1549 THE SAFETY OF ARGININE VASOPRESSIN (AVP) IN DONOR BLOOD FOR NEWBORNS. Amaury Velez, Guillermo Zeballos, David Clark, Julian Stewart, Harry S.Dweck. New York Medical College, Westchester County Medical Center, Valhalla, New York.

Sick newborns have been found to have significantly elevated levels of AVP. The frequency of blood transfusions in sick neonates and the multiple physiological actions of AVP prompted us to determine the content of AVP in donor blood.

In keeping with standard blood banking practices, 80 ml of blood were drawn from each of eight donors, mixed with 7 ml of anticoagulant (CPD) in standard blood bank bags and refrigerated at 4°C. Daily samples were drawn on each of five successive days. The plasma was acidified and frozen at -20°C until the time of assay. AVP was extracted by bentonite procedure modified from Skowsky technique in duplicate and measured by radioimmunoassay in triplicate. Only 2 of 8 donors had higher than normal values (6 & 7 pg AVP/ml) at the time of the initial sample. AVP levels decreased from day 1 to day 5 with the greatest fall in the first 24 hours.

AVP LEVELS (pg/ml) (N = 8)
(1 pg = 2.5 microunits)

	DAYS 1	2	3	4	5
mean (pg/ml)	3.63	2.85	2.72	2.22	2.08
(S.E.)	(0.70)	(0.28)	(0.47)	(0.43)	(0.21)

We conclude that the use of banked donor blood in newborns is not likely to result in excessive infusion of AVP.

†1550 MARKEDLY ELEVATED SERUM CALCITONIN (CT) REFRACTORY TO SERUM CA CHANGES AND CA-RESPONSIVE SERUM PARATHYROID HORMONE (PTH) IN HYPOCALCEMIC VERY LOW BIRTH WEIGHT (VLBW) INFANTS. P.S.Venkataraman, K.E.Blick, H.D.Fry, R.K.Rao. Dept. Pediatr., Univ. Okla., Okla. City (Spon. O.M.Rennert).

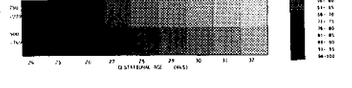
In VLBW infants, we studied the theses that in early neonatal hypocalcemia, 1)serum PTH would rise, 2)serum CT would decline, and in response to IV Ca infusion, 3)serum PTH would be lowered, 4)serum CT would rise. Fifteen AGA infants, gestation <32 wks., bt.wt. <1500 gms. were enrolled in the study. In 8 infants whose serum Ca declined <6.0 mg/dl, changes in serum Ca,Mg,P,PTH,CT and blood iCa were evaluated at 8 ±4 hrs.(baseline), when serum Ca declined to < 6.0 mg/dl (pre-Ca), immediately post-infusion of 18 mg/kg of Ca^{++} as Ca gluconate (post-Ca). Serum Ca declined from 7.9 ± 0.6 baseline (mean ± s.e.) to 5.2 ±0.2 mg/dl, pre-Ca, $p < 0.025$, and rose to 9.17 ± 0.74 mg/dl post-Ca, $p < 0.025$ and 7.1 ±0.5 mg/dl at 8 hr.post-Ca. Whole blood iCa declined from 4.82 ± 0.24 to 3.72 ± 0.19 mg/dl pre-Ca, $p < 0.025$, and rose to 6.68 ± 0.32 post-Ca, $p < 0.025$ and 4.12 ± 0.21 mg/dl at +8 hr. post-Ca. Serum Mg and P did not change significantly. Serum PTH (RIA, mid-molecule, N 29 to 85) rose from 116 ± 17 to 204 ± 34 p mol/l pre-Ca, $p < 0.01$ and declined to 149 ± 22 post-Ca, $p < 0.01$, and was 187 ±28 p mol/l at +8 post-Ca. Serum CT (RIA, adult N 32 to 102) was 751 ±150, 738± 115, 895 ±206 and 551 ±94 pg/ml at these times, $p < 0.005$ vs. term infant values, changes not significant. Thus, in infants < 32 wks. gestation, serum PTH rises in early neonatal hypocalcemia and is suppressed by IV Ca infusion; serum CT is markedly elevated and is not lowered in early neonatal hypocalcemia, and does not rise further in response to IV Ca infusion in VLBW infants. We suggest that hypercalcitonemia occurs in VLBW infants, and serum CT concentrations are unresponsive to changes in serum Ca.

1551 THE INFLUENCE OF GESTATIONAL AGE(GA) VS. BIRTHWEIGHT (BW) ON NEONATAL MORTALITY(NM) OF PREMATURE INFANTS: A DUTCH NATIONWIDE STUDY. S.P.Verloove-Vanhorick, J.H. Ruys, R.Brand. Leiden University Hosp, Dept of Ped and Dept of Med Statist, Leiden, The Netherlands (sponsored by William Oh).

During the year 1983, NM data were collected prospectively on all liveborn infants with a GA of <32 weeks(wks) and/or a BW of <1500 gr, admitted to 102 neonatal wards(level 1,2 and 3 hospitals) in the Netherlands. The 1208 infants, admitted to the study (133 infants excluded because of lethal congenital malformations or uncertain GA) represent 94% of the total liveborn population of this category in the Netherlands. Results were:

	N	Neonatal Mortality
total	1203	22%
<32 wks	906	28% (range 83%~25 wks-8%~31 wks)
<1500 gr	983	24% (range 63%~500-749 gr-11%~1250-1499 gr)

By fitting these data to a loglinear model (figure) we were able to demonstrate that GA has a significantly larger influence on NM than BW. We conclude that GA rather than BW should be used in NM statistics of premature infants.



