

Mortality

2/19/2016 Be sure to see Life Threatening Chart too
(Lost everything prior to January 2011)

Akseer et al., 2015	PT, FT, A review paper that reports that the Every Newborn Action Plan relates that KC prevents deaths.
Andres et al., 2011	FT, altes and deaths with Birth KC
Barros et al. 2010	PT, Review. Says KMC is important intervention to decrease mortality in LBW infants in developing countries.
BCG Foundation, 2013	PT, Malawi research of maternal acceptance to do KMC to help reduce PT discharged and this needs to change to reduce mortality.
Becher et al., 2011	FT, SUPC guidelines (60% of cases cause is known after postmortem which should be done on all dead babies. Lists the tests to do while baby is still alive and in post-mortem.
Becher et al. 2012	FT, Altes and Deaths with Birth KC
Bergman & Jurisoo, 1994	Reduced mortality in preterm and full terms in the African bush country with KC.
Bhandari et al. 2012	PT, FT, Birth KC has a protective effect against newborn mortality.
Bhutta et al., 2005	PT, FT, Review of at home intervention studies and cites one for KMC and puts in the chart that benefits from home KMC have been documented.
Bhutta et al., 2015	PT, Systematic review of statistics for countries and use of interventions, including KC, and states that increased used and quality of newborn interventions could prevent an estimated 113,000 maternal deaths, 531,000 stillbirths, and 1-325 million neonatal deaths annually by 2020 at an estimated running cost of US\$4-5 billion per year (US\$0-9 per person).
Blencowe et al., 2009	Malawi, early KMC discharge is safe/feasible, but 46/272 infants died and 201/272 gained weight to 2500 grams.
Boundy et al., 2016	PT, Meta-analysis of 124 studies of 1035 reviewed to compare associations. KMC was associated with 36% lower mortality among LBW newborns compared with conventional care (RR=0.64, 95%CI 0.46-0.89).
Branger et al. 2007	FT, 11ALTEs and 7 deaths occurred and 5 of these events were in Birth KC. Others were with infants prone on own bellies.
Canadian Ped Soc 2012	PT, Position Statement that starts with KC reduces neonatal mortality.
Cattaneo et al., 1998	RCT showing improved survival of preterm infants with KC.
Carlo et al., 2010	Descriptive report of mortality in 3 rd world countries where essential care was taught and compared to data before essential care. No change in mortality in first 7 days of life in 7 countries.
Charpak, et al. 2005	PT. Review of 25 yrs after it began and says that KMC started and reduced mortality of infants
	PT, Cochrane meta-analysis showed decreased risk of mortality in KC infants
Charpak et al., 1994	One year FU: 162 KMC (24/7 from 34-38 weeks) infants had higher risk of death than 170 infants in non-KMC hospital.
Charpak et al., 1997	Risk of dying was the same in KMC group as in control group at term age in preterm infants. KMC does not increase risk of dying and is as safe as traditional care.
Conde-Agudelo et al., 2000b	No evidence of difference in mortality between 24/7 KMC and non-24/7 KMC preterm infants.
Conde-Agudelo et al., 2003	Insufficient evidence to comment on any difference in mortality between KMC and non-KMC preterm infants.

