wet nurses decreased these mothers had to resort to the 'pocket wet nurse' – the baby feeding bottle and modified cow's milk (infant formula).

The decline in breastfeeding continued until 1972 in Australia, as in other like countries (UK, USA, etc), but since this time the proportion of mothers choosing to breastfeed their infants has increased considerably.

Whereas the newborn baby has the inherent skills required to suckle the breast, the new mother acquires the skills needed to correctly position and attach her baby from her previous experience of watching other mothers breastfeed.

Due to the small proportion of women choosing to breastfeed in the middle of the twentieth century and the social pressures against breastfeeding in public, we now have a generation of mothers who are highly motivated to breastfeed their babies but who have been deprived of the opportunity to acquire breastfeeding skills.

When I was pregnant, breastfeeding loomed like an exam for which I hadn't studied...I resisted the idea that a process at once natural and mysterious could be mastered as an abstract science. (Julie Szego, The Sunday Age, 3/4/05)

Local

The first shift back to restoring the original paradigm of infant-feeding practices began in 1964 when **Mary Paton, OAM**, founded the Nursing Mothers' Association of Australia (now known as the Australian Breastfeeding Association). At that time it was unacceptable to say the word "breast" in public, and the Postmaster General's Department would not allow the word "breastfeeding" to be printed in the telephone directory. Attitudes have changed dramatically since then, but misconceptions about the relationship between breastfeeding and reproduction still influence negatively upon our cultural response.

(The following is adapted from the book *Breastfeeding with Confidence* by Sue Cox, RM, IBCLC):

In our great, great grandmother's day women knew so much more than we do today about parenting and breastfeeding because they **saw it first-hand**. Children watched their mothers, or visited other new mothers and observed all the things she did with her baby: how she held, changed, bathed, dressed, wrapped and fed it. They listened to an experienced relative or visitor talking about baby care, and put it in their memory banks for use when they grew up and became mothers. Babies were the centre of the family and everyone helped by cuddling, carrying, rocking and singing to it.

Children's doctors of the day wrote that babies needed to breastfed **twelve times each day for the first three months** and aside from that gave little advice as they recognised that mothers knew more about infant feeding than they did.

Then, at the beginning of the twentieth century, there was a move to hospital delivery of babies and with this came rules controlling breastfeeding:

Reduced and routine feeding times

One eminent child nutrition expert, who was also a dairy farmer, suggested that, as cows had a lower fat concentration in their milk when they were milked too often, a mother feeding her baby too often would lower the amount of fat in her breastmilk. He also believed that it was important for mothers to rest to build up their milk supply. So by the 1920s mothers in hospitals were taught to feed their babies every four hours and have an eight-hour gap at night. In the span of twenty or thirty years, babies in Western countries went from having twelve to only five breastfeeds a day.

Human mothers do not make milk like cows and human babies need to feed more often than calves, so breastfeeding became very difficult. When the milk 'came in', breasts were left overfull and painful for long periods, particularly during the night. When the baby finally came to feed it was very difficult for him to take enough of his mother's firm breast into his mouth. His tongue squashed her nipple against the roof of his mouth, causing her great pain, and he suckled very little milk from her breast.

It was therefore decided that during the antenatal period, nipples needed 'toughening up' to cope with the baby's suck. Mothers-to-be were taught to rub their nipples with rough towels or a nailbrush each day and to rub methylated spirits into their nipples.

Many followed these suggestions because they knew of women who had had painful bleeding nipples and they did not want that to happen to them. However, the effect of this was that new mothers had very dry and damaged nipples at the beginning of the breastfeeding relationship and they became more painful as the days went by.

Unfortunately, because the treatment made nipples so dry, bleeding nipples became more, not less, common. So it was decided that nipples needed time to get used to sucking, and a routine of timed feeding was introduced whereby babies were only allowed two minutes on their birth day, three on the second day, five minutes on each breast on the third, seven on each on the fourth and ten on each from the fifth day onwards.

