

## Effects of Reading to Preterm Infants on Baby and Parents' Well Being

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### Study Protocol:

Parents of infants born between 23 and 31 weeks gestational age who were between 26 0/7 and 34 6/7 weeks post menstrual age cared for in the NICU were approached for enrollment into the study. All infants were at least 7 days or older after birth to allow successful transition to extra uterine life. Parents agreed to participate and to read out loud from written word as a requirement for participation in the study. Infants were excluded if: they were considered too ill to participate by the primary care team, were on high frequency ventilation, were not expected to survive, had chromosomal anomalies, had abnormalities of the midface, or had a family history of/suspected congenital hearing loss. The study was approved by the Georgetown University Institutional Review Board. Of 21 sets of parents approached, 18 consented to participate. Two sets of parents decided to participate only with live reading and did not make a voice recording. Parents were given a children's book using a rhyming pattern of text to read, but other materials were allowed according to parental preference. Parents were asked to read or create a recording lasting a minimum of 15 min but up to 60 min of recorded reading. Mothers and fathers could read to their infants individually. Recordings were made using Garage Band® on a study computer and exported to bedside ipods®. Recording was played via humidity resistant Bluetooth enabled speakers in the incubator. Recorded reading was played for infants up to twice per day by the bedside nurse. The primary care team could withhold any recorded or bedside reading exposure if an infant was deemed too unstable for that experience on any given day. Live and recorded reading could occur on the same day with the goal of at least 2 reading episodes per day, but because parents may not be available for live reading everyday, recorded and live reading episodes may occur on different days. Cardiorespiratory events for each reading exposure were compared to the immediate period before and after the reading exposure. As such the period before each reading exposure served as the control period for that reading exposure to mitigate the effect of reading on different days or time periods. All infants were being cared for in incubators on reading exposure days. For 2 infants, at one time period each, the infant was removed from the incubator and was being held for all comparison time points around that single reading exposure. Two infants had one day of data when the infant was held only during reading exposure. Data from those days were excluded from analysis. For all other live reading exposures, the infant was in the incubator with parents reading through the open portholes. Sound decibel levels were checked via a sound meter (Triplett SoniChek TSC-MC1 Mini Digital Sound Level meter) to ensure sound levels did not increase above baseline if above 45 decibels prior to reading exposure.

Cardiorespiratory data, including heart rate (HR), respiratory rate (RR), oxygen saturation, apnea and bradycardia events, were continuously downloaded every 5 seconds directly from bedside GE monitors using BedMaster EX Software and exported to a spreadsheet for analysis. The data on mode of respiratory support and amount of supplemental oxygen needed were collected for each time period. Mean RR, HR, apnea and bradycardia episodes, amount of supplemental oxygen needed, mode of respiratory support, if any, and number of periods with oxygen saturation <85% were compared to the reading period at 3 time points: 3 h before reading, 1 h before reading and 1 h after reading. These time points were chosen to provide a variety of time periods in relation to care times and feedings, including

day and nighttime periods. Results were compared using  $\chi^2$  test for categorical variables and student's t test for continuous variables.  $P < 0.05$  was considered as significant.