†1552 COMPARISON OF TWO ANIMAL MODELS IN ARTIFICIAL SURFACTANT THERAPY FOR HYALINE MEMBRANE DISEASE (HMD). Dharmapuri Vidyasagar, Haruo Maeta, Hiroo Matsuda, Tonse Raju, Rama Bhat, Mark Anderson, Margaret Go, Urmila Dahiya, Eunice John, Yvette Roberson. University of Illinois Hospital, Department of Pediatrics, Chicago, Illinois.

Preterm baboon (B) and lambs (L) have been used as models for different surfactant studies. Varying responses have been recorded. We studied and compared the responses of these models to S-TA therapy. Animals delivered prematurely (B:76% and L:83% term) by C-section were used. All had HMD. S-TA 100 mg/kg was instilled into trachea at 2 hrs. of age. Controls received no S-TA. Sequential $a/AP\bar{O}_2$ data are shown. Treated B had sustained improvement in $a/AP\bar{O}_2$ up to 16 hrs. and mean airway pressure dropped from 14.5±1.1 to 10.2±0.5 cmH_2O $p<.001$. In lambs improvement in $a/AP\bar{O}_2$ was significant but transient lasting only 2-3 hrs. with deterioration by 4-5 hrs. Pressure vol. curves at autopsy showed significantly larger hysteresis in treated baboons than lambs. Two other treated baboons could be maintained alive for 36 hrs. We conclude: 1) Differences in response to S-TA therapy may be species related, 2) Baboon HMD model may be better for studies of long term effects of surfactant therapy than the lambs.

$a/AP\bar{O}_2$ Baboon vs Lamb

	n	pre-surf.	Post 1 hr.	Post 4 hr.	Post 6 hr.
Baboons	(6)	0.20±1.10	0.53±0.05***	0.44±0.11***	0.42±0.08***
	(5)	0.23±0.11	0.23±0.06	0.13±0.05	0.13±0.05
Lambs	(5)	0.08±0.07	0.27±0.08**	0.22±0.12*	0.06±0.01
	(5)	0.10±0.05	0.10±0.02	0.07±0.04	0.03±0.01

( ) = n Table: x±S.D., *p<0.05, **p<0.005, ***p<0.001

1553 EARLY INDOMETHACIN (IND) DOES NOT PREVENT BRONCHOPULMONARY DYSPLASIA (BPD) IN A RANDOMIZED CLINICAL TRIAL M.J. Vincer, A.C. Allen, D.A. Stinson, J.R. Evans, C.G. Nwaesei, E. Rees, A. Fraser, Dalhousie University, Dept. of Pediatrics, Halifax, Nova Scotia

Thirty infants < 1500 g at birth on IPPB or CPAP by 12 hours were entered in a randomized double blind controlled trial to test the efficacy of IND in preventing BPD. 15 treated infants received IND at 12, 24 and 36 hours of age while 15 control infants received normal saline at these times. The groups were similar for birth weight, gestational age and sex.

	NUMBER	BPD MILD	BPD CYSTIC	IRDS MOD	IRDS SEV	IVH GRADE 1&2	IVH GRADE 3&4	SPDA	DIED
Indomethacin	15	5	3	5	5	7	5	1	3
Control	15	7	1	5	8	5	4	5	2

Although there was a 65% probability of detecting a 50% reduction in BPD, there was in fact no difference in the incidence of BPD between the two groups. The incidence of IRDS and IVH was similar in the two groups. There was a tendency towards reduced incidence of symptomatic PDA (SPDA) in the IND group but it did not reach significance. There were no cases of NEC in either group and the incidence of pneumothorax and RLF was similar. Length of stay, length of ventilator support and length of oxygen therapy did not differ between the two groups.

IND may reduce the incidence of SPDA. However, when given within 12 hr of birth, IND does not reduce the incidence or severity of BPD, or the need for ventilation or oxygen.

●1554 EFFICACY OF THEOPHYLLINE FOR PREVENTION OF POST-EXTUBATION RESPIRATORY FAILURE IN INFANTS LESS THAN 1250 GRAMS. Rose M. Viscardi, Roger G. Faix, Thaddeus H. Grasela, Joanne J. Nicks, University of Michigan, Departments of Pediatrics, Pharmacy, and Respiratory Therapy, Ann Arbor. (Spon. by SM Donn).

Because methylxanthines modulate apnea and enhance intercostal and diaphragmatic contractility, we hypothesized that administration of theophylline to infants < 1250 gm on low ventilatory settings would facilitate extubation and prevent post-extubation respiratory failure. A prospective, randomized, blinded, placebo-controlled trial was performed. Twenty-five infants [11 placebo (P), 14 treated (T)] who were < 1250 grams on assisted ventilation with $FiO_2 \leq .30$, PIP ≤ 20, IMV ≤ 10 were enrolled. Electrolyte abnormalities and anemia were corrected before entry and absence or stability of IVH was confirmed by cranial sonography. Prior to extubation, T infants received 6 mg/kg theophylline loading dose IV or PO and then a maintenance dose 2 mg/kg q 12h for 5 doses. Control infants received equal volumes of normal saline. No significant differences existed between groups for birthweight, GA, duration of ventilation, and peak FiO_2. Nine of 14 T infants and only 1 of 11 P infants were successfully extubated for at least 5 days ($p=0.01$). Of 5 T infant failures, 2 had congestive heart failure with patent ductus arteriosus and 3 had severe apnea. Of 10 P infant failures, 8 had recurrent apnea and 2 failed to wean from the respirator during the study period. Seven of 9 P infants were later successfully extubated with theophylline. We conclude that theophylline therapy prior to extubation of infants < 1250 gms is effective in preventing post-extubation respiratory failure.