

**37** COST EFFECTIVENESS OF NEONATAL INTENSIVE CARE (NIC)

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The fully allocated costs of hospital care from birth to final discharge were determined and compared to survivorship in two cohorts of <1500g birth weight infants. Study infants included all 500 to 1499g babies liveborn in Hamilton-Wentworth from 1964-69 and 1973-77 (before and after the introduction of the McMaster Regional Perinatal Program). Survivors numbered 157/376 (42%) and 251/416 (60%). For the ascertainment of costs, two random samples, stratified by birth weight and outcome, were selected: 77/376 infants (20%) and 83/416 (20%) from '64-69 and '73-77 respectively. Cohort costs in 1978 dollars amounted to \$1299490 ('64-69) and \$5800896 ('73-77). After making the cohorts equal in size, the following comparisons were made:

Period	Cost (C) \$	Effects (E) Survivors	Δ Cost C1 - C2	Δ Effect E1 - E2	C/E Ratio (C1-C2)/(E1-E2)
1. 73-77	\$5800896	251	\$4363163	77.3	\$56445
2. 64-69	\$1437734	173.7			

For the defined costs and effects the post NIC period is both more costly (by \$4363163) and more effective (by 77.3 survivors) than the pre-NIC period, resulting in a cost of \$56445 per additional survivor. In deciding whether NIC is a good health care investment, it is necessary to compare these results to comparably measured costs and effects from alternative programs offered by the health care system.

**38** ECONOMIC CONSEQUENCES OF CHILDHOOD DISABILITY: DIFFERENTIAL EFFECTS ON MATERNAL EMPLOYMENT BY RACE AND FAMILY INCOME. Naomi Breslau, Kathleen Staruch, and David Salkever, Case Western Reserve Univ., School of Medicine, Dept. of Epid. & Comm. Hlth., Cleveland, and Johns Hopkins Univ., Baltimore. (Sponsored by E.A. Mortimer, Jr.)

Econometric studies of maternal employment have found an inverse relationship with husband's income and higher rates for blacks. This paper examines whether child disability attenuates the effects of race and income on maternal employment. Data on 370 families of children 3 to 18 years old with cystic fibrosis, cerebral palsy, myelodysplasia or multiple handicaps and 450 randomly selected families with children in the same age range in the Cleveland area were analyzed. Multiple regression analysis with other predictors of maternal employment as covariates was used separately for two-parent and single-parent families. For two-parent families, a disabled child reduces the probability of maternal employment for those with income less than \$19,000; the lower the income the greater the effect. In this group child disability interacts also with race: For whites, a disabled child reduces the probability of maternal employment from 45% to 32%, whereas for blacks the reduction is markedly greater, i.e., from 60% to 23%. For female-headed single-parent families, the interactive effects of child disability with income and race are weaker. This indicates that among two-parent families child disability has a greater impact upon the earning potential of those with low compared to those with high income and of blacks compared to whites.

**39** DELAYED MOTOR DEVELOPMENT IN PREMATURE INFANTS WITH BRONCHOPULMONARY DYSPLASIA. E.R. Brown, and P.S. Osborne (Spon. by H.W. Taeusch, Jr.) Harvard Medical School, Dept. of Pediatrics, Boston, MA.

Attrition in neuromuscular capabilities may result from an inability to use muscles in infancy. To study motor development in infants after immobility associated with severe bronchopulmonary dysplasia (BPD), we studied three matched groups of infants: 1. respiratory distress syndrome (RDS) and BPD (N=6); 2. RDS (N=6); 3. no neonatal pulmonary disease (N=6). Since we wished to evaluate the effects of prolonged pulmonary disease, we excluded infants with intracranial hemorrhage. There were no differences among the groups with respect to birthweight, gestational age, current weight or length, mean Apgar score at 1 or 5 min. or parental educational level. Assessments were at a mean age of 20 months (range 16-22) and were corrected for degree of prematurity. Resting respiratory rates were increased in the BPD group. Neuromuscular assessment utilized the Gesell Fine and Gross Motor Scales, the Barnes-Crutchfield-Herzia Reflex Scale and an adaptation of the Prechl Muscle Tone Assessment, and were administered without knowledge of patient grouping. There were no significant differences in muscle tone or reflex behavior among the three groups. There was, however, a significant delay in both gross and fine motor development in the BPD group.

GESELL SCORE	RDS+BPD	RDS	NO PULM. DIS.SIG.	
GROSS MOTOR	77.2±9.5	101.3±12.3	94.5±12.9	p<.01
FINE MOTOR	80.3±14.2	110.7±17.5	102.3±14.2	p<.01

BPD infants have delayed motor development unrelated to abnormal muscle tone or reflexes when compared to their premature peers.

