

HOP TO IT: FUNDAMENTALS OF KANGAROO CARE

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Mother Kangaroo



Welcome to Bogota, Colombia



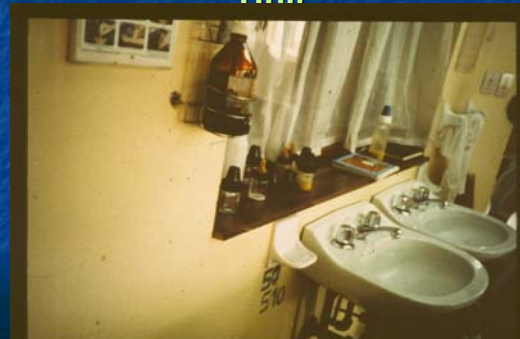
Labor Room



Immediate Post-partum Care



The Neonatal Intensive Care Unit



“Clean” Supply Room in NICU



IV Bags in the NICU



Intubated infant in Bogota



“Co-Bedding” in NICU



Three infants sharing an incubator



Sharing Phototherapy Lights



Bogota Nursery



Baby with a heating pad for warmth



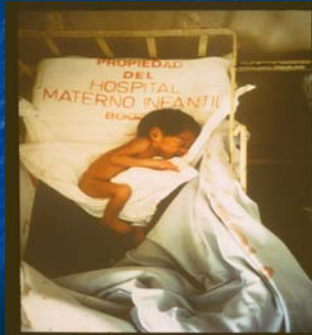
Transitional Nursery



Maintaining an upright position



Use of Sling for Positioning



Mom gets infant for KMC



Infant with an NG tube



VLBW infant in KMC



VLBW infant with standard premie diaper



Settling down



Sound Asleep



**Dr. Hector Martinez,
Co-founder of Kangaroo Care**



"La Casita": Kangaroo Mother Care Follow-up Clinic



KMC follow-up



Getting ready to go home



A 16 year old mom leaving "La Casita"



Dr. Gene Anderson with KMC baby on her lap



Utrecht, Holland embraces KMC



Infant with Blow by O2

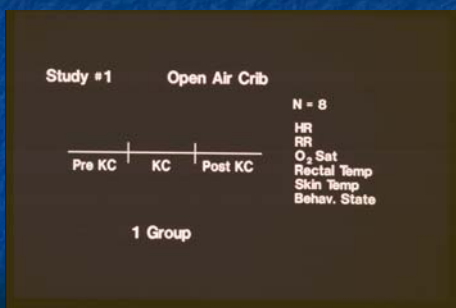
Sweden embraces maternal and paternal Kangaroo Care



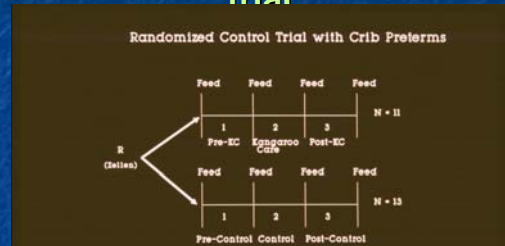
PHYSIOLOGIC EFFECTS OF KANGAROO CARE

Susan M. Ludington, CNM, Ph.D.

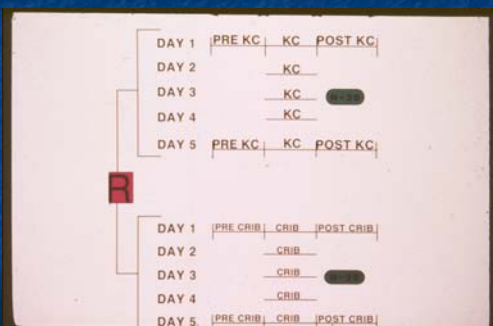
Beginning descriptive study



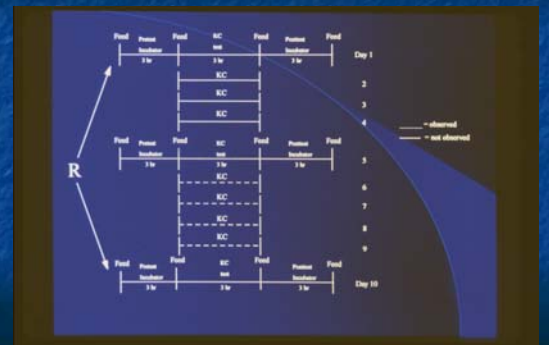
Progressed to Randomized trial



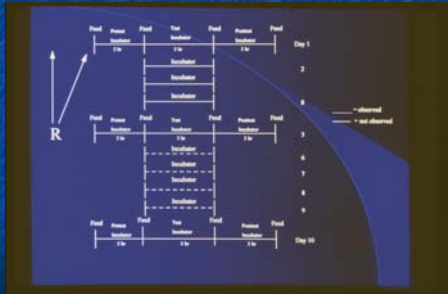
RCT over 5 days



10 days in KC versus:



10 days in incubator



Control condition for first RCT



Experimental condition



Find the baby! U.S. technology



RESULTS - 1

1. All values within normal limits at all times
2. HR increased by 10 beats during Kangaroo Care ($p=0.05$)
3. RR increased by 5 breaths during Kangaroo Care ($p=0.02$)
4. Skin temp. increased by nearly 1.0 degree C. during K.C. ($p=0.004$).
5. Rectal temps were similar
6. Skin temp decreased during post-K.C. ($p=0.03$)
7. O₂ = No differences

RESULTS

No significant differences in Heart Rate, Respiratory Rate, and Oxygen Saturation between periods

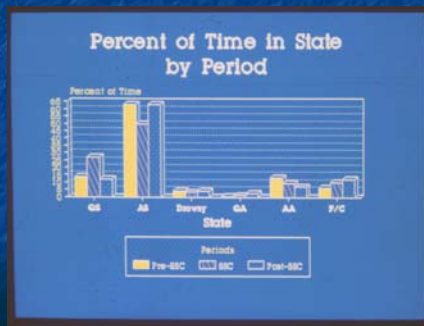
CONCLUSION - 1

- Heat loss and/or physiologic instability DO NOT OCCUR during SSC

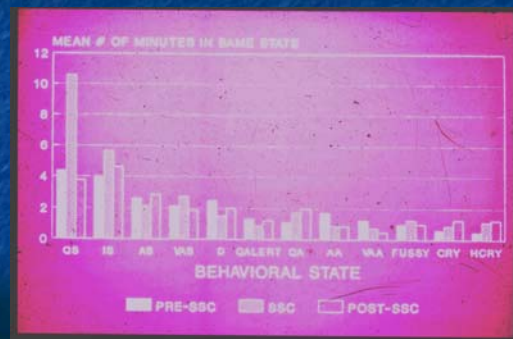
Thermal Synchrony Between Mother and Infants During Kangaroo Care

Susan M. Ludington, CNM, PhD
Gene C. Anderson, RN, PhD, FAAN
Anthony Hadeed, MD, FAAP

Descriptive crib study- 6 states



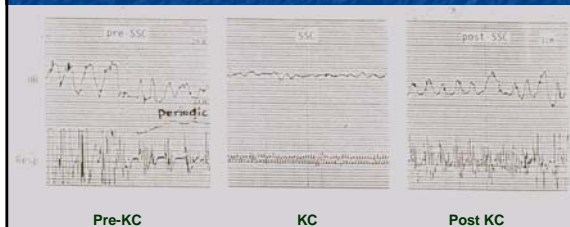
More refined State Measures



Crib Babies- Quiet Sleep State Means RCT Kangaroo Care



Cardio Respiratory Changes



**Gould Cardio-Respiratory
Patterns**



**Chaotic modeling of cardio-
respiratory pattern in an
incubator**



Chaotic modeling in KMC



**All over warm and collapsed in
sleep**



KMC apnea study



Apnea Study



Mom with foot support

Apnea Study, Edentech nasal thermistor



Nasal thermistor close-up



Apnea reduction by 75% during KMC



Ludington-Hoe et al Neonatal Network 1994

Paternal KC during ventilation



Ludington-Hoe et al Acta Paediatrica 1998

PKC and KMC Research Team



DESIGN in Cali, Colombia

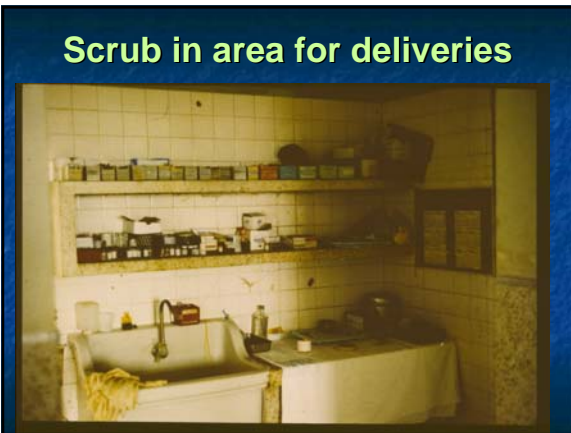
Descriptive, 2 hours of PKC in first 24 hours of life (N = 11)