Separation of mother and baby

As well as all the routines for nipple preparation and feeding times, babies and their mothers were not cared for together. The baby cried in the nursery and his mother often cried in her hospital bed. At about fifteen minutes before 6am, 10am, 2pm, 6pm and 10pm the nursery doors were opened and the mother heard the cries that heralded the approach of her hungry baby. The baby may have been crying for one or two hours waiting for his feed, and when he finally nestled in his mother's arms he fell asleep exhausted, after feeding for only a short time. Even if he attached to the breast and fed, his mother then had to offer a complementary bottle of formula after each breastfeed during the first few days.

When babies were not with their mothers during this early period there was no stimulus for the milk ejection or 'let down' and as a result the flow to the baby took quite a while to happen. Milk ejection occurs as the mother's body becomes used to the habitual things that happen at feed times – baby stirs, mother picks up baby, mother sits or lies down to feed and the milk flows. Milk ejection can be slowed by embarrassment, fear or pain, so when babies were kept in the nursery a number of problems occurred:

Firstly, baby arrived frantic for a feed and his mother had very little skill or knowledge of how to attach him to the breast. She had to wait her turn for the midwife or nurse to come and do it for her and while she waited her baby cried unhappily.

Secondly, if she was shy about her breasts this was not a positive experience, as she had to allow the midwife to take hold of her breast. The midwife held the baby's head in one hand and the mother's breast in the other and quickly brought the two together. As the midwife held the baby at the back of his head, his nose was pushed into his mother's breast so he fought to push his head back to get a breath. The baby's refusal to feed undermined the new mother's confidence in her ability to breastfeed. The associated fear of this attachment hindered the milk ejection and the milk did not flow.

Thirdly, the baby sucked in a very fast pattern trying to get the milk to flow and this was often painful, slowing the milk flow even further.



Rooming-in

As mentioned above, the milk ejection gets used to patterns of baby care. Just noticing your baby is waking, hearing him as he wakes for a feed, or even talking on the phone about him is enough to start your milk flowing.

With some insistence from parents, forward-thinking midwives decided to encourage babies to 'room in' next to the mother's bed (in some hospitals it was called 'rooming out' ie rooming out of the nursery!). Mothers quickly became relaxed as they got to know their baby's needs; their milk ejection reflex worked quickly and their milk flowed as soon as the baby required it.

The dreaded test-weigh days

At the time when post-delivery hospital stays were a week or more, test-weighing was practised on the fourth and seventh days after birth. Test-weighing was done by weighing the baby before and after feeds to see how much the baby had drunk. A table was displayed on a chart next to the scales, giving the expected amount of milk a baby of a particular weight required, based on the amount worked out for formula-fed babies of that age and weight. The mother was led to believe that this was a scientific test of her milk-making ability. If her baby was weighed and it was found that he had not drunk 'what the chart said' he needed, he was taken back to his mother and she had to try to make him drink more.

No thought was given to averaging the amount over the day. Even if the baby had had a really big drink at 6am and less than the required amount at 10am, he had to try again to drink the 'right amount' at each feed. Also, no thought was given to the accuracy of the scales, nor to the calorie or fat content of the milk, which changes from feed to feed. If the baby had not drunk the amount specified on the chart, he was perceived by staff, and consequently by the mother, to have an insufficient supply of milk.

What happened when mother and baby went home

Having survived the traumas of 'learning to breastfeed' the mother in our grandma's day was shown how to make up a bottle of formula before she left hospital just in case she needed to supplement her own milk. The effect on her confidence was very negative - if the hospital did not know whether she had enough milk, how was she going to know? The baby did not realise that he was no longer in the nursery and his mother now found out how much more he had cried in need of her. She thought he had slept for three hours after he returned to the nursery but now at home he continued to cry long and often. None of his crying seemed to be associated with the 6am, 10am, 2pm, 6pm or 10pm feeds. Also her breasts were quite soft most of the time, so she thought he must be crying because she was not making enough milk, and perhaps it was just as well that they had taught her how to make up a bottle of cow's milk for him. Her lack of confidence in her ability to make enough milk to satisfy her baby persuaded her to bottle-feed him.

Fitting the required pattern of feeding, sleeping and playing

When Grandma looked in her child health booklet there was a page that showed how babies should fill in their day...As you can imagine, this would have made a new mother feel that to have a nice smiley-faced baby she needed to help her child fit this pattern of eating five times a day.

