

OHIO WAR ON INFANT MORTALITY: The Newborn Kangaroo Care Project.

We recommend: Once born and admitted to the NICU, treating the preterm infant with consistent kangaroo caregiving for at least 8 hours per day by mothers and fathers can improve the newborn's health and result in reduced neonatal mortality. The Ohio Collaborative to Prevent Infant Mortality could work with the United States Institute for Kangaroo Care or the International Kangaroo Mother Care Network to develop and implement a uniform screening and treatment approach to reduce infant mortality through use of Kangaroo Care. For more information, contact Susan Ludington, Ph.D. at the United States Institute for Kangaroo Care at www.kangarooocareusa.org or Susan.Ludington@case.edu or phone 216-368-5130.

Given that:

- 34.3% of infant deaths are ultimately due to preterm birth (ODH Review) and that the Bill and Melinda Gates Foundation is spending more than 20 million per year to reduce infant mortality (Ref) and accelerate the implementation of kangaroo care with a focus on Kangaroo Care's ability to reduce newborn deaths (Engmann et al., 2013)
- Save the Children's "group of stakeholders in newborn health affirmed adoption of Kangaroo Care **as a life-saving intervention** because prematurity is a major cause of newborn death and disability (accounting for >35% of neonatal mortality), Kangaroo Care is an evidence-based solution to reduce preterm mortality and morbidity, and Kangaroo Care **can avert up to 450,000 preterm deaths each year** if near-universal coverage with Kangaroo Care is achieved." (Engmann et al., 2013, pg. 1; United Nations Population Division, 2012)
- Kangaroo Care is one of the five ESSENTIAL CARE elements for all newborns at birth to prevent neonatal mortality (World Health Organization, 2009), and "essential care of newborns decreased all-cause 7-day neonatal mortality rates from 11.5 deaths/1000 live births to 6.8 deaths/1000 live births" in one study (Carlo et al., 2010, p e1064).
- Kangaroo Care reduces neonatal mortality (associated with 36% lower mortality LBW newborns compared with conventional NICU care (RR=0.64, 95%CI 0.46-0.89 (Boundy et al., 2016 Meta-analysis) and as confirmed by Cochrane meta-analyses (Conde-Agudelo et al., 2014) that showed decreased risk of mortality in Kangaroo care newborns by 33% and if Kangaroo care started in the first week of life then there was a 51% reduction in mortality. But "only a very small proportion of newborns who could benefit from Kangaroo Care receive it" (Engmann, et al., 2013, pg.1).
- Kangaroo Care improves cardiorespiratory stability (Maastrup & Greisen, 2010) and as confirmed by Cochrane Meta-Analysis (Moore et al., 2012) and recommended by the American Academy of Pediatrics (Baley et al., 2015). Cardiorespiratory instability is one source of mortality.
- Kangaroo Care reduces apneic episodes by 50% (Maastrup & Greisen, 2010) to 75% (Hadeed et al., 1995; Ludington-Hoe et al., 1994).
- Kangaroo Care decreases risk of sepsis (Boundy et al., 2016) and reduces infections as confirmed by Cochrane meta-analysis (Conde-Agudelo et al., 2011; 2014).
- Kangaroo Care reduces risk of hypothermia (Boundy et al., 2016), and reduces hypothermia events as confirmed by Cochrane meta-analysis (Conde-Agudelo et al., 2011, 2014).
- Kangaroo Care reduces preterm newborn stress by 70% within 20 minutes of onset (Collados-Gomez et al., 2011 ; Gitau et al., 2002) and high levels of stress impair immune functions (Ganatra et al., 2010). NICU infants experience toxic levels of stress (Montirosso & Provenzi, 2015).

- Kangaroo Care is well tolerated without adverse events by newborns 24 weeks (Heinemann et al., 2010; Kauer et al., 2004), 25 weeks (Carbasse et al., 2013; Maastrup & Greisen, 2010) gestation and older (Fohe et al., 2000).
- Kangaroo Care reduces length of stay (Ghavane et al., 2012) in Neonatal Intensive Care Units, as confirmed by Cochrane meta-analysis (Conde-Agudelo et al., 2014),
- Kangaroo Care accelerates transition to nipple feedings (Bala et al., 2016),
- Kangaroo Care enhances initiation and exclusivity of breastfeeding according to Cochrane meta-analyses (Conde-Agudelo et al., 2011; 2014), which can further accelerate reduction of newborn deaths,
- Kangaroo Care enhances weight gain (O'Brien et al., 2013) and as confirmed by Cochrane Meta-Analysis (Conde-Agudelo et al., 2011; 2014).

