1523 CORD BLOOD ERYTHROPOIETIN (Ep) AND POSTNATAL BILIRUBIN PRODUCTION IN NORMAL TERM INFANTS. David K. Stevenson, Louis R. Bucalo, Gisela K. Clemons, and Herbert C. Schwartz. Dept. of Pediatrics, Stanford University School of Medicine, Stanford, CA

We hypothesized that high cord blood Ep levels measured by radioimmunoassay, reflecting in utero hypoxic stress in some apparently normal term infants, might be associated with increases in the pulmonary excretion rate of CO (VeCO), an index of bilirubin production, because of consequent effective erythropoiesis or stimulation of hepatic heme turnover by other biochemical effects of such stress. Forty-eight normal-sized (AGA) or macrosomic (LGA; > 4 kg) infants were studied consecutively, excluding only those with a diabetic mother (IDMs; maternal HbA_{Ic} > 5.7% total Hb), a hematoma, bruising, or a positive Coombs test. Others with a history of possible in utero hypoxic stress late in gestation (toxemia, 2nd stage of labor > 2 hrs, dystocia, meconium staining, nuchal cord, low Apgars) were included (9/26 AGA; 14/22 LGA).

	VeCO (SD) μl/kg/hr	EP (SD) mU/ml
AGA (n = 26)	15.8 ± 4.8	33.0 ± 38.5
LGA (n = 22)	15.8 ± 6.5	57.9 ± 38.1

Ep and VeCO did not correlate. No infants had polycythemia. Thus, if IDMs are excluded, 1) AGA and LGA infants with nonchronic in utero hypoxic stress late in gestation may have similar postnatal bilirubin production, and 2) cord blood Ep levels in such infants may not predict bilirubin production after birth.

†**1524** THE EFFECT OF TIN-PROTOPORPHYRIN ON BILIRUBIN PRODUCTION IN NEWBORN RATS AFTER HEMATOMA FORMATION Andrew M. Posselt, Clark G. Ochikubo, Hendrik J. Vreman, and David K. Stevenson, Dept. of Pediatrics, Stanford University School of Medicine, Stanford, CA

The pulmonary excretion rate of carbon monoxide (VeCO), an accepted index of bilirubin production, was measured in newborn rats with iatrogenic hematomas, and with tin-protoporphyrin, (TP) injected subcutaneously. TP, a synthetic metalloporphyrin has been shown in vitro and in vivo in the rat to competitively inhibit heme oxygenase, which is the rate-limiting enzyme in heme catabolism. TP treatment has also been associated with lower serum bilirubin levels in mutant mice with severe hemolytic anemia [Blood 61:1011, 1983].

		NaCL	Hematoma	Hematoma & TP
*VeCO μl/kg/hr	(n=4)	29 ± 6	39 ± 7	38 ± 11
*Weight g/3 pups	(n=4)	31.5 ± 3.7	33.6 ± 3.5	33.0 ± 2.8
*Bilirubin mg/dl	(n=4)	1.9 ± 0.4	2.4 ± 0.8	2.6 ± 0.5

*100 hrs $\bar{p}$ TP;55 hrs $\bar{p}$ hematoma;n=# of grps of 3 pups;$\bar{x}$ ± SD

Despite finding significant decreases in hepatic and splenic heme oxygenase activities after TP treatment, we did not find significant decreases in the mean VeCO and mean serum bilirubin levels of TP-treated rats with iatrogenic hematomas compared to nontreated rats with hematomas. Both groups had elevated bilirubin production and elevated bilirubin levels compared to saline-treated rats without hematomas. This suggests that 1) heme oxygenase activity may not directly reflect in vivo heme catabolism in this model; and 2) TP may not decrease heme catabolism, even when the latter is increased pathologically.

1525 INCIDENCE OF HEME POSITIVE STOOLS IN A NEONATAL INTENSIVE CARE UNIT. Alan D. Stiles, Beth Simpson, Ross Vaughn, and James T. Thullen (spon. by Barry T. Smith), University of North Carolina, Department of Pediatrics, Chapel Hill.

Since infants with necrotizing enterocolitis (NEC) often present with blood in the stools, nursery routines often dictate cessation of feedings when this sign occurs. To study the validity of this practice, we tested all stools of 35 consecutive admissions to a neonatal intensive care unit using the Hemoccult system (SmithKline Diagnostics). All infants were inborn, with weights ranging from 840 to 2900 gm and gestational ages from 27 to 36 wk. All infants were fed by oro-gastric tube during at least a portion of their hospital course and 22 received CPAP or IPPV. During the study period there was no diarrheal or known viral disease noted in the nursery population.

27 infants (77%) had heme positive stools during their course (mean 6 heme positive stools per patient, range 1 to 41). There were no apparent associations between birth weight or gestational age and the incidence or number of heme positive stools. One infant developed NEC with pneumatosis and bowel perforation, but heme positive stools were not present prior to diagnosis.

We conclude that heme positive stools are frequent in the neonatal intensive care population and, as an isolated finding do not justify witholding feedings. Further, routine use of this test as a screening procedure does not appear to be justified.

1526 EFFECT OF EARLY CLOSURE OF DUCTUS ARTERIOSUS (DA) ON RESPIRATORY DISTRESS (RD) IN LAMBS. D.A. Stinson, A.C. Allen, D.L. Roy, R.M. Liston, J.A. Love, J.R. Evans, Dalhousie University, Dept. of Pediatrics, Halifax, N.S.