Feeding |—————| To Postpartum
Paternal KC

DESIGN:

R

- KC** -prone and inclined on maternal chest, wearing head cap, diaper, under blanket in 4ths x 6 hours in delivery and KC rooms.
- Crib** -prone and horizontal in crib, wearing head cap, t-shirt, diaper, under blanket in 4ths x 6 hours at maternal bedside in delivery and KC rooms.



Post-delivery research room



Subject #1: Pilot study



Twins



Breastfeeding in KC



D-stick < 40 ; D10W feed



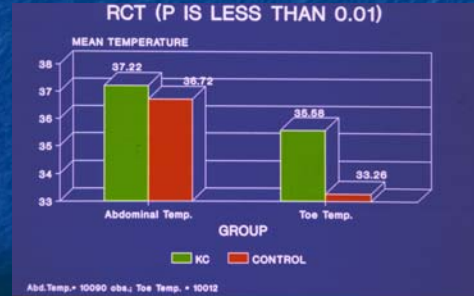
KC during immediate post-partum transition



Peaceful slumber 1 hour after birth



KC Beginning in Delivery Room



Discharge at 48 hours after birth



Transient respiratory distress in KC



Beginning of PKC



Note the infant's smile in PKC



PKC in Colombia



PATERNAL KC - CALI (1992) ABDOMINAL TEMPERATURE RESULTS

All warmed up 37.06 (0.63)

GRADUAL, STEADY INCREASE

Started at: 36.50 (0.51)

Ended at: 37.50 (0.24)

# of infants with Abdominal Temp > 37.0	10/11
> 37.5	07/11
> 38.0	01/11

PATERNAL KC - CALI (1992) CORE TEMPERATURE RESULTS (TYMPANIC)

Gradual increase for most (08/11) 37.64 (0.61)

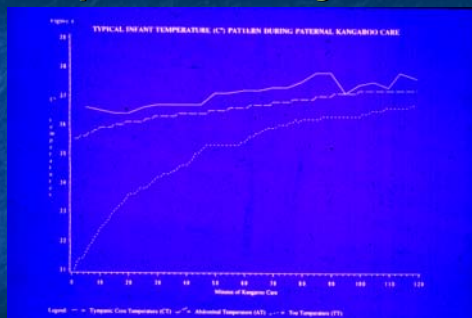
Some vacillation for three

Started at: 37.30 (0.76)

Ended at: 37.80 (0.29)

# of infants with Core Temp > 37.0	ALL
# of infants with Core Temp > 37.5	ALL
# of infants with Core Temp > 38.0	05/11
# of infants with Core Temp > 1.0° C higher than Abdominal Temp	05/11

Temperature changes in PKC



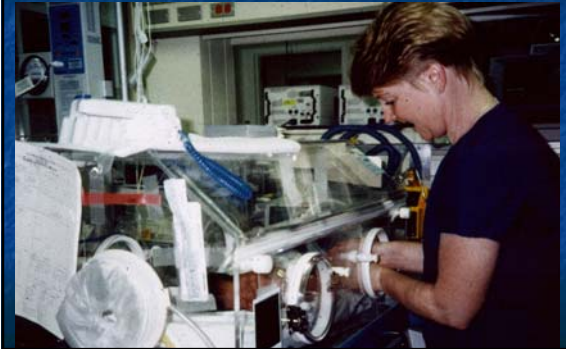
Ludington-Hoe et al Developmental Physiology 1992

FIGURE 1
Percent of Time in State
PATERNAL KANGAROO CARE



INFANT BEHAVIOR STATE
 ORS=Quiet Regular Sleep QRS=Quiet Irregular Sleep AS=Active Sleep WAS=Very Active Sleep
 D=Awake AI=Alert Inattentive QA=Quiet Awake AA=Active Awake AWA=Awake Very Active
 F=Feedy C=Cry HC=Hard Cry
 CALI, COLOMBIA