**40** ORAL PENICILLIN (P) PROPHYLAXIS IN CHILDREN WITH IMPAIRED SPLENIC FUNCTION: A STUDY OF COMPLIANCE. George R. Buchanan, Jane D. Siegel, Susan J. Smith, Bonnie M. DePasse, Univ. of Tex. Health Sci. Ctr., Dept. of Ped., Dallas TX.

Septicemia due to *S. pneumoniae* is a well known complication of splenectomy or splenic dysfunction. Although prophylactic oral P is often recommended as a supplement to patient education and pneumococcal vaccine as a means of preventing these serious and often fatal infections, poor patient compliance is used as an argument against this approach. Therefore, we studied compliance during a 10 mo. period in 43 high risk patients, 27 of whom were infants or young children with sickle cell anemia, 15 with prior splenectomy, and 1 after bone marrow transplant. Median age was 3 yr. (range 6 mo. to 19 yr.). All were instructed and most were regularly reminded to take P twice daily. Without knowledge of the patients or their parents, urine obtained at one or more clinic visits was tested for P by the *Sarcina lutea* inhibition method. 50 of 76 (66%) samples contained P. Of the 43 patients, 32 (76%) had urines positive for P at least once. 19 of 20 patients tested multiple times were positive on at least one occasion. Parents of children whose initial urines were negative for P were provided with written and verbal reminders, and repeat urines tended to be positive. Compliance was not clearly related to age, duration of P administration, diagnosis, or number of clinic visits. Based on these data, we conclude that poor patient compliance is not a valid argument against use of prophylactic oral P in patients at high risk of pneumococcal septicemia.

**41** PREDICTION AND PREVENTION OF MATERNAL PHENYLKETONURIA (mPKU) WITH A REGISTRY. L. Cartier, C.L. Clow, A. Lippman-Hand, J. Morissette and C.R. Scriber. McGill Univ.-Montreal Children's Hosp. Res. Inst., Montréal and the Réseau Provincial de Médecine Génétique (RPMG), Québec.

Successful treatment and normal development of patients with PKU or Hyperphe. will yield ~ 250 fertile females in Canada and 2,500 in the USA by 2000 AD. Because unmodified mPKU (and mHyperphe) has a high risk of fetopathy, counseling and birth control, or treatment, of mPKU are indicated. Intrapartum treatment alone during pregnancy is insufficient to prevent the fetopathy; combined preconception & intrapartum treatment of 5 known cases has improved outcome for offspring (Lenke, R.R. and Levy, H.L. NEJM 303:1202, 1980; Brenton, D. Pers. comm. 1980). A register, to follow potential mPKU subjects, would provide a systematic mechanism for preconception counseling. Otherwise, the incidence of mental retardation (MR) due to mPKU in 2000 AD could equal the incidence of MR due to PKU itself before the advent of newborn screening. The RPMG has diagnosed 65 PKU/Hyperphe cases (26F) under 12 yrs. of age. All cases are now registered anonymously in the RPMG data bank. Regional centers caring for the patients, report entries which are recalled on the 12th birthday and returned to reporting centers. Data can be reentered and recalled yearly thereafter, as required. Decisions to proceed with counseling, birth control or pregnancy management rest with the patient's physician. The register permits prediction of risk and potential prevention of MR by preconception management of mPKU; it will also facilitate research on mPKU.

**42** A FOUR-YEAR FOLLOWUP STUDY OF THE EFFECTS OF METHYLPHENIDATE ON THE BEHAVIOR AND ACADEMIC ACHIEVEMENT OF HYPERACTIVE CHILDREN. Linda Charles and Richard Schain, University of California School of Medicine, Department of Pediatrics, Los Angeles.

Sixty-two children were evaluated 4 years after their initial referral for symptoms of hyperactivity. Behavioral measures included parent and teacher judgments of behavior and social adjustment. Academic achievement was assessed by teachers' reports, number of failed grades, special education services, and two individually administered achievement tests. Data were analyzed for the total group to determine both the extent to which presenting problems diminished over time and the major problems still present. The effects of stimulant drug therapy on outcome were assessed by dividing the children into groups according to the duration of time they had taken stimulants. Total duration of time on stimulants ranged from 6 months (Group I) to 4 years (Group V).

Results indicated that the symptoms of hyperactivity significantly lessened, but remained higher in these children than in normal peers. Behavioral and social problems were less pervasive than academic underachievement. There were no group differences, indicating that the duration of stimulant intervention did not have a significant effect on outcome. The clinical implication of this study is that the beneficial effects of stimulant drug intervention occur within the first months after initiation of therapy. Long-term treatment does not appear to be of value in producing better outcome.