Other interactions were only at bath-time, sunbath time and playtime for an hour and a half each day; the rest of the day was for sleep. Were the breastfed babies reading the booklet? Obviously not, because they did not conform to the author's ideas! Hundreds of thousands of mothers gave up breastfeeding so that their babies would become 'happy child health booklet babies'.

When the babies moved onto cow's milk mixtures, this type of milk needed to stay in their stomach longer for the hard cow's milk protein to be digested. The casomorphins in the milk made them sleepier so they started to fit the booklet pattern.

Human milk for human babies

Each species of mammal makes milk particular to the needs of its offspring and feeds its babies at different intervals, depending on their unique needs.

The grey seal wants her pup to gain 1.6kg/day and to develop a thick layer of blubber to keep it *warm*. During the three weeks of lactation she eats nothing and loses 65kg as she breaks down her fat to make milk. She feeds her pup with her fat-rich (>50%) milk four or five times a day.

The rabbit mother wants her babies to double their birth weight in a week and develop *muscle bulk* to make sure they are able to *flee from danger when necessary*. She feeds them a high-protein (20%) milk once a day.

The cow wants her calf to double its birth weight in six weeks and produces a milk with 3.5% protein to assist with quick *muscle growth*. She feeds her calf every four to six hours and also likes to be able to leave it hidden in the tall grass. Her milk has casomorphins to drug her calf to sleep while she wanders off to *graze and synthesise the next feed*.

Nutritional aspects of human milk

Mammals produce milk to feed their young. However, as each species produces milk uniquely adapted to its own offspring, there are significant differences in the nutrient content of milks from different species. Human milk represents one extreme, with a low protein and mineral content and a high lactose content. Human infants are born relatively immature and have a slower growth rate than other species. Figure A2.1 illustrates the relationship between the rate of growth of offspring and the protein content of the milk of various species.

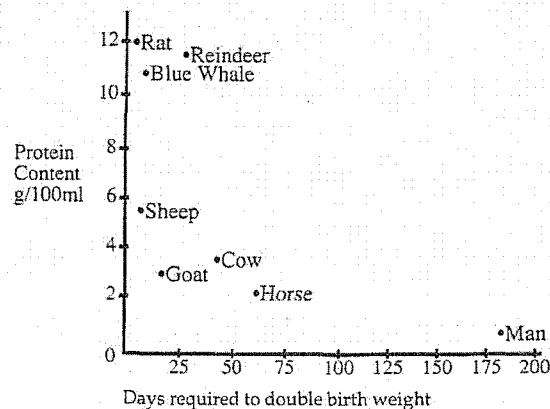


Figure A2.1 Protein content of milk v growth rate of offspring (adapted from Hambraeus, 1977²⁹ and Jenness & Stone, 1974⁴²).

The human mother wants her baby to gain about 25g each day and to double his birth weight in three months. She does not need to produce high protein milk for muscle growth like the rabbit, as her baby will not start crawling until about six months of age. She makes milk that will assist in **optimal growth of the brain and spinal cord** and so feeds her baby a low-protein (0.8%) milk eight to twelve times a day during the early weeks. Human milk is broken down in the baby's stomach very quickly, so the baby needs to feed frequently.

Age	Stomach Capacity	Comparable Objects
1 day	5-7 ml	Large teaspoon, hazelnut, thimble, glass marble
3 days	22-27 ml	Level tablespoon, baby's fist
10 days	45-60 ml	Walnut, golf ball
Adult	900 ml	Softball, grapefruit, adult's fist

© 2006 **Julieanne Hensby, IBCLC** (Adapted for Aussie mums from *Coach's Notebook: Games and Strategies for Lactation Education*, Linda J Smith, IBCLC, 2002, Jones and Bartlett Pub, p139)

Human mothers do not need to produce lots of fat to keep their babies warm like the grey seal, as they cuddle and clothe them instead. Although fat is obviously a source of calories in human milk, the important fat components are the essential fatty acids. These are vital for brain growth and also affect the fatty sheath that covers the spinal cord. They are converted to longer-chain polyunsaturated fatty acids, which are needed for the development of the brain and nervous system and for sharpness and acuteness of sight.

