

Motherisk Drug Testing Newsletter for Children's Aid Societies

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Editor – J. Gareri

Dear Colleagues:

We are very pleased to present our third Newsletter, dedicated to you. We value greatly the relationships we have developed with you over the years and aim to provide you with service as comprehensive as possible from analysis to interpretation and beyond. You are our partners in important clinical and research work in protecting the health of high-risk children; together we advance the state of knowledge in this evolving field.

*All the best and season's greetings,
Dr. G. Koren, Director
The Motherisk Program*

THE NEXT GENERATION OF SECOND-HAND EXPOSURE RISKS: THE GROWING ISSUE OF CHILDREN IN METH LABS AND MARIJUANA GROW-OPS

Over the last decade we have seen increased media reporting of law enforcement agencies discovering marijuana grow-operations and "meth labs" (producing crystal methamphetamine) in residential areas. This has brought to the forefront the serious public health issues associated with this illegal practice. Children living in places where drugs such as MDMA ("Ecstasy") or Crystal Meth are manufactured are at high risk for exposure to multiple health hazards including the drugs of abuse themselves (either by accidental ingestion or as a means for child abuse), strong chemicals such as acids, alkalis, and solvents, and other grave risks such as unguarded firearms and violence. These children are commonly referred to as 'Drug Endangered Children' by the police and legal system.

Two years ago, because of the increase in numbers of these labs and grow-ops detected by police, the Motherisk Program at the Hospital for Sick Children initiated, in collaboration with the Children's Aid Society (CAS), a program to follow all children found to reside in homes where methamphetamine

laboratories and marijuana grow-ops were found. Through this collaboration, we hope to identify the risks associated with these environments, the extent of which is currently unknown.

Exposure to drugs can be evaluated in different matrices (ie, urine, hair, blood), each having its advantages and disadvantages. Urine and/or blood testing can usually provide an estimation of exposure in the few days or hours preceding the sampling but can neither disclose exposures further in the past nor provide an estimation of the level of chronic exposure or passive (i.e. "second-hand") exposure. Hair, on the other hand, allows estimation of exposure over weeks or months.

Our clinicians at the Motherisk Program have recently published a brief report in the journal *Clinical Pediatrics* detailing the clinical assessment of two young girls (age 14 months and 8 years) found residing in an Ecstasy Lab, both positive for methamphetamine through hair analysis. In such cases, complete investigation and comprehensive review of the laboratory

results, home environment, detailed medical and social history, child's performance in school, and thorough laboratory examination are recommended before coming to any decision that may affect the life of the children involved.

If you wish to have a child found in a marijuana grow-op or meth lab evaluated at the Motherisk Clinic, please call us at (416) 813-5312 to arrange an appointment.

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INTERPRETATION OF HAIR TEST RESULTS: AN UPDATE

We are often asked, "Can you test for alcohol use?". Since May of this past year the answer is "Yes, we can!". While Motherisk has offered meconium analysis for prenatal alcohol exposure for many years; we have now added adult hair analysis for alcohol abuse to our list of services.

This method was pioneered by leading forensic toxicologists in Germany, where it routinely used in the context of driver's license re-granting after impaired driving convictions. In partnership with this group, we have now established alcohol hair analysis in the Motherisk Laboratory available to social services from coast to coast.

Since alcohol is a legal drug, detecting

any alcohol consumption is not very useful, nor is it feasible analytically. The alcohol hair test {Fatty Acid Ethyl Ester (FAEE) analysis} distinguishes moderate drinking from *regular excessive alcohol consumption*. Due to the particularities of how these FAEE deposit into hair, alcohol hair analysis cannot be segmented in the same way that drug tests can; rather, alcohol hair analysis is done in the first six centimetres of hair to determine **the average level of alcohol consumption over the six months prior to hair sampling**.

The following table shows the cut-offs associated with FAEE hair analysis and is provided with sample results when they are issued:

FAEE concentration	Classification	Interpretation
> 1.0 ng/mg (POSITIVE)	Chronic Alcohol Abuser	-100% specific for regular, excessive alcohol consumption -25% of chronic alcohol abusers will test below this level
0.50 – 0.99 ng/mg (POSITIVE)	Chronic Alcohol Abuser	-90% specific for regular, excessive alcohol consumption -10% of chronic alcohol abusers will test <i>below</i> this range -10% of moderate drinkers will show results <i>in</i> this range
< 0.49 ng/mg (NEGATIVE)	Moderate/ Non-drinker	-no evidence of excessive alcohol consumption (up to 20g of alcohol per day; ~ 2 drinks)
< 0.20 – 0.40 ng/mg (NEGATIVE)	Non-Drinker (abstainer)	-no evidence of alcohol consumption

We can conduct alcohol hair analysis on adult scalp hair only. Unfortunately, chronic alcohol consumption cannot be determined in

body hair. Neonatal hair analysis for late gestational prenatal alcohol exposure is an area we are actively researching.

