1404 A PROSPECTIVE STUDY OF THE USE OF FROZEN-THAWED WASHED RED BLOOD CELLS (FTW-RBC) TO PREVENT TRANSFUSION-ACQUIRED CMV INFECTION (TA-CMVI) IN THE NEONATE. Haewon C. Kim, Alan R. Spitzer and Stanley Plotkin. Univ. of Penn. and The Children's Hosp. of Phila., Depts. of Pediatr. and Clin. Lab.

A 2-yr. study was begun to evaluate the use of FTW-RBC in preventing TA-CMVI and the severity of TA-CMVI in neonates. Neonates weighing 2 kg or less were randomized to receive either liquid-stored RBC (RBC) (Gr.I) or FTW-RBC (Gr.II). CMV antibody was measured in sera from mothers and neonates (pre- and 2 mo. post-Tx). Viral cultures were done every 2 wk. 296/853 (35%) donors were seropositive (CMV Ab+). Of 71 infants analysed, 41/45 (91%) in Gr.I and 20/26 (77%) in Gr.II received CMV Ab+ blood at least once. No infant in either group receiving seronegative (CMV Ab-) blood developed TA-CMVI. The incidence of TA-CMVI in infants receiving CMV Ab+ RBC in Gr.I was 24.4% (10/41); 2/10 were born to CMV Ab+ mothers. In Gr.II, one infant seroconverted prior to Tx of CMV Ab+ FTW-RBC, suggesting nursery-acquired CMVI (NA-CMVI). In Gr.I, the mean number of Tx (19.2 vs 11.2, $p<0.02$) and donor exposures (12.8 vs 7.1, $p<0.01$) were significantly higher in infants with TA-CMVI than in CMV Ab- infants. In Gr.II, no infant, including the one with NA-CMVI, acquired TA-CMVI despite receiving the same mean number of CMV Ab+ blood Tx as did Gr.I infants. This suggests cryopreservation prevents TA-CMVI. As to severity, 1/10 infants with TA-CMVI developed hepatitis and recovered uneventfully; none died. Our preliminary data support the concept that the use of FTW-RBC or CMV Ab- RBC prevents TA-CMVI, although TA-CMVI appeared to be mild in the neonates studied.

1405 OUTCOME OF VLBW INFANTS WITH INITIAL HOSPITALIZATION GREATER THAN 40 WEEKS GESTATIONAL AGE. S. Kinlay, A. Orgill, J. Astbury, B. Bajuk & V.Y.H. Yu. Dept. of Pediatrics, Queen Victoria Medical Centre, Melbourne, Australia. Sponsored by Margaret L. Williams.

Of 294 hospital survivors ≤1500g 103 (35%) were discharged after 40 weeks gestational age (mean gestational age at discharge for all survivors - 40 weeks (SD 4.2)). These long-stay survivors were divided into 3 groups: Gp 1, AGA ≤28 weeks; Gp 2, AGA >28 weeks and Gp 3, SGA. The proportions of long-stay survivors in the respective groups were 31%, 25% and 84%. Significant predictors of long-stay were SGA, 1-minute Apgar score <4 and admission base deficit >10. Compared to other groups,Gp 1 had increased neonatal respiratory morbidity, BPD, RLF and days in NICU. In the first 2 years they had more episodes of otitis media and more hospitalizations for respiratory problems. Cerebral palsy occurred in 13%. Long-stay survivors in Gp 2 had better 2-year growth percentiles but significantly more cerebral palsy (18%) and family disintegration. Long-stay survivors in Gp 3 had fewer neonatal complications,but lower growth percentiles. Significantly more post discharge deaths (6/8) occurred in long-stay survivors (6% vs 1%) and included 3 deaths from sepsis (Gps 1&3) and 3 deaths from SIDS (Gp 2). Mean Bayley scores at 2 years corrected age were: Gp 1 (MDI 89,PDI 85), Gp 2 (MDI 93, PDI 89), Gp 3 (MDI 96,PDI 91). Long-stay survivors have a differing neonatal course and outcome according to gestational age and prenatal growth, and continue to have increased morbidity and mortality in their first 2 years.

1406 STARCH PARTICLE EMBOLI IN LUNGS OF NEONATES. Haresh Kirpalani, Tom Higa, Ernest Cutz, Max Perlman (spon. by Paul R. Swyer). Division of Neonatology and Dept. of Pathology, Hospital for Sick Children, Toronto.

Particulate matter, mainly starch, has been described in airways of lungs of newborns at autopsy, and attributed to inhalation of the talc from surgical gloves used with suctioning. Using polarised light we have identified birefingent particles typical of starch in the lumina of small peripheral pulmonary vessels. A total of 137 babies were studied retrospectively. 13 (9.4%) infants were found to have intravascular starch particles. 9 of these had had cardiac catheterization and cardiovascular surgery (shunt procedures for pulmonary valve atresia in 6 of them). One further infant underwent cardiac bypass during tracheal surgery. 2 others had multiple general surgical procedures. Only one child had no surgery. Thus the incidence of cardiovascular intervention was 10/13 (76%). Of 124 babies without particles, 21 had cardiac catheterization and/or cardiovascular surgery (21/124 or 16%). Since the birefringent particles are found in vessels, the route of entry into lungs is probably via blood stream, and not the respiratory tract. The likely source of entry remains starch on surgical gloves. Identical particles were observed in suspension of fluid washed from gloves. Our findings indicate the need for more thorough decontamination of surgical gloves prior to procedures.

