1051 FED-UP PHAGOCYTES: SPLENIC MACROPHAGE FUNCTION IN GAUCHER'S DISEASE. Peter E. Newburger, and Susan L. Hansen. (Spon. by David G. Nathan). Harvard Medical School, Children's Hospital, Division of Hematology, Boston, MA.

In order to test the phagocytic function of reticuloendothelial cells in storage diseases, we compared the ingestion and respiratory burst capacities of splenic macrophages (MØ) from a patient with Gaucher's disease to control splenic MØ from patients with Stage IA or IIA Hodgkin's disease. Gaucher (MØ) ingested ^{14}C-labeled E. coli at a rate 22% that of control MØ but bound the E. coli 75% as well as controls. We measured respiratory burst activity in pooled cells by a continuous spectrophotometric assay of superoxide (O_2^-) production in individual cells by nitro-blue tetrazolium (NBT) slide tests. Both assays utilized phorbol myristate acetate (PMA) a soluble stimulant, or opsonized zymosan (OpZ) particles to initiate the respiratory burst.

	Stimulus	O_2^- Production nmol/min/10^6 cells	NBT % + cells
Gaucher's	PMA	2.41	93
	OpZ	0.21	1
Control	PMA	2.19	97
	OpZ	1.40	93

Thus Gaucher's disease splenic MØ engorged with cerebroside exhibit a defect not only in ingestion but also in their ability to activate the respiratory burst in response to complement-opsonized particles. However they bind particles nearly as well as controls and produce a normal respiratory burst response to a soluble stimulant.

1052 INHALED CEPHALORIDINE IN THE TREATMENT OF CYSTIC FIBROSIS (CF), G. Nolan, P. McIvor, R. Gold, C. Newth, H. Levison and M. Corey, Dept. of Pediatrics, The Hosp. for Sick Children, Toronto.

The use of inhaled antibiotics in CF is both controversial and expensive. However they are used in many centers. In order to assess the effect of prophylactic inhaled cephaloridine on the colonization of the respiratory tract with staphylococcus aureus and other pathogens and on the general progression of the disease we are following 47 patients with mild to moderate CF in a controlled prospective study. Patients are seen monthly for quantitative sputum cultures and clinical assessment. Chest x-ray and pulmonary function testing are performed every 6 months. 25 patients receive daily inhaled cephaloridine, 22 patients do not receive any inhaled antibiotic. Both groups receive oral cloxacillin. The groups are balanced for age, sex and severity of the pulmonary disease. Analysis of the first 12 months of the study show that there are no differences in either Schwachman scores, chest x-ray, pulmonary function, incidence of respiratory infections, or quantitative sputum cultures. Over 90% of children carried Pseudomonas aeruginosa and 35% carried Pseudomonas cepacia regardless of treatment group. Only 8% of children in each group carried S. aureus. We conclude that antistaphylococcal prophylaxis with inhaled cephaloridine plus oral cloxacillin does not add any benefits to oral cloxacillin alone and is not indicated in the management of children with CF.

1053 EPIDEMIOLOGY OF NOSOCOMIAL INFECTIONS IN A NEWBORN INTENSIVE CARE UNIT. J.C. Overall, Jr., S.D. Minton, G.M. Chan, A.K. Volkman, G.Stoddard & J.J. Sullivan, Department of Pediatrics in the University of Utah College of Medicine and the College of Nursing, Salt Lake City, Utah.

Nosocomial infections (NI) are a known problem in newborn intensive care units (NBICU), but important predisposing factors are not clearly defined. Prospective surveillance for NI risk factors was conducted on all newborns admitted to the Utah NBICU longer than 48 hrs (at risk for NI) during a 6-month period. Twenty-five of 175 (14.3%) patients developed 52 NI, a NI rate of 29.7%. The most common first NI were pneumonia (13 or 52%) and necrotizing enterocolitis (7 or 28%). The 25 NI infants had a higher underlying disease severity score during the first 24 hrs after admission than the 150 non-NI babies (mean score of 5.4 vs 4.2 out of a scale of 8, p=.001). NI infants had a greater number of procedures than non-NI infants during the first week of hospitalization: 1) endotracheal tube days (mean of 5.6 vs 3.9, p=.007); 2) umbilical artery catheter (UAC) days (mean of 5.4 vs 3.8, p=.01); and 3) combined UAC and heel stick blood samples (mean of 125.5 vs 98.4, p=.008). The same significant associations were observed with the 13 NI pneumonia patients vs the non-NI infants. In addition, the 13 NI pneumonia cases had more endotracheal tube days than matched-control infants (mean of 5.7 vs 1.2, p=.03) during the 7 days prior to their first NI. These results indicate a significant association between underlying disease severity and the frequency of certain procedures and NI in NBICU infants.

