1057 SUBSTRATE BINDING BY THE INDUCIBLE BETA-LACTAMASE (BL) OF PSEUDOMONAS CEPACIA (PC). Stephen C. Aronoff and Pauline H. Labrozzi. Case Western Reserve University School of Medicine, Rainbow Babies and Children Hospital, Department of Pediatrics, Cleveland, OH (Sponsored by William T. Speck).

PC is emerging as a significant pulmonary pathogen in children with cystic fibrosis (CF). PC is resistant to most of the new penicillins, cephalosporins and monobactams. Preliminary studies comparing a relatively susceptible non-CF strain of PC and a highly resistant isolate recovered from the sputum of a child with CF showed that: (1) the CF isolate produced significantly more BL following cefoxitin induction than the non-CF strain and (2) induction resulted in increased resistance only of the CF isolate to BL stable cephalosporins.

Using competitive inhibition, the relative affinities of piperacillin, ceftazidime, moxalactam, and aztreonam were determined for crude BL preparations of E. coli (TEM-1), and the two isolates of PC. The relative affinities of the test compounds for the two PC preparations were similar. PC BL had a greater affinity than crude TEM-1 (2-100 fold) for all of the test compounds.

BL inactivates beta-lactam agents by two mechanisms, hydrolysis and non-hydrolytic binding of BL stable compounds. The latter mechanism requires bacterial production of large quantities of BL of the inducible type. Resistance of PC to BL stable compounds appears to be mediated by the latter mechanism. Since BL-stable compounds are excellent enzyme inducers, they should be used cautiously in CF patients with PC infections.

1058 THE BACTERIOLOGY OF PERITONITIS IN CHILDREN WITH APPENDICITIS. Stephen C. Aronoff, Margaret M. Olsen, Michael W. L. Gauderer, Michael R. Jacobs, Jeffrey L. Blumer, and Robert J. Izant. Case Western Reserve University School of Medicine, Rainbow Babies and Childrens Hospital, Departments of Pediatrics, Surgery, and Pathology, Cleveland, OH.

Bacterial peritonitis is a complication of acute appendicitis in healthy children. To provide adequate antimicrobial therapy, the causative pathogens should be identified. Anaerobic and aerobic bacterial cultures of peritoneal fluid and blood were obtained prospectively in 12 consecutive children undergoing laparotomy for suspected appendicitis.

The diagnosis of appendicitis was confirmed at surgery in all cases. The study group's mean age was 8.3 years (2-17); 7 were male. All blood cultures were sterile. Nine patients had an average of 3.6 organisms recovered from the peritoneal fluid; E. coli was recovered from 8/9 children. Pseudomonas aeruginosa, B. fragilis, and Bacteroides spp. were recovered from 5 patients each; Peptococcus spp. was isolated from 4.

The recovery of Pseudomonas aeruginosa from the peritoneal fluid of 5 otherwise healthy children was surprising. The routine use of clindamycin and gentamicin in combination or third generation cephalosporins as single agents for the initial treatment of childhood peritonitis does not provide adequate activity against this organism. Although the frequency of recovery of Pseudomonas aeruginosa from peritoneal fluid may vary, we strongly suggest that children with appendicitis have bacterial cultures obtained and have antimicrobial therapy individualized.

1059 CEFACLOR AND AMOXICILLIN ACTIVITY AGAINST ACUTE OTITIS MEDIA (AOM) BACTERIA. Basim I. Asmar, Kanta Bhambhani, and Denise M. Kobos. (Sponsored by Jeanne M. Lusher) Wayne State Univ., Children's Hospital of MI., Department of Pediatrics, Detroit, Michigan.

56 infants and children (4 months-8 years) with AOM were randomly assigned to be treated for 14 days each with either cefaclor 40 mg/kg/d BID (n=21), cefaclor 40 mg/kg/d TID (n=15), or amoxicillin 40 mg/kg/d TID (n=20). Each patient had a diagnostic unilateral tympanocentesis before initiation of therapy. Thirty patients (53.6%) had positive middle ear fluid (MEF) cultures. Twenty-two of the thirty organisms recovered were considered pathogenic. The minimal inhibitory concentration (MIC) of cefaclor and amoxicillin against 18 organisms were as follows:

Organism	No.	MIC (µg/ml)	
		Cefaclor	Amoxicillin
S. pneumoniae	11	0.06-1.0	0.06-0.25
H. influenzae NT	3	1.0 -2.0	0.5
H. influenzae b	1	2.0	0.5
Group A Strep.	2	0.12	0.06-0.12
B. Catarrhalis	1	1.0	1.0

15 patients with positive MEFs responded to cefaclor treatment (cefaclor MICs: 0.06-2.0 µg/ml). Amoxicillin was successful in the treatment of the other 7 patients with positive MEFs (amoxicillin MICs: 0.12-0.5 µg/ml). Our data indicate that amoxicillin has a better in vitro activity than cefaclor against AOM bacteria. However, the clinical outcome indicate that both antibiotics are effective.

●1060 NEONATAL IMMUNITY TO TYPE III GROUP B STREPTOCOCCAL (III-GBS) POLYSACCHARIDE FROM MATERNAL THIRD TRIMESTER VACCINATION. Carol J. Baker, Morven S. Edwards, Marcia A. Rench and Dennis L. Kasper. Dept. of Pediatrics, Baylor College of Medicine, Houston.

