553 ETHNIC DETERMINATION OF THE PATHOGENS IN URINARY TRACT INFECTION (UTI) IN INFANTS AND CHILDREN. Abdul J. Khan, Sudhakara Kunamneni, Branda Shrivastava, Kusum Kumar and Hugh E. Evans. Interfaith Medical Center, SUNY/Downstate Medical Center, Brooklyn, New York.

The role of ethnicity in UTI has not been studied. We analysed the prevalence of organisms causing initial UTI in 550 cases including blacks (200 cases), Hispanics (330 cases) and white (20 cases) based on race, sex and urinary tract (UT) structure (table). Whites were too few to evaluate. Incidence of E.coli

	E.coli %		Pro	Mir %	Kleb %		S.epid %		ALL	Gm+
	M	F	M	F	M	F	M	F	M	F
Black	49	80	14	7	10	6	13	3	19	5
Hispanic	40	84	39	3	9	4	2	2	5	6
P Value	NS	NS	<0.001	>0.05	-	-	<0.01	>0.5	<0.01	-

(EC) (>80%) was similar in black and Hispanic females (F) however in males (M) > 50% were caused by organism other than EC ($P < 0.01$). Proteus Mirabilis (PM) was more prevalent in Hispanic M than Hispanic F, black M or F ($P < 0.001$, each). Among Hispanic M, PM was less common with abnormal UT (AUT) than with normal UT (NlUT). S.epid and all gram+ were most prevalent in black M compared with other groups ($P < 0.01$). Among black M Gm+ was seen in 33% with AUT and only 13% with NlUT ($P > 0.05$). Incidence of AUT was similar (about 24%) in hispanic and black. In conclusion, PM is primarily a pathogen of Hispanic M and more common with NlUT and rare among blacks. Gm+ are most common among black M and is associated with malformation. Ethnicity thus has major impact on the prevalence of pathogen in UTI.

† **554** MOTHER'S BIRTH WEIGHT: DOES IT PREDICT LARGE FOR GESTATIONAL AGE BABIES? Mark A. Klebanoff, James L. Mills, Heinz W. Berendes (Spon. by Sumner Yaffe). NICHD, NIH, Bethesda.

The search for factors that can predict a large for gestational age (LGA) infant has, thus far, uncovered only maternal diabetes, large maternal size and some uncommon genetic and metabolic syndromes. This study examined the relationship between mother's birth weight and the probability of producing a LGA (>90 percentile for age and sex) infant using prospectively collected data from the Collaborative Perinatal Project (Buffalo center). Among 1337 white women without preexisting diabetes delivering liveborn singleton infants, the percentage of LGA births was 2.4% for mothers weighing 4-5.9 lbs at birth, 7.3% for mothers weighing 6-7.9 lbs at birth, and 13.6% for mothers weighing 8 or more pounds at birth. (There were too few women weighing <4 lbs at birth to provide stable rates.) The association between the rate of LGA births and increasing maternal birth weight was highly significant ($p < .001$). The odds ratios for delivering a LGA infant were adjusted for maternal height, weight, weight gain, smoking, age, education, socioeconomic status, gravidity and glycosuria during pregnancy. After adjusting for all these factors, women weighing 8 lbs or more at birth were 5.1 times as likely, and women weighing 6-7.9 lbs at birth were 2.8 times as likely as women weighing 4-5.9 lbs at birth to have an LGA baby ($p = .003$ and .049, respectively). As a predictor of LGA births, mother's birth weight was better than either current maternal height or weight.

● **555** COTININE VS. SELF-REPORTED CIGARETTE CONSUMPTION AS PREDICTORS OF BIRTHWEIGHT. George J. Knight, James E. Haddow, Glenn Palomaki, Edward M. Kloza. Foundation for Blood Research, Scarborough, Maine 04074.

Smoking during pregnancy results in an average 200 gm reduction in birthweight (BW) and is associated with a two to threefold increase in low BW infants (<2500 gm). The number of cigarettes smoked each day is, however, an imprecise measure of the extent of exposure to the fetus to cigarette smoke components. In an attempt to improve precision, biochemical markers of cigarette smoke intake have been developed, among them cotinine, which is a metabolic derivative of nicotine, specific to tobacco smoke inhalation. We have developed an assay for cotinine and studied the relative predictive power of a single serum cotinine level versus self-reported numbers of cigarettes smoked in relation to BW on 6,689 second trimester women. Women who answer a smoking question do so reliably as judged by cotinine (sensitivity-95%; specificity=95%). Serum cotinine levels above 10 ng/mL are defined to be consistent with cigarette smoking. Values between 10 and 25 ng/mL are associated with a lowered mean BW of 75 gm. As cotinine concentration increases in serum, mean BW continues to fall, reaching an extreme of 420 gm with cotinine values above 200 ng/mL. A two way analysis of variance shows serum cotinine to be a more sensitive predictor of BW than self-reporting. Cotinine measurement is, therefore, a useful screening test to identify those smoking women at greatest risk of delivering low BW babies.

556 FAILURE OF HIGH CALCIUM (CA) AND PHOSPHORUS (P) FORMULA IN THE PREVENTION OF RICKETS IN EXTREMELY SMALL PRETERM INFANTS (<800G). Winston WK Koo, Alan Oestreich, Reginald C Tsang, Roberta Sherman, Donna Buckley, Jean Steichen. U.C.

