

MNCH research – what is new for newborns?

Dr. Joy Lawn MB BS MRCP (Paeds) MPH PhD
Director Global Evidence and Research
Saving Newborn Lives/Save the Children-US





Thanks to...

ABBDULLAH BAQUI
ZULFIQAR BHUTTA
Bob Black
Sandy Cairncross
Harry Campbell
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Anita Zaidi

Names in CAPITALS provided slides or data

**Prioritised based on those that address:
Major cause of neonatal death
News!
Most votes!**



OUTLINE



- 1. Interventions – more definitive evidence?**
- 2. Interventions – on the horizon?**
- 3. Implementation advances?**

Causes of death in the neonatal period for 193 countries (2000-2008)

Cause of death	2000	2004	2008
↓ Infection	1.04 (26%)	0.94 (25%)	0.89 (25%)
Sepsis			0.54
Pneumonia			0.36
Diarrhoea	0.11 (3%)	0.07 (2%)	0.07 (2%)
↓ Tetanus	0.26 (6%)	0.10 (3%)	0.07 (2%)
Preterm	1.12 (28%)	1.23 (33%)	1.04 (29%)
“Asphyxia”	0.91 (23%)	0.91 (24%)	0.83 (23%)
Congenital	0.30 (7%)	0.31 (8%)	0.29 (8%)
Other	0.26 (6%)	0.19 (5%)	0.39 (11%)
Total	4.0 million	3.8 million	3.6 million

Source: Lawn JE, Cousens SN, Adler A, Ozi S, Oestergen M, Mather C for the CHERG neonatal group. Based on CHERG/WHO estimates



Jonathan Hubbschman/Save The Children

1. Interventions – more definitive evidence?



Kangaroo Mother Care

Definition of the intervention

Cause of death 1
PRETERM

What?

- Continuous Kangaroo Mother Care is when baby is tied skin to skin with mother 24 hours a day for days/weeks
- Provides thermal care, increased breastfeeding, reduced infections and also identification and links to additional supportive care, if needed

Who?

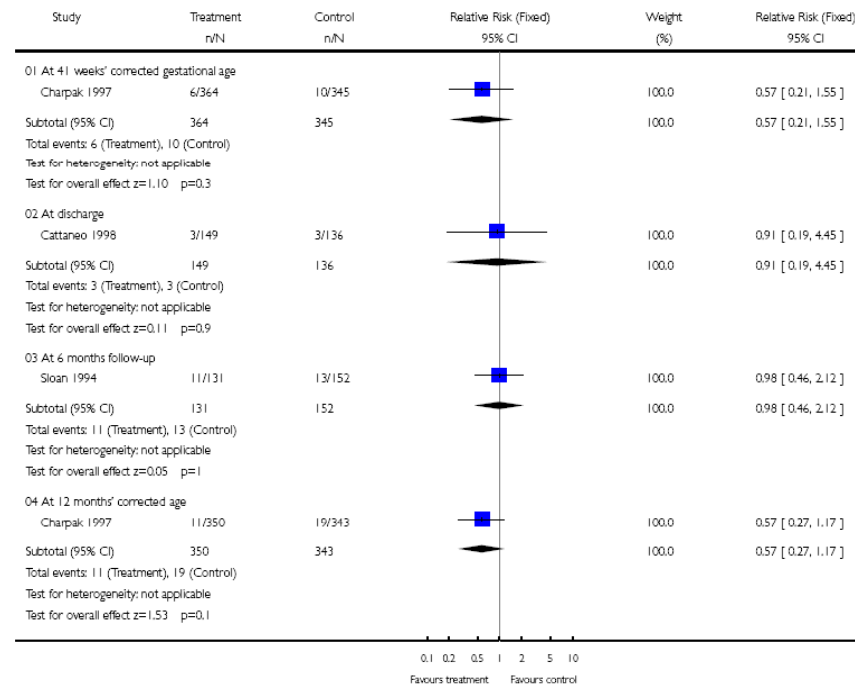
- Babies <2000g birth weight (as marker of preterm birth approx <34 weeks)
- Babies who are stable (eg not requiring recurrent resuscitation)



Previous systematic reviews have not shown a significant mortality benefit of KMC

Analysis 01.01. Comparison 01 Kangaroo mother care versus conventional neonatal care, Outcome 01 Mortality

