

Motherisk Drug Testing Newsletter for Children's Aid Societies

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Editors – J. Gareri, M. Moller

Dear Colleagues:

We are very pleased to present our fourth Newsletter, dedicated to you. As always, our newsletter is here to provide you with insight into our field, Frequently Asked Questions, and a sneak peek into some of the research work we have been conducting. Our best wishes go out to you as we embark upon this new decade.

*All the best,
Dr. G. Koren, Director, The Motherisk Program*

TOXICOLOGY AT MOTHERISK: “HERE ARE YOUR RESULTS, PLEASE ASK ME WHAT THEY MEAN”

When the Motherisk Laboratory began offering hair & meconium analysis for drugs of abuse towards the end of the last millennium, we believed we were merely offering social service agencies access to a novel and advantageous method of long-term substance abuse monitoring. What we have discovered over the following ten-plus years of service in the field of child welfare was that we were also filling a major gap in support required by social workers on the front line.

At the Motherisk Program, we have built a history of evidence-based information dissemination starting with our Medication Safety in Pregnancy telephone counseling service back in 1985. As the Motherisk Drug Testing Laboratory developed over the years, we adopted the philosophy that providing meaningful interpretation of test results is just as important as providing the results themselves. To this end, we have always ensured that we remain available by telephone or email to answer questions- we are determined to answer all calls and return all emails received here in the lab. What we have found, and many of you could attest to this, was that our free consultations had snowballed into one of the major components of our service. The lag-time for email and

telephone responses stretched as more and more social workers and social work agencies contacted us for assistance in interpreting results, formulating hair testing schedules for their clients, and assisting with other drug-related inquiries where possible.

In response to this increased demand, and our recognition that consultations are just as important as the drug tests themselves, the Motherisk Laboratory is proud to announce to you that we have increased our consultation staff by 300%. The Motherisk Laboratory now has dedicated counselors available daily for interpretation of hair and meconium results. All of our counseling staff members possess medical or graduate degrees in the field of toxicology, trained here in the Division of Clinical Pharmacology & Toxicology at the Hospital for Sick Children. We are very pleased with this development, as it is the only counseling service of its kind in Canada.

We recognize that social workers are often called on to deal with materials outside their own expertise dealing with the incredibly complex situations they are charged to resolve. It is our goal to alleviate the burden by providing comprehensive support. We are the toxicologists so you don't have to be. To

this, the Motherisk Laboratory staff is currently collaborating on writing and publishing a comprehensive review paper and mini-textbook dedicated to drug testing in the field of social work. We will notify you all when these materials are ready.

So as we move into the new decade, we want to encourage you to call us with your questions, book us for your training days, and let us know what you need to do your job right.

Motherisk Drug Testing Laboratory:

(416) 813-8572

Ext.1 – hair test clinic appointments

Ext. 2 - administrative inquiries

Ext. 3 - interpretations/general inquiries

hairtest@sickkids.ca

INTERPRETATION UPDATE:

HAIR TESTING CHILDREN FOR PASSIVE DRUG EXPOSURE

One of the major benefits of hair analysis is that it not only provides information about active drug use, but because the hair is located external to the body, it can absorb valuable information about environmental drug exposure. This is of particular benefit when assessing child safety concerns due to parental drug use.

It is important not to jump to conclusions regarding what positive hair tests in children mean. Due to the fact that there are many disturbing case reports involving young children administered illegal drugs, social workers often assume that positive hair test results in children indicate drug ingestion. This is not always the case; in fact, in over 90% of cases where a parent's hair test result is positive for cocaine, the children in the home test positive for cocaine as well. What can make the situation more confusing is the presence of benzoylecgonine (i.e. cocaine metabolite) in children's hair.

The presence of benzoylecgonine (cocaine is converted to benzoylecgonine by the body after administration of the drug) is generally a confirmation of active cocaine use in adults. In children, especially infants and toddlers, frequently handling by regular cocaine users can result in the transfer of benzoylecgonine present in caregiver sweat to the child's hair. This means that the

presence of benzoylecgonine in a child's hair sample indicates a risk of systemic (i.e. internal) cocaine exposure; but **is likely only present as a result of external passive exposure to cocaine.**

Systemic exposure to cocaine, thought to be rarer, can occur through extensive inhalation of second-hand cocaine smoke or ingestion of the drug. The most common sources of passive exposure to cocaine in young children are: the presence of cocaine smoke (i.e. "crack") in the air, contact with powder cocaine residues present on surfaces in the home, or transfer from a contaminated caregiver who is a regular cocaine user.

Due to a number of factors, it is common for older children in families with cocaine-using caregivers to exhibit lower results than their younger siblings. First, in the case of passive cocaine smoke exposure, very young children have higher respiratory rates than older children and adults, making passive inhalation more significant with decreasing age. Second, older children are handled less, and therefore have a lower rate of cocaine transfer via hand-to-hair contact with using caregivers. Third, older, school-age children tend to spend less time in the family home and therefore have a lower average duration of exposure to the cocaine-contaminated environment.

