1438 RESPIRATORY DISTRESS SYNDROME (RDS) - THE PERINATAL CARE CENTER VERSUS INFANT TRANSPORT IN RELATION TO SEVERITY OF DISEASE. Alan R. Spitzer, William W. Fox, Maria Delivoria-Papadopoulos. Dept. of Peds. University of Pennsylvania School of Medicine, Philadelphia, PA.

Few studies have determined if severity of RDS is influenced by the affected infant being born at a tertiary level center as opposed to being transported from an outlying hospital to the ICU. To evalute this problem, we followed 10 inborn(I), infants and 20 outborn(O) infants. All had RDS by standard criteria. Inborn infants were slightly less mature (I = 31.1±.7 wks. SEM; O = 31.6±.6 wks. SEM) and weighed less (I = 1490±109 gms. SEM; O = 1620±76 gms. SEM), but the difference was not statistically significant. The inborn group had a lower mean maximum FiO_2 (I = 0.63±.03 SEM; O = 0.73±.03 SEM) to maintain paO_2 at 50-75 torr and required oxygen for a significantly shorter period (I = 135.3 ±27.5 SEM hrs; O = 247.7±46.0 SEM hrs.) to resolution of their disease ($p < .05$). While maximum ventilator rate was similar in each group (I = 50±2.8 SEM breaths/min.; O=48.5±4.05 SEM breaths/min), peak inspiratory pressure was significantly higher in the outborn babies (I = 16.8±0.7 SEM cm H_2O; O = 24.4±1.7 SEM cm H_2O) ($p < .025$). Infants in the inborn group also required mechanical ventilation for a shorter duration (I = 68.3±13.8 SEM hrs.; O = 138.1±36.7 SEM hrs.), but this difference was not significant ($p=.09$). Results of this study suggest that the course of RDS in the perinatal center is significantly milder than that seen in infants requiring transport. Avoidance of perinatal asphyxia and early intervention may be the critical factors.

1439 REDUCING DURATION OF ANTIBIOTIC USE IN NEWBORNS. Edward N. Squire, Blaise E. Favara, Gerald B. Merenstein, Harvey M. Reich, James K. Todd. C. Henry Kempe Center for Investigative Pediatrics, The Children's Hospital; Fitzsimons Army Medical Center; Denver.

Newborns are often tested, then treated for presumptive bacterial infection. Inconclusive results may perpetuate unnecessary therapy. We studied 123 neonates prospectively evaluated for infection. Complete physical examinations including pneumatic otoscopy as well as chest radiographs were performed on all patients. Of 11 screening tests, only WBC, absolute band count, and CRP showed statistical differences ($p<.05$) between 32 patients with positive non-permissive (blood, CSF, suprapubic or catheter urine, needle aspirate, tracheal aspirate) cultures and 50 with negative cultures who had antibiotic therapy discontinued within 72 hours. 41 additional patients had therapy continued, despite negative cultures. Incomplete culture evaluations resulted in unconfirmed "pneumonia" in 24 of these patients. No statistical differences between the culture negative groups existed regardless of treatment status. Patients in the later group may not have required continued treatment. A complete bacteriologic work-up emphasizing non-permissive cultures should be done in newborns suspected of infection. When negative, antibiotics may be stopped. In equivocable cases, a negative CRP best supports stopping therapy. This approach can reduce the total duration of newborns' exposure to antibiotics by approximately 40%.

