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Abstract

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Grant Number:	5R01NR004926-02
PI Name:	LUDINGTON, SUSAN M.
PI Title:	PROFESSOR
Project Title:	PRETERM SKIN CONTACT EFFECTS ON ELECTROPHYSIOLOGIC SLEEP

Abstract: *Skin-to-skin contact (SSC) has been shown to increase quiet sleep frequency and duration as measured by behavioral state indices. Yet, behavioral state measurements are subject to observer bias and recording error-limitations not present with electrophysiologic recording of sleep using electroencephalographic (EEG), electrooculographic (EOG), electromyographic (EMG), and respiratory waveform indicators. Yet, no electrophysiologic studies of sleep during SSC have been reported. The purpose of this study is to determine the effect of SSC on electrophysiologic- determined sleep and to test for a significant increase in Quiet Sleep during SSC as compared to incubator periods and between the treatment and control groups. Complete data sets from 60 medically stable 32 weeks plus 4 days conceptional age will be obtained and subjects will be randomly assigned by minimization technique to SSC or control group for one day of testing. All infants will be monitored in hooded incubators for 3 hours (pretest) as they lay in a nested prone position, followed by three hours of monitoring during the test period. In the test period control infants remain in the incubator in the same conditions; SSC infants will be held in chest-to-chest, upright position, skin-to-skin between maternal breasts as mother reclines in a stationary chair at the side of the incubator in the NICU. EEG, EOG, EMG, and respiratory waveform will be recorded in real time on thermal paper running at 30 mm/s using the Grass K2GR polygraph outfitted with Model 12 Neurodata Acquisition System (Astromed-Grass). Behavioral observations will be noted on the tracing as they occur. Tracings will be read by one neurologist who is a specialist in polygraphic EEG/EOG/EMG/Respiratory Waveform recording. The neurologist recorder will be blind to group and period, even though all testing commences with the 9 a.m.*

feeding in the neonatal intensive care unit of University of Maryland Medical Center, Baltimore, MD. EEG is obtained by Grass gold 7 mm electrodes over O2 and C4 points, EMG by two submental electrodes, EOG by electrodes at the outer canthus of each eye, Respiratory waveform by thoracic excursion belt provided by Grass. Light, noise and humidity will be recorded each minute. All electrodes will be attached to infants at least 30 minutes prior to testing to allow for calibration and warm-up. Outcome measures are number of epochs of Quiet Sleep, Active Sleep, Indeterminate Sleep, and Total Sleep Time. Number of delta brush and theta wave episodes will be calculated too. Nearly all analyses will be based on repeated observations on each subject; various types of regression analysis (linear, logistic, or Poisson as appropriate) formulated for longitudinal data will be used. Partitioning of data into fifteen minute segments will be performed prior to repeated measures analysis.

Thesaurus Terms:
electrophysiology, mother child interaction, neonatal intensive care, premature infant human, sleep, touch
behavioral /social science research tag, clinical research, electroencephalography, electromyography, electrooculography, human subject, respiratory airflow measurement

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