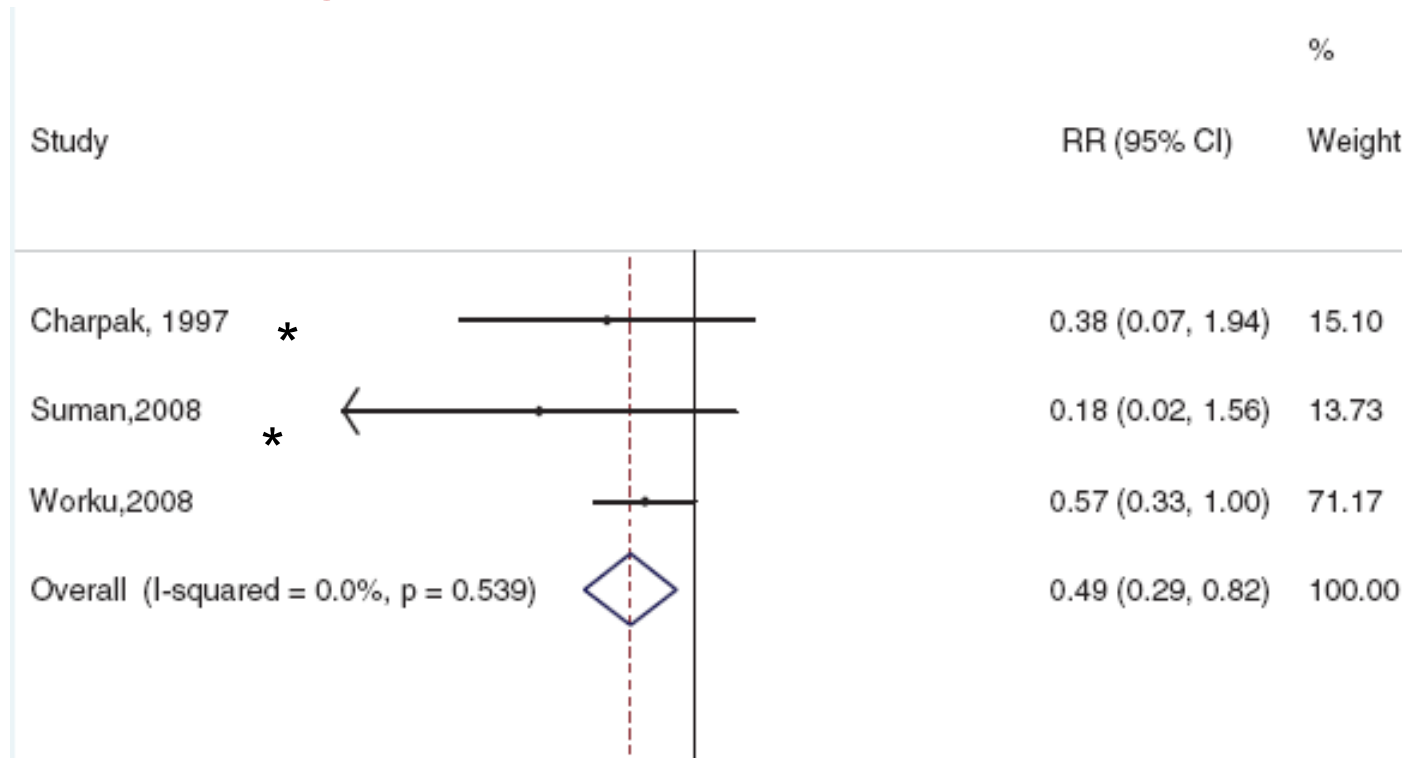
Review: Kangaroo mother care to reduce morbidity and mortality in low birthweight infants
 Comparison: 01 Kangaroo mother care versus conventional neonatal care
 Outcome: 01 Mortality



Cochrane review 2003, Conde-Agudelo A *et al*

**Non significant mortality result –
 small numbers, mixed mortality outcomes,
 some studies did not allow KMC in first week of life
 New RCTs with neonatal mortality outcomes**

Meta-analysis of effect on neonatal mortality of facility-based KMC (3 RCTs, N 1075)



