1324 HEMORRHAGIC PERIVENTRICULAR LEUKOMALACIA (HPVL): DIAGNOSIS BY REAL-TIME ULTRASOUND (US). Alan Hill, G. Leland Melson, H.Brent Clark, Joseph J. Volpe. Wash. Univ.Schl.of Med., St.Louis Children's Hosp. Depts. Ped. Radiol. Pathol. and Neurol., St. Louis.

Hemorrhage into periventricular white matter may be due to intraparenchymal extension of intraventricular hemorrhage (IVH) or to secondary hemorrhage into areas of infarction, i.e. HPVL. Because IVH and HPVL occur principally in the premature infant, they may coexist. Distinction is important because IVH with intraparenchymal extension may not be followed by major parenchymal injury whereas prominent HPVL is indicative of severe brain infarction.

Using US, we have made the antemortem diagnosis of HPVL, (confirmed at autopsy), in a premature infant with prior severe hypotension. The infant sustained several postnatal hypoxic-ischemic episodes followed by restoration of circulation. US at age 31 days was compatible with hemorrhage in the periventricular regions dorsal and lateral to the germinal matrix. There was no evidence of IVH. Death occurred on day 34 and autopsy examination revealed massive hemorrhagic infarction in the periventricular regions and no evidence of IVH.

The use of the noninvasive technique of US permitted antemortem diagnosis of HPVL and differentiation from IVH with intraparenchymal extension. HPVL has been hitherto diagnosed only at autopsy. Although HPVL may be less common than IVH, its recognition during life is important, because in infants who survive, awareness of site and extent of cerebral injury provides valuable prognostic information.

1325 NEONATAL BABOON MODEL FOR STUDIES IN HYALINE MEMBRANE DISEASE (HMD). James L. Hilliard, Marilyn Escobedo, James Robotham, Franklin Smith, Keith Meredith, William Walsh, David Johnson, Jacqueline Coalson, Thomas Kuehl, (Spon. by Robert C. Franks). Univ of Tex Health Sci Center, Dept's Pediatr, Anesth, & Pathol; Southwest Found for Research & Edu, San Antonio.

The preterm neonatal baboon (Papio cynocephalus) at 74-82%(134 to 147 days) of term gestation (180 days) with an amniotic fluid (AF) L/S ratio of <0.7 has been found to consistently develop HMD. Ten dated pregnancies (134-180 days) confirmed by ultrasound determination of biparietal diameter were delivered by C-section. Birthweights were 495-988 gms. AF collected at delivery showed L/S ratios from 0.47 to 1.0. Phosphotidylglycerol was absent in all. The 6 animals with L/S ratios <0.7 developed HMD. They required resuscitation at birth by intubation and mechanical ventilation. Tachypnea, severe retractions, and poor air entry were present. Chest X-rays were consistent with HMD. The course was typical of HMD with a significant O_2 requirement for >24 hrs followed by clinical improvement, usually rapid. Symptomatic patent ductus arteriosus was not encountered clinically. HMD was confirmed pathologically in 2 animals who died of complications <5 days. Four of eight animals were successfully weaned from the ventilator. This study shows that the preterm (<147 day) baboon naturally develops HMD when the L/S ratio is<0.7 and that when supported by methods presently used for human neonates with HMD they have a reasonable chance of recovery and survival. The preterm baboon may serve as a valuable model for the study of not only acute HMD but also its course and consequences. (Supported by the Ladies Forum of the SWFRE)

1326 PLASMA LIPIDS IN NEONATES RECEIVING FAT EMULSIONS. J.L. Hilliard, D.L. Shannon, M.A. Hunter and Y.W. Brans. University of Texas Health Science Center, Department of Pediatrics, San Antonio, Texas.

Plasma total lipids (TL), free fatty acids (FFA), triglycerides (TG) and free glycerol (FG) were measured in 11 normally grown premature neonates who received total parenteral nutrition with dextrose, amino acids and fat emulsion. Gestational ages ranged from 26 to 32 weeks, birthweights ranged from 964 to 1758g and postnatal ages ranged from 2 to 14 days. Fat emulsion was infused continuously, beginning with a daily dose of 1 g/kg on the first day and increasing by 1 g/kg each 24 hours to a daily dose of 4 g/kg. Blood samples were obtained before and 4, 8, 12 and 24 hours after each dosage change. For all lipid fractions measured the mean (±SE) concentrations increased over mean preinfusion values, differences reaching statistical significance ($p<0.05$) at 12 hours for TL (413±16.0 vs 327±21.3 mg/dl), at 8 hours for FFA (16.2±1.78 vs 10.6±1.19 mEq/dl), at 12 hours for FG (0.26±0.093 vs 0.16±0.030 mM/dl) and at 4 hours for TG (0.51±0.103 vs 0.30± 0.031 mM/dl). The mean concentrations of all lipid fractions remained higher than their respective baselines and there was no significant change in the mean values for any particular fraction. These data suggest that the infusion of fat emulsion at 1 g/kg produces elevations of all plasma lipids but that the effects of 4 g/kg do not markedly differ from those of 1 g/kg. The tolerance of individual patients, however, varies considerably at daily dosage in excess of 2 g/kg. Studies to determine the optimal dosage of fat emulsions in small premature neonates are needed.