● **1440** $1,25(OH)_2$ VITAMIN D ($1,25(OH)_2D$) AND INCIDENCE OF HYPOCALCEMIA IN INFANTS OF DIABETIC MOTHERS (IDM) IN RELATION TO PROSPECTIVE RANDOMIZED TREATMENT DURING PREGNANCY. J.J. Steichen, R.C. Tsang, M. Ho, H. Knowles, J. Lavin, and M. Miodovnik, University of Cincinnati College of Medicine, Department of Pediatrics, Cincinnati, Ohio

It is not known whether 1) hypocalcemic (HC) IDM (Ca <7 mg/dl) have a deficiency in $1,25(OH)_2D$ and 2) whether prospective control of diabetes during pregnancy affects the incidence of HC in IDM. 22 subjects were randomly assigned during the 1st trimester to strict vs. customary treatment groups. Serum $1,25(OH)_2D$ (HPLC - protein binding assay) levels in IDM at birth were 29.5±2.4 (SEM) and increased to 60±7 at 24 hrs. ($p<.0003$) and to 95.6±15.5 pg/ml ($p<.01$) at 72 hrs. Maternal levels decreased from 49.6±5.7 pg/ml at birth (elevated vs. normal adults 29±1.2) to 29.1±3.9 pg/ml ($p<.0005$) at 72 hrs. At birth 25OHD (protein binding assay adults 11-69) values were normal in IDM 32±5.4 ng/ml and mother 40.1±3.5 and did not change postnatally. Customary treatment IDM had a significantly higher (5/11) incidence of hypocalcemia in the first 72 hrs. vs. 0/11 in the strict control group (χ square 6.5, $p<.01$). Serum Ca of <8.0 mg/dl in mothers during the first 72 postnatal hrs. were highly predictive of HC in IDM: of 9 mothers with Ca <8 mg/dl, 5 had HC-IDM vs. 0 HC-IDM in 13 mothers with Ca >8 mg/dl (χ square 9.4, $p<.002$). $1,25(OH)_2D$ and 25OHD levels were not different in HC-IDM vs. non HC-IDM. We conclude that 1) vitamin D metabolism is not deficient in hypocalcemic IDM and 2) diabetic control during pregnancy significantly affects the incidence of hypocalcemia in infants.

1441 ASSOCIATION OF CONGENITAL PNEUMONIA (CONPN) WITH SHORT DURATION OF RUPTURE OF MEMBRANES (ROM) IN VERY LOW BIRTHWEIGHT (VLBW) INFANTS. Dora A. Stinson, Alexander C. Allen, Dalhousie University, Dept. of Pediatrics, Halifax, Nova Scotia.

Survey of 14,488 consecutive livebirths at the Grace Maternity Hospital, 1976-78, revealed that 52.3% of neonatal deaths occurred in 198 VLBW infants (500-1499g). Infection was the assigned cause of death in 20 of the 83 VLBW infants who died, of whom 12 had late onset disease and 8 had CONPN. One infant died of HMD with CONPN.

Fifty-two VLBW infants had ROM >24 hr, of whom none was identified as having intrauterine infection. Of 5 infants with unknown ROM, 1 had CONPN. Of 141 infants with ROM <24hr, 8 had CONPN all of whom had ROM <8hr. The 9 VLBW infants with CONPN died with the diagnosis confirmed at autopsy. All 9 placentae demonstrated chorioamnionitis and 7 funisitis. All 9 infants were severely depressed at birth and died by 31 hr of age, 7 by 5 hr. E Coli, Listeria and Group B Strep were implicated in 3 infants, but no organisms were isolated in 6. The 9 infants with CONPN had a lower mean birthweight than VLBW infants without CONPN (794 ± 175 g S.D. vs 1116 ± 266 g, $p<0.001$) and a lower gestational age (25.5 ± 2.0 wk vs 29.4 ± 3.5 wk, $p<0.001$) where this was known. When ROM was known, the 8 infants with CONPN had a shorter duration of ROM than infants without CONPN (3.0 ± 3.3 hr vs 54.2 ± 135.2 hr, $p<0.001$). We speculate that intrauterine infection in the absence of ruptured membranes led to premature labour and delivery in these VLBW infants with congenital pneumonia.

1442 COMPENSATORY ALTERATIONS IN RESTING HEART RATE (HR): AN INDICATOR OF TRUE ANEMIA IN PRETERM INFANTS. J.A. Stockman III, D.A.Clark, R.E.Kavey, K.McClellan, Dept. of Pediatrics, SUNY, Syracuse, New York.

