



Quality, Equity, Dignity

A Network for Improving Quality of Care  
for Maternal, Newborn and Child Health

# Transforming Care for Small and Sick Newborns

Webinar series: May 2021- May 2022



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A Network for Improving Quality of Care  
for Maternal, Newborn and Child Health

# Transforming Care for small and sick newborns: Implementing quality care for every small and sick newborn

## WEBINAR SERIES OBJECTIVE:

This series will accompany the learning and experience in implementing the WHO Standards for improving the quality of care for small and sick newborns in health facilities (2020) and related guidance for their implementation.

## Upcoming webinar:

Nurturing care for every newborn: Ensuring every newborn survives and thrives (Wednesday August 25 2021, 2pm Geneva)



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Every Newborn Action Plan



# Immediate KMC improves survival in LBW infants

## Part 1: Presentation & Panel Discussion

**Presentation:** Dr. Rajiv Bahl - Newborn Unit Head & Head of Research, Department of Maternal, Newborn, Child and Adolescent Health and Ageing World Health Organization, Geneva

### Panelists:

- **Dr. Harish Chellani** - Professor of Pediatrics, Safdarjung Hospital and Vardhan Mahavir Medical College, India
- **Dr. Helga Naburi** - Pediatrician, Muhimbili University of Health and Allied Science, Tanzania
- **Dr. Gyikua Plange-Rhule** - Senior Lecturer, Department of Child Health, Komfo Anokye Teaching Hospital, Ghana
- **Dr. Kondwani Kawaza** - Pediatrician & Lecturer, College of Medicine, University of Malawi, Malawi
- **Dr. Ebunoluwa Adejuyigbe** - Professor of Paediatrics, Obafemi Awolowo University, Nigeria
- **Dr. Nils Bergman** - Researcher, Department of Women's and Children's Health, Karolinska Institute, Sweden

## Part 2: Questions & Answers



## Presentation

# Immediate KMC improves survival in LBW infants

**Dr. Rajiv Bahl** - Newborn Unit Head & Head of Research,  
Department of Maternal, Newborn, Child and Adolescent  
Health and Ageing

World Health Organization Geneva







## Immediate KMC improves survival in LBW infants



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Department of Maternal, Newborn, Child and Adolescent Health, and Ageing

# WHO immediate KMC study group

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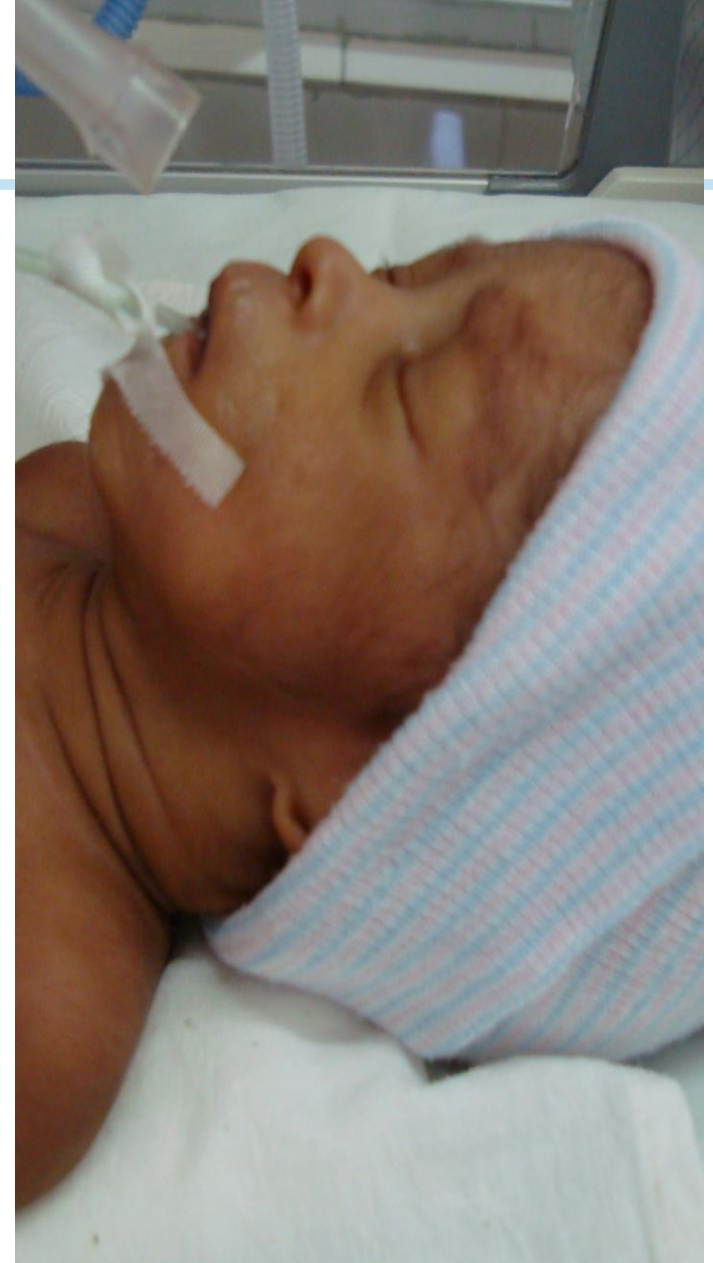
**FUNDED BY:** Bill and Melinda Gates Foundation