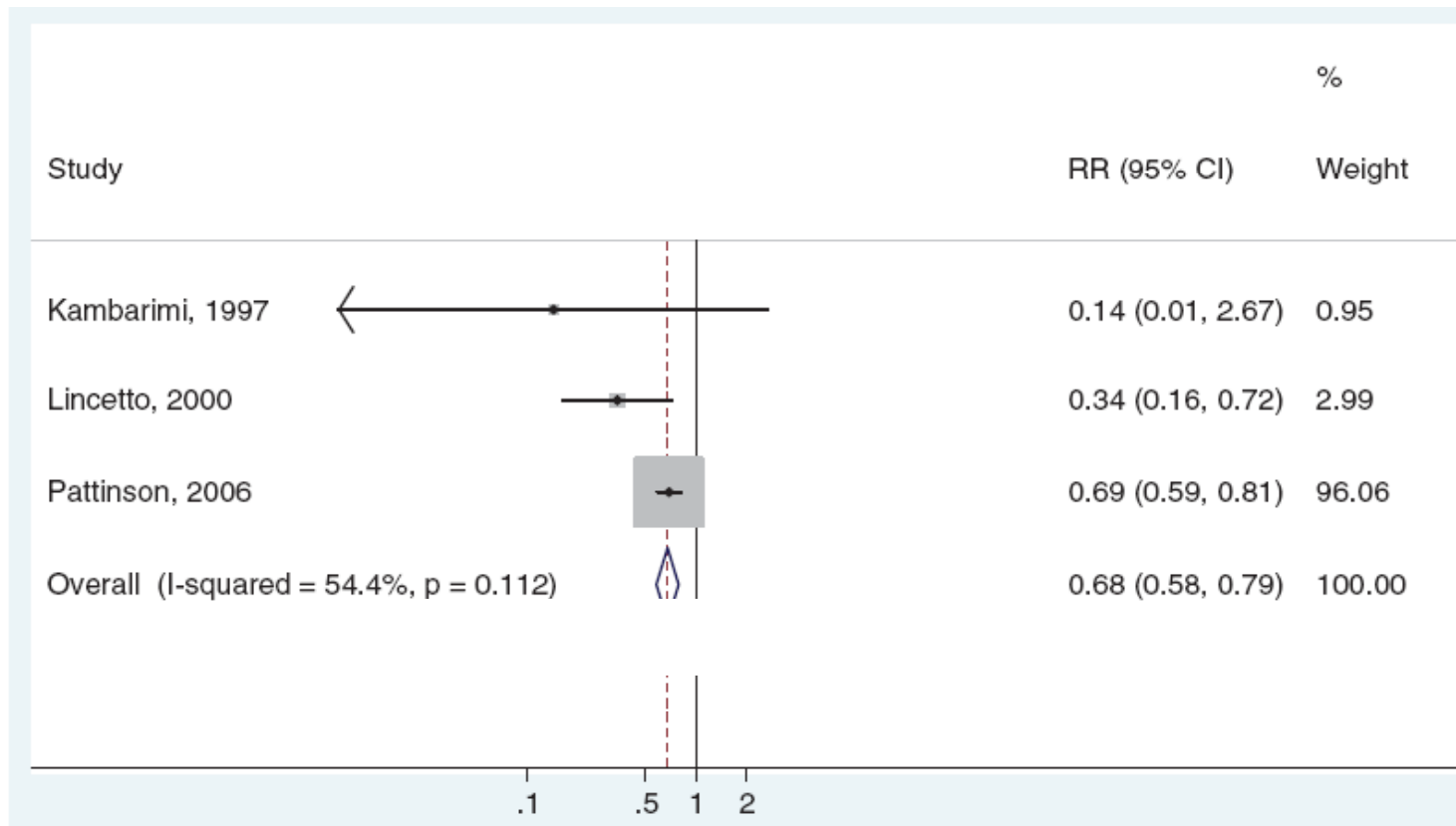
* neonatal specific outcome data from the principal investigator.

Source: Lawn et al (2010) 'Kangaroo mother care' to prevent neonatal deaths due to preterm birth complications. Int J Epidemiol: i1–i10.



RR 0.49 (0.29, 0.82)
51% reduction in neonatal mortality
for neonates <2000 g with facility-based KMC
compared to conventional care

Meta-analysis on neonatal mortality of facility based KMC effect (3 observational studies, 17,961)



Source: Lawn et al (2010) 'Kangaroo mother care' to prevent neonatal deaths due to preterm birth complications. Int J Epidemiol: i1-i10.



RR 0.68 (0.58, 0.79)
34% reduction in neonatal mortality
for neonates <2000 g with facility-based KMC
compared to conventional care
Major effect possible at scale

But, knowledge ≠ implementation

Government tells mothers to use charcoal stoves as incubators

RISDEL KASASIRA
PARLIAMENT

INADEQUATE incubation services for premature babies in the country have forced the government to adopt use of charcoal stoves commonly known as sigili as an alternative source of

provide temperatures like those of a mother's womb. So where you don't have incubators, mothers can use sigili."

Premature births in Uganda are common in rural areas where pregnant mothers are exposed to diseases like malaria. Dr Ronald Muhelirwe of Star

the government deliver services

Ngara County a medical doctor

said exposing premature babies to charcoal stove heat is dangerous because the heat is hard to regulate. "This is a crude and desperate measure



African newspaper headline August 2007

As yet no coverage data for KMC – possible through household surveys and urgent need to track rapid scale up

