CRIMINAL LAWYERS' ASSOCIATION

Submissions of the Criminal Lawyers' Association

Motherisk Hair Analysis Independent Review

Submitted to:

Motherisk Hair Analysis Review
c/o Joanna Arvanitis
Executive Coordinator
155 Wellington St. W. 35th Floor
Toronto, ON M5V 3H1

Prepared by:

Daniel Brown
Mark Halfyard
Vincenzo Rondinelli

Submission date: March 31, 2015

CRIMINAL LAWYERS' ASSOCIATION, 189 Queen Street East, Suite 1, Toronto, ON M5A 1S2
Tel: 416-214-9875 / Fax: 416-968-6818
www.criminallawyers.ca / anthony@criminallawyers.ca

The Criminal Lawyers' Association: Who We Are

The Criminal Lawyers' Association (CLA) represents more than 1300 members. Our membership consists primarily of criminal defence lawyers in Ontario.

Among our considerable contributions to the justice system, a large portion of our efforts relate to ensuring access to justice in the criminal law context and protecting the civil liberties of Canadians. The majority of our members' clients are part of vulnerable groups in one way or another. Both our organization and our members routinely assist individuals with mental health issues, marginalized racial groups, the impoverished, and the uneducated.

The CLA has routinely made submissions with respect to policy decisions both provincially and federally. The CLA has also intervened as an interested party in significant litigation that concerns important criminal law matters and the concerns of its members, both at the Ontario courts and the Supreme Court of Canada.

The Concern About Motherisk

The CLA is extremely concerned about the validity of test results produced by the Motherisk Drug Testing Laboratory (MDTL) between 2005-2010 for use in criminal cases. This concern stems predominantly from the fact that MDTL was not operating as a forensic lab between 2005-2010, nor did MDTL adhere to appropriate international standards established for forensic hair testing analysis. Notwithstanding this lack of accreditation or adherence to forensic standards, the results of MDTL were used as evidence in criminal cases. The lack of adherence

CRIMINAL LAWYERS' ASSOCIATION, 189 Queen Street East, Suite 1, Toronto, ON M5A 1S2
Tel: 416-214-9875 / Fax: 416-968-6818
www.criminallawyers.ca / anthony@criminallawyers.ca

to forensic standards, which is essential to the accuracy and/or reliability of test results, has potentially led to the wrongful conviction of at least one individual.

At the outset, it is important to state that there are very few examples the CLA uncovered where MDTL testing was known to be used in criminal cases. The *Curriculum Vitae* of Joey Gareri[1], who holds the position of Laboratory Manager at Motherisk since 2005, indicated that as of May 2009 he had testified as an expert in criminal matters in the Ontario Court of Justice in the Central West, Central East and Toronto Regions. The nature of the evidence he provided or the number of times he testified in such proceedings remains unknown. It is also unknown the number of times that Dr. Gideon Koren has testified at trial in criminal matters on behalf of Motherisk. Only one such criminal case was brought to our attention which fell within the scope of this review.[2]

The *Broomfield* Case

In 2010, Tamara Broomfield was found to have administered cocaine to her son, Malique, over a 14-month period. She was convicted of aggravated assault and administering a noxious substance in relation to the cocaine allegations. Ultimately, Ms. Broomfield's convictions related to the cocaine counts were vacated by the Court of Appeal.[3] At the appeal, concerns were raised through the admission of fresh evidence over the methodology used in the analysis of the hair samples supporting the cocaine counts and validity of the test results given in evidence at trial.

---

[1] *Curriculum Vitae* of Mr. Joey Gareri, May 2009
[2] *R. v. Broomfield*, [2010] O.J. No. 3102 (S.C.J)
[3] *R. v. Broomfield*, [2014] O.J. No. 4903 (C.A.)

CRIMINAL LAWYERS' ASSOCIATION, 189 Queen Street East, Suite 1, Toronto, ON M5A 1S2
Tel: 416-214-9875 / Fax: 416-968-6818
www.criminallawyers.ca / anthony@criminallawyers.ca

At trial, the judge relied heavily on the expert evidence provided by MDTL to support the cocaine related convictions.[4] After Ms. Broomfield was convicted, an application to reopen her case and declare a mistrial was brought by her new counsel prior to sentencing. One issue raised at that application hearing was whether her original trial counsel failed to properly challenge Motherisk's hair testing analysis. From the evidence called on the reopening, it was clear that her trial counsel did not understand the science underpinning the hair tests and that he did not appreciate the limitations of the tests conducted by MDTL.

Mr. Joey Gareri was called as an expert witness by the Crown at Ms. Broomfield's preliminary inquiry to interpret the MDTL hair results. At no time during his evidence in chief or in cross-examination did he explain that Motherisk was not a forensic laboratory. He also did not identify MDTL did not adhere to international forensic standards. He did not explain the difference between immunoassay testing and gas chromatography with mass spectrometry (GC-MS) nor did he make clear that immunoassay testing was merely a presumptive test for the presence of cocaine *requiring further confirmation tests*. In fact, Gareri went further by misstating that "[MTDL] uses an immunoassay that's verified by GC-MS".[5] No such verification by GC-MS was done in the *Broomfield* case, which is required by established forensic standards.[6]

---

[4] *R. v. Broomfield*, [2014] O.J. No. 4903 (C.A) at 8
[5] *R. v. Broomfield*, Preliminary Inquiry Evidence of J. Gareri at p. 163
[6] *R. v. Broomfield* (C52434), Fresh Evidence, Evidence of Dr. Douglas Rollins, July 16th, 2014 at pp. 89 – 143

CRIMINAL LAWYERS' ASSOCIATION, 189 Queen Street East, Suite 1, Toronto, ON M5A 1S2
Tel: 416-214-9875 / Fax: 416-968-6818
www.criminallawyers.ca / anthony@criminallawyers.ca

The Identified Issues With Motherisk

From the fresh evidence adduced on the *Broomfield* appeal, it is evident that during the relevant period 2005 – 2010:

i. MDTL was not ISO accredited lab for the purpose of forensic analysis;[7]

ii. MDTL should not have engaged in forensic investigations. Regardless of whether a biomedical purpose existed, once it became a forensic investigation, MDTL should have passed the case on to a laboratory equipped to deal with forensic work;[8]

iii. Immunoassay testing in the context of a forensic lab is only a *presumptive test*. Any initial findings must be *confirmed* with another, more specific test for the target analyite such as mass spectrometry testing.[9] It is important to note that, of the 15 labs subjected to proficiency tests in 2005, Motherisk was the only lab that relied exclusively on immunoassay tests without a confirmatory mass spectrometry test;[10] and,

---

[7] *R. v. Broomfield* (C52434), Fresh Evidence, Evidence of Dr. Douglas Rollins, July 16th, 2014 at p. 93; *R. v. Broomfield* (C52434), Fresh Evidence, Witness Statement, Dr. Craig Nicholas Chatterton, dated June 6, 2014, at p. 5

[8] *R. v. Broomfield* (C52434), Fresh Evidence, Evidence of Dr. Douglas Rollins, July 16th, 2014 at pp. 93 – 94

[9] For example, GC-MS – see *R. v. Broomfield* (C52434), Fresh Evidence, Evidence of Dr. Douglas Rollins, July 16th, 2014 at pp. 116 – 117; also see *Society of Hair Testing Guidelines for Drug Testing in Hair* (online: http://www.soht.org/index.php/statements/9-nicht-kategorisiert/85-statement-2011), at 6.2.1 - *Recommendations for Screening Techniques*

[10] *R. v. Broomfield* (C52434), Fresh Evidence, Evidence of Dr. Douglas Rollins, July 16th, 2014 at p. 127

CRIMINAL LAWYERS' ASSOCIATION, 189 Queen Street East, Suite 1, Toronto, ON M5A 1S2
Tel: 416-214-9875 / Fax: 416-968-6818
www.criminallawyers.ca / anthony@criminallawyers.ca

iv. When results are obtained solely by immunoassay testing, the report should state that the results are "unconfirmed."[11]

As a result of the information uncovered in the *Broomfield* case, the CLA believes that an additional review of other criminal cases may be warranted for the period of 2005 – 2010. This expanded review should also include cases outside of the review time period where MDTL results were used. To determine which criminal cases should be reviewed, the following questions may assist:

i. In which criminal cases did MDTL provide testing and/or opinions during this period?

ii. At the very least, which criminal cases did Mr. Joey Gareri or Dr. Gideon Koren testify in during this period?

iii. Where MDTL did provide testing and/or opinions, in which of those cases did MDTL rely exclusively on immunoassay testing?

iv. Where MDTL did rely exclusively on immunoassay testing, did the reports indicate that the results were "unconfirmed?"

[11] This was not done in the *Broomfield* case see *R. v. Broomfield* (C52434), Fresh Evidence, Evidence of Dr. Douglas Rollins, July 16th, 2014 at page p. 138 – see also the S*ociety for Forensic Toxicology Forensic Toxicology Guidelines* (2006, online: http://www.soft-tox.org/files/Guidelines_ 2006_Final.pdf) at 8.1.3, which state, "if the results of preliminary, unconfirmed screening tests are included on the final report, the report must clearly state that the results are unconfirmed."

CRIMINAL LAWYERS' ASSOCIATION, 189 Queen Street East, Suite 1, Toronto, ON M5A 1S2
Tel: 416-214-9875 / Fax: 416-968-6818
www.criminallawyers.ca / anthony@criminallawyers.ca

Conclusion

Public inquiries relating to Canadian wrongful convictions held over the last two decades have highlighted the fallibility of the criminal justice system. Many of the inquiries uncovered a common shortcoming: a failure to keep faulty forensic evidence out of the system.[12] As Justice Kaufmann noted in his conclusions on the wrongful conviction of Guy Paul Morin, "an innocent person was convicted of a heinous crime he did not commit. Science helped convict him".[13] It is clear that faulty forensics seeped into Ms. Broomfield's case. What is not clear, however, is whether other individuals were wrongfully convicted on the basis of similar, unreliable evidence. The frailty of Motherisk's forensic abilities between 2005 and 2010 cries out for a meaningful review of all criminal cases MDTL handled.

[12] See *Morin Inquiry* (hair and fibre evidence); *Driskell Inquiry* (hair microscopy evidence); and *Goudge Inquiry* (forensic pathology)

[13] Hon. F. Kaufman C.M, Q.C., *The Commission on Proceedings Involving Guy Paul Morin*, (Toronto: Queen's Printer, 1998) at 1272.

CRIMINAL LAWYERS' ASSOCIATION, 189 Queen Street East, Suite 1, Toronto, ON M5A 1S2
Tel: 416-214-9875 / Fax: 416-968-6818
www.criminallawyers.ca / anthony@criminallawyers.ca

Appendices

1. *Curriculum Vitae* of Mr. Joey Gareri, May 2009

2. *R. v. Broomfield*, [2010] O.J. No. 3102 (S.C.J.)

3. *R. v. Broomfield*, [2010] O.J. No. 3506

4. *R. v. T.B*. [2010] O.J. No. 1253

5. *R. v. Broomfield* [2014] O.J. No. 4903 (C.A.)

6. *R. v. Broomfield*, Preliminary Inquiry Evidence of J. Gareri

7. Witness Statement, Dr. Craig Nicholas Chatterton

CRIMINAL LAWYERS' ASSOCIATION, 189 Queen Street East, Suite 1, Toronto, ON M5A 1S2
Tel: 416-214-9875 / Fax: 416-968-6818
www.criminallawyers.ca / anthony@criminallawyers.ca

Curriculum Vitae: Joey Gareri, M.Sc.

Updated May 2009

Laboratory Manager
Motherisk Program
Division of Clinical Pharmacology & Toxicology
Department of Pediatrics
Hospital for Sick Children, 555 University Avenue, Toronto, Ontario, M5G 1X8

Phone: 416-813-5780
Fax: 416-813-5189
joey.gareri@sickkids.ca

DATE OF BIRTH: January 29, 1977

PLACE OF BIRTH: Toronto, Ontario, Canada

CITIZENSHIP: Canadian

EDUCATION

Doctor of Philosophy; Pharmaceutical Science; University of Toronto, *in progress*

Master of Science; Clinical Pharmacology & Biomedical Toxicology; University of Toronto, 2006

Honours Bachelor of Science; Toxicology Specialist, Zoology Minor; University of Toronto, 2003

POSITIONS / APPOINTMENTS

Laboratory Manager, Motherisk Program, Division of Clinical Pharmacology & Toxicology, Hospital for Sick Children (2005 -)

Project Investigator, Research Institute, Hospital for Sick Children (2009 -)

Guest Lecturer (Human Toxicology 466A), Department of Pharmacology, Schulich School of Medicine and Dentistry, University of Western Ontario (2007 -)

Research Trainee, Division of Clinical Pharmacology & Toxicology, Hospital for Sick Children; Department of Pharmacology, University of Toronto (2003-2005)

ARTICLES

Gareri J, Brien J, Reynolds J, Koren G. Potential Role of the Placenta in Fetal Alcohol Spectrum Disorder. *Pediatric Drugs* 11(1): 26-29, 2009.

Pichini S, Pellegrini M, Gareri J, Koren G, Garcia-Algar O, Vall O, Vagnarelli F, Zuccaro P, Marchei E. Liquid chromatography-tandem mass spectrometry for fatty acid ethyl esters in meconium: Assessment of prenatal exposure to alcohol in two European cohorts. *Journal of Pharmaceutical and Biomedical Analysis.* 48: pp. 927-933, 2008.

Gareri J, Rao C, Koren G, Lynn H, Handley M. Prevalence of Fetal Ethanol Exposure in a Regional Population by Meconium Analysis of Fatty Acid Ethyl Esters. *Therapeutic Drug Monitoring.* 30(2): pp. 239-245, 2008.

Garcia-Algar O, Kulaga V, Gareri J, Koren G, Vall O, Zuccaro P, Pacifici R, Pichini S. Alarming Prevalence of Fetal Alcohol Exposure in a Mediterranean City. *Therapeutic Drug Monitoring.* 30(2): pp. 249-254, 2008.

Koren G, Hutson J, Gareri J. Novel methods for the detection of drug and alcohol exposure during pregnancy: implications for maternal and child health. *Clinical Pharmacology & Therapeutics.* 83(4): pp. 631-634, 2008.

Garcia-Bournissen F, Rokach B, Karaskov T, Gareri J, Koren G. Detection of stimulant drugs of abuse in maternal and neonatal hair. *Forensic Science, Medicine and Pathology.* 3(2): pp. 115-118, 2007.

Taguchi N, Mian M, Shouldice M, Karaskov T, Gareri J, Nulman I, Verjee ZH, Koren G. Chronic cocaine exposure in a toddler revealed by hair test. *Clinical Pediatrics* 46(3): 272-5, 2007.

Brien JF, Chan D, Green CR, Iqbal U, Gareri J, Kobus SM, McLaughlin BE, Klein J, Rao C, Reynolds JN, Bocking AD, Koren G. Chronic prenatal ethanol exposure and increased concentrations of fatty acid ethyl esters in meconium of term fetal Guinea pig. *Therapeutic Drug Monitoring* 28(3): 345-50, 2006.

Gareri J, Klein J, Koren G. Drugs of Abuse testing in meconium. *Clinica Chimica Acta* 366(1-2): 101-111, 2006.

Florescu A, Koren G, Klein J, Gareri J. Benchmarking hair cotinine as a marker of tobacco smoke exposure-meta analysis of international studies. *Journal of the French Society of Analytical Toxicology* XVII(4); 2005.

Gareri J, Chan D, Klein J, Koren G. Motherisk Update. Screening for Fetal Alcohol Spectrum Disorder. *Canadian Family Physician* 51: 33-34, 2005.

Gareri J. Fatty Acid Ethyl Esters in Meconium: An emerging biomarker for in utero alcohol exposure. *JFAS Int* 2003;1:e20 December 2003.

ABSTRACTS

Nesterenko M, Garcia-Bournissen F, Karaskov T, Gareri J, Koren G. Kinetics of disappearance of cocaine from hair after discontinuation of drug use. *Annals of Analytical Toxicology* 20(4): S1-17, 2008 (Supplement)

Kulaga V, Pichini S, Garcia-Algar O, Gareri J, Koren G. Fatty acid ethyl ester hair analysis (FAEE): Assessing prenatal alcohol exposure. *Alcoholism: Clinical and Experimental Research* 31(6): 246A, 2007. (Supplement)

Hutson JR, Magri R, Suarez H, Miguez H, Gareri J, Koren G. High prevalence of prenatal exposure to alcohol and other drugs of abuse in Uruguay as determined by meconium analysis. *Alcoholism: Clinical and Experimental Research* 31(6): 188A, 2007. (Supplement)

Gareri J, Rao C, Koren G, Lynn H. Comparison of different formulae for meconium fatty acid ethyl ester calculation to determine prenatal ethanol exposure. *Alcoholism: Clinical and Experimental Research* 31(6): 188A, 2007. (Supplement)

Hutson JR, Magri R, Suarez H, Miguez H, Gareri J, Koren G. Alcohol consumption during pregnancy in Uruguay as measured by Fatty Acid Ethyl Esters in meconium. *Alcoholism: Clinical and Experimental Research* 30(6): 101A, 2006. (Supplement)

Gareri J, Lynn H, Koren G. Evaluating the use of Gas Chromatography with Flame Ionization Detection in Mass Screening for Meconium Fatty Acid Ethyl Esters. *Alcoholism: Clinical and Experimental Research* 30(6): 101A, 2006. (Supplement)

Gareri J, Lynn H, Koren G. Regional Mass Screening for Fetal Alcohol Exposure via Fatty Acid Ethyl Ester Analysis. *Alcoholism: Clinical and Experimental Research* 29(5): 437, 2005. (Supplement)

Gareri J, Koren G. Fatty Acid Ethyl Esters in meconium as a novel method of mass screening for fetal alcohol exposure. *Canadian Journal of Clinical Pharmacology* 12(1): e123, 2005.

Gareri J, Koren G. Regional Prevalence of Fetal Alcohol Exposure as Determined by Meconium Analysis. *Therapeutic Drug Monitoring* 27(2): 219, 2005.

Gareri J, Koren G. Ongoing regional prevalence study of fetal alcohol exposure as determined by meconium analysis of fatty acid ethyl esters. *Clinical Pharmacology and Therapeutics* 77(2): P93, 2005.