Almost half the calories in human milk are provided by carbohydrates; specifically lactose. Human beings, with the most complex brain of all the mammals, also have the highest amount of lactose of all animal milks. Lactose is broken down in the body to glucose for energy and galactose, which is essential for the production of galactolipids, including cerebroside, used by the body for brain and central nervous system development. As well as being essential for brain growth, lactose helps the infant to absorb iron and calcium and promotes the growth of lactobacillus.

The lactobacillus combines with another factor in human milk, the bifidus factor, to produce high levels of *lactobacillus bifidus*, which leads to high levels of lactic acid in the baby's intestine to stop the growth of harmful bacteria.

Brief history of origin of modern neonatal care

Bergman N. J. MB ChB, MPH, MD

(Extract from CD - Capers Breastfeeding Seminar, Newcastle NSW, 2006)

The widespread use of incubator care and mother-infant separation is almost an historical accident. *Semelweis* identified the cause of high maternal deaths as infections, spread by doctors. By the end of the 19th century infection was recognised as a cause of mortality of premature newborns. *Tarnier* and *Budin* in France developed and implemented the “child hatchery” to protect from infection, and gave it glass walls so that mother could see and be part of the care team. A German called *Couney* exploited this knowledge and successfully raised small infants donated to him by hospitals in exhibitions, circuses and fairs, and in so doing excluded mothers. He took the concept to America, using his daughter and her friends to raise the babies.



Dr Couney's display of premature baby incubators at the 1933 Chicago World's Fair





When American hospitals eventually accepted his practice and techniques, they also accepted the exclusion of the mother, regarding her as being the source of infections for the neonates. With mothers excluded, provision of formula became a convenient and almost essential way of providing feeds. As a result, technology could now take over, so both “habitat and niche” have become synthetic and artificial.

This societal shift was accomplished by the end of 1950. Only in the beginning of 1960 did randomised controlled trials test new methods of care. Incubator care and formula feeds (institutionalised before 1950), were never subjected to such trials.

OXYTOCIN – THE ‘HORMONE OF LOVE’

By *Andrea Robertson*, Consultant in Childbirth Education from Sydney, Australia.

Oxytocin is the central hormone in all aspects of reproductive behaviour. In each area of reproduction (sexual intercourse, labour and birth, lactation) it works in the same way and is affected by the same inhibiting factors.

All of the actions of oxytocin are inter-related, and occur across all aspects of reproduction. Therefore those factors that inhibit oxytocin release in one area of reproductive behaviour will have the same effects in other areas. For example, as Michel Odent states *"the right place to give birth would be the right place to make love"* (Odent, 1982). This interconnection is often overlooked, especially by those who find the notion of birth and breastfeeding as being sexual events as distasteful or even shocking.

By refusing to accept the central role of oxytocin, we have excused ourselves from finding ways of ensuring its successful release and unimpeded flow, and in the process, inflicted long and unnecessarily painful labours on women.

The resultant "failures" during labour have been attributed to inherent weaknesses in women, when they should have been recognised as a lack of understanding of the action of the basic labour hormones and an unwillingness to provide the necessary conditions for their unimpeded release.

A brief summary of some of the actions of oxytocin are listed below:

Oxytocin in the sexual cycle:

- causes uterine contractions
- **initiates care-taking behaviours in men and women**
- causes an in-sucking action of the cervix --- aids sperm transport
- enhances sperm production and early ovulation
- **following orgasm, reduces anxiety and depression**
- increases skin temperature

During pregnancy and birth:

- frequent uterine contractions help to maintain pregnancy and stimulate placental blood flow
- pressure of the baby on the cervix in labour stimulates contractions
- distension of the pelvic floor muscles and opening out of the vagina maintain contractions, and the pushing urge in second stage
- stretching of the perineum causes a surge of oxytocin just after the birth assists in maintaining uterine tone

Following birth:

