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CORRELATES OF TIME OF UTILIZATION OF NEONATAL TRANSPORT & MORBIDITY OUTCOME. Sang Sun Ahn, Angelo Ferrara, NYU/Bell. Hosp. Ctr. NYC. The hypothesis that in time of scarce resources (weekend, after midnight, etc.) utilization of the service would occur & possible adverse outcome. To test this, all NB moved in '79 (853) were stratified by day & hour of transport. Excluded were elective, non-sick NB. Specific groups were noted: Resp. Distress & other diseases. Distribution of calls by shift was: 8-4, 45%; 4-12, 35%; Mid-8AM, 20%. RESULTS: 1) Utilization by decreasing order: M, Tu, Fr, Wed, Thu, Sun, Sat. 2) Days of greatest survival are: M & Tu, while Fr & Sat are days of least survival $\chi^2=3(.05 < P < .10)$ 3) Most elective calls were on Wed. 4) No Sig. Dif. in mortality among 3 shifts, but of 21 shifts/wk. highest mortality was on Fri, Mid-8, & Sun 8-4. 5) Combined transports on Mon & Tu show a sig. lower mortality (13.8%) compared to Fri & Sat (20.7%) ($\chi^2=3.7, P < .05$). Though there was less util. on weekends (Fri-Sat) mortality was noted. ↑ number & competency of staff is recommended for weekends in stabilizing & transporting sick neonates. TABLE I-DISTRIBUTION BY DAYS OF WEEK & SHIFT OF DUTY & MORTALITY (%).

SHIFT/DAY	M	T	W	Th	F	Sat	Sun	TOTAL
8-4	N=70 (10.0)	N=59 (15.3)	N=49 (22.4)	N=49 (14.2)	N=56 (16.1)	N=41 (19.5)	N=48 (27.1)	N=372
4-12	N=57 (17.5)	N=54 (27.2)	N=51 (13.7)	N=42 (14.2)	N=48 (20.8)	N=25 (16.0)	N=39 (10.2)	N=316
M-8AM	N=33 (15.3)	N=25 (12.0)	N=20 (10.0)	N=18 (11.1)	N=20 (30.0)	N=32 (15.6)	N=17 (11.7)	N=165
DAILY TOT:	160	138	120	109	124	98	104	853
AVERAGE MORT/DAY	(13.7)	(17.4)	(16.7)	(13.8)	(21.8)	(19.4)	(18.3)	

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HYPERKALEMIA AND PACKED RED CELL TRANSFUSIONS IN VERY LOW BIRTH WEIGHT (VLBW) INFANTS. Craig W. Anderson, Leandro Cordero, Jr. (Spon. by Grant Morrow, III) Ohio State Univ. College of Med., OSU Hospitals, Dept. of Pediatrics, Columbus, Ohio.

The occurrence of hyperkalemia in a VLBW infant (720 gms) following packed red blood cell (PRBC) rapid infusion prompted an investigation into the transfusion procedure and the characteristics of banked PRBC that could affect potassium (K^+) levels. Twenty-three premature infants ($\bar{X}$ Wt 1080 gms) received PRBC (10cc/kg) over two hours for correction of anemia. Serum K^+ was measured on blood obtained by warmed heel stick immediately before and within two hours after each transfusion. Age, hematocrit and serum K^+ level of the PRBC at the time of infusion was documented. Patients with blood glucose instability or those receiving diuretics were excluded.

POTASSIUM LEVELS IN TWENTY-THREE PRBC TRANSFUSIONS

	Patient Serum K^+ (meq/L)		Banked PRBC Analysis		
	Before	After	K^+ (meq/L)	Hct%	Age (d)
$\bar{X}$	5.3	5.0	19.4	73.4	3.0
SD	1.3	1.4	9.7	7.4	1.1
Range	3.2-9.3	3.0-9.8	6.4-44.9	60-89	1-5

A positive correlation was found between hematocrit ($r=.38, p=.07$) and age ($r=.47, p=.02$) of banked PRBC and serum K^+ . Following PRBC transfusions, no changes in serum K^+ were found; hence it is possible that the duration of infusion may have allowed time for K^+ equilibration with the intracellular space. It is worth noting that the range of K^+ present in banked PRBC is wider than previously accepted and may create a potential for severe hyperkalemia in the VLBW infant.

