



Kangaroo Mother Care – Survival & Beyond

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Global burden of LBW

- ▶ Every year **20 million** (~15% of all births) infants are born with LBW
- ▶ **>95%** are in LMICs
- ▶ Account for **70-80%** of all neonatal deaths
- ▶ LBW infants are also at increased risk of **early growth retardation** and **developmental delay**



Kangaroo Mother Care



Baby's Right, Mothers Delight

Components of KMC



+



+



Continuous &
Prolonged Skin to skin
contact

Exclusive
breastfeeding

Early discharge and
adequate follow-up

Kangaroo Mother Care – Cochrane review 2016

40% reduction
in neonatal mortality

65% reduction
in sepsis

58% reduction in hospital
readmission in infancy

72% reduction
in hypothermia

Improved exclusive
breastfeeding at 1-2 months

88% reduction
in hypoglycemia

Improved weight gain, length
and head circumference

Kangaroo Mother Care – current WHO recommendations



KMC is recommended in health facilities for the routine care of newborns weighing **2000g or less at birth.**



Brief sessions of KMC should be initiated when clinical condition begins to **stabilize.**



As close to **continuous KMC** as possible should be provided when **clinically stable**

Rationale for the Immediate KMC Trial

1

Studies included in Cochrane mortality review: mean age of randomization **~3 days** (range 10 h to 24.5 d)

2

About half of preterm deaths occur in first 24h, **over three quarters** in the first week

3

Thus, majority of preterm deaths occur before KMC can be initiated as per current guidelines

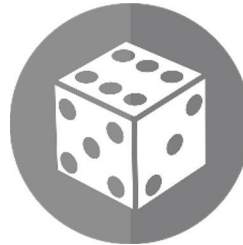


Research question

Does continuous KMC initiated immediately after birth (immediate KMC) compared with current guidelines improve newborn survival?



Immediate KMC study design



Randomized
Controlled Trial



Multi-country, multi-center
Referral hospitals in Ghana, India,
Malawi, Nigeria and Tanzania



Population
Mothers and babies,
if birth weight
1.0 to <1.8 kg



Intervention*
KMC initiated as soon
as possible after birth
by mother or surrogate



Control*
KMC initiated
only after baby
is stable

*Both groups received WHO minimum package for small babies

Immediate KMC study

Intervention group
(n=1609)



As soon as possible after birth:
Continuous KMC in M-NICU



Throughout in M-NICU:
Continuous KMC



Baby stable:
Shifted to KMC ward:
Continuous KMC in KMC ward

Control group
(n=1602)



After birth baby receives care in
warmer or incubator in NICU



In NICU: after baby starts
recovering, brief sessions of KMC



Baby stable:
Shifted to KMC ward:
Continuous KMC in KMC ward



Intervention

Three Components :

1

Continuous skin-to-skin contact with mother or surrogate starting within 2 hours of birth, aiming > 20 hours/day

2

Counselling and support for exclusive breastmilk feeding / breastfeeding

3

Provision of required medical care for mother and baby in STS contact without separation, as much as possible

New Mother–Newborn ICU



India



Tanzania

Part of NICU re-modelled to Mother–Newborn ICU



Provision of respiratory support with KMC



Mean duration of KMC in NICU
17 hours/day



Control group: KMC after stabilization

Continuous KMC initiated after the baby is stable and shifted out of NICU



Primary and Key Secondary Outcomes

Outcome	Intervention (N=1609)	Control (N=1602)	Risk Ratio, Hazard Ratio, or Difference (95% CI) [†]	P Value
Primary				
Death between enrollment and 28 days — no./total no. (%)	191/1596 (12.0)	249/1587 (15.7)	0.75 (0.64–0.89)	0.001
Death between enrollment and 72 hr after birth — no./total no. (%)	74/1606 (4.6)	92/1599 (5.8)	0.77 (0.58–1.04)	0.09
Secondary[‡]				
Hypothermia — no./total no. (%) [§]	90/1609 (5.6)	133/1602 (8.3)	0.65 (0.51–0.83)	
Suspected sepsis — no./total no. (%) ^{**}	361/1575 (22.9)	434/1561 (27.8)	0.82 (0.73–0.93)	

