The Science behind Skin-to-Skin Contact: The original paradigm

Dr Nils Bergman
"M.D., D.C.H., M.P.H., Ph.D."
Cape Town, South Africa

www.kangaroomothercare.com

Overview

History of incubator
Origins of an alternative Manama experience
Randomised trial

Practical application
Scientific approach

Speaker Disclosure

Under ACCME guidelines:

a) I have a financial affiliation with AMEDA: Speakers Bureau

b) My wife markets educational materials and shirts related to the talk content Kangaroo Mother Care Promotions

The psychology of human parent-infant relationships
Parenting is regulated by key hormones and neurotransmitters
Neuroanatomical circuits of parenting
Integrative physiology of normal parenting behaviours
Brain imaging of human parent-infant relationships
The neurobiology of empathy and parenting

Conclusions and critical summary

(Swain et al. 2007)
autonomic responsivity

longing for reciprocity
separation distress
reciprocal patters of interaction

Breastfeeding (PSNS)
Growth

Breast Vagal Mother Feeding (PSNS)

Other
Protest Stress Survival or Despair (SNS)

Separation

SKIN-TO-SKIN CONTACT

THE PLACE MODEL

HYPERAROUSAL – (Schore 2001)

(neurologically) compelled to approach

distress

crying ... then

maintains proximity and elicits care

FETAL CIRCULATION
(from J Lind et al.)

Oxygen rich blood from placenta,
First through liver,
to inf vena cava,
Divides in heart, through FORAMEN OVALE
Right flow to brain
Left flow to body, AND back to placenta

NEONATAL CIRCULATION
(from J Lind et al.)

Expansion of lungs
(takes one third second,)

Pushes volume of fluid to
left ventricle, pressure
Closes foramen ovale

Left ventricle pushes blood

to brain and body

Blood returns via both vena cava,
Right heart pumps to LUNGS,
Oxygenated blood to left heart
Left atrial pressure keeps
foramen ovale closed.
There is a small amount of contrast shunted to LA. Note also that contrast refluxes easily up into the superior vena cava.

**Crying Circulation**

Crying increases right atrial pressure. The foramen ovale opens, venous blood mixes with oxygenated blood. Cyanosis results. Also: increased pressure in carotid arteries, increased pressure in superior vena cava. Choroid plexus unsupported intraventricular haemorrhage.

Crying, the highest behavioural state, is detrimental.

It impairs lung functioning, jeopardizes the closure of the foramen ovale, increases intracranial pressure, and initiates a cascade of stress reactions.

“Crying … depletes energy reserves and oxygen, increases intracranial pressure, increases white blood count and increases base excess, re-establishes fetal circulation, interferes with the infant’s ability to interact with caregivers.”

Gene Cranston Anderson (1984)

Crying is bad for baby!!

“Crying, the highest behavioural state, is detrimental.”

Separated infants cry much more

<table>
<thead>
<tr>
<th></th>
<th>SSC babies</th>
<th>Cot babies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of cries</td>
<td>4</td>
<td>41</td>
</tr>
<tr>
<td>Seconds cried</td>
<td>70</td>
<td>2839</td>
</tr>
</tbody>
</table>

(Christenson 1992)
Crying is bad for baby!!

“These effects place fullterm and preterm infants at greater risk for respiratory distress, pneumothorax, acute or subclinical intra-ventricular haemorrhage, unnecessary treatment for pseudosepsis, delayed circulatory and psychosocial adaptation to extrauterine life.”

Gene Cranston Anderson (1984)

Children Need Touching and Attention, Harvard Researchers Say

April 09, 1998

America’s “let them cry” attitude toward children may lead to more fears and tears among adults, according to two Harvard researchers.

Instead of letting infants cry, American parents should keep their babies close, console them when they cry, and bring them to bed with them, where they’ll feel safe, according to Michael Commons and Patrice Miller


Babies Should Never Cry

Frontal alpha EEG asymmetry = a measure of temperament (i.e. trait emotion).

an index of potential risk for emotion-related psychopathology.

A sizable literature (+/- 100 studies) embeds the measure in a network of psychological and behavioural constructs, thus bestowing frontal EEG asymmetry with sizable construct validity as a measure of an underlying approach-related or withrawl-related motivational style, or as an index of potential risk for emotion-related psychopathology.