OPINION

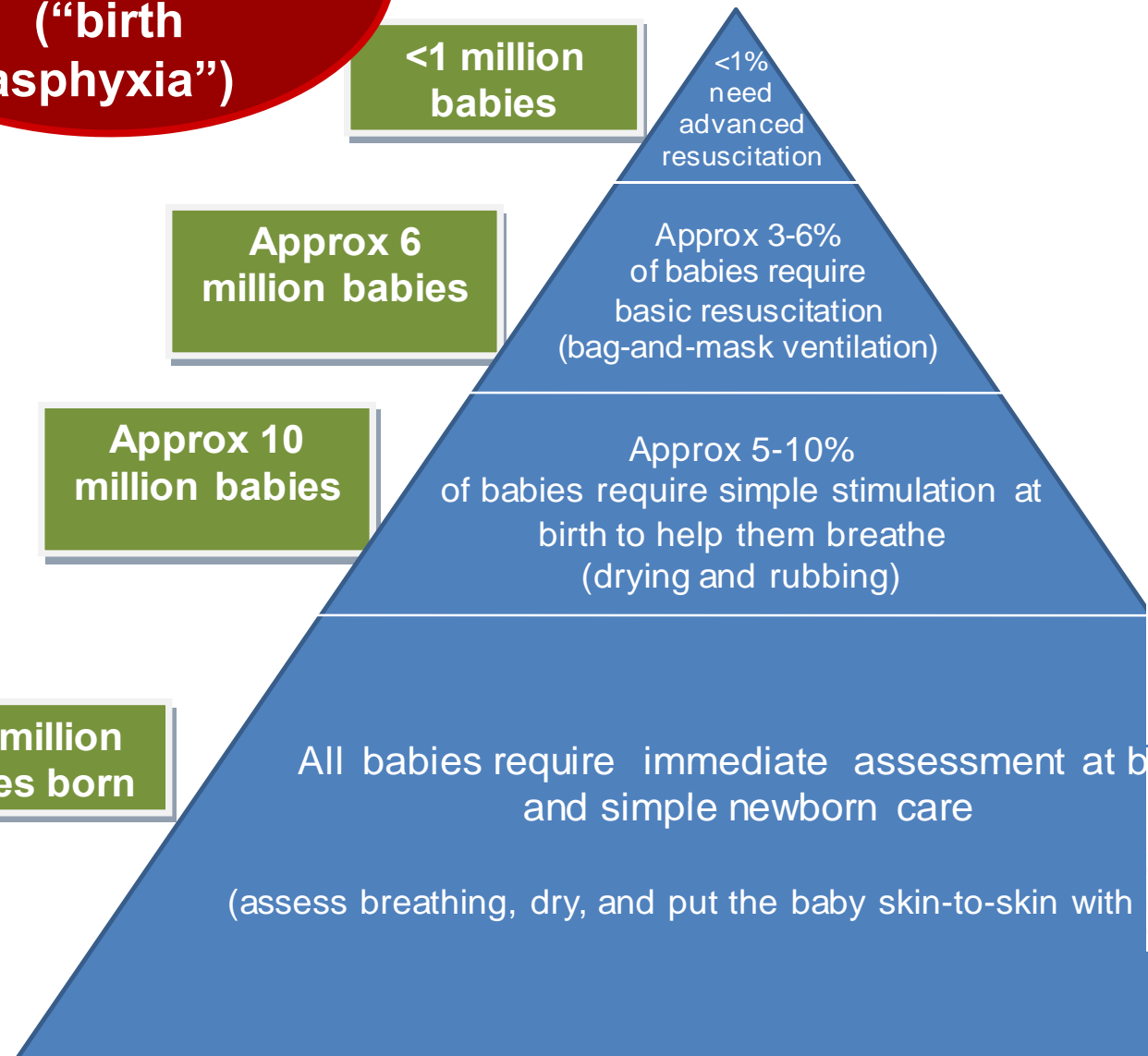
DAILY MONITOR
WEDNESDAY, AUGUST 8, 2007



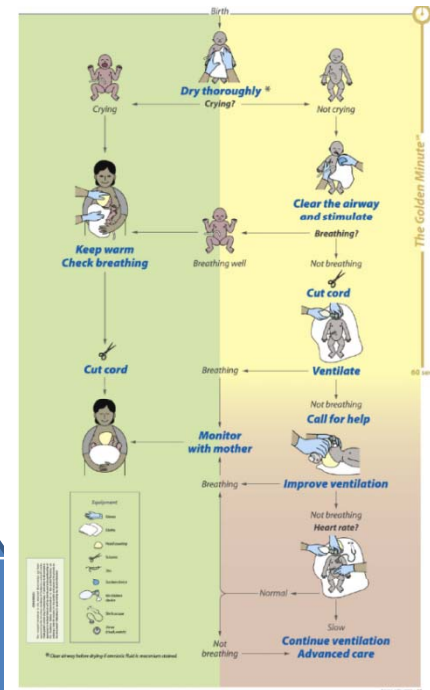
Inadequate incubation services have forced government to use charcoal stoves as an alternative source of warmth for premature babies.

