571 CHOICE OF BLOOD FOR EXCHANGE TRANSFUSION (ET) IN THE NEONATE: IN VITRO STUDY OF COAGULATION FACTORS AND MICROAGGREGATES. Dorothy R. Barnard, Robert G. Chapman, Michael A. Simmons, William E. Hathaway, Univ. of Colo. Med. Ctr., Depts. of Ped. and Med., Denver, Colo.

In the newborn ET has been utilized both therapeutically and prophylactically. In spite of frequent ETs done, no studies of platelet-white cell microaggregates (MA) which cause RDS in massively transfused adults have been examined in blood to be used for neonatal ET. The presence of MA in blood used for prophylactic ET may explain some of the discordant results of clinical trials. This study examined coagulation and MA by the Swank filtration pressure method (SFP) in fresh blood (FB), blood stored 96 hours, and buffy coat poor (BCP) reconstituted blood (RB) from 4-day-old packed cells and fresh frozen plasma. Mean results from the 15 units were:

Units	pH	Na	K	PTT	V	VIII	SFP	Plt. Ct. x 10^3
FB	7.0	170	3.6	47.2	103	84	15	200
96 hr.	7.0	165	9.5	57.9	81	33	>250	55
BCP-RB	6.9	168	9.5	53.4	79	62	16	20

The following, present in physiological amounts, showed no significant difference among the above 3 groups: AT-III activity, prothrombin time, prekallikrein, high molecular weight kininogen, and factors I, II, VII, IX, XII. Dacron wool filters which removed microaggregates without changing any of the above studies except reducing the platelet count can be used with stored blood or non-BCP-RB. Based on these in vitro studies, it was concluded that FB (<24 hrs.) or RB-BCP should be used for neonatal ET.

572 THE OCCURRENCE OF 1-2% HB BART'S IN A HIGH PROPORTION OF BLACK NEONATES AS AN EXPRESSION OF α-THALASSEMIA. Bart Asner, Shlomo Friedman, Jean Atwater and Elias Schwartz, University of Pennsylvania School of Medicine, The Children's Hospital of Philadelphia, and Jefferson Medical College, Cardeza Foundation for Hematologic Research, Phila., Pa.

Levels of Hb Bart's in Thai neonates of 2-10% and 1-2% indicate the presence of the α-thal$_1$ or α-thal$_2$ genes, respectively. We have previously shown that the 3.0% of black neonates with greater than 2.0% Hb Bart's have α-thalassemia trait (Pediat.Res. 8:955, 1974). In a screening study in 1970-72, we found that 12.0% of the 693 neonates screened had 1.1-1.7% Hb Bart's, using starch gel electrophoresis and CM Sephadex chromatography. Follow-up studies were done on 8 infants who had 1-2% Hb Bart's at birth and on 7 without Hb Bart's. The children were between 25 and 60 months of age at the time of study. There were no differences in Hb levels, RBC and reticulocyte counts between the groups. Significant differences were found in mean cell volume, 79.4±3.4 and 72.6±2.9 ($p<0.01$) and mean cell hemoglobin, 26.7± 1.7 and 24.0±1.3 ($p<0.01$), with the lower values in the children who had Hb Bart's at birth. The levels of Hb A_2, Hb F, serum Fe, Fe-binding capacity and Pb were normal in the two groups. The results indicate a mild form of α-thalassemia in infants with 1-2% Hb Bart's at birth, and some type of α-thalassemia in 15.0% of all black newborns in Philadelphia. This high incidence should be taken into account in determining normal values for red cell indices in black children, and in evaluating the diversity of expression of other hemoglobin disorders in blacks.

573 THE ASSESSMENT OF ANEMIA IN SMALL PREMATURE INFANTS. Edward F. Bell, Claude Nahmias, John C. Sinclair, E. Stephen Garnett and Alvin Zipursky, McMaster University Medical Centre, Departments of Pediatrics and Nuclear Medicine, Hamilton, Ontario, Canada

Changes in hemoglobin concentration in premature infants are difficult to interpret because of variations in blood volume and blood loss. We have determined circulating red cell volume (RCV) and erythrocyte survival by Cr^{51} red cell labelling using capillary techniques. In six infants whose weights varied from 680-1,320 g, RCV was 29.5 ± 6.4 ml/kg.

In these babies, blood lost for laboratory tests during the first three weeks of life averaged 0.81 ml/kg/day. In addition all materials contaminated by blood (sponges, syringes, etc.) were collected and the content of Cr^{51} labelled cells was determined. A correlation was found ($r=0.60$; $p<0.01$) between the amount of blood taken for tests and that in contaminated materials (0.08 ml/kg/day).

The assessment of erythrocyte survival and of changes in hemoglobin concentration demands quantitation of blood lost through sampling. This, together with direct measurement of RCV permits a more complete evaluation of anemia in small premature infants.

