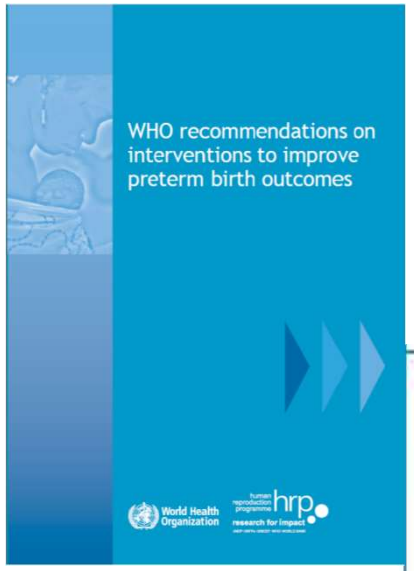
16 November 2016

KMC:
Evidence, gaps and ongoing research

Department of Maternal, Newborn, Child and Adolescent Health

WHO, Geneva

World Health Organization



WHO recommendations

7.0. Kangaroo mother care is recommended for the routine care of newborns weighing 2000 g or less at birth, and should be initiated in health-care facilities as soon as the newborns are clinically stable.	**Strong recommendation** based on moderate-quality evidence
7.1. Newborns weighing 2000 g or less at birth should be provided as close to continuous Kangaroo mother care as possible.	**Strong recommendation** based on moderate-quality evidence
7.2. Intermittent Kangaroo mother care, rather than conventional care, is recommended for newborns weighing 2000 g or less at birth, if continuous Kangaroo mother care is not possible.	**Strong recommendation** based on moderate-quality evidence

World Health Organization

Cochrane Library
Cochrane Database of Systematic Reviews

Evidence: mortality

Kangaroo mother care to reduce morbidity and mortality in low birthweight infants (Review)

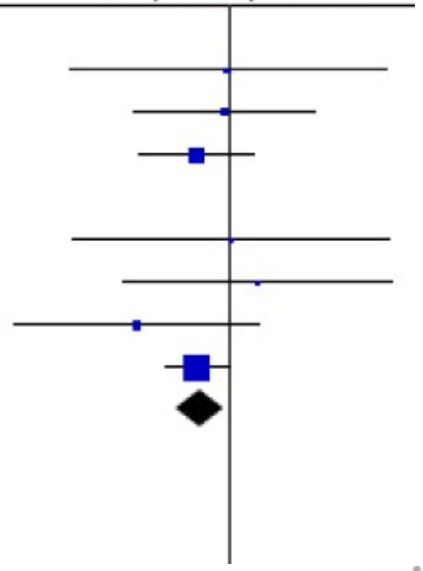
Conde-Agudelo A, Díaz-Rossello JL

KMC improves survival of small babies by 40% compared with conventional newborn care

	KMC		Control			Risk Ratio
Study or Subgroup	Events	Total	Events	Total	Weight	M-H, Fixed, 95% CI
1.1.1 All studies						
Boo 2007	1	65	1	63	2.2%	0.97 [0.06, 15.16]
Cattaneo 1998	3	149	3	136	6.9%	0.91 [0.19, 4.45]
Charpak 1997	6	364	10	345	22.5%	0.57 [0.21, 1.55]
Ghavane 2012	0	68	0	68		Not estimable
Kadam 2005	1	44	1	45	2.2%	1.02 [0.07, 15.85]
Rojas 2003	2	33	1	27	2.4%	1.64 [0.16, 17.09]
Suman 2008	1	103	5	103	10.9%	0.20 [0.02, 1.68]
Worku 2005	14	62	24	61	52.9%	0.57 [0.33, 1.00]
Subtotal (95% CI)		**888**		**848**	**100.0%**	**0.60 [0.39, 0.92]**
Total events	28		45			

Heterogeneity: Chi² = 2.29, df = 6 (P = 0.89); I² = 0%

Test for overall effect: Z = 2.32 (P = 0.02)



