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**ABNORMAL PNEUMOGRAMS (PNGS) IN INFANTS WITH IN UTERO COCAINE EXPOSURE.** Jean G. Riley, Rachel Porat. (Spon. by Hope Punnett) Albert Einstein Med. Ctr., Temple Univ. Sch. Med., Dept. of Ped., Phila., Pa.

Widespread abuse of cocaine among the general population has focused new interest on its effects on the developing fetus. Abnormal cardiorespiratory patterns and increased risk for Sudden Infant Death Syndrome (SIDS) have been reported in infants with intrauterine narcotic exposure, but few data exist for infants with in-utero exposure to cocaine only (IUC). As part of an ongoing prospective study to determine the risk of SIDS in infants with IUC, we enrolled users of cocaine alone and obtained the following: 1) maternal drug history 2) maternal and infant urine drug screen 3) PNGs with a minimum of 6 hours sleep, scored for short (10-15 seconds) and long (>15 seconds) apneas, % periodic breathing and bradycardias (<80 for >5 seconds). Maternal cocaine use included 70% free basing, 20% snorting, 10% by IV or oral.

Twenty infants, each followed for 6 mos., have been evaluated thus far (birthweight 2616 ± 588 gms, gestational age 37.6 ± 2.6 wks., and Apgar scores of 8 ± 2 at 1 min. and 9 ± 1 at 5 mins.). Withdrawal, evaluated by standard neonatal abstinence scoring, was monitored for >24 hrs.; maximal score recorded was 5.1 ± 3.7. Urine screen was positive for cocaine in 60% of mothers at time of delivery; 6 of their infants were positive as well.

Evaluation of PNG demonstrated the only abnormal finding to be apnea >15 seconds in 4 out of the 20 infants, 3 of whom also had positive urine screens for cocaine. The 4th infant was first tested at 35 wks post-conceptual age; at 37 wks a repeated PNG was normal. None of the term infants exhibited clinical apnea during the hospitalization, however, one has subsequently been readmitted with a near-miss episode.

We conclude that infants with IUC demonstrate abnormal respiratory patterns as evaluated by PNGs. The prolonged apneas are more likely to occur in infants with apparent recent cocaine exposure as reflected by the positive urine in 3 of the 4 patients with abnormal PNGs. Further evaluation is currently in progress to determine: 1) if prolonged apnea is only an immediate post-natal risk, 2) if prolonged apnea places IUC infants at increased risk for SIDS.

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**EARLY HAND PREFERENCE AND THE RISK FOR CEREBRAL PALSY.** Neal P. Simon, Nancy A. Ruiz, Mary A. Givhan. (Spon. by Robert C. Boerth). University of South Alabama, Departments of Pediatrics and Physical Therapy, Mobile, AL.

Hand preference is generally not acquired in infants until approximately 2 years of age. Eleven graduates from the intensive care nursery undergoing developmental evaluations at 6 months corrected age were either reported by parents or detected on motor exam to have hand preference. Mean birth weight was 1492 grams (range=700-3500 grams) and gestational age 30.8 weeks (range=26-40 weeks). Diagnoses included respiratory distress syndrome (10) and group B streptococcal meningitis (1). Only 1 infant with respiratory distress syndrome had a significant intracranial bleed with subsequent post-hemorrhagic hydrocephalus necessitating ventriculo-peritoneal shunt placement.

By 12 months corrected age, 8 of the 11 infants (73%) continued to demonstrate hand preference, including the infants with group B streptococcal meningitis and post-hemorrhagic hydrocephalus. All 8 have subsequently been diagnosed with cerebral palsy (CP), with the remaining 3 exhibiting normal development. We conclude that persistent hand preference within the first year of life may be an early predictor of cerebral palsy as a developmental outcome.

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**THE RELATIONSHIP BETWEEN INFANT FEEDING AND INFECTION.** DH Rubin, JM Leventhal, PA Kraslinski, J Jekel, B Welle, M Kurzon, A Levee, L Palmer, L Menasse, Dept.'s of Peds., Albert Einstein Col. of Medicine, Bronx, NY, Gentofte Univ. Hosp., Hellerup, Denmark and Yale Univ. Sch. of Med., New Haven, Ct.

The relationship between infant feeding (IF) (breast milk and/or formula) and infectious disease (ID) in developed countries is still unclear.

To determine the relationship between IF and ID, questionnaires were mailed monthly to 500 mothers of infants from birth to 3 months of age in Copenhagen, Denmark (90% return rate). Data was collected on: 1) infectious illnesses, 2) feeding histories, and 3) use of health services.