In healthy adults, IgG is the major isotype and IgG_2 the predominant subclass of antibody (Ab) elicited in response to III-GBS polysaccharide vaccine (PV). Although immunization to prevent neonatal GBS disease is a promising strategy, it must be shown that III-GBS PV is immunogenic during pregnancy and that the Ab is an isotype and a subclass which crosses the placenta efficiently. 23 non-immune pregnant women at a mean of 31 wk gestation and 15 age, race, sex, and III-GBS Ab level-matched non-pregnant controls each received 50µg of III-GBS PV subcutaneously. No significant difference in immunogenicity was found. In pregnant subjects, the geometric mean III-GBS Ab level (radioactive antigen-binding assay) increased from 1.2 to 5µg/ml at 4 wk post-PV, and at delivery it was 4.7. III-GBS Ab levels in maternal-cord serum pairs correlated significantly (r=.89), and 89% of babies whose mother's Ab was >2µg/ml were also >2µg/ml. The major isotype of specific Ab in maternal sera at delivery (radioimmunoprecipitin assay) was IgG (mean 64%) with IgM comprising a mean of 19%. In cord sera 86% of III-GBS Ab was IgG. The immune response to III-GBS PV in pregnant women was predominantly IgG_2 and its placental passage was efficient. Although not all of these non-immune pregnant women responded to III-GBS PV, those who did reliably provided III-GBS Ab levels >8µg/ml to their offspring. These results suggest that maternal vaccination for the prevention of III-GBS disease in neonates is feasible.

†1061 DISTRIBUTION OF TRANSFUSED LEUKOCYTES IN NEWBORN VS ADULT RATS. J Baley, M Bruce, E Stork, J Klinger, K Medvik. (Spon. A. Fanaroff), CWRU, D. Peds, Cleve, OH

Transfused polymorphonuclear leukocytes (PMNs) have been proposed as therapy for septic neonates, yet their distribution to lung (pneumonia) and brain (meningitis) is unknown. To determine this, we injected 10^4-10^5cfu/gm type III group B Streptococcus (strain GBS 130) into 52 newborn(NB) and 20 adult(A) rats ip. and phosphate buffered saline(PBS) into 19 NB and 10 A rats as controls. ^{51}Cr-labeled human PMNs were given to all rats (A, 0.2 x10^6/gm; NB, 1.1x10^6/gm) at 7 hrs. Lung, spleen, kidney, liver and brain γ counts were measured after sacrifice at 13 hrs. Organ indices were calculated as actual cpm/expected cpm, based upon each organ's % wt. All GBS-NB rats had 10^2-10^6cfu/gm GBS in both lung and brain, whereas only 32% of adults had 10^2-10^4cfu/gm in either lung or brain. The white cell count x 10^6 cells/ml (WBC) after transfusion(Tx) did not change in A and increased (p<.01) in NB PBS-rats, but increased (p<.05) in A and decreased

	A - PBS	A - GBS	NB - PBS	NB - GBS
Pre-Tx WBC	19.6±4.6	16.7±5.2	11.0±3.2	13.0±4.6
Post-Tx WBC	19.8±6.8	19.5±4.9	12.9±3.7	8.7±3.9
Lung	0.43±.16	0.38±.50	0.84±.16	0.73±.40
Brain	0.08±.03	0.05±.05	0.34±.05	0.27±.22

(p<.001) in NB GBS-rats. In both A and NB rats, the distribution of PMNs to lung and brain did not change with either PBS or GBS injections. However, significantly more PMNs were present in both lung and brain of NB compared to A rats, p<.001. We conclude that significantly more transfused PMNs are distributed to lung & brain of infected or uninfected NB rats compared to A.

●1062 PROTECTION BY SERUM ANTIBODIES IN EXPERIMENTAL NONTYPABLE HAEMOPHILUS INFLUENZAE (NTHI) OTITIS MEDIA (OM). Stephen J. Barenkamp (Spon. by Dan M. Granoff), Dept. Peds., Washington Univ. Sch. Med., St. Louis, MO.

Host immune defenses appear to be important in the prevention of NTHI OM. I investigated the importance of serum antibodies in prevention of experimental OM in chinchillas. Animals infected by unilateral intrabullar inoculation with 10^3 cfu of NTHI strain 3245 uniformly developed acute OM. Following recovery, animals were protected against rechallenge with the homologous organism. Immunity was associated with the appearance of serum antibodies directed primarily against a 39Kd surface-exposed major outer membrane protein (OMP) as determined in a whole-cell radioimmunoprecipitation (WC-RIP) assay. Antibodies to LPS were undetectable in convalescent sera by ELISA. In a second experiment, chinchillas were immunized with killed bacteria. Pooled preimmune or immune serum from these animals was administered to a second group of animals one day prior to intrabullar bacterial challenge. 5 of 5 animals receiving preimmune serum developed OM compared to 0 of 10 animals receiving immune serum (P<.001). The immune serum pool and sera from passively immunized animals contained antibodies directed primarily against the 39Kd OMP by WC-RIP. AntiLPS antibody was detectable in the immune serum pool and in sera from passively protected animals. However, the antiLPS ELISA titer was more than 10-fold lower than the titer to the 39Kd OMP. Neither convalescent sera from infected animals nor sera from immunized animals was bactericidal. My results indicate that serum antibody is protective in experimental NTHI otitis, possibly by means of opsonic activity, and that major OMPs or LPS may be important immune targets.