Gareri J, Koren G. Ethical Framework for Implementing Meconium Analysis as a Fetal Alcohol Exposure Screen. *Alcoholism: Clinical and Experimental Research* 28(5): 41A, May 2004. (Supplement)

BOOK CHAPTERS

Gareri J, Klein J, Koren G: Determination of Prenatal Exposures. In: Medication Safety in Pregnancy and Breastfeeding. G Koren, ed. McGraw Hill Publishing, New York; 2007: pp. 187-193

PRESENTATIONS

September 2008; Toronto, Ontario: North American Congress of Clinical Toxicology. *Alternative Matrices: Laboratory Biomarkers of Fetal Exposure to Drugs of Abuse*

September 2008; Montreal, Quebec: 9th Annual Fetal Alcohol Canadian Expertise (FACE) Research Roundtable. *Neonatal Screening for Prenatal Alcohol Exposure: Past, Present & Future Studies*

July 2008; Toronto, Ontario: IUPHAR CPT 2008 "The Toronto Satellite in Pediatric Pharmacology". *Biological Markers of in utero Exposure.*

June 2008; Schoelcher, Martinique: Annual Meeting of the Society of Hair Testing. *Kinetics of disappearance of cocaine from hair after discontinuation of drug use.*

May 2008; St. John, New Brunswick: Pediatric Grand Rounds, St. John Regional Health Sciences Centre. *Alternative Matrices: Biomarkers of Drug Exposures in Neonates, Children, and Adults*

November 2007; Toronto, Ontario: 31st Annual Canadian Congress on Criminal Justice. Workshop; *Fetal Alcohol Spectrum Disorder (FASD) in the Correctional Population: Determining Incidence and Next Steps*

October 2007; Orillia, Ontario: Ontario Provincial Police Regional Crime Conference. *Forensic Hair Toxicology: Digging Deeper into Drug Exposures*

September 2007; Nice, France: 10th International Congress of Therapeutic Drug Monitoring & Clinical Toxicology. *Rates of Fetal Exposure to Alcohol in Ontario by Meconium FAEE Analysis*

July 2007; Chicago, Illinois: 30th Annual Meeting of the Research Society on Alcoholism. *Comparison of different formulae for meconium fatty acid ethyl ester calculation to determine prenatal ethanol exposure.*

July 2007; Chicago, Illinois: 30th Annual Meeting of the Research Society on Alcoholism; Fetal Alcohol Canadian Expertise (FACE) Satellite Meeting. *Addressing Legal and Ethical Considerations in Neonatal Screening for Prenatal Alcohol Exposure.*

June 2006; Baltimore, Maryland: 29th Annual Meeting of the Research Society on Alcoholism. *Evaluating the use of Gas Chromatography with Flame Ionization Detection in Mass Screening for Meconium Fatty Acid Ethyl Esters*

June 2006; London, Ontario: The Inaugural Ivey Symposium: Drugs and Alcohol in Pregnancy: The Silent Disaster. *Measuring Drugs in Mothers and Neonates*

May 2006; Vadstena, Sweden: Annual Meeting of the Society of Hair Testing. *Cocaine detection in maternal and neonatal hair & Methamphetamine detection in maternal and neonatal hair; Implications of fetal safety*

May 2006; Toronto, Ontario: 3rd Canadian Therapeutics Congress Joint Scientific Meeting of CSCP/CCCP/CAPT. *Mass Spectrometry versus Flame Ionization Detection of Meconium Fatty Acid Ethyl Esters in the context of Neonatal Screening for Fetal Alcohol Exposure*

May 2006; Regina, Saskatchewan: Canada Northwest Fetal Alcohol Spectrum Disorder Partnership Conference. *Establishing the Prevalence of Alcohol Abuse in Pregnancy by Meconium Analysis*
September 2005; Strasbourg, France: Annual Meeting of the Society of Hair Testing. *Benchmarking hair cotinine as a marker of tobacco smoke exposure-meta analysis of international studies*

September 2005; Toronto, Ontario: 6th Annual Fetal Alcohol Canadian Expertise (FACE) Research Roundtable. *Neonatal Screening for Prenatal Alcohol Exposure-The Grey Bruce Study*

June 2005; Santa Barbara, California: 28th Annual Meeting of the Research Society on Alcoholism. *Regional Mass Screening for Fetal Alcohol Exposure via Fatty Acid Ethyl Ester Analysis*

May 2005; Toronto, Ontario: Visions in Pharmacology Research Symposium; University of Toronto; Toronto, Ontario. *Regional Prevalence of Fetal Alcohol Exposure as Determined by Meconium Analysis*

April 2005; Louisville, Kentucky: 9th International Congress of Therapeutic Drug Monitoring & Clinical Toxicology. *Regional Prevalence of Fetal Alcohol Exposure as Determined by Meconium Analysis*

April 2005; Vancouver, British Columbia: 2nd Canadian Therapeutics Congress Joint Scientific Meeting of CSCP/CCCP/CAPT. *Fatty Acid Ethyl Esters in meconium as a novel method of mass screening for Fetal Alcohol Exposure*

April 2005; Toronto, Ontario: 20th Annual Motherisk Update Medical & Research Symposium. *Alcohol Use in Pregnancy and the Potential for Fetal Alcohol Exposure Screening*

March 2005; Orlando, Florida: American Society for Clinical Pharmacology and Therapeutics Annual Meeting. *Ongoing Regional Prevalence Study of Fetal Alcohol Exposure as determined by Meconium Analysis of Fatty Acid Ethyl Esters*

September 2004; Saskatoon, Saskatchewan: 5th Annual Fetal Alcohol Canadian Expertise (FACE) Research Roundtable. *Questions of Ethics: Neonatal Screening for Prenatal Alcohol Exposure*

June 2004; Winnipeg, Manitoba: 1st Canadian Therapeutics Congress Joint Scientific Meeting of CSCP/CCCP/CAPT. *Ethical Framework for Implementing Meconium Analysis as a Fetal Alcohol Exposure Screen*

June 2004; Vancouver, British Columbia: 27th Annual Meeting of the Research Society on Alcoholism / FACE Satellite Meeting. *Ethical Framework for Implementing Meconium Analysis as a Fetal Alcohol Exposure Screen*

May 2004; Toronto, Ontario: Visions in Pharmacology Research Symposium, University of Toronto. *Prevalence of Fetal Alcohol Exposure in the Region of Grey Bruce, Ontario*

MEMBERSHIP IN PROFESSIONAL SOCIETIES

Canadian Society of Clinical Pharmacology (2004 – present)
International Society of Hair Testing (2005 – present)
International Association of Therapeutic Drug Monitoring and Clinical Toxicology (2005 – present)

REVIEWER

Canadian Medical Association Journal
Therapeutic Drug Monitoring
Clinical Pharmacology & Therapeutics
Alcohol & Alcoholism
Fetal Alcohol Research

CONTINUING EDUCATION

Clinical Toxicology Rounds* (weekly)
Chairs: M. Thompson, D. Juurlink (Ontario Poison Centre)

Maternal-Fetal Pharmacology & Toxicology Rounds* (weekly)
Chairs: S. Ito, G. Koren (Motherisk Program)

Annual Meeting of the Society of Hair Testing
-Schoelcher, Martinique; June 3, 2008
-Cardiff, Wales; May 14-15, 2007
-Vadstena, Sweden; May 28-30, 2006
-Strasbourg, France; September 28-30, 2005

The International Association of Forensic Toxicology
-Schoelcher, Martinique; June 2-7, 2008

International Congress of Therapeutic Drug Monitoring & Clinical Toxicology
-Nice, France; September 9-14, 2007
-Louisville, USA; April 23-28, 2005

Workshops: Toxicokinetics: *Chair; Donald R.A. Unges, Groningen, The Netherlands*
Interactive Toxicology Cases: *Chairs; I.D. Watson, Liverpool, UK*
T.C. Kwong, New York, USA

Symposia:

- Novel Strategies, Tactics and Metrics for Clinical and Forensic Toxicology
- Alternative matrices in clinical and forensic toxicology *(TIAFT, SOHT joint session)*

Chairs; P. Kintz, France, C. Jurado, Spain, O. Drummer, Australia, A.Verstraete, Belgium.

- Transitioning Therapeutic Drug Monitoring/Toxicology: Genetics and Novel Biomarkers

Chairs: R. Valdes, M. Linder USA

- Date-rape, new hallucinogenic and recreational drugs *(SFTA joint session)*

Chairs: P. Mura, P. Kintz France

*accredited group learning activities as defined by the Maintenance of Certification Program of the Royal College of Physicians and Surgeons of Canada

ABBREVIATIONS
TIAFT: The International Association of Forensic Toxicologists
SOHT: The Society of Hair Testing
SFTA: The French Society of Analytical Toxicology (Société Française de toxicologie analytique)

EXPERT TESTIMONY

-Superior Court of Justice, Family Division, Toronto Region (Ontario)
-Superior Court of Justice, Family Division, Central East Region (Ontario)
-Ontario Court of Justice, Family Division, West Region
-Ontario Court of Justice, Family Division, Toronto Region
-Ontario Court of Justice, Criminal Division, Toronto Region
-Ontario Court of Justice, Criminal Division, Central West Region
-Ontario Court of Justice, Criminal Division, Central East Region
-Court of Queen's Bench of New Brunswick, Family Division, District of Fredericton
-Supreme Court of Nova Scotia, Family Division, Cape Breton-Victoria

AREAS OF RESEARCH INTEREST

Maternal-Fetal Pharmacology & Toxicology
Adverse effects of drugs and chemicals in the prenatal period. Special interest on the teratogenic and developmental effects of drugs and chemicals. As a member of the Motherisk Program, I have provided prenatal counseling to pregnant women and their health-care providers regarding the safety of medications and other exposures in pregnancy. I am currently directing the Motherisk Laboratory's research involving the development of biological markers of *in utero* substance exposure (i.e. hair and meconium analysis), the assessment of drug transfer through the human placenta, and population-based analysis of trends in gestational use of drugs of abuse.

Fetal Alcohol Spectrum Disorder
Adverse effects of alcohol exposure during the prenatal period. Special interest in the development of biomarkers for prenatal ethanol exposure, with the ultimate goal of early detection and intervention of individuals at risk for FASD. I conducted the first Canadian population-based study to assess fetal alcohol exposure in a regional neonatal population and have researched the ethical aspects of implementing universal neonatal screening for prenatal exposures.

DUTIES

- As a member of the Motherisk research team, I participate in every step of each research project from the preliminary discussions for establishing the protocol to the writing, publication, and presentation of data at national and international meetings.

- I supervise and direct the work of the technical staff, undergraduate and graduate students. I give lectures to scientists, physicians, nurses, laboratory technicians, and social workers regarding the use of hair and meconium analysis to determine drug use patterns in adults and exposures in children, and neonates.

- I provide consultations to researchers, physicians, nurses, and social workers regarding hair and meconium test result interpretations, written interpretations for trial purposes, and testify as an expert witness when required.

ACADEMIC BACKGROUND

Toxicology/Pharmacology

- knowledge of toxicological and pharmacological mechanisms of action
- principles and methods of toxicological analysis and risk assessment
- mechanistic knowledge of drug interactions, fetal, and perinatal toxicology
- occupational and passive exposures to metal, pesticide, food-based, and pollution-based toxins
- tobacco, alcohol and illicit drug toxicity
- mechanisms of addiction and dependence
- methods of forensic toxicology
- knowledge of vitamin and herbal product pharmacology and toxicology
- knowledge of pharmacokinetic and pharmacodynamic principles and applications
- comprehensive systemic knowledge of pharmacological therapy for illnesses including nervous, motor, cardiovascular, gastrointestinal, and endocrine disorders
- familiarity with the drug development process
- analysis of primary research in the fields of toxicology, pharmacology, environmental chemistry, neuroscience, and molecular biology
- written reports on topics such as; pesticide toxicity, aspartame toxicity, PCB bioaccumulation, nitrous oxide cycling in the stratosphere, and microbial defenses

Environmental Chemistry

- environmental fate analysis
- calculation of reaction rate constants in air, water, and soil
- volatility, solubility, and sorption calculation of various chemicals
- knowledge of chemical properties determining bioaccumulative behaviour

Research/Laboratory

- research in the field of population health sciences at the Hospital for Sick Children
- research in the field of laboratory biochemistry at the Hospital for Sick Children
- research in the field of biochemical psychiatry at the Centre for Addiction and Mental Health
- periodic review and analysis of primary research
- analysis/development of objectives, methodology, hypotheses, and data
- preparation of research proposals for ethics board review
- training/supervision of project and graduate students
- GC/FID analysis, liquid-liquid and solid-phase extraction
- mRNA extraction for PCR analysis, spectroscopic analysis, restriction enzyme/protease digests, and electrophoresis
- periodic review and analysis of primary research
- basic statistical analysis
- training in GC/MS analysis and maintenance

Case Name:

R. v. Broomfield

Between
Her Majesty the Queen, and
Tamara Broomfield

[2010] O.J. No. 3102

2010 ONSC 3808

Court File No. PR832/07

Ontario Superior Court of Justice

T.M. Dunnet J.

July 8, 2010.

(45 paras.)

Criminal law -- Sentencing -- Criminal Code offences -- Offences against person and reputation -- Duties tending to preservation of life -- Failure to provide necessaries of life -- Bodily harm and acts and omissions causing danger to the person -- Administering a noxious thing -- Assaults -- Assault causing bodily harm -- Aggravated assault -- Sentencing considerations -- Deterrence -- Denunciation -- Seriousness of offence -- Effect on victim -- Sentencing of accused following convictions for aggravated assault, by giving her infant son potentially lethal dose of cocaine; administering cocaine to him over 14-month period; assault causing bodily harm, resulting in multiple rib fractures; and failing to provide necessaries of life, by failing to seek medical assistance for his fractured arm -- Accused sentenced to seven years' imprisonment -- Accused indifferent to her child's suffering and her duty as parent -- She persisted in pattern of gross parental abuse over prolonged period against vulnerable and defenceless child -- Her conduct shocked conscience of community and required significant penitentiary sentence.

Sentencing of Broomfield following her convictions for aggravated assault endangering life, by giving her infant son a potentially lethal dose of cocaine; administering cocaine to him over a 14-month period; assault causing bodily harm, resulting in multiple rib fractures; and failing to provide necessaries of life, by failing to seek medical assistance for his fractured arm. As the result of Broomfield's actions, her son, Malique, sustained permanent and irreversible brain damage causing him to be dependent upon others for the rest of his life. In the weeks preceding the almost fatal

overdose of cocaine, the Children's Aid Society ("CAS") questioned Broomfield about skin markings on Malique's body. On one occasion, when day care staff noticed swelling to his arm, a CAS worker took Malique to the hospital. X-rays showed an old fracture as well as evidence of a new fracture in the same area. It was a physician's opinion that Broomfield's failure to get medical attention for Malique's arm led to the fracture healing abnormally, causing it to fracture again. Two days before the cocaine overdose, day care and CAS staff had questioned Broomfield about fresh markings on Malique's body. She acknowledged that she had caused them. On the day of the overdose, Broomfield was moving out of her apartment. Video surveillance of the lobby of her building showed her going in and out of the apartment. There was nothing in the video to suggest that Malique was not behaving like a normal, healthy, two-year-old toddler. Four hours later, Broomfield appeared at the hospital with her unconscious child. She told medical personnel that after she had fed him a banana, he pointed to his eye and had a seizure. She said nothing about cocaine. She telephoned Malique's father from the hospital to say that their son had swallowed cocaine during the day. Eight hours later when she was informed of the positive test results, Broomfield denied any knowledge of cocaine. As the result of a significant disruption of brain function, it was decided to perform a craniotomy and remove part of the child's skull in order to decompress the brain. An expert in pediatric intensive care testified at trial that if it had been known at the outset about a history of cocaine ingestion, the information would have been valuable for the attending doctors to determine whether to conduct a gastric washout to eliminate the toxin, minimize absorption and treat the aftereffects. Broomfield was a 28-year-old first time offender. She had a high school education and some post-secondary education. She was self-employed in a communications networking business and worked as a telemarketer.

HELD: Broomfield was sentenced to seven years' imprisonment for aggravated assault endangering life, and two years' concurrent for the charges of administering a noxious substance, assault causing bodily harm and failing to provide the necessaries of life. Broomfield was indifferent to her child's suffering and to her duty as a parent. She persisted in a pattern of gross parental abuse over a prolonged period of time against a vulnerable and defenceless child. When confronted with his injuries, she minimized them. Ultimately, when he was clinging to life, she acted in her own self-interest and elected to disclose nothing to the medical authorities. Since that time, she demonstrated callous indifference to the harm she had caused. The protracted nature of this activity without any apparent insight into her behavior, together with the young age of the victim, made her conduct acutely deplorable. She exhibited no remorse for her conduct. Primary consideration was given to the sentencing objectives of denunciation and deterrence. Broomfield's long-term and repetitive child abuse shocked the conscience of the community and cried out for a significant penitentiary sentence. Sentence: Seven years' imprisonment for aggravated assault; two years' concurrent for assault causing bodily harm, administering noxious substance and failing to provide necessaries of life; DNA order; Lifetime weapons prohibition.

Statutes, Regulations and Rules Cited:

Criminal Code, R.S.C. 1985, c. C-46, s. 109, s. 487.051, s. 718.01

Counsel:

Andrew Pilla, for Her Majesty the Queen.

Daniel Brown, for the Accused.

REASONS FOR SENTENCE

1 **T.M. DUNNET J.**:-- Tamara Broomfield has been found guilty of:

* aggravated assault engendering life, by giving her infant son a potentially lethal dose of cocaine;
* administering cocaine to him over a fourteen month period;
* assault causing bodily harm, resulting in multiple rib fractures; and
* failing to provide necessaries of life, by failing to seek medical assistance for his fractured arm.

2 As the result of his mother's actions, her son, Malique, has sustained permanent and irreversible brain damage causing him to be dependent upon others for the rest of his life.

3 The circumstances under which these offences were committed are largely unknown because, at the time of these events, Ms. Broomfield was the sole caregiver for her child. Her frustration with this role is evident from an incident recalled by Malique's grandmother when he was eight months old: Ms. Broomfield locked herself in a room and screamed that she did not want the child and had had enough of this life.

4 In the weeks preceding the almost fatal overdose of cocaine, the Children's Aid Society ("CAS") had become actively involved in the lives of Ms. Broomfield and Malique. CAS had questioned her about skin markings on his body. On one occasion, when day care staff noticed swelling to his arm, a CAS worker took Malique to the hospital. X-rays showed an old fracture as well as evidence of a new fracture in the same area. It was Dr. Luigi Castagna's opinion that Ms. Broomfield's failure to get medical attention for Malique's arm led to the fracture healing abnormally, causing it to fracture again.

5 Two days before the cocaine overdose, day care and CAS staff had questioned Ms. Broomfield about fresh markings on Malique's body. She acknowledged that she had caused them. At the time, CAS was in the process of seeking temporary custody of the child and Malique's father had initiated court proceedings for joint custody.

6 On the day of the overdose, Ms. Broomfield was moving out of her apartment. Video surveillance of the lobby of her building shows her going in and out of the apartment. There is nothing in the video to suggest that Malique was not behaving like a normal, healthy, two year old toddler.

7 Four hours later, Ms. Broomfield appeared at the hospital with her unconscious child. She told medical personnel that after she had fed him a banana, he pointed to his eye and had a seizure. She said nothing about cocaine.

8 She telephoned Malique's father from the hospital to say that their son had swallowed cocaine during the day. Eight hours later when she was informed of the positive test results, Ms. Broomfield denied any knowledge of cocaine.

9 As the result of a significant disruption of brain function, it was decided to perform a craniotomy and remove part of the skull in order to decompress the brain. There was concern that the child would not survive.

10 Dr. Peter Cox testified at trial as an expert in pediatric intensive care. He stated that after Malique arrived at the hospital, his spinal fluid, gastric aspirate, urine and blood all tested positive for cocaine. Dr. Cox had never seen these levels of cocaine metabolites in a child.

11 Ultimately, it was determined that the protracted seizures on initial presentation and the ongoing clinical picture of myocardial ischemia and abnormal liver and kidney function were consistent with toxic cocaine ingestion. Dr. Cox testified that if it was known at the outset about a history of cocaine ingestion, the information would have been valuable for the attending doctors to determine whether to conduct a gastric washout to eliminate the toxin, minimize absorption and treat the after-effects.

12 Dr. Marcellina Mian testified at trial as an expert in assessing trauma and injuries and determining their potential causes. From her examination of Malique at the hospital, she concluded that his eleven rib fractures at various stages of healing were non-accidental injuries caused by repeated trauma. It was her opinion that they could have been sustained by a blow, squeezing, and/or shaking of the child.

13 Dr. Mian also examined numerous skin and burn markings on Malique's body. It was her opinion that, although they were non-specific as to cause, the fractured ribs, re-fractured arm and cocaine overdose increased her level of concern that there was a non-accidental origin to the markings and she questioned whether the puncture wounds to the child's feet were the portal of entry for the cocaine.

14 A few days after Malique was admitted to hospital, Ms. Broomfield telephoned his day care supervisor and said: "I don't know what happened. I don't do that shit. He had a cocaine overdose and probably won't be back for a week or so."

15 During her video statement to the police, Ms. Broomfield said that when the doctor told her that Malique had overdosed on crack cocaine,

> Immediately I said, 'Doctor, give me a blood test. I don't do those things. And we're gonna find out where my son got this from.' That's exactly what I told him. On the spot.

16 She also told the police that when she telephoned Malique's father, they had the following conversation:

> 'Who's around my kid? What, you kill my kid?' I'm 'Calm down' 'cause (sic) I never knew the danger of that drug. ... I thought - I really never knew the danger of that drug. ... 'Cause I've never taken it. ... So in my - it to me at the time I thought Malique would have been okay.

17 There is no insight as to why Ms. Broomfield deliberately and repeatedly administered cocaine to her child. On the basis of the evidence adduced at trial, I concluded that the night she administered the almost fatal dose of cocaine to Malique and he began having seizures, she delayed taking him to the hospital for fear of being found out, until she realized that he was dying in front of

her eyes. On arrival at the hospital, she did not disclose what she knew, in order to avoid problems for herself. She was indifferent to her child's suffering and to her duty as a parent.

18 Dr. Peter Rumney is the Senior Physician Director of the Brain Rehabilitation Program at Bloorview Kids Rehab in Toronto and an international expert in childhood brain injury. He has been involved in assessing Malique since his discharge from hospital.

19 Dr. Rumney testified on the sentence hearing that Malique will be subject to a lifetime of seizure and other medications. In order to manage his impulse control problems, the doctors have had to "initiate treatment at a time earlier than we're usually comfortable with" for a young child.

20 Dr. Rumney testified that the younger the child with an acquired brain injury, the worse the child fares cognitively and behaviourally. It was his opinion that Malique has a significant learning disability for which he will need specialized education. He will likely be unemployable and dependent life-long upon others. I accept Dr. Rumney's opinion in its entirety.

21 Malique's father, Steve Fitz-Charles, has been awarded sole custody of his son. In his Victim Impact Statement, Mr. Fitz-Charles spoke poignantly of the harm done and the loss suffered as the result of the commission of these offences and of the daily struggles that he faces in coping with raising a severely disabled child while he is attending university.

22 Malique's grandmother, Yuillie Fitz-Charles, is assisting her son in caring for Malique while working full-time as a supervisor for an integrated centre which provides care for children, including those with special needs. She also works part-time as a support worker caring for children with diverse disabilities.

23 Ms. Fitz-Charles spoke about the profound and devastating cognitive and behavioural effects of the harm done to Malique, who is now seven years old. He requires constant one-on-one supervision and assistance. He is hyper-active, non-compliant and impulsive. He struggles with fine motor control, hand manipulation tasks and body coordination. He has difficulty processing, interpreting and reacting to sensory information. This affects his ability to make sense of the world around him. His cognitive level is well below his age. He cannot read.

24 She stated that Malique is becoming more adamant and hard to manage and it is becoming increasingly difficult to encourage him to take his medication. Her observations confirm the opinions of Dr. Rumney.

25 Ms. Broomfield is a twenty-eight year old first time offender. She was raised by her grandmother in Jamaica and came to Canada at the age of twelve to live with her father. She told her Probation and Parole Officer, Paulette Joseph, "I was not raised in an abusive environment at all."

