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Introduction: Title: Neonatal Outcomes in Very Preterm Infants in the Era of Delayed Cord Clamping
BACKGROUND: Placental transfusion at birth is a physiological process. Meta-analyses demonstrate that delayed cord clamping (DCC) in preterm infants is associated with reduction of transfusions, intra-ventricular hemorrhage (IVH) and necrotizing enterocolitis (NEC). National and international organizations have recommended DCC in preterm infants.

Methods: OBJECTIVE. This study analyzed the outcomes of preterm infants < 32 weeks gestation when DCC was implemented as part of a standardized routine delivery room resuscitation. STUDY DESIGN. This is an observational study. Cord clamping data, Delivery Room (DR) measures and neonatal outcomes were collected prospectively from all eligible infants from January 2008 to December 2015. The intended duration of DCC was 30-45s from January 2008 to February 2011 and 60-75s from March 2011 to December 2015.

Results: DCC was performed in 83% of the 531 eligible infants with median gestation of 30.6 weeks and median birth weight of 1400grams. DCC was comparable in vaginal and cesarean section (CS) deliveries (85% vs 82%). Of the 89 multiple births, 84% of the twins and triplets received DCC. The percent of infants receiving DCC initially was 72% in 2008 and steadily increased to 89% in 2015. There is a

significant reduction in any intubation (OR-0.81, 95% CI 0.74-0.90), any transfusion (OR-0.78, 95% CI 0.69-0.89), any IVH (OR-0.85, 95% CI 0.76-0.94) and severe IVH (OR-0.83, 95% CI 0.69-0.99) over the years after adjusting for gestational age and antenatal steroids. These reductions remain significant even after adjusting for DCC. There are no differences in chronic lung disease, NEC, severe retinopathy of prematurity, infection or death during the same time period.

Conclusion: DCC can be safely and effectively adopted in routine clinical practice in DR management and performed in majority of very preterm infant delivery. This study shows DCC alone is insufficient to explain the risk reduction of intubation, transfusion and IVH. However, it optimizes cardiopulmonary stability and allows for less aggressive interventions during the newborn transition, leading to improved outcome.