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**MORBIDITY & MORTALITY IN SICKLE CELL DISEASE INFANTS**  
 Maria Cousins, Ranjeet Grover, Doris Wethers, Genetic Screening Program, NYC Health Dept. (MRA) St. Lukes Hospital. All infants born in NYC are screened for sickle cell disease (SCD). This study was conducted to observe the morbidity and mortality among sickle cell infants and to study the correlation between mortality and early comprehensive care provided to the patients (pts.) and their families. In 1982 (1/1-12/31) the Newborn Screening Lab identified 173 newborns with SCD on repeat testing. 168 pts. were followed in sickle cell/hematology clinics over an 11-23 mos. period. 5 pts. were reported to be lost for follow-up despite the counseling given to all parents of the importance of early entry in a comprehensive care system. Written protocols with the infant's name and the screening diagnosis were sent to providers to whom the infants were initially referred. Interesting features reported by the providers were that 7 families in the study had one or more children previously diagnosed with SCD. 6 with "SS" and 1 "S" and in 2 families the older sibling with "SS" had died. Two mothers had "SS" disease, and one mother gave birth to an "SS" infant after knowledge of the hemoglobinopathy by prenatal diagnosis. 33 infants were reported to have had one or more complications. One infant had salm. sepsis, 2 had pneumo. sepsis, 4 had possible sepsis, one had sequestration crisis, 5 had pneumonia, 8 had hand-foot syndrome, and 12 had high fever. One infant from the study group died at the age of 12 mos. as a result of sepsis and D.I.C. No other death was reported by either the parents or by the Bur. of Vital Statistics, NYC Health Dept. Our data suggests that low mortality could be associated with early entry of SCD pts. in a comprehensive care system.

**799** **CONTINUOUS TISSUE pH MONITORING USING A DISPOSABLE, NONGLASS ELECTRODE IN CRITICALLY ILL NEONATES.** Urmila Dahiya, Rama Bhat, Tom McGuire, Joseph Lai, Dharmapuril Vidyasagar, Department of Pediatrics, University of Illinois Hospital, Chicago.

Subcutaneous tissue pH was continuously monitored in 15 critically ill neonates using a miniaturized needle electrode (Biochem International, Milwaukee). This needle electrode consists of a silver wire with chloride at the tip, which is then covered by a H<sup>+</sup> selective polymer. Total length of electrode was 1½". The sensor was calibrated in vitro at room temperature against standard buffers of 7.40 and 6.8. The response time of the electrode in vitro for a step change in pH was 5 seconds. The electrode was applied on the anterior aspect of the thigh using a 20 gauge 1½" I.V. catheter. Electrode was left in situ from 4½ to 67 h (M ± S.D. 26 ± 18). The electrode drift was calculated in each case at the end of monitoring. Umbilical arterial blood gases were obtained for correlation with the tissue pH reading. The data from 15 neonates are shown below. The tissue pH correlated well with the

B.Wt.(G)	C.Age (wks)	Data Points	r	slope	$\bar{x}$	$\bar{y}$	p
M 1805	34	175	0.74	0.81	7.42	7.41	<.00005
S.D.	720	4.5			0.10	0.11	

arterial pH at a wide range of pH values (7.10 to 7.6). Mean drift at the end of the study were 0.16 at 7.40 and 0.15 at 6.8. No complications were seen during or following tissue pH monitoring. Continuous monitoring was useful during the management of problems, such as pneumothorax and septic shock. The electrode is simple and can be applied easily in preterm neonates.

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**FREQUENCY OF MILK EXPRESSION BY MOTHERS OF PREMATURE NEONATES AND MILK PRODUCTION.** M.DeCarvalho, D.Ander-son, A.Giangreco, W.Pittard, CWRU, D.Peds, Cleve,OH  
 Although many mothers delivering prematurely wish to provide expressed milk for their infants, their milk volume is reported to be low. We therefore investigated the relationship between frequency of expression and milk output in 25 healthy mothers of premature infants(GA27to37wks). Mothers expressed milk from day 5 to day 11 postpartum based on card selection, either >4 times/day or ≤3 times/day using an electric pump. Based on a second card selection, milk expression was either maintained at the same frequency or changed to the opposite frequency for a second week. On days 11 and 18 all milk expressed was quantitated. Of the 25 mothers studied, 9 changed expression frequency from >4 times/day to ≤3 times/day or vice versa, while 9 expressed at the same frequency both weeks. Of the 7 remaining women, 5 withdrew because their infants began directly nursing and 2 because they chose not to complete the study. Milk production by the 9 mothers who alternated from frequent to infrequent expression(5) or vice versa(4) demonstrated that frequent expression was associated with a significantly (p<.02) greater milk volume than infrequent expression. Of the 9 mothers who expressed at the same frequency both weeks (1 frequent, 8 infrequent), all had a decline in milk production from week 1 to week 2. The 1 frequent expresser produced the largest milk volumes (651ml and 424ml respectively) in this group. Thus, a low cost, noninvasive method of enhancing milk production by mothers of non-nursing, prematurely delivered infants is to encourage frequent milk expression.