26 Ms. Broomfield has a high school education and some post-secondary education. She was self-employed in a communications networking business and worked as a telemarketer.

27 When she sought access to Malique in 2006, CAS referred her for psychological assessment. In her report of June 14, 2006, Nitza Perlman stated that when she asked Ms. Broomfield about the high dose of cocaine ingested by Malique, she had no explanation.

28 The psychologist reported that from her assessment, Ms. Broomfield was functioning well within the normal range of cognitive abilities and there was no evidence of depression. Her performance on the verbal reasoning test associated with the capacity to exercise good judgment fell in the low average range. Her performance on the Minnesota Multiphasic Personality Inventory-2

showed that she had a tendency for poor impulse control, grandiosity and hyperactivity. The responses suggested that under stress, she may become confused, rigid and inclined to displace blame and misread social situations.

29 At present, Ms. Broomfield is working part-time as a customer service representative in a mortgage brokerage firm and attending university one day a week, in anticipation of obtaining a marketing certificate. She participates in a support group at a rape crisis centre and volunteers by helping a friend with daily chores.

30 In the Presentence Report, Ms. Joseph states that family members describe Ms. Broomfield as "very strong, loving, trustworthy, kind and God-fearing." Community counselors describe her as "resourceful, articulate, respectful and open." CAS worker Lutchmie McCarthy describes Ms. Broomfield as "abusive" to her at times and "in total denial," maintaining that she had nothing to do with the child's injury and continuing to blame others.

31 Ms. Joseph describes Ms. Broomfield as "calm, in control and unremorseful." She states:

> As well, the subject stated coldly, 'I want to express, as a mother, I am naturally remorseful for any pain or suffering a child or children suffered with or has ever endured.' The subject seemed to be referring to children as a whole and in general, but not specifically to her child ...
>
> Furthermore, the subject did not take responsibility for her behavior, and maintained her 'innocence.' She stressed, 'I do not want to talk about it as I did not administer any substance.' She added, 'I did not commit the offence.'

32 In an addendum to the Report, Ms. Joseph concludes:

> The writer has no further revision to the assessment or recommendations, only to add that the subject continues to minimize her responsibility in the commission of the offences before the Court. Her demeanour still seems unremorseful, as even when she is saying she is 'remorseful,' it does not come across as such.

33 On behalf of the Crown, it is submitted that a sentence of six to eight years is appropriate. The position of the defence is that a sentence of three and a half to four and a half years is appropriate.

34 In *R. v. C.M.R.* (2004), 197 C.C.C. (3d) 566, [2004] O.J. No. 4490 (C.A.) at paras. 14-16, Cronk J.A. held:

> Strict maintenance of the trust relationship between parents and children, particularly children whose vulnerability and needs are heightened by young age ... is an integral component of responsible and civilized community life in Canada. Few, if any, other relationships in society will attract more rigorous scrutiny by the courts in their application of the law in order to protect against the abuse and exploitation of vulnerable persons by those to whom their care and protection have been entrusted.
>
> Parliament has recognized the fundamental importance of such trust relationships in the sentencing process by providing in s. 718.2(a)(iii) of the Criminal Code,

> R.S.C. 1985, c. C-46 that the abuse of a position of trust or authority by an accused in relation to a victim is an aggravating factor that must be taken into account by a sentencing judge.
>
> As well, this court has long emphasized that the imposition of substantial sentences is essential to meet the purposes of sentencing in order to protect defenceless children from mistreatment by their parents or other caregivers.

35 In R. v. G.S.J., [2007] O.J. No. 5079 (S.C.J.) at para. 7, Chapnik J. set out the sentencing factors to be considered in these cases as follows:

> The relevant jurisprudence cited to me by both counsel involving the intentional infliction of injury to a young child supports a sentence in the range of three to eight years. This presents a broad range. Each case depends on a number of factors, primarily based on the particulars of the offender, the nature of the offence and the circumstances surrounding it. The list of relevant factors related to the offence include the consequences or damages sustained by the victim, whether the incident or incidents of abuse were protracted or isolated, deliberately planned and intentional or momentary, whether there was provocation, the seeking of help or medical attention for the victim after the fact, and whether there was a breach of trust. As to the personal circumstances of the offender, such factors as his or her age, criminal antecedents, contributions to society, family support, expressions of remorse and whether the offender poses a danger to the community are considered.

36 Ms. Broomfield persisted in a pattern of gross parental abuse over a prolonged period of time against a vulnerable and defenceless child. When confronted with his injuries, she minimized them. Ultimately, when he was clinging to life, she acted in her own self-interest and elected to disclose nothing to the medical authorities. Since that time, she has demonstrated callous indifference to the harm she has caused. The protracted nature of this activity without any apparent insight into her behavior, together with the young age of the victim, makes her conduct acutely deplorable.

37 She has exhibited no remorse for her conduct. Although lack of remorse is not an aggravating factor, there is concern that her lack of insight may affect her prospects for rehabilitation.

38 There is nothing in her background to explain her actions. There is no suggestion that she suffers from any cognitive disability, diminished mental capacity, or substance abuse. She has professed throughout that she does not consume cocaine. One is left to infer that she made conscious decisions to obtain cocaine to give to Malique for her own selfish purposes.

39 As a result of her egregious breach of trust, the consequences to Malique are catastrophic. In addition, the lives of his father and grandmother have been directly and permanently affected. As the boy matures, there will be untold challenges as they turn their attention to his special needs and behavioural difficulties.

40 In R. v. Naglik (1991), 3 O.R. (3d) 385, 65 C.C.C. (3d) 272 at para. 90 (C.A.), rev'd on other grounds [1993] 3 S.C.R. 122, [1993] S.C.J. No. 92, our Court of Appeal has held that where:

> a parent has inflicted injuries over a substantial period of time that could have killed and which have in fact seriously impaired the child, the court is bound to impose a sentence which will act as a marked deterrent to other parents who would abuse a helpless babe in arms. The imposition of severe sentences is the only means available to a court to attempt to protect the defenceless from those parents who would breach the primary duty of protecting a newborn child.

41 No sentence will restore the mental limitations that have been imposed on this child. Although Ms. Broomfield is a first time offender, the sentence I impose must reflect the gravity of the offences and express society's abhorrence towards this unacceptable conduct by the very person whose duty it was to protect the victim. As Ferguson J. stated in R. v. Scinocco, [1993] O.J. No. 1388 (Gen. Div.) at para.12: "Young children are the precious jewels of our society."

42 While rehabilitation must be borne in mind, s. 718.01 of the Criminal Code provides that when a court imposes a sentence for an offence that involves the abuse of a person under the age of eighteen years, it shall give primary consideration to the objectives of denunciation and deterrence. Ms. Broomfield's long-term and repetitive child abuse shocks the conscience of the community and cries out for a significant penitentiary sentence.

43 For the charge of aggravated assault endangering life, Tamara Broomfield will be sentenced to a term of imprisonment in the penitentiary of seven years. There will be credit on a two for one basis for the seven months spent in pre-trial custody.

44 For the charges of administering a noxious substance, assault causing bodily harm and failing to provide necessaries of life, she will be sentenced to imprisonment for two years. Taking into account the principle of totality, the sentences are to be served concurrently.

45 There will be an order under s. 109 for life and an order under s. 487.051 directing her to provide a DNA sample.

T.M. DUNNET J.

cp/e/ln/qllxr

Case Name:

R. v. Broomfield

Between
Her Majesty the Queen, Respondent (Responding Party), and
Tamara Broomfield, Appellant (Moving Party)

[2010] O.J. No. 3506

2010 ONCA 558

Dockets: M39026 (C52434)

Ontario Court of Appeal
Toronto, Ontario

K.M. Weiler J.A.
(In Chambers)

Heard: August 19, 2010.
Judgment: August 20, 2010.

(16 paras.)

Criminal law -- Compelling appearance, detention and release -- Judicial interim release or bail -- Grounds for denial -- Detention necessary to maintain confidence in the administration of justice -- Release or detention after trial or pending appeal -- Application by the accused for bail pending her appeal from conviction for aggravated assault endangering life, assault causing bodily harm and failure to provide necessities of life and from sentence dismissed -- Accused administered a potentially lethal dose of cocaine to her two-year-old son, fractured his arm and failed to seek medical attention for the fracture -- Considering the extremely serious nature of the conviction coupled with the weak grounds of appeal, the need for enforceability of the trial judgment had to be given precedence at this time.

Application by the accused for bail pending her appeal from conviction for aggravated assault endangering life, assault causing bodily harm and failure to provide necessities of life and from sentence. The accused administered a potentially lethal dose of cocaine to her two-year-old son, fractured his arm and failed to seek medical attention for the fracture. The accused, a 26-year-old first offender, submitted that she had employment available to her if she was released pending her appeal. The Crown alleged her continued detention was required in the public interest. The overarch-

ing ground of appeal was that the accused's trial counsel rendered ineffective assistance to her resulting in a miscarriage of justice.

HELD: Application dismissed. The extremely serious nature of the conviction coupled with what appeared at this time to be weak grounds of appeal led to the conclusion that the need for enforceability of the trial judgment had to be given precedence at this time. The accused's continued incarceration would not render her appeal nugatory.

Appeal From:

On appeal from the conviction entered on April 1, 2009 and the sentence imposed on July 8, 2010 by Justice Tamarin Dunnet of the Superior Court of Justice, sitting without a jury, and on a motion for bail pending appeal.

Counsel:

James Lockyer and Grace David, for the moving party.

Andrew Cappell, for the responding party.

---

1 **K.M. WEILER J.A.**:-- The applicant applies for bail pending her appeal. She was convicted of aggravated assault endangering life, by giving her son a potentially lethal dose of cocaine; administering cocaine to him over a 14 month period; assault causing bodily harm, resulting in multiple rib fractures; and failing to provide necessaries of life by failing to seek medical assistance for his fractured arm. The applicant was sentenced on July 8, 2010, [2010] O.J. No. 3102, to a period of five years and ten months imprisonment in addition to credit for 14 months pre-trial custody.

2 The Crown concedes that the appeal is not frivolous, and does not dispute that the applicant will surrender herself into custody in accordance with the terms of any judicial interim release order made pending appeal. In addition, the applicant, a 26 year old first offender, submits that she has employment available to her if she is released pending her appeal.

3 The issue in this case is whether the applicant has established that her detention is not necessary in the public interest. The public interest relates to the need to maintain confidence in the administration of justice by enforcing the judgment balanced against the need to review the judgment to ensure that no person has been wrongly or unfairly convicted. Appellate courts have recognized that, where the grounds of appeal are strong and there is serious concern about the accuracy of the verdict, the public interest may favour release notwithstanding the seriousness of the offences involved: *See R. v. Baltovich* (2000), 144 C.C.C. (3d) 233 (Ont. C.A.) at para. 20. As a result, the strength of the grounds of appeal is central to my decision whether or not to grant the application.

4 Based on the material before me, including the comprehensive reasons of the trial judge for her verdict as well as on the motion to declare a mistrial, the grounds of appeal appear weak. The overarching ground of appeal is that the appellant's trial counsel, Mr. Kirichenko, breached his duty of loyalty to his client and rendered ineffective assistance to her resulting in a miscarriage of justice.

5 Insofar as counsel's duty of loyalty is concerned, the applicant testified on the mistrial application that in December of 2008, she gave him $1,000 in cash as a means of obtaining a meeting with him. Mr. Kirichenko, who was on a legal aid certificate at the time and therefore prohibited from receiving a private retainer from the applicant, admits receiving money from her, says it was $300 and that it was a Christmas present.

6 Three days before the applicant's trial was to commence, the Law Society of Upper Canada (LSUC) held a disciplinary hearing into allegations that Mr. Kirichenko had failed to keep proper accounts and failed to respond to demands and spot audits from the LSUC. Mr. Kirichenko conceded the allegations but requested an indefinite postponement of the penalty including a 30 day suspension of his license to practice. The Chair refused the request for an indefinite postponement but postponed the commencement of the suspension until February 23, 2009 to accommodate the appellant's trial. In the event it was necessary, the Chair advised Mr. Kirichenko he could request a further extension of time in writing. Mr. Kirichenko did not request an extension of time and further postponement of his suspension. Thus, he began serving his suspension on February 23, 2009.

7 The evidence and submissions in the applicant's trial were completed on January 29, 2009 and the case was adjourned for judgment to March 25, 2009. The day before judgment was to be handed down, Mr. Kirichenko telephoned the applicant to say that the matter was going to be adjourned for one week. He told her that he could not appear in court with her when the matter was adjourned because he was ill. The following week, when judgment was handed down, on April 1, 2009, he sat beside her ungowned in the courtroom. He lied and said that he had forgotten his robes at home. In a hand written note to Ms. Phillips of the LSUC before the hearing, Mr. Kirichenko wrote, "Can I go get judgment tomorrow? It was long trial; client with no record faces long term if convicted. Also press has been all over the case. I would like to avoid explaining being ungowned. If there is conviction it will be adjourned."

8 The applicant submits that Mr. Kirichenko's conduct fell well below the duty of loyalty required of a lawyer outlined by Binnie J. in *R. v. Neil,* (2002) 168 C.C.C. (3d) 321 and that, as a result, she is entitled to a new trial. She submits that she was entitled to be informed of Mr. Kirichenko's circumstances because that information could have affected her decision as to whether to continue with him as her counsel. In addition, Mr. Kirichenko apparently did not comply with the LSUC's requirement that he cease to practice for one month. He continued to provide the applicant with legal advice and spoke with her probation officer assisting in the preparation of the presentence report. Had the applicant wished to ask Mr. Kirichenko to have the court reopen the case and to reconsider its verdict, the applicant submits Mr. Kirichenko would not have been in a position to do so as he was under suspension during this time. I note, however, that after March 23, he would have served his suspension and been in a position to bring such an application as the sentence was not pronounced until July 8, 2010. No such application was made.

9 While Mr. Kirichenko's conduct may well be the subject of further discipline proceedings before the LSUC, the LSUC allowed him to continue to act and postponed his suspension so that he could act for the applicant. It did not require him to advise the applicant of his pending suspension. In doing so, it is apparent that the LSUC did not see a conflict of interest, a breach of Mr. Kirichenko's duty of loyalty to his client, or any danger to her interests. Insofar as the receipt of money in December is concerned, Mr. Kirichenko may have wrongly accepted money from the applicant and, in doing so, put his self-interest first, but the acceptance of the money did not create a conflict in the proceeding brought by the Crown.

10 The applicant also alleges that Mr. Kirichenko's upcoming suspension improperly influenced his conduct of the appellant's trial and caused him to cut corners in order to complete the trial as soon as possible.

11 Dunnet J. dealt with these arguments in her comprehensive reasons on the motion for a mistrial. At this stage, I am not satisfied that counsel has shown any error in principle in the manner in which she exercised her discretion in refusing to grant a mistrial and in rejecting the submission that Mr. Kirichenko's conduct led to a miscarriage of justice. As a result, those reasons are entitled to deference.

12 Some further brief comment is warranted concerning the applicant's submissions that Mr. Kirichenko was obliged to raise the prior misconduct of two expert witnesses in matters that were unrelated to this proceeding with a view to undermining their credibility generally. I note that the evidence of the one expert, Dr. Mian, relates to the conviction for assault causing bodily harm due to rib fractures but does not touch the trial judge's findings concerning the appellant's failure to seek medical attention for her son's arm which led to her conviction for failing to provide the necessaries of life nor does it relate to her conviction for aggravated assault by endangering life by administering a noxious substance.

13 The applicant's challenge to the evidence of Dr. Koren, the hair follicle expert, to the effect that M. had been given cocaine over a 14 month period, loses a considerable amount of its thrust due to the fact that during the preliminary inquiry Mr. Gareri, the Manager of the Division of Clinical Pharmacology and Toxicology in the Motherisk Laboratory, gave the same evidence. I do not take the applicant's submission to go so far as to suggest that the evidence of anyone who works at the Motherisk Laboratory is not credible because of some past misconduct on the part of its owner Dr. Koren.

14 The extremely serious nature of the conviction in this case, endangering the life of a two year old child by the administration of a potentially lethal dose of cocaine with the tragic consequence that he is now severely disabled, coupled with what appear at this time to be weak grounds of appeal, lead me to conclude that the need for enforceability of the judgment must be given precedence at this time. The appellant has failed to discharge the onus on her respecting the public interest criterion.

15 I also observe that, if properly processed, the appellant's continued incarceration would not render her appeal nugatory. The trial was not unduly lengthy. The applicant's counsel has ordered the trial transcripts. Priority should be given to their preparation and to the scheduling of this appeal in as expeditious a manner as is possible.

16 For the reasons given the application for bail pending appeal is dismissed.

K.M. WEILER J.A.

Case Name:
R. v. T.B.

Between
Her Majesty the Queen, Respondent, and
T.B., Applicant

[2010] O.J. No. 1253

2010 ONSC 1579

Court File No. P0832/07

Ontario Superior Court of Justice

T.M. Dunnet J.

Heard: January 18-20 and 22, 2010.
Judgment: March 19, 2010.

(110 paras.)

Criminal law -- Procedure -- Trials -- Mistrial -- Application by TB to declare a mistrial dismissed -- TB was found guilty of several offences relating to her treatment of her infant son -- TB sought the mistrial on the grounds that her lawyer breached his duty to her -- TB's lawyer was suspended by the Law Society prior to the trial, suspension postponed till after trial -- TB's lawyer was suspended when verdict was read, but did not inform her -- No breach of duty of loyalty -- TB did not establish that she was ineffectively represented -- Lawyer breached his duty of candour by not disclosing his suspension, but that breach did not undermine the fairness of the trial or the decision-making process.

Professional responsibility -- Self-governing professions -- Duties -- Loyalty -- Professions -- Legal -- Barristers and solicitors -- Application by TB to declare a mistrial dismissed -- TB was found guilty of several offences relating to her treatment of her infant son -- TB sought the mistrial on the grounds that her lawyer breached his duty to her -- TB's lawyer was suspended by the Law Society prior to the trial, suspension postponed till after trial -- TB's lawyer was suspended when verdict was read, but did not inform her -- No breach of duty of loyalty -- TB did not establish that she was ineffectively represented -- Lawyer breached his duty of candour by not disclosing his suspension, but that breach did not undermine the fairness of the trial or the decision-making process.

Legal profession -- Barristers and solicitors -- Relationship with client -- Conflict of interest -- Application by TB to declare a mistrial dismissed -- TB was found guilty of several offences relating to her treatment of her infant son -- TB sought the mistrial on the grounds that her lawyer breached his duty to her -- TB's lawyer was suspended by the Law Society prior to the trial, suspension postponed till after trial -- TB's lawyer was suspended when verdict was read, but did not inform her -- No breach of duty of loyalty -- TB did not establish that she was ineffectively represented -- Lawyer breached his duty of candour by not disclosing his suspension, but that breach did not undermine the fairness of the trial or the decision-making process.

Application by TB to declare a mistrial. TB was found guilty of administering cocaine to her infant child throughout a fourteen-month period, aggravated assault endangering his life, assault causing bodily harm and failing to provide the necessaries of life. She sought a mistrial on the grounds that her lawyer breached his duty of loyalty to her, breached his duty of commitment to her cause and breached the duty of candour to her. TB claimed there was a conflict of interest between her and her lawyer that infringed her right to a fair trial. TB's lawyer was suspended by the Law Society prior to the trial, but the suspension was postponed. He was suspended during the reading of the verdict. TB claimed her lawyer waived her right to trial by jury without explaining the consequences of that waiver, failed to advocate for her by retaining experts and preparing her for trial and failed to inform her of his disciplinary issues.

HELD: Application dismissed. The lawyer did not breach his duty of loyalty or commitment to TB. The decision to proceed without a jury was made independent of TB's lawyer's issues with the Law Society. Her lawyer gave TB rational and reasonable reasons why trial by judge alone was preferable. TB did not establish that she was ineffectively represented. The lawyer breached his duty of candour by failing to advise her of his suspension. However, that breach did not undermine the fairness of the trial or the decision-making process.

Statutes, Regulations and Rules Cited:

Criminal Code, R.S.C. 1985, c. C-46, s. 245

Law Society Act, R.S.O. 1990, c. L.8,

Counsel:

Joshua Levy, for the Respondent.

Mark Halfyard and *Daniel Brown*, for the Applicant.

RULING ON APPLICATION TO DECLARE A MISTRIAL

T.M. DUNNET J.:--

OVERVIEW

1 The applicant has been found guilty of administering cocaine to her infant child throughout a fourteen month period, aggravated assault endangering his life, assault causing bodily harm and failing to provide the necessaries of life. She has not been sentenced for these crimes.

2 She brings this application for an order declaring a mistrial on the grounds that her lawyer:

(a) breached the duty of loyalty to his client because he was facing suspension by the Law Society of Upper Canada and was, therefore, in a conflict of interest. The applicant submits that this suspension improperly influenced her lawyer's advice on her decision to waive her right to trial by jury;
(b) breached the duty of commitment to his client's cause by "cutting corners" to shorten the proceeding. In particular, he did not retain a "competing expert to counter the Crown's hair follicle expert" and failed to cross-examine the Crown's expert on a finding of professional misconduct made by the College of Physicians and Surgeons (the "College"); and
(c) breached the duty of candour to his client by failing to advise her that he was facing the possibility of imminent suspension days before her trial. When the suspension came into force, he failed to advise her of his inability to represent her.

