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DEVELOPMENT OF CHILDREN BORN TO WOMEN WHO RECEIVED METHADONE DURING PREGNANCY. Karol Kaltentbach, Leonard J. Graziani, Loretta P. Finnegan, Jefferson Medical College, Department of Pediatrics, Philadelphia, Pa.

Although evidence suggests that infants of methadone dependent women (IMDW) are within normal range in their mental and motor development, this is predictive neither of later intellectual functioning nor the presence of learning disorders. In order to investigate the possible existence of long-term dysfunction, 25 IMDW who underwent abstinence and 25 control Ss are being evaluated at 4 yrs. of age. To date, 10 male and 11 female Ss have been studied. The addicted group, N=9, \bar{x} age 4.3, were born to methadone maintained women participating in the Family Center Program. The non-addicted group, N=12, \bar{x} age 4.3, were randomly selected from a stratified population of comparable socioeconomic, race and medical backgrounds. Ss were assessed with: Test of Language Development (TOLD), Imitation of Gestures (IM), Motor Free Visual Perception Test (MVPT), Wechsler Pre-school and Primary Scale of Intelligence (WPPSI) and a neurological exam. Group means and standard deviations were:

	IMDW	CONTROLS
TOLD:	N=7 79.29 ± 6.75	N=10 81.00 ± 6.42
IM:	N=9 12.67 ± 3.55	N=12 12.58 ± 4.10
MVPT:	N=6 81.50 ± 12.03	N= 9 81.20 ± 9.93
WPPSI:	N=9 84.33 ± 10.46	N=11 91.54 ± 17.54

A t-test revealed no significant differences between groups on the WPPSI ($t=1.04$, $p<.05$). All neurological exams were normal. This preliminary data suggests that there are no apparent long-term effects on children from prenatal methadone use.

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HIGH RISK NEONATAL FOLLOW-UP IN A COMMUNITY SETTING Steven A. Kardos, Richard Reutter, I. Mark Hiatt & Thomas Hegyi. (sponsored by Margaret Heagarty)

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The community hospital that functions as a level three referral center for neonatal intensive care is the optimal setting for long term follow-up studies of sick neonates. The Regional Newborn Extension Program was started at Monmouth Medical Center in 1977 with the objective of early identification and intervention of neurodevelopmental disabilities in a population of high risk newborns discharged from the Intensive Care Unit.

With the support of the Crippled Children's Program and The Division of Maternal and Child Health in New Jersey, full multidisciplinary (neurologic, ophthalmologic, orthopedic and psychologic) evaluations were performed on 220 patients in 1977, without charge. This model program hopes to demonstrate the cost effectiveness of neonatal follow up care and to ultimately include follow up as an integral part of hospital services for the high risk infants.

By using all of the available community agencies and reporting data promptly after each examination at three month intervals to local pediatricians in a two county area, the Extension Program has become a medical resource to the entire community, as well as a vehicle for clinical research and epidemiological studies.

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CATCH UP GROWTH IN HEIGHT ASSOCIATED WITH IMPROVEMENT IN READING SKILLS FOR MALNOURISHED EARLY SCHOOL AGE CHILDREN IN A POOR COMMUNITY. Robert J. Kard,

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In 1976, nutritional status was identified for 139 kindergarten and first grade children on the basis of height, mid arm muscle circumference (MAMC) and hemoglobin level. Reading levels of children were ranked separately by grade. A correlation between height percentile and reading level was found for children with an MAMC below median for age and sex, ($r=0.28$, $n=0.013$). An excess of the short children were anemic, but no difference in reading skills were found for anemic and non-anemic children. An intervention protocol was initiated for children identified as malnourished.

In 1977, for 47 children in first grade there was an assessment of nutritional status and reading skills for successive years. Children whose height increased the most, also increased most in reading level ($r=0.32$, $n=0.029$). In a model for linear regression, it was found that change in height contributed significantly to change in reading level ($F=4.85$, $n=0.046$).

The percentage of variance for reading level accounted for by height that we found in the U.S. is consistent with findings in underdeveloped countries. Correction of this nutritional deficit was associated with an improvement in reading level. The identification of these malnourished children required a technique not commonly utilized in schools (upper arm anthropometry).