Cause of death 2
**INTRAPARTUM
RELATED
("birth
asphyxia")**

Resuscitation of babies who do not breathe at birth



Helping Babies Breathe algorithm



Neonatal resuscitation – First breath 6 country study

Comparison design	Intervention	Results
Before and after (N>50,000 births)	WHO Essential Newborn Care package which includes basic newborn resuscitation	<u>Stillbirth</u> 0.69 (0.54 - 0.88) <u>Early neonatal</u> 0.99 (0.81-1.22)
Cluster RCT (N > 60,000 births)	Additional effect of specific training in basic resuscitation	<u>Stillbirth</u> 1.05 (0.84 - 1.13) <u>Early neonatal</u> 0.87 (0.65 - 1.16)

**Major media coverage and major program confusion!
Messages such as resuscitation has no effect except on
stillbirths..**

Meta-analysis of neonatal resuscitation training on “birth asphyxia” specific neonatal mortality (3 observational studies)

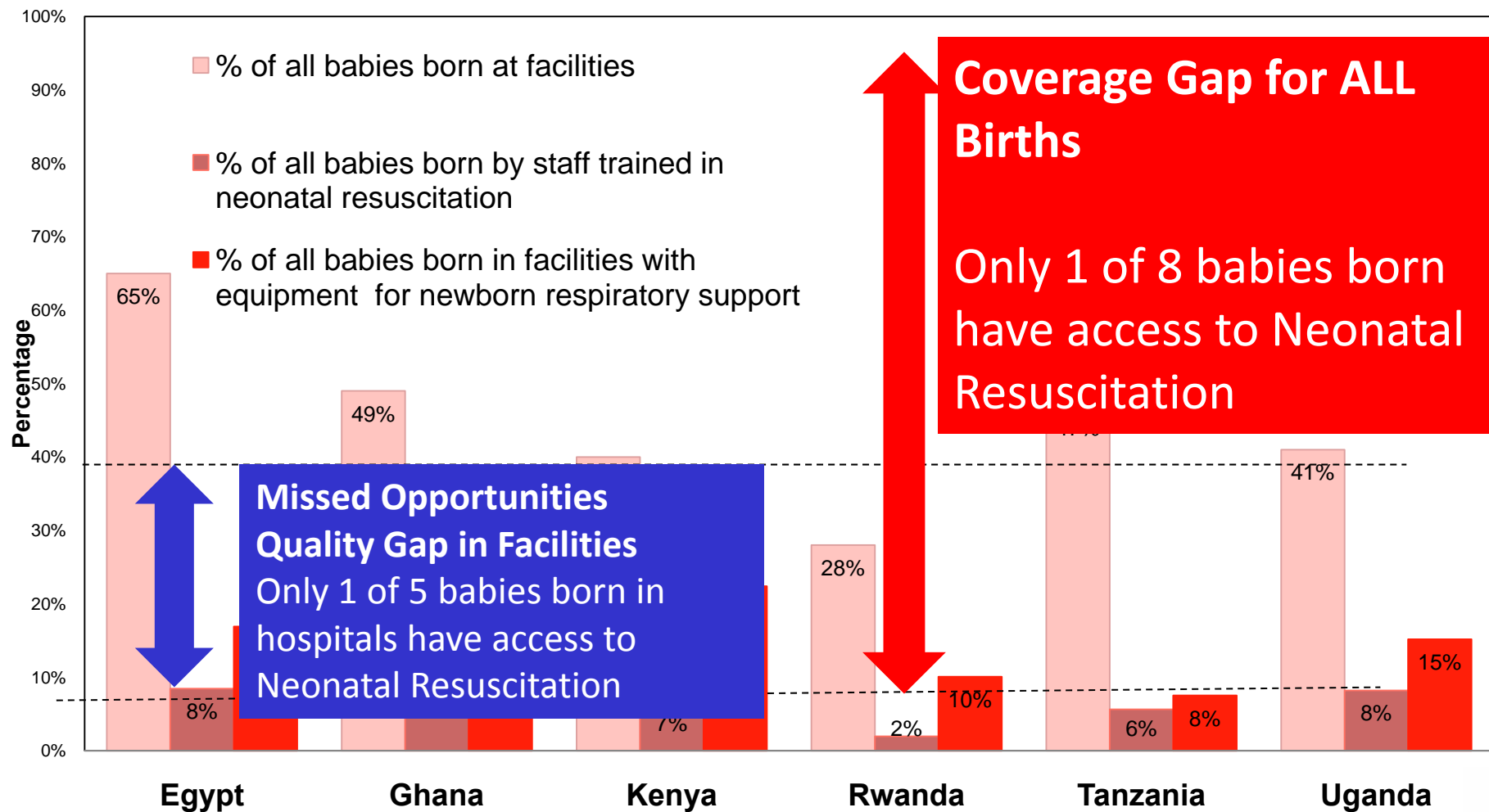
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Anne CC Lee for the LiST neonatal resuscitation group – DO NOT CITE



RR 0.70 (0.58, 0.79)
30% reduction in neonatal deaths due to “birth asphyxia” with before-after studies of facility-based resuscitation training

Coverage gap for resuscitation



Data source: National Service Provision Assessment Surveys, years ranging 2002-2006
Source: Wall S et al, IJGO 200

Cause of death 3
**NEONATAL
INFECTIONS**

Chlorhexidine umbilical cord cleansing

Intervention

Application 4% chlorhexidine on umbilical cord

May be multiple applications – more effective if early (first 24 hours)

Potential to include chlorhexidine in mother-held clean birth kits

Mortality trials (all cluster RCTs)

