1342 CORD BLOOD THYROID FUNCTION STUDIES IN PREMATURE INFANTS WITH AND WITHOUT RESPIRATORY DISTRESS SYNDROME (RDS). Alan H. Klein, Barbara Foley, Thomas P. Foley, Jr., Hugh M. MacDonald and Delbert A. Fisher, UCLA School of Medicine, Harbor-UCLA Medical Center, Department of Pediatrics, Torrance, and University of Pittsburgh School of Medicine, Children's Hospital of Pittsburgh, Department of Pediatrics, Pittsburgh.

Thyroid function as reflected in cord blood T4, T3, rT3 and TSH concentrations was assessed in a group of non-asphyxiated premature infants between 31 and 34 weeks gestation with RDS and compared to a rigidly controlled non-RDS population. Infants were matched for gestational age (GA), sex and birthweight. Results (as geometric mean with 95% confidence limits in parentheses) were as follows:

	T4(μ g/dl)	T3(ng/dl)	rT3(ng/dl)	TSH(μ U/ml)
Control	10.5 (9.2-12.0)	32 (26-40)	288 (256-323)	10.0 (7.8-13.0)
RDS	9.3 (8.4-10.3)	22 (18-27)	276 (247-309)	11.5 (8.3-15.9)
N	19	19	19	13

Hotelling's T2 test used for a global comparison of thyroid function as reflected in T4, T3 and rT3 concentrations failed to demonstrate a significant difference between the two groups (0.10>p>0.05). TSH concentrations also were similar in control and RDS infants (p>0.10). Conclusion: Maturation of hypothalamic-pituitary-thyroid function is not significantly delayed in infants who subsequently develop RDS.

1343 SEIZURES-A NEGLECTED PATHOGENESIS IN NEONATAL INTRAVENTRICULAR HEMORRHAGE, Marvin Klein & Mitchell Sugarman, (Spons. by Norman Gootman), (SUNY at Stony Brook) Long Island Jewish-Hillside Medical Center, Department of Pediatrics, New Hyde Park, New York.

We investigated the cerebrovascular responses of immature piglets to Pentylene-tetrazol (PTZ)-induced seizures. Our objective was to demonstrate that seizures induce hemodynamic changes known to cause intraventricular hemorrhage (IVH), and should be considered an important triggering mechanism.

14 piglets were artificially ventilated with 0.25% Halothane in 50% N2O-50% O2 after tracheotomy and neuromuscular blockade. Flow in external and internal carotid and femoral arteries was continuously recorded, along with aortic blood pressure (BP), EEG and EKG. Animals were subjected to hypercapnia (HC) by breathing 7% CO2 to produce respiratory acidosis ($P_{aCO_2}=53.9 \pm 1.0$; pH=7.263 $\pm$ 0.008.) Following return of blood gases to baseline values, PTZ was administered in a threshold (I-V) epileptogenic dose (75 mg/kg.). HC produced a significant (30-50%) increase in internal carotid blood flow (ICBF), accompanied by a 10% drop in BP. PTZ produced a much greater (80-198%) and more rapid increase in ICBF, with a parallel large (60-70%) increase in BP. Autoregulation was lost during PTZ-induced seizures.

We conclude that the increase in cerebral blood flow and BP, plus loss of autoregulation, occurring during a seizure duplicate the hemodynamic conditions which trigger IVH. The changes are of much greater abruptness and magnitude than those seen with respiratory acidosis. Hence, seizures are likely to have a significant role in germinal matrix hemorrhages in premature newborns.

1344 CONSIDERATIONS IN EVALUATING CHANGES IN OUTCOME FOR INFANTS UNDER 1501 GRAMS. Hilda Knobloch, Anthony F. Malone, Patricia H. Ellison, Frances Stevens, Michael Zdeb, Albany Medical College of Union University, N.Y. State Office of Mental Retardation and Developmental Disabilities and Office of Biostatistics of the Health Department, Albany.

Neonatal mortality for 285 and developmental outcome for 135 inborn infants 751-1500 grams born from 7/75-12/79 were compared with the findings for prior decades and the influence of demographic, social and medical care changes accounted for. There is the expected mortality decrease in the 1001-1500 gram group, with an 18% incidence of major neuropsychiatric disability compared to the 48% found in 1952 by one of the present authors, using identical examination techniques and diagnostic criteria. More 751-1000 gram infants survive now, but 50% have a major handicap.

All the infants have a higher incidence of adverse preconceptional, pre-peri-, and postnatal abnormalities, but those who die or have major disabilities have significantly more. The abnormal infants and those who die require the sophisticated techniques of neonatal intensive care, while these procedures are not needed or are used briefly for the infants who are normal.