3 The applicant submits that there was a material conflict of interest between the applicant and her lawyer that infringed her right to a fair trial and there are no measures that can be taken at this stage of the proceedings to correct the unfairness, short of declaring a mistrial.

4 The respondent submits that the applicant cannot establish that a conflict of interest existed, that she was ineffectively represented by counsel, or that any duty of loyalty owed to her was breached. It is submitted that the applicant's assertions, insofar as the impending suspension had an effect on trial counsel's conduct of the applicant's defence, are speculative and not based on any evidence contained in the record or on any fresh evidence.

5 The respondent also submits that the fact that the applicant's lawyer did not cross-examine the Crown's hair follicle expert on his past disciplinary record, or the Crown's trauma expert on negative comments made about her during the Goudge Inquiry, were reasoned, tactical decisions relating to collateral matters and were not reasonably capable of affecting the verdict.

THE VERDICT

6 The trial before me spanned twelve days. Evidence was heard from eighteen witnesses, including seven doctors. The verdict was as follows:

> [177] The evidence does not have to answer every question raised in this case or explain all of the factors that ultimately led to M's acquired brain injury. The burden of proof upon the Crown applies to the ultimate question of whether guilt of each offence has been proven beyond a reasonable doubt.
>
> [178] T.B. stands charged with five offences. First, she is charged with aggravated assault between January 1 and August 1, 2005, by maiming. This offence relates to the fractured ribs. The Oxford Dictionary defines the word "to maim" as "to injure (someone) so that part of the body is permanently damaged." The

Crown submits that the effect of these injuries on this child meets that definition. The evidence is that multiple fractured ribs would cause pain on breathing and would compromise a child's activities. While I would agree that the effect of the injuries on M would have been disabling at the time, there is no medical or other evidence to indicate that the ribs were damaged permanently.

[179] I am satisfied beyond a reasonable doubt that T.B. intentionally applied force to M without his consent, fracturing his ribs, in circumstances where a reasonable person would realize that the force applied would put M at risk of suffering bodily harm. The injuries interfered with his health and comfort and they were more than merely transient or trifling in nature. Accordingly, I find T.B. not guilty of aggravated assault, but guilty of assault causing bodily harm.

[180] Second, she is charged with failing to provide the necessaries of life between June 1 and July 14, 2005. I am satisfied beyond a reasonable doubt that T.B. was under a legal duty as a parent to provide the necessaries of life for M and that she failed, without lawful excuse, to seek medical care for him after his arm was fractured.

[181] The evidence is that M sustained another fracture through the original fracture site before he was hospitalized and his arm re-aligned by an orthopedic surgeon. Although there was no medical evidence about the long-term effects of the fractures to the left arm, I am satisfied beyond a reasonable doubt that T.B.'s failure to seek medical care for M likely put him at risk of permanent harm. She is, therefore, guilty of failing to provide the necessaries of life.

[182] Third, T.B. is charged with aggravated assault between July 31 and August 1, 2005, by endangering the life of M. I am satisfied beyond a reasonable doubt that she intentionally applied force to M without his consent by administering cocaine to him. Her actions endangered his life in circumstances where a reasonable person would realize that giving cocaine to a child would put him at risk of suffering bodily harm. Thus, she is guilty of aggravated assault by endangering M's life.

[183] Fourth, T.B. is charged with administering a noxious substance between July 31 and August 1, 2005, with intent to endanger the life of M.

[184] Section 245 of the *Criminal Code* states:

> Everyone who administers or causes to be administered to any person or causes any person to take poison or any other destructive or noxious thing is guilty of an indictable offence and liable

(a) to imprisonment for a term not exceeding fourteen years, if he intends thereby to endanger the life or to cause bodily harm to that person; or
(b) to imprisonment for a term not exceeding two years, if he intends thereby to aggrieve or annoy that person.

[185] There can be no issue that regardless of the quantity, cocaine in a two-year-old child constitutes a "noxious substance." Although the description of the offence itself makes no reference to any specific or ulterior mental element, the nature of the specific or ulterior mental element proven determines the maximum punishment for the offence.

[186] It is not necessary for the Crown to prove that T.B. knew that cocaine was noxious. The Crown must prove, however, that she intended to endanger M's life by administering it to him. I am satisfied beyond a reasonable doubt that T.B. administered a potentially lethal dose of cocaine to M, but I am not satisfied that she did so with the intention to endanger his life. Accordingly, I find her not guilty of this offence.

[187] Fifth, T.B. is charged with administering a noxious substance between June 1, 2004 and July 30, 2005, with intent to aggrieve or annoy M.

[188] The evidence that I accept is that M internally ingested cocaine on many occasions during that fourteen month period. I am satisfied beyond a reasonable doubt that T.B., who was the constant and continuous caregiver, administered the cocaine to M.

[189] To "annoy" is to make slightly angry, pester or harass, harm or attack repeatedly. To "aggrieve" is to infringe upon the rights of someone or to inflict an injury on someone. It is a reasonable inference that T.B. knew that the cocaine would change M's conduct - whether it was to make him submissive by stopping a temper tantrum, or tears, to make him happy, or even to make him sleep.

[190] I am satisfied that T.B. would have known that cocaine was an illegal substance and that it would alter M's outlook and behaviour. I am also satisfied that by giving him cocaine, she infringed upon his right to cry or to behave in a way that a normal, active, two-year-old behaves. By giving him cocaine on numerous occasions over a prolonged period, she repeatedly forced her will on his. Therefore, I am satisfied beyond a reasonable doubt that T.B. is guilty of administering a noxious substance to M over the fourteen-month period with intent to aggrieve or annoy him.

THE APPLICANT'S EVIDENCE

7 On this application, the applicant testified that after the commencement of the preliminary inquiry, her lawyer, David Mercury, told her that he could no longer represent her because of other

commitments. Mr. Mercury arranged a meeting between the applicant and Terry Kirichenko. A retainer followed.

8 The applicant recalled that during one of their first meetings, Mr. Kirichenko said that he favoured a jury trial, because jurors, as the applicant's peers, would relate to her life experiences and have sympathy for her.

9 During the preliminary inquiry, Joey Gareri gave evidence about a scientific analysis that had been performed on the hair of the applicant's child at the Hospital for Sick Children (the "HSC") where Mr. Gareri was the Manager of the Division of Clinical Pharmacology and Toxicology in the Motherisk Laboratory.

10 He testified that by testing strands of the child's hair in segments representing hair growth in monthly time periods, members of the Motherisk team were able to determine the child's level of exposure to cocaine over time. Their results demonstrated that, in each month during a fourteen month period in the child's life up to the time of his admission to hospital, there was a significant amount of cocaine present in his bloodstream. The team concluded that the child had been ingesting or was administered cocaine in each of the time periods tested.

11 The applicant researched the Internet and found documents relating to a 2002 discipline hearing involving the Director of the Motherisk Program, Dr. Gideon Koren.

12 Dr. Koren and another physician at the HSC had been co-investigators in a research project regarding the effectiveness of deferiprone ("L1") in controlling iron overload in thalassemia patients (a type of hereditary anemia). The research consisted of clinical trials sponsored by the pharmaceutical company Apotex.

13 Two years into the study, the other physician came to doubt the effectiveness of L1. Dr. Koren disagreed with her and published papers outlining his interpretation of the data. Subsequently, five anonymous harassing letters relating to the physician and her research were received by the media and medical staff at the HSC. Dr. Koren denied that he was the author of the letters. After a private investigator obtained a DNA match from saliva on the envelopes, Dr. Koren confessed that he had authored the letters. The College found that Dr. Koren had committed an act of professional misconduct.

14 The applicant gave Mr. Kirichenko the results of the Internet research and the telephone number of a forensic toxicologist, Julia Kline, who had worked with Dr. Koren in the Motherisk Laboratory. She wanted her lawyer to determine if Ms. Kline would agree to testify as an expert on the issue of hair analysis.

15 Mr. Kirichenko told the applicant that before he could retain an expert, he needed special funding from Legal Aid. Later, he said that he was unable to contact Ms. Kline. A few days before trial, he told the applicant that they did not need an expert, because it was his opinion that the Crown's experts would not be able to prove the allegations beyond a reasonable doubt.

16 In December 2008, the applicant telephoned her lawyer and offered him money. She testified that she was trying to get his attention to prepare for trial. She told him that she had $1000 and needed to see him. They arranged to meet on the ground floor of his office building where he told her to put the money into his pocket.

17 He agreed to meet with her again at his office on January 10, 2009.

18 The applicant testified that over the course of a two hour meeting on that date, she was satisfied with the discussion she had with her lawyer. Although she had been, up to that point, under the impression that she would have a jury trial, Mr. Kirichenko told her that "going by judge alone will speed up the process." He gave her no other reasons. Her evidence is that she accepted his advice, trusting that he was acting in her best interest.

19 The applicant had expected her trial to take four to six weeks. After eight days of evidence, the Crown closed its case. When her lawyer asked if she was ready to testify, she told him that she did not feel prepared. He asked her to think about it and to give him her decision in the morning. If she decided not to testify, he would have a paper for her to sign. The next morning, she signed the paper.

20 The day before judgment was to be handed down, Mr. Kirichenko telephoned her to say that the matter was going to be adjourned for one week. He told her that he could not appear in court with her when the matter was adjourned because he was ill. The following week when judgment was handed down, he sat beside her in the courtroom. He told her that he had forgotten his robes at home.

21 The applicant's evidence is that later that day, she consulted her present counsel about whether to appeal the decision. Two weeks later, she learned that Mr. Kirichenko was under suspension. In the course of this application, she was asked: "If you had known right from the start that Mr. Kirichenko had been suspended by the Law Society, what would that have meant for you?" Her answer was:

> I wouldn't have wanted any of the negativity of his suspension to reflect on my case, at all. Based on what the suspension's all about - organizing his books and record keeping - I mean, he would have been totally distracted. I would have sought new counsel. And when I did find out, I did sought [sic] new counsel.

MR. KIRICHENKO'S EVIDENCE

22 Terry Kirichenko was called to the bar in 1983. His practice is restricted to criminal law.

23 He agreed to take over the defence of the applicant's case during the preliminary inquiry in May 2007. He reviewed the documents in her file relating to family court proceedings, Children's Aid Society notes, hospital records and medical reports concerning the injuries suffered by the child.

24 It was Mr. Kirichenko's understanding that, at the time he was retained, the applicant had elected to be tried by judge and jury. During their first meeting, Mr. Kirichenko asked the applicant to provide him with family *memorabilia* so that he could "tell her story" to a jury.

25 It is his evidence that her decision to be tried by a judge sitting alone was made months before the trial following a long meeting in September 2008 after a pre-trial appearance before Nordheimer J. Mr. Kirichenko recalled that they were sitting outside in Nathan Phillips Square when they had this discussion.

26 He was referred to his billing statement to Legal Aid showing a docket of .75 hours on September 11, 2008 "to meet with Nordheimer J. to confirm trial date and to meet with Crown's expert" and 2.5 hours on March 25, 2008 "to attend judicial pre-trial before McCombs J. Pre-trial postponed. Attend trial office for new date and attend in court to address matter."

27 When it was suggested to him that the decision to re-elect could not have been made on September 11th, he said he must have been mistaken. He consulted his diary at home during the overnight recess and found that he had written "no ev" after meeting with the applicant in September, which meant that "the jury idea had been laid to rest."

28 Mr. Kirichenko testified that during that meeting with the applicant, he expressed a number of concerns about proceeding with a jury:

> First, her infant child had been admitted to hospital in a precarious state of health following cocaine ingestion and she had provided no explanation.
>
> Second, she had given a video statement to the police that when her child started to convulse, they were inside the house of a friend of Mohamed Fazal. Later, despite the fact that there did not appear to be any falling out with Mr. Fazal, the applicant made no effort to help the police find the location of the house. Mr. Kirichenko thought that the relationship with Mr. Fazal would cause the applicant insurmountable problems.
>
> Third, there was extensive evidence in the Children's Aid Society files about markings on the infant's body and interactions with the applicant in the weeks leading up to his hospitalizations.
>
> Fourth, Mr. Kirichenko had not been able to find an expert to contradict the hair analysis.

29 He asked the applicant if she would be able to testify in those circumstances. She became upset and started to cry and she told him that she did not want to testify. He testified that in his mind, the issue was settled after the meeting in Nathan Phillips Square and from that day on, he never prepared her to testify.

30 Mr. Kirichenko stated that the applicant would not accept that her child had sustained multiple rib fractures. She was convinced that there was a conspiracy among the doctors and if he had followed her instructions, he would have accused them of fabricating the fractures seen on the x-rays.

31 He hoped instead to challenge the evidence of Dr. Marcellina Mian, a pediatrician and former Director of the Suspected Child Abuse and Neglect Program ("SCAN") at the HSC who had testified at the preliminary inquiry that the child's fractures were sustained at different times. He discussed the ability to date fractures with a general practitioner who was also a relative.

32 In the end, he did not seek authorization from Legal Aid to retain an orthopedic expert, because he was of the opinion that he could raise a reasonable doubt based on the evidence of the Crown's radiologist, Shi-Joon Yoo, who testified that none of the rib fractures were new.

33 Mr. Kirichenko's position is that he spent countless hours on the Internet searching for literature about hair analysis. However, he was unable to find anything that would challenge the methodology or the findings of the Motherisk team.

34 He testified that he made efforts to contact Ms. Kline without success. Then, on the first day of trial, she telephoned him from New York. After speaking with her, he was of the opinion that her

evidence would only serve to reinforce the methodology used by the Motherisk team and thus, would not assist the applicant's case.

35 Mr. Kirichenko did not dispute that the applicant gave him money; however, he denied the purpose and the amount. His evidence was that a few days before Christmas, the applicant telephoned him to say that she had a present for him. He told her that a present was not necessary. He agreed to meet with her at his office building where she put her hand into his pocket and said, "I want you to have this for Christmas." He noticed some bills inside his pocket and after he got into his car, he removed $300. He testified that he accepted the money as a Christmas gift and he thought that it was her way of thanking him for helping her out.

36 In December 2008, Mr. Kirichenko received notice from the Law Society about a discipline hearing scheduled for Friday, January 9, 2009. He sought an adjournment of the hearing, stating:

> This is not the optimum situation for me to stand here and represent myself. But what I hope to do - I'm admitting the case. I don't want them wasting time calling evidence. It's incontrovertible. What I hope to do is, once this trial is out of the way - and this is a trial, very serious child-abuse trial, touches on the Goudge Inquiry material. All I've been doing for about the last six weeks is reading medical, ortho-pediatric, toxicological. I've just been trying to prepare for this trial. And so then this date was presented to me about three and a half weeks ago. Well, during the holidays I tried - and then I had to let the Crown know, "Lookit, I might have a problem." And obviously, the Crown was bringing one witness from Dubai, and he is continuously asking me, "Well, we have to do this trial."

37 Mr. Kirichenko asked the Chair of the Hearing Panel, Janet Minor, if the disposition of the hearing could be adjourned in order to allow his suspension to take effect after the applicant's trial, stating:

> The Crown's case, on its own, is estimated to take three to four weeks, so I've waived the jury. It'll be before a Superior Court judge here next door. I don't know - my guess is that right now there will be some defence evidence ...

38 The Chair refused to grant the adjournment, made a finding of professional misconduct and proceeded to the penalty portion of the hearing. In his further submissions, Mr. Kirichenko said:

> I would have addressed this before the start of the year, but my attention has been divided, clearly divided. ... And so, to an extent here, what I have been doing is so preparing for this trial that I've regretfully put the Law Society on the back burner. And my hope is to get this trial done. ...

39 In her reasons, the Chair stated:

> ... The lawyer has indicated that he will be engaged in a significant trial which is scheduled for a month. It is not, of course, 100 per cent clear that the trial will end in a month, and as a result, the Law Society has agreed that the period for suspension may be altered or extended as the trial unfolds.

40 It was then ordered:

1. The Lawyer is suspended for 30 days commencing from February 23, 2009, unless the Director of Professional Regulation determines a later date that the suspension shall begin, and continuing indefinitely until the following conditions have been met to the satisfaction of the Director of Professional Regulation:

    a) The Lawyer has brought all of his books and records for the period from January 2006 to the present into full compliance with By-Law 9 (formerly By-Laws 18 and 19) made under s. 62 of the *Law Society Act*; and
    b) The Lawyer has produced all of the documents and books and records pertaining to the Law Society's spot audits and investigation as requested in the letters set out in particulars 2 and 3 of the Notice of Application.

2. The Lawyer shall comply fully with the terms of the Law Society's *Guidelines for Lawyers who are Suspended or who have Given an Undertaking Not to Practice*, while suspended pursuant to this Order.

41 Mr. Kirichenko testified that it was always his understanding that the Law Society had agreed to accommodate the applicant's trial. For that reason, he never told the applicant about his suspension. He also understood that if the trial continued longer than anticipated, "they would issue a letter." He denied that the proceedings before the Law Society had any impact on his conduct at the trial.

42 In his cross-examination, Mr. Kirichenko was challenged on his decision not to cross-examine Dr. Mian on negative comments made about her during testimony before the Inquiry into Pediatric Forensic Pathology in Ontario (the "Goudge Inquiry"). Although Dr. Mian did not testify before the Goudge Inquiry, the Inquiry heard testimony that Dr. Mian co-authored a report with Dr. Charles Smith concluding, incorrectly, that a deceased child had been sexually abused. This report contributed to the wrongful conviction of the child's father. In testimony before the Inquiry, Dr. Mian was criticized for allegedly acting outside the area of her expertise in drafting the report. The final report of the Goudge Inquiry does not refer to Dr. Mian by name (presumably because she did not have the opportunity to testify before the Inquiry), but does refer to the report and unnamed co-author (*Inquiry into Pediatric Forensic Pathology in Ontario: Report,* Vol. 2, pg. 157). Mr. Kirichenko testified that he was aware of this criticism and chose not to cross-examine her on this point because, in his opinion, Dr. Mian's evidence in the applicant's case was within her area of expertise in assessing trauma and injuries and determining their potential causes.

43 Mr. Kirichenko was aware that the applicant had concerns about Dr. Koren's credibility because of his discipline hearing before the College. During his cross-examination of the doctor, he was holding the documents in his hand, but when their exchange became heated, he made the decision not to embark on a personal attack, because "we would have lost sight of the ball." He also knew that the Crown would have been in a position to call other members of the Motherisk team to testify about the hair analysis.

44 After the close of the Crown's case, Mr. Kirichenko raised the issue of whether the applicant wanted to testify and he gave her time to think about it overnight. In the morning, she told him that she did not want to testify and she gave him written instructions. His evidence is that her decision came as no surprise to him. If she had changed her mind, he would have asked the Court for time to prepare her.

45 Mr. Kirichenko had received correspondence from the Law Society to deal directly with Christine Phillips of the Monitoring and Enforcement Department. On March 24, 2009, he sent an e-mail to Ms. Phillips as follows:

> Please advise when we can meet. I am required in Superior Court tomorrow to receive judgment on a lengthy trial. I am today at home with the flu and can be reached on my cell.

46 Documentary evidence was produced that on March 24, 2009, Ms. Phillips telephoned Mr. Kirichenko and told him that he could not represent anyone in court, because he remained suspended. Mr. Kirichenko did not recall this conversation in his evidence.

47 When he learned that judgment was to be postponed for one week to accommodate the Court, he telephoned the applicant and asked her to appear in court by herself when the new date was set.

48 On March 31, 2009, Mr. Kirichenko delivered a handwritten note to Ms. Phillips' office that read:

> Dear Christine,
>
> This is trust half of books. He is finishing general. Can I go get judgment tomorrow? It was long trial; client with no record faces long term if convicted. Also, press has been all over the case. I would like to avoid explaining being ungowned. If there is a conviction, it will be adjourned. Will call you in a.m. Thanks again.

49 Mr. Kirichenko testified that he made the unfortunate assumption that Ms. Phillips was aware of the accommodation that the Law Society had given him to conduct the applicant's trial and he had expected to receive a letter permitting him to continue to represent the applicant when judgment was handed down.

50 On the morning of April 1st, he telephoned Ms. Phillips. When he was unable to reach her, he did not leave a message. His handwritten note did not come to Ms. Phillips' attention until after April 1st.

51 When the verdict was pronounced, Mr. Kirichenko was sitting beside the applicant in the body of the court. He was not wearing his gown. The Crown was aware that Mr. Kirichenko was under suspension by the Law Society; the Court was not.

52 On April 7, 2009, Mr. Kirichenko received correspondence from Mark Halfyard, stating that he had been retained to provide the applicant with an opinion on the merits of an appeal. Enclosed was a signed authorization to release the contents of the applicant's file "for which you continue to represent me" and waiving solicitor-client privilege.

53 Two weeks later, the applicant learned of Mr. Kirichenko's suspension. On May 14, 2009, Mr. Kirichenko was removed as counsel of record. Despite repeated requests, he did not deliver the applicant's file. In the interim, Mr. Halfyard received copies of the disclosure from Crown counsel.