Behavioural activation system

reward-based
(dopamine)

prefrontal cortex
approach / avoid

AMYGDALA:
fear and emotion

right brain

regulated and organised

efficiently

Amodio 2008
Frontal alpha EEG asymmetry

Greater Left-sided EEG asymmetry
→ greater positive affect and
→ greater psychological and
→ greater physiological resilience.

Greater Right-sided EEG asymmetry
→ greater negative affect and
→ poorer psychological and
→ poorer physiological resilience.

Now we know → Maternal depression causes attachment and developmental problems in baby ... just as above ... what about EEG asymmetry ???

Aaron Jones et al. (2004) conducted a study of four groups of mother - infant dyads: EEG done on baby at 1 month of age.

The first group was Depressed-Bottlefed. EEG asymmetry correlates as expected ...

Aaron Jones et al. (2004) The four groups were of mother - infant dyads:

Depressed-Bottlefed
Non-Depressed-Bottlefed
Depressed-Breastfed
Non-Depressed-Breastfed

Breastfeeding is PROTECTIVE.
**Schore / Bergman**

"developmental psychoneurobiological model"

Poor adult mental health → from
Poor infant mental health → from
Poor right brain regulation → from
POOR ATTACHMENT → from
lack of skin-to-skin contact → from
SEPARATION

**Stephane TARNIER 1828 -97**

French obstetrician

**WHY DO WE SEPARATE BABIES FROM MOTHERS ???**

Saw a warmed box for hatching chickens, had one designed for "weaklings" ...
... invented incubator

**Pierre BUDIN 1846 - 1907**

Friend of Tarniers ... took incubators, made centres for the care of weaklings, wrote book on subject.
Political support ...
France versus Germany

**Martin COUNEY 1860 - 1950**

German born, learnt of incubator from Budin, took "hatchery" to Exhibitions, famous for "preemie road show".

Berlin 1896, Buffalo → Omaha 1902-4, Chicago Fair 1932 2nd highest receipts, Last show New York 1940.

**Martin COUNEY 1860 - 1950**

Couney sucessfully raised 5000 prems!

BUT used wet-nurses, excluded mothers
(mother got free pass to the shows !)

Mothers were excluded - "germs" ...

**Martin COUNEY 1860 - 1950**

Couney sucessfully raised 5000 prems!

BUT used wet-nurses, excluded mothers
(mother got free pass to the shows !)

Mothers were excluded - "germs" ...

Equal parts P.T. Barnum-style circus sideshows and World's Fair wonders, Dreamland delivered novel and fantastic diversions of the odd and unusual. It was the home to scientific, ethnological and cultural exhibits, including Dr. Couney's Baby Incubator pavilion, which had been shown at the 1901 Buffalo Exhibition and the St. Louis Pike (seen here).
Catering to the public's endless fascination with oddities and freaks, Dreamland had, as one of its main attractions, "Lilliputia."

BUDIN was very particular to include mother, reason for the glass window ....
Sarah Morris Hospital, Chicago 1923, others followed – all with a “policy of strict separation”.

With the advent of artificial infant formula, mother not needed at all!! Habitat AND niche now synthetic!!

**HOW MUCH SCIENCE?? RESEARCH??**

**WHY**
do we separate mothers from babies??

**INCUBATOR & SEPARATION** = ACCIDENT of HISTORY

**Martin COUNEY** 1860 - 1950

... famous for “preemie road show”.

MONEY MAKING SHOW

PERMANENT pavilion in Dreamland

**Gunnar Sedin**

"Air, warmth and water"

Early neonatology focused on warmth and cardio-respiratory outcomes

"If CVS and oxygenation okay = brain okay"

High BP  $\rightarrow$ IVH
Low BP  $\rightarrow$ PVL

**Gunnar Sedin**

Focus on ELBW “increasing survival” decreasing sequelae

Current record 22 wk 6A
Current record 244 g
Gunnar Sedin

Focus on ELBW  "increasing survival"  decreasing sequelae
Current record 22 wk GA  
Current record 244 g  
Rumaisa went home 9th February 2005  
Sequelaes are in fact huge

Comment

Though our survival is amazing ...  our sequelae are objectively speaking HORRIFIC.

our measures / parameters for sequelae have  
high specificity and  
low sensitivity ....