1. Nepal (2002-2006) Mullany et al
2. Bangladesh (2007-2009) El Aruifeen et al
3. Pakistan Sindh province - 9741 births

TBAs handwashing and/or chlorhexidine wipes

Factorial design (outcome all cause neonatal mortality)

- Handwashing vs none – no significant neonatal mortality effect
- Any chlorhexidine vs non 0.62(0.45-0.86)

New trials

Zambia and Zanzibar (2010-2014)



Meta-analysis of effect on neonatal mortality of chlorhexidine umbilical cord cleansing (3 RCTs)

Forest plot removed for web version

Cord Chlorhexidine Working Group – DO NOT CITE OR PASS ON



RR 0.77 (0.64, 0.93)

**23% reduction in all cause neonatal deaths
Higher reduction for infection deaths**



2. Interventions – on the horizon

On the horizon.....

New technologies

**Birth simulator to improve skills
for care at birth (Laerdal Foundation)**



Wind up powered robust technology

- Doppler fetal heart rate monitor
- Pulse oximeter



Cell phone technology for referral and for tracking

Bubble CPAP ventilator

Neonatal sepsis biomarkers and testing

**PROLIFERATING
KITS !!**

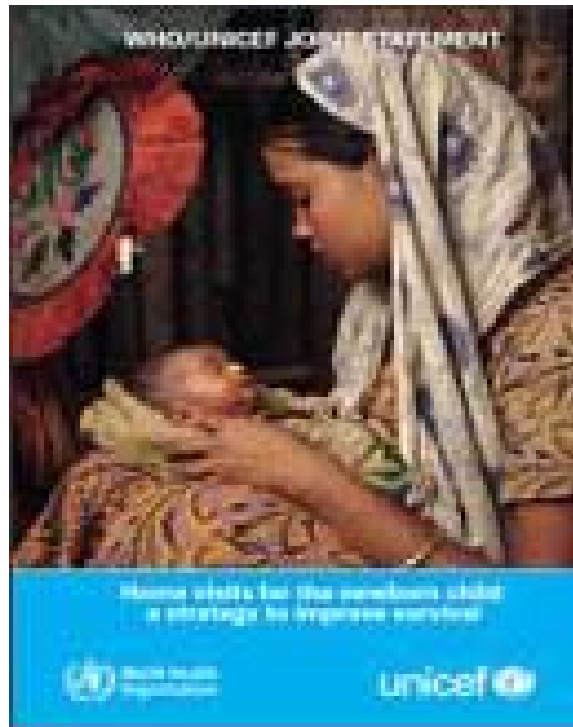




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3. Implementation advances

Joint WHO and UNICEF statement on postnatal visits



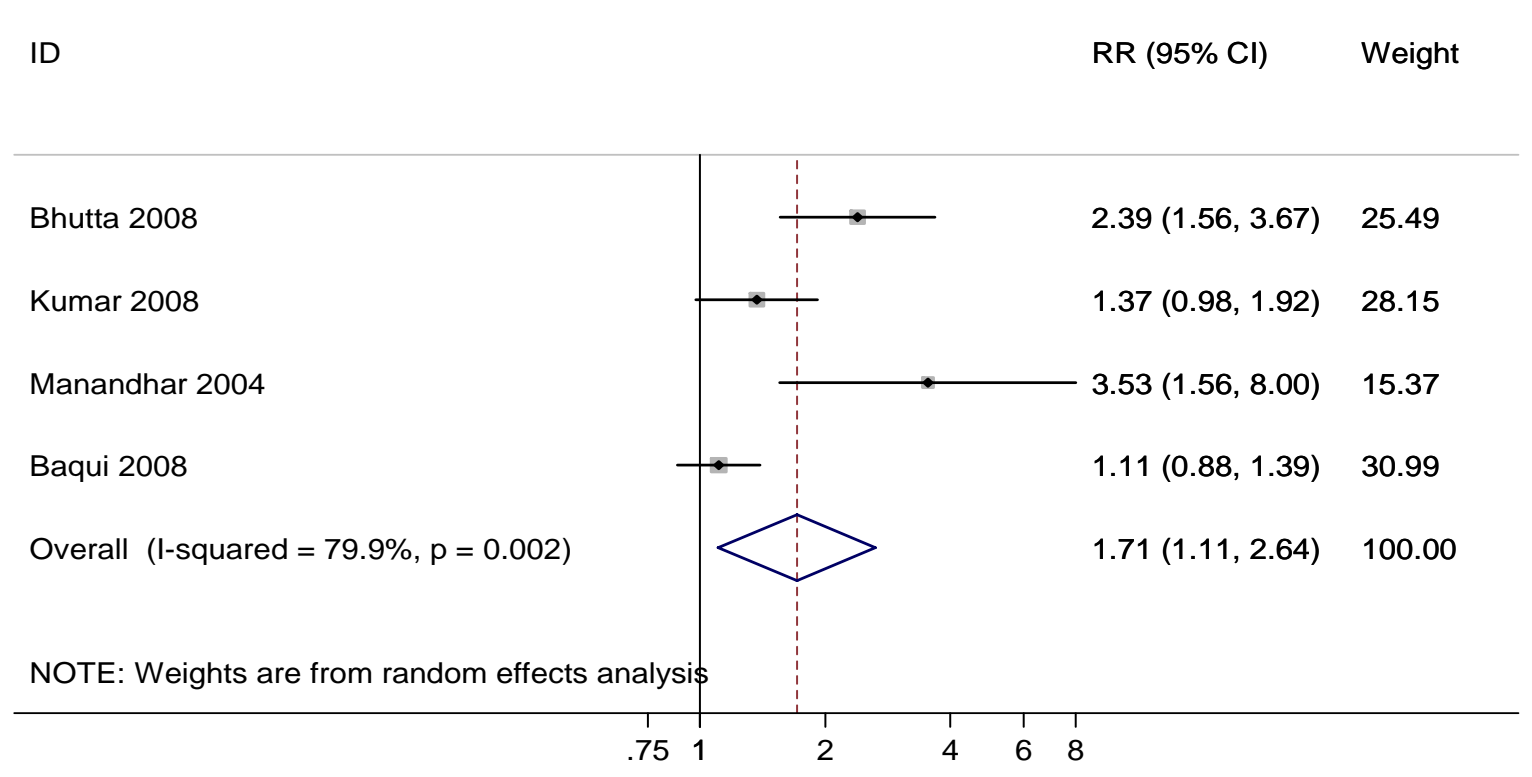
Launched since last Countdown – recognizes strong evidence base for early postnatal care..