Quality

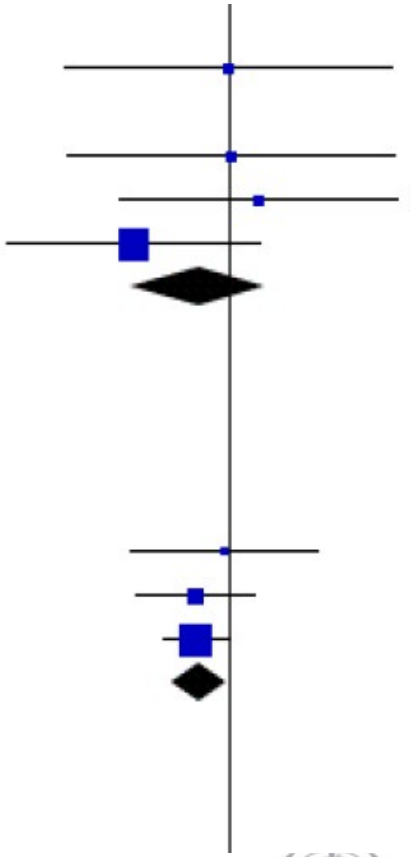
⊕⊕⊕⊕
HIGH

World Health Organization

Evidence: mortality

Survival benefit clear for continuous KMC. Insufficient evidence for intermittent KMC.

1.1.2 Intermittent KMC						
Boo 2007	1	65	1	63	12.5%	0.97 [0.06, 15.16]
Ghavane 2012	0	68	0	68		Not estimable
Kadam 2005	1	44	1	45	12.2%	1.02 [0.07, 15.85]
Rojas 2003	2	33	1	27	13.6%	1.64 [0.16, 17.09]
Suman 2008	1	103	5	103	61.7%	0.20 [0.02, 1.68]
Subtotal (95% CI)		**313**		**306**	**100.0%**	**0.59 [0.19, 1.81]**
Total events	5		8			
Heterogeneity: Chi² = 2.00, df = 3 (P = 0.57); I² = 0%						
Test for overall effect: Z = 0.92 (P = 0.36)						
1.1.3 Continuous KMC						
Cattaneo 1998	3	149	3	136	8.3%	0.91 [0.19, 4.45]
Charpak 1997	6	364	10	345	27.3%	0.57 [0.21, 1.55]
Worku 2005	14	62	24	61	64.3%	0.57 [0.33, 1.00]
Subtotal (95% CI)		**575**		**542**	**100.0%**	**0.60 [0.38, 0.96]**
Total events	23		37			
Heterogeneity: Chi² = 0.31, df = 2 (P = 0.86); I² = 0%						
Test for overall effect: Z = 2.13 (P = 0.03)						



Quality

⊕⊕⊕O
MODERATE

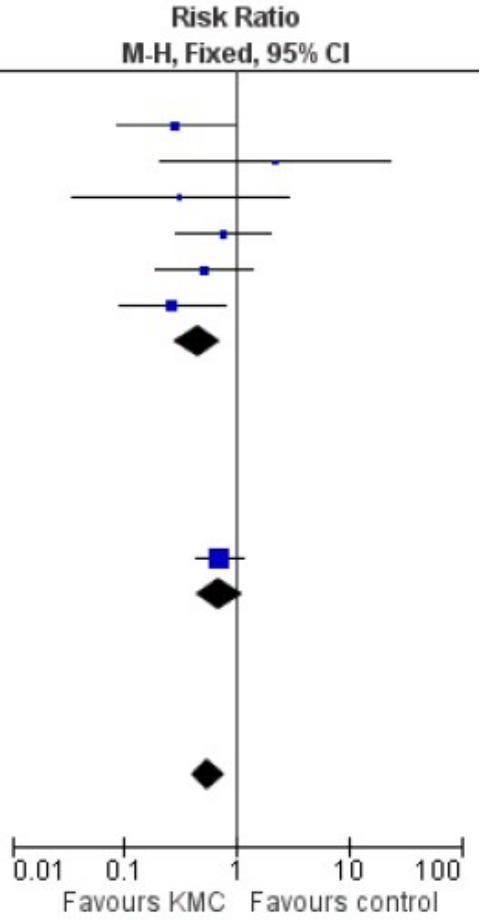
⊕⊕⊕⊕
HIGH

World Health Organization

Evidence: severe infection

KMC reduces risk of infection in small babies by 44% compared with conventional newborn care