References:

- Bala P, Kaur R, Mukhopadhyay K, Kaur S. (2016-JAN). Oromotor Stimulation for Transition from Gavage to Full Oral Feeding in Preterm Neonates: A Randomized controlled trial. *Indian Pediatr.* 2016 Jan 8;53(1):36-8.
- Baley J & COMMITTEE ON FETUS AND NEWBORN. (2015-August 31). Skin-to-Skin Care for Term and Preterm Infants in the Neonatal ICU. *Pediatrics*, 136(3):596-599 .doi:10.1542/peds.2015-2335 pii: peds.2015-2335. Boundy, E.O. Dastjerdi, R., Spiegelman, D. Fawzi, W.W., Missmer, S.A., Lieberman, E., Sandhya Kajeepeta, S., Wall, S., Chan, G.J. (2016-Jan). Kangaroo Mother Care and Neonatal Outcomes: A Meta-analysis. *Pediatrics* 137 (1), e20152238 , doi:10.1542/peds.2015-2238.
- Carbasse, A., Kracher, S., Hauser, M., Langlet, C., Escande, B., Donato, L., Astruc, D., & Kuhn, P. (2013). Safety and effectiveness of skin-to-skin contact in the NICU to support neurodevelopment in vulnerable preterm infants. *J. Perinatal and Neonatal Nursing*, 27(3):255-62. doi: 10.1097/JPN.0b013e31829dc349
- Carlo, W.A., McClure, E.M., Chomba, E., Chakraborty, H., Hartwell, T., Harris, H., Lincetto, O., & Wright, L.L. (2010). Newborn care training of midwives and neonatal and perinatal mortality rates in a developing country. *Pediatrics*, 126(5), e1064-e1071.
- Collados-Gomez, L., Aragonés-Corral, B., Contreras-Olivares, I., García-Feced, E. & Vila-Piqueras, M.E. (2011). Assessing the impact of kangaroo care on preterm infant stress. *Enfermería Clínica*, 21(2), 69-74. NO DOI.
- Conde-Agudelo, A. & Díaz-Rossello, J.L. (2014). Kangaroo mother care to reduce morbidity and mortality in low birthweight infants. *Cochrane Database Syst Rev.* 2014 Apr 22;4:CD002771.
- Fohe K, Kropf S, & Avenarius S. (2000). Skin-to-skin contact improves gas exchange in premature infants. *Journal of Perinatology*, 20(5), 311-315.
- Ganatra HA, Stoll BJ, & Zaidi AKM (2010) International perspective on early-onset neonatal sepsis. *Clinics in Perinatology* 37, 501-523
- Ghavane, S., Murki, S., Subramanian, S., Gaddam, P., Kandraj, H., & Thumalla, S. (2012). Kangaroo Mother Care in Kangaroo ward for improving the growth and breastfeeding outcomes when reaching term gestational age in very low birth weight infants. *Acta Paediatrica*, 101(12):e545-549. Doi: 10.1111/apa.12023
- Gitau R, Modi N, Gianakouloupolous X, Bond C, Glover V, & Stevenson J. (2002). Acute effects of maternal skin-to-skin contact and massage on saliva cortisol in preterm babies. *J Reprod Infant Psychol* 20(2), 83-88. **No doi.**
- Hadeed, A.J., Ludington, S.M., & Siegal, C. (1995). Skin-to-skin contact (SSC) between mother and infant reduces idiopathic apnea of prematurity. *Pediatric Research*, 37(4), Part 2, p. 280A, #1233.
- Heimann, K., Vaessen, P., Peschgens, T., Stanzel, S., Wenzl, T.G. & Orlikowsky T. (2010). Impact of skin-to-skin care, prone and supine positioning on cardiorespiratory parameters and thermoregulation in premature infants. *Neonatology*, 97(4), 311-317. DOI: 10.1159/000255163
- Kaur R, Narula S, Parmar V, Kumar A, Basu S., Kavita R, Sharma R, & Kaur D. (2004). Intermittent Kangaroo Mother Care in Neonatal Intensive Care Unit, Chandigarh. Presentation at "Workshops on KMC at Neoncon 2004. XXIV NNF Annual Convention at Chandigarh, 28 October, 2004" Available from [file://E:\KangarooMotherCareInitiative\(KMCI\).htm](file://E:\KangarooMotherCareInitiative(KMCI).htm) .
- Ludington-Hoe, S.M., Thompson, C.A., Swinith, J. Hadeed, A.J., & Anderson, G.C. (1994). Kangaroo care: Research results and practice implications and guidelines. *Neonatal Network*, 13(1), 19-27
- Maastrup, R., & Greisen, G. (2010). Extremely preterm infants tolerate skin-to-skin contact during the first weeks of life. *Acta Paediatrica*, 99(8), 1145-1149. doi: 10.1111/j.1651-2227.2010.01806.x

Montirosso, R. & Provenzi, L. (2015). Implications of Epigenetics and Stress Regulation on Research and Developmental care of preterm infants. *JOGNN*, 44(2), 174-182. Doi: 10.1111/1552-6909.12559

United Nations Population Division. (2012). Born TOO Soon Report.

World Health Organization. (2009). *Pregnancy, Childbirth, Postpartum and Newborn Care: A Guide for Essential Practice*. Geneva: WHO.