Community based packages

Approach	Number of cRCTs or quasi experimental	NMR baseline (per 1000 births)	Effect on neonatal mortality rate
Women's groups	3 (Azad 2010, Manandhar 2004, Tripathy 2010)	30 - 54	Non sig to 32%
Home visits – preventive and linkages	3 (Bhutta 2008, Kumar 2008, Baqui (India) 2009)	35 – 84	Non sig to 50%
Home visits with community-based curative care	2 (Bang 1999, Baqui 2008)	47 - 62	34 to 62%

Context, content of care, coverage
Confusing cost analysis.. US\$95 TO \$3442 per life saved
FURTHER GROUP ANALYSIS IN PROGRESS
NEW TRIALS IN PROGRESS IN AFRICA

Meta-analysis of effect on facility birth of community mobilisation (3 cRCTs)

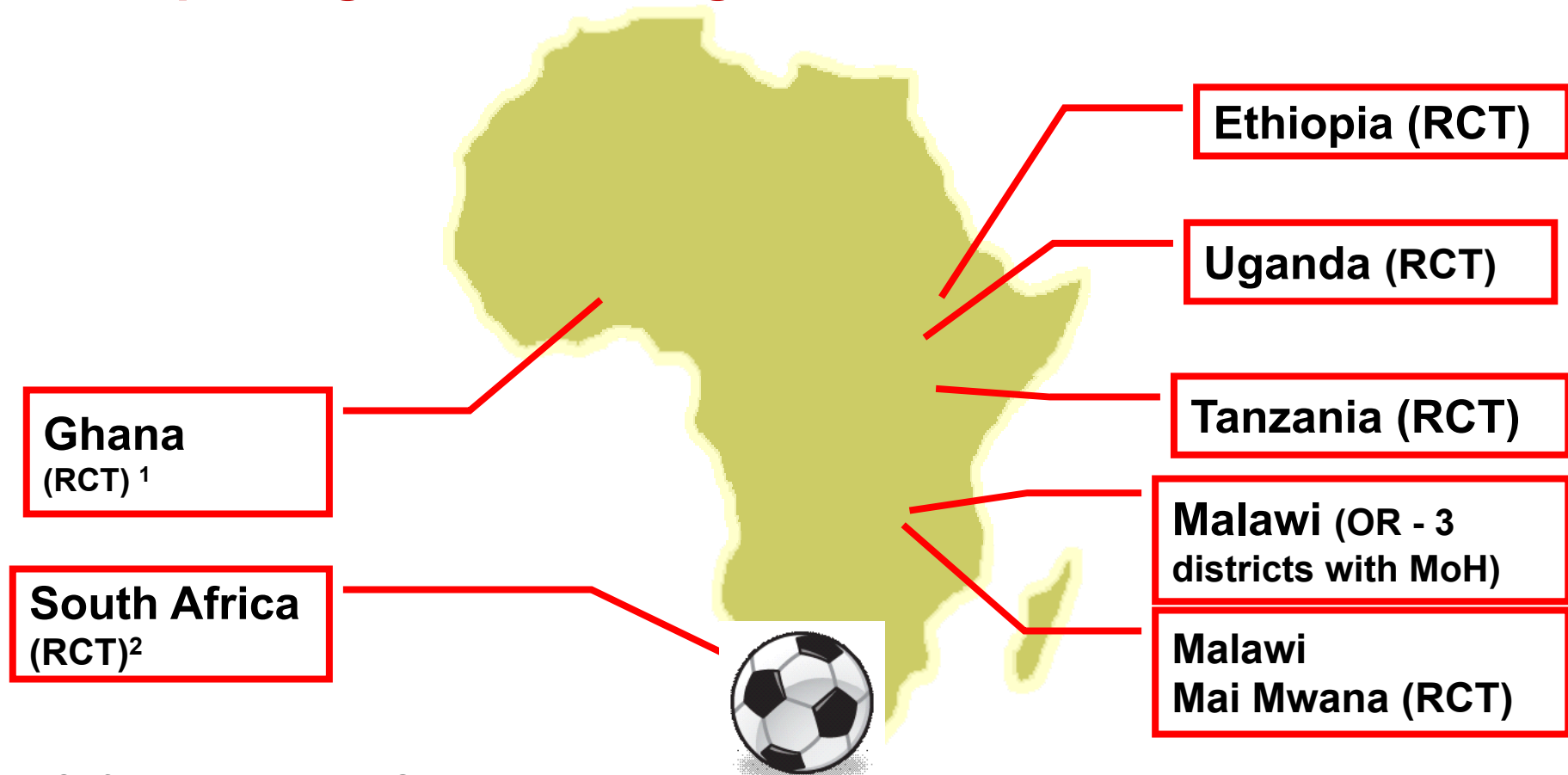


Lee CC et al IJGO 2009

71% increase in facility births across all studies
210% increase for more intensive home visit approaches
Reduction in early NMR (RR 0.64 (0.48, 0.85))