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Other secondary outcomes

Outcome	Intervention (N=1609)	Control (N=1602)	Risk Ratio, Hazard Ratio, or Difference (95% CI) [†]
Secondary[‡]			
Exclusive breast-feeding at end of neonatal period — no./total no. (%)	1208/1401 (86.2)	1140/1336 (85.3)	1.01 (0.98–1.05)
Fully breast-fed (i.e., by suckling) at hospital discharge — no./total no. (%)	62/1435 (4.3)	55/1376 (4.0)	1.06 (0.73–1.53)
Median time to clinical stabilization — hr (IQR) [¶]	73.8 (26.8–138.5)	74.8 (25.3–140.6)	0.98 (0.90–1.07)
Hypoglycemia at any time between 0 and 36 hr after birth — no./total no. (%) ^{††}	82/799 (10.3)	66/651 (10.1)	1.15 (0.85–1.56)
Mean duration of hospital stay — days ^{‡‡}	14.9±0.2	15.2±0.2	1.07 (0.99–1.16)
Mean score for maternal satisfaction ^{§§}	9.2±1.0	9.1±1.2	0.11 (0.03–0.19) ^{¶¶}
Maternal depression — no./total no. (%)	2/1276 (0.2)	7/1231 (0.6)	0.23 (0.05–1.14)