54 On August 31, 2009, Mr. Kirichenko wrote to Mr. Halfyard enclosing "some odds and ends from what is left in the file," advising that "much of what you request is non-discoverable personal work." Mr. Kirichenko's position is that after he prepared his account to Legal Aid on March 17, 2009, he "vetted" the file and any personal work product that remains is privileged.

55 On May 6, 2009, Mr. Kirichenko was reinstated by the Law Society as a member in good standing.

THE POSITION OF THE APPLICANT

56 The applicant raises three issues warranting a mistrial:

> First, her lawyer made the decision to waive her right to trial by jury without advising her of the consequences of waiving that right, in circumstances where the waiver must be voluntary and informed. It is submitted that he made that decision to allow him to favorably negotiate an adjournment of his discipline hearing before the Law Society.
>
> Second, he failed to advocate for the applicant's interests by retaining experts and preparing her to testify. It is submitted that he then conducted the trial in such a way as to speed up the process and finish the trial in time to bill his file, serve his thirty day suspension and be in a position to carry on with his trial practice.
>
> Third, he failed to inform the applicant of matters relevant to the retainer. In particular, he failed to advise her of his discipline hearing three days before her trial. After he was formally suspended, he failed to advise the applicant and the Court that he was unable to represent her.

THE POSITION OF THE RESPONDENT

57 The respondent submits that although the evidence about the transfer of money is "disturbing," it suggests that Mr. Kirichenko's candour about receiving cash from a client on a Legal Aid certificate demonstrates that he is also being candid and forthright about the applicant's decision to re-elect and her desire not to testify.

58 The respondent contends that throughout his involvement in the matter and in the course of his discussions with the applicant, Mr. Kirichenko had always considered this to be an appropriate case for a judge alone trial. Those reasons included the nature of the allegations involving the young infant child of the applicant; the applicant's desire not to testify; the expert medical evidence that was anticipated and the fact that the applicant had not disclosed any explanation for what had happened to her child other than what was contained in her video statement to the police. It is further submitted that even if the decision to waive the applicant's right to trial by jury may be impugned, it cannot be said that the verdict would have been different, or that this resulted in an unfair trial or a miscarriage of justice.

59 The respondent states that to suggest that Mr. Kirichenko failed to retain experts ignores the reality of the record: he made several requests of the court for time to find an expert to challenge the hair analysis. During his cross-examination of Dr. Koren, Mr. Kirichenko challenged the validity and trustworthiness of the science and the protocol used in this case. Further, reference to Dr. Koren's past disciplinary record and lawsuits arising from comments about Dr. Mian at the Goudge Inquiry are nothing more than collateral attacks and are not reasonably capable of altering the reliability of the verdict.

60 The respondent submits that the interest of the applicant in having her trial proceed with counsel of her choice was of paramount consideration to both the Law Society and Mr. Kirichenko and the intent was that Mr. Kirichenko would be in a position to represent the applicant to the end of her trial. It is submitted that what happened on April 1st should not have a retroactive effect on the conduct of the trial or the verdict.

61 The position of the respondent is that during the trial, the applicant raised no issue about the competence or conduct of her lawyer. The evidence at trial demonstrated that she blamed the child's father, day care workers and doctors for conspiring against her. Then, after she was convicted, she blamed her lawyer.

ANALYSIS

The lawyer's duty of loyalty

62 In *R. v. Neil*, [2002] 3 S.C.R. 631, at para. 12, Binnie J. set out the declaration of an advocate's duty of loyalty made by Henry Brougham, later Lord Chancellor, in his defence of Queen Caroline against the charge of adultery brought by her husband, King George IV, when he addressed the House of Lords as follows:

> [A]n advocate, in the discharge of his duty, knows but one person in all the world, and that person is his client. To serve that client by all means and expedients, and at all hazards and costs to other persons, and, among them, to himself, is his first and only duty; and in performing this duty he must not regard the alarm, the torments, the destruction which he may bring upon others. Separating the duty of a patriot from that of an advocate, he must go on reckless of consequences, though it should be his unhappy fate to involve his country in confusion.

63 Binnie J. went on to explain that the duty of loyalty endures, because it is essential to the integrity of the administration of justice and it is of high public importance that public confidence in that integrity be maintained. Unless a litigant is assured of the undivided loyalty of the lawyer, neither the public nor the litigant will have confidence that the legal system is a reliable and trustworthy means of resolving their disputes.

64 He held that aspects of the duty of loyalty engage other dimensions - the duty to avoid conflicting interests, including the lawyer's personal interest; the duty of commitment to the client's cause and the duty of candour with the client on matters relevant to the retainer (at para. 19).

65 Binnie J. described the duty of loyalty to an existing client, as expressed by Wilson J.A. (as she then was) in *Davey v. Woolley, Hames, Dale & Dingwall* (1982), 133 D.L.R. (3d) 647 (C.A.) at para 8:

> The underlying premise ... is that, human nature being what it is, the solicitor cannot give his exclusive, undivided attention to the interests of his client if he is torn between his client's interests and his own ... (at para. 26 of *Neil*).

66 Binnie J. cautioned that a lawyer must not put himself in a position where there is a substantial risk that the lawyer's representation of the client would be materially and adversely affected by the lawyer's own interests (at para. 31).

67 Further, if material facts surface while court proceedings are ongoing in the criminal law context, the conflict should be raised at the earliest practicable stage and an application to disqualify the lawyer from acting further may be brought. If the trial is concluded, the conflict of interest may still be raised at the appellate level as a ground to set aside the trial judgment, but the test is more onerous, because it is no longer a matter of taking protective steps but of asking for the reversal of a court judgment (at para. 38). Binnie J. explained, citing *R. v. Graffe* (1993), 80 C.C.C. (3d) 84 (Alta. C.A.), that in a post-conviction situation, if an accused is to challenge a conviction or sentence on appeal, he or she must show more than a possibility of a conflict of interest. While actual prejudice need not be shown, the appellant must demonstrate the conflict of interest and that the conflict adversely affected the lawyer's performance on behalf of the appellant (at para. 39).

68 Although it was not necessary to consider the argument, the Supreme Court left the door open as to whether ineffective counsel can result in a miscarriage of justice:

> ... Even in *Charter* terms, there is much to be said for the view of Powell J. of the United States Supreme Court who observed in *Cuyler v. Sullivan*, 446 U.S. 335 (1980), that, if defence counsel is incompetent or otherwise violates his or her duties in such a way as to adversely affect the representation of an accused, "a serious risk of injustice infects the trial itself ... . When a State obtains a criminal conviction through such a trial, it is the State that unconstitutionally deprives the defendant of his liberty" (p. 343) ... (at para. 43 of *Neil*).

The Re-election: Did the applicant's lawyer breach his duty of loyalty?

69 Mr. Kirichenko's evidence is that the applicant made the decision to have a trial before a judge sitting alone after he explained to her the difficulties a jury would have with her infant's cocaine ingestion and its aftermath, her relationship with Mr. Fazal, her video statement to the police and the results of the hair analysis.

70 In his affidavit, Mr. Kirichenko stated:

> An interim date to speak to the matter was scheduled for September 11, 2008, to see where the defence was with respect to retaining an expert and to confirm the trial date. On that date, I attended court and appeared before Justice Nordheimer. By that date I had found no expert to contradict the cocaine analysis performed by the Motherisk Laboratory. I seem to recall advising Justice Nordheimer that there would probably be a re-election and the trial date was confirmed. Following that court appearance I had a two hour discussion with Ms. [T.B.] about her impending trial. In the course of that conversation the decision was effectively fi-

> nalized that the applicant would re-elect trial by judge alone. I explained to her the nature of the evidence and explained why a jury trial was not going to work.
>
> Thereafter, the issue of having a trial by judge and jury was not revisited. My last meeting with Ms. [T.B.] before the commencement of the trial was January 10, 2009. That meeting included Mr. Mercury. By that time, the assigned trial judge was known. In the course of that meeting, it was assumed the trial would be heard by a judge alone. There was no discussion questioning the wisdom of conducting a judge alone trial. The applicant never insisted on a jury trial and accepted my advice in that regard.

71 The applicant testified that there was no meeting at Nathan Phillips Square and Mr. Kirichenko told her for the first time on January 10, 2009 that a judge alone trial would speed up the process.

72 When confronted with his dockets, Mr. Kirichenko became confused as to whether the meeting was in September or March, although he recalled that it was warm enough to sit outside at Nathan Phillips Square. He consulted his diary at home and testified the next day that the meeting was in September.

73 It is argued by the applicant that, in the absence of reliable dockets or written instructions, Mr. Kirichenko's evidence cannot be accepted as truthful. There is no issue that given his difficulties with the Law Society arising from his lack of record keeping, Mr. Kirichenko is lacking in administrative skills. At times, his evidence was confusing, inconsistent and difficult to follow. The cross-examination was vigorous and he was embarrassed and defensive.

74 Although she did not stray far from her affidavit, I do not accept as reasonable or credible the applicant's evidence that Mr. Kirichenko never discussed his concerns with her about trying her case before a jury. I find that he gave her rational and reasonable reasons why it would be better to try her case before a judge sitting alone and I accept his evidence that they came to an understanding that "she had a better shot before a judge."

75 When he advised the Chair on January 9th, "The Crown's case, on its own, is estimated to take three to four weeks, so I've waived the jury," he was using the words in the context of seeking to obtain an adjournment of the discipline hearing. When he was unsuccessful, the Law Society then structured his suspension around the applicant's trial.

76 The next day, he discussed the issue of proceeding before a judge alone with the applicant, because by then he knew the name of the trial judge who was going to hear the case. She accepted her lawyer's advice in that regard. There is no evidence that the applicant insisted on a jury trial. Moreover, she has not articulated any reason why a jury trial would have been the preferable mode of trial in the circumstances of her case.

77 It makes no difference when her decision to waive her right to a jury trial was made. I am satisfied that the decision was made independent from Mr. Kirichenko's troubles with the Law Society. I am also satisfied that there was no time constraint that influenced the decision.

Conduct of the Trial: Did the applicant's lawyer breach his duty of commitment to his client's cause?

78 The applicant acknowledged that she was aware that the Crown was relying on her video statement to the police to suggest that it was the applicant who fed her infant cocaine on the night he

almost died. Her evidence was that she was willing to testify and the reason she gave her lawyer written instructions agreeing not to testify was because she did not feel prepared.

79 Mr. Kirichenko testified that he never prepared his client to testify, because the decision had been made months earlier that she was not willing to do so. He said that if she had changed her mind, he would have been surprised and he would have asked for time to prepare her. I accept his evidence in that regard.

80 Mr. Kirichenko did not retain an expert to contradict the opinion of Dr. Koren, because he could not find such an expert. The assumption built into the applicant's argument is that such a person exists. At the outset of the application, that part of the application seeking an order to re-open the trial to call additional evidence was abandoned. The applicant has not adduced any fresh evidence that attacks the scientific methods used to detect cocaine and cocaine metabolites in the hair of the applicant's child or the significance of finding it there.

81 The value of any attack on Dr. Koren's credibility would be primarily to undermine the scientific methodology employed, which was the substance of his testimony. Dr. Tatiana Karasov was the technician who actually analyzed the hair samples and arrived at the results. It was Dr. Koren who provided the interpretation of the results and generally spoke to the methods employed and the science behind the analysis.

82 During his cross-examination of the doctor, Mr. Kirichenko had the material about Dr. Koren's disciplinary proceeding at hand. He considered the utility of cross-examining him on his past record and chose not to do so for tactical reasons. He believed that his cross-examination was aggressive and that to cross-examine further on a matter that he viewed as collateral would have been unnecessarily aggressive and may have been viewed negatively by the trial judge as "mudslinging." I find that his decision not to cross-examine in the area was a reasoned decision by an advocate and was not related to issues of time or his impending suspension.

83 Further, I accept his explanation for choosing not to cross-examine Dr. Mian on comments made about her during the Goudge Inquiry. Dr. Mian's evidence in the applicant's case was within her area of expertise in assessing trauma and injuries and determining their potential causes.

84 A court should be hesitant to interfere with tactical decisions made by counsel when cross-examining a witness. There is nothing in the record to suggest that cross-examination of either Dr. Mian or Dr. Koren on these collateral matters would have altered the course of the trial or influenced the verdict. Accordingly, I find that the applicant has not established that during the trial, she was ineffectively represented by counsel or that Mr. Kirichenko's performance on her behalf was affected by a conflict of interest arising from his disciplinary proceedings before the Law Society.

The Suspension: Did the applicant's lawyer breach his duty of candour?

85 Mr. Kirichenko informed Crown counsel about the impending discipline hearing and the potential difficulties it might create in proceeding with the applicant's trial. Crown counsel wanted to proceed, given that the events had occurred three and one half years prior. Mr. Kirichenko sought an adjournment of the discipline hearing, which was refused.

86 Contrary to the suggestion that the trial was shortened because of Mr. Kirichenko's difficulties with the Law Society, the timing of the suspension revolved around the applicant's trial, as evidenced in the exchange between discipline counsel and the Chair as follows:

MS. DUGGAN: The Society had indicated to Mr. Kirichenko that we were aware of his difficulties with his criminal trial starting on Monday. Our office did speak to the Crown, Mr. Levy, L-e-v-y. He indicated that it's a one-month trial. He indicated that he wanted the trial to proceed, mainly because of this expert witness, who has to come in from Dubai, and it's costing the Crown a great deal of money.

The Society is sensitive to that, and so what I had indicated to Mr. Kirichenko is that I'd like to build in the trial time with respect to a start date, should you order a suspension. And so I had indicated that if it's meant to be one month, that February 23rd would give him about a week's leeway, should the trial not finish in a month, or even if it did finish, he would have a week to deal with things and then start any suspension, should it be imposed. So I was trying to take that into account.

THE CHAIR: So you just - could you repeat that again? You are going to be proposing -

MS. DUGGAN: I had -

THE CHAIR: -- a one-month suspension?

MS. DUGGAN: Yes, 30 days, commencing February 23, 2009.

THE CHAIR: And if the trial were still in progress?

MS. DUGGAN: I can build something into the paragraph, that perhaps, rather than having to reappear in front of a Panel, that the Director of Professional Regulation could be allowed to vary the date without having to come back to a bencher.

87 The running of the suspension was postponed precisely to accommodate, and not to interfere, with the timing of the applicant's trial and Mr. Kirichenko's ability to represent her.

THE CHAIR: Are you content that that date be determined by the Director of Regulation? If you are not, I am prepared to consider it again, if requested.

MR. KIRICHENKO: The February 23rd date?

THE CHAIR: Yes. What I'm saying is I'll make it February 23rd, to be reconsidered or to be adjusted as required by the Director of Professional Regulation.

MR. KIRICHENKO: That's fair enough.

THE CHAIR: But if you would prefer that I'm the one who does it, I could retain - I could be seized of that portion of it in case it's necessary to address -

> MR. KIRICHENKO: Would I then have to bother you and come -
>
> THE CHAIR: Yes.
>
> MR. KIRICHENKO: Oh, I don't -
>
> THE CHAIR: But I'm not saying you'd bother me.
>
> MR. KIRICHENKO: Well, perhaps that's a bad choice -
>
> THE CHAIR: You would have to address it.
>
> MR. KIRICHENKO: -- of words, but I trust the office to handle it.

88 The trial ended on January 29, 2009. Mr. Kirichenko was suspended from February 23, 2009 to May 6, 2009. Prior to the date set for judgment on March 25, 2009, Mr. Kirichenko was aware that the matter would be adjourned for one week to accommodate the Court.

89 On March 24, 2009, Ms. Phillips telephoned Mr. Kirichenko in response to inquiries he had made of her about submitting his records for review. In her note to the file, it states:

> The Lawyer advised that he is due in court tomorrow (March 25th); I told him he cannot represent anyone in court because he remains suspended. He advised that he is aware, but he at least has to make an appearance even if to sit in the gallery.

90 In an e-mail to Mr. Kirichenko on March 24, Ms. Phillips wrote,

> I thought I should follow up on our telephone conversation from this morning, in order that we are clear on what is required. ... I am also attaching a copy of the Guidelines for Lawyers who are Suspended in order that you can ensure that you abide by those guidelines until you are reinstated.

91 The Law Society's "Guidelines for Lawyers who are Suspended" states in part:

1. (1) In this guideline, "suspended lawyer" means a lawyer whose licence to practice law is suspended ... .

(2) A suspended lawyer ... must cease practice as a result of the suspension ... . Suspended lawyers are also prohibited from providing legal services as defined by the *Law Society Act*, as only those persons licenced by the Law Society to provide legal services may do so. By-laws 7.1 (Part II) and 9 (Part II.1) impose on suspended lawyers certain notice requirements, obligations and restrictions on activities, including handling of money and other property.

(3) In order to comply with these obligations and restrictions, suspended lawyers must comply with these Guidelines.

2. (1) During the term of the suspension ..., suspended lawyers may only:

a) See clients only for the limited purpose of assisting them in transferring their past or present legal work to another lawyer;
b) If requested by the client, suggest a referral to a particular lawyer to continue work on the client's file. The ultimate choice of who is retained rests with the client and not with the suspended lawyer.

4. (2) A suspended lawyer shall not resume the practice of law upon termination of a suspension ... until the suspended lawyer receives written confirmation of the termination of the suspension ... from the Law Society.

92 Although Mr. Kirichenko made efforts to contact Ms. Phillips to advise her that the applicant's matter was not complete, he did not formally request a postponement of the suspension. He was told that he could not represent anyone in court because he remained suspended. He was nevertheless of the view that in the applicant's case, nothing was to be done other than to receive judgment and, in the event of a conviction, the matter would be adjourned for sentencing on a date when his licence to practice was reinstated.

93 After judgment was rendered, Mr. Kirichenko conferred with Crown counsel and agreed on a date for sentencing at a point in time when the suspension was completed.

94 During his cross-examination, Mr. Kirichenko was asked:

Q. When you appeared before Madam Justice Dunnet -
A. Right.
Q. - on April 1 -
A. Right.
Q. - did you indicate to Her Honour that you couldn't accept the judgment because you were a suspended lawyer?
A. No, actually, because the - I couldn't accept - I couldn't what?
Q. That you couldn't be before the Court to address it; you couldn't represent your client properly that day or make any submissions because you were suspended? Did you -
A. There weren't any submissions to be made that day. There was going to be a judgment and it was going to go over. That was it. No submissions.
Q. Did you recognize that there was a potential that the Crown Attorney might attempt to revoke her bail upon the finding of guilt?
A. Uh, no. Uh, I had been advised that he wouldn't do that, by him.
Q. Okay, on -
A. So if you want to get down to it, Ms. [T.B.] caught a break there.

Q. So you think just because -
A. Didn't she?
Q. Because of the fact that you were suspended that the Crown Attorney didn't make that request?
A. I don't know, but it didn't happen. He told me beforehand he wouldn't do it.
Q. Did he tell you why he wouldn't do it?
A. Uh, because I'd have to get other counsel in here, and it would stop everything. And because she'd come to court religiously, I wasn't that concerned about her not coming to court. And I told Mr. Halfyard this.
Q. Just so I'm clear, you had a conversation with the Crown where the Crown said that, so as not to delay things and not to interrupt things, he wouldn't ask to have the bail revoked? And from what I read in the transcript and what was conveyed to Her Honour, the Crown Attorney indicated that because she had been found not guilty of a particular count was the reason why he wasn't asking for the bail to be pulled?
A. That very well may be, but, uh ... I'm saying, at the end of the day, it wasn't asked, was it?
Q. And you're saying you had a specific conversation where he said the reason why he's doing this is to accommodate you?
A. No, he said, "If - if - if it comes down to she's convicted, whatever, um, if I have to - if I ask for her bail to be revoked, you're going to have to get another lawyer." I said, "I know, and I'll have to instruct them," so we played it by ear. And then we agreed on the Pre-Sentence Report, which I needed, um, and that was it ...

...

A. And that morning, I remember feeling like I'm in no-man's land here, what do I do? And I wasn't going to disappoint Ms. [T.B.], who's been waiting and waiting for this judgment, and, uh, I thought, okay, how are we going to slice this in half, here? I can't appear gowned. Uh, I don't want to stop the judgment. I know Her Honour's been working on it. It was adjourned a week. Uh, what do you do?

So I - okay, I'll appear ungowned. We'll get the judgment, at least, because everyone's waiting for this judgment.

95 In my view, whether or not Mr. Kirichenko should have advised the applicant before her trial began about his forthcoming suspension, he had a duty to advise her before the date of judgment that he was under suspension and to provide her with the opportunity to obtain legal representation. Mr. Kirichenko's failure to inform the applicant of his suspension left her effectively unrepresented at this crucial moment. He breached his duty of candour to his client.

96 In addition, Mr. Kirichenko failed to inform the Court that he was not, on the day of judgment, entitled to practice law. He sat in the body of the Court, told the applicant that he had forgotten his robes, and permitted the Court to believe the same. For an officer of the Court, albeit a suspended one, this is unacceptable conduct.

97 Moreover, at the time of judgment, Crown counsel was aware that Mr. Kirichenko was suspended and he too failed to inform the Court that the applicant was not represented. Had an unforeseen issue arisen at that time, the applicant would have been left to her own devices. It seems trite to point out that Crown counsel are quasi-judicial officers and must be beyond reproach in their dealings with the Court. In the instant case, Crown counsel's silence misled the Court into believing that the applicant was represented by counsel.

