

origin was 1.15:1 whereas the ratio for infants with infections acquired after birth was 1.58:1. Removal of the cases with antenatal infections from the analysis eliminated much of the sex ratio difference between whites and nonwhites and between the poor and the nonpoor. A decreasing incidence of such antenatal infections may well explain why the ratio of male to female neonatal deaths is increasing in the U.S. and other industrial societies and why U.S. poor whites and nonwhites have fewer excess male deaths than their more prosperous counterparts.

Preschool nutrition survey: Heights and weights of children. GEORGE M. OWEN and A. HAROLD LUBIN. *Ohio State Univ., Coll. of Med., Children's Hosp., Columbus, Ohio.*

Between November, 1968 and December, 1970, some 2300 children between 1 and 6 years old were examined in connection with overall evaluation of nutritional status. Measurements were made of height, weight, thoracic fatfold, and head circumference. X-rays of the hand-wrist were taken to assess skeletal maturation. Heights (standing) and weights were measured by one of five nurses using standard techniques. Data collected between November, 1968 and December, 1969 were analyzed, percentile (10th-90th) values for heights and weights were computed, and distance growth charts have been developed. These charts were based on 1106 children (538 girls and 568 boys with birth weights >2500 g) who represent a national probability sample. Median, 75th, and 90th percentile values were the same or slightly below those of the Boston chart while 25th and 10th percentile values were somewhat progressively more skewed below the Boston norms. Distribution of height values by percentiles shows some relationship to income as do various parameters of dietary intake and biochemical assessment.

Percapita income	Children	<10th P	<25th P	<50th P	<75th P	<90th P
(dollars/yr.)	(no.)	(no.)				
≤900	235	22	56	112	165	206
901-1300	238	23	52	107	175	218
1301-1900	306	24	67	137	225	268
≥1901	327	20	53	137	224	287

A test for lead poisoning based on increased osmotic resistance of erythrocytes. Q. H. QAZI and D. P. MADAHAR. *Dowstate Med. Ctr., Brooklyn, N.Y.* (Intro. by E. S. Smithwick).

The proposed test is based on observations that lead, *in vitro* and *in vivo*, increases the osmotic resistance of erythrocytes.

Blood samples were collected in heparinized lead-free tubes from 32 patients admitted to the hospital with lead poisoning (blood lead level of 0.06 mg/100 ml, or higher). Samples obtained from 30 blood donors, 27 children without lead poisoning and 10 children with iron deficiency anemia served as controls. A hemoglobin pipetteful of blood is added to each of two tubes, one containing 5 ml of 0.4% buffered sodium chloride solution and the other, 5 ml of double distilled water. After 20 minutes, the tubes are centrifuged and the optical density (OD) of the supernatants determined at 540 m μ . The results are calculated and expressed as follows:

$$(\text{OD in } 0.4\% \text{ saline} \div \text{OD in water}) \times 100 = \% \text{ hemolysis}$$

The results show that the mean hemolysis in children with lead poisoning (49.9, SD 18.7) was distinctly lower ($P < .01$) than

that in blood donors (95.2, SD 5.2), in unaffected children (92.2, SD 6.0) and in children with iron deficiency anemia (87.1, SD 9.2). The test identified 28 of 32 children with blood lead levels of 0.06 mg/100 ml, or higher, and each of ten children with blood lead levels of 0.09 mg/100 ml, or more.

Further data, derived from continued use of the test, will be presented.

Diagnostic value of laboratory tests in progressive protein malnutrition. VIJAY KUMAR, KEITH B. HAMMOND, and H. PETER CHASE. *Univ. of Colo. Med. Ctr., Denver, Colo.*

