●1471 EARLY ENTERAL FEEDING DOES NOT AFFECT INCIDENCE OF NECROTIZING ENTEROCOLITIS (NEC): A CONTROLLED, RANDOMIZED TRIAL. Ostertag SG, LaGamma EF, Reisen CW, Ferrentino F. Cornell Medical Center, NY. (Spon: PAM Auld)

Our previous work has shown that delaying feedings for >14 days in high risk neonates does not prevent NEC (AJDC, in press). To help determine the optimal time for initiating enteral feedings, infants at High Risk for NEC were prospectively selected from all admissions <1500g using a risk scoring system we developed. Of 112 VLBW admissions, 47 were Low Risk, 22 died within 24 hours, and 9 parents refused consent. Ultimately, 34 High Risk infants were entered into the study protocol and randomly assigned to be fed on Day 1 or 7 of life. Identical feeding protocols included parenteral nutrition and a scheduled progression from sterile water to 2.5% dextrose, half-strenght, and finally full-strength formula over 7 days. The incidence of NEC and subsequent hospital course were compared. Initiating enteral feedings on Day 1 did not increase the incidence of NEC, produce a clustering of cases, or induce an earlier onset of NEC. The overall incidence of NEC was 29% (5/17) and 35% (6/17) in the Day 1 and 7 groups, respectively, compared to 4.2% (2/47) in the Low Risk neonates. Only 1 infant got NEC within 3 days of feeding (Day 7 group) and no differences were seen in obstetrical complications, BW, GA, Apgars, PDA, IVH, and respiratory or oxygen requirements. Infants fed enterally from Day 1 did show a trend toward significantly higher energy and protein intakes during the second week of life. These data suggest that providing dilute, early enteral calories does not affect the incidence of NEC, but may promote improved nutritional status in sick, high-risk, VLBW neonates.

†1472 THE EFFECT OF PRENATAL LIDOCAINE ON HEARING RESPONSES IN TERM INFANTS. Barbara Ostfeld, Susan Friedman, Thomas Menke, Sandor Paskin, Victor Zapanta, Gerald Ostheimer, Michael Graff, I. Mark Hiatt, Thomas Hegyi, Departments of Pediatrics & Anesthesiology, Monmouth Medical Center, Long Branch, N.J.

Abnormal hearing responses were found in a group of term infants born by Caesarian section after maternal administration of epidural anesthesia in a study comparing the effect of lidocaine and lidocaine-epinephrine combination on the infant's neurobehavioral response. Twenty-nine infants born after lidocaine anesthesia (mean dose 455±85mg) had an umbilical artery lidocaine level of 1.18±0.50ug/ml, and umbilical venous concentration of 1.87±0.70ug/ml compared to 14 born after lidocaine epinephrine (mean dose 406±86mg) that resulted in a UV level of 1.43±0.40ug/ml and a UA level of 1.06±0.30 ug/ml. All infants were evaluated with the neurobehavioral index (ENNS) at four and 24 hours of age.

Both groups demonstrated optimal responses during both time periods in muscle tone and reflex items including pinprick, pull to sit, arm recoil, truncal tone, body tone, rooting, suck, Moro, placing, and alerting. However, response to sound was abnormal in 65% of the lidocaine and 68% of the combined therapy group, comparable to similar results following 0.5% bupivacaine.

The results of this study suggest that maternal anesthesia with these agents adversely affects hearing in the newborn infant, possible mechanisms including conduction delay in the eighth nerve or other neuronal pathways.

†1473 ABNORMAL CARDIORESPIROGRAPHIC (CRG) TRACINGS AND ELEVATED SERUM CREATINE PHOSPHOKINASE (CPK) IN INFANTS OF DRUG DEPENDENT MOTHERS. (IDDM) Enrique M. Ostrea, Jr., Paul Kresbach, David K. Knapp. Dept. of Pediatrics, Wayne State University, Detroit.

Continuous respiratory & heart rate monitoring were done during the first 5 postnatal days in 12 IDDM & 19 normal infants (control). The results showed abnormal CRG patterns in the IDDM such as: (1) significantly ($p<0.01$) higher baseline heart rate. (BHR), beat to beat (BBV) & long term (LTV) variability, and resp. rate (RR) - See Table, (2) exaggerated response of HR to stimuli such as light, noise or pain, and (3) frequent & spontaneous occurences of large (Δ40 bpm), brief, rise and fall in HR giving a characteristic "wave-like" appearance to the tracings. The BBV & LTV changes were also more intense ($p<0.02$) in the IDDM with moderate to severe, as compared to mild withdrawal. Treatment of the withdrawal with drugs, did not abolish the CRG abnormalities despite distinct clinical improvement.

Results: Mean (SD)	BHR	BBV	LTV	RR
Control	118(8)	2.6(1.6)	7.0(3.9)	42(5)
Mild withdrawal	127(16.1)	3.6(1.6)	12.9(6.6)	64(28.1)
Mod./severe "	132(13.4)	5.4(2.9)	18.1(6.6)	57(14.8)

Serum CPK (normal = 80 - 450 IU/L) was also analyzed in 16 IDDM during the first 2-7 days of life. Eleven infants (69%) had markedly elevated CPK levels (Mean = 1313 + 401 IU/L; range = 459 - 5123) & predominantly of the MM fraction (89%). The elevated CPK did not correlate with the infant's birth weight, GA or Apgar score, but was usually found in the infants with significant tremors & hypertonicity. Conclusion: The chronic exposure of infants to drugs of abuse, in utero, induces striking changes in their CRG patterns postnatally & elevation of their serum CPK isoenzymes. These new findings may provide a probe which can be used to study this group of infants, antenatally & postnatally.