Conde-Agudelo et al., 2007	META-ANALYSIS. No evidence of difference in mortality between 24/7 KMC and incubator care studies (only 3 studies, but 1362 infants across the three studies).
Conde-Agudelo 2011	PT, Cochrane Meta-Analysis based on 16 studies (2518 infants) KMC reduced mortality at discharge and severe illness, infections, LOS (length of stay) and improved bonding, BF, maternal satisfaction. KC saves newborn lives.
Conde-Agudelo et al. 2014	PT, Cochrane meta-analysis showed decreased risk of mortality in KC infants by 33% and if KC started in first week of life then 51% reduction in mortality. But intermittent KC in resource rich NICUS has NOT been shown to reduce mortality. See also Lassi et al., 2015
Daga & Daga, 1989	PT. Reduction in neonatal mortality with KC in preterms.
Espagne et al., 2004	FT , may have mortality in this report of ALTEs with Birth KC
Faye et al., 2016	PT, Retrospective comparative chart review of KC vs incubator care over 2 yrs in Senegal. 135 subjects and either had conventional care (12.3 days) or KC (10.2 days). Main complications of conventional care were respiratory distress(46.2%), infections (36.9%), nec; main complications of KMC were infections (20%- 50% fewer infections), hypoglycemia (19%), GER (16.4%), wgt gain was 15.g/kg/day, 3 episodes of hypothermia, 56 % exclusively BF, 5 deaths (1 in KC, 1 @home, 3 upon readmission).
Ghavane et al. 2012	PT, RCT, micropreemies, 24/7 KMC ward vs NICU incubator showed no differences in apnea,BF, hypoglycemia,hypothermia, sepsis, morbidity, mortality, and weight gain but LOS was 11.5 days shorter
Gogia et al., 2011	PT, FT , META-ANALYSIS, Birth KC has a protective effect against newborn mortality
Imdad & Bhutta, 2013	PT, IUGR clinical report that says KC will reduce mortality in these infants
Kambarami et al., 1998	RCT, 37 KCers (24/7 KC) had better survival than 37 controls (0% vs 9% mortality).
Kambarami et al., 2003	Descriptive study of 297 preterm infants born at Harare, Zimbabwe who were discharged home on KMC. 26.6% died (median age=66 days). Hospital readmit rate = 22.9% with 8.8% mortality. Maternal mortality=4.7%. Infant mortality related to young maternal age, BW <1500g, and maternal mortality, not to discharge weight or birth weight.
KC, et al., 2015	PT & SGA mortality can be prevented and reduced by KMC.
Kirkwood et al. 2013	PT, FT , descriptive study of ESSENTIAL care of newborn home visits that reduced mortality by 12% and KC increased from 29-44% of birth.
Kumar et al., 2014	FT, PT, Measure of newborn deaths in Bihar, India and found that NOT doing KC immediately after birth was strongly associated with neonatal death.
Lamy Filho et al., 2008	Clinical evaluation of 8 KMC stepdown units vs 8 no-KMC step down units in Brazil. No difference in mortality between the units.
Lassi et al., 2015	PT, Review of two meta-analyses and the review says "On page 986 Based on the findings from GRADE criteria Kangaroo Mother Care is listed as an EFFECTIVE Intervention to reduce preterm, low birth weight infant mortality). CondeAgudelo & Diaz-Rosello 2014 showed a 33% reduction in mortality; KMC to infants in the first week of life showed a significant 51% reduction in neonatal mortality (also citing CondeAgudelo & Diaz-Rosello 2014)
Lawn et al., 2010	Descriptive study of mortality in countries where KMC is part of essential care of the newborn and KMC dramatically reduced mortality.
Lawn et al., 2009	PT, Review that says Charpak 2005 says KMC reduces Neonatal Mortality
Lawn et al. 2010	PT, Meta-analysis of <2000 g LBW infants in low and middle income countries. When KMC began in first week of life, it reduced infant mortality (remember Sloan et al. (2010) made the point that statistics were incorrectly performed and