23w  40% SURVIVAL ... BUT
BUT - smaller brains (steroid effects)  
IQ losses = 1 SD  
white tract loss,  
hippocampal loss  
....  etc

“The fetal brain has remarkable capacity to regenerate and repair”

Comment

"The fetal brain has remarkable capacity to regenerate and repair"

ILLUSION?
"woe to you that give comfort where there is no comfort"

Recent research suggests the opposite.  
The brain has a degree of adaptability, and is able to compensate and cope with insult.  
The brain does not significantly regenerate.

Is there an alternative for premature infants ??

Comment

KANGAROO MOTHER CARE

-Skin-to-skin  CALOR  warmth
-Breastfeeding  LECHE  milk
-Protection  AMOR  love

KMC started by Drs Rey and Martinez,  
(1979) Bogota, Colombia.  
UNICEF report 1983  
“remarkable claims”
Rey and Martinez
Started in 1979
UNICEF report 1993
“remarkable claims”
Survival 1001-1500g before : 27%
after 89%
Hammersmith in London 91%
“intriguing and incredible”

Andrew Whitelaw & Katherine Sleath
11000 births annually, overcrowded
cross-infections ⇒ poor survival
“kangaroo babies”:
At birth: incubator, conventional care,
“... do not see this as an alternative to
conventional care ... babies need to
survive hazards of first few days in
order to enter programme” ⇒ 1/3 do!

Andrew Whitelaw (Lancet 1985)
“The myth
of the marsupial mother”
Survival 89% ....
“but figures misleading because omitted
babies who died in first few days”
Valuable in developing countries
Colombia has nothing to teach developed
countries about survival ....

Anderson and Wahlberg
also visited in 1985
First English reports
Wahlberg spread news
to Europe, where Swedish
group continues to research
including Christensson

Anderson Syfrett Ludington Swinth
Early dissemination and
research in the USA ongoing

First International meeting
convened in Trieste, Italy,
1996, by Cattaneo & team
Meeting reported
on multicenter study, which
included Worku, Ethiopia.
International Network
of KMC (INK) established.
Kangaroo Mother Care

was there defined

Kangaroo Position     Skin-to-skin contact
Kangaroo Nutrition    Breastfeeding (excl)
Kangaroo Discharge     Home followup
Kangaroo Support       Adjunct to technology

Origin of BIRTH K M C

Drs Rey & Martinez
1979 Bogota, Colombia
LATE K M C

1985 Andrew Whitelaw
1987 Agneta Jurisoo
BIRTH K M C

DEFINITION of KMC (1990)
MANAMA, ZIMBABWE

# Skin-to-skin contact from birth, continuous

# Breastmilk from birth & exclusive breastfeeding

# Psychological support to mother

KMC as above used regardless of weight and gestation. KMC provides the baby with very intensive care.

KC (in the USA) - In-hospital skin-to-skin contact, any duration, primarily adjunct to CMC (Conventional Method of Care).

Results - Manama

(Born 1000g to 1500g)

Survival before KMC 10%
Survival with KMC 50%
(Stabilized in 6 hours)

Weight gain per day 30 g/d
Breastfeeding rate 100%
**The Place Model**

Skin-to-skin contact

Mother ➔ 50% Survival

Other ➔ 10% Survival

Separation

Mother is a superior incubator

**KangaCarrier**

This shirt was designed to enable the mother to provide continuous day and night skin-to-skin contact.

The wrapper secures the baby, the shirt supports the mother, both are comfortable and safe.

**Dangers and contraindications**

→ Obstructive apnoea
→ Monitoring caveats

? Smothering
? Skin care
?? Infections

**Technique:**

Continuous SSC makes great demands on mother

The KangaCarrier & wrapper ensure that MOTHER and BABY are safe and comfortable.

Photos on website: www.kangaroomothercare.com

**Technique:**

The WRAPPER is for BABY.

Detail: Baby xiphisternum on mother's xiphisternum.
Flex baby, head either side.
Folded edge of wrapper goes UNDER THE EAR - tight!
Make reef knot behind axilla (this picture posed, is too far forward)

In this position:

The airway is protected,
Gravity helps breathing,
Abdominal breathing helped

There is maximal SSC,
Position is flexed,

Baby can sleep safely.
**Technique:**

The **SHIRT** is for MOTHER.

Detail: With baby in wrapper, put KangaCarrier on, flaps facing forwards, over babies head, right around body, tied below flexed legs, fixing baby firmly to mother’s chest.