The order and magnitude of alterations in laboratory values occurring with progressive protein malnutrition are presently poorly understood. Four young female pig tail monkeys were given a 34% protein diet and four other young females an isocaloric protein free diet for 20 weeks. Fasting blood samples were obtained every 2 weeks for biochemical analyses. The mean body weights in the two groups were identical initially, but the protein deprived group steadily lost weight and were 20% below controls after 10 weeks and 39% after 20 weeks. Edema was present 15 weeks after initiation of protein deficient diet. The BUN and serum amylase levels were the first tests affected, and were significantly decreased ($p < .01$) after only two weeks of protein free diet. They were decreased a mean of 64-96% during the 20 weeks of observation. Serum transferrin levels have been reported to be the best screening test for kwashiorkor (Lancet, p. 392, 1969), but in this study were not significantly altered until after 6 weeks of protein deprivation. They were thereafter decreased a mean of 24-33%. Progressive reduction in total serum proteins (6.55 ± 0.51 g% at 2 weeks, 4.62 ± 0.78 g% at 20 weeks) and serum albumin (3.27 ± 0.39 g% at 2 weeks and 1.35 ± 0.44 g% at 20 weeks) occurred in the poorly nourished group, but were not consistently lower than control values until after 10 weeks of protein deprivation. Blood cholesterol levels were decreased significantly only after 16 weeks of protein free diet, and alkaline phosphatase and glucose values were not altered at any stage of deprivation. This study indicates that reduced BUN and serum amylase levels are good indices for the diagnosis of early protein malnutrition, whereas, reduction of transferrin, total serum proteins, and albumin are indicative of sustained deprivation.

Recognition of the humanistic student entering medical school. K. C. MORTON and S. J. SCHAEFER. *Univ. of Calif., Irvine, Calif.* (Intro. by R. Greenberg).

Twenty-two of 57 freshmen medical students chose to attend a pediatric clinic once a week in the evening for six months. Responses to a structured questionnaire were scored on a positive-negative attitude continuum (from -7 to +7), a high score indicates a positive attitude. Those students electing to attend an evening pediatric learning experience without credit, scored 4.15 before and 4.30 after exposure. Those who did not attend the presentations scored 2.44 and 2.46 on the two questionnaires. The humanistic student can be identified on admission to medical school and those with this viewpoint may be guided towards appropriate learning experiences. The findings of this study indicate that it is possible to assess differences in expectations of students early in their first year and it is necessary to provide alternative electives to develop differing specialized interest.

Air and blood lead and the G6PD deficient. CAROL R. ANGLE and

MATILDA S. MCINTIRE (Intr. by Gordon E. Gibbs). *Univ. of Nebr. Coll. of Med., Univ. of Nebr. Hosp., Omaha, Nebr.*

Investigation is being conducted of the effect of urban blood lead levels on the activity of glucose-6-phosphate dehydrogenase (G6PD) in the red cells (rbc) of enzyme deficient negroes. Blood lead was determined in 202 students, age 6 to 17, suggested as deficient by initial mass screening with two or three serial assays including G6PD, 6 PGD, red cell indices and reticulocytes plus sampling for GSH reductase, ATPase, ALA dehydratase, and haptoglobins. Significant findings include: (1) G6PD deficient (0-4 μM) negroes had a significantly higher concentration of lead in both rbc and whole blood when corrected for anemia, as compared with nondeficient individuals of comparable age, sex, socioeconomic score, and census tract. This is the first demonstration of a genetic susceptibility to an air pollutant. (2) Whole blood lead, corrected for anemia is preferred to red cell lead since intracellular accumulation of lead progresses rapidly in vitro. (3) Evidence of the direct effect of ambient lead on blood lead is derived from the significantly higher blood lead in elementary school children in central Omaha which has industrial as well as automobile sources of lead emission than in comparable students just three miles away; seasonal correlation with air lead levels at the sites is expected to be available.

A regional system for transport of sick neonates in Arizona. H. B. P. MEYER, L. WAGNER, and W. J. DORSON (Intr. by V. A. Fulginiti). *Good Samaritan and St. Joseph's Hosps. and Arizona State Health Dept., Phoenix; and Engineering Ctr., Arizona State Univ., Tempe, Ariz.*

In 1967, newborn intensive care centers were developed within two community hospitals having a combined delivery rate >8000 births/year. Two hundred twelve neonates were transported from rural hospitals to these centers between July, 1967 and June, 1970 by specially trained nurses from the centers under direction of a neonatologist. Characteristics of the infants, distance travelled and morbidity and mortality were compared according to a modification of Lubchenko's method. Mortality associated with IRDS was compared between infants transported from and infants remaining in hospitals of birth.

