811 DETECTION OF TYPE-SPECIFIC ANTIBODY TO GROUP B STREPTOCOCCI (GBBHS) BY THE "LONG CHAIN REACTION." Prudence Stewardson-Krieger, Keith Albrandt, Timothy Nevin, Roberto R. Kretschmer and Samuel P. Gotoff. Pritzker School of Medicine, University of Chicago, Michael Reese Hospital and Medical Center, Department of Pediatrics, Chicago.

Since the lack of transplacental antibody to GBBHS appears to constitute a major determinant of susceptibility to neonatal infection and presently available methods for detecting antibody are cumbersome and time-consuming, a rapid test for antibody would be advantageous for screening populations at risk. Accordingly, we have adapted the streptococcal "long chain reaction" to measure antibody to GBBHS type Ia in human sera and correlated the results with those previously obtained by mouse protection and bactericidal assays (Clin. Res., 24:578A, 1976).

A mid-log phase inoculum of GBBHS-Ia in Todd-Hewitt broth is incubated with the serum sample for three hours. Smears are made, and the length of 100 streptococcal chains is evaluated microscopically. Hyperimmune anti-GBBHS-Ia rabbit sera and six human sera which protected mice against a LD_{90} challenge with GBBHS-Ia and opsonized GBBHS-Ia in the in vitro bactericidal assay produced significantly ($p<0.001$) longer streptococcal chains than heterologous rabbit antisera and 18 human sera which were neither mouse protective nor opsonically active. The "long chain reaction" was demonstrable with a 1:1000 dilution of hyperimmune sera and with 1:32 dilutions of human sera. This simple, sensitive, and rapid method provides a semiquantitative test for antibody to GBBHS.

812 RISK FACTORS IN EARLY-ONSET NEONATAL GROUP B STREPTOCOCCAL INFECTIONS. Prudence Stewardson-Krieger and Samuel P. Gotoff. Pritzker School of Medicine, University of Chicago, Michael Reese Hospital and Medical Center, Department of Pediatrics, Chicago.

Newborn infants with "early-onset" disease due to group B beta hemolytic streptococcus were studied over a 40-month period. Clinical presentations included asymptomatic bacteremia, mild transient illness, respiratory distress, meningitis, and overwhelming sepsis. Chronologically, 19 were ill at birth; 11 became ill after a symptom-free period; and four were asymptomatic. Sixty-eight percent of the cases weighed less than 2500 grams, and 59 percent were born to mothers whose amniotic membranes were ruptured for over 20 hours. The overall "early-onset" attack rate was 1.9/1000 live births, but the rates increased markedly with decreasing birth weight, i.e., for infants weighing > 2.5 kg, 0.8/1000; 2-2.5 kg, 5/1000; 1-2 kg, 11.2/1000; and .5-1 kg, 66/1000 live births, respectively. Similarly, the attack rates increased with the duration of ruptured membranes, from 0.7/1000 for 0-9 hrs, 1/1000 for 10-19 hrs, 17/1000 for 20-29 hrs, to 21/1000 for > 30 hrs. All 15 of the deaths occurred in the low birth weight infants who were critically ill from birth. These results suggest that the management of "early-onset" disease should begin prior to delivery and focus on high risk groups. The colonized gravid woman in premature labor or with prolonged ruptured membranes is clearly at risk, and a controlled study of penicillin prophylaxis appears indicated.

813 ON SLOW VIRUS INFECTION: COMPARATIVE ANALYSIS OF DEFECTIVE MUMPS VIRUS. Joseph V. St. Geme, Hawley L. Martin and John J. Holland. UCLA School of Medicine, Harbor General Hospital, Department of Pediat., Torrance, CA and UC San Diego, Department of Biology, La Jolla, CA.

Replication experiments in vitro have been employed as a biological assay system to ascertain defectiveness and the expression of viral interference for strains of wild mumps virus, high passage cell culture-adapted laboratory virus, and attenuated vaccine virus.

The efficiency of viral replication (EOR) was determined by comparing the multiplicity of infection (MOI) with the multiplicity of viral production (MOP). Serial passage of partially purified, cloned laboratory virus demonstrated a striking increase in EOR during early cycles with subsequent decline---the classic Von Magnus phenomenon of defective viral interference. The replication kinetics of wild, laboratory and vaccine virus were evaluated using regular stock and cloned pools of virus. The EOR for stock wild virus was 4-fold greater than stock vaccine virus and 300-fold greater than stock laboratory virus. The EOR for vaccine and laboratory virus was increased strikingly by double cloning, while such limiting dilution hemadsorption plaquing techniques employed to eliminate defective virions had little impact upon the EOR of wild virus.