1232A

VARIABLES AFFECTING NEONATAL PATTERNS OF BILE ACIDS Catherine Arrieta, Angelo Ferrara, Anantham Harin-Dept. of Peds. NYU/Bell. NYC; Norman Javitt-Dept. of Med. Cornell Med. Ctr. NYC From 11/79 to 3/80, 176 specimens were collected from 94pts. (total of 84 in NICU & 30 selected normal term NB) by IMD (CA) & analyzed by an enzymatic method which correlates with gas/liquid chromatography (Javitt: J. of Lip. Res. 18:666;77). Pts were stratified by wt, by presence of jaundice & degrees of illness. Cross sect & regres. anal. of bile acids are noted in Fig. 2. Results: 1) Bile acid levels correlate neg. with wt. 2) Serial levels rise up to 15 wks. This is seen more in <1500 g. 3) Levels correlate more with sickness & compromised state (sepsis & RD) than with jaundice. 4) No correlation noted with total parenteral nutrition. Further studies are required for predict. values of bile acid & neonatal disease. FIG. 1 MEDIAN VALUES BILE ACID (μ M/Lit) SPECIMENS BY AGE & WEIGHT. A = <1000 g; B = 1001-1500g; C = >1500 g (2wks: A-6, B-6.4, C-6) (4wks: A-7.5, B-7, C-6) (6wks: A-7, B-18.5, C-7) (7-15wks: A-11, B-27). FIG. 2 REGRESSION OF BILE ACID LEVEL ON WEEKS OF LIFE IN NEWBORN

1233

INCREASING MALFORMATION RATES IN INFANTS OF DIABETIC MOTHERS (IDM) DESPITE IMPROVEMENTS IN MORTALITY IN A CLOSELY SUPERVISED POPULATION. J. Ballard, J. Holroyde, K. Novak, J. Grote, C. Kammerer, H.C. Knowles, Jr., C. McLain, R.C. Tsang, U. of Cincinnati College of Medicine

The incidence of malformations (malf) in IDM has not been prospectively evaluated in relation to time. 186 pregnant juvenile diabetics (C,D,E,R,F) were cared for by one diabetologist (H.C.K.) (1955-1978). Ages were 15-39 yrs and did not change over time. In 1955-69, management included regular diet (3 meals, snack, unweighed) and single insulin; in 1970-78, rigid, measured diet, 4-16 wks stay in Clinical Research Center and multiple insulin adjusted from pre-meal and night glucose. Between 2 periods, maternal complications did not change, and were similar for classes; perinatal mortality fell from 35 to 16%, ($p < .01$), due to fall in neonatal deaths 18 to 6% ($p < .05$), not abortions (4 to 3%) or stillbirths (17 to 8%, N.S.). However malf rates increased from 3% in 1955-69 to 25% in 1970-78 ($p < .001$). Malf were genitourinary 6%, musculoskeletal 6%, eye-ear-nose-throat 6%, cardiac 5%, neurologic 2%. Multiple system malf were present only after 1970. We analyzed 11 reports (1938-1975) and detected a trend of increase in IDM malf rates with time. Malf rates were 17% in C,D vs 13% in E,R,F (N.S.); 16% for mothers <24 yrs vs 18% >25 yrs (N.S.). Thus, although perinatal mortality in IDM has improved with time, the malformation rate is very high, does not vary with diabetic class or maternal age, and may have increased recently.

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FOLLOW-UP OF PRETERM INFANTS AFTER PRENATAL BETAMETHASONE (BETA). Roberta A. Ballard, Christine Clark, Ronald I. Clyman, Margaret Dekle, Carol H. Leonard, Robert S. Roth, Sally Sehring, and Susan Sniderman. Mt. Zion Hospital and Medical Center, Department of Pediatrics, San Francisco, California.

Prenatal Beta to prevent Hyaline Membrane Disease has been used at Mt. Zion Hospital since July 1972. Serial assessments of neurological and developmental status of 128 infants weighing <1250 gm were done at 1-6 years of age (mean age 30.7 months). Mental development was considered normal (N), borderline (B) or abnormal (A) if developmental or intellectual quotients were >80 , 70-80 and <70 respectively. Motor development was considered B if there was clumsiness or mild paresis and A if moderate to severe cerebral palsy. The table presents outcome for inborn (IB) and outborn (OB) infants whose mothers received ≥ 1 dose (Rx) of Beta-methasone vs untreated (unRx) infants.

	n	Mean Wt*	Mean GA*	Mental		Motor		A	%N
				N	B	N	B		
IB Rx	30	1001 $\pm$ 27	28.5 $\pm$ 0.3	26	4	0	27	3	83.3%
IB unRx	15	1054 $\pm$ 46	29.3 $\pm$ 0.8	13	2	0	14	1	80.0
OB Rx	13	1050 $\pm$ 48	27.8 $\pm$ 0.4	11	1	1	12	1	84.6
OB unRx	70	1035 $\pm$ 20	29.4 $\pm$ 0.3	48	18	4	49	15	60

* $\pm$ SE
Rx infants showed no deficits in growth (weight, height or head circumference) when compared with unRx infants. Rx infants also compared favorably in mental and motor development and there were significantly more normal infants in the Rx group (83% vs 63.5%), $p < 0.025$.

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THE EFFECT OF HIGH AND LOW O_2 AFFINITY BLOOD DURING CONDITIONS OF COMBINED HYPOXIA HYPERCAPNIA, AND SEVERE HYPOXIA IN NEWBORN LAMBS. Harry Bard, Marie-R. Van Ameringen, Jean-C. Fouron, Janie Prossmanne. Univ. de Montréal, Centre de Recherche, Hôp. Ste-Justine, Montréal, Canada.

In order to simulate the blood gas conditions in RDS of pre-term newborn infants and evaluate the effect of the position of the Hb O_2 dissociation curve (ODC) on tissue O_2 and cardiac function, studies were carried out on newborn lambs less than 48 hr of age. Twenty-eight animals were divided up into two groups based on their ODC (a) high affinity: P_{50} 20.5 mmHg, and (b) low affinity: P_{50} 32.3 mmHg (by an exchange transfusion with adult blood). These two groups were then subdivided and ventilated under the following conditions: (I) 10% O_2 , 10% CO_2 , 80% N_2 , and (II) 8% O_2 , 92% N_2 , for 90 min. Blood gases, arterio-venous O_2 content differences (A-V), cardiac output, ml/kg/min (CO) and O_2 consumption, ml/kg/min ($\dot{V}O_2$) were determined. The results are means $\pm$ SD of paired values.

	P_{50}	PaO_2	A-V	CO	$\dot{V}O_2$
Room air	20.5 $\pm$ 2.2	62.2 $\pm$ 4.2	4.39 $\pm$ 1.12	230.6 $\pm$ 87.6	10.60 $\pm$ 0.87
	32.3 $\pm$ 1.1	62.6 $\pm$ 11.6	4.91 $\pm$ 0.89	272.9 $\pm$ 75.1	13.03 $\pm$ 2.93
I	20.5 $\pm$ 2.2	24.3 $\pm$ 4.3	2.17 $\pm$ 0.97	456.6 $\pm$ 182.4	8.55 $\pm$ 1.12
	32.3 $\pm$ 1.1	31.2 $\pm$ 3.8	2.33 $\pm$ 0.53	395.1 $\pm$ 114.8	8.73 $\pm$ 0.96
II	20.5 $\pm$ 2.2	19.8 $\pm$ 7.7	2.36 $\pm$ 1.08	218.7 $\pm$ 50.7	5.52 $\pm$ 1.23
	32.3 $\pm$ 1.1	23.4 $\pm$ 5.1	2.05 $\pm$ 0.63	308.7 $\pm$ 91.9	6.27 $\pm$ 1.12

Hypoxia and hypercapnia resulted in an increase in CO ($p < 0.025$) and a decrease in $\dot{V}O_2$ ($p < 0.005$). In severe hypoxia $\dot{V}O_2$ decreased ($p < 0.001$). These changes occurred irrespective of the position of the ODC.