Pre-test period for PKC in Bakersfield



Dad prepping for PKC



Dad's temperature gauge



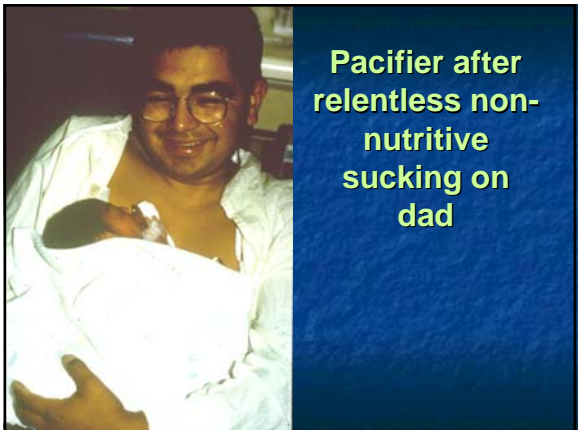
Samoaan Dad for PKC



Feet up for PKC



Pacifier after relentless non-nutritive sucking on dad



Searching out
the nipple



What is she
doing?



She finds the
breast



Asleep and
still on the
breast



Dad is happy!



More PKC

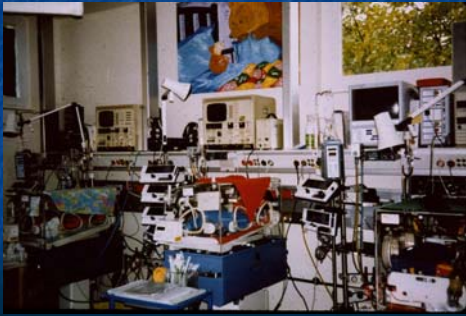




24 hour/day KC in Heidelberg



NICU: Heidelberg



Step-down NICU: Heidelberg



KC in the NICU



KC in Step-down





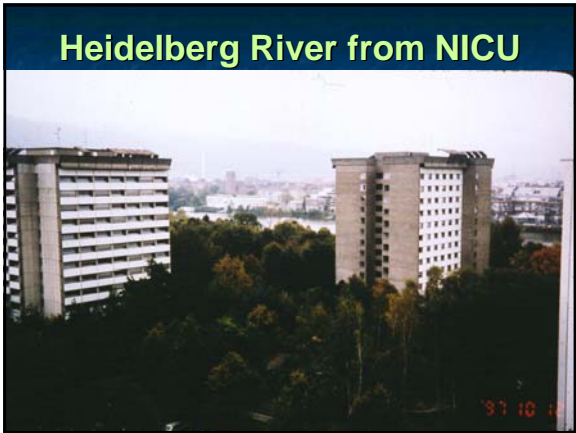
KC room in Heidelberg



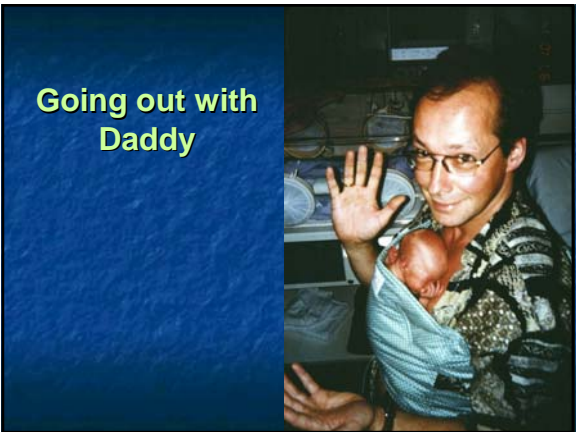
24 hour KMC



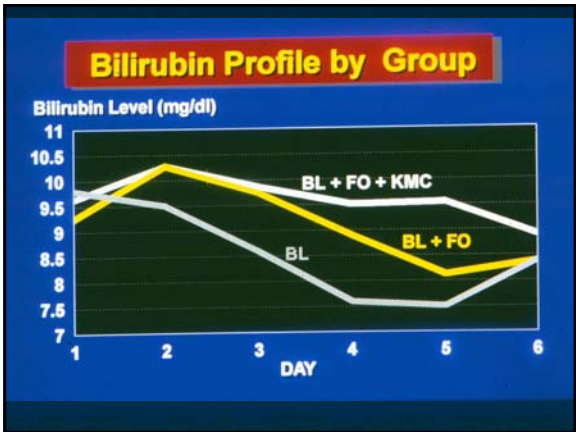
KC supplies in Heidelberg...note the stroller