1407 CEREBRAL BLOOD FLOW VELOCITY IN VARIOUS CLINICAL EVENTS. Anne Koons, Elizabeth de la Cruz, Shyan Sun (Spons. F. Behrle) UMD-New Jersey Medical School, Division Neonatal-Perinatal Medicine, Newark, New Jersey

Doppler ultrasound measurement of cerebral blood flow velocity (CBFV) measuring pulsatility index (PI), peak systolic velocity, diastolic velocity, and area under the curve was used as adjunct monitoring in neonates to study alterations of cerebrovascular dynamics in various clinical events. Changes in CBFV induced by lumbar puncture (LP) in the treatment of post hemorrhagic hydrocephalus (IVH) and sepsis were evaluated. The effect of exchange transfusion (ETx), pneumothorax (Pn), and the drugs pavulon (Pa), dopamine (Dop), isuprel (Isu), and mannitol (Mann) on CBFV were studied.

	LP		Drugs				ETx	Pn
	IVH	Sepsis	Pa	Dop	Isup	Mann		
N	7	4	7	5	3	1	7	2
Δ CBFV	3	0	6	3	0	1	0	2

Effect of LP on CBFV in IVH was dramatic only in infants with very abnormal initial CBFV, two of whom required shunting. In infants with severe RDS, pavulon and dopamine stabilized CBFV; isuprel had no effect. Pneumothorax dramatically affected CBFV adversely, and this effect was not improved after chest tube insertion. Exchange transfusion did not alter CBFV either during or after the procedure. Cerebral blood flow is affected by physiologic perturbation. Monitoring this parameter can be helpful for a better understanding of cerebrovascular hemodynamics.

1408 PREDICTION OF FETAL MACROSOMIA. James R. Green, J. Collin Partridge, Jean Perry, and Norman Kretchmer. University of California, San Francisco. Departments of Obstetrics, Pediatrics and Koret Center for Human Nutrition.

A simple system for predicting fetal macrosomia has been developed, involving three risk factors: 1)Glucose intolerance, 2)History of macrosomia and 3)Maternal obesity. To date, 305 infants have been delivered from 302 prospectively screened mothers. The frequencies of risk factors were: 1)Obesity 25%, 2)Glucose intolerance 7.6% and 3)History of macrosomia 7.0%. Thirty one infants (10.1%) were macrosomic (>4000 g) and/or large-for-gestational age (LGA). Overall, the sensitivity of the screening method was 61%. Obesity was the predominant risk factor (48%) among mothers of macrosomic infants, while glucose intolerance was present in only 17%. The macrosomic infants from "at risk" mothers were characteristically LGA (90%) compared to those from normal mothers (50% LGA) ($p<.02$). The LGA-Macrosomic group of infants were younger (38.8 vs. 41.4 weeks) but heavier (4290 vs. 4062 g) than the AGA-Macrosomic group. They exhibited a significant increase in skinfold thickness, but no difference in length or head circumference compared with the AGA-Macrosomic Group. There appears to be two dinstinct groups of macrosomic infants: those who are asymmetrically large, and those who are symmetrically large, but post-term. If gestational age of 41 weeks or greater is included in the scoring system, 77% sensitivity is achieved in predicting these combined groups. (Supported in part by grants from the Bay Area March of Dimes and the Nestle Co.-USA)

1409 INFLUENCE OF A PORTABLE TRANSCUTANEOUS OXYGEN MONITOR ($TcPO_2$) ON OXYGEN CONCENTRATION (FiO_2) CHANGES DURING NEONATAL TRANSPORTS. V. Krishnan, K. Douglas. (Spon. by M. G. Robinson) Medical College of Ohio, The Toledo Hospital, Dept. of Ped., Toledo, Ohio.

185 of 329 neonatal transports in 1981 used a portable battery operated $TcPO_2$ monitor. The FiO_2 at start and end of transport was compared with 144 transports without the $TcPO_2$ monitor.

	No $TcPO_2$	$TcPO_2$
FiO_2 unchanged during transport	62	37
FiO_2 $\bar{x}$ S.D.	53 ± 33	60 ± 34
$FiO_2\uparrow$ during transport	26	32
Starting FiO_2 $\bar{x}$ S.D.	45 ± 19	41 ± 16
$\Delta FiO_2\uparrow$ $\bar{x}$ S.D.	23 ± 18	20 ± 19
$FiO_2\downarrow$ during transport	56	116
Starting FiO_2 $\bar{x}$ S.D.	69 ± 28	65 ± 27
$\Delta FiO_2\downarrow$ $\bar{x}$ S.D.	26 ± 20	28 ± 21

The initial FiO_2 and the magnitude of change were similar in both groups. However, the likelihood of FiO_2 change was significantly ($p<0.0001$) greater in the $TcPO_2$ group. Especially in the group when the FiO_2 at onset of transport was below 60%, the $TcPO_2$ group was significantly more likely to lower the FiO_2 concentration.

FiO_2 below 60% at start of transport

	No $TcPO_2$	$TcPO_2$
FiO_2 unchanged during transport	42	18
$FiO_2\downarrow$ during transport	24	52

$p < 0.001$

It is probable that use of the $TcPO_2$ monitor gives more confidence and hence increases the likelihood of FiO_2 changes during neonatal transports.