979 ASSESSMENT OF GESTATIONAL AGE BY EXAMINATION OF THE ANTERIOR VASCULAR CAPSULE OF THE LENS. Norma J. Hirsch, Helen M. Hittner and Arnold J. Rudolph. Baylor College of Medicine, Jefferson Davis Hospital, Departments of Pediatrics and Ophthalmology, Houston, Texas.

One hundred infants between 27 and 34 weeks gestational age assessed by maternal dates and Dubowitz Scoring were studied with the direct ophthalmoscope following dilation of the pupil. The disappearance of the anterior vascular capsule of the lens was arbitrarily divided into four grades. Grade four was assigned when the anterior vascular capsule was complete with progressive decrease in grade as the vascular capsule atrophied. Before the 27th week, the cornea was too opaque to allow good visualization of this vascular system. After the 34th week, these vessels had generally atrophied completely.

There were 24 infants scored grade 4, 22 infants scored grade 3, 20 infants scored grade 2 and 28 infants scored grade 1. Six infants had no significant anterior vascular capsule.

There was a significant negative correlation between gestational age and grade of anterior vascular capsule ($r = -0.877$, $t = 18.1$, $p < 0.001$). Of the twelve preterm infants in the study estimated to be small for gestational age, one was grade 4, five were grade 2 and six were grade 1. There was significant negative correlation ($r = -0.93$, $t = 7.08$, $p < 0.001$).

It is recommended that this simple technique be added to the initial newborn physical examination as an adjunct to gestational aging.

980 CONTROLLED TRIAL OF INTERMITTENT PHOTOTHERAPY IN THE TREATMENT OF JAUNDICE OF THE PREMATURE INFANT. Leonard Indyk, Thomas Hegyi, Mark Hiatt, Richard A. Polin, Thomas P. Vogl, Coll. of P & S, Col. Univ., Dept. of Pediatrics, N. Y. (sponsored by L. Stanley James)

Because of the potential hazards of phototherapy, we have explored the feasibility of reducing total light dosage without impairing effectiveness. We have compared intermittent and continuous phototherapy in treating nonhemolytic "physiological" hyperbilirubinemia. Premature infants (n=76) weighing between 1200-2400 gm whose serum bilirubin concentration (SBC) exceeded 8 mg/dl within the first 3 days of life were included in the study. Patients were randomly assigned to one of four treatment groups: (a) continuous light (control, n=26), (b) 15 minutes light on, 15 minutes light off (n=16), (c) 15 min. on, 30 min. off (n=17),(d) 15 min. on, 60 min. off (n=17). Phototherapy was discontinued when the S.B.C. was 8 mg/dl or less on two consecutive measurements. The total light dosage received by the study groups was (b) 49%, (c) 42%, (d) 28% of the exposure of control (a) infants. There was no statistically significant difference between the study groups and the control in the duration of phototherapy, the peak S.B.C. and the time from the start of therapy to the peak value. There were no significant differences in the number of infants in each group whose peak S.B.C. exceeded 10 mg/dl and 12 mg/dl. Thus, intermittent phototherapy with the described time schedules (resulting in a reduction of total light dosage of up to 72%) is as effective as continuous phototherapy in the treatment of hyperbilirubinemia in the premature infant.

981 NEW TRANSFUSION PROGRAM FOR AN INTENSIVE CARE NURSERY. J. D. Johnson, N. Malachowski, P. Sunshine, E.B. Hafleigh and F.C. Grumet, Stanford Univ. School of Medicine, Depts. of Peds. and Pathology, Stanford, California.

A new transfusion protocol for sick neonates was established in February, 1974, in which units of packed red blood cells obtained biweekly from type O⁻ donors are split into 4 packs. Up to 4 infants requiring transfusions are crossmatched against a single unit. One split pack is brought to the nursery each day and refrigerated for 24 hours. During the 24 hours, the split pack may be entered as many times as necessary to provide small transfusions for infants crossmatched to the unit. Using this procedure, several infants can receive numerous small transfusions from a single unit for 3-4 days. Over a 16 month period, 191 newborns received 785 transfusions under this system. Of 129 infants who survived and had received transfusions, 91 (71%) were evaluated at a mean age of 10 months for evidence of CMV infection and most for hepatitis B infection and red cell antibody formation. Evidence for CMV infection was found in 18/91 or 20%, compared to 25% in transfused infants at a comparable age in other follow up studies. No transfused infants tested had either hepatitis B antigenemia (0/72) or antibody to hepatitis B core antigen (0/44). One transfused infant of 72 screened had an anti-M antibody. Advantages of this system compared to a walking donor program include immediate availability of blood in the nursery for most sick newborns, quality control in drawing and processing blood by the blood bank and testing for hepatitis B antigen before using blood.