● 1327 IMPROVED PROGNOSIS OF THE INFANT LESS THAN 750gm-HOW SMALL IS TOO SMALL? Toshiko Hirata (Spon. by June P. Brady), Children's Hospital, San Francisco.

Because of the high mortality rate (76-100%) and severe neurologic handicap in survivors, Sechner (1980) has suggested that a "hands off" approach be adopted to the infant less than 750gm. This has not been our experience. We therefore analyzed the NBICU course, mortality and outcome of infants weighing 520-750gm admitted to our NBICU during 1975-1979. Of 56 infants, 22 were inborn (In) and 34 were outborn (Out); 21 were male and 35 female. All but one required assisted ventilation and all received parenteral alimentation via percutaneous central line. Of 22 surviving infants two died later, at 5 and 28 months of SIDS and an obstructed tracheotomy tube respectively. Fourteen have been evaluated at our NBICU Follow-Up Clinic.

	N	Survival	N	IQ (Mean±SD)	Neurologic Handicap
In	22	36%	5	96±12	0
Out	34	41%	9	70±21	2

The smallest survivor was 530gm and the only SGA infant (32 weeks' gestation). Two further inborn infants are abroad and reported to be progressing normally.

We conclude that these high-risk mothers should be transferred to a tertiary center and meticulous perinatal management instituted because the inborn infant <750gm is not "too small".

● 1328 RETINOPATHY OF PREMATURITY: ADMINISTRATION OF VITAMIN E TO MITIGATE AGAINST SEVERE DISEASE. Helen M. Hittner, William A. Monaco, Louis Godio, Joseph A. Garcia-Prats, James M. Adams, Zvi Friedman, Arnold J. Rudolph. Baylor College of Medicine, Departments of Ophthalmology and Pediatrics, Houston, Texas.

One-hundred infants admitted to Texas Children's Hospital Neonatal Intensive Care Unit from Nov. 1979 to Nov. 1980 who weighed ≤1500 grams at birth and who developed respiratory distress were given orally either 5 mg/kg/day (control) or 100 mg/kg/day (experimental) of dl-α-tocopherol (vitamin E) beginning on their first day of life and continuing throughout their hospital stay on a randomized double-blind basis. Blood levels of vitamin E were found to average 6 ugm/ml in the controls and 12 ugm/ml in the experimentals after 7 days. Each infant had a weekly retinal evaluation beginning at the third week of life. The critical time for screening and treatment for retinopathy of prematurity (ROP) was found to be seven weeks post-delivery. The significant ROP risk factors identified in the controls were gestational age, birth weight, oxygen administration, intraventricular hemorrhage, and sepsis.

There was no difference between the two groups in clinically insignificant ROP (grade II or less). However, the incidence of grade III ROP in the control population was 10% (5 of 50) while no grade III ROP developed in the experimental infants. The correlation between the development of grade III ROP and the lower level of vitamin E administration was found to be highly significant ($p<.02$).

1329 THE INCIDENCE OF PERINATAL INTRACRANIAL HEMORRHAGE (ICH) FOLLOWING MATERNAL ADMINISTRATION OF ISOXSUPRINE AND BETAMETHASONE. Jeffrey D. Horbar, Kathleen Leahy, and Jerold F. Lucey, Dept. of Pediatrics, University of Vermont College of Medicine, Burlington, Vt. 05405

Real-time ultrasound brain scans were performed on 43 infants with birth weights less than 1500 grams. Subependymal or intraventricular hemorrhages were detected in 27 cases (62.8%). Nine infants (20.9%) had no ultrasound evidence of hemorrhage, and 7 infants (16.3%) had equivocal scans. ICH was diagnosed during the first postnatal day in 25 infants and within 4 hours of birth in 11. The relationship of maternal isoxsuprine and betamethasone administration to perinatal ICH was investigated retrospectively. Infants with equivocal ultrasound scans were excluded. ICH was present in 44.4% (4/9) of infants whose mothers received both isoxsuprine and betamethasone as opposed to 83.3% (15/18) of infants whose mother received neither drug ($p < 0.05$), and 87.5% (7/8) of infants whose mother received betamethasone alone. The groups were similar with respect to birthweight and gestational age. When mothers who received both drugs were compared with those who received betamethasone alone, there was no difference in the length of time from betamethasone treatment to delivery, nor in the severity of subsequent neonatal respiratory distress. The decreased incidence of ICH in infants of women treated with both drugs may be due to the physiological effects of isoxsuprine. This raises the possibility of reducing the incidence of perinatal ICH with prenatal pharmacological intervention.