Essentially a positive drug test result in child hair indicates that:

- i) This child has a caregiver who is a regular user of the drug in question;
- ii) This child's home environment may be contaminated with drug residues or drug smoke;
- iii) This child may be at risk for drug ingestion or inhalation.

It is important to bolster your understanding of the child's level of risk by incorporating information from the home inspection into your assessment of positive hair test results. For example, does the home smell like smoke? If the answer is yes, this significantly raises the risk of inhalational exposure. If caregivers are smoking their cigarettes inside, they are more likely to be smoking their other drugs (e.g. cocaine, marijuana) inside as well. If the home does not smell smoked in, then caregiver-handling (soon after drug use) is the more plausible explanation for the positive results.

Frequently Asked Questions

Q. Can I order a segmented test for alcohol (FAEE)?

A. Due to the mechanics of how fatty acid ethyl esters (FAEE) are incorporated into hair, we cannot conduct segmental analysis the same way we do for drugs of abuse. Alcohol testing is limited to two options: examining **the last three months**, or **the last six months**. Prior to this year alcohol testing was limited only to six-month analyses, but the recent release of updated alcohol-testing guidelines from the international forensic Society of Hair Testing has enabled us to now offer three-month testing for alcohol.

Q. What information is required to order a test?

A. When we receive a hair sample, it is generally accompanied by our Chain of Custody Requisition form. This form is available by contacting our Laboratory's Administrative Assistant at 416-813-8298. The requisition contains the information needed to complete a test. It is very important to ensure that the information written on the chain of custody forms is printed legibly and is complete. A date of birth should *always* be provided, the *collector* and *donor consent* sections of the chain of

custody requisition must be complete with signatures and dates or testing cannot proceed. Finally, please ensure that the organization information is complete – we require the name, address, phone and fax numbers of the agencies that are to be billed and to whom the results should be sent.

Q. I have no idea what drugs to test for, what should I look for?

A. Cocaine is by far the most common drug detected in our laboratory. Amphetamine and its derivatives (e.g. 'speed', 'crystal meth', 'Ecstasy', MDMA, 'uppers') are also a major concern along with oxycodone (Percocet®, OxyContin®, Percodan®, and Endocet®) and other opiate drugs of abuse such as codeine (Tylenol-3®, Tylenol-4®), hydrocodone (Vicodin®), hydromorphone (Dilaudid®), and oxymorphone (Numorphan®). All the above drugs will be detected by ordering: i) cocaine, ii) opiates, iii) oxycodone, iv) methamphetamine, and v) amphetamine. Marijuana is one of the most commonly used illicit drugs in North America, however, it appears to be that many social workers are not overly concerned about marijuana use, as they are often dealing with 'harder' drugs. Ultimately, you should gravitate towards

testing for drugs that you have existing concerns about. It is important to keep in mind that the cost of testing is per drug, per segment; so be sure to order tests that will be of use to you in your assessment. If you have further questions or are looking for testing recommendations for a particular client, please feel free to contact the laboratory for guidance.

Q. My client has admitted to frequent marijuana use, but her test result is negative. Is there something wrong with her sample?

A. Due to the physical and chemical properties of cannabinoids, they are not incorporated into hair to the same degree as other drugs of abuse. In fact, the

incorporation rate of THC (the active ingredient in marijuana) is over 100 times less efficient than cocaine. Because of this, the concentrations of cannabinoids that are found in hair are much lower than other drugs and individuals generally must smoke, at minimum, several marijuana cigarettes (i.e. "joints", "spliffs") a week in order to test positive in hair.

A negative result for cannabinoids, therefore, while providing no evidence of cannabis use, cannot be used to rule out cannabis use during the respective time period tested. In spite of the lack of sensitivity of testing for marijuana in hair, over twenty-five percent of the hair samples we test are positive for cannabinoids, indicating frequent use by these individuals being monitored by social services.

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.

Agreement between FAEE Hair Test for Alcohol and Social Workers' Reports

Vivian Kulaga, Joey Gareri, Netta Fulga, Gideon Koren

Abbreviations: FAEE: fatty acid ethyl esters, OR: odds ratio

Aims

To examine the relationship between social worker reports and the FAEE test as biomarker for heavy alcohol use.

Design, Setting, Methods

In 2005, a diagnostic program to detect excessive alcohol use by FAEE hair analysis was established examining social service clientele at high risk for heavy drinking in the

context of parenting and/or pregnancy. All cases submitted by Child Protective Services (CPS) between May-December of 2007 (n = 172) were included, comparing social worker reports to FAEE test outcome by odds ratio analysis. A sub-analysis of mothers (n = 119), excluding fathers, was also performed.

Results

Factors associated with testing positive for hair FAEE in parents, and mothers alone, were: knowledge of a specific instance of problem drinking within the past 6 months (OR = 5.11, 2.57-10.16), (OR = 8.51, 3.59-20.18), respectively, and third party reports alleging alcohol abuse (OR = 3.31, 1.69-6.46), (OR = 3.30, 1.45-7.50), respectively. Mothers that admitted to heavy drinking were also seven times more likely to test positive for hair FAEE (OR = 6.74, 1.50-30.38) than

