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## NEWBORN SCREENING FOR SICKLE CELL DISEASE IN GHANA

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Screening of newborns for SCD allows early initiation of prophylactic therapy, parental education, and comprehensive management, resulting in reduced mortality. Since April 1993, a demonstration project to develop and implement a program of newborn screening for SCD has been conducted in Kumasi (Ghana) by the Comprehensive Sickle Cell Center, the Children's Hospital of Philadelphia (CHOP), in collaboration with the Ministry of Health and other institutions in Ghana.

**Methodology:** Babies are screened at birth or at well-baby visits within days or a few weeks after birth. Mothers are asked to come for results within 4 weeks and failing that, an extensive tracking system is used to deliver results to the homes of families with babies with possible-SCD (P-SCD). Tracking relies solely on information obtained from mothers at the time of screening. The goal is to enroll P-SCD babies into the sickle cell clinic by eight weeks of age. Pregnant women, parents with children and the general public are regularly educated about the screening program. Children with SCD receive comprehensive care through the Sickle Cell Clinic at Komfo Anokye Teaching Hospital.

**Results:** From February 13, 1995 (when newborn testing was started) to December 31, 2004, a total of 177,283 babies were screened through 8 public health institutions and 11 private clinics in Kumasi and one maternity centre in Tikrom, a nearby, rural community. A total of 3,346 (1.9%) babies were identified as having P-SCD with the following Hb phenotypes by isoelectric focusing: 1,847 (1.04%) FS; 1,478 (0.83%) FSC; 6 (0.003%) FSA; and 15 (0.008%) Other. Screening and Tracking Results: Feb. 1995 – Dec. 2004

	No.	%
Total no. of babies screened	177,283	
Babies with P-SCD	3346 1.9	(of babies screened)
Under active tracking (newly diagnosed)	(116) 3.5	(of P-SCD babies; excluded)
Total P-SCD accounted For	323096.5	(of P-SCD babies; reported)
Lost to follow up/never found	(455) 14	(of P-SCD babies; reported)
Dead before contact made	(31) 0.9	(of P-SCD babies; reported)
No. contacted with results (Eligible for enrolment) - Came for results - Through Home visiting	274464	(of P-SCD babies; reported) 22 (of those contacted)
Eligible But Not Enrolled After Contact	37813.8	(of those eligible)
Enrolled In Clinic	236686.2	(of those eligible)
Known Deaths After Enrolment	109 4.6	(of those enrolled)

**Conclusions:** Screening and follow-up of newborns for sickle cell disease is feasible in a developing country in Africa. Extra effort in tracking is necessary to ensure that babies with disease are found early and referred for medical management.

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## DETECTION OF FETAL EXPOSURE TO ENVIRONMENTAL PESTICIDES: A COMPARISON OF VARIOUS MATRICES

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The exposure of pregnant women to environmental pesticides may be harmful to the developing fetus. Our aim was to determine the best matrix to detect fetal exposure to these toxicants.

**Methods:** Pregnant women were recruited at midgestation from a town in the Philippines where our preliminary survey showed significant use at home or farm of the following pesticide/herbicide: cyfluthrin/proproxur (73%), chlorpyrifos (37%), cypermethrin (31%), pretilachlor (28%), bioallethrin (26%), malathion (15%), diazinon (12%) and transfluthrin (11%). Maternal hair and blood were obtained upon recruitment [hair A (n=686), blood A (n=466)] and at birth [hair B (n=493), blood B (n=361)]. Umbilical cord blood (n=346), infant hair (n=345) and meconium (n=342) were obtained at birth. All samples were analyzed for the above compounds by GC/MS.

**Results:** Analysis of meconium detected the highest fetal exposure rate (% positive) to the toxicants: propoxur (39.2%), diazinon (0.3%), malathion (0.6%), bioallethrin (0.3%), pretilachlor (1.6%), DDT (0.9%) cyfluthrin (0.3%) and cypermethrin (3.5%). Cord blood was only positive for propoxur (3.5%) and infant hair for propoxur (0.3%) and chlorpyrifos (0.3%). By meconium analysis, 40% of the infants were exposed to 1 pesticide and 3% to 2 pesticides. Maternal hair showed the next highest exposure rate, particularly in samples taken at delivery: propoxur (14.2%), chlorpyrifos (0.4%), bioallethrin (9.1%), pretilachlor (0.2%) and DDT (0.6%). Correlations among matrix for propoxur were significant ( $p < 0.02$ ) between meconium and cord blood ( $r = 0.231$ ), maternal hair A and B ( $r = 0.22$ ), maternal blood A and B ( $r = 0.120$ ), maternal blood B and cord blood ( $r = 0.245$ ). High exposure to propoxur was due to use of spray insecticide (Baygon) at home by pregnant women (43%).

**Conclusions:** Prenatal exposure to environmental toxicants is best detected by the analysis of meconium and maternal hair. Since meconium is fetal in origin, it represents the best matrix to detect fetal exposure to environmental toxicants.

