

# Skin-to-Skin Contact Activates Oxytocin Release and Correlates to Parent Engagement

Vittner D<sup>a,b</sup>, Butler S<sup>c,d</sup>, Smith K<sup>b</sup>, Makris N<sup>a</sup>, Samra H<sup>e</sup>, McGrath J<sup>a</sup>

<sup>a</sup>University of Connecticut, School of Nursing, Storrs, CT, USA

<sup>b</sup>Connecticut Children's Medical Center, Hartford, CT, USA

<sup>c</sup>Boston Children's Hospital, Boston, MA, USA

<sup>d</sup>Harvard University, Medical School, Boston, MA, USA

<sup>e</sup>South Dakota State University, Brookings, SD, USA

## Background/Significance

Over 15 million premature infants are born annually around the world. It has been optimistically yet incorrectly proposed, that healthy preterm infants without major complications eventually catch-up developmentally to term infants. Research shows these preterm infants remain increasingly disadvantaged on many neurodevelopmental outcomes. Parental touch, especially during skin-to-skin contact (SSC) has the potential to reduce the adverse consequences of prematurity. SSC is an evidenced based strategy that increases parental proximity and provides an interactive environment known to enhance infant physiologic stability and affective closeness between parent and infant. Evidence suggests SSC activates oxytocin release in mothers, fathers and infants.

## Relevance to NIDCAP

This study provides evidence to support developing relationships between mothers, fathers and premature infants. Early responsive and synchronous contacts with parents may positively influence cognitive and developmental outcomes for premature infants. Parental engagement creates an opportunity guide future research on how to increase parents' active participation with their premature infants.

## Aims/Purpose

The purpose of this research study was to examine bio-behavioral mechanisms of SSC for parents and preterm infants. Specifically, is there a relationship between salivary oxytocin and cortisol levels and parental engagement as measured with the Parent Risk Evaluation on Engagement Model and Instrument (PREEMI)?

## Methods:

This randomized cross-over design study used a 3-day time-frame conducted in the Newborn Intensive Care Unit (NICU). Twenty-eight stable preterm infants (30 0/7 – 34 6/7 weeks gestational age between 3 -10 days old) and their mothers and fathers participated. After informed consent, each triad was randomly assigned to one of two sequences: Maternal-SSC on day 1 and Paternal-SSC on day 2; or Paternal-SSC on day 1 and Maternal-SSC on day 2. Infants' and parents' saliva samples for oxytocin and cortisol were collected 15-min pre-SSC, at 60-min during-SSC, and 45-min post-SSC. Parental engagement was measured using the PREEMI just prior to hospital discharge.

## Results

Data analysis was performed using IBM SPSS version 18. Data were not normally distributed; therefore Pearson's correlation was used to measure the relationship between salivary oxytocin and cortisol levels with maternal and paternal engagement composite scores. Multivariable linear regression models were used to model the effect of maternal and paternal oxytocin and cortisol levels independently on engagement composite scores, adjusting for infant oxytocin and cortisol levels respectively. There was a significant negative correlation between paternal oxytocin levels and paternal engagement ( $r = -0.43$ ;  $p$ -value = 0.03) and a significant negative correlation between infant oxytocin levels and maternal engagement ( $r = -0.54$ ;  $p$ -value = 0.004). There was no significant interaction between maternal oxytocin or maternal cortisol levels and maternal engagement scores. However, the adjusted linear regression model showed that as infant oxytocin levels increased maternal engagement scores significantly decreased ( $\beta$ : -0.04;  $p$ -value = 0.01). The unadjusted linear regression model showed that as paternal oxytocin levels increase paternal engagement scores significantly decrease ( $\beta$ : -0.14;  $p$ -value = 0.03). Linear regression, adjusted for infant oxytocin and cortisol levels, showed that as paternal oxytocin levels increase there was a significant decrease in paternal engagement ( $\beta$ : -0.16;  $p$ -value = 0.03) and as paternal cortisol levels increased there was a significant decrease in paternal engagement ( $\beta$ : -68.97;  $p$ -value = 0.05).

## Conclusions

Salivary oxytocin and cortisol levels significantly influence parental engagement. Oxytocin facilitates social sensitivity and attunement necessary for developing relationships and nurturance for emotional and physical health. Defining parent engagement facilitates identification of parent-risks and needs for intervention to optimize outcomes for premature infants.

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## Reference

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