528 ULTRAVIOLET EXPOSURE AND 25OH VITAMIN D IN BREAST-FED INFANTS IN BEIJING, CHINA, Mona Ho, Reginald C. Tsang, Qing-Mei Shui, Bonny Specker, Buford L. Nichols, Why-Cheng Yen, Xue-Cun Chen, U. of Cincinnati, Baylor Col. of Med.-USDA, Houston, and Institute of Health, Beijing.

A high incidence of rickets among infants in the Peoples Republic of China has been reported, etiology unclear. The vit. D status of infants in China has not been investigated. The specific effect of sunshine (UV) exposure on D status in any infant is unstudied. We hypothesized that breast-fed infants in China have low vit. D status and UV exposure increases serum 25OH vit. D into the normal range. 54 breast-fed term infants 1 to 8 mos. without D supplements were randomly assigned into 2 grps. in a 2 mo. study, Sept. and Oct. (mos. of high UV exposure): controls with "usual" sun exposure; and experimental with 2 hr. sun/d. Infants received only human milk, rice soup, fruit juice and mashed vegetables and exposed mostly face and forearms. A 20 nurse team monitored UV exposure with diaries and a unique infant UV dosimeter. Only 100 µl blood samples were permissible in infants. Serum 25OHD was measured by protein binding assay after chromatography. (N 11 to 68 ng/ml). Mean maternal 25OHD was 22 ng/ml. Infant 25OHD correlated with mother's (r=0.48). Infant 25OHD ranged 3 to 61 ng/ml at entry with 20% <11 ng/ml. Mean ± SE 25OHD did not change for controls (21 ± 3 vs 18 ± 3 ng/ml, pre- vs. post- 2 mo.sun exposure 83 min./d) but increased significantly for experimental (28 ± 4 vs 40 ± 5 ng/ml, $p<0.01$, sun 144 min./d). Thus, infant 25OHD correlated with maternal 25OHD; although infants in Beijing may receive moderate sun exposure in fall, 20% of 25OHD are low and additional sun exposure for 2 mos. increases serum 25OHD towards normal.

529 EPIDEMIOLOGY OF CYTOMEGALOVIRUS (CMV) INFECTIONS: GROUP DAY CARE (DC) AND SOCIOECONOMIC FACTORS. Celia Hutto and Robert F. Pass, University of Alabama in Birmingham, Department of Pediatrics, Birmingham, Alabama.

A recent study found a high rate of CMV excretion among children in a group day care center (DCC) enrolling primarily children from middle income families, suggesting that the increasing use of group DC in this country could change the epidemiology of CMV. We studied 5 DCCs serving children of diverse backgrounds and examined CMV infection rates (IR) (viral excretion ± serology) in children >1 year of age, in relation to demographic and family data. DCCs 1-3 serve primarily children from middle income families, whereas, DCCs 4-5 enroll children from low income families. The IR for DCCs 1-3 was 47% (86/183) and 25% (25/98) for DCCs 4-5, P=0.0004. The sex distribution and median age for all 5 centers was similar. DCCs 1-3 were predominantly white, (86%); 50% of the children were breast-fed >1 month, and no child had >2 siblings. In DCCs 1-3 mean maternal and paternal ages were 30.1 years and 31.9 years, respectively; mean # of years of education were 15.5 and 16.9, respectively. DCCs 4-5 were predominately black (73%); less than 25% of the children were breast-fed >1 month, and 20% had >2 siblings. Mean maternal and paternal ages were 26.9 and 35.3 years, respectively; mean # of years of education was 12.4 and 12.2, respectively. Susceptibility (seronegative) to CMV of parents in DCCs 1-3 was 41% (75/182); 17% in DCCs 4-5 were susceptible (P=0.0008). For middle but not low income families, group DC results in the potentially troublesome combination of high IR among children with a high proportion of susceptible parents.

530 TULAREMIA: A CHANGING PRESENTATION IN CHILDREN. Richard F. Jacobs, Yoland M. Condrey and Mary A. Coleman, (Spon. by Terry Yamauchi), Department of Pediatrics, University of Arkansas for Medical Sciences/Ark. Children's Hospital & Ark. State Health Dept., Little Rock, AR.

Tularemia, a febrile zoonosis in children, has a changing clinical presentation. We reviewed 23 cases of tularemia in children at the Arkansas Children's Hospital (ACH, 1975-1983); pediatric cases represented 28/71 tularemia cases in Arkansas in 1983 (39%, 9 at ACH). The demographic data revealed: 1) Age: 0-3 yrs - 5/23, 4-10 yrs - 11/23, and 11-19 yrs - 7/23 (8.2±4.5 yrs); 2) male - 72%; 3) white - 91%; 4) rural - 78%; and 5) season - summer (52%), spring/fall (30%), winter (13%). Transmission by a tick vector (65%), rabbit exposure (9%), other game animals (4%) and multiple exposures (4%). The types of tularemia included: ulceroglandular (35%), glandular (43%), oculoglandular (4%), pneumonic (13%), oropharyngeal (9%). Clinical features included: fever (91%, 103.5°F±1.4°F), lymphadenopathy (91%), pharyngitis (43%) and radiographic evidence of pneumonia (30%, 3/7 due to tularemia). The diagnosis was made by serology (87%), culture (4%) and history/physical (13%). There were no deaths and the most frequent morbidity was late lymph node suppuration (52%). Tularemia in Ark. has increased - 1978 (29), 1979 (42), 1980 (56), 1981 (54), 1982 (69), and 1983 (71). The major changes in tularemia include: 1) an increase in cases in children, 2) an increase in tick exposure over game animal exposure, 3) an absence of typhoidal tularemia, 4) a milder disease with no deaths, and 5) an increase in tularemia pneumonia in children.