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## AGGRESSION TOWARDS PAEDIATRICIANS AND TRAINEE PAEDIATRICIANS IN THE NETHERLANDS

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During the last decennia aggression seems to become more commonplace in society. Almost all occupations, including the medical profession encounter it. However, many medical practitioners regard paediatrics as a caring profession treating ill and vulnerable children and do not associate it with any risks of aggression.

**Aim of the study:** To determine the extent of aggression which paediatricians and trainee paediatricians in the Netherlands suffer from patients and their family members.

**Design:** Cross-sectional survey

**Method:** Data were collected using anonymous questionnaires distributed to doctors working in the field of paediatrics in the Netherlands during the annual Paediatric Congress of the Paediatric Association of the Netherlands.

**Results:** A total of 401 questionnaires were distributed and 400 were returned. Of these 395 were suitable for analysis. Of the respondents, 78% reported that they had, at some time in the course of their work, been confronted with aggression. Verbal aggression was the most common form (75% of the respondents) and it was experienced mainly by doctors with little work experience (63% in the preceding year). Physical aggression was experienced by 17% and threats by 24% of the respondents. In 96% of cases the perpetrator of the aggression was a parent or family member of the patient. Fourteen percent of the doctors who had been confronted with aggression said that this had had serious consequences for their wellbeing, including fear, anxiety and loss of work enjoyment. In 22% of cases the aggression led to a change in medical policy for the patient, such as earlier hospital admission or discharge. Only 20% of the respondents said they were aware of the existence of training programmes on dealing with aggression in their hospital.

**Conclusion:** Aggression towards paediatricians in the Netherlands is a serious problem.

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## MANNOSE BINDING LECTIN IN MOTHERS AND INFANTS: THE MIMI-STUDY

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**Introduction:** Functional Mannose Binding Lectin (f-MBL) may play an important role in the immune system of the neonate. No studies have been done in mothers and their infants at delivery involving f-MBL. Therefore, it is unknown if f-MBL in umbilical cord blood (UCB) is related to maternal f-MBL.

**Aims of study:** To determine the relation between f-MBL in mother and child at birth and to compare arterial and venous UCB f-MBL levels.

**Materials and methods:** The levels of f-MBL in arterial UCB of term infants delivered by elective Caesarean Section and in venous blood of the mothers sampled just before the procedure, were measured with a one-step haemolytic assay. In a subgroup of infants, both arterial and venous UCB was obtained. Statistical analysis was done by Wilcoxon signed rank test, Spearman's Rho test and paired T-test.

**Results:** 48 Paired mother-infant samples, including two bi-amniotic, bi-chorial twins, were obtained. The median f-MBL level (range) was higher in mothers than in arterial UCB: 1,016 (0,121-4,253) microg/ml and 0,701 (0,045-2,359) microg/ml respectively ( $p = 0.002$ ). There is a significant correlation ( $R_2 = 0.16$ ,  $p = 0.0007$ ) between maternal and UCB f-MBL levels. In 3 mothers with f-MBL deficiency, normal f-MBL levels in UCB were found. One pair of twins had different f-MBL levels (2,031 and 1,096 microg/ml respectively). In 14 infants, f-MBL was measured both in arterial and venous UCB. Arterial levels are slightly lower than venous levels, but the difference is not significant ( $p = 0.2$ ).

**Conclusions:** The f-MBL level in UCB of term infants is significantly lower than the f-MBL level of their mothers. There is a weak correlation between maternal and UCB f-MBL levels. There is no significant difference between arterial and venous UCB f-MBL. UCB f-MBL seems, at least partly, derived from the fetoplacental unit.

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## AWARENESS OF ADVISORIES FOR MERCURY IN FISH

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**Background:** Methyl mercury, a known neurotoxin, is found primarily in fish. No prior studies have investigated inner-city population awareness of these guidelines. Objective: To determine knowledge of the federal commercial fish mercury advisory among an inner city population.

**Design/Methods:** A cross-sectional survey of subjects using a 14-item questionnaire that was pilot-tested and modified by a group of experts and then administered by the same researcher to all subjects. We inquired about awareness of the source of methyl mercury toxicity, at-risk populations for mercury toxicity, and knowledge of the types of fish that should be both avoided and limited in the diets of the at-risk population.

**Results:** 1000 subjects participated, of whom 85% were women, 73% were women of childbearing age (defined as younger than age 40), 43% were African American, and 42% were Hispanic/Latino. Overall, 44% of participants did not know that children should limit fish intake, 42% did not know that mercury was found in high levels in certain fish, and 40% did not know that nursing mothers should limit fish intake. When asked about young children, nursing mothers, pregnant women, and women who may become pregnant, 52% of subjects were unaware about limiting the consumption of tuna, 50% did not know the guidelines for swordfish, and 42% did not know the advisory for shark. Similarly, 53% of subjects did not know the recommendations for consumption of shrimp.

**Conclusions:** A substantial number of subjects were unaware of the federal recommendations for commercial fish consumption. The majority of participants were women of childbearing age, a target population for the advisories. Inner city children have been shown to be at increased risk for developmental delays and thus, may be more vulnerable to mercury toxicity. Our findings suggest a need for further education targeted to this at-risk population.