†1465 INHIBITORY ACTION OF BILIRUBIN ON O_2^- PRODUCTION BY POLYMORPHONUCLEAR LEUCOCYTES(PMN). Hajime Nakamura, Yoshiyuki Uetani, Satoshi Takada, Miyoji Komura, and Tamotsu Matsuo(Spon. by Audrey K. Brown). Kobe Univ. Sch. Med., Dept. Ped., Kobe Japan.

To assess the site of bilirubin toxicity to cells, we have studied O_2^- production of PMN by two different stimulators; concanavalin A(ConA)+cytochalasin D(CytD) which acts on the cell surface, and phorbor myristate acetate(PMA) which acts intracellularly. PMNs separated from cord blood using Lymphoprep^R were incubated in the buffered solution(pH 7.4) with different molar ratios of bil/alb for 30 min. at 37°C. Using a special double beam photodetector, O_2^- was measured by an increase in the difference in the absorbance(550-540)nm, due to the reduction of ferricytochrome C. Unbound bilirubin(UB) was determined by automated peroxidase method(UB Analyzer). More than 96% viability of PMNs was maintained in each solutions. O_2^- production by ConA+CytD was inhibited more than that by PMA which directly activates intracellular protein kinase C as UB levels rose. These results suggest that the critical site at which bilirubin exerts its toxicity is mainly on cell surface receptor rather than on intracellular functions. The inhibitory action increased as UB rose.

Total Bil.	O_2^- production (nmoles/min/10^6 PMN)					
	Alb=3.0gm/dL			Alb=5.0gm/dL		
	UB	by ConA+CytD	by PMA	UB	by ConA+CytD	by PMA
0mg%	0.00ug%	3.08(100%)	7.31(100%)	0.00ug%	4.72(100%)	7.70(100%)
10	0.33	3.24(105%)	7.33(100%)	0.15	4.45(94%)	7.73(100%)
20	1.25	2.06(67%)	6.59(90%)	0.50	4.34(92%)	7.83(105%)
30	4.86	0.38(12%)	3.77(52%)	1.02	3.95(84%)	7.07(92%)

†1466 SERUM VITAMIN E LEVELS IN THE VERY LOW BIRTH WEIGHT INFANT DURING ROUTINE ORAL SUPPLEMENTATION, Patricia Neal, Pat Erickson, John Baenziger, John Olson, James A. Lemons, Indiana University School of Medicine, Indiana University Hospitals, Department of Pediatrics, Indianapolis.

A prospective study was initiated to monitor serum tocopherol levels in all infants admitted to Indiana University Medical Center with birth weights <1500 gm. These infants routinely receive 100 mg/kg/day of oral vitamin E (Aquasol E) divided q6h. Levels are determined weekly or semiweekly using a modification of the fluorometric method of Hanson and Warwick. Vitamin E dosage is adjusted regularly for changes in weight or levels >3.5 mg/dL. During the first 10 weeks of study, a total of 52 patients had 320 serum measurements. Of these, 132 levels (41%) were >3.5 mg/dL, and 42 (13%) were >5.5 mg/dL. Among 27 patients weighing 500-1000 grams, 87 of 197 levels (44%) were >3.5 mg/dL. Among 25 patients weighing 1001-1500 grams, 45 of 123 levels (37%) were 3.5 mg/dL. Serum tocopherol levels often: a) remained >3.5 mg/dL for several days after oral supplementation was discontinued, or b) again became >3.5 mg/dL on a reduced dosage of 25-50 mg/kg/day. These data indicate that infants weighing <1500 grams at birth who are receiving oral vitamin E supplementation at 100 mg/kg/day will have varied serum levels with a significant percentage exceeding 3.5 mg/dL.

1467 CHARACTERISTICS OF LBW INFANTS DISCHARGED ON MONITORS/THEOPHYLLINE. Howard W. Needelman, Michael N. Nelson Mary E. Bozynski, Patricia Naughton (Spon. by Joseph R. Christian) Rush Medical College, Rush-Presbyterian-St. Luke's Medical Center, Department of Pediatrics, Chicago.

The number of NICU infants discharged on Theo and/or monitors has been increasing. Of 68 graduates in 1983-1984 with BW ≤1200 gm, 23 were discharged on therapy. We have compared the population discharged on monitors/Theo (treated) with the remaining ≤1200 gm graduates (untreated). Both groups had similar PCA at birth (treated 28.6 wks vs untreated 29.1 wks, N.S.) and at discharge (treated 41.7 wks vs untreated 40.1 wks, N.S.). Treated infants were more often male (70% vs 40%) and not Black (52% vs 31%). IVH did not differentiate treated (8/23) vs untreated (19/42), nor did chronic lung disease (13/23 treated vs 17/42 untreated). For the 23 treated patients, 19 discharge pneumograms (PCG) were evaluated, 7 while on Theo. Five were normal/borderline; 14 were abnormal. For untreated patients, 24 PCGs were available, all normal/borderline off Theo. Of treated infants PCGs, 13/19 had $A_6D \geq 0.5\%$, 9/19 had bradycardia, 5/19 had PB>3.5% and 4/19 had apnea ≥15 seconds. Five studies had 1 abnormality, 7 had 2, and 4 had 3. With the increasing use of PCGs, more infants born in 1984 were treated when compared to 1983 (11/45 in 1983 vs 12/20 in 1984, $p<0.05$). One death occurred in an untreated black female with a normal PCG prior to discharge. We conclude for LBW infants: 1) the demographically at-risk population for apnea/bradycardia at term is the white male; 2) neither chronic lung disease nor IVH necessarily lead to abnormal term PCGs and 3) the use of the PCG at discharge leads to an increase in monitoring and/or Theo treatment.