85% of transported infants had birth weights <2500 g. Observed morbidity (86%) and mortality (28%) exceeded predicted morbidity (65%) and mortality (23%) in these infants. Predicted mortality was the same in transported infants with IRDS remaining in their hospitals of birth (59%) exceeded mortality in transported infants with IRDS (32%). Infants originating within or beyond a 60-mile radius of the center had identical mortality (28%).

This transport system has made necessary care available to sick neonates born outside newborn intensive care centers with minimal compromise resulting from transport. Mortality has been independent of distance travelled.

What happened to I.Q. between four year and seven year in a selected collaborative project population. ROSALIND Y. TING, THOMAS F. MCNAIR SCOTT, THOMAS E. ATKINS, and DONALD GOLDSTEIN. *Univ. of Pennsylvania, Children's Hosp. of Philadelphia.*

One hundred eighty-one of 2341 4-year-olds had I.Q. below 70 (7.7%). 133 of 181 had I.Q. between 60 and 69 (73.5%). Of these 133, 94 Negro children were studied, on whom there was complete information available for analysis on maternal socio-environmental, prenatal history, pregnancy, labor, and delivery

records; examinations at birth, 4 months, 8 months; 1, 3, and 4 years. As controls, 94 Negro children matched as to birthdate and sex were used with an I.Q. above 90 on the 4 year examination.

The study children showed a higher incidence of low birth weight, delay in motor development at 1 year and delayed speech development at 3 years.

The mothers of these children had the following characteristics namely: a higher incidence of teenage pregnancy, low education, large family size, closer sibship and a low socio-economic index.

At 7 years of age of the 87 available children 6 (6.9%) still had an I.Q. below 70. 43 (50%) showed a gain to the 80-109 level, 34 (39%) showed a rise to the 70-79 level. Of the 74 available controls 13 (17.5%) dropped to 80-89 I.Q. level and 2 (2.7%) to the 70-79 level, while the remainder showed minimal changes in I.Q. points within the normal range. A further analysis of preschool and school activities, the I.Q. of siblings and the changes in socio-environment suggest that the availability of stimuli outside the home had contributed to the development to their genetic potential of the children in whom there was a significant increase in I.Q. points.

The predictiveness of infant developmental diagnosis. HILDA KNOBLOCH and BENJAMIN PASAMANICK. *Albany Med. Coll. and N. Y. State Dept. of Mental Hygiene, Albany, N. Y.*

The purposes of infant evaluation are to detect the child with organic disease of the brain and to identify factors which will modify the course of development. Follow-up of 199 infants seen between 16 and 52 weeks and re-evaluated at an average age of 7 years indicates the infant evaluation is highly predictive and points out some of the most important factors which affect school-age behavior. This report is confined to DQ (general developmental quotient)-IQ (Stanford-Binet) changes.

Infant neuromotor status and developmental quotient form the basic substrate, which is modified later by socioeconomic status and the occurrence of seizures after the infant examination.

Of the 30 non-defective infants who fell to IQ 75 or less at school age, only one was not explainable by associated adverse factors, singly or in combination: i.e., abnormal infant neuromotor status, subsequent seizures, lowest third in the socioeconomic scale or other specific diseases such as Down's or cretinism. In contrast, if the child is in the highest socioeconomic third his school-age function is good, even if adverse factors are present. Only 5 of the 48 children with IQs 106+ would not have been expected to achieve this level on the basis of their infant behavior; only one of these was in the lowest socioeconomic third.

Perceptual-motor, language, school achievement and central nervous system integrative functions, as measured by a battery of tests at school age, were predicted at the same high level by the infant examination. The data indicate the importance of clinical judgment in diagnostic evaluation in infancy.

Patterns of illicit drug use among patients in an adolescent medical service. MARION N. CHALL. *Teenage Service, Beth Israel Med. Ctr., New York, N. Y.* (Intr. by Saul Blatman).

The objective of this work is to describe the prevalence of various types of illicit drug use among adolescents treated in a comprehensive ambulatory medical service, located in a lower-middle and low-income area of New York City. About 65% of the