531 ENTEROVIRUS INFECTION IN A HOSPITAL NURSERY, CANADA. Janet S Kinney, Eugene McCray, Jonathan E Kaplan, Donald E Low, Godfrey Harding, Gregory W Hammond, Peter Riben (Spon. by Godfrey P Oakley) Centers for Disease Control, Atlanta, GA, St Boniface General Hospital and Cadham Provincial Laboratory, Winnipeg, Canada.

An outbreak of Echovirus 11 illness occurred among infants in the nurseries at a teaching hospital in Winnipeg, Canada, between July 22 and August 12, 1983. Viral cultures were obtained from 142 of the 196 infants exposed to the nurseries during the outbreak period, and serum pairs were obtained from 100. Specimens were obtained from all symptomatic infants. Fourteen infants were infected as determined by isolation of virus from stool or CSF and/or a fourfold rise in neutralizing antibody to Echovirus 11. Of the 14 infants, 8 were severely ill with seizures, CSF pleocytosis and/or apnea (one infant died). Four infants had mild illness, and two were asymptomatic. Infants who were present >48 hours in one of the nurseries were more likely to become infected than infants present ≤48 hours (attack rates 24% and 3%, respectively, $p<.001$). Among infants present in this nursery >48 hours, illness was associated with gavage feeding ($p=.01$) and inversely related to feeding with breastmilk ($p=.03$). Three cases of hospital-acquired Coxsackie B4 virus infection also occurred during this period; all 3 infants were in the suspect nursery >48 hours and one was gavage fed. Observations suggest that immune globulin, which was administered to all hospitalized infants on July 31, was not beneficial in attenuating illness caused by Echovirus 11.

●**532** MOTHER'S BIRTH WEIGHT AFFECTS PREGNANCY OUTCOME. Mark A. Klebanoff, Barry I. Graubard, Heinz W. Berendes. (Spon. by Sumner J. Yaffe). National Institutes of Health, National Institute of Child Health and Human Development, Bethesda.

Low birth weight (LBW) is recognized as the most important correlate of infant mortality, but many of the factors responsible for LBW are unknown. The relationship between maternal birth weight and infant birth weight was prospectively studied in the Buffalo, New York cohort of the Collaborative Perinatal Project. Among 1348 middle-class white women delivering singleton offspring, maternal birth weight was significantly associated with infant birth weight ($p<.001$). This association remained significant after adjustment for maternal age, height, weight, weight for height, smoking, education, socioeconomic index, parity, gravidity, pregnancy weight gain, and infant sex. Compared to women weighing 8 pounds or more at birth, women weighing 4 to 6 pounds were at 3.5 times the risk, and women weighing 6 to 8 pounds were 1.7 times the risk of having a LBW infant. Maternal birth weight was more important than smoking and comparable to prepregnancy weight in predicting the occurrence of LBW. Gestational age was not significantly different between groups. These data suggest the possible role of genetic and familial factors in the determination of birth weight. The relationship between LBW and infant mortality may depend on maternal birth weight.

533 DETERMINANTS OF WEIGHT AND ADIPOSITY IN THE FIRST 12 MONTHS OF LIFE. Michael S. Kramer, Ronald G. Barr, I. Barry Pless, Christiane Boisjoly, and Denis G. Leduc. McGill U. Fac. Med., Depts. of Peds. and Epid., Montreal.

To overcome methodologic defects (failure to control for confounding factors, univariate statistical analyses) in previous studies of etiologic determinants of childhood adiposity, we carried out a prospective cohort study of 462 healthy, full-term infants followed from birth to 12 mo. Post-partum, we obtained sociodemographic data and administered 2 recently validated scales of maternal attitudes toward feeding and infant body habitus. Parental height and weight and infant feeding variables were determined by interview during the 12 mo. At 6 and 12 mo, we measured height, weight, and triceps, subscapular, and suprailiac skinfolds. Multiple regression analysis was used to determine independently predictive factors for weight (W), body mass index ($BMI=wt/ht^2$), and the sum of the 3 skinfolds (SF).

Birthweight, age at introduction of solids, sex, breast feeding, and father's relative weight were all significant predictors of W at 12 mo ($R^2=.291$; $P<.0001$). For BMI, age at introduction of solids, birthweight, and sex ($R^2=.119$; $P .0001$), and for SF, birthweight and breast feeding ($R^2=.041$; $P<.004$), were significant determinants. Similar results were obtained at 6 mo, though slightly less of the variance was explained. We conclude that the ability to predict which babies will be fat during the first 12 mo is limited. Breast feeding and delayed introduction of solids do offer some protective effect, however, and thus our efforts to encourage these practices may be reaping some benefit.