1054 INFLUENCE OF INOCULUM SIZE ON INTERPRETATION OF SUSCEPTIBILITY TESTING OF HAEMOPHILUS INFLUENZAE: MOXALACTAM VS. AMPICILLIN. Steven W. Parmelee, James K. Todd. C. Henry Kempe Center for Investigative Pediatrics, The Children's Hospital, Denver.

A direct relationship between inoculum size and in vitro antibiotic susceptibility is readily apparent in the response of Haemophilus influenzae to beta-lactamase antibiotics. We studied three strains of H. influenzae, (Amp^S $Chloro^S$, Amp^R $Chloro^S$, and Amp^R $Chloro^R$) in parallel under varying inocula conditions against Moxalactam and Ampicillin. The Amp^S strain showed little or no inoculum effect with Moxalactam or Ampicillin while the Amp^R strains showed dramatic differences in response to Ampicillin but not Moxalactam as demonstrated by broth dilution, agar dilution, and disk diffusion techniques. The inoculum effect was found to be independently related to the total number of colony-forming units (CFU) inoculated as well as the density of organisms (CFU/ml). Kinetic studies demonstrated significant differences between conventional broth growth curves and a continuous antibiotic flow system. Beta-lactamase producing H. influenzae reduced Ampicillin concentrations in "stagnant" in vitro systems but not in dynamic systems more analogous to the steady state of patients. Extrapolation from in vitro susceptibility studies to therapeutic decision-making requires knowledge beyond the MIC of an organism at a standard inoculum size, including: the total number of organisms in a patient, the maximum concentration of organisms in a patient, antibiotic tissue penetration, antibiotic turnover, and the effect of host defenses.

1055 EMERGENCE OF MULTIPLY RESISTANT PNEUMOCOCCUS. Michael S. Radetsky, Mary P. Glode, Greg R. Istre (CDC, EIS Officer), Brian A. Lauer, Andrew M. Wiesenthal. (Spon. by James K. Todd). C. Henry Kempe Center for Investigative Pediatrics, The Children's Hospital, Denver.

A strain of S. pneumoniae resistant to multiple antibiotics was isolated from an 11-month-old infant with meningitis. CSF obtained after 96 hours of high-dose penicillin-G continued to grow a beta-lactamase negative pneumococcus, type 6. When treatment was changed to ampicillin, chloramphenicol, and rifampin, the child improved; and CSF was sterile within 24 hours. Agar dilution MIC's were: pen-G 1 µg/ml; chloro, 16 µg/ml; ampicillin 0.5 µg/ml; tetracycline, 16 µg/ml; rifampin, 0.03 µg/ml. A cultural survey of day-care center contacts utilized two selective media; one containing pen-G, 0.125 µg/ml, the other chloro, 4.0 µg/ml. 4/14 children <2 years and 5/47 older children and staff had throat carriage of this resistant strain, as did 5/10 of the family contacts of carriers. No carriers were treated. We also cultured 103 children in 4 other day-care centers without detecting the organism. We believe this to be the first report of a penicillin/chloramphenicol resistant pneumococcus in the Western Hemisphere. Due to the seriousness of delaying correct antibiotic therapy, we suggest that significant pneumococcal isolates be screened for both penicillin and chloramphenicol susceptibility. Surveys of contacts, which may yield a high carriage rate, can be performed rapidly using selective media. However, there is no established strategy regarding the treatment and follow-up of carriers.

1056 GRANULOCYTE ADHERENCE IN NEWBORN INFANTS: Sudha Rao, Raymond L. Olesinski, Usha V. Doshi and Dharmapuri Vidyasagar. Abraham Lincoln School of Medicine, University of Illinois Hospital, Department of Pediatrics, Chicago.

Adherence to the vascular endothelium is an important cell property of the granulocyte which influences the degree of inflammation and host defense against bacterial invasion. In order to determine if granulocyte adherence (GA) is altered during the newborn period, we studied 52 full-term healthy neonates during their first week of life. The neonates were chosen from mothers who had uncomplicated pregnancies and were receiving no antenatal medications. All neonates had received 1 mg of Vitamin K intramuscularly after birth. GA was assayed by modified nylon fiber columns. The mean GA ± SEM for 80 healthy adult volunteers was 69.6 ± 1.2% while the GA for the 52 newborns was 92.0 ± 0.9%. There was a significant difference between the two populations ($p < 0.01$). There was no significant influence of either race or sex in both adult and neonatal populations studied. A small but significant negative correlation between GA and hematocrit existed for the adults ($r = -0.242$, $p < 0.05$) but no such correlation was demonstrable for the neonatal group. There was no significant correlation for the adults between GA and total granulocyte counts, and a small but significant negative correlation was noted for the neonates ($r = -0.285$, $p < 0.05$). It is thus concluded that granulocyte adherence is markedly enhanced in the newborn infant as compared to the adult; it is further speculated that such enhanced adherence to the endothelium possibly contributes to the defective chemotaxis seen in newborn infants.