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**A NOVEL APPROACH TO METABOLIC STABILIZATION IN THE NEWLY-DIAGNOSED DIABETIC.** John A. Duncan, John I. Malone. Dept. of Pediatrics, U. of So. Fl.  
 Common practice for the management of the new patient with insulin dependent diabetes (IDD) is hospitalization for institution of insulin therapy, diet and daily home management instruction. Standard protocols include basal insulin doses of 0.5 u/kg/24 hrs. plus supplemental doses of regular insulin every 4-6 hrs. according to urine and blood glucose concentrations. After several days an insulin dose is calculated. We have successfully utilized a new insulin dose regimen in 52 IDD pts. All patients received 1.0 u/kg/24 hrs. of s.c. NPH U-100 insulin which was delivered as 0.5 u/kg BID. Except in 16 pts. hospitalized 6 days or fewer (11 for DKA) all pts. began this regimen as outpatients. Extensive nutritional and daily home management instructions were provided on an outpatient basis. Urine testing for glucose and acetone was performed TID. When all urinary tests were negative for 3 days, the insulin dose was lowered to 0.5 u/kg/24 hrs. administered in 0.25 u/kg BID. Pts. were reassessed at 1 wk, 1 mo., 3 mos. and every 3 mos. thereafter. Insulin dosage was maintained at 0.5 u/kg until an increase in glucose and acetone spillage suggested total insulin dependence. An estimated 250 hospital days and \$98,000 were saved by using this regimen. A dosage decrease to 0.5 u/kg was experienced by 33 of 52 pts. Mean duration of 0.5 u/kg therapy was 7.2 mos.

DECREASE TO 0.5 u/Kg	HOSP/Dx	DKA/Dx	HbA1c/Dx	HbA1c/1 mo.
Yes 33 patients	6	3	12.5 ± 3.0%	7.1 ± 1.4%
No 19 patients	10	8	11.2 ± 2.8%	10.0 ± 2.0%

**802** **URINARY COTININE AS A MEASURE OF TOBACCO SMOKE EXPOSURE IN UTERO AND EARLY INFANCY.**

R. Etzel, R. Greenberg, N. Haley and F. Loda, Department of Pediatrics, University of North Carolina at Chapel Hill & the American Health Foundation, Valhalla, NY. Maternal smoking during pregnancy and after birth has adverse effects on infants. However, studies to date have not used quantitative measures of infant tobacco smoke exposure. A RIA for cotinine, the major metabolite of nicotine, has been used for this purpose in adults. We studied whether urine cotinine could be detected in exposed newborns and young infants. Urine was collected every 12 hrs for the first 5 days of life from 7 newborns of smoking mothers and 1 control, all isolated from tobacco smoke after birth. Initial mean cotinine/creatinine in exposed newborns was 1884 ng/mg (range 364 to 3888 ng/mg); these are comparable to values found in non-smoking adults with workplace tobacco smoke exposure. The control infant had only 18 ng/mg. Cotinine elimination half-time was 56 hrs, more than twice that seen in adults. Urine cotinine was measured in 18 non-hospitalized, non-exposed infants and in 28 infants with at least 2 recent exposures. Mean cotinine/creatinine from exposed infants was significantly greater (p<0.0001) than from non-exposed (459 vs 19 ng/mg), with a direct relationship between cotinine excretion and number of cigarettes consumed daily by the mother (r=0.64, p=0.0001). Urine cotinine is an easily obtainable and reliable measure of infant tobacco smoke exposure.

**803** **PHYSICIAN KNOWLEDGE AND CLINICAL BEHAVIOR REGARDING CHILD AUTO SAFETY.** Marilyn M. Faber, Sue K. Hoppe, Andrew K. Diehl (Spon. by John A. Mangos, The University of Texas Health Science Center at San Antonio).

A survey was conducted in May, 1982 of physicians practicing in child related medical specialties (pediatrics, family practice, and general practice) in San Antonio to assess their influence on patients' knowledge, attitudes, and behavior regarding child auto safety. A 47-item questionnaire was mailed to 361 physicians; 139 (37.5%) returned the questionnaire. 13 true-false and multiple choice questions were used to construct a multi-item index of knowledge of child auto safety; other questions elicited sociodemographic data and personal and professional behavior with respect to child auto safety. The knowledge index was significantly correlated with doctors own use of seat belts, number of children under 5 years old, exposure to child restraints during residency, clinical behavior (asking about use of child restraints during the first well-child visit and subsequent visits, instructing parents about child auto safety, dispensing child auto safety literature in their office), being a pediatrician and being board certified. Knowledge was inversely correlated with age of the physician. However, child auto safety education of parents by physicians was generally found to be sparse and infrequent. (Of the total group, only 14% always ask at the first well-child visit if child restraints are being used, 3% always instruct parents, 4% considered themselves very familiar with the subject, 26% have literature in their offices.) Only 8% received such training during their residencies, pointing toward a need for including this subject in physician education. The dispensing of this potentially live-saving information by doctors might be a partial answer to the low motivation among mothers not now using child restraint devices.