982 EFFECT OF PHOTOTHERAPY ON SERUM BILIRUBIN (SB), BODY WEIGHT AND BILIRUBIN DAMAGE TO CEREBELLAR PURKINJI CELLS IN INFANT JAUNDICED (jj) GUNN RATS. Lois Johnson Dennis Martell, Donald E.Goldstein, Dorothy Neff, Henry S.Schutta Univ.Pa.Sch.Med.&Pop.Studies Ctr.Pa. Hosp, Dept.Ped & Neurol.Phila

From day 5 to 14 infant jj rats were subjected to increasing periods of either superblue phototherapy (8 twenty watt fluorescent bulbs, 1 to 5 hours per day depending on age) or darkness. Half of each litter was assigned to each group(N=84 and 82 respectively). Pups in litters of 6 received no supplement while separated from the mother; those in litters of 8 received 5% glucose, 25 cc/K. Temperature and humidity were controlled. Nursing dams were fed high fat breeder chow (11%) to insure an abundant milk supply. A statistically significant decrease in brain damage was achieved without evident ill effect. See Table.

	Light	Dark	t test $p(H_0)$ 2-tail
Mean % abnormal Purkinji cells	24%	62%	$p<.0005$
Mean SB day 14			
before Rx	11.7	12.7	$p=.001$
after Rx	10.3	12.0	$p<.0005$
Mean Hct day 14			
before Rx	31%	32%	NS
after Rx	32%	32%	NS
Mean weight (gm)			
males d 14	32.5	31.5	NS
females d 14	32.7	31.4	NS

983 INFLUENCE OF VIT.E TREATMENT (Rx) & ADULT BLOOD TRANSFUSIONS ON MEAN SEVERITY OF RETROLENTAL FIBROPLASIA (MS-RLF) IN PREMATURE INFANTS. Lois H.Johnson,David B. Schaffer, Donald E.Goldstein, Thomas R.Boggs, Univ. Pa.Sch.Med & Pop.Studies Center, Pa. Hosp, Dept. Ped & Children's Hosp. Phila.

Partial analysis of a 4 yr study of factors influencing MS-RLF including the effect of random assignment to Rx with Vit E (ERx) or no Rx (C) has been completed. Data from 269 babies with birth weight (BW) under 2000 gm or with BW 2000-2500 gm out at a gestational age <36 weeks and who required O_2 Rx are presented. Babies were cared for in Pa. Hosp. Nurseries under strict O_2 control as monitored by frequent measurements of PaO_2. ERx babies in the 1st 2 yrs of the study (StudyI) had serum E levels in the range of 1.5 mg%; those in StudyII were kept in the 3.0 mg% range. StudyII babies received more adult blood than StudyI babies(mean of 58ml/K vs 29ml/K, $p<.02$) and had a greater MS-RLF in spite of greater antioxidant protection. Considering all babies (N=269) MS-RLF in ERx babies was less than in C babies (0.63 vs 1.05,$p<.01$) Babies who received 10ml/K (N=171) had a significantly lower MS-RLF than the 98 who received more blood (0.59 vs 1.41, $p<.01$). ERx babies in the "low" group had significantly lower MS-RLF associated with ERx than C babies (0.38 vs 0.71, $p<.05$) but reduction of MS-RLF associated with ERx did not reach significance in the "high"blood group (1.25 vs 1.52, NS). This suggests that more antioxidant protection was needed to offset the greater oxygen unloading ability of adult hemoglobin, as compared to fetal hemoglobin. An interesting sex difference was noted in C babies, MS-RLF being somewhat greater in the 82 boys than in the 82 girls (1.04 vs 0.92).

984 EFFECT OF LITTER SIZE AND DIET ON BILIRUBIN BRAIN DAMAGE IN INFANT jj GUNN RATS. Lois H. Johnson, Henry S.Schutta, Donald E.Goldstein, Univ.Pa. School of Med. & Pop.Studies Center, Pa. Hosp., Dept. Pediat & Neurology, Phila.

Working with Gunn Rats as an animal model for kernicterus, it was noted that jaundiced (jj) adult females fed standard lab chow (4% fat) could rarely carry litters to term or rear healthy pups. In contrast they were as able as non-jaundiced (Jj) females when fed mouse breeder chow (11% fat). As the table shows, decreasing the litter size and feeding nursing dams breeder chow resulted in a decreased number of Purkinji cells (PC) exhibiting typical bilirubin abnormalities as assessed by phase microscopy of glutaraldehyde-perfused, araldite-embedded sections of the cerebellar vermis. Protection seems to result from an increase in body fat and the known high affinity of fat for bilirubin. On day 16 mean S. bilirubin and protein levels were similar in all pups. Rats of breeder chow fed dams were fatter than rats of regular chow dams at both litter sizes; litters of 4 were fatter than litters of 6.

Litter Size	Abnormal PC Regular Chow	Abnormal PC Breeder Chow	p (H_0) t test 2-tail
4	59.4% (21 rats)	22.4% (34 rats)	$p < .0025$
6	61.8% (26 rats)	35.3% (27 rats)	$p < .0005$