Study or Subgroup	KMC Events	KMC Total	Control Events	Control Total	Weight	Risk Ratio M-H, Fixed, 95% CI
1.5.1 Intermittent						
Ali 2009	3	58	10	56	12.4%	0.29 [0.08, 1.00]
Boo 2007	2	56	1	62	1.2%	2.21 [0.21, 23.76]
Eka Pratiwi 2009	1	48	3	45	3.8%	0.31 [0.03, 2.90]
Kadam 2005	6	44	8	45	9.6%	0.77 [0.29, 2.03]
Rojas 2003	5	33	8	27	10.7%	0.51 [0.19, 1.38]
Suman 2008	4	103	15	103	18.3%	0.27 [0.09, 0.78]
Subtotal (95% CI)		**342**		**338**	**55.9%**	**0.45 [0.28, 0.73]**
Total events	21		45			
Heterogeneity: Chi² = 4.46, df = 5 (P = 0.48); I² = 0%						
Test for overall effect: Z = 3.22 (P = 0.001)						
1.5.2 Continuous						
Charpak 1997	26	343	35	320	44.1%	0.69 [0.43, 1.12]
Subtotal (95% CI)		**343**		**320**	**44.1%**	**0.69 [0.43, 1.12]**
Total events	26		35			
Heterogeneity: Not applicable						
Test for overall effect: Z = 1.48 (P = 0.14)						
Total (95% CI)		**685**		**658**	**100.0%**	**0.56 [0.40, 0.78]**
Total events	47		80			
Heterogeneity: Chi² = 5.69, df = 6 (P = 0.46); I² = 0%						
Test for overall effect: Z = 3.37 (P = 0.0008)						
Test for subgroup differences: Chi² = 1.55, df = 1 (P = 0.21), I² = 35.3%						