Frequently Asked Questions

Q. What if the drug I want to test my client for is not listed on your requisition form?

A. We understand that you may not know what drug class (i.e. opiates, benzodiazepines) your drug of interest belongs to; if you do not see your drug of interest on our chain of custody requisition, just write the name of the drug in yourself. Do your best to spell it correctly, if we offer a test for it, we will conduct the appropriate analysis.

Q. Do you require consent to do a hair test for drugs?

A. Any sample taken from an adult requires their consent. We do not conduct any analysis unless all the appropriate documentation, including consent, is received. Children's and newborn's samples require consent of the legal guardian.

Q. When can a physician order a test on a newborn?

A. A physician is allowed, by medical ethics, to order any test deemed necessary in the course of care for a child. Parental consent is not required for newborn drug analysis in urine; and neither is it

required in drug analysis of meconium or hair, when a physician suspects prenatal substance abuse. Because physicians may be less familiar with meconium and hair toxicology, they may be uncomfortable in ordering it without consent. This is, of course, their prerogative. It may be advisable to obtain consent for newborn hair analysis, since the cutting of hair may violate cultural beliefs in certain populations.

Q. How can I get an interpretation of my hair test results? Can I get the interpretation in writing? What if the judge wants an expert witness?

A. Don't worry, at Motherisk we place very high importance on providing you, the social worker, with all the tools we can offer to do your job effectively. Highly qualified staff are available by phone for interpretations (416-813-5780); if you cannot reach us, you can always leave a detailed voicemail or send an email to hairtest@sickkids.ca. We absolutely return all calls and e-mails in a timely manner. After discussing an interpretation with our staff, if you feel the situation requires a written interpretation for court, we will provide one to you at no additional cost. We are also available to provide expert testimony when required and travel across Canada to do so several times per year.

Eye on Research

The following is a sneak peek at some of the research currently underway in the Motherisk lab. Each research project is approved by the Hospital for Sick Children's research ethics board, and conducted according to strict research protocols. When it is complete, this study will be published in a peer-reviewed scientific journal where it will become one of over 300 Motherisk research articles published since 1985.

RISK OF FETAL ALCOHOL EXPOSURE AMONG NEWBORNS IN A HIGH RISK UNIT

Ingrid Goh, Janine Hutson, Joey Gareri, Henry Roukema, Hazel Lynn, Gideon Koren

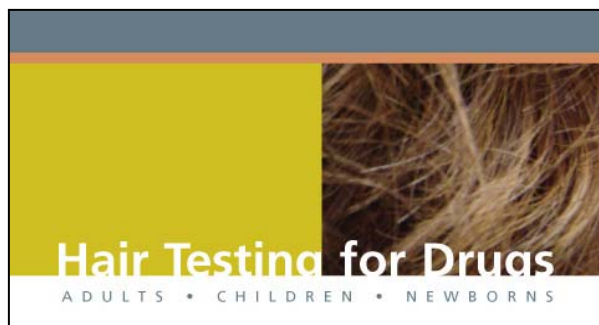
Fatty acid ethyl esters (FAEEs) are sensitive and specific markers for prenatal alcohol exposure found in meconium. A previous study reported a 2.5% prevalence of FAEE positive meconium in Grey-Bruce, Ontario. However, this study excluded high-risk maternal and neonatal subjects transferred to tertiary healthcare in London, Ontario. The objective of our study was to measure the prevalence of FAEE positive meconium of Grey Bruce babies delivered in tertiary healthcare setting. We hypothesized that there will be higher positive rates in tertiary versus primary healthcare settings due the association of alcohol involvement with high risk pregnancies.

Babies born to Grey-Bruce residents referred to St. Joseph's Health Care London due to high risk were identified. Mothers were informed of the anonymous prevalence study and were provided specimen bags and instructions on meconium collection. Mothers declining to participate indicated so by marking the bag. All specimen bags were placed in -20°C freezer. The meconium was

transported on dry ice to The Hospital for Sick Children where FAEEs were quantified using gas chromatography-mass spectrometry.

Forty-six meconium specimens were collected from August 1, 2006 – August 1, 2007. Twelve specimens (26%) tested positive for FAEEs. This translated to a 10-fold higher rate than babies born in primary healthcare settings ($p < 0.0001$).

Referral to a high risk tertiary unit confers a ten-fold increased risk for *in utero* alcohol exposure. Efforts should be directed towards implementing screens for infants born in these environments and instituting appropriate follow-up programs.



CALL 416-813-8572 TO:

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Get testing results
Get help interpreting results

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