98 While Mr. Kirichenko breached his duty of candour, it remains to be determined whether this breach undermined the fairness of the trial or the decision-making process. The applicant claims that she would have obtained different representation had she known of Mr. Kirichenko's impending suspension. At the very least, had the Court been informed, inquiries would have made to ensure that the applicant had made an informed decision to hear her verdict as a self- represented litigant.

99 Our Court of Appeal has repeatedly stated that mistrials should only be granted in the clearest of cases, and only where the impugned conduct undermines trial fairness or the decision-making process. This same test applies both before and after judgment is rendered. As was recently stated in *R. v. Arabia*, 2008 ONCA 565, at paras. 51-52:

> Trial judges are more likely to encounter mistrial applications before, rather than after verdict or judgment, and when sitting with a jury, rather than in judge alone trials. The underlying circumstances that ground mistrial applications prior to verdict are myriad, but often involve the introduction of inadmissible evidence or the intrusion of some trial or related event that puts trial fairness at risk or compromises the integrity of the decision-making process.
>
> While there may be some uncertainty about the precise standard a judge is to apply in determining whether to declare a mistrial *before* verdict or judgment, it is well-settled that the authority to declare a mistrial should only be exercised in the clearest of cases. *R. v. R.(A.J.)*. (1994), 94 C.C.C. (3d) 168 (Ont. C.A.) at 174; *R. v. Paterson* (1998), 122 C.C.C. (3d) 254 (B.C.C.A.) at paras. 93-98. There seems no reason in principle to apply any less rigorous standard to applications for the same remedy made after verdict or judgment.

100 Similarly, in *R. v. T. (L.A.)* (1993), 14 O.R. (3d) 378 (C.A.) at para. 8, the Court of Appeal phrased that question as: "Did [the breach] ... create such a prejudice that it cannot be said with certainty that the accused received a fair trial?"

101 In *R. v. Harrer,* [1995] 3 S.C.R. 562 at para. 45, the Supreme Court discussed the fair trial rights of the accused and stated:

> At base, a fair trial is a trial that appears fair, both from the perspective of the accused and the perspective of the community. A fair trial must not be confused with the most advantageous trial possible from the accused's point of view: R. v. Lyons, [1987] 2 S.C.R. 309, at p. 362, per La Forest J. Nor must it be conflated with the perfect trial; in the real world, perfection is seldom attained. A fair trial is one which satisfies the public interest in getting at the truth, while preserving basic procedural fairness to the accused.

102 I find helpful the discussion on miscarriages of justice in *R. v. Khan*, [2001] 3 S.C.R. 823 at paras. 69 and 72, where the Supreme Court of Canada stated:

> When should an irregularity which occurred during a trial be said to constitute a "miscarriage of justice" as understood by s. 686(1)(a)(iii)? The essential question in that regard is whether the irregularity was severe enough to render the trial unfair or to create the appearance of unfairness. Contrary to the analysis under s. 686(1)(b), the emphasis here is not so much on the final verdict and the overall strength of the evidence against the accused, but rather on the gravity of the irregularity [page858] and the effect it may have had on the fairness of the trial.
>
> ...
>
> This being said, the other types of irregularities require that the whole of the circumstances of each case be carefully weighed in determining whether the trial has been rendered unfair in reality or in appearance. In so doing, the court of appeal must bear in mind that the accused is not entitled to a perfect trial. He is entitled to a fair trial, but it is inevitable that minor irregularities will occur from [page859] time to time. The trial cannot be held to a standard of perfection, provided it remains fair in reality and in appearance. See R. v. Find, [2001] 1 S.C.R. 863, 2001 SCC 32, at para. 28; R. v. Carosella, [1997] 1 S.C.R. 80, at para. 74; R. v. G. (S.G.), [1997] 2 S.C.R. 716, at para. 101; R. v. Harrer, [1995] 3 S.C.R. 562, at para. 45.

103 In *Khan*, the jury was provided with transcripts that included issues discussed in the absence of the jury that were previously ruled inadmissible. The transcripts indicated that the accused may have confessed to the crime; yet, the Supreme Court upheld the trial judge's decision to issue a warning to the jurors, rather than order a mistrial.

104 Thus, public confidence in the administration of criminal justice rests on the rule of law and the fundamental fairness of the trial process. It requires not only the avoidance of professional impropriety, but also the avoidance of any appearance of impropriety: *R. v. Robillard* (1986), 28 C.C.C. (3d) 22 at pp. 27-28 (Ont. C.A.).

105 Based on this caselaw, I conclude that a mistrial should be granted where the breach complained of materially affects the fairness of the trial or the decision-making process. On the facts before me, I am unable to conclude that Mr. Kirichenko's failure to inform his client of his impending suspension or his failure to inform her that he was under suspension on the date of judgment affected either of these facets of the trial. In this regard, the only basis upon which I could grant a mistrial would be pure speculation: that the applicant, with the benefit of hindsight, may have considered other representation.

106 In my view, Mr. Kirichenko's breach of his duty of candour had no effect on either the conduct of the trial or on the applicant's decision to re-elect trial by judge alone. I have found no evidence that there was a conflict of interest between the applicant and her lawyer: Mr. Kirichenko was under no time constraint to complete the trial before his suspension began. The Law Society agreed that the period for suspension could be altered or extended as the trial unfolded. Furthermore, the fact that the applicant was effectively unrepresented at the date of judgment, while a breach of Mr.

Kirichenko's duty to his client, cannot impugn trial fairness or the decision-making process. Simply put, the decision in the case had already been made. Moreover, I am convinced that a member of the public, reasonably informed of the facts of this case, would not perceive that the trial of the applicant was unfair.

107 While it is regrettable and inappropriate that on the day judgment was rendered, Crown counsel did not bring to the Court's attention his knowledge of Mr. Kirichenko's suspended status, I conclude that the integrity of the trial and the verdict were not affected thereby.

108 Accordingly, Mr. Kirichenko should have informed his client before the trial of his upcoming suspension. On the day of judgment, he had a duty to inform her before the judgment was handed down that his licence to practice law was then under suspension. I find, however, that the breach of his duty of candour did not affect the fairness of the trial or compromise the integrity of the decision-making process. In my view, this is not one of the clearest of cases where a mistrial should be granted.

CONCLUSION

109 I have found that Mr. Kirichenko did not breach his duty of loyalty or his commitment to his client's cause. He made a reasoned and tactical decision not to cross-examine Dr. Koren and Dr. Mian on collateral issues. I accept Mr. Kirichenko's evidence relating to events that led to the applicant's decision to re-elect trial by judge alone and to not testify. Mr. Kirichenko did not have a conflict of interest with his client due to time constraints caused by his suspension. No such time constraints existed. Whether or not Mr. Kirichenko should have informed his client before her trial began of his impending suspension, he breached his duty of candour to his client by failing to inform her before judgment was rendered that he was suspended from practicing law. However, his conduct in that regard did not affect the fairness of the trial or the integrity of the decision-making process.

DISPOSITION

110 The application for a mistrial is dismissed.

T.M. DUNNET J.

cp/ci/e/qllxr/qljxr/qljxh/qlaxw

Case Name:

R. v. Broomfield

Between
Her Majesty the Queen, Respondent, and
Tamara Broomfield, Appellant

[2014] O.J. No. 4903

2014 ONCA 725

123 O.R. (3d) 316

Docket: C52434

Ontario Court of Appeal

E.A. Cronk, R.A. Blair and D. Watt JJ.A.

Heard: October 14, 2014.
Oral judgment: October 14, 2014.
Released: October 21, 2014.

(16 paras.)

Criminal law -- Criminal Code offences -- Offences against person and reputation -- Bodily harm and acts and omissions causing danger to the person -- Administering a noxious thing -- Assaults -- Aggravated assault -- Appeal by accused from convictions for aggravated assault and administration of noxious substance allowed -- Accused allegedly administered cocaine to son, aged two, over 14-month period -- Accused convicted of separate offences related to wrist and rib fractures for which no treatment was sought -- Convictions for offences related to administration of cocaine were unsustainable -- Fresh toxicology evidence successfully challenged methodology related to taking and analysis of hair sample from victim and validity of results given at trial -- Order for new trial stayed, as accused remained convicted of offences related to fractures and had served sentence.

Criminal law -- Evidence -- Methods of proof -- Scientific evidence -- Opinion evidence -- Expert evidence -- Appeal by accused from convictions for aggravated assault and administration of noxious substance allowed -- Accused allegedly administered cocaine to son, aged two, over 14-month period -- Accused convicted of separate offences related to wrist and rib fractures for which no treatment was sought -- Convictions for offences related to administration of cocaine were unsus-

tainable -- Fresh toxicology evidence successfully challenged methodology related to taking and analysis of hair sample from victim and validity of results given at trial -- Order for new trial stayed, as accused remained convicted of offences related to fractures and had served sentence.

Appeal by the accused, Broomfield, from convictions for aggravated assault and administration of a noxious substance. The accused allegedly administered a potentially lethal dose of cocaine to her two-year-old son, fractured his arm and ribs over a 14-month period, and failed to seek medical attention for the fractures. At trial, Crown counsel adduced expert evidence regarding long-term cocaine ingestion. A sample of the victim's hair revealed high concentrations of cocaine and related metabolites. The expert concluded that the victim ingested substantial amounts of cocaine throughout the 14-month period described in the indictment. The trial judge concluded that the accused gave substantial amounts of cocaine to her son in some form or another. The trial judge further found that the son's collapse from seizure-like symptoms was due to cocaine. The accused was convicted of additional offences related to the victim's fractures. The accused appealed the convictions related to the ingestion of cocaine. She adduced fresh evidence of a toxicologist challenging the methodology related to the taking and analysis of the hair sample from the victim, and the validity of the results given at trial.

HELD: Appeal allowed. The proposed fresh evidence was sufficiently credible to be admitted and could reasonably be expected to have affected the verdict on the two counts relating to the administration of cocaine. No evidence was adduced at trial to challenge the methodology used by the Crown's expert. The trial judge made her decision unaware of the genuine controversy among the experts about the use of the testing methods relied upon by the Crown. The fresh evidence rendered the convictions for aggravated assault and administration of a noxious substance unsustainable. An order for a new trial was stayed. A new trial was not in the interest of justice, as the accused remained convicted of the offences related to the fracture and had already served her sentence.

Statutes, Regulations and Rules Cited:

Criminal Code of Canada, R.S.C. 1985, c. C-46, s. 683

Appeal From:

On appeal from the convictions entered on April 1, 2009 and the sentences imposed on July 8, 2010 by Justice Tamarin M. Dunnet of the Superior Court of Justice, sitting without a jury.

Counsel:

James Lockyer and Saman Wickramasinghe, for the appellant.

Randy Schwartz, for the respondent.

ENDORSEMENT

The judgment of the Court was delivered by

1 THE COURT (orally):-- Tamara Broomfield appeals convictions of assault causing bodily harm, aggravated assault, failing to provide the necessaries of life and administering a noxious substance. Each count and conviction relates to her conduct towards her son who was about two years of age at the time of the relevant events. Ms. Broomfield has served the sentences imposed for the convictions.

THE BACKGROUND FACTS

2 The circumstances that underpin the counts of which Ms. Broomfield has been convicted fall within narrow compass and can be summarized briefly.

The Fracture Counts

3 One count of aggravated assault and the count of failure to provide the necessaries of life relate to various fractures Ms. Broomfield caused to her son's wrist and ribs. X-rays confirmed that her son's wrist had been fractured not once but twice. He had suffered a total of eight fractured ribs, including two ribs that had been fractured twice.

4 The conviction of failure to provide the necessaries of life was entered because Ms. Broomfield failed to obtain medical care for her son's broken wrist. The charge of aggravated assault, which resulted in a conviction of assault causing bodily harm, relates to the multiple rib fractures she caused her son over a 14-month period.

The Cocaine Counts

5 The remaining convictions of aggravated assault and administering a noxious substance (counts four and six) have a common origin -- the finding of cocaine or its metabolite (BZE) in her son's blood and urine.

6 At trial, Crown counsel adduced expert evidence about long-term cocaine ingestion from a pharmacologist/toxicologist and a technician in the Motherisk Program at the Hospital for Sick Children. A sample of the victim's hair revealed high concentrations of cocaine and its metabolite, BZE, and led the expert to conclude that the victim must have ingested substantial amounts of cocaine throughout the 14-month period described in the indictment.

7 A live controversy at trial was whether the victim exhibited any behavioural signs consistent with chronic exposure to significant amounts of cocaine over the 14-month period.

8 The trial judge concluded that Ms. Broomfield had been giving cocaine to her son, in some form or other and in substantial amounts, for 14 months prior to his collapse on July 31, 2005 when he was rushed to the hospital. The trial judge concluded further that Ms. Broomfield gave her son cocaine on July 31, 2005 that resulted in his collapse and seizure-like symptoms.

THE APPELLATE PROCCEEDINGS

9 Ms. Broomfield appeals her convictions. She has abandoned her appeal from the convictions arising out of the several fractures she caused her son but pursues her appeal from the convictions based on the ingestion of cocaine. In aid of the appeals she pursues, Ms. Broomfield tenders the evidence of a toxicologist who:

i. challenges the methods used to collect and prepare the hair sample on which the Crown expert relied in support of his opinion at trial;

ii. criticizes the methodology used in the analysis of the sample; and

iii. questions the validity of the results as given in evidence at trial.

The Admissibility of the Fresh Evidence

10 Counsel agree that the proposed fresh evidence -- two reports of Dr. Craig Chatterton, the Deputy Chief Toxicologist in the Office of the Chief Medical Examiner in Edmonton, Alberta -- should be received as fresh evidence under s. 683 of the *Criminal Code* because it is in the interests of justice to do so.

11 We agree.

12 We are satisfied that due diligence is not a factor that should weigh against the reception of the proposed evidence in this case. The evidence is relevant to a potentially decisive issue on the counts grounded on the administration of cocaine. The evidence is sufficiently credible to be admitted and could reasonably be expected to have affected the verdict on the two counts relating to the administration of cocaine. No evidence was adduced at trial to challenge the methodology used by the Crown's expert. The trial judge made her decision unaware of the genuine controversy among the experts about the use of the testing methods relied upon by the Crown expert at trial to found a conclusion of chronic cocaine ingestion, thus, its administration by Ms. Broomfield.

The Effect of the Admission of the Fresh Evidence

13 We also agree with the joint submission of counsel about the effect of the admission of the fresh evidence on the sustainability of the convictions of the cocaine administration counts. The conviction on count six -- administering cocaine over a 14-month period -- cannot be sustained. Further, the conviction of aggravated assault by administering cocaine to the victim on July 31, 2005 thereby endangering his life, was founded, in part at least, on the finding that Ms. Broomfield had been administering cocaine to her son over the previous 14 months.

14 It follows, in our view that the conviction on count four cannot stand.

CONCLUSION

15 In the usual course, admission of the fresh evidence would warrant quashing the conviction on counts four and six and ordering a new trial on those counts so that the competing expert opinions could play out before a trier of fact. But in this case, Crown counsel, in the best traditions of his office, invites us to stay the order for a new trial on the cocaine administration counts. He says, and we agree, that it is not in the interests of justice to proceed to a new trial on those counts because:

i. the appellant has already served the equivalent of a 49-month sentence, more than double the sentence she was ordered to serve for the fracture-related counts; and

ii. the appellant remains convicted of the fracture-related counts because she has abandoned her appeal from those convictions.

16 In the result, the appeal from the convictions on counts one (assault causing bodily harm) and three (failure to provide necessaries) is dismissed as abandoned. The fresh evidence is admitted in connection with the appeal from the convictions on counts four and six, the convictions on those counts are quashed, and a new trial is ordered. The order for a new trial is stayed.

E.A. CRONK J.A.
R.A. BLAIR J.A.
D. WATT J.A.

MR. JOEY GARERI - AFFIRMED:

EXAMINATION IN-CHIEF BY MR. LEVY:

5 Q. Mr. Gareri, are you a medical doctor?

A. I am not.

Q. What are your professional qualifications?

A. I have a Master of Science in Pharma-clinical Pharmacology and Biomedical Toxicology, with
10 an undergraduate specialty in Toxicology.

Q. All right, and what institution did you obtain those degrees?

A. Both are from the University of Toronto.

Q. And when did you obtain them?

15 A. My undergraduate degree was attained in 2003, and I convocated my Masters in 2006.

Q. All right. Are you employed at the present time?

A. Yes, I am.

20 Q. And where are you employed?

A. At the Hospital for Sick Children managing the Motherisk Laboratory for drug testing.

Q. All right. And how long have you been in that position for?

25 A. I've been in that position for approximately 24 months.

Q. All right, so were you working there back in August of 2005?

A. Yes, I was.

30 Q. All right. And what is it that you

actually do at the Motherisk Laboratory?

A. I act as a technologist, so I do some analyses myself at the bench. I oversee the technicians and the technologists, and assist in the directing of the science and the research of the laboratory.

Q. All right. And what kind of science and research do you do at that laboratory?

A. We do a number of different types of research all related to pharmacology and toxicology with relation to Children's Aid and drug testing. We work on biomarkers of drug exposure, so we do the testing of alternative matrices, alternative to blood and urine, which are conventional. So we test hair in adults and children, as well as in newborns. We also test meconium, which is the first bowel movement of a newborn to determine prenatal exposures. We test hair for drugs of abuse in order to determine exposure to drugs in individuals.

Q. All right. And I understand that at some point in time your services were called upon in relation to testing of a Malique Fitz-Charles-Broomfield; is that right?

A. Yes.

Q. And in terms of the documentation that you may have created at the time, do you have any of that with you?, as you don't have anything in front of you.

A. I do not have the actual letter of interpretation that I wrote with me, no.

Q. All right. I've been provided with certain documents and I take it it would be of assistance to you to have some of the report that you prepared.

A. Certainly.

Q. I have some other documentation that might assist you in giving your testimony?

A. Yes.

Q. And do you know when and where these reports and documents were created in relation to whatever work you might have done in connection with this matter?

A. My work in connection with this matter was mainly interpretative. Our head technician did the actual analysis. I was aware of this particular case from the outset due to the unusual circumstances that were involved in the ordering of the test.

Q. Right.

A. I can't state the exact date when I produced the interpretation, as I produced several interpretations every month for court purposes for Family Services.

Q. Right. All right, I have a number of documents that I had obtained through the police and the Hospital for Sick Children. I just want to show these, and if you recognize these documents and whether or not they're documents that you either created or have reference to it in relevant points in time, and if they are something that would assist you in giving your evidence here today?

A. I see here the two-page interpretation that I produced for Malique Fitz-Charles-Broomfield on January 30th of 2006. The results report here is a copy of the results report issued by our laboratory for Tamara Broomfield, and the copy of the actual results report for the child as well. All

of these would be of benefit for me to reference when we're discussing this matter.

Q. All right, and were these documents available to you at the time you prepared your own report in January 2006?

A. Oh, yes. All the reports I prepare are in conjunction - or they're interpretations of the results that we have issued. So the way interpretations will work is once a social worker or a physician has received our results they may want a more detailed interpretation, in which case they will contact us and I will then produce for them a document.

MR. LEVY: Okay. I wonder, Your Honour, if the witness might be permitted to refer to the documents that he's just identified?

THE COURT: Any objection?

MR. MERCURY: No objection.

THE COURT: Thank you.

MR. LEVY: Thank you. Q. All right, you are free to make reference to the documents that you now have in front of you. Perhaps we can start off by indicating, or you telling us did you do any testing other than hair in this particular case?

A. Not at the Motherisk Laboratory.

Q. All right, so let's just concentrate on the hair testing. First of all, how is it that you're referred and asked to, and why is that you're asked to test hair samples?

A. Well, hair is unique in that it contains a long-term history of drug exposure. Urine and blood are

fleeting in terms of how long a drug will remain in those matrices. The blood is constantly being cleansed by the liver and by the kidneys, and drugs are excreted out into the urine, which is then evacuated so it leaves the body. Hair acts as a core sample, so while hair is growing there is a blood supply to the follicle. Drugs that are present in the blood supply will pass into the hair by diffusion, and then will become trapped inside the hair shaft when the cuticle hardens. So the length of a person's hair can allow us to go back in time and determine an average level of exposure to a drug in question over a specific period of time.

Q. All right. After, I take it, the specific reference to cocaine or cocaine metabolites, in your experience, what are the markers, I guess, are you looking for in a hair sample?

A. Well, when we're looking at cocaine specifically, because cocaine can be attached externally to the hair shaft, - ….

Q. How is that?

A. Through the presence of cocaine smoke in the air, which can absorb externally onto the shaft of hair as well as through, as a powder drug, if there are a lot of residues in the environment you can have transfer from hand onto the hair. We look for a bi-product of cocaine called benzoylecgonine. This is produced in the body when the cocaine is metabolized. So this is uniquely present when an individual has used cocaine. So, for example, some individuals who are around people who smoke a lot of crack may be positive in their hair for cocaine, but negative for

benzoylecgonine, so the presence of benzoylecgonine confirms that exposure in an adult is due to use of cocaine itself. With young children we can sometimes find small amounts of benzoylecgonine due to their higher rates of respiration and lower body weight over which second-hand exposures are spread. So, they have a higher dose per kilo, therefore very young children in a passive exposure …

Q. To smoke.

A. … situation may have - yes, to smoke, may have a small amount of benzoylecgonine. That's speaking generally.

Q. All right. And so there's a number of compounds I take it that you're looking for in a hair shaft?

A. Well, we will look for whatever is requested by the ordering party. When we're asked to look for cocaine we automatically look for cocaine as well as the metabolite.

