

Mathematical bias in assessment of placental residual blood volume.

Running title: Assessment of placental residual blood volume

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We read with interest the randomized controlled trial by Mercer et al.<sup>1</sup> Their study adds valuable information to the debated question of the ideal timing to clamp the cord for term infants. However, in their description of early outcomes, we consider that the formula used to evaluate the relative placental residual blood volume (rPRBV) is prone to “mathematical” bias: As delayed cord clamping allows blood to be transfused from the placenta to the baby, the birth weight (BW) is increased by the intervention, as found in their report<sup>1</sup> and previous studies<sup>2</sup>. Therefore, using an intervention dependant-BW as a denominator to compute rPRBV ( $rPRBV = PRBV / BW$ ) will amplify differences between immediate and delayed cord clamping groups. The sum of birth weight and absolute PRBV would not be affected by the timing of cord clamping; this sum could then be used as the fraction’s denominator ( $rPRBV = PRBV / (PRBV + BW)$ ) to allow a more robust estimation of rPRBV difference.

Conflict of interest: none.

1. Mercer JS, Erickson-Owens DA, Collins J, Barcelos MO, Parker AB, Padbury JF. Effects of delayed cord clamping on residual placental blood volume, hemoglobin and bilirubin levels in term infants: a randomized controlled trial. *J Perinatol* 2016;e-pub ahead of print 09 December 2016;doi: 10.1038/jp.2016.222.
2. McDonald SJ, Middleton P, Dowswell T, Morris PS. Effect of timing of umbilical cord clamping of term infants on maternal and neonatal outcomes. *Cochrane Database Syst Rev* 2013(7): CD004074.