The clinical correlation of signs consistent with anemia as defined by a low Hb alone are poor (Wardrop, C., et al, Arch D. Child 53:855, 1978). In order to define whether resting HR can be used as an indicator of inadequate tissue oxygenation, those factors considered important in oxygen delivery were investigated among a group of 36 infants with birthweights <1500g. Serial determinations included Hb, P_{50}, arterial blood gas (PaO_2) and oxygen consumption ($\dot{V}_{O2}$). Additionally, in 21 of these infants, serial cardiac outputs ($\dot{Q}$) were obtained by echocardiography with calculation of the central venous oxygen tension ($P\bar{v}O_2$). HR was recorded 1 hour after feeding, during sleep, at the time the $\dot{V}_{O2}$ and ECHO studies were performed. The Hb values ranged from 6.6 g/dl to 18.8 g/dl while the HR varied from 79 to 170 beats/min. The cardiac stroke volume within each infant's data set varied little (avg. change=19% from low to high) in comparison to a wide variation in $\dot{Q}$ indicating that the change in HR is the major determinant of $\dot{Q}$ at this age. No significant correlations existed between HR and Hb, PaO_2, or P_{50}. The HR appeared to be related to the $\dot{V}_{O2}$ ($r=+0.31$, $p<0.001$, $n=124$) and inversely to the $P\bar{v}O_2$ ($r=-0.42$, $p<0.05$, $n=49$). These data indicate that HR is dependent on the metabolic needs ($\dot{V}_{O2}$) of the infant. Compensatory changes in HR do not simply reflect the level of Hb but rather the combined effect of Hb, P_{50}, PaO_2, and $\dot{Q}$ as reflected in alterations of the central venous oxygen tension.

● **1443** ANEMIA OF PREMATURITY, ERYTHROPOIETIN (EP) AND CENTRAL VENOUS OXYGEN TENSION ($P\bar{v}O_2$), INDICATORS OF ADEQUATE TISSUE OXYGENATION. J.A.Stockman III, D.A.Clark, R.E.Kavey, K.McClellan and J.F.Garcia. Dept. of Pediatrics, SUNY, Syracuse and L.B.L., University of California, Berkeley.

Whether the low Hb observed at 1-2 mos. age in preterm infants truly represents an anemic state remains a controversy. In order to determine what factors appear to be most important in the regulation of tissue oxygenation during this period of life, 21 infants with birth wgts. <1500 were evaluated at day 14 and then every two weeks during their nursery stay. Studies obtained included: Hb, retic cts, fetal Hb, RBC 2,3 diphosphoglycerate, P_{50}, oxygen consumption ($\dot{V}_{O2}$), arterial blood gas, cardiac output ($\dot{Q}$) by echocardiography and plasma erythropoietin by RIA. $P\bar{v}O2$ values were calculated from the information provided by the P_{50}, PaO_2, Hb, Q, and $\dot{V}_{O2}$. The derived $P\bar{v}O_2$ varied from 22 to 43 torr (mean= 32±5) while EP ranged from 4.5 to 26.2 mU/ml. No significant correlations were observed between EP and $\dot{Q}$, $\dot{V}_{O2}$, PaO_2, A-V oxygen content difference, or retic count. The EP did inversely correlate with the Hb level ($r=-0.21$, $p<0.05$). The most significant correlation obtained was between EP and $P\bar{v}O_2$ ($r=-0.55$, $p<0.001$). No elevations of EP were noted when the $P\bar{v}O_2$ >37 torr. Between 30-37 torr $P\bar{v}O_2$, the EP was ↑ in 10 of 25 instances while between 25 and 30 torr, 16 of 23 EP samples were elevated. The EP was uniformly ↑ when the $P\bar{v}O_2$ was <25 torr. These data indicate that the most important indicator of a need for a higher Hb in preterm infants is a low $P\bar{v}O_2$, the calculation of which reflects the balance of O_2 delivery and O_2 need.