We tested the hypothesis that the left-to-right shunt through the DA contributes to the high pulmonary blood flow (PBF) and increased lung water content (LWC) in lambs with RD. Five singletons and 1 lamb from each of 2 twin pairs underwent fetal surgery at 128-132 d. An electromagnetic flow probe was placed on the postductal segment of the common pulmonary artery to measure PBF. A polyethylene snare was passed around the DA and left loose. Eight days after surgery, lambs were delivered by C-Section. Ten min after delivery, the snare was tightened around the DA. Arterial BP, pH and blood gases in the 7 lambs and PBF in 5 lambs were measured from birth until sacrifice at 4 hr. Lung blood volume was measured by injection of ^{51}Cr RBCs. DA was demonstrated to be tightly closed after sacrifice. All 7 lambs tolerated DA closure well; 6 had mild, 1 had moderate RD. Four hr P_aCO_2 values ranged from 38-60 mmHg. PBF increased with air breathing to peak at 258-400 ml/kg/min. The PBF surge appeared to be cut short by DA closure in 3 lambs. Flow decreased to 108-214 ml/kg/min by 4 hr. Right LWC ranged from 4.8-9.9 ml/g blood-free dry lung. There was no appreciable difference in 4 hr PBF or LWC from lambs we have previously reported with mild to mod RD without early ductal closure, or between the 2 lambs with DA closure and their unoperated twin. Although closure of DA at 10 min appeared to attenuate the initial PBF surge, we were unable to demonstrate a benefit in decreasing clinical RD or LWC in preterm lambs.

●**1527** EFFECT OF POLYCYTHEMIC HYPERVISCOSITY ON GASTROINTESTINAL (GI) BLOOD FLOW AND O_2 CONSUMPTION IN PIGLETS. Philip Nowicki, William Oh, Alice Yao*, Nancy Hansen, Barbara S. Stonestreet. Brown Univ, Women & Infants Hosp, Dept. Ped. Providence, RI. Downstate Univ. of N.Y., N.Y.*

The effect of polycythemic hyperviscosity (H) on GI blood flow (QGI) and oxygenation were evaluated in the fasted and fed state because of its relevance in the pathogenesis of necrotizing enterocolitis. H was induced by isovolemic exchange transfusion (ET) with age matched packed red blood cells in 8 2-day old piglets. Compared with 8 non-exchanged control (C) piglets, ET resulted in a rise in Hct (145%) and viscosity (>3SD); ^{51}Cr blood volume was unchanged. QGI (microsphere-measured), O_2 extraction (O_2 ext GI), and O_2 consumption (VO_2GI) were measured before (BET) and after ET (AET). Both H and C groups were then fed 30 ml/kg pig formula via nasogastric tube over 5" & then measurements repeated (PC).

QGI ($ml \cdot min^{-1} \cdot 100gm^{-1}$)			O_2 ExtGI (%)			VO_2GI ($ml O_2 \cdot min^{-1} \cdot 100gm^{-1}$)		
BET	AET	PC	BET	AET	PC	BET	AET	PC
C 106±9	105±9	142±16*	17±1	18±1	23±4*	2.0±0.2	2.0±0.2	3.6±0.2*
H 102±6	69±6†§	123±10*	20±2	7±1§	18±2*	1.9±0.1	1.0±0.1§	4.3±0.6*

M±SEM +:p<0.05 vs BET *:p<0.05 vs AET o:p<0.05 vs C

In the fasting state, H decreased perfusion and O_2 ext GI and VO_2GI decreased. Post prandial oxidative requirements (VO_2GI) were met in both C and H by hyperemia and increased O_2 ext GI. We conclude that H compromised fasting GI O_2 transport and uptake; however, H piglets remained capable of meeting postprandial oxidative demands by hyperemia and increased O_2 ext GI.

1528 LACK OF EFFECT OF PATENT DUCTUS ARTERIOSUS (PDA) LIGATION ON INTRAVENTRICULAR HEMORRHAGE (IVH) IN THE VERY LOW BIRTHWEIGHT INFANT. M.J. Strange, G. Myers, J.K. Kirklin, A.D. Pacifico, J.B. Philips, G.E. Cassady. University of Alabama in Birmingham, Depts of CV Surgery and Pediat., Birmingham, AL.

Uncertainty exists whether the acute perioperative blood pressure changes associated with surgical closure of a PDA may cause or worsen IVH. Twenty infants undergoing PDA ligation had pre- and postoperative intracranial ultrasound studies performed within 24h of each other. The studies were read and graded (Papile classification) by one author (G.M.) who was unaware of the infant's operative status. At surgery, the ductus was occluded rapidly (within seconds) with either silk ligature or hemoclip. Each operation took <20 minutes.

Gestational ages ranged from 25-31 weeks, and birthweights from 680-1420g. Fourteen of 20 infants weighed ≤1000g. Postnatal age at surgery ranged from <24h to 20 days. Six babies underwent PDA ligation within 24h of birth, and 15 babies within 1 week.

Of the 20 infants studied--12 babies had no IVH, 2 babies had grade II, 3 babies had grade III, and 3 babies had grade IV on both pre- and postoperative ultrasound studies. No baby showed progression of IVH within 24 hours of PDA ligation.

These data suggest that PDA ligation is not accompanied by an increased risk for development or extension of IVH in preterm infants.