Morelius et al., 2011	this was not really an outcome – but people still quote it) Time extremely low birth weight infants got first KC. 81 of 520 babies died in first 28 days, and of these 17 (21%) got KC and they lived longer (til day 12) and those who did not get KC (died on Day 3 = median values).
Murguia-Peniche, et al., 2014	FT, PT. KC has been shown to reduce mortality in infants
Nagai et al. 2010	RCT of early vs late 24/7 KMC in stable preemies. No significance difference but higher mortality in first 28 days in early start KMC than late start KMC.
Ndelema et al., 2016	PT, descriptive retrospective chart review of infants admitted to KMC ward and NICU in a community/district hospital in Burundi (not a tertiary care center). Survival rates at hospital discharge were 62 % for the <32 weeks and 87 % for the 32-36 weeks groups; compared to respectively 30 and 50 % in the literature on neonates in low- and middle-income countries. Providing neonatal care for premature babies is feasible at a district level in a resource-limited setting in Africa. High survival rates were observed, even in the absence of high-tech equipment or specialist neonatal physician staff.
Puig & Sguassero 2007	Late PT and FT, Cochrane review. Reports that Birth KC helps initiate BF and early BF reduces mortality and the earlier the breastfeeding after birth the greater the reduction (22%) in mortality.
Rao et al., 2008	RCT, one KMC and 5 control infants died during study in India.
Ryan & Dogbey, 2015	PT, FT, talks about millennium development goals to reduce prematurity and neonatal deaths and says that nurses need to help by doing KC
Sachdev 2003	PT, Meta-analysis of 3 RCTS of 24/7 KMC in developing countries and no differences in rates of mortality occurred.
Salam et al. 2014	This is a review of Essential newborn care practices at birth, including KC for thermal protection, that should reduce mortality and morbidity. It says that most infants die in first 24 hours of life.
Singh et al. 2012	FT. Correlation between Birth KC and neonatal mortality over first three days of life. Babies in KC were less likely to die.
Sloan et al., 2011	Commentary on Lawn mortality study and says that the analysis is flawed.
Sloan et al., 2008	RCT of KMC in the community showed no difference in mortality.
Sloan et al., 1994	RCT of KMC with stable preterms and then 6 month follow-up showed no mortality differences between incubator and KMC infants.
Torres et al. 2006	PT, descriptive follow up of 66 LBW KMC infants til term age. None died.
United Nations Pop Report, 2012	PT, guidelines that say there are 1.1 million preterm infant deaths per year and that KMC could save about 450,000 of them if 95% practice occurred in the leading 21 countries contributing to neonatal death. See all BCG Foundation citation in the KC bib.
Vahidi et al., 2014	PT, quasi=exp of cost and mortality between KC and incubator 2010-2011 in Iran and KCers had better breastfeeding, better weight gain, decreased mortality (3.7% by 2 months) than controls, which makes KC more effective than incubator care even though KC cost (\$3539.00) was higher than control infant hospitalization cost (\$2907).
Worku & Kassie, 2005	PT RCT, 22% of KMC babies died during study, 38% of conventional care babies died. Survival for preterm KMC group was remarkably better for early KMC group than those in conventional care in the 1 st 12 hours post birth and thereafter.
Zimba et al., 2012	Neonatal mortality decrease from 2000-2010 with “high impact interventions for

infant survival” like Birth Kangaroo Care and KMC

Maternal Deaths

Bhutta et al., 2015

PT, Systematic review of statistics for countries and use of interventions, including KC, and states that increased use and quality of newborn interventions **could prevent an estimated 113,000 maternal deaths, 531,000 stillbirths, and 1.325 million neonatal deaths annually by 2020 at an estimated running cost of US\$4.5 billion per year (US\$0.9 per person).**

Related Literature:

Ostergaard IMS, Inoue M, Yoshida S et al. on behalf of the United Nations Inter-agency Group for Child Mortality Estimation and the Child Health Epidemiology Reference Group. **(2011)**. Neonatal mortality levels for 193 countries in 2009 with trends since 1990: a systematic analysis of progress, projections, and priorities.. PLoS Medicine, 8: e1001080. Doi: 10.1371. <http://www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.1001080>. USA ranks 41 along with Qatar. Even tho US mortality rate has dropped 26% since 1990, it still trails many other developed nations, with an annual death rate of 4.3/1000. The 3 leading causes are preterm delivery, asphyxia, and severe infection, all of which are considered avoidable. Overall, in 2009, an estimated 3.3 million babies died in the first month of life – compared with 4.6 million neonatal deaths in 1990- and more than half of all neonatal deaths occurred in 5 countries of the world (44% of global births): India 27.8%, Nigeria (7.2%), Pakistan 6.9%, China 6.4%, and Democratic Republic of the Congo 4.6%. Between 1990 and 2009 the global neonatal mortality rate declined by 28% from 33.2 to 23.9 deaths per 1000 live births.