1468 PHYSIOLOGICAL CHANGES INDUCED BY ENDOTRACHEAL INSTILLATION AND SUCTIONING IN CRITICALLY ILL PRETERM INFANTS WITH AND WITHOUT SEDATION. Abraham Ninan, Maureen O'Donnell, Keith Hamilton, Koravangattu Sankaran, University of Saskatchewan College of Medicine, University Hospital, Department of Pediatrics, Saskatoon, Canada.

Endotracheal instillation and subsequent suctioning produces fluctuations in intracranial pressure (ICP), mean arterial pressure (MAP), heart rate (HR) and tissue oxygenation (PO_2) in ventilated, sick preterm infants. In an attempt to evaluate whether these fluctuations could be minimized using parenteral administration of sedation, we studied seven sick preterm infants on intermittent mandatory ventilation with and without sedation on eight occasions. Phenobarbital 10 mg/kg IV was used for sedation. Continuous polygraphic recordings of ICP, MAP, HR and PO_2 were obtained. Cerebral perfusion pressure (CPP) was calculated. Using Wilcoxson signed rank test, statistically significant increases in HR, MAP and ICP and a significant decrease in PO_2 were observed in these infants using no sedation. However, using sedation, even though significant increases were observed in ICP and a decrease in PO_2, they were less than that without sedation. When looked at the changes (Δ) brought about by sedation, resulted in significant blunting of these phasic changes induced by endotracheal instillation and suctioning in MAP, ICP, CPP and PO_2. We conclude that sedation produces a significant physiologic advantage to eliminate fluctuations of MAP, ICP and CPP. Thus, this physiologic benefit may at least in part help prevent morbidity commonly observed in these infants.

†1469 EFFECT OF RITODRINE ON BILIRUBIN FORMATION IN THE NEONATAL RAT. Clark Ochikubo, Sam Sunshine, Henk J. Vreman, James E. Ferguson, David K. Stevenson, Stanford Univ. Sch. of Med., Dept. of Ped., Stanford, CA.

Ritodrine hydrochloride (RH) is a β-adrenergic, tocolytic agent. RH activates adenyl cyclase which generates cyclic adenosine monophosphate (cAMP). cAMP is reported to increase hepatic heme oxygenase (HO) activity. Because increased hepatic HO activity has been associated with increased hepatic early-labeled bilirubin (ELB) production, we studied the effect of RH on total bilirubin formation (TBF). Litters of Wistar rats (< 12 hrs old) were divided into groups (3 rats each) of equal weight and given 2 SQ injections of RH (35 mg/kg) or saline at 7 and 5 hrs prior to injection of a radio-labeled hepatic heme precursor, δ-ALA-5-^{14}C (0.6 μCi/12.3 nmol) (t=0). ^{14}CO was collected continuously and was quantitated at t=1,2,3,4,6,8, and 12 hrs. The excretion rate of carbon monoxide (VeCO), an index of TBF, was determined at t=0,2,4,6,8, and 12 hrs. At t=12 hrs, the animals were decapitated and blood and liver were collected. Plasma bilirubin (mg/dl) was measured by a UB Analyzer and HO activity(nmoles bili/min/10 mg prot) was determined spectrophotometrically.

GROUP	BODY WT (g)	VeCO* (μl/kg/h)	^{14}CO RECOVERY (%)	BILI (mg/dl)	HO
NaCl(n=9)	20.6±0.9	44±4	5.7±0.2	0.8±0.1	149±26
RH(n=9)	20.3±0.8	52±5**	6.4±0.2**	0.9±0.1	210±32**

Mean ± SE; n=# of groups; *average over 12 hr period; **P< 0.05.

Our results suggest that, although high dose RH administration in rats increases hepatic HO activity and ELB, these changes are minimal and the effect of RH on TBF is small.

1470 BREAST FEEDING AND NEONATAL JAUNDICE. M.Orzalesi, C. Corchia, M.Ruiu, A.Scarcella. Chairs of Neonatology, Medical Schools of Sassari and Naples, Italy. (Spon. by H.D.Modanlou).

Breast-fed infants often receive small amounts of adapted formula, in addition to breast milk, during the first 4-5 days of life. This study evaluates the effects on the immediate post-natal course of withdrawing the formula feeding in breast fed infants. 982 normal full-term infants from 2 nurseries (Naples and Sassari) were studied. 460 infants (Group 1) received an adapted formula in addition to breast-milk during the first 5 days of life. 523 (Group 2) received only 5% dextrose in water in addition to breast feeding. The 2 groups were comparable for social class of parents, maternal age, parity, mode of delivery, Apgar score, sex and birth weight. Maximal weight loss was similar in the 2 groups (around 7% of birth weight). The incidence of hyperbilirubinemia (serum bilirubin 12 mg/dl) and the need for phototherapy was significantly greater in infants of group 2 (28 vs 19% and 26 vs 14% respectively: p 0.05). These results indicate that the addition of an adapted formula during the first 5 days of life decreases the incidence and severity of jaundice in breast-fed infants. However, this effect, though statistically significant, is clinically modest and may not overcome the possible disadvantages of the early introduction of heterologous proteins in the diet of normal breast-fed infants. (Supported by M.P.I. and Regional Research Funds).