The demographic shifts in race, age, parity, education and induced abortions account for some 22% of the drop in neonatal mortality in the 1001-1500 gram group. Improvements in medical, prenatal and neonatal care appear to be doing for the 751-1000 gram group now what the then high-level care in 1952 did for the 1000-1500 gram group, when mortality decreased but only 50% were normal.

1345 ANTIBACTERIAL PROPERTIES OF AMNIOTIC FLUID. Neil K. Kochenour, Neal S. Rote, and Monte Crandall, Univ. of Utah Medical Center, Depts. Ob-Gyn and Path., Salt Lake City. (Spon. by Harry R. Hill).

Premature rupture of membranes (PROM) is followed by amniotitis and/or fetal sepsis in some, but not all patients. At present there is no diagnostic test that can reliably predict which patient will become infected, but antibacterial properties of amniotic fluid may be important determinants. The purpose of this study was to investigate whether gestational age or amniotic fluid (AF) lysozyme, IgG, C-Reactive Protein (CRP) or glucose concentrations influence bacterial growth. Thirty-seven AF samples were obtained by transabdominal amniocentesis from patients between 15 and 39 weeks of gestation. Each AF sample was inoculated with the same quantity of E. Coli (10^4 bacteria/ml). Bacterial growth was measured both spectrophotometrically for increasing turbidity and by plating techniques to determine numbers of colony-forming units. The gestational age ($r = -0.73$), lysozyme ($r = -0.65$), and glucose concentrations ($r = 0.55$) were significantly correlated with bacterial growth, while IgG concentration ($r = 0.09$) was not. CRP was not detected in the AF samples with our assay (range = 0.6 to 10.0 mg/100 ml). We conclude that antibacterial properties of amniotic fluid correlate more closely with increasing gestational age than with the other factors tested.

1346 PREVENTION OF POST-EXTUBATION ATELECTASIS BY NASAL CPAP. Anne Koons, Anita Baldomero, Shyan Sun (Spon. by Robert Levine) College Medicine & Dentistry-New Jersey Medical School, Newark, New Jersey

Post extubation pulmonary atelectasis following mechanical ventilation is a frequent neonatal occurrence. To determine if a course of nasal prong CPAP (NCPAP) after extubation would prevent this, a prospective trial of 48 hrs of NCPAP following weaning from the respirator was begun in July 1980. 40 consecutive patients ventilated for varying periods of time from 1-21 days for respiratory failure were placed on 2 days of NCPAP (group A). This group was compared to 70 clinically similar patients who received mechanical ventilation for respiratory failure for 4-21 days from Jan-June 1980. These patients did not receive NCPAP (group B). No patient in group A (0%) and 10 patients in group B (14%) developed post extubation atelectasis. In those patients ventilated for >30 days before extubation, we could not demonstrate a significant reduction in the incidence of atelectasis following extubation to NCPAP.

	No.	Atelectasis	%	P
Group A	40	0	0	< 0.05
Group B	70	10	14	< 0.05

The complications consequent to NCPAP including pneumothorax, nasal erosion, or stenosis were not seen in any patient. We conclude that a period of NCPAP following weaning from the respirator can prevent post extubation atelectasis. A prospective randomized control study is in progress to further evaluate this hypothesis.

1347 STATISTICAL DOCUMENTATION THAT CONTINUOUS OXYGEN MONITORING IMPROVES PATIENT CARE.

Richard W. Krouskop, Eresvita E. Cabatu, Francis E. McDonnell and Edwin G. Brown. Mount Sinai School of Medicine, Mount Sinai Medical Center, Department of Pediatrics, New York.

In a prospective controlled study, we used the Oximetrix(R) catheter oximeter in preterm infants with cardiopulmonary disease to determine if continuous measurement of arterial oxygenation offers any significant clinical advantages over conventional intermittent monitoring. Eleven study and 11 control infants were matched for gestational age, weight, hematocrit and similarity of disease.

The mortality rate, need for a ventilator and the time in an $FiO_2 > .40$ or $> .70$ were similar in both groups. The simultaneous measurement of saturation by the catheter oximeter and the Radiometer OSM2 bench device was compared. The correlation coefficient of 1039 data pairs was .97. In-vivo calibration was required in 60% of catheters in use 40 hours. The time before the first calibration was 18.3 ± 10.6 hours (mean $\pm$ S.D.). During the first 72 hours, 51% more blood samples for gas analysis were withdrawn from the control group ($P=.012$) and the number of blood samples obtained per hour during the catheter's lifetime was greater ($P=.026$). More blood transfusions were needed in the control group ($P=.019$). The PaO_2 was greater than 100 mmHg 18.6% (control) and 8.4% (study) of the total hours the catheters were used for monitoring ($P=.026$). This study shows statistically significant evidence that the continuous measurement of arterial oxygenation using the Oximetrix(R) oximeter improves the management of infants with cardiopulmonary disease.