- **stimulation of the nipple or other oxytocin sensitive sites causes milk ejection**
- release of oxytocin reduces risk of haemorrhage
- assists the uterus to return to its pre-pregnant size
- **increases maternal nurturing behaviours**
- **increased temperature of the breast during breastfeeding is comforting and protective for the baby**

Oxytocin release is triggered in labour by a number of factors:

- distension of the vagina
- clitoral stimulation
- pressure on the cervix
- distension of the pelvic floor muscles
- stretching of the perineum during crowning
- **nipple stimulation**

Oxytocin release is inhibited by both direct influences:

- fear and anxiety
- anaesthetic injections, which numb oxytocin-sensitive areas
- flooding of receptor sites by exogenous doses of oxytocin which reduces sensitivity to endogenous oxytocin
- episiotomy --- reduces stretching of the perineum
- **separation of mother and baby, with resultant loss of skin contact**

and indirect influences:

- beliefs and attitudes, which may lead to embarrassment
- memories e.g. of past sexual abuse --- leading to fear and anxiety

When oxytocin release is inhibited, it results in:

- failure to achieve orgasm.
- **diminished nurturing feelings and reduced/absent care-taking behaviours**
- slowing of labour
- prolonged second stage
- increased likelihood of post-partum haemorrhage
- **problems with breastfeeding**



Developmental consequences of oxytocin

Journal of Physiological Behaviour, 2003 Aug; 79(3): 383-97

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Abstract: This paper examines the developmental effects of the mammalian neuropeptide, oxytocin.

In adults, oxytocin is the most abundant neuropeptide in the hypothalamus and serves integrative functions, coordinating behavioural and physiological processes. For example, oxytocin has been implicated in parturition, lactation, maternal behaviour and pair bond formation.

In addition, oxytocin is capable of moderating behavioural responses to various stressors as well as the reactivity of the hypothalamic-pituitary-adrenal (HPA) axis. Neonates may be exposed to hormones of maternal origin, possibly including peptides administered to the mother in the perinatal period to hasten or delay birth and in milk; however, whether peptide hormones from the mother influence the developing infant remains to be determined.

Experiments in neonatal prairie voles have documented the capacity of oxytocin and oxytocin receptor antagonists to have immediate and lifelong consequences for social behaviours, including adult pair bonding and parental behaviours, as well as the reactivity of the HPA axis; most of these effects are sexually dimorphic. Possible mechanisms for such effects, including long-lasting changes in oxytocin and vasopressin, are summarized.



The Chemistry of Love: Could the first opportunity to fall in love influence our ability to love for a lifetime?

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There are many different types of love: sexual, romantic, platonic, filial, maternal, paternal, spiritual, love of self, love of country, love of possessions to name a few. Love for our mother, our first love, could be the pivotal love around which we build our ability to love in every other way. This paper will look at the chemistry that is involved in the baby's first opportunity to love at that crucial time surrounding birth and the consequences of denying that opportunity. Love is as important to the individual as it is to their society and our world.

At the time of birth, and for about an hour following birthing, the mother and her newborn baby are swamped in a cocktail of hormones. This time is a crucial time for the mother and baby to bond, to become attached ... to fall in love. A baby born after a normal, unmedicated birth and immediately dried and placed in his mother's arms on her bare chest gives an initial cry but quickly becomes quiet and alert, seeking visual contact with her. He rests for awhile, looking at his mother intermittently. This is followed by lip-smacking, and mouthing of the fingers begins, with an outpouring of saliva onto the baby's chin. Then the baby begins to inch forward with his legs to push strongly into the mother's lower abdomen. His hands reach from his mouth out to her chest and breasts, moistening her nipples with his wet fingers. When he reaches the tip of the sternum, he bounces his head into her chest. While moving up, he often turns his head from side to side. As he comes close to the nipple, he opens his mouth widely and, after several attempts, makes a perfect placement on the areola of the nipple and begins suckling. The baby's heart rate and respiratory rate are rapidly stabilised, oxygen saturation remains normal and thermoregulation is rapidly achieved. There are no signs of stress.