Heidelberg River from NICU



Going out with Daddy



Baby in KC with a fiber-optic bili-blanket



Baby with desire to nest



Artificial nesting



Artificial nesting



Blanket nesting



Swinging nest



Nesting and flexion



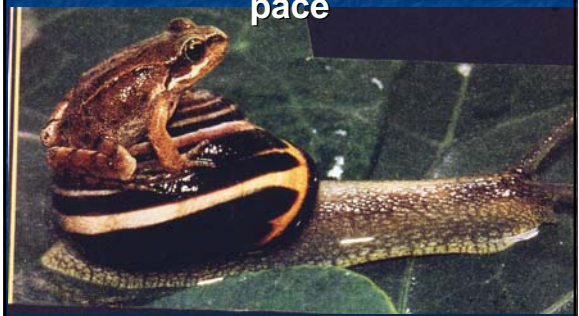
**Natural
nesting**



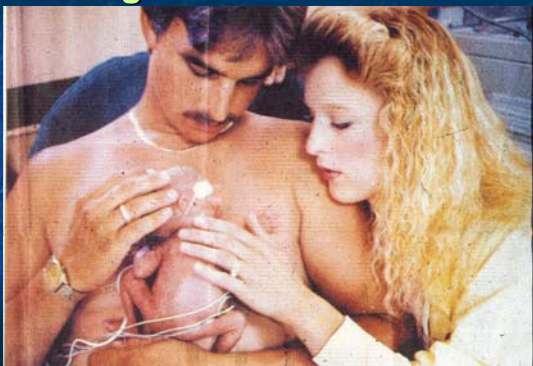
Kan - GURUs



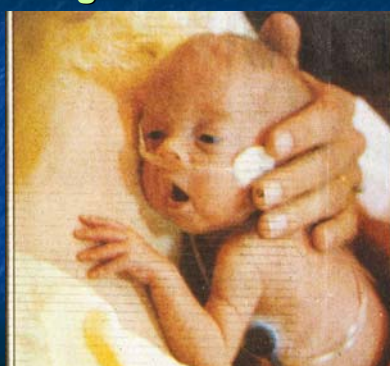
**Research moves at a snails
pace**



Original KC in America



Original KC in America



Newspaper report in 1989



Anne Geddes' view of KC



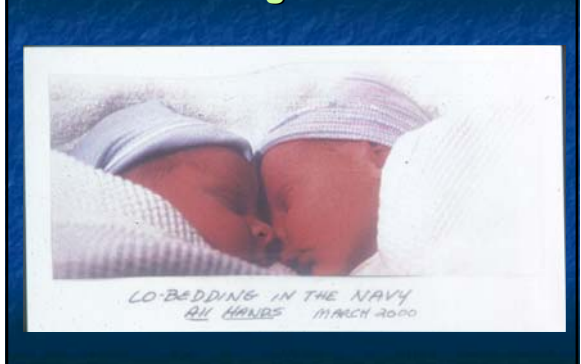
Mother and baby together



My babies



Co-Bedding in the NAVY





Nurses Were to:

“Put the Patient in the Best Position for Nature to Act Upon Him”

Florence Nightingale
(1859/1969)





Israeli mom in KC



Columbia: RDS and KC

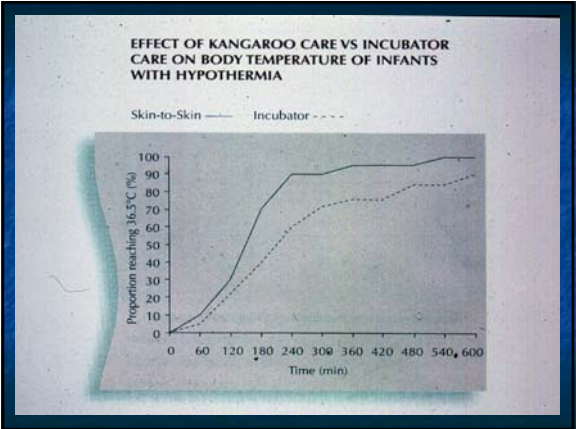


Maternal cortisol before and after KC



Mom sleeping in KC





MEAN RESPIRATORY AND METABOLIC MEASUREMENTS 90 MINUTES AFTER BIRTH

	Skin-to-skin	Control	p value
Respiratory rate/minute	44.3	49.8	<0.05
Blood glucose (mmol/l)	3.17	2.56	<0.001
Delta base-excess	3.4	1.8	<0.001

Adapted from *Acta Paediatrica* 1992;81:488-493.