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CURRENT STATUS AND GOALS OF THE COMMUNITY HOSPITAL PERINATAL SERVICE AS DETERMINED BY A SELF-INVENTORY. John Kattwinkel, Lynn J. Cook, George A. Nowacek,

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Regional perinatal care is often criticized because local personnel are uninvolved in determining their "level" category. To intensify local input, we developed a self-assessment inventory of desired care practices and existing resources. The inventory includes a list of 48 high-risk conditions to be classified as requiring local care or referral and a list of 179 items for hospital equipment and staffing. 21 obstetricians (O), 16 pediatricians (P), 16 family physicians, and 84 perinatal nurses from 8 rural hospitals completed the inventories. The results of the inventory were compared with data obtained from 3-day site visits to the hospitals.

O and P consistently felt that over 80% of Level II and III prenatal conditions should be managed locally, but they disagreed about referring neonatal conditions (O=46% refer; P=76% refer). 10.6% of the resources required for desired level of care were stated as not present in the hospitals. These results were 96% consistent with site visit observations. There were conflicting responses on 17.1% of the 179 items (i.e., some responders did not know many of their own resources).

We conclude that 1) patient care goals frequently are not consistent with available resources and 2) the self inventory can replace site visits, identify discrepant patient care goals, accurately assess hospital facilities, and identify existing hospital resources not being utilized.

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A DOSE RESPONSE ANALYSIS OF THE EFFECT OF METHYLPHENIDATE (RITALIN) ON COGNITION OF HYPERACTIVE CHILDREN Marcel Kinsbourne, James Swanson and Laura Kurland

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Methylphenidate (Ritalin) has been used to treat more than a million hyperactive children over the past 10 years, but as is the case with most psychotropic drugs, documentation of its effect has remained on a subjective basis. We have previously reported a paradigm for objectively documenting the time-response characteristics of a single dose of Ritalin on cognition. To provide more objective information about its effect on our patients, we have developed a dose-response paradigm to measure the effect of multiple doses of Ritalin on the ability of hyperactive children to learn and remember new material (a cognitive effect). Twenty-five patients were tested on our learning test each for 5 days as inpatients in the Clinical Investigation Unit of the hospital. A TID dosing schedule was used to establish the following dose conditions: (1) the patient's current dose, (2) $\frac{1}{2}$ of that dose, (3) $1\frac{1}{2}$ of the established dose, and (4) placebo. Tests were given $\frac{1}{2}$ hr., 2 hrs. and $3\frac{1}{2}$ hrs after the 1st and 2nd administrations of each dose, and $\frac{1}{2}$ hr. before the 1st dose and after the last dose; thus a total of 8 tests were given for each dose. We found that a U-shaped function related dose and cognitive performance of the learning test, reflecting a minimal effect an optimal effect, and an overdose effect on learning. We also noted that the overdose effect seemed to make these children more manageable, even though it impaired cognition.

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NORMATIVE DATA FOR AGE AND SEX VARIABILITY IN NEUROMATURATIONAL FUNCTION. Craig B. Liden and Cynthia P. Johnson. School of Medicine, Univ. of Pittsburgh,

Children's Hospital of Pittsburgh, Dept. of Pediatrics, Pittsburgh, (Spon. by Thomas K. Oliver).

A collection of soft neurological signs including horizontal visual tracking, dysdiadochokinesis, motor impersistence, finger differentiation, choreiform movements, stereognosis, synkinesias, stimulus extinction, and laterality were studied in a cross-sectional population of 114 children (5-12y) without learning or behavior problems to determine the effect of age and sex on the variability of their manifestation. The items were viewed as a composite measure of neurologic maturity and scores on individual items were summed and designated the "Neuromaturation Total" or NMT (interobserver reliability= 0.92).

The NMTs demonstrated a curvilinear distribution with the greatest rate of change occurring between ages 6 to 8 years. A non-linear regression model indicated that 64% of the variability in scores was accounted for by age and sex indicating that NMT is a maturational and sex dependent function and not necessarily indicative of specific brain damage. The regression analysis generated a normative equation:

$$NMT(\text{pred}) = -3.195 + [15.24 (1_n \text{ AGE})] + 1.09 (\text{sex})$$

These normative data facilitate comparison of actual versus predicted NMTs and thereby a means to quantify neuromaturation. NMTs can determine if neuromaturation delay is present as a contributing factor in children with learning disabilities, "hyperactivity" or related dysfunctions.