African Newborn Network

Adapting and testing community-based, integrated packages addressing newborn health in Africa



1. Cofunding with WHO

Comparable results for effect and cost – some by time of next Countdown meeting



Conclusion

New for newborns!

1. Interventions – more definitive evidence?

- Kangaroo mother care
- (Antenatal steroids)
- Basic neonatal resuscitation
- Chlorhexidine cord cleansing

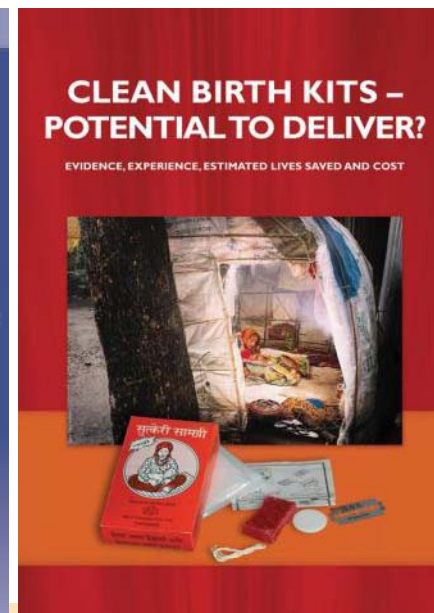
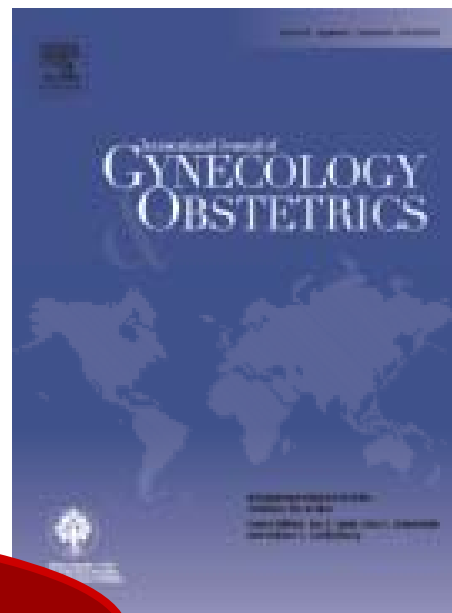
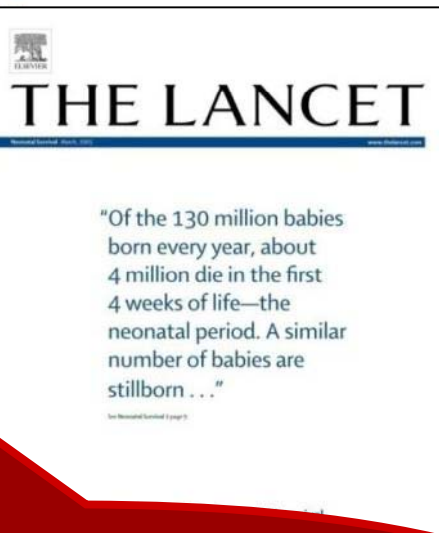
2. Interventions – on the horizon?

- More technologies – will be critical to evaluate
- Kitting!

3. Implementation advances?

- Postnatal care
- Community based care – linked to facilities
- More on context, content of packages

4. Research gaps



Thank you !

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www.healthynewbornnetwork.org