Quality

⊕⊕⊕O
MODERATE

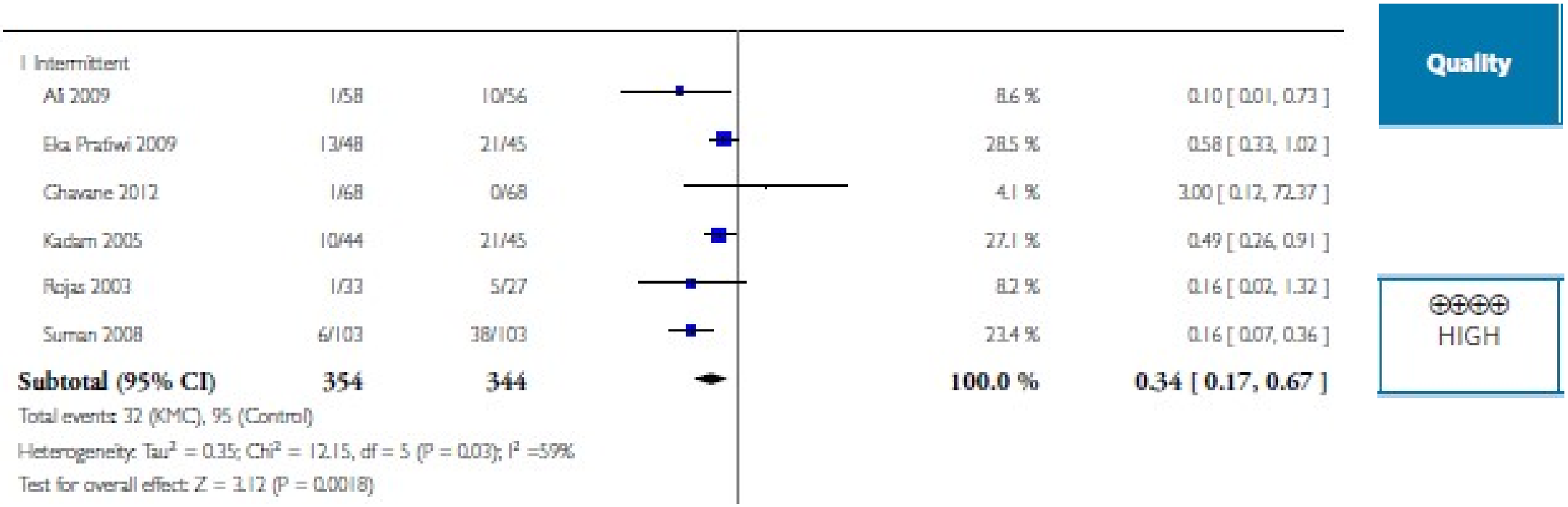
⊕⊕OO
LOW

⊕⊕⊕⊕
HIGH

World Health Organization

Evidence: hypothermia

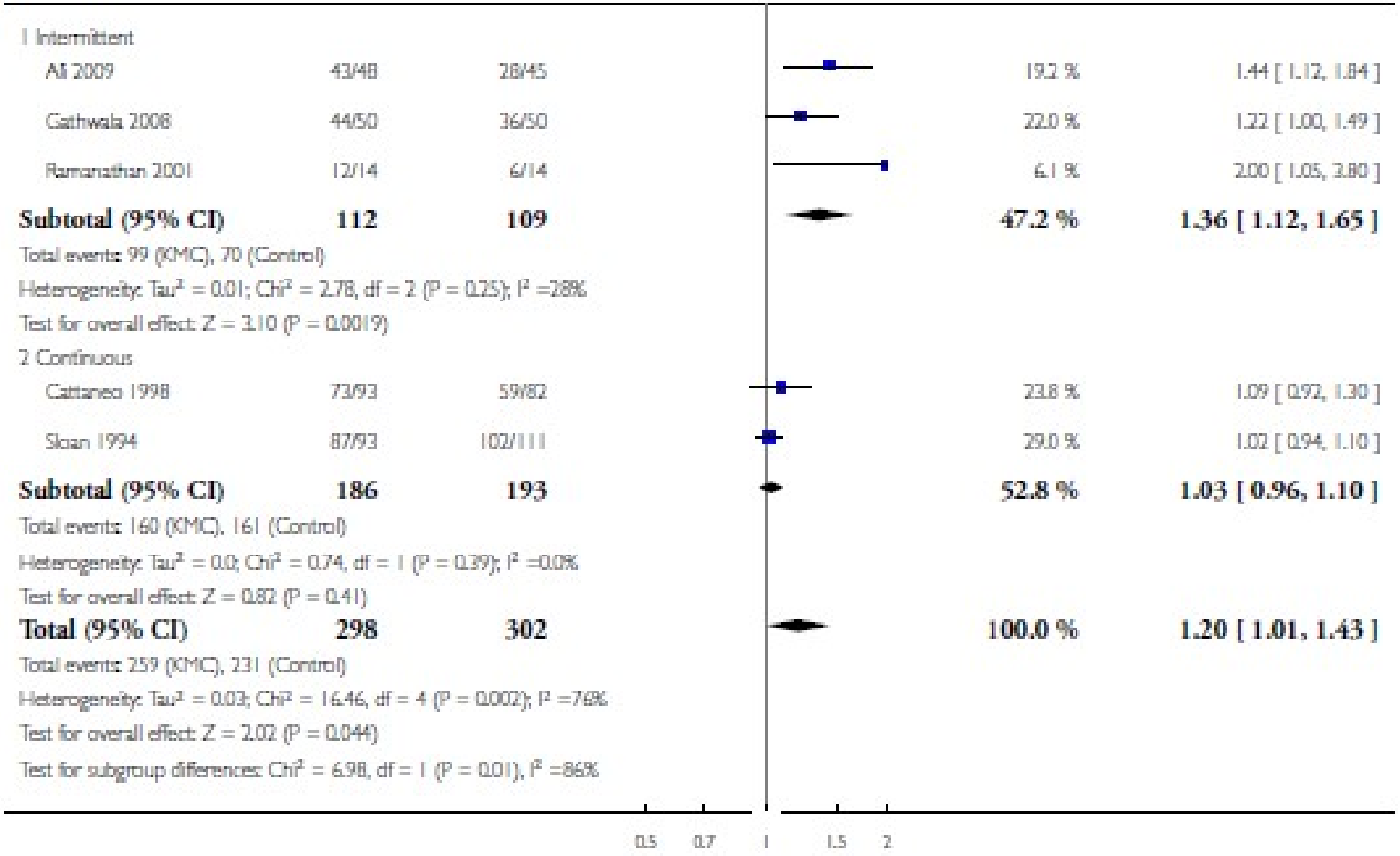
KMC reduces risk of hypothermia in small babies by 66% compared with conventional newborn care