During the first month of life there were a significantly ( $p < .05$ , Mann-Whitney U Test) greater number of symptoms related to gastrointestinal illness in formula fed infants (51%) compared to formula and breast fed infants (30%) or breast fed alone (20%). However, this relationship was significant ( $p < .01$ ) only in the upper social classes. When controlling for other children and family illness, there was no effect of IF on gastrointestinal (GI) infection. We found no other effect of IF on symptoms of infectious illnesses (e.g. ENT, pulmonary, and skin).

These data suggest that there may be a minimal protective effect of breast-milk against GI illness early in life.

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**INDIVIDUAL AND SOCIOECONOMIC VARIABLES AFFECTING BLOOD PRESSURE RESPONSES TO PSYCHOLOGICAL STRESS.**

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Exaggerated blood pressure (BP) responses to stress may be a mechanism or marker for the development of hypertension. In a sample of 211 healthy children between the ages of 6-18 years, we administered a psychological stressor (3 video games) while monitoring BP. If a child's BP (systolic and diastolic) values for each video game were above the median, the child was classified as hyperreactive. We found that 34, or 16%, were classified as hyperreactive. Variables investigated for possible association with hyperreactivity included gender, race, income (as a measure of socio-economic status [SES]), physical activity level, Quetelet index, age, and family history of cardiovascular disease. Only two variables were significantly associated classification as hyperreactive: race and SES. Black children were 3.5 times more likely to demonstrate hyperreactivity than white children. Likewise, children of low SES were 3.2 times more likely to demonstrate hyperreactivity than high SES children. Thus, in normotensive healthy children, low SES black children were at the highest risk of being classified as hyperreactive to a psychological stressor, i.e., 4.7 times more likely than high SES white children. These data may have critical impact upon research investigating the pathogenesis of hypertension in black Americans. Intervention studies in high risk populations, such as low SES blacks, which attempt to reduce physiologic response to environmental stress, seem to be justified.

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**A COMMUNITY-BASED CASE-CONTROL STUDY OF THE ASSOCIATION BETWEEN THE ATTENDANCE OF GROUP DAY CARE AND DISEASE DUE TO HAEMOPHILUS INFLUENZAE TYPE B (Hib).**

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In an ongoing case-control study to assess the association between the attendance of group day care and the occurrence of Hib disease, active surveillance was used to prospectively identify children ≤60 months of age who had cultures of the blood, CSF, or other normally sterile sites that were positive for Hib and who were seen at either of the two hospitals in New Haven (the cases). Children who were transferred from outside the community were excluded. For each case, two matched controls were selected from the birthlogs of the hospital. The controls were matched to the case by age (±1 month) and their regular pediatric practice. The parents of the subjects were interviewed by telephone. Attendance of group day care was defined as ≥4 hours/week of care within the preceding 3 weeks with one or more children from a different household.

Thusfar, 39 cases with Hib disease and 78 matched controls have been enrolled in the study. Their ages ranged from 3 to 51 months (median: 13 months). Of the children, 54% attended private physicians, 23% attended an HMO and 23% attended public clinics. Overall, 59% of the cases and 42% of the controls attended group day care. The matched odds ratio for this association was 2.9 (95% confidence interval: 1.1-8.1),  $X^2_{M-H} = 4.2$ ;  $P < 0.05$ . The results were not substantially affected by controlling for gender, race, Hollingshead social class or the number of children in the day care group. There was a trend towards increased risk with increased time spent in group day care. The attendance of group day care does increase the risk of Hib disease.

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**PLACE OF BIRTH AND MORTALITY IN VERY PRETERM AND VERY LOW BIRTHWEIGHT (VLBW) INFANTS.**

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The national collaborative survey on very preterm (<32 weeks) and/or VLBW (<1500 g) infants liveborn in The Netherlands in 1983, collected perinatal data on 1338 study infants born in 138 hospitals. We analysed the relation between place of birth and mortality, adjusting for a varying number of risk factors. All infants were assigned to 3 levels of care according to hospital of birth: Level 3: (university) hospitals, (n=8) Level 2: (regional) hospitals, limited neonatal facilities (N=19) Level 1: hospitals with no or little neonatal facilities (n=111). Logistic regression analysis with 4 perinatal factors as potential confounders (gestational age, birthweight, sex, multiple birth) showed a higher mortality risk for infants born outside the tertiary centers. Inclusion of 22 relevant perinatal factors (e.g. maternal disease, fetal position, multiple birth) increased the odds ratio further. Contrary to the current belief, the higher mortality risk in level 1 and 2 is even clearer if more differences in perinatal risk factors are taken into account.

Level 1 vs 3	Odds Ratio (95% Confidence Interval)
4 confounding factors	1.62 (1.1, 2.3)
22 confounding factors	1.80 (1.1, 3.0)
Level 2 vs 3	Odds Ratio (95% Confidence Interval)
4 confounding factors	1.56 (1.0, 2.3)
22 confounding factors	1.90 (1.1, 3.2)