1381 **ASSOCIATION OF PERINATAL FACTORS WITH PERIVENTRICULAR HEMORRHAGE (PVH) IN VERY LOW BIRTHWEIGHT (VLBW) NEONATES** J.R. Evans, A.C. Allen, D.A. Stinson, M.J. Vincer, C.G. Nwaesei, B.St.J. Brown, Dalhousie University, Dept. of Pediatrics, Halifax, N.S.

Perinatal factors associated with PVH were prospectively surveyed in 157 consecutively born VLBW inborn infants. Diagnosis of PVH was determined by cranial ultrasound (148 cases) or autopsy (9 cases). Ten infants with major anomalies and four infants who had no ultrasound or autopsy were excluded. The overall incidence of PVH was 29.9%, 22.9% minor (Gr 1-2) and 7% major (Gr 3-4). Mean gest age (GA) and birthweight (BW) were significantly lower ($p<0.001$) in those who developed PVH: 974±227g and 27±2.6 wk vs 1150±269g and 30±3.3 wk respectively. Mortality was 13.6% in infants with no PVH, 22.2% with minor, and 45.5% with major PVH.

With partial correlation analysis, highly significant ($p<0.001$) perinatal factors found to be independently associated with PVH were vaginal delivery, hyaline membrane disease (HMD), positive pressure ventilation (PPV) and pneumothorax. The reduced incidence of PVH associated with Caesarean section (CS) was noted only in infants <30 wk GA. Major PVH occurred exclusively in infants who had no or suboptimal (<24 hr) prenatal steroids ($p<0.03$), developed severe HMD ($p<0.001$) and required PPV ($p<0.001$).In attempting to reduce the incidence and severity of PVH, attention should be focused on the prevention of prematurity and HMD. The suggestion that CS prevents PVH in extremely premature infants could be established only with a randomized controlled trial.

1382 Post natal (PN) evolution of anthropometric variables (AV) in preterm infants (PI) fed breast milk (BM). JL. EXCLER, L. SANN, Y. LASNE, J. PICARD (Spon. by Alistair G S PHILIP).Hop. Debrousse Dept of Neonatologie, LYON, FRANCE

35PI were studied : 20 appropriate for gestationel age (AGA), GA: 29 ± 1 · 4 wks, birth weight (BW) : 1301, 2 ± 256 g, and 15 small for GA(SGA), GA: 34 ± 2,4 wks, BW : 1323, 3 ± 255 g. They were followed during 3 to 10 weeks, measuring each week, head and chest circumferences (HC,CC), midarm circumference (MAC), triceps skin-fold thickness (TSKF), derived arm muscle and fat areas (AMA,AFA). Correlations were made between GA and AV, and then compared with fetus values, (previously described on 74 AGA and 22 SGA at d 1 of life) as follows :

AGA	fetus (n=74)	PN (n=20)	comparison of slopes	SGA	fetus (n=22)	PN (n=15)	comparison of slopes
MAC	0,853*	0,592**	**		0,758*	0,641*	NS
AFA	0,646*	0,619**	**		0,625*	0,602*	NS
AMA	0,765*	0,284	-		0,730*	0,531†	NS

When fed BM, the growth patterns of AV during intra(IUL) ans extra uterine life (EUL) do not differ in SGA infants, but show a significant lower growth velocity in AGA infants during EUL : MAC shows an important reduction mainly due to a lower fat compartment (AFA). By multiple regression analysis a mathematical model relating AV and the degree of maturity was established for IUL: this model does not apply to EUL. A new model is proposed : GA = 0,276 HC + 0,723 cc - 0,122 MAC + 0,5 TSKF + 10,173(r =0,867,p 0,001). MAC and SKF provide a simple estimation of body composition of neonates in agreement with carcass studies, and a useful tool to determine the degree of maturity of a newborn (*:$p<0,001$; ** · $p<0,01$, † $p<0,05$).

1384 RISK FACTORS FOR BRONCHOPULMONARY DYSPLASIA Neil Finer, Kathrine Peters, Keith Barrington, Zamir Hayek. University of Alberta, Royal Alexandra Hospital, Department of Neonatology, Edmonton, Alberta, CANADA

In an effort to identify risk factors associated with the development of bronchopulmonary dysplasia (BPD) we retrospectively reviewed over a 5 year period the neonatal course of all 188 infants of <1500 g who required mechanical ventilation for >24 hours and survived at least 14 days. Infants with BPD had lower birth weights ($p<.001$), shorter gestations ($p<.001$), more frequent patent ductus arteriosus ($p=.009$), more often required muscle relaxation ($p<.001$), had interstitial air on x-ray within 7 days of birth ($p=.007$). A discriminative analysis utilizing these variables plus sum of the daily mean airway pressure and sum of daily mean A-aDO_2 for the 2nd week of life was compared to the clinical criteria of the need for mechanical ventilation and an FiO_2 >.3 at 14 days of age for the prediction of BPD. Both functions were then tested on a subsequent prospective cohort of 35 infants.

PREDICTIVE VALUE OF POSITIVE TEST (N=223)

	<1000 gm	1000-1250 gm	>1250 gm
Incidence of BPD (%)	72.2	33.8	21.7
Discriminant function (%)	80	72.2	92.9
Clinical criteria (%)	91.4	66.7	71.4

The clinical criteria correctly predicted BPD in 92% <1000 gm, 58.3% between 1000-1250 gm and 85% >1250 gm. With a specificity and sensitivity similar to the discriminant function the use of such criteria may be helpful in identifying infants who may benefit from therapeutic trials to prevent or ameliorate this disorder.