High Ca, P fortified 'premie' formulas (FM) have been recommended as supplements to preterm infants fed own mother's milk (OMM) to prevent rickets. FM (20kcal/dl) when added to OMM in 1:1 ratio by volume and given 150ml/kg/d can deliver maximum Ca 78-113mg, P 44-59mg and vit D 42-79IU/kg/d. Two white females, birth wt 410g (P1), 660g (P2), gestation 23,30 wks resp given FM alone, or, FM added to OMM or standard (20kcal/oz) formula (SM) who developed severe bone demineralization, rickets and fractures on x-ray at 15 and 13wks resp. Nutrition intake prior to diagnosis was:

	PN*	OMM/SM	FM	Ca**mg/kg	P**mg/kg	Max Vit D**
P1	9d	SM 54d	54d	69-184	56-92	154 IU/kg
P2	10d	OMM 83d	49d	112-135	58-70	94 IU/kg

* Parenteral solution Ca 20mg, P 15mg/dl, vit D_2 20 IU/kg/d.

** Daily Ca, P, vit D intake from FM alone, or, FM+OMM or SM.

Additional 100-400 IU vit D_2/d commenced at 63 and 14d resp. FM were shaken prior to each bolus gavage feed. P1 received 24 doses furosemide (1-2mg/kg) and 43d of phenobarbital (5mg/kg/d). P2 received 4 doses of furosemide (1-2mg/kg). At diagnosis, serum Ca and Mg were normal, P were 3.6 and 4.8mg/dl, and 25 hydroxyvitamin D (25OHD) normal (61 and 38ng/ml). Rickets and fractures healed while P1 continued on FM and same drug therapy and P2 was fed OMM alone. We conclude 1) supplementation of OMM or SM with Ca, P fortified milk (1:1 vol/ vol) may not be sufficient to prevent rickets and fracture in extremely small infants (BW<800g); 2) 400 IU vit D_2/d is sufficient to maintain normal serum 25OHD. 3) Rickets may resolve "spontaneously" with age.

557 **INFECTION IN NEWBORN INFANTS - A CHANGING PATTERN IN A SPECIAL CARE UNIT (SCU).** Savitri P. Kumar, Jan M. Goplerud, and Maria Delivoria-Papadopoulos. Univ. of PA. School of Medicine, Department of Pediatrics, Philadlephia, PA. 19104

An analysis of bacterial infection in the intensive and intermediate care nurseries (special care unit) of the Hospital of the University of Pennsylvania was made over a 3 year period to determine if changes in the predominant organisms for neonatal sepsis had occurred. From Jan. 1982 to Sept. 1984, 98 bacteremias were identified in 2571 infants, an incidence of 3.8/100 SCU admissions and 11.8/1000 hospital births was noted. Eighty-eight percent of all bacteremias were due to gram positive organisms, with coagulase negative staphylococcus (CNS) and beta hemolytic streptococcus Group B (GBS) being the predominant organisms. Paucity of gram negative infection was noted. CNS was responsible for 42% of bacteremias and 75% of nosocomial infections, while GBS was responsible for 32% of bacteremias and 78% of early infections. Incidence of GBS disease was 3.8/1000 hospital births; however, if GBS antigenuria as identified by latex agglutination was included, incidence rose to 5.5/1000 hospital births. Mortality from GBS was 11%. The majority of infants with CNS were 1600 gms. Although mortality was low, considerable morbidity was noted. Forty-two percent of infants with clinical signs of necrotizing enterocolitis were noted to have CNS bacteremia, and 32% of localized infections were due to CNS.

These data suggest the changing pattern of infection and emergence of coagulase-negative staphylococcus as a pathogen. In view of the significant morbidity caused by CNS among low birth weight infants, antibiotic therapy for suspected nosocomial infection should include coverage against this ubiquitous organism.

558 COXSACKIE A (CA) ANTIGEN DETECTION BY ENZYME IMMUNOASSAY (EIA) IN SUSPECTED SEPSIS (SS). Robert J. Leggiadro. Scott W. Zucker, Brian S. Blinderman and Robert H. Yolken. Depts. of Pediatrics, Nassau County Medical Center (NCMC), E. Meadow, NY 11554 and Johns Hopkins University School of Medicine (JHSM), Balto., MD 21205.

Previous studies have documented the important association of non-polio enterovirus (E) isolation with SS in young infants. These studies relied on tissue culture alone to identify E. We utilized a double-antibody, solid-phase EIA for CA, in addition to standard methods, in the evaluation of 45 patients <3 months of age admitted to NCMC for SS from 6/1 to 10/31/83. No patient had an obvious focus of infection, abnormal chest roentgenogram, or history of previous antibiotics. 38 patients had a rectal temperature $\geq 37.8^{\circ}C$ on admission, 4 were febrile by history, and 3 were evaluated for lethargy. Blood, cerebrospinal fluid (CSF) and rectal swabs were collected from all patients and urine from 39 for routine bacterial studies. CSF from 42 and nasopharyngeal, throat and rectal swabs from all patients were plated on rhesus monkey and human embryonic kidney cells for viral isolation. Echovirus (8), coxsackie-virus (10), untyped E (2) and parainfluenza (1) were identified by culture and CA antigen was detected in an additional 5 patients. All of the 26 patients with proven viral infections were suspected of having bacterial infections on clinical grounds and 25 were treated with anitbiotics despite negative bacterial cultures. These data support a major role for E in SS in the summer and fall. Further evaluation of rapid diagnostic tests for viruses and their role in preventing unnecessary antibiotic administration are warranted.