840 BONE MARROW TRANSPLANTATION (BMT) IN GAUCHER'S DISEASE. Charles S. August, Michael Palmieri, Peter Nowell, William L. Elkins, Giulio D'Angio, Robert H. Glew, Lydia Daniels, Univ. Pa. Sch. Med., Children's Hosp. of Phila., Dept. of Ped., Univ. Pittsburgh Sch. Med., Dept. Biochem.

A 19 year-old female with non-neuronopathic Gaucher's Disease had 3 BMT's from 2 partially HLA-matched, carrier, sibling donors. Pre-BMT glucocerebrosidase (glc-ase) activity in leukocytes and liver were 13 and 9% of controls respectively. BMT #1 was done in 8/81 (donor=brother) after fractionated total lymphoid irradiation (100 rad x 18). Donor leukocytes (XY) were found in the blood (1-3%) for 6 weeks and in marrow (6-9%) for 3 months with no graft vs. host disease. A 2nd BMT (same donor) failed and graft cells disappeared. Leukocyte glc-ase activity never changed. During 1982 the patient developed marrow failure. In 2/83, using a sister as donor, she had a 3rd BMT after cyclophosphamide (120 mg/kg), total body x-ray (165 rad x 8) and cyclosporine. She engrafted promptly and had normal or supranormal leukocyte glc-ase levels by day +27 and thereafter. At death on day +50 from cyclosporine toxicity ("capillary leak syndrome") and polymicrobial sepsis, her bone marrow showed partial clearing of Gaucher cells. Her liver had increased its glc-ase levels from 1.7 to 4.7 U/mg protein ([^{3}H]-glucocerebroside substrate; 25% normal). The brain had very low enzyme levels (12% normal). Conclusion: BMT offers the Gaucher patient effective enzyme replacement for cells of marrow origin in the circulation and in reticuloendothelial organs. Whether remissions of clinical disease will occur and glc-ase levels in the CNS will rise after BMT remains to be determined.

841 BILIRUBIN ALBUMIN BINDING (BAB) ASSAY IN NEWBORN INFANTS BEFORE, DURING AND AFTER EXTRACORPOREAL MEMBRANE OXYGENATION (ECMO). Raul C. Banagale, Cindy Nixon, John Toomasian, Alice Andrews, Dietrich W. Roloff, and Robert H. Bartlett. (Spon. by W. F. Howatt) Depts. of Peds and Surg, Univ. of Michigan, Ann Arbor, MI.

Red blood cell destruction during ECMO may increase the risk for hyperbilirubinemia and bilirubin neurotoxicity. For this reason we performed bilirubin binding studies on 12 newborn infants (mean ± SD, gestational age 37.6±3.6 wks, birth wt 2889±706 gms) managed with ECMO for respiratory failure. The mean duration of ECMO was 91.1±37.2 hrs. Bilirubin binding studies including reserve bilirubin binding capacity (RBBC), and saturation index (SI) were performed using a bilirubin fluorometer.

No significant changes pre, on, or post ECMO were noted on the hemoglobin and fibrinogen levels. The bilirubin levels were not significantly different pre and on ECMO and were lower post ECMO. As shown in the table, there were significant changes pre, on, and post ECMO plasma hemoglobin values. Significant changes between pre and on ECMO values only were noted on the infant's platelet, fibrin split products and SGOT levels. Thus, the hemolysis that occurs during ECMO does not adversely effect the RBBC and SI from any alterations in the bilirubin load or in the BAB sites. ECMO would not predispose an infant to bilirubin neurotoxicity because of the normal BAB values pre, on, and post ECMO.

	Plasma Hemoglobin (mg/dl)	Platelets ($X10^3/mm^3$)	Fibrin Split Products (µg/ml)	SGOT (IU/L)	RBBC (mg/dl)	SI
PRE ECMO (n=12)	8.7±7.2	179.8±65.4	10.2±8.2	46.8±5.6	17.4±3.0	2.9±1.7
ON ECMO (n=12)	41.3±27.1	102.9±29.1	41.3±39.0	77.8±60.9	16.5±2.5	3.5±2.5
POST ECMO (n=10)	18.9±8.3	147.9±75.2	13.7±7.6	36.9±24.0	15.2±2.5	1.9±1.9
P value	< 0.05*	< 0.05#	< 0.05#	< 0.05#	NS**	NS**

*Significant, all repeated measures
#Significant, between pre and on ECMO only
NS** Not significant, all repeatd measures

● **842** INTRAVENOUS (IV) IMMUNOGLOBULIN G (IgG) THERAPY IN CHILDHOOD NEUTROPENIA. Victor S. Blanchette and Melvin H. Freedman. The Hospital for Sick Children, Department of Pediatrics, Toronto, Canada.

High-dose IV IgG therapy may cause a rapid increment in platelet counts in children with immune thrombocytopenia. We have evaluated this therapeutic approach in three children (2F, 1M: ages 10,22 and 30 mos.) with neutropenia and absolute neutrophil counts (ANC's) <500/µl. Patients were given 1 G/Kg of Sandoglobulin intravenously on each of two consecutive days. Two children had clear evidence of autoimmune neutropenia as evidenced by: a) +ve circulating neutrophil antibody (NAb): and b) normal in-vitro granulopoiesis (CFU-C) which was inhibited (50%↓) by autologous serum. Both children had rapid responses to IV IgG therapy with ANC's increasing from 220 and 360/µl pre-therapy to 3110 and 5360/µl 48 hrs. post-therapy. Responses were maintained for 2 to 3 weeks. In one child impaired clearance of autologous, anti-D coated, ^{99m}Tc-tagged red blood cells confirmed reticuloendothelial cell blockade as the mechanism of action of IV IgG. As a control we treated one child with an inherited (autosomal dominant) neutropenia. No response to IV IgG occurred. In this child neutropenia was due to impaired granulopoiesis with in-vivo and in-vitro growth arrest at the myelocyte stage. Autologous sera had no effect on in-vitro cell growth (CFU-C) and circulating NAb's were not present. These results suggest that high-dose IV IgG is a useful therapeutic option in patients with immune-mediated neutropenia; in-vitro studies of hematopoiesis and a search for circulating NAb's may predict those patients most likely to respond to this therapeutic intervention.