Q. Okay. Could you tell us how it worked in this particular case in terms of how you got involved, what were you asked to do, and how the sample - I take it you tested a sample, how the samples were generated and provided to you?

A. Certainly. Because the child came in in quite serious condition and apparently there were some urine tests that indicated the presence of narcotics we were requested to do a hair sample to determine if this exposure was short term, only occurring precipitating this one admission into hospital, or if there was any evidence that there was some form of long-term exposure. So, the initial

test that we conducted, we cut a small section of hair. When we collect the hair we cut it, so one of our technicians went to the ward and collected the sample from the child by cutting it as close to the scalp as possible, so we had a length of hair. Now, that hair longitudinally represents time going back from the present, so hair grows at approximately 1 centimetre per month. So this child had hair 14 centimetres in length indicating that we had a total history of approximately 14 months prior to hospital admission.

So we cut the first centimetre of hair closest to the scalp to determine if there was anything very immediately prior to admission that occurred versus the long history of the 13 months preceding that. What we found on that initial analysis is that both segments were positive, indicating both very recent exposure alone and a long history of very high-level exposure. Now, the level in the long segment was in the very high range. So when I say very high it actually corresponds to ranges of drug concentrations in our laboratory. I actually have a document of our interpretation ranges, which I can provide to you if necessary, but a very high result indicates that in our population of adults who test positive for cocaine, that result is in the top 5 percent of over 1,500 individuals.

So, this child's results on average for the 13 months prior to the admission was in the very high range, indicating that there was a long-term situation of high level exposure occurring. After this initial test, and discussing

it with the Children's Aid workers, a subsequent test was ordered to break this time period down into 1-month segments. So what we then did is cut the hair into sections of 1 centimetre, and tested month-by-month what the level of exposure would have been in the child going back 14 months in total.

Q. So you did 14 tests in all.

A. Basically, yes, 14 tests, each representing a distinct time period.

Q. All right; and I take it that the most recent, the 1st centimetre you've linked to the period immediately preceding admission? That would be the month of July 2005?

A. That's correct, yes.

Q. And back in time as you move up the hair shaft to May 2004, which is the last segment?

A. That is correct, yes. And this is, of course, an approximation …

Q. That was my next -.

A. … Based on average growth.

Q. All right, that was my next question. In terms of the timing how accurate is this 1 centimetre estimate per month?

A. It's approximation based on average growth rates in a population.

Q. All right, what's the plus or minus, one month plus or minus?

A. It's quite variable, so people's hair can Grow as slowly as .4 centimetres per month, as quickly as 1.7

centimetres per month. So the average in the population is about 1 centimetre per month.

Q. Based on what you've just told me, then it could be approximately 1 centimetre for every two months or as little as two weeks?

A. It could be, but the vast majority of the population falls into around 1 centimetre. So, when I say can be as low as that, in any population which you're looking at, is sort of like a Bell curve formation, you will have a very small percentage of individuals who have very slow-growing hair, which might be around .3 centimetres per month.

Q. All right.

A. And you may have a very small percentage of the population that has very fast-growing hair, but the majority of people will be in the middle.

Q. All right. Are there any sort of external factors that might affect that growth rate; for example, nutrition?

A. Not that I'm aware of, that would impact the results.

Q. And so in other words, if you had a malnourished child as opposed to a normal well-nourished child would that or would that not affect the - ....

A. I couldn't really comment on how that might effect the growth of the hair. Theoretically it could affect the integrity of the hair, but in terms of these results I don't believe it would have any bearing.

Q. Okay.

A. The taking into account that growth rate, of course, is variable by nature, everything about humans is variable, the important aspect of hair testing is the comparative aspect. So, at the very least we are taking equal time periods in comparing them all against each other, and they are all distinct. So, whether or not each centimetre represents a month or five weeks, they each represent a distinctive time period, so what we're seeing is a pattern of 14 consecutive distinctive time periods.

Q. All right, which is on average a month, but might be as little as two or three weeks, might be as long as two months?

A. That's correct.

Q. All right. Can you comment on the stability of whatever substance you're looking for is found in the hair over time? Does it degrade, does it - ….

A. Certainly. That's a function of the integrity of the hair shaft. Because of the nature of how the drugs are incorporated into the hair they are extremely stable. They're protected by the cuticle, so the drug is actually in the medulla, or the very innermost section of the hair shaft, so it's protected by the cortex and in the cuticle on the outside which shields it from the environment from just coming out of the hair through diffusion or through regular washing and hygiene. To give an example of this we have been able to find cocaine in the hair of mummies that are over 2,000 years old from Peru. So, if the hair is in relatively good shape, that means it's not very brittle, then the drugs are very stable in it for very long periods of time. If

someone has extremely dry or damaged hair, their results may be artificially low because the integrity of the shaft is porous and drugs can diffuse out into the environment a little easier.

Q. Can you recall, or can you comment in terms of the condition of the hair sample that was taken from Malique Fitz-Charles-Broomfield?

A. I was not aware of anything of note when it came to that hair sample. So, for instance, I would generally be notified if there was something unusual about a hair sample. I was not notified of anything unusual. Most often extensive bleaching or dyeing would be something, but that would be present on the results report underneath the sample of data.

Q. Is there any indication of that?

A. I don't believe so. I will double-check here for you. There is no indication of anything unusual about this hair sample, other than we thought the length was unusual for a young male of that age, but that's relatively subjective.

Q. I wonder if you could go through the 14 individual samples and tell us what you found, starting with the one closest to the follicle.

A. Certainly.

Q. Because I think that's how you've got it out in your report. I think just for clarification, are you making reference to your report of January 30th, 2006?

A. I'll be referring to the report of January 30th, 2006, as well as the results report date December 20th,

2005. That's the official results.

Q. Can I see the document you just said was December 2005?

A. Certainly. This is the official results report from January as my interpretation.

Q. I see, so that's the source document - ….

A. That's correct.

Q. All right.

A. Because of the number of results the best way to look at it is in this graph form that I produced. Now, to give some perspective, is this okay?

Q. Yes, all right, we can ….

THE COURT: You have this, Mr. Mercury?

MR. MERCURY: I've seen it; I've seen it.

THE COURT: Okay.

THE WITNESS: Okay.

THE COURT: Thank you. Any objection to me getting a copy then? Thank you. Thank you, Mr. Levy.

THE WITNESS: A. Now, to give some perspective, on the Y-axis the - ….

MR. LEVY: Q. The 'Y' is the vertical axis?

A. That's the vertical axis, beg your pardon. It's in intervals of 10 nanograms per milligram. That's nanograms of cocaine per milligram of hair, or nanograms of benzoylecgonine per milligram of hair.

THE COURT: Can I stop you there. Can you spell that for both me and the reporter, please.

THE WITNESS: Certainly. Spell what in particular?

THE COURT: The marker you're looking for.

THE WITNESS: Benzoylecgonine, okay. B-E-N-Z-O-Y-L-E-C-G-O-N-I-N-E.

THE COURT: Thank you.

THE WITNESS: You're welcome. A. Now, when we're looking at the graph, as I mentioned the intervals are in 10 nanograms per milligram, which is our standard unit of measurement, it's important to note that in our population a high result has a cut-off of about 8.6 nanograms per milligram. So anything above 8.6 is in the top 25 percent of our adult using population. So we can see out of all - ….

MR. LEVY: Q. Adult using - sorry, adult using cocaine?

A. Adults using cocaine. We don't have specific ranges for toddlers because the way we interpret our results is on the basis of distribution in our population. So we have ranges for newborns, for pre-natal exposures because we have a population of over 500 positive cocaine results for newborns for their pre-natal exposure, so that's exposure before they were born, in the womb. We also have a large database of adults who have come in for Children's Aid testing. So we have over 1500 adults who have tested positive for cocaine, but we don't have those large numbers for very young children. So, what we have to do is compare this child to an adult in terms of their level of use. So, if these were an adult's tests this would be a high-level user, and in instance, in months where the results was above 40, that would

be a very high-level user. So anything above 40 is in the top 5 percent out of 1500 adults we've tested for cocaine, and anything above 8.6 is in the top 25 percent of that population. So these are very unusual results for a small child to have. Normally in a home where a child is being exposed second-hand to cocaine, either through crack smoke or if there is residues in the environment, their level would be closer to 1 or 2, maybe 3 nanograms per milligram with very low or trace amounts of benzoylecgonine.

Q. And I think you have already explained that benzoyl (can't pronounce it) ecgonine, in terms of how you might see it in a toddler but not - or how you might see the cocaine, sorry, in a toddler as opposed to an adult?

A. Well, we would see the benzoylecgonine in a toddler in some second-hand exposures. We wouldn't see it in an adult for a second-hand exposure. You always see it in an adult if they've been using.

Q. All right, but when you're seeing it as a sort of a second-hand smoke or residue - ….

A. It's much lower than the concentration seen in this child. The overall, when looking at all the results together, it appears as though this child has either been ingesting or administered cocaine in each of the time periods in question. So the fact that these time periods are sectioned and distinct means that exposures occurred within each one of them.

Q. All right, just quickly tell us the results and then I'll ask the ….

A. Certainly. So for the first month prior to testing - well, actually, I'll move chronologically if that's …

Q. Yes.

A. … easier, since we have the test. So essentially we're looking at a history going back to May of 2004. So, at that time the child's results were at the high end of the medium range for adults, somewhere around the 70th percentile, and they continued to go up and reached a peak in January of 2005. The average level of exposure in each month then decreased relatively steadily until July of 2005, which is the last month in which we have a result.

All of the results: the lowest result is 6.22 nanograms per milligram for cocaine, which is in the, that's the lowest result, and that's well above the 50th percentile for adult users, so this child's lowest result in any of these time periods was still greater than 50 percent of the adult cocaine users that we test in our laboratory. What the take home message for this result is is that the highest level of exposure this child experienced was in January of 2005, and more importantly, that there was exposure to cocaine in each of the time periods that were tested. To put that in context, our original test that I made note of looked at 13 months as a whole. So we looked back on that whole 13 months and got an average result for that time period.

Now, from that test we wouldn't know was this child exposed for two months at a very high level, for six

months, or was it for the entire 13 months, and it's for this reason that we did the segmented analysis; so, when we broke it down to determine were there any gaps, did this exposure start at a certain time period and end; but according to these results, during the time period that all of these segments was growing there was cocaine present in this child's bloodstream.

Q. All right. If I could direct your attention to the peak, which was in January 2005, again assuming the 1 centimetre per month growth rate, was a level of over 70 nanograms per milligram?

A. Yes.

Q. And then you see a decline from there?

A. Mm-hmm.

Q. The question is is if your next result in February has a result of slightly over 60 nanograms, is it conceivable that the higher amount that you see in January still being absorbed a month later - ....

A. Well, it wouldn't still be being absorbed. Hair growth is variable. So a certain percentage of hair shafts don't grow. They remain in a resting phase. So it is possible to have some bleed between time periods.

Q. What does that mean?

A. What that means is that at any given time, from the area of the scalp where we take the hair, 10 to 15 percent of hairs are not growing, so time can pass and you take a hair sample, but some of that hair has remained static. So, you can have the presence of cocaine at much lower levels without actually having had exposure during that time. The comparison from January to February is not consistent with

that because of the similarity. It does not decrease significantly enough. But what you are saying is is it possible that at any of the time periods is it possible that there may have been some carry over, so …

Q. Yes.

A. … maybe it wasn't actually every month. Where we see a very significant drop is between February and March, so that's a possibility between those two months. So, for example, if the child was heavily exposed in January and February and then not exposed at all in March these results would still be consistent with that.

Q. All right, so you are saying from January and February to March, but not from January to February.

A. Not from January to February.

Q. All right. How about from February to April? It seems to be there's an upslope there.

A. It upslopes, and that's also another factor. So when we see an adult who is, we call this like a washout effect, that carryover, when we see an adult who is a high-level user and then they've quit what happens is their cocaine level drops drastically and then it decreases and goes to zero within a couple of months. So the fact that there's a steady decrease is an indicator that they actually have quit.

Before they go to zero the results could be consistent with either no exposure, or a significantly reduced level of use or exposure. So, between February and March it's possible that the child was not exposed in March. It's also possible that the level of exposure was significantly reduced,

so this would consistent with both of those scenarios. Because it goes back up in April, it indicates that there was then another exposure subsequent to February.

Q. Okay. And if I were to ask you to review the graph there and look at every upslope, would your comments be the same or would they be different in terms of where we see the upslopes?

A. The only difference between February and March is that drastic of a reduction that I would say it would be reasonable to say that there was no exposure during that time period. All the other ones that have a reduction in concentration, the reduction is not significant enough to say that it was because of this carryover effect. There would have had to have been an exposure in that subsequent time period.

Q. All right. And the type of exposure you're talking about, because you've talked about residual and actually, I guess, consuming in one way or another, are you able to comment on that in terms of …

A. Based on these levels …

Q. … these levels?

A. … it is apparent that the child had significant blood concentrations of cocaine. So that would mean that the child was either administering themselves cocaine or someone was administering cocaine to the child. With a child of that age we can't say how it got into their system. All we can say is that there is significant blood levels. This isn't from the presence of cocaine on the outside of the hair shaft where we'd see a much larger

disparity between the cocaine and the bi-product levels. So this indicates that there was a significant amount of cocaine in the child's system.

Q. Okay. So if I was to posit a theory that the last time this child was exposed to cocaine was January of 2005 and that the results right up until, I guess, July, just prior to the admission, that there was no further ingestion of cocaine; would I be right or wrong?

A. Taking the growth rate to be 1 centimetre per month I would consider that to be incorrect. You could possibly (let me just take a look here) - no, I would consider that to be incorrect.

Q. So you're saying that, and according to the graph, the last was, giving some of the benefit of the doubt here, the last time you would be confident in saying that the child was exposed to cocaine after January 2005 would be when?, because I see after April there's a decrease.

A. According to the results I would be quite certain that it occurred right up to July of 2005.

Q. Right up to July?

A. Yes.

Q. And why is that?

A. I see no evidence of a really drastic drop off in the levels that would be consistent with it being just residual based on the prior months and the concentrations that I see in terms of their sequence and their grade in terms of how the level at which they're decreasing. I would interpret this as being very strong evidence that exposure occurred right up to the time of admission.

Q. And why is it that you look for a very drastic decline before you're prepared to say that the exposure is in a sort of residual in the system kind of result?

A. Well, I'm glad you mentioned that. It's actually not residual in the system. What it is is it's residual in the hair. The cocaine exits the body within several days of the last use, so once someone has used cocaine it's out of their urine in three to five days in general. It's no longer present in their blood within hours of their last use. So what happens is the reason we see this washout is because of the different phases of hair growth. So, some hair will grow and then it will stop growing and it will fall out, so this hair that stopped growing, if it's taken along with new growth hair, that is the source of that carryover. In humans and from the vertex posterior the amount of hairs that are in the resting phase is only about 10 to 15 percent, which means if this is the source of that carryover the result would have to be approximately tenfold lower than the previous time period, or sixfold lower to be more conservative. But I don't see any decreases that are that drastic for it to be legitimately assumed that it's because of this resting phase. So the drop generally has to be six to tenfold lower in order for us to responsibly hypothesize that it's not due to current exposure during that time.

Q. I take it you're not a pharmacologist or training in - ....

A. Well, my training is in clinical pharmacology and toxicology.

Q. All right. So you have already touched on the percentage of the population of users, …

A. That's right.

Q. … but in terms of the significance of these results in a two-year-old boy in terms of, so it's toxicity levels or?

A. Mm-hmm.

Q. I'm trying to get a sense of how …

A. Well, high levels of cocaine - ….

Q. … significant this is. I mean, it's significant that it's there to start with. I think we understand that. But going beyond that, can you comment?

A. Well, cocaine is a very potent drug. It can cause excitotoxicity, so basically rapid and extensive firing of neurons which can cause damage. What damage could that cause in this child I can't say with any degree of expertise. Firstly, because I'm not trained as an M.D.; but secondly, as well, there's not a lot of previous cases where you have very young children who have high, high levels of cocaine chronically in their system for a long period of time. So the best assessment of what the outcome is would be the clinical assessment of the physician that saw the child. In terms of looking at this as an analytical toxicologist given this to interpret, I say that there is in this situation is extremely high risk of death in this child due to the potency of the drug in question and the extremely high level of exposure.

Q. All right. And just to be clear, is it just one stand that's tested, or is there more than one

strand?

A. No. We take a population of hair, generally about 30 milligrams; so, usually the locked - it's a lock of hair that we would take about the width of a pencil. That's a bit of a fat pencil, but maybe about 3 to 4 millimetres in diameter, so a population of maybe 50 to 70 hairs.

Q. And when you test them do you test the follicle, the shaft individually from that whole strand of hair, or do you just, …

A. No. We take the lock - ….

Q. … you put them into a vat or something and - ….

A. We lay the lock of hair down so it's fixed with the root end indicated, and then the hair is cut in 1 centimetre intervals; so each test is on, you know, approximately 30 to 50 strands of 1-centimetre length that are all corresponding to that same time period.

Q. Okay, so it's not just one hair you're basing …

A. No.

Q. … the test - ….

A. No, it's on a population of hairs. That's why we say of this carryover; so, for example, if you're looking at 50 hairs and 5 of those actually weren't growing, they may be the 5 that contain cocaine in a carryover situation, but that would mean a very, very low concentration compared to a time period that was positive for exposure. The hair is then cut into a very fine mulch, because we have to

get at the drug inside the hair. That mulch is then incubated overnight in solvents, and the drug is extracted through that manner and then tested.

Q. Yes, because if it leeches into the solvent?

A. That's correct, yeah. So we have to cut the hair into very, very fine, fine pieces and then the solvent extracts the drug out of the inside of the hair shaft.

Q. And you examine the solvent?

A. That's correct.

Q. Okay. All right, I think this finishes my questions regarding the testing of hair sample from Malique Fitz-Charles-Broomfield. All right, were you asked to perform a similar sort of analysis on a Tamara Broomfield?

A. I cannot recall if I specifically wrote an interpretation for Tamara Broomfield, but I believe so.

Q. Do you have that with you today, or?

A. I do not have that with me.

Q. And at whose direction do you sort of embark upon this investigation?

A. When you say investigation?

Q. Well, looking at or testing of the hair samples.

A. The testing is done at the behest of either a physician or a Children's Aid worker.

Q. And in this particular case?

A. This particular case in terms of the child, it was an initiated by the physicians at the Hospital for Sick Children who saw the child.

Q. Right.

A. In terms of the Ms. Broomfield herself, I believe it was the social work service that referred her to have her hair tested.

Q. All right. Just with my friend's permission, I believe a report was generated in relation to Tamara Broomfield.

A. I do have a copy of the results report here.

Q. This is what I have.

A. Yes, you have given me a copy of that. I didn't bring it with me, but you have provided me that in your package.

Q. All right, and just so we're clear, did you have anything to do with the results that are in that report? Would this be firsthand knowledge or this is something someone else - ….

A. Well, I mean, it's firsthand knowledge. I do all the interpretation for all of the testing in our laboratory, so I consult with the social workers on all the tests generated; so, our head technician does, like manually do the testing, but I oversee the testing, quality control, and provide interpretations.

Q. So the document that you are now making reference to, you have in front of you, is a results report dated the 12th of August 2005, and it's signed by a Dr. Koren, K-O-R-E-N.

A. That's correct.

Q. Who is the director of the Motherisk

Program.

A. He's the overseeing physician for the laboratory, so he signs off on all results.

Q. He's the Fellow you report to?

A. That's correct, yes.

Q. And so essentially he's relying on what you tell him?

A. To a certain extent, yes.

Q. Okay.

A. He's the director of the entire Motherisk Program, which encompasses more than just the laboratory.

Q. So, I guess with that caveat and understanding that you're reading from a results report signed by Dr. Koren, first of all, what testing, if any, was done of Ms. Broomfield and what were the results of those reports?

A. Well, I see here on the sample that was taken on the 10th of August 2005, the first 6 centimetres next to the scalp were tested indicating that this result represents exposures between February and July of 2005 inclusive. So, as opposed to the child's results, which are segmented into 1-month periods, what we're looking at here is the entire 6 months as a whole, so the average level of exposure to the drug in question between February and July of 2005.

Q. And why would you just, I guess, throw a 6-centimetre strand - ....

A. It's all dependant on how it's ordered. The cost is per drug per segment, so in terms of family workers it's not effective for them to order individual months

without determining in a longer time period that there is actually a drug present.

Q. Okay.

A. So, for example, if they would have ordered the same test in segments it would have been many times more expensive, but all of them would have been negative for opiates, cannabinoids, amphetamine, methamphetamine; so it would have been essentially like a waste of money, so it's ordered initially this way as a screen for that time period.

Q. All right. And the screening for that time period was?

A. They're a little dark. I believe it says .29 nanograms per milligram.

Q. Of?

A. Mine are a little bit shaded in. Am I correct in reading that?, 0.29 for cocaine? Okay. So it indicates positive for cocaine at a level of 0.29 nanograms per milligram. It's negative for benzoylecgonine, opiates, cannabis, amphetamines or methamphetamine.