**In this position:**

- Baby is fully contained. (this containment allows the gestation to continue)
- Mother is free to work: both hands are free, and she can feel the baby is secure.

**In this position: Mother free**

- To socialize
- To go home
- In this position, Mother is giving intensive care, and is able to do so at home much sooner
- **EARLY DISCHARGE**

**In this position: Mother free**

- To sleep, safely and comfortably

In this position

Mother **CANNOT** breastfeed!!!
But can easily loosen and feed frequently ...

**The principles**

- can be extended to different contexts
- premature birth
- oxygen dependence
- **CPAP / IPPV**

**KangaCarrier available at**

[www.kangaroomothercare.com](http://www.kangaroomothercare.com)

And here today ...
SKIN-TO-SKIN & BREASTFEEDING: THEN ADD TECHNOLOGY

Is there an alternative for premature infants??

Is THIS an alternative for premature infants??

ALTERNATIVE: BIRTH S S C

IMPLICATIONS Third World

The solution: BIRTH S S C

Is SSC safe for Unstable newborns?

FIRST NEONATAL RESEARCH

1960’s → Hyperbaric oxygen chamber, Treatment for asphyxia, very popular

The first RANDOMISED CONTROLLED TRIAL ever conducted: compared to “air”

More babies died in the chamber

More survivors had long term problems

Still used widely for years after … now coming back!
Archie COCHRANE 1909 1988

Any intervention should be subject to RANDOMISED CONTROLLED TRIAL and meta-analysis ...

EVIDENCE BASED MEDICINE.

EVIDENCE BASED MEDICINE.

INCUBATOR invented 1900
INCUBATOR in wide use 1940
Randomised trials 1960
KMC first described 1980
Birth KMC described 1990
INCUBATOR vs Birth KMC 2000

KANGAROO MOTHER CARE FROM BIRTH COMPARED TO CONVENTIONAL INCUBATOR CARE

Research funded by THRASHER RESEARCH FUND, U.S.A.
Admin and stats by MEDICAL RESEARCH COUNCIL, R.S.A.

KANGAROO MOTHER CARE FROM BIRTH COMPARED TO CONVENTIONAL INCUBATOR CARE

Nils Bergman
Lucy Linley, Sue Fawcus
Mowbray Maternity Cape Town, RSA.

Reference

RCT of skin-to-skin contact from birth versus conventional incubator care for physiological stabilisation in 1200- and 2199-gram newborns.

Bergman NJ, Linley LL, Fawcus SR.
Primary hypothesis

SSC (skin-to-skin contact) from birth is superior to incubator care for low birthweight infants.

ONLY HABITAT DIFFERS

BAILOUT points ...

“physiological parameters exceeding normal limits, requiring medical assessment and or intervention”

1 Skin temp consistently <35.5°C
2 Heart rate <100; or > 180 bpm
3 Apnoea longer than 20 seconds
4 O₂ sats below 89% (x2), (CPAP/60% O₂)
5 Blood glucose < 2.6mmol/l, (laboratory)

“Stability of Cardio-Respiratory system In Preterm Infants”
(Fischer et al, 1988)

<table>
<thead>
<tr>
<th>SCRIP SCOR</th>
<th>2</th>
<th>1</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart rate</td>
<td>Regular</td>
<td>Deceleration to 80-100</td>
<td>Rate &gt;80 or &lt;200 bpm</td>
</tr>
<tr>
<td>Respiratory rate</td>
<td>Regular</td>
<td>Apnoea &gt;10s, or periodic breathing</td>
<td>Apnoea &gt;10s Tachypnoea &gt;60 pm</td>
</tr>
<tr>
<td>Oxygen saturation</td>
<td>Regular ≥97%</td>
<td>Any fall to 80-87%</td>
<td>Any fall below 80%</td>
</tr>
</tbody>
</table>

Score allocated for a five minute period of continuous observation, maximum six for period

Research hypotheses

<table>
<thead>
<tr>
<th>BAILOUT</th>
<th>Stabilising DURING 6h</th>
<th>Stabilised AT 6 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1a</td>
<td></td>
<td>H1b</td>
</tr>
<tr>
<td>SCRIP</td>
<td>H2a</td>
<td>H2b</td>
</tr>
</tbody>
</table>

Results

Minimisation technique ensured groups balanced for confounders.