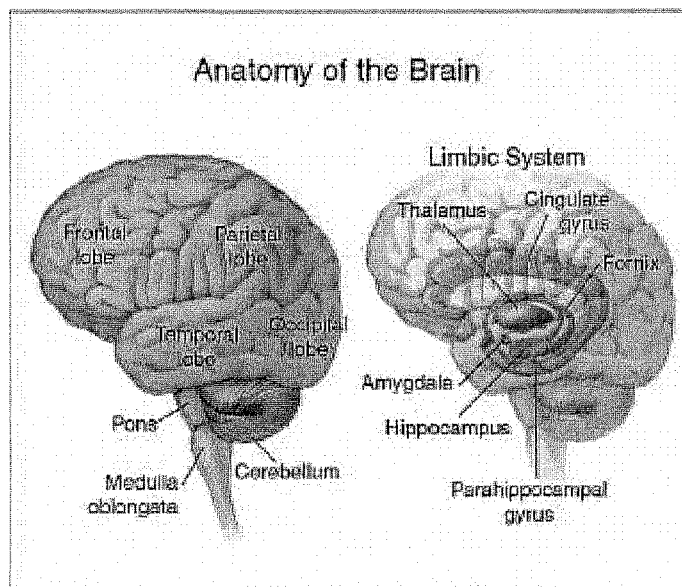
This species-specific set of innate behaviours is governed by and responsible for the release of the neurotransmitters that will influence the baby's and mother's relationship for a lifetime.

The hormones (neurotransmitters) involved:

Interesting studies have been conducted on voles. The prairie vole, or prairie dog, is one of only a few mammals that are monogamous – they mate for life with one partner. Both parents nurture their young and the adult pair spend most of their time together. The montane vole, a close cousin of the prairie vole, on the other hand, is very promiscuous; its life being filled with one-night-stands and is uncommitted to either a partner or their own offspring. Very little genetically separates these two animals...only the presence of receptor sites for oxytocin in the area of the brain responsible for reward and pleasure, the limbic system, being one that the prairie vole has but the montane vole does not.



All of the neurotransmitters, the chemical messengers, that are involved in love and loving, care and being cared for and our emotional state arise from the Limbic System. This is an 'old' part of the brain, sometimes referred to as the 'mammalian' brain. Responses that arise from this part of our brain are not under the control of our 'thinking' brain, or the neocortex.



Oxytocin is produced in the hypothalamus, a part of the Limbic System, and sequestered in the posterior pituitary gland to be released in a pulsatile manner when stimulated. This stimulation could occur from sharing a meal with friends; in response to a hug from a friend; while making love; during birthing and immediately after birth; and it is an integral part of breastfeeding. Oxytocin is described as the 'hormone of love' because it is consistently involved in all forms of love.

All of these releases of oxytocin occur during a form of love. The hormones present at the same time as the oxytocin release determine how this love is directed. For example, during a shared meal with friends, oxytocin causes sociability; during romantic love oxytocin in the presence of high levels of dopamine and low levels of serotonin stimulates a desire for caring love-making.

When high levels of testosterone are present it causes sexual lust. In the presence of prolactin, the love is directed at nurturing and “mothering”, and sexual desire is suppressed. Oxytocin also causes a reduction in stress and later stress-related diseases. For oxytocin to have an effect on behaviour it must be available to the brain and for the brain to have receptors for it. Oxytocin cannot pass from the peripheral blood stream back into the brain – ie, artificially administered oxytocin cannot enter the brain and cause behavioural effects.

Around the time of birth oestrogen, progesterone, and prolactin blood levels are reaching all time highs in the mother, and circulating into the fetus. Beta-endorphin has also been steadily rising throughout pregnancy peaking at high levels during labor in response to the pain felt, and is also generated by the fetus. Oxytocin is released in a pulsatile manner periodically throughout the pregnancy by both mother and fetus, while labor is characterised by strong pulses of oxytocin that cause uterine contractions. After birthing Matthiesen et al (2001) reported a significant rise in maternal oxytocin in response to the massaging movements as well as the suckling of the newborn baby.