^{||} Hazard ratio ^{¶¶} Mean difference

Implications: System Changes

POLICY

to permit Mother & surrogate in NICU
24/7

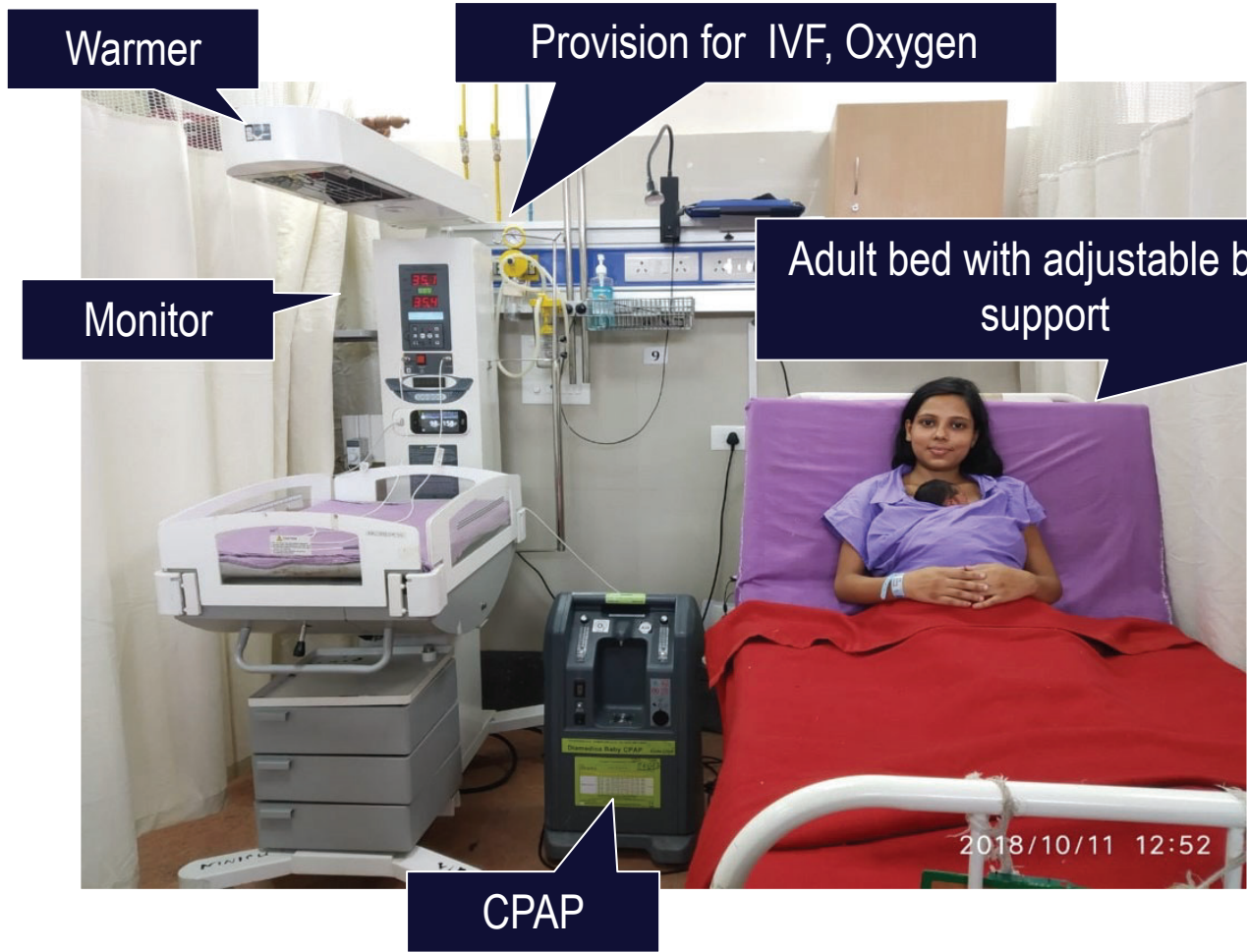
M-NICU

to keep the mother and baby together
right from birth with zero separation

Revolutionize the way neonatal
intensive care is currently practiced



M- NICU



- Hand hygiene area
- Pantry
- Washing area
- Area for examn. Of mother
- Infection control