( n = 34) KMC  CMC
Mean weight 1813g  1866g
Mean GA  34.2w  35.3w
Approp' GA  65%  64%
Male  60%  50%

(p 783)

H1b (SPECIFIC)

Doctor summoned:

INCUBATOR 92% 8%
SKIN-TO-SKIN 17% 83%

Bergman et al 2004
**THE PLACE MODEL**

**SKIN-TO-SKIN CONTACT**

- **MOTHER**
  - 100% STABLE
- **OTHER**
  - 46% STABLE

**SEPARATION**

**"100% SCRIP STABILITY"**

<table>
<thead>
<tr>
<th>SSC</th>
<th>CMC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1200g to 2200g</td>
<td>1 - 6h</td>
</tr>
<tr>
<td>@ 6h</td>
<td>100%</td>
</tr>
<tr>
<td>1200g to 1800g</td>
<td>1 - 6h</td>
</tr>
<tr>
<td>@ 6h</td>
<td>100%</td>
</tr>
</tbody>
</table>

**INCUBATORS DE-STABILISE NEWBORNS**

**THE PLACE MODEL**

**SKIN-TO-SKIN CONTACT**

- **MOTHER**
  - 100% STABLE
- **OTHER**
  - 83% UNSTABLE

**SEPARATION**

Skin-to-skin contact IS MORE essential for premature newborns!
THE PLACE MODEL
SKIN-TO-SKIN CONTACT
STABILISATION
DYS-REGULATION
SEPARATION

Oxygenation
SKIN-TO-SKIN
BREAST- VAGAL
MOTHER- FEEDING (PSNS)
OTHER- PROTEST- STRESS DESPAIR (SNS)
SEPARATION

Anderson, Brf Rev 1993

THIS IS THE “PHYSIOLOGY” IN OUR TEXT BOOKS … actually PATHOPHYSIOLOGY

Premature babies are not in incubators because they are unstable.

Premature babies are unstable because they are in incubators.

INCUBATORS DE-STABILISE NEWBORNS

What is a paradigm?


Kuhn defines a paradigm as: “an entire constellation of beliefs, values and techniques, and so on, shared by the members of a given community”
What determines a paradigm?

- Tradition
- Culture
- Experience

What is a paradigm?


**paradigm** 3. A set of assumptions, concepts, values, and practices that constitutes a way of viewing reality for the community that shares them, especially in an intellectual discipline.

**PARADIGM CONSTRUCT**

Paradigm: “in the philosophy of science, a generally accepted model of how ideas relate to one another, forming a conceptual framework within which scientific research is carried out”

**BASIC ASSUMPTIONS:**

- FOUNDATION / PLATFORM / BASE

**PARADIGM CONSTRUCT**

Paradigm: “in the philosophy of science, a generally accepted model of how ideas relate to one another, forming a conceptual framework within which scientific research is carried out”

**BASIC ASSUMPTIONS:**

- INFANT SLEEPS ALONE
- FOUNDATION / PLATFORM / BASE

**Culture Producing Science Producing Culture:**

How A Folk Myth Achieved Scientific Validation

1. Initial test condition: infant sleeps alone, is bottle fed, and has little or no parental contact
2. Derive measurements of infant sleep under these conditions
3. Repeat measurements across ages, creating an "infant sleep model"
4. Publish clinical model on what constitutes desirable, healthy infant sleep.
5. To produce "healthy" infant sleep, replicate the test condition

From James McKenna

"Scientific" validation of solitary infant sleep as "normal" and "healthy"

**PARADIGM CONSTRUCT**

Specifically, all the recommendations involving clinical medicine in a CME activity must be based on evidence that is accepted within the profession of medicine as adequate justification for their indications and contraindications in the care of patients.
Culture Producing Science Producing Culture: How A Folk Myth Achieved Scientific Validation

#1: Initial test condition — infant sleeps in INCUBATOR and is FORMULA fed, SEPARATED

#2: Derive measurements from these conditions

#3: Repeat measurements across ages, defining "NEONATAL PHYSIOLOGY"

#4: Publish TEXTBOOKS describing "NORMAL" NEONATES

#5: "replicate the test condition" SEPARATED NEONATES ARE NORMAL

BASIC ASSUMPTIONS:
* INCUBATOR STABILIZES BABY
* FOUNDATION / PLATFORM / BASE

Scientific Validation of a False Assumption

"It's not what we know that gets us into trouble.... it's what we know... that just ain't so!"
From: Everybody's Friend (1874)
By Josh Billings

EVIDENCE FOR SAFETY OF INCUBATORS ...