843 NEUTROPENIA IN THE PEDIATRIC POPULATION AND ITS ASSOCIATION WITH INFECTION. R. Bowden, T. Hays and W.E. Hathaway, The Children's Hospital & University of Colorado Health Sciences Center, Denver, CO.

Neutropenia, defined as an absolute neutrophil count <1000, occurs frequently in the general pediatric population. Its incidence and association with infection, both self-limited and more serious, have not been well described.

A retrospective review of 1198 inpatients and 215 outpatients was performed to determine the incidence. Three percent of inpatients were found to have neutropenia. However, 80% of the children presenting with neutropenia were without signs or symptoms of infection. Three children had associated viral symptoms, 1 had a documented bacterial meningitis and 2 had a combination of viral and bacterial infection. The largest single diagnosis associated with neutropenia was serous otitis media (SOM), accounting for 35% of neutropenia inpatients. While making up only 35% of total admissions, 7.5% of all patients with the diagnosis of SOM had neutropenia.

Of 215 outpatients reviewed, 7% were neutropenic. As with the inpatient group, a majority of children with neutropenia were without signs and symptoms of infection.

Neutropenia appears to be a common incidental finding in otherwise healthy children. In our study, it was most commonly seen with serous otitis media. We conclude that neutropenia represented by the patients reviewed here is most likely short-lived, transient in nature, and needs no special evaluation or altered treatment plan, unless persistent or recurrent.

844 PLATELET ASSOCIATED IMMUNE GLOBULIN(PAIg)IN THE COURSE OF CHILDHOOD IDIOPATHIC THROMBOCYTOPENIC PURPURA. A.K.Brown,N.Gowda,S.Miller,S.P.Rao&P.McFall; Dept.of Pediatrics,Downstate Med.Cntr.,Brooklyn,NY.

Platelet associated immune globulin was studied during the course of ITP in 15 children; the microtiter solid phase immunoassay was used.Values in 10 patients with acute ITP were compared with those in 5 children with chronic ITP.

At the onset,PAIgG was elevated in 9/10 children with acute ITP;8/10 had levels>70fg/pl (median PAIgG=91.7;normal=<5.2fg/pl) The one child with acute ITP whose PAIgG was normal recovered within two weeks.At recovery PAIgG levels had fallen below 10fg/pl(median 3.7 fg/pl) in 7/8;5/7 had normal levels.

In contrast, 4/5 children whose disease became chronic, had lower levels of PAIgG (<16.7fg/pl).Only 1/5 chronic ITP patients had markedly elevated PAIgG.In 2 patients post-splenectomy, levels were normal even in transient periods of thrombocytopenia. In one patient,PAIgG rose dramatically to 75 fg/pl during an intercurrent viral illness. Another patient's PAIgG levels rose transiently following treatment with IV gamma globulin; no change in the platelet count occurred.

These findings suggest that PAIgG is usually higher at the onset of classic childhood ITP (acute) than in those children whose course becomes chronic although the levels are not individually predictive. The observed drop in PAIgG after splenectomy as well as the sharp rises noted during infection and gammaglobulin treatment deserve further study to help understand the relationship between thrombocytopenia and PAIgG.

† **845** IMPAIRED SPLENIC RETICULOENDOTHELIAL FUNCTION IN CHILDREN WITH CANCER. George R. Buchanan, Christine A.Holtkamp. Dept. of Pediatrics, Univ. of Texas Health Science Center at Dallas, Southwestern Medical School & Children's Medical Center, Dallas, TX.

The reticuloendothelial (RE) phagocytic function of the spleen is a major mechanism of defense against invasive infections due to S. pneumoniae and H. influenzae, two organisms which often affect children with cancer. Little information is available about the effects of malignancy and of cytotoxic agents on phagocytic function. Therefore, we studied splenic RE function in children with cancer receiving diverse forms of chemotherapy by quantitation of pitted or pocked erythrocytes (pit counts). The pit count (PC) is the percentage of erythrocytes containing one or more membrane-bound vesicles as determined by interference phase microscopy. The mean PC in 77 normal children and adults was 0.53% (range 0-2.0%), with only 2.6% of normal subjects having values over 1.5%. Mean PC in 28 splenectomized subjects was 37% (range 3.2-81%). Among 158 children with cancer (361 specimens), the mean PC was 1.10% (range 0-12.6%). Forty-six patients (30%) had one or more values above 1.5%, and 16 children (11%) had PC measurements above 3.0%, a level previously suggested to have clinical significance. Elevated PC (> 1.5%) occurred in over 1/3 of children with Wilms' tumor and ALL and appeared to be related to chemotherapy rather than to the malignancy itself. Mild splenic RE hypofunction occurs in many children with cancer, probably results from chemotherapy, and may contribute to the risk of serious infection during treatment with cytotoxic agents.