Obstetric–Neonatal Collaboration

OBSTETRIC ROUNDS



NEONATAL ROUNDS

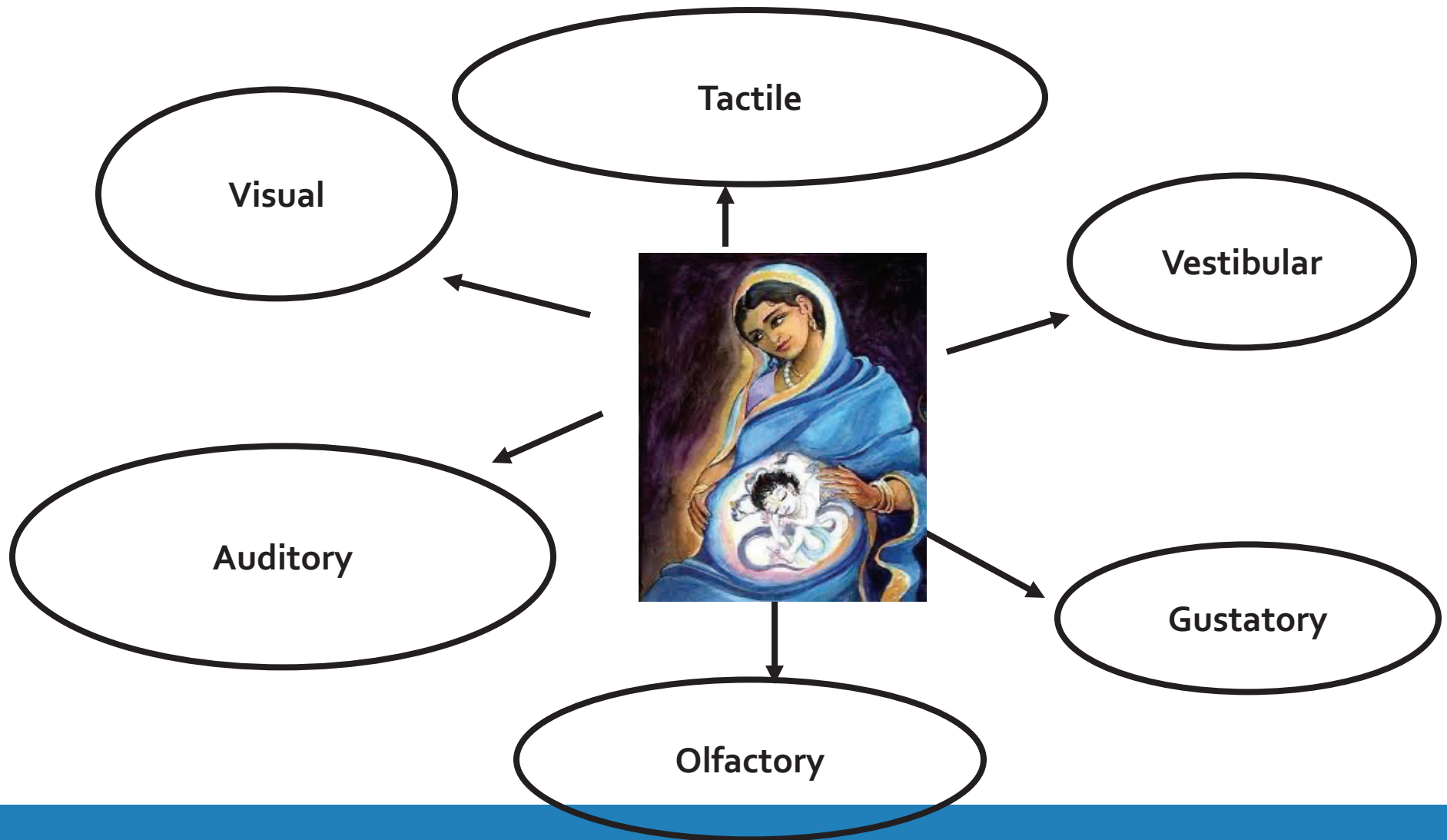


iKMC results in + 150,000 lives saved globally every year

KMC – beyond survival, the foundation for Early Childhood Development



KMC - Best Developmentally Supportive Care



KMC – the Perfect Balance

**Stimulatory
approach**



**Containment
approach**

- Under-stimulated tactile proprioceptive senses

- Overwhelmed late developing senses

Protection from Pain



KMC Promotes N Sleep & cycling



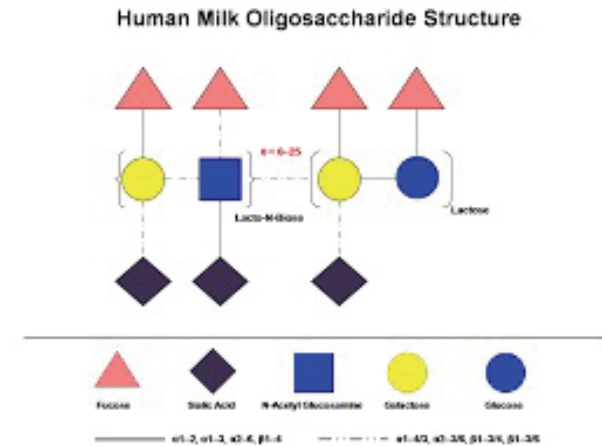
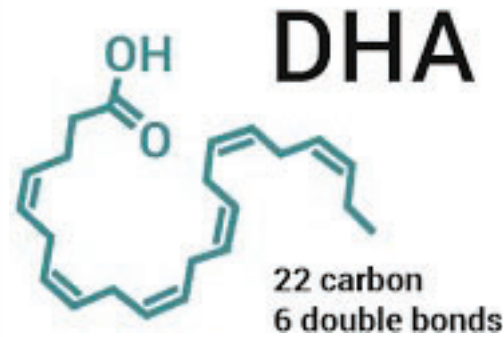
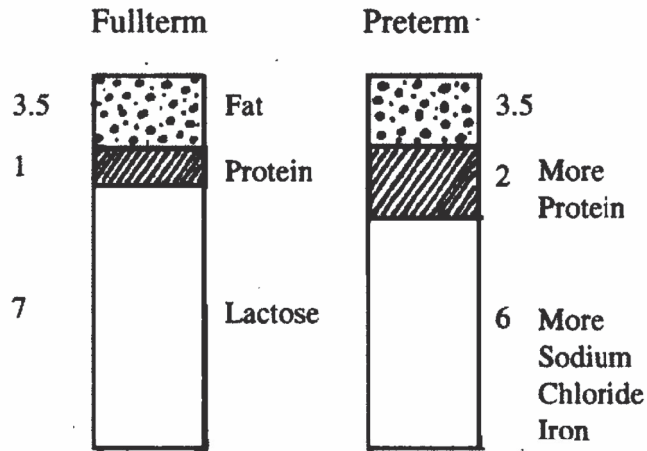
- ↑ Quiet sleep
- ↑ Quiet awake
- Normal sleep cycling
- More alert when awake