Defective virions play an important role in the development of persistent, slow virus infections. Wild mumps virus seems unlikely to produce such a pathobiologic process, however there may be some concern about attenuated mumps virus vaccine.

814 NEONATAL GROUP B STREPTOCOCCAL (GBS) PNEUMONIA: AN IMMUNE COMPLEX DISEASE? Robert C. Strunk, Jacob L. Pinnas, Lawrence J. Fenton, Dept of Ped & Med, Univ. of Arizona (Intr. by J. J. Corrigan).

GBS pneumonia in the newborn is often fatal despite early treatment. Three infants with GBS pneumonia and sepsis were studied to define the role of immunoglobulins (Ig) and complement (C) in the development of this disease. Cord blood samples from 2 of the 3 infants had been obtained and were found to contain antibodies to GBS, but normal C levels. Serum C levels were obtained from all 3 infants during illness, at which time C3, C4 and Factor B (B) were depressed. Necropsy lung specimens from the 3 infants were studied by light microscopy. PAS positive hyaline membranes were observed in alveoli and gram stains showed gram positive cocci. Lung specimens were also snap-frozen for immunofluorescence (IF) with antisera to Ig, C and fibrin. Deposits of IgG, C3, C4 and fibrin were observed in the alveolar hyaline membranes. IF staining for GBS organisms and B was distributed throughout the lung parenchyma. IF for IgM was negative in all patients. Specimens taken from three infants who died from other causes did not show these patterns of staining. C3, C4 and B IF staining in lungs associated with serum C depression in patients with GBS pneumonia suggests activation of classical and alternative C pathways in this illness. In addition, the presence of IgG, C3 and C4 in the alveolar membranes suggests that maternal IgG may contribute to immune complex deposition as part of the pathogenesis of this disease, and further suggests that treatment other than antibiotics should be considered.

815 DETECTION OF ACUTE SERUM ANTIBODIES TO A/NEW JERSEY/76 INFLUENZA VIRUS AFTER REMOVAL OF IgG WITH COWAN I STAPHYLOCOCCUS AUREUS. Ciro V. Sumaya, Thomas E. Williams (Intr. by P.A. Brunell). Univ. of Texas Health Science Center, Department of Pediatrics/Pathology, San Antonio, Texas.

Cowan I strain of Staphylococcus aureus contains a cell wall substance, protein A, which can absorb most of the IgG from human serum; IgM, IgA, and IgD remain practically unaffected. In the present study, acute sera from children who received killed A/New Jersey/76 influenza virus vaccine were absorbed with S. aureus (Cowan I). An aliquot of the serum was also absorbed with S. aureus (Wood), a strain which does not contain protein A. A third aliquot was left unabsorbed. Hemagglutination-inhibiting (HAI) antibodies to A/New Jersey/76 antigen were determined on the three serum aliquots in tandem. The unabsorbed sera and sera which were absorbed with S. aureus (Wood) had comparable HAI antibody titers. The sera of 11 of 14 children had an eight-fold or less decline in HAI antibody titer after absorption with S. aureus (Cowan I); the sera of two other children decreased sixteen-fold. Only one child's serum had no detectable HAI antibodies after the absorption procedure with S. aureus (Cowan I). In contrast, the latter absorption completely removed HAI antibodies from the sera of a control group who had long-standing antibodies to A/New Jersey/76 (or an antigenically similar virus). The acute sera of the vaccinees which still contained HAI antibodies after S. aureus (Cowan I) absorption suggests the presence of specific IgM and/or IgA antibodies. This relatively simple absorption procedure performed on a single serum may be useful for the detection of an acute influenzal infection.

816 BIVALENT INFLUENZA VACCINE IN CHILDREN WITH CANCER. Ciro V. Sumaya, Thomas E. Williams, Philip A. Brunell. Univ. of Texas Health Science Center, Department of Pediatrics/Pathology, San Antonio, Texas.

Although it has been recommended that children with malignant diseases be immunized against influenza, few data are available to indicate the immune response or reactions that might be expected from this group. In this study, 46 children with malignant diseases received varying dosages of killed split or whole bivalent (A/New Jersey/76 and A/Victoria/75) influenza vaccine or a placebo by the intramuscular route. Two doses were administered four weeks apart. The children were receiving standard cancer chemotherapy regimens of the Children's Cancer Study Group. The response to immunization in the children with malignant diseases was similar to that found in normal children who received aliquots of the same antigen preparations as killed monovalent A/New Jersey/76 vaccine. Reactions after vaccine administration were minimal. It is concluded that the dose of influenza antigen in the vaccine recommended for normal children would appear to be appropriate for children with malignant diseases. In addition to immunization against A/New Jersey/76 it has been recommended that the children with malignant diseases receive antigen preparations of other prevalent influenzal strains.