574 MATERNAL-FETAL HEMORRHAGE: INCIDENCE AND SENSITIZATION. Betty Bernard, Margaret Presley, Guillermina Caudillo, Barbara Clauss, Charles L. Rouault, James McGregor, E. R. Jennings (Spon. by Paul Y.K. Wu). Univ. of So. Calif. Sch. of Med., LAC-USC Med. Ctr. and Long Beach Mem. Hosp., Depts. of Peds. and Path., Los Angeles, Calif.

Observations indicate that the first born Rh_0 (D)-positive (Rh+) infant of an Rh_0 (D)-negative (Rh-) mother may have a higher risk of hemolytic disease if the grandmother is Rh+ rather than Rh-. This "grandmother theory" gives rise to the speculation that the primary sensitizing dose of Rh+ blood was received in-utero by the Rh- baby from the Rh+ mother. To investigate the incidence and the timing of a possible maternal-fetal transfusion and its resultant antibody stimulation in the Rh- infant born of an Rh+ mother, 402 infant serums (292 at birth and 110 at 2 days) were studied for presence of anti-D antibody (modified Lalezari method) and retested in 237 patients at 1-6 months of age. In addition, 275 blood samples from 2 day old infants were tested for presence of maternal Rh+ red cells (fluorescein labeled anti-globulin technic). Although several reactions initially appeared to identify antibody, none of these proved to be anti-D when these serums were tested with a 10 red-cell panel. Maternal Rh+ red cells were detected in 3 neonatal blood samples (1.1%), but no anti-D antibody was found in these 3 babies on follow-up - at 1, 3 and 6 months in 2 babies or at birth and 4 months in the other. Published reports indicating a significant risk for parturition sensitization of the Rh- neonate of the Rh+ mother cannot be corroborated by our studies. (Support: Ortho Diagnostics)

575 EFFECT OF DIET ON URINARY EXCRETION OF VMA AND HVA IN NEUROBLASTOMA. Umesh Betkerur, Philip Lanzkowsky, Ashok Shende. Sch. of Med., Health Sciences Ctr., State Univ. of N.Y. at Stony Brook and Long Island Jewish-Hillside Med. Ctr., Dept. of Pediatrics, New Hyde Park, New York.

It has been shown that diet does not affect VMA and HVA excretion in normal children (Weetman, et al: J. Pediat. 88:46-50, 1976) and this study was designed to determine the effect of diet on urinary excretion of VMA and HVA in children with neuroblastoma.

Four patients with neuroblastoma in full remission with no evidence of disease were studied during chemotherapy. Urinary VMA and HVA on a 24 hour specimen were determined on two separate occasions at monthly intervals in each patient while on a regular diet, on 3 days of a diet loaded with and on a diet free from foods known to interfere with VMA and HVA determinations. The mean VMA on a regular, loaded and free diet was 4.57, 4.58 and 4.4 ug/mg creatinine respectively and the HVA was 7.8, 8.0 and 9.5 ug/mg creatinine on these diets respectively. There was no statistically significant difference between the values obtained for urinary VMA and HVA excretion on the three diets. There was a statistically significant difference in excretion of these metabolites in the same patient on the same diet at different periods with wider variations of readings for HVA than for VMA. All the values, however, were within normal range for age. It is concluded that different diets do not significantly alter the urinary excretion of VMA and HVA in children with neuroblastoma in remission.

576 TISSUE DAMAGE IN HODGKIN'S DISEASE FOLLOWING THERAPY. Umesh Betkerur, Philip Lanzkowsky, Ashok Shende. Sch. of Med., Health Sciences Ctr., State Univ. of N.Y. at Stony Brook and Long Island Jewish-Hillside Med. Ctr., Dept. of Pediatrics, New Hyde Park, New York.

In 14 patients with Hodgkin's disease, aged 5½ to 19½ years, physical growth, immune status, thyroid function and pulmonary function were studied 1½ to 5 years after receiving extended field radiation + combination chemotherapy in order to determine early evidence of tissue damage.

Eight of the 14 patients maintained the same height percentile or better, 13 maintained the same sitting height percentile whereas the bi-cristal and bi-deltoid diameter was in the same percentile in all patients. Eleven patients reacted to PPD, candida or to SKSD antigens whereas 3 remained anergic despite repeated testing. The IgG, IgA and IgM levels and the absolute lymphocyte count in each patient was within the normal range for age. In 2 patients with lymphocytopenia at the time of diagnosis the absolute lymphocyte count rose to normal levels following therapy. With reference to thyroid function 13 patients had normal T4 levels (range 3.0-5.3 ugm/dl) and 11 had normal TSH levels (range 4.0-9.8 microU/ml). The one patient who had a lowered T4 level also had a markedly elevated TSH level as evidence of thyroid hypofunction and these biochemical parameters returned to normal on thyroid therapy. Pulmonary function tests (FEV_1 and VC) revealed 2 patients with severe and 2 with mildly compromised pulmonary function.