World Health Organization

Evidence: exclusive breastfeeding

KMC increases exclusive breastfeeding by 20% compared with conventional newborn care



Quality

⊕⊕⊕⊕
HIGH

⊕⊕OO
LOW

⊕⊕⊕O
MODERATE

World Health Organization

Benefits far beyond temperature maintenance

- Skin to skin contact promotes breastfeeding by effects both on mother and baby
- Lower infections perhaps due to reduced harmful exposure, microbiome, exclusive breastfeeding
- Reduced stress in the baby
- Increased bonding between mother and the baby
- Increased maternal efficacy and confidence in caring for her small baby

Evidence gaps: key research priorities

- How can facility based initiation of effective KMC for stable small babies be scaled up?
- Can community-based initiation of KMC reduce neonatal mortality of clinically stable small babies?
- Does initiation of KMC immediately after birth, even for unstable babies, improve survival?

New WHO coordinated research

- Learning how to implement KMC at scale to reach a population coverage of at least 80% (ongoing)
- Efficacy of home-initiation of KMC in reducing neonatal and infant mortality (ongoing, 25% enrolled)
- Efficacy of KMC initiated immediately after birth in reducing neonatal mortality (will be initiated in early 2017)

KMC scale up study

- In Ethiopia and India, 7 populations of about a million each in different geographic regions
- Understanding barriers to implementation and addressing them systematically
- Accurate weighing of all newborns, referral, implementing KMC in health facilities, supporting continued KMC at home
- Independent population-based evaluation of coverage

Home-initiated KMC study

- Individually randomized controlled trial in India. Sample size 10,500
- Low birth weight infants <48 hours old, born at home or discharged from health facilities without KMC
- Families allocated to intervention group supported to provide skin to skin contact, exclusive breastfeeding
- Primary outcome mortality to 1 and 6 months of age
- Early learnings: almost universal acceptance, average KMC duration about 9.5 hours per day achieved.

Immediate KMC study

- Individually randomized controlled trial: hospitals in Ghana, India, Malawi, Nigeria and Tanzania. Sample size 4,200
- Newborns <1.8 kg will be allocated to intervention or control group
- Those allocated to intervention will receive skin to skin care starting immediately after birth, and continued thereafter
- Those allocated to control will receive conventional care until considered stable, KMC will be initiated after that
- Primary outcome neonatal mortality

Conclusions

- KMC is effective in improving survival, reducing infection, reducing hypothermia and improving breastfeeding
- Evidence of benefits only in studies conducted in hospitals
- Most previous studies initiated KMC only after the newborns were stable, average age at initiation >3 days
- Coverage of KMC remains low globally
- New research will address barriers to scale up, and evaluate efficacy in the period of greatest risk