The Second Component of KMC

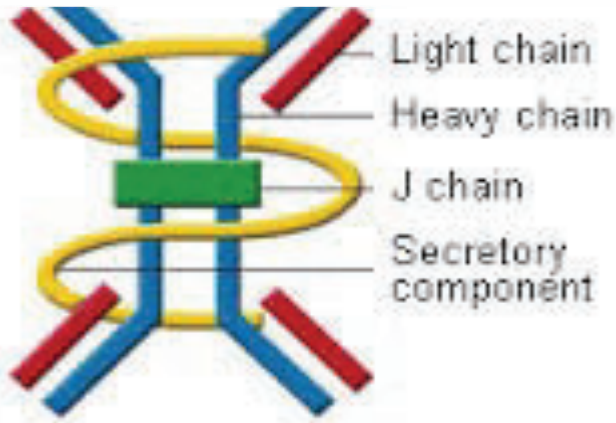
Exclusive Breastfeeding



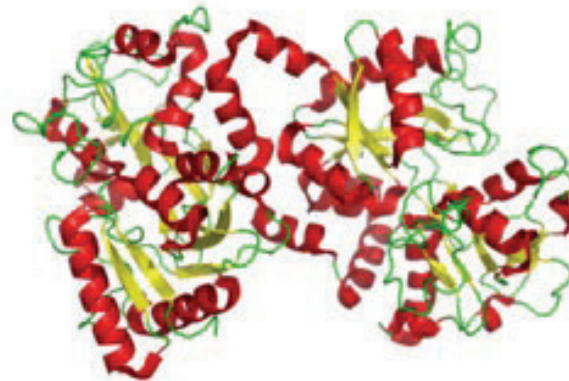
Preterm breast milk – More than food



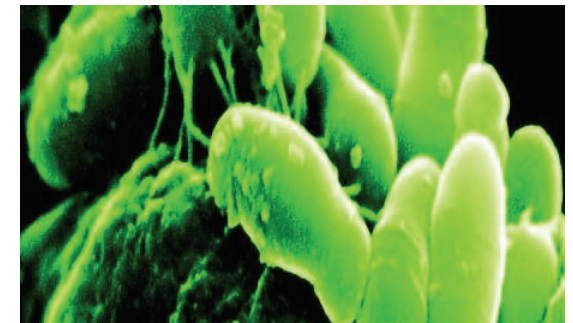
Oligosaccharides



Ig - sIGA



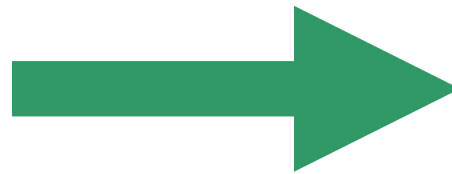
Lactoferrin



Lactobacillus

KMC – Improved parenting

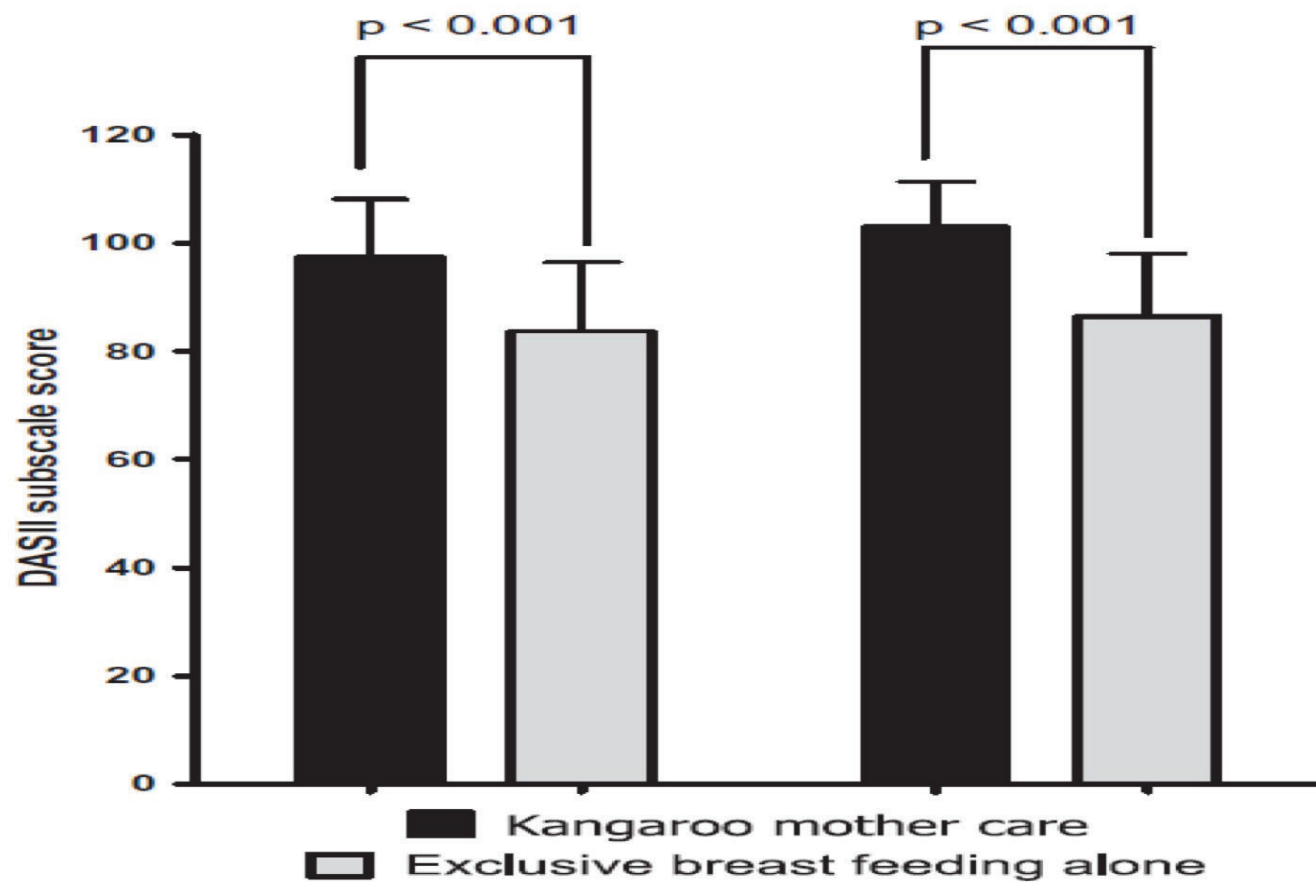
- ↓ post partum depression
- ↓ maternal stress
- Provides a more stimulating climate
- Better care giving environment



What is the evidence ?



KMC Vs Excl BF – Effect on neurodevelopment



Bera et al. Effect of KMC on growth & dev at 1 year. A controlled clinical trial. Acta Paediatr 2014

St. John's Study

Population

- LBW (<2000g) infants

Intervention

- Early (< 3 d) AND Prolonged KMC (> 8 h/d)

Comparison

- No early and prolonged KMC

Outcome

- Neurodevelopment

Time

- 12 months corrected age

Methodology- Early Initiation KMC

KMC advised as soon as possible after birth :

- Ventilated, CPAP,
- IVF, O₂
- Inotropes

(no increase for >6 h)



Bisanalli S, Rao PNS. Feasibility of KMC in LBW infants on respiratory support:2014, Advances in neonatal care