DOES NOT EXIST !!!

EVIDENCE FOR SAFETY OF INCUBATORS ...

The evidence is assumed, taken for granted!
It is part of our paradigm.
EVIDENCE FOR SAFETY OF INCUBATORS ...

We know their use to achieve thermal control and appropriate humidity ... and SURVIVAL ...
... but we've neglected the brain!

INCUBATORS DE-STABILISE NEWBORNS

Paradigm shift ....
For unstable newborns:
Is "Birth KMC" safe?
Is "Birth KMC" safer ... ?
Is “incubator” safe?
Is “incubator” unsafe?

INTERVENTION DOES:
GOOD
LITTLE
HARM
PRIMUM NON NOCERE

INCUBATOR
SEPARATION
DISSOCIATION
DIS-REGULATION
NEUROPATHOLOGY

THIS EVIDENCE DOES EXIST !!!

Parasite S. stercoralis: A surmountable barrier to the development of new vaccines

Good
 SSC

Normal

SSC

Incubator

What is a paradigm?
A set of assumptions, concepts, values, and practices that constitutes a way of viewing reality for the community that shares them, especially in an intellectual discipline.

Parasite S. stercoralis: A surmountable barrier to the development of new vaccines

Perceived harm: NO

**THE PLACE MODEL**

**SKIN-TO-SKIN CONTACT**

- **NORMAL**
- **Perceived HARM:**
  - **NO**
  - **YES**

**THE PLACE MODEL**

**SKIN-TO-SKIN CONTACT**

- **MOTHER**
  - **GOOD**
  - **HARM**
  - **DEFENCE**
- **OTHER**
  - **NUTRITION**
  - **MALICE**
  - **BENEFICE**

**“We cannot solve any significant problem at the same level of thinking at which it was created.”**

Albert Einstein

**BASIC ASSUMPTIONS:**

- QUESTION OUR ASSUMPTIONS
- FOUNDATION / PLATFORM / BASE

**QUESTION OUR ASSUMPTIONS:**

Without awakening to assumptions and “basic belief system”
New information cannot be grasped!!

**SEPARATION VIOLATES**

**THE INNATE AGENDA OF MOTHER AND NEWBORN**

**SSC**

**Incubator**

**THE PARK MODEL**

**SKIN-TO-SKIN CONTACT**

- **INCUBATOR**
  - **SSC**
  - **SSC**
- **NORMAL**
- **Perceived HARM:**
  - **NO**
  - **YES**
SEPARATION IS LIFE THREATENING
(WRONG PLACE)

MATERNAL DEPENDENCE
PREMATURITY

MATERNAL DEPENDENCE
DEPRIVATION

MATERNAL DEPENDENCE
PREMATURITY
KC (Kangaroo Care)

THE NEUROSCIENCE OF KANGAROO CARE

TOO LITTLE, TOO LATE..
Miles et al 2006
A controlled trial of skin-to-skin contact in extremely preterm infants
Rachel Miles, Frances Cowan, Vivette Glover, Jim Stevenson, Neena Mod.

Mother-infant skin-to-skin contact after extremely preterm birth results in neither benefit nor adverse consequences. Although there is no reason to dissuade mothers who wish to provide STS contact, we are unable to recommend resource allocation for the implementation of STS programmes for extremely preterm infants in a neonatal intensive care unit setting.

nurse providing clinical care. The intention was to provide 20 min of STS once daily for 4 weeks. Unit policy did not

Miles et al 2006

MATERNAL DEPENDENCE

PREMATURITY

KMC (Kangaroo Care)

KC (Kangaroo Care)

BSSC (Birth or Immediate Skin-to-Skin Contact)

GOOD & QUALITY SURVIVAL

KANGAROO MOTHER CARE

HUMANITY FIRST

TECHNOLOGY SECOND

Baby Stohm, 780g

Skin-to-skin contact IS MORE essential for premature newborns!

Our NORMAL biology
Geddes Productions
P.O. Box 41761
Los Angeles CA 90041
(323) 344-8045
www.geddesproduction.com

Get both videos
together on one DVD,
plus a CD with extras ....