During the last contractions before the baby is birthed, adrenalin blood levels peak. Each of these hormones has its own characteristic effects, and in combination they are dynamite! Beta-endorphin is a naturally occurring opiate that, like other opiates, acts as an analgesic, inducing feelings of pleasure, euphoria, and dependency or, with a partner, mutual dependency. Beta-endorphin is found in high concentration in pregnancy and increases throughout labor when levels of beta-endorphin reach those found in male endurance athletes during maximal exercise on a treadmill. It influences the beginning of attachment between mother and baby. Beta-endorphin is also found in colostrum –the neonate receiving it from his mother transplacentally prior to birth and more as soon as he starts to suckle, as well as his own endogenous production.

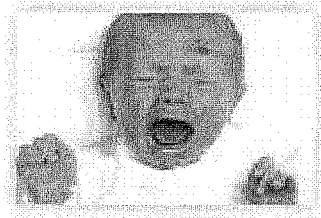
Prolactin is the ‘mothering’ hormone, regulating maternal behaviour and suppressing sexual desire. Oxytocin and prolactin together in high concentrations after the birth of the baby cause the mother’s love to be directed toward her baby. The innate behaviours exhibited by the baby when placed on his mother’s chest combine to increase oxytocin and prolactin levels in his mother – you could think the baby is preprogrammed to make his mother love him.

Adrenalin is the stress hormone – not usually associated with oxytocin! However, in normal birthing it only appears during the last couple of contractions prior to birth. The action can be seen in the mother as she gains energy, focus, strength, and alertness and may complain of thirst. The baby also gets a burst of adrenalin – being born alert, wide-open eyes and dilated pupils. The mother is fascinated by the newborn’s eyes – returning the gaze like star-struck lovers. The scene is set for a dependent baby who wants and needs love and protection, born to a mother who is primed to love strongly and protectively. How could this go wrong?

Easy – introduce both to the technological world of birthing. A mother who doesn’t understand or trust her body puts her fate and that of her baby into the hands of a paternalistic system where birthing interventions are the norm. The chemical cocktail gets shaken, not stirred!

Fear early in labor causes the labouring woman to release stress hormones, which inhibit oxytocin release and therefore contractions. So begins the cascade of interventions that start with an exogenous source of oxytocin that is unable to reach the brain to cause desirable behavioural responses, but increases labor pain levels to such an extent that analgesia or anaesthesia will be necessary. This in turn increases the incidence of birth complications, inhibits the release of beta-endorphin, and makes both mother and baby drowsy and less-responsive to each other. Baby is quickly separated from his mother for resuscitation.

A baby separated from his mother is stressed! Stress and love are mutually exclusive!



Picture the newborns contorted facial expression, the exaggerated body movements, the crying, and know that there are undesirable changes in heart rate, respiratory rate, blood pressure, oxygen saturation, vagal tone and plasma cortisol. These are the signs and symptoms of stress. Raine, et al (1997) studied criminals at 18 years of age, and the same cohort at 34 years of age. In both studies these researchers were able to predict which ones committed a violent crime (ie rape, murder, robbery, domestic violence and assault) by studying their birth records.

The violent offenders were the ones who experienced a complication during their birth (eg. forceps delivery, breech delivery, cord prolapse, pre-eclampsia, or long birth duration) and experienced maternal rejection. Odent (1999) describes this as the ultimate form of an inability to love – no love for self or others or society.

There are other studies, particularly in the psychological literature, describing the effects of birth trauma and a failure to love or be loved at birth and long-term psychological and psychiatric defect. The number of children reported to authorities in Australia as suffering some form of abuse in 2003/4 totalled 146,562. The age group most affected were babies less than 12 months old.

With increasing medicalisation of birthing and thoughtless separation of mother and baby the picture is not pretty, but we can do something very basic, very quickly, with minimal cost ... and it starts with empowering women to trust and care for their bodies and trust in normal childbirth. After a natural birth it is a natural response to put the newly born baby into his mother's arms to be held against her bare chest, but essential that we do this after a birth where there was any intervention. When birthing has been disturbed, the mother and her health carers must work extra hard over the next few hours and days to recreate an environment that will cause oxytocin and prolactin and beta endorphin to flow naturally in both mother and baby, giving them every chance to fall in love with a love that will last the baby a lifetime.