Prolonged KMC

**Antenatal
Counselling**



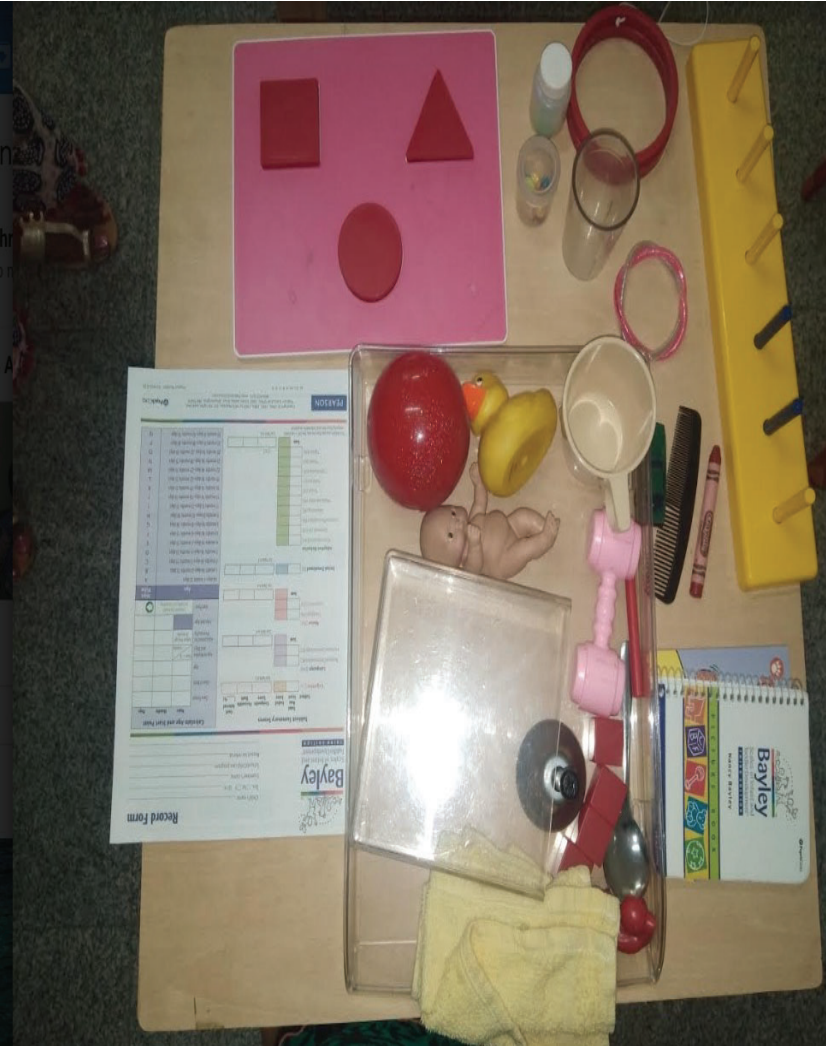
Foster KMC



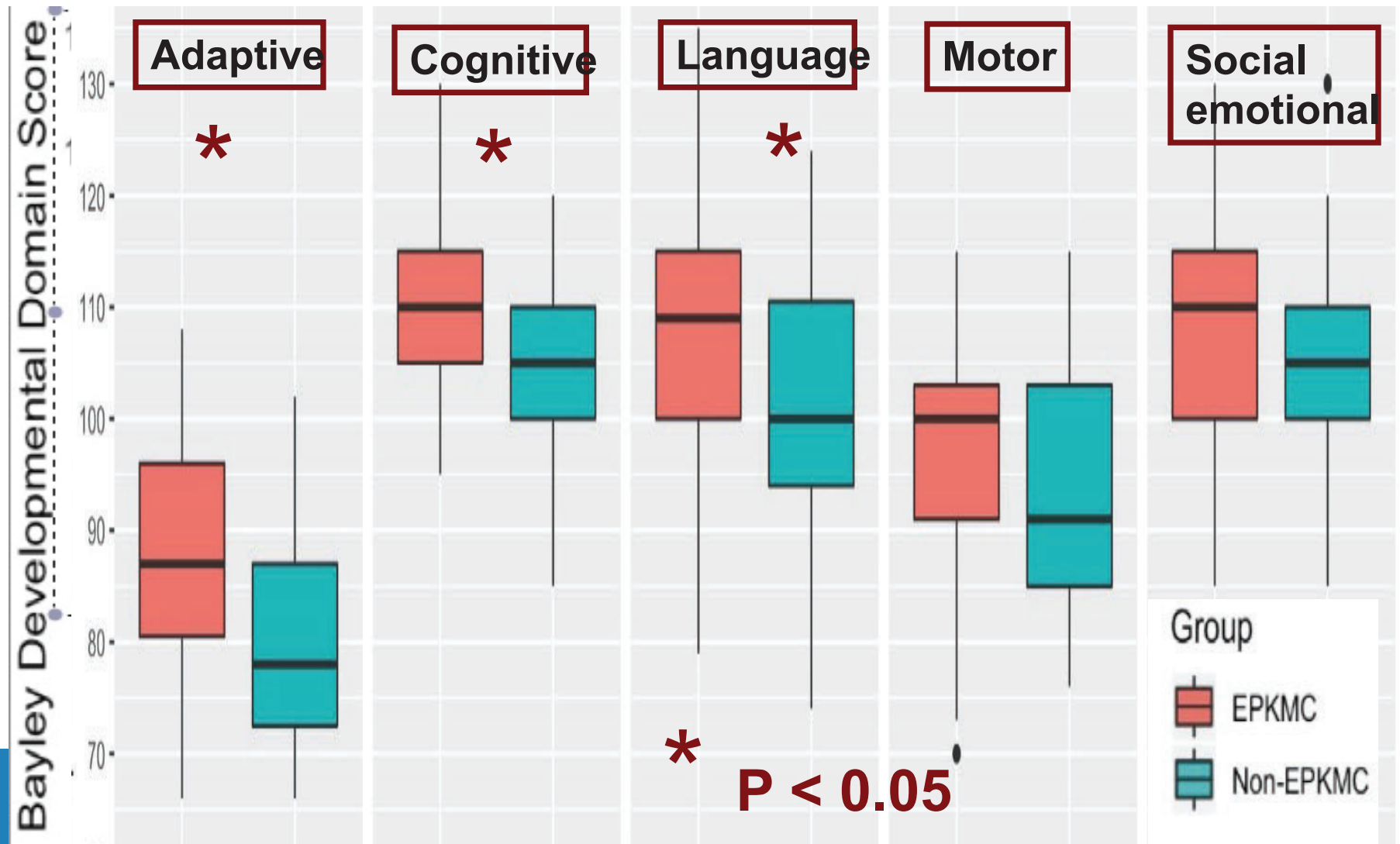
KMC Ward



BSID 3



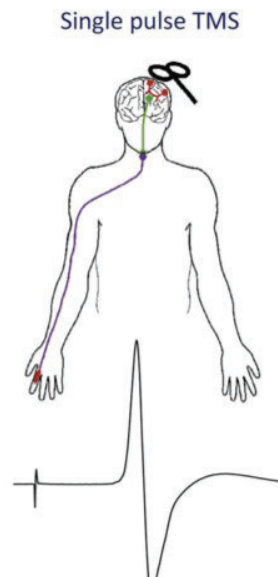
BSID 3 at 12 mo corrected age



KMC – benefits at 20 years

- Transcranial Magnetic Stimulation (TMS) outcomes:
 - KMC = term infants
 - KMC better than controls

- Neuromotor disability lower
- Better school attendance
- Better wage



Schneider , et al. Cerebral motor functions adolescents – KMC effects. *Acta Paediatrica* Oct 2012
Charpak et al. 20 y followup of KMC vs traditional care. *Pediatrics* 2017; 139 e20162063

Kangaroo Mother Care – Survive and Thrive

Zero Separation Policy



**Keeping mother and baby
always together**





A kiss may just be a kiss
A sigh may just be a sigh
But **THE TOUCH** can save
my life and my brain

Thank you