●1385 CEREBRAL BLOOD FLOW (CBF) AUTOREGULATION IN THE NEWBORN LAMB WITH HYPOVOLEMIC HYPOTENSION WITHOUT AN ASSOCIATED ANEMIA. Gregory A. Franklin, J. Timothy O'Neill and Errol R. Alden, Department of Pediatrics, USUHS, Bethesda, MD. (Spon. by Gerald W. Fischer).

We have shown that the newborn lamb maintains CBF when mean arterial blood pressure (MAP) is lowered to 30 mmHg by hemorrhage. Independent measurements of both hematocrit (HCT) and arterial O_2 content $[O_2]_a$ fell nearly 40%. Although O_2 delivery (O_2D) decreased, O_2 consumption (MVO_2) was maintained. Because HCT and $[O_2]_a$ are determiners of CBF, we attempted to control those variables in 6 anesthetized lambs (< 7 days old). HCT was maintained within physiological limits by infusing autologous packed RBC's. CBF was measured with radioactive microspheres. MAP was reduced (with a pressurized reservoir connected to a catheter in the abdominal aorta) from control to 50,40 & 30 mmHg. Results are as follows:

		MEAN ± SEM		
MAP (mmHg)	95 ± 3.1	49 ± 1.3†	37 ± 0.8†	29 ± 0.6†
CBF(ml/min/100g)	37 ± 6	50 ± 9	41 ± 5	36 ± 3
O_2D(mlO_2/min/100g)	5.2 ± 0.6	6.3 ± 0.9	5.4 ± 0.6	4.7 ± 0.2
MVO_2(mlO_2/min/100g)	2.7 ± 0.3	4.3 ± 0.4*	4.1 ± 0.5*	3.6 ± 0.4

†$P < 0.01$; *$P < 0.05$

CBF and O_2D were maintained and MVO_2 increased in the newborn lamb model of hypotension without anemia. Since the HCT and $[O_2]_a$ were well controlled, this study documents that the newborn lamb can autoregulate CBF over the range of MAP of 96-28 mmHg. If O_2D is maintained (non-anemia), MVO_2 increases. If O_2 demand is as great in anemic-hypotensive newborns, the inability of O_2D to adequately supply this demand may result in ischemia.

●1383 PROLONGED TREATMENT OF THE PATENT DUCTUS ARTERIOSUS (PDA)WITH INDOMETHACIN(IM)Mitzi G. Ferguson, Philip G. Rhodes and James A.Joransen(Spon. by Blair E. Batson)Univ. of Mississippi Med. Ctr., Dept of Peds, Jackson, MS

IM has been widely accepted as a safe and effective method for closure of the PDA in the very low birth weight (VLBW) infants. Suggestions for prolonged IM treatment in these VLBW infants have been advocated to obtain adequate closure of the PDA. Therefore, this study was undertaken as a controlled clinical trial to compare 2 dosage regimens of IM and their effectiveness in the closure of the PDA. All infants <1500 gms who had a ⊕ contrast echocardiogram for a PDA were randomized to one of 2 groups: maintenance (M) or non-maintenance (NM). The M group received 2 doses of IM OG 12 hrs apart and were then placed on M IM for 5 days. The NM group only received 2 doses of IM OG 12 hrs apart. 69 infants have been entered into the study: 33 in the M group and 36 in the NM group. 23/33 (70%) in the M group and 20/36 (55%) in the NM group had negative follow-up echo after the 1st 2 doses of IM. 10 days after the initial dose of IM 5/20 in the NM group had reopened their PDA as compared to 0/23 in the M group ($p<0.025$). 11 infants in the M group and 1 additional infant in the NM group reopened their PDA at an average age of 35 days as evaluated by clinical and radiographic criteria. The data suggests that by giving M IM for 6 days after birth, there is a lower rate of ductal reopening during the acute stage of illness. The late ductal reopening does occur in both groups although it had little clinical significance at this late stage.

1386 PLASMA PROSTAGLANDIN RESPONSE TO INDOMETHACIN THERAPY FOR PATENT DUCTUS ARTERIOSUS IN PREMATURE INFANTS

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To elucidate the relationship between ductal patency (PDA), plasma prostaglandins (PG) and indomethacin (IN), 55 infants <1750 gms at birth were monitored prospectively for a hemodynamically significant PDA by exam, CXR, echo/doppler and ventilator dependence. Six received IN 0.2 mg/kg/dose for 3 doses at 12 hr. intervals. Plasma for IN, thromboxane B_2 (T) and 6-keto-$PGF_{1\alpha}$ (6K), the stable metabolite of prostacyclin, was obtained prior to and 2,6,12,18,24,36 hr after starting IN. Control and 12 hr interval mean results were:

Hr after IN	$\overline{IN}$(ng/ml)	$\overline{T}$(pg/ml)	$\overline{6K}$(pg/ml)
0	0	80	132
12	268	60	133
24	346	55	134
36	418	60	132

The PDA closed in all infants within 24 hr. The data indicate that PDA closure correlated with rising IN concentration and decreased T synthesis while 6K did not change. This differential inhibition of PG suggests that IN preferentially accesses cyclooxygenase at different anatomic sites and that circulating T may predict efficacy of PDA closure by IN.