Q. All right. And the significance of a result of .29 nanograms of cocaine?

A. These results would be consistent with one of two scenarios. The first is that between February and July of 2005 Ms. Broomfield was exposed second-hand to cocaine, and that she came in contact with it and it was deposited externally on her hair, but that there is no evidence of use during that time period based on these results due to the absence of benzoylecgonine. The second scenario that this would be consistent with is that she used cocaine immediately

prior to February of 2005, and that this small amount of cocaine, which is in the low range, is residual from use in December or January; but again, without that previous test result this result does not prove that she has used cocaine.

Q. All right. And again, that .29 result (if I can have the graph there), …

THE COURT: Oh, sorry, yes.

MR. LEVY: Q. … if you are going to plot .29 on the graph, where would you plot .29?

A. Well, it would essentially be along the X-axis.

Q. The zero axis?

A. Yeah.

Q. All right. And if you were to assume for the purpose of my question that Malique Fitz-Charles is the son of Tamara Broomfield and that they spend a good deal of time together in this 6-month period, what, if anything, can you say in terms of the potential, again for the second-hand absorption and the child's - ….

A. Well, the child's result is not consistent with second-hand absorption at all due to the degree of levels, so with the child we have to assume the child was either administered the drug or was accidentally ingesting it on a regular basis. In terms of which is more feasible, administration is more feasible in a two year old just because it's highly unlikely that he would have a source of cocaine that he was constantly able to access for 14 months, and this is going back quite significantly into their life. In terms of comparing that to the mother's results, what these results

indicate is in these six months that mom did have cocaine in her environment; so, this could be through her handling cocaine, it could be through her being consistently in the company of people who are using cocaine. It proves that it was in her environment. So we know that it's in her environment, and we know that it was either administered or consumed by the child.

Q. Okay, before I move on, is there anything else that we can learn from the testing of Tamara Broomfield's hair that we haven't already touched on?

A. Nothing. Nothing I can think of.

Q. Okay, let's move on then. I understand there was another report that was prepared based on analysis of hair sample from a Steve Fitz-Charles; is that right?

A. I believe so, yes.

Q. All right, and I have - do you have this?

A. I don't believe that's with the package you gave me, so I don't have it on - ….

Q. Are you familiar with this one, or?

A. Yes.

Q. You can use my copy for this.

A. I'm familiar with it.

Q. And this is again a results report from the Motherisk Program.

A. Mm-hmm.

Q. And it's dated the 3rd of May 2006?

A. That's correct.

Q. And it appears to be a test sample result from a Steve Fitz-Charles?

A. Mm-hmm.

Q. Now, are you able to say what the time period or what sample of hair was looked at in the case of Steve Fitz-Charles?

A. Certainly. In this case his hair was a total of 2.5 centimetres, so the farthest back we could look is the two-and-a-half months prior to testing.

Q. All right, and when was the testing done?

A. This sample was taken April 25th of 2006, so these results are essentially showing a history of February, March, and the first half of April of 2006 in terms of the average level of cocaine exposure.

Q. All right. Are you aware of any other testing other than that time period that was done in relation to Steve Fitz-Charles?

A. On this individual I'm not aware of any other testing. There was quite a lot of communication about this matter with social services, and I do not recall another test being ordered for Mr. Fitz-Charles.

Q. Okay. And the results of that test are?

A. These tests are positive for cocaine at a level of 0.23 nanograms per milligram, and trace amounts of benzoylecgonine. Trace indicates that we were able to detect it but concentration was so long we cannot reliably quantify the amounts. We can't place a number to it. These results are essentially the same as Ms. Broomfield's in that they indicate that Mr. Fitz-Charles was either exposed to second-hand cocaine within the two-and-a-half months prior to testing, or he had used cocaine immediately prior to that two-

and-a-half month time period. In this case use, prior use is more likely because of the trace amount of benzoylecgonine. A result this low could be due to, let's say, a single use of cocaine.

Q. Anything further on that?

A. Nothing I feel that should be offering. If you have any questions I'd be happy to answer them.

Q. I'd just be repeating, so those are all my questions. I would just ask if that graph could be marked as the next exhibit.

THE COURT: Mr. Mercury, any objection.

CLERK OF THE COURT: Four.

MR. MERCURY: Yes, I'm wondering if we could take just a really quick break.

THE COURT: Sure. Exhibit four then?

MR. MERCURY: Yes; oh, yes, yes.

THE COURT: Okay, thank you.

EXHIBIT NUMBER 4 - graphs of hair analyses done over periods of time for Malique Fitz-Charles-Broomfield, Tamara Broomfield, Steve Fitz-Charles. Produced and Marked.

THE COURT: How long do you need?

MR. MERCURY: Just five minutes.

THE COURT: Back at five after.

MR. MERCURY: Thank you.

R E C E S S

U P O N R E C O N V E N I N G:

THE COURT: Mr. Mercury.

MR. MERCURY: Yes, thank you, Your Honour.

5

MR. JOEY GARERI - **Previously Affirmed**

CROSS-EXAMINATION BY MR. MERCURY:

Q. Good afternoon.

10

A. Good afternoon.

Q. Sir, the statistics that you, or the findings that you make, they're based on certain assumptions; you'd agree?, like an average hair growth of 1 centimetre a month?

15

A. That's correct, yes.

Q. Okay. You'd agree with me that if the hair, say, grew at 2 centimetres a month that would skew your conclusions quite a bit?

A. It would indicate that the overall time period we're looking at is half of what we projected it.

20

Q. Would be half?

A. Yes.

Q. Right. So therefore the graph that you showed where you say that the time period for the hair sample, I believe, was (if I can just find it here) - if I could see that exhibit. Oh, never mind I think I found it.

25

THE COURT: This is May of 2004 to July of 2005.

MR. MERCURY: Right. Q. Right, that would then be half that time period, agreed?

30

A. That's correct, yes.

Q. Okay. And you took Malique's hair sample from the root to the top, the whole?

A. Yeah. When we cut the hair it's as close to the scalp as possible.

Q. Okay.

A. We don't pluck it, but it would have been cut from the vertex posterior of his head.

Q. Okay. Now, are you aware of how long Malique was in hospital for?

A. No, I cannot state that.

Q. Okay. After taking that hair sample was there any observation or measurement done of how quickly that hair grew back, the hair that you had cut?

A. No, not that I'm aware of.

Q. Okay. You'd agree with me that would have helped to determine how quickly his hair grows?

A. Yes.

Q. And that might - ….

A. On an individual basis, yes.

Q. Yes. And you'd agree with me that would have given you a more accurate determination?

A. Yes.

Q. Okay. That's not something you do?

A. No. We process many hundreds of tests per month, so we don't normally track hair growth in individuals per person-by-person, no.

Q. Now, this measurement of the amount of cocaine in the hair follicle, - …

A. It's in the shaft.

Q. … - or in the shaft, I'm sorry, is that affected at all by the level of pigmentation in the hair?

A. There is some studies that have shown that certain drugs may bind to melanin, which is the pigment that makes hair dark. Other studies have shown no difference between the average levels in populations of blonde versus brown versus black haired individuals.

Q. Okay, would cocaine be one of the drugs that might be affected?

A. Cocaine not so much as codeine and some other more basic drugs, but I believe cocaine is one of the drugs that may bind selectively to melanin.

Q. Okay. And so if that's the case dark hair would be affected differently than blonde hair, say.

A. Well, it's dependent on what your perspective is. So, for example, it would not really affect the interpretation of these results because our interpretations are based on comparative analysis, so in our population of individuals who are exposed to or who are using you'll have a natural distribution of blonde versus brown versus black hair, so a black haired individual is compared against other black haired individuals. So unless the majority of our population was blonde, actually stating these results as high or very high would not be affected by the fact that an individual's hair was dark.

Q. You say it's a comparative?

A. Yes.

Q. So they compare what?, dark hair with dark

hair?

A. When we say a high level, that indicates it's in the top 25 percent of our population as assessed in our laboratory, so that population is a real-world population, so the majority of those people have dark hair which is the predominant hair colour over blonde.

Q. Well, do you know in these testings what percentage of, in arriving at these figures what percentage of blonde hair, what percentage are grey hair, what percentage are dyed hair? Do you have that information?

A. We don't have much grey hair simply because we mainly deal with individuals with young children, so there generally isn't a lot of grey hair in that population. The majority is black and brown, and there's also blonde, but it's relatively representative of normal distribution.

Q. Can you tell me what percentage is black and brown?

A. No, I cannot.

Q. Or what percentage is blonde?

A. No, I cannot.

Q. No? So how do you know it's the majority?

A. We know the majority through experience and the fact that blonde is a recessive trait in hair colour.

Q. Well, what I'm saying though is in arriving at, when this testing is done, these statistics are taken, …

A. Yes.

Q. … have you seen these studies themselves?

A. I've seen studies presented at conferences, yes. I've seen the actual presentation of a study showing no

difference in hair colour. It's an area that's in conflict as to whether or not hair colour actually can create any meaningful difference in the results for drug analysis. In terms of the number, the samples that come into our laboratory the vast majority are dark hair, and I do see this firsthand.

Q. What studies does Motherisk use to base it's ....

A. In terms of interpretation?

Q. Yes.

A. Well, we do, to provide context in terms of what these results mean. Because with certain drugs, let's say it was therapeutic drugs, you can do a clinical trial and you would dose people with escalating doses of that drug and then you would test their blood or test their hair or test their urine to determine what dose corresponds with what level. This can't be done with drugs of abuse because we can't ethically have a trial where we dose people with escalating doses of cocaine.

Q. I understand that.

A. So therefore in terms of interpreting it we have to look retrospectively. So we have to look back on a population and see where does our population test, where are the majority of people falling, what's the high, what's low; so, when I say comparative it means we look at the whole of our database in adults that are, and it's a population that's biased in the sense that it's adult who are under suspicion by Children's Aid that are being tested for drugs, so that's the population that we're looking at. So, our results are direct to that population. It's not the same as if we went and

randomly tested just people off the street for cocaine in their hair. So it is a targeted population. And we have over 1500 positive results, and so there's a distribution to that. So we say where does a person's result fall within that population? Out of 1500 people who are positive for cocaine is this person in the top 5 percent, or in the bottom 5 percent, the middle 50 percent where most people lie? So that is how we assess the significance of the level in the hair.

Q. Okay. Now, are you familiar with the Journal of Analytical Toxicology?

A. Yes, I am.

Q. Okay. That's a journal that you read?

A. Yes.

Q. If I could just show you, and I'll show it to my friend. Are you familiar with a Gary L. Henderson?

A. No, I am not.

Q. Martha R. Harkey?

A. No.

Q. Or Chihong Zhou?

A. No.

Q. Okay. I'll just show you an excerpt from this article.

A. Thank you.

Q. And I've marked it up.

A. Do you wish that I read through this?

Q. Yes.

A. Can you give me a moment?

Q. Yeah, read through it; sure.

A. All right. Okay.

Q. Thank you. Now, would I be right in having read this excerpt of this, I guess it's a presentation that was made, or an article that was …

A. That would be an article …

Q. … published?

A. … that was published, yeah.

Q. Okay. They indicate that, I have underlined: Subjects receiving the same dose differed (from two to 12 times as much depending on how …) the measurement was made …

A. Mm-hmm.

Q. … for the hair analysis measurement, …

A. Yeah.

Q. … right? And then it goes on to say it incorporated more cocaine-d5 in hair. Non-Caucasians, in particular, incorporated more cocaine in hair than did Caucasians.

A. Mm-hmm.

Q. Could you explain that to me?

A. It would indicate that in that trial they noticed that there was, on average in the population of Caucasians, lower concentration of cocaine that they had detected than the non-Caucasians for that dose range that they tested. To put that in context, that's a trial of 25 individuals; so, what you would be looking at is that there was a statistically significant difference for them to make that claim between the Caucasians and the non-Caucasians in terms of the concentration of drugs seen. If we want to put that into context of the ranges that we're using, a

statistically significant difference does not necessarily mean a clinically significant difference. So, for example, when we have a medium result, that could be anywhere from .7 nanograms per milligram all the way up to about 8 nanograms per milligram. All of those are within the middle 50 percent of our population. So, a level of .7 and a level of 1.4 are twofold different, but they essentially have the same interpretation. So, from a research perspective you would consider those to be different levels, but when you are looking at it in the real world in terms of what does this clinically mean, they actually have the same interpretation.

Q. Well, you said that it could be a statistical …

A. Yes.

Q. … significant difference, …

A. Yes.

Q. … but not a clinical one?

A. That's correct, yes.

Q. Are you saying that it may not be clinically significant or it is not clinically significant?

A. What I'm saying is when you say, for example, that drug incorporate, that study states that in their population at that dose range they found that non-Caucasians had a higher average level of cocaine in their hair than the Caucasians. That would be, for that to be a correct assertion, a statistically significant difference. Now, what statistically significant means is that when you run it through the statistical analysis that they are actually different, they're not the same. It's not random that they

could be. They could be interchangeable. What I'm saying is that a statistically significant difference does not indicate a clinically significant difference by default.

Q. I understand that. But what I'm putting you is it doesn't then follow that it is not clinically significant. In other words, because you're saying it, …

A. Yes.

Q. … it doesn't prove it's clinically significant but that doesn't prove it's clinically insignificant?

A. I don't really understand that, what you are attempting to state there. So because it's statistically significant it could be clinically significant or it could not?

Q. Or it could be clinically - ….

A. The absolute numbers aren't there so I can't comment on that.

Q. Okay.

A. Yes.

Q. And also, then I'll go on, it says: Also, segmental analysis of the samples revealed …, and that's where you chop them up; is that what they're talking about?

A. Yeah.

Q. … - revealed considerable intersubject variability …

A. Mm-hmm.

Q. … in the time that the drug first appeared in hair and the rate at which the drug moved along the hair shaft with time.

A. Mm-hmm.

Q. So, in other words, there is individual variability in the time that someone would ingest drugs and it would show in the hair, …

A. Mm-hmm.

Q. … and the rate at which it moved through the hair shafts to the point where sort of at the end of the hair shaft; is that right?

A. I would assume though at the rate at which it is present along the length of the hair shaft.

Q. Right.

A. There is a large degree of inter-individual variability in all aspects of biology, especially drug metabolism, so the way a person handles a drug will differ from person to person. It's for this reason that the best way for us to do an analysis is by comparative to a large group, because that takes into account inter-individual variability. And in addition to that, the most valuable aspect of hair testing is comparing an individual's results against their own, …

Q. Right.

A. … so that is where the most meaningful interpretation is. So, for example, with Malique Broomfield we have a sequence of results, all comparing that child at his own level of exposure, so that's the most significant. So, for example, the exact same dose of cocaine could be .3 in one individual in a 3-month section, or it could be .5 in another individual, or it could be .2 in another. All of those are in the low range, but they are many-fold different, you know, to

1.5, you know, 50 percent larger. These are very large when you look at them as absolute numbers, but it's for that region(sic) that we have very broad ranges.

Q. So you'd agree with me you could have had a more accurate determination had, say he's in hospital for two months, take another hair sample and test him, do the same tests, segment the hair, test it because he's in a controlled environment where you can be certain he's not getting access to cocaine.

A. Well, you would - yeah, what you could do in what you're presenting as an example is take a subsequent sample just to represent the time period that he's in hospital as a control.

Q. Right.

A. To self-show either significantly lower negativity for cocaine; or, as you mentioned, to assess the actual rate of hair growth in that child themselves specifically.

Q. Right.

A. We're not geared towards individualizing analysis to that degree, but in terms of like if we're just speaking in terms of what could be possible, yes, to know an individual's actual rate of hair growth themselves would allow you to give a more detailed interpretation.

Q. Okay, and in this summary of this article it indicates, and tell me if you agree with this: Considered together, these results suggest that cocaine incorporation into the hair may occur by way of multiple mechanisms by way of sweat and sebum, for example, and at various times during

the hair growth cycle. Thus, hair analysis using GC-MS ... - could you tell me what GC-MS is?

A. GC-MS is gas chromatography with mass spectrometry.

Q. Is that the method you use?

A. We use an immunoassay that's verified by GC-MS.

Q. Okay. So, hair analysis using GC-MS appears to be a very sensitive method for detecting cocaine ingestion. However, within the range of doses used in the present study, hair does not provide a particularly accurate record of either the amount, time, or duration of the drug use.

A. I would disagree with the wording of that. Although it does correctly give its own caveat that for the dose range used, but what is an accurate representation is subjective in terms of what analytical tool you're looking at. So, for example, with the standardized method such as urine that's been used for decades, and there's many different other contents of urine, like for example, creatinine, that are used as a factor to normalize results, you have a different level of accepted variability than you do for hair analysis. So, for example, that result - sorry, I beg your pardon. That publication is about 11 years old. It's well known that there's more than one way in which drugs are incorporated into the hair. You mentioned sweat and sebum. Sebum is the oils that are secreted by the scalp that protect the hair shaft. So, much like the drug is present in the blood, it was also present in the sweat and it will also be present in the sebum.

Now that being said, the sebum coats the hair as it's growing, so the sebum gland is located within the follicle, so cocaine present on the sebum will be deposited onto the hair that's growing during that time period. Sweat can be a little more variable, but if we're talking about deposition from sweat you see certain patterns. They all contribute to the total result, but the majority of drug that's present is from the blood supply.

Q. Now, I would put it to you that because Malique is two-and-a-half then, small in mass, you'd agree with me that it would take much less exposure to cocaine to have higher readings; would you agree with that?

A. In comparison to an …

Q. An adult.

A. … adult's use? Yes.

Q. Yes.

A. Yes.

Q. So his readings, you don't have a lot of statistics or information with regards to the exposure of young children, two-and-a-half to - ….

A. Well, we have isolated cases. We don't have enough to be able to generate, to state that they are within like low or a medium or a high range with certainty, but we do have a large number of cases; just not enough to develop ranges.

Q. Okay, so the ranges that you used, you were comparing those to adult ranges?

A. That's correct, yes.

Q. So in a young person they may not be

applicable, agreed?

A. Well, they're not directly applicable. They provided a certain level of context.

Q. Right. But again, the context is within an adult context?

A. Yes. We would not expect an adult who is exhibiting a level of let's say 40 nanograms per milligram in their hair to have taken milligram per milligram the same dose as a child, but we would expect the same dose per body weight.

Q. Same dose, sorry what?

A. Per body weight.

Q. Per body weight.

A. So, for example, if it were to take, you know, a 70 kilogram adult seven lines to get a certain level of cocaine, the equivalent of one line would have to be ingested by a child that is seven times lighter. Of course, it's not completely linear, but it's the dose per body weight that is the most meaningful in pharmacology.

Q. Okay. Now, for a person who ingests cocaine how long after ingestion would it start to show on the hair shaft?

A. In the hair?

Q. Yes.

A. Well, there can be a small amount of cocaine that's present in the sweat that will deposit on the hair that's already close to the scalp, but in general for the actual, the large chunk of hair that's incorporated into the shaft, it takes that hair about 10 to 14 days to grow out of underneath the scalp of the head. So at the time of exposure

it's in the follicle being formed, and about 10 to 14 days later that hardened piece of hair protrudes out of the scalp, so we would be able to detect it at that time.

Q. Now, when you do your test, when you segment the hair, you chop it up, you make it a mulch I think you said, …

A. Yeah.

Q. … and then you test it, you don't know from where on the hair shaft that cocaine is coming from.

A. Well, we do know from where, depending on how detailed the analysis; so, for example, for Ms. Broomfield's results they were of 6 centimetres, so we don't know where in that 6 centimetres, but we know that that cocaine was present in that 6-month time period.

Q. Okay. What I'm asking you, and maybe I didn't phrase it properly, is when you said that immediately the hair of some of the cocaine attaches to the hair shaft; is that what you said?

A. It can be present in the sweat …

Q. In the sweat?

A. … depending on how much, so there may be a small amount at the very base of the scalp.

Q. Okay. So, like say the testing of Malique, some of the cocaine that's present could have been right in the shaft? I think I'm - ….

A. Most of it is in the medulla, …

Q. The medulla.

A. … so it's in the inner workings of the hair shaft.

Q. Okay, and some of it could be on the surface?

A. Some can be surface, yes.

Q. Okay, but you have no way of determining how much is on the surface, how much is in the medulla?

A. We don't differentiate, but in our experience, because sometimes we will be requested to wash off the hair, the majority of the hair is present on the inside, the majority of the cocaine is present on the inside of the hair shaft.

Q. Did you wash off his hair?

A. I don't believe so based on these results, but I don't know whether or not we did a secondary analysis with a washed sample.

Q. Okay, so then because you don't know, you don't know how much of it would have been present?

A. Well, we know that the benzoylecgonine is generally only present from the blood supply, and that's not well incorporated through sweat, so the presence and significance of the benzoylecgonine level coupled with the level of cocaine indicates that this is from systemic exposure. The levels indicate that. So, for example, when you're saying can these things be present, presence is one question and the level of presence is another entirely. So, based on this child's level of cocaine in their hair, there's really no doubt that it's from systemic exposure. It was present in the bloodstream.

Q. Okay, now looking at your graph, …

A. Yes.

Q. … it ends in July.

A. That's correct.

Q. Does that represent the