1537 UNIT DOSE, READY-TO-USE BLOOD PRODUCTS FOR NEONATES. Ronald G. Strauss, Char Elbert, Greta Crawford, Esther L. Snyder, Alice M. Floss. Univ. of Iowa Hosp. & Clinics, Depts. of Pathology & Pediatrics, Iowa City.

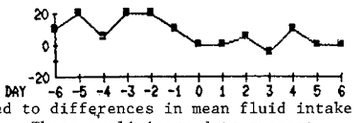
A system was designed to dispense precise volumes of prefiltered, sterile, quality blood for immediate infusion into designated infants without waste. In the blood bank, the volume ordered was aspirated from the primary blood bag through a microaggregate filter into a plastic syringe. The syringe was capped, taken to the nursery in a lock-top plastic bag and was directly attached to an infusion pump. In practice, a transfusion may require hours to complete; thus, both quality and sterility of blood stored in syringes were studied. Blood was drawn from 10 bags (packed RBC, 5 days old) through filters into two syringes. Each bag and one syringe were stored at 4°C, the other syringe at 22°C. Samples (N=70) were taken after 0, 3, 6 and 24 hr. Quality and sterility of RBC in syringes was equal at all times to that of blood bags stored at 4°C in the blood bank except for a decreased ($p < .05$) pH after 24 hr at 22°C. Only baseline (0 hr) and extreme (24 hr) mean values are shown here:

Container (N=10)		pH	HCT	K	LDH	Plasma Hb	Cultures
baseline	0 hr	7.06	37	9.6	226	12.9	Sterile
4 °C bag	24 hr	7.05	36	10.4	291	19.4	"
4 °C syr	24 hr	7.05	36	11.3	259	17.2	"
22°C syr	24 hr	6.83	37	9.4	290	13.9	"

Blood, plasma, platelets and granulocytes can be dispensed similarly. Thus, unit dose dispensing provides precise quantities of quality, ready-to-infuse blood products for individual neonates.

1538 GROWTH FAILURE DURING DEXAMETHASONE THERAPY IN PRETERM NEONATES. Terrence Sweeney, William Benitz, Roger Baldwin, Ronald L. Ariagno. Stanford Univ. Sch. of Med., Dept. of Pediatrics, Stanford, CA.

Recent reports suggest that steroid treatment may improve lung function in infants with chronic lung failure. Glucocorticoid therapy has many potential toxicities, including growth failure. Growth retarding effects have been reported with 200 mg/kg of cortisol. Suggested mechanisms include inhibition of cell mitosis, loss of thymic growth factor, and increased consumption of amino acids by liver. We have noted that growth cruves of ventilator dependent infants were flat during dexamethasone (D) therapy; we retrospectively evaluated 13 such infants 27±2 wks GA, 1057±251 gms b.wt. with chronic lung failure. Parenteral D was started at mean age of 6±2 wks at a dose of 1 mg/kg/day for 4 days and 0.5 mg/kg/day for 6 days. The mean weight of the infants the week prior to treatment was 1346 gms ± 474 and 1420 gm ± 464 at the time D was started. The median daily weight change (gms) prior to and during D therapy are plotted below.



(Wilcoxon 0.07)

This pattern was not related to differences in mean fluid intake or output for the 2 periods. These preliminary data suggest that growth during D may be impaired. Further research is needed to determine if this is a transient or long term effect.

1539 PROSPECTIVE SURVEY OF FUNGAL COLONIZATION IN HIGH RISK INFANTS. H.M. Swingle, J.S. Abramson, S.M. Block, R.G. Dillard. (Spon. by J.L. Simon), Bowman Gray School of Medicine of Wake Forest University, Winston-Salem. Systemic candidiasis occurs in 3 to 10% of high risk neonates, but the incidence and significance of fungal colonization in these patients is unknown. We studied colonization and evaluated surveillance cultures for the early detection of systemic fungal infections. Infants older than two weeks who were begun on antimicrobials and those with central venous catheters had weekly throat, stool, and urine cultures. 28 patients were enrolled at a median age of 28 days and followed for a mean of 9 weeks. 70 of 786 (8.9%) specimens grew Candida sp. (12.5% urine, 9.2% throat, 5.0% of stool cultures). 12 of 28 infants became colonized at a median age of 48 days; 6 in the throat, 7 in stool, and 7 in urine. Among 7 patients with positive bagged urine cultures, only 2 had positive catheterized cultures and both had systemic disease. 3 of the 28 patients died, 2 with systemic fungal infections. Risk factors in the 12 colonized versus 16 noncolonized were: birth weight 1140 vs 1530 g*, arterial catheters 11 vs 15, central venous catheters 2 vs 3, hyperalimentation 11 vs 14, asphyxia 7 vs 12, NEC 3 vs 6, bowel surgery 0 vs 3, prenatal steriods 2 vs 3, theophylline 11 vs 8*, days on antibiotics 44 vs 20*, respectively (*$p<0.05$). In summary, 42.9% of selected infants became colonized with Candida sp. and 7.2% developed systemic candidiasis. Surveillance with urine cultures, but not throat and stool, detected incipient systemic fungal infections.