†1474 THE CLINICAL SIGNIFICANCE OF BILIRUBIN SPECIES, INCLUDING DELTA (δ) BILIRUBIN, IN JAUNDICED INFANTS. Enrique Ostrea, Jr., E. Alan Ongtengco, Vasundhara Tolia, Wayne State U., Hutzel Hosp., CHM, Dept. of Peds., Det.

Historically, the separation of bilirubin (bil) into conjugated & unconjugated fractions provided an important tool for the diagnosis of jaundice. Progress in HPLC has further allowed the identification of 4 species of bilirubin: unconjugated (α) monoconjugated (β), diconjugated (γ) bil, & lately, a bil specie (δ) that is tightly bound to albumin. Unlike in the adult, there is little information on the significance of these 4 species of bilirubin in jaundiced infants. This study addresses this problem & opens new avenues for the future study of jaundice in infants. METHODS: 24 infants were prospectively studied with jaundice due to: physiologic (13) hemolytic (3) prematurity (2), biliary atresia (2), cholangitis (1), CMV (1), hepatitis (1), unknown (1). Serial total (TB) and direct (DB) bilirubin were analyzed by Jendrassik-Grof (diazo) method. Bilirubin species (expressed as %TB) were detected by reverse phase HPLC. RESULTS: (1) infants with physiologic/hemolytic jaundice showed >90% as α bil. Direct bilirubin, if elevated, was either β or γ, whereas δ was consistently low (<5%). (2) infants with direct hyperbilirubinemia (DB>1.0 mgs%) showed β > γ by ratio of 3:1. In general, DB was underestimated by 30-50% by diazo tests compared to HPLC. (3) δ bil was seen in most infants with elevated DB and constituted from 8-73% (mean=22%) of TB: it was detected as early as at birth in a patient with hepatitis/atresia; it persists for a long period and its % increases with the duration of jaundice, inversely proportional to declining TB. CONCLUSION: The study of jaundiced infants, particularly those with high direct bil requires further demonstration of the different bilirubin species, not only because direct bilirubin is grossly underestimated by diazo tests, but that the bilirubin species may provide information that can lead to a better understanding and study of the disease.

†1475 LIPID CLEARING IN PREMATURE INFANTS: LECITHIN-CHOLESTEROL ACYL TRANSFERASE ACTIVITY. Andrea Papadopoulos, Margit Hamosh, John W. Scanlon, Parveen Chowdhry and Paul Hamosh. Georgetown University Medical Center, Washington, DC 20007.

Lipoprotein-X, a low density lipoprotein containing lecithin and free cholesterol, appears in the circulation of infants maintained on total parenteral nutrition within 16 hrs of Intralipid infusion, suggesting that the clearing mechanism of lecithin (present in Intralipid) is not well developed at birth. We have therefore quantitated the activity of the key enzyme in lecithin catabolism, lecithin-cholesterol acyl trasferase (LCAT) in cord blood of 173 infants. LCAT activity, measured by transesterification of ^{3}H-fatty acid from lecithin to cholesterol, is expressed in nmol cholesterol esterified/ml serum/hr. Cord blood levels of cholesterol, lecithin and triglycerides were also measured. LCAT levels were significantly (p 0.001) lower in newborns than in adults: 43±10, 54±19, 101±29 and 290±36 (Mean+SEM) at 24-30(n=19), 31-35(n=17), 36-40(n=137) wks gestation and in adults (n=7), respectively. Cord blood cholesterol, lecithin and triglyceride levels were similar at all gestational ages. We conclude that the clearing of lecithin is inefficient at birth and that preterm infants have a higher incidence of hyperlipemia due to low LCAT activity. (Supported by NIH grant HD-15631).

†1476 HYPERVENTILATION REDUCES CEREBRAL BLOOD FLOW VELOCITY IN NEWBORNS. JL Peabody and JR Emery, (Spon. by June P. Brady). Dept. Peds., Children's Hospital and Cardiovasc. Res. Inst., Univ. Ca., San Francisco.

Hyperventilation is a popular therapy for improving systemic oxygenation in infants with pulmonary hypertension. To determine the effects of hypocapnea on cerebral blood flow velocity and intracranial pressure, we studied 6 infants with severe pulmonary hypertension, GA 38-43 wks, during normocapnea and moderate and extreme hypocapnea. Arterial PCO_2 ($PaCO_2$) was altered by changing ventilator rate. Mean airway pressure and arterial PO_2 were kept constant by changes in ventilator pressure and inspired oxygen concentration. We measured transfontanel intracranial pressure (ICP) and mean arterial blood pressure (BP). Cerebral blood flow velocity (CBFV) was assessed by Doppler technique. The maximum amplitudes of advancing flow velocity during systole and diastole were measured and the pulsatility index calculated.

Table: $PaCO_2$ (mm Hg)	35±2	24±1††	17±2††
CBFV			
Systolic amplitude (mm)	19±2	19±1	13±1††
Diastolic amplitude (mm)	6±1	4±1††	2±1††
PI	.68±.02	0.78±.07†	0.88±.08††
ICP (cm H_2O)	11.0±2.2	8.8±1.4†	6.5±1.0†
BP (mm Hg)	48±7	50±2	51±5

Values are X̄±SD, ††$p<.01$, †$p<0.05$, compared to normocapnea.

These findings suggest that extreme hyperventilation significantly reduces advancing cerebral blood flow velocity and may reduce total cerebral blood flow. Therefore, despite an improvement in systemic PO_2, cerebral oxygenation may suffer.