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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 – 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**



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# Kangaroo Mother Care – Cochrane review 2016

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**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



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# Rationale for the Immediate KMC Trial

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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



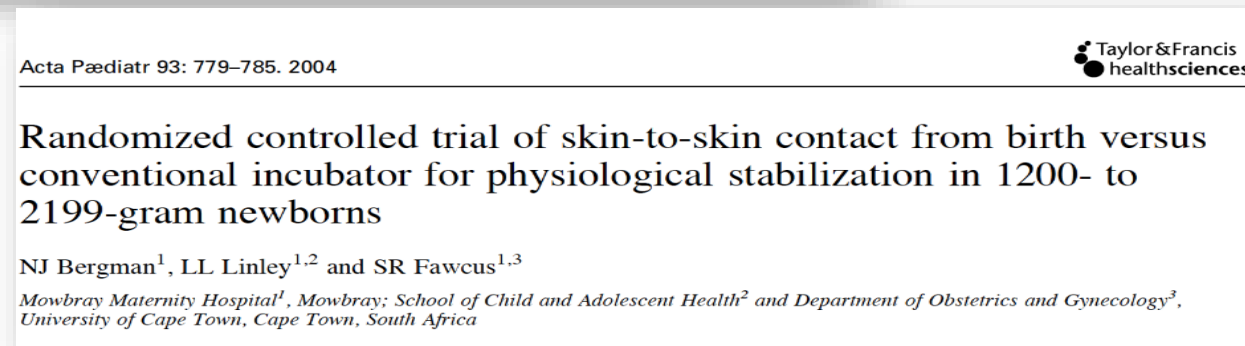
## Research question

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



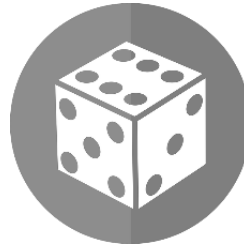
# KMC before stabilization

Two small studies in Vietnam and South Africa had shown that skin to skin contact started immediately after birth is safe and helps LBW babies stabilize faster





## 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



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# 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





# Eligibility criteria

## INCLUSION CRITERIA:



Livebirth with birth weight between 1.0 and <1.8 kg

Even if:

- 1) Twins (both babies allocated to the same group)
- 2) Babies born by caesarean section

## EXCLUSION CRITERIA:

- Mother unable to provide consent
- Major maternal complications surely expected to preclude STS the first three days (e.g., eclampsia, shock, major surgery)
- Triplets and quadruplets
- Neonates unable to breathe spontaneously within 1 hour
- Congenital malformation that interferes with the intervention, or the intervention interferes with the required care.
- Place of residence outside the study area (defined to make 28-day follow up feasible)



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# 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



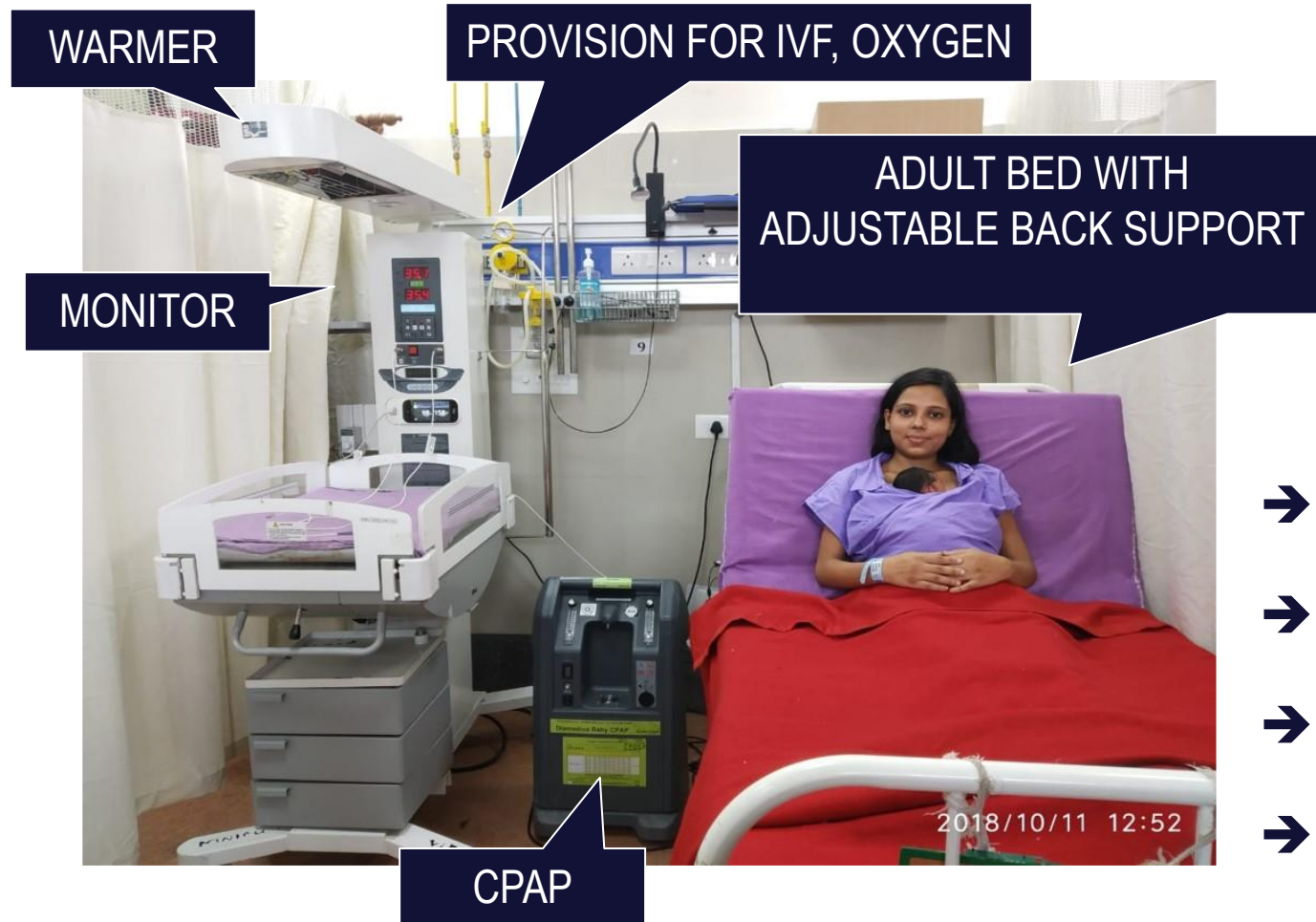
Tanzania



## Part of NICU re-modelled to Mother–Newborn ICU



# M-NICU



- ➔ Hand hygiene area
- ➔ Pantry
- ➔ Shower
- ➔ Toilet





## Provision of respiratory support with KMC



Mean duration of KMC  
**17 hours/day**



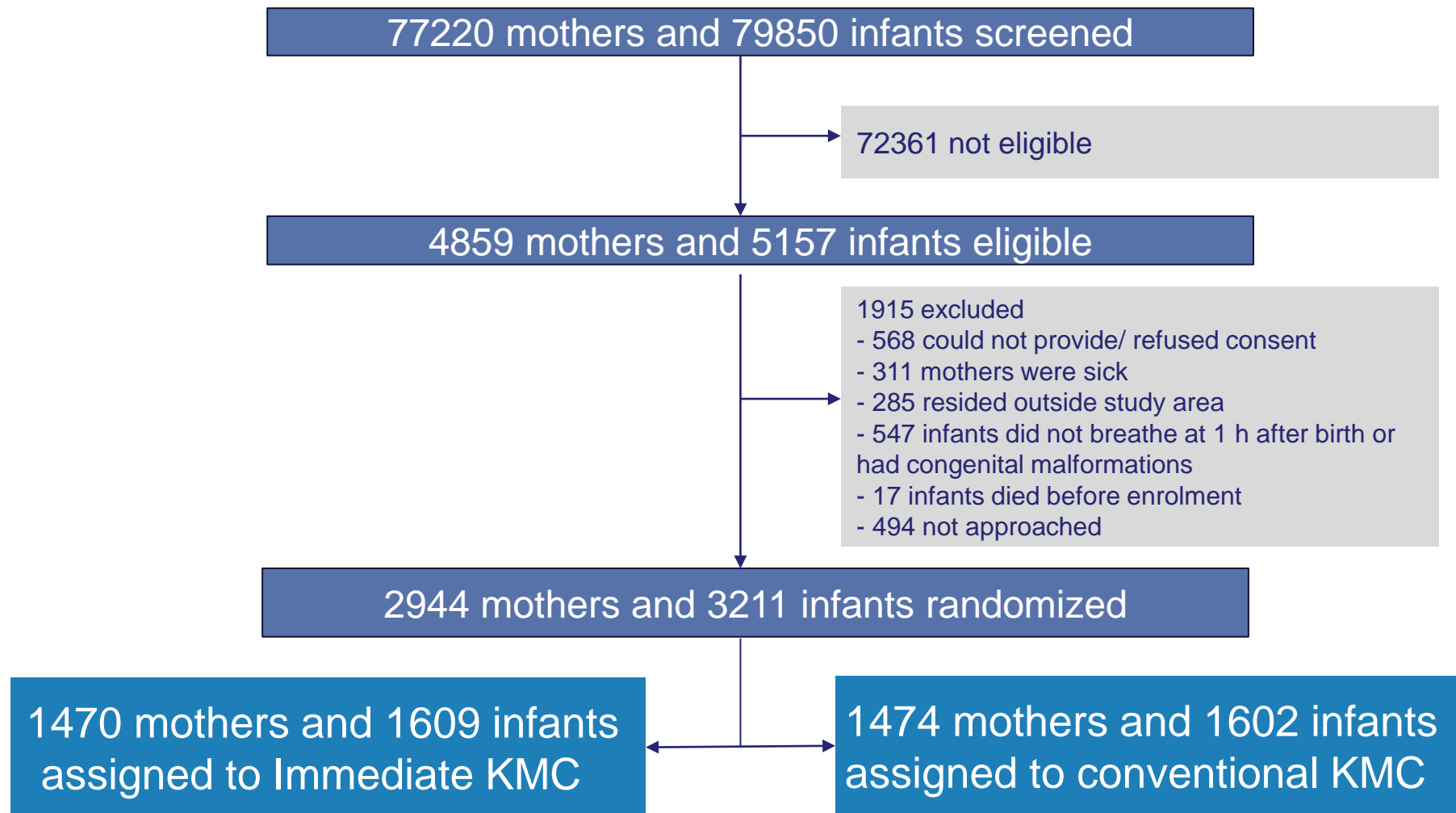
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## Control group: KMC after stabilization

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



# Results of the Immediate KMC Study: Participant flowchart



## Characteristics of enrolled infants

	Immediate KMC	Control
	N=1609	N=1602
Age at randomization in minutes (median, IQR)	35 (20,55)	33 (20,54)
Birth weight in kg, mean (SD)	1.5 (0.2)	1.5 (0.2)
Gestational age at birth, mean (SD)*¥	32.6 (3.0)	32.6 (2.8)
Male, n (%)	752 (46.7)	748 (46.7)
Infants born as twin, n (%)	430 (26.7)	430 (26.8)
Delivery by C-section, n (%)	559 (34.7)	614 (38.3)
Respiratory distress in first 7 d of life, n(%)	691 (43.3)	705 (44.0)



# Primary and Key Secondary Outcomes

Outcome	Intervention (N = 1609)	Control (N = 1602)	Risk Ratio, Hazard Ratio, or Difference (95% CI) <sup>†</sup>	P Value
<b>Primary</b>				
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
<b>Secondary<sup>‡</sup></b>				
Hypothermia — no./total no. (%) <sup>§</sup>	90/1609 (5.6)	133/1602 (8.3)	0.65 (0.51–0.83)	
Suspected sepsis — no./total no. (%) <sup>**</sup>	361/1575 (22.9)	434/1561 (27.8)	0.82 (0.73–0.93)	



## Other secondary outcomes

Outcome	Intervention (N=1609)	Control (N=1602)	Risk Ratio, Hazard Ratio, or Difference (95% CI) <sup>†</sup>
<b>Secondary<sup>‡</sup></b>			
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) <sup>¶</sup>	73.8 (26.8–138.5)	74.8 (25.3–140.6)	0.98 (0.90–1.07) <sup>  </sup>
Hypoglycemia at any time between 0 and 36 hr after birth — no./total no. (%) <sup>††</sup>	82/799 (10.3)	66/651 (10.1)	1.15 (0.85–1.56)
Mean duration of hospital stay — days <sup>‡‡</sup>	14.9±0.2	15.2±0.2	1.07 (0.99–1.16) <sup>  </sup>
Mean score for maternal satisfaction <sup>§§</sup>	9.2±1.0	9.1±1.2	0.11 (0.03–0.19) <sup>¶¶</sup>
Maternal depression — no./total no. (%) <sup>   </sup>	2/1276 (0.2)	7/1231 (0.6)	0.23 (0.05–1.14)

<sup>||</sup> Hazard ratio <sup>¶¶</sup> Mean difference

## Additional breastfeeding indicators

Outcome	Intervention (n=1609)	Control (n=1602)	RR (95% CI)
Initiation of breastmilk feeds within 24 hr, n (%)	941 (58.5%)	729 (45.5%)	1.29 (1.20–1.37)
Infant put to breast before 72 hr of age, n (%)	1108 (68.9%)	832 (51.9%)	1.32 (1.24–1.41)
Age Infant first put to the breast in hr, median (IQR)	41 (21–83)	66 (36–138)	1.50 (1.40–1.62)*
Reached full breastmilk feeds within 7d, n (%)	1261 (78.4%)	1105 (69.0%)	1.14 (1.09–1.19)
Discharge on exclusive breastmilk feeding**, n (%)	1208 (93.1%)	1067 (88.7%)	1.05 (1.02–1.08)

\* Hazard ratio

\*\* only among discharged infants (1298 intervention; 1203 control)

## Cause-specific mortality

Cause of death	Intervention n= 1596	Control n= 1587	RR (95% CI)
Sepsis, n (%)	70 (4.4%)	109 (6.9%)	0.64 (0.48–0.86)
Preterm birth complications*, n (%)	79 (4.9%)	83 (5.2%)	0.95 (0.70–1.28)
Perinatal asphyxia, n (%)	12 (0.8%)	18 (1.1%)	0.66 (0.32–1.37)
Congenital malformation, n (%)	10 (0.6%)	10 (0.6%)	0.99 (0.42–2.38)
Other specific cause, n (%)	4 (0.3%)	5 (0.3%)	0.80 (0.21–2.96)
Sudden death, n (%)	16 (1.0%)	20 (1.3%)	0.80 (0.41–1.53)
Undetermined, n (%)	0	4 (0.3%)	-



# Conclusions

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1

Immediate KMC for 1.0 and <1.8 kg infants significantly **reduces the risk of neonatal death by 25%**

2

Immediate KMC provided to every 27 babies saves a life which translates to **150,000 lives globally every year**

3

**M – NICU is a paradigm shift** in the care of the low birth weight infant weight



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# Thank you!



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# **Panel Discussion: Immediate KMC improves survival in LBW infants**



**Dr. Harish Chellani, Professor of Pediatrics, Safdarjung Hospital and Vardhan Mahavir Medical College, India**



**Dr. Helga Naburi, Pediatrician, Muhimbili University of Health and Allied Science, Tanzania**



**Dr. Gyikua Plange-Rhule, Senior Lecturer, Department of Child Health, Komfo Anokye Teaching Hospital, Ghana**



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**Dr. Nils Bergman, Researcher, Department of Women's and Children's Health, Karolinska Institute, Sweden**

# Questions & Answers

## Facilitated by:

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Please type your questions in the  
[CHATBOX](#)







# STAY ENGAGED

- Upcoming webinars in this series:
  - Wednesday 25 August 2021 at 2pm CEST: Nurturing care for every newborn: Ensuring every newborn survives and thrives
    - Register here: [bit.ly/SSNB-4](https://bit.ly/SSNB-4)
- Learn more about the series: [bit.ly/SSNB2021](https://bit.ly/SSNB2021)
- Visit Quality of Care Network website: <https://www.qualityofcarenetwork.org/about>
- Join the Care for small and sick newborns Community of Practice - next conversation for World Breastfeeding Week, August 4 2021: [Email: ssnbcop@savechildren.org](mailto:ssnbcop@savechildren.org)