●1540 MECHANISM OF INCREASED LUNG FLUID FILTRATION DURING LIPID INFUSION IN LAMBS. William G Teague, J Usha Raj David Braun, Ronald I Clyman, and Richard D Bland. Cardiovasc Res Inst, Dept Pediatr, Univ California, San Francisco

Intravenous lipid infusion in newborn lambs causes acute pulmonary hypertension followed by a sustained increase in lung lymph flow and reduction in lymph protein concentration (Teague et al, Pediatr Res 18:313A, 1984). We found that plasma concentrations of the pulmonary vasoconstrictors thromboxane B_2 and serotonin (5-HT) both increased during lipid infusion in lambs. To see if these vasoactive substances might play a role in the lung microvascular changes associated with lipid infusion, we pretreated 14 lambs with suitable inhibitors: 8 received indomethacin (1-5 mg/kg/h for 6h) and 6 received a 5-HT blocker, methysergide (0.6 mg/kg/d for 2d) before and during lipid infusion. We measured pulmonary artery (Ppa) and left atrial pressures, lung lymph flow ($\dot{Q}_L$), and lymph and plasma protein concentrations during a 2-4h control period followed by 6h of constant lipid infusion, 0.25 g/kg/h. Indomethacin alone increased Ppa and $\dot{Q}_L$, but lipid infusion in the presence of indomethacin caused no further increases of either Ppa or $\dot{Q}_L$. Methysergide reduced steady-state $\dot{Q}_L$ without preventing the acute pulmonary hypertension associated with lipid infusion. In 6 lambs, intravenous infusion of 5-HT (4-6 μg/kg/min for 5h) increased $\dot{Q}_L$ without affecting Ppa. These results suggest that cyclooxygenase products of arachidonic acid metabolism may cause the acute pulmonary hypertension that occurs during lipid infusion, whereas 5-HT may be responsible for the steady-state increase in lung fluid filtration.

1541 RELATIONSHIP BETWEEN PERINATAL FACTORS AND NEUROLOGIC OUTCOME OF VERY LOW BIRTH WEIGHT INFANTS. Annabel Teberg, Ivette Pena, Toke Hoppenbrouwers, (Spon. by Joan Hodgman). Univ. of So. Calif. Sch. of Med., LAC-USC Med. Ctr., Dept. of Pediatrics, Los Angeles, CA.

Relationship between maternal, perinatal and nursery factors to neurologic outcome of infants with birthweight (BW) ≤1500g were evaluated. Two hundred-eleven infants born from Jan. 1979 - Dec. 1981 were discharged from the nursery and 159 (75.4%) were followed to a minimum of 40 weeks chronologic age corrected for prematurity. Multiple maternal demographic, medical, socioeconomic, perinatal and obstetrical factors were evaluated. The incidence of these factors in BW categories of ≤1000g and 1001-1500g and their significance related to abnormal neurologic outcome was evaluated. There were no differences in incidence of maternal or obstetrical factors in the two BW categories. Infants with BW ≤ 1000g had a greater incidence of seizures, respiratory distress syndrome, necrotizing enterocolitis and multiple infections in the nursery than the larger infants ($p<0.025$).

Nineteen infants (12%) of the entire group were neurologically abnormal on follow-up, including 5 of the 15 infants with BW ≤ 1000g (33%) and 15 of the 144 infants with BW 1001-1500g (10%). ($p<0.05$) There were no differences in incidence of maternal or obstetrical factors between neurologically normal or abnormal infants. A greater incidence of 1 min Apgar score ≤4, need for ventilatory assistance, apnea and seizures in the nursery ($p<0.05$) was found in the abnormal group. In summary, neither maternal or obstetrical factors related to BW or to neurologic outcome. Postnatal complications were found more often in very tiny infants and in those neurologically abnormal on follow-up.

1542 COMPLICATIONS OF POSTPONED NEONATAL DEATH IN THE SMALL PREMATURE INFANT. Susan B. Turkel, Maureen E. Sims, Marta E. Guttenberg (Spon. by Paul Y. K. Wu). University of Southern California School of Medicine, LAC-USC Medical Center, Depts of Pathology and Pediatrics, Los Angeles.

Improved obstetrical and neonatal care has increased survival for many small premature infants. Those who die of complications after 28 days form a distinct group. We reviewed these postponed neonatal deaths from the autopsies performed at LAC-USC Women's Hospital from January, 1976 through December, 1983. We found 18 infants who died after 28 days of continuous hospitalization. The mean birth weight was 1195 g (SD 84) and the mean gestational age was 28.6 wks (SD 2.6). Survival ranged from 4 weeks to 4 months with a mean of 70 days (SD 44). All infants initially required artificial ventilatory support for pulmonary disease, and it was maintained for persistent apnea. Bronchopulmonary dysplasia was found at autopsy in all except one case, and was severe in 3. Evidence of myocardial infarction was found in 9 cases. All infants required parenteral nutrition. Cholestasis, fibrosis, Kupffer cell hyperplasia, or cirrhosis were found in the liver in 15 cases. Abnormalities of endochondral ossification consistent with chronic malnutrition were prominent. Diffuse cerebral gliosis was found in 15 cases, and 7 showed cerebral infarction. Retrolental fibroplasia was present in all eyes examined. Nine infants died of bacterial infection, and 5 had disseminated candidiasis. The syndrome of postponed neonatal death is associated with consistent clinical findings and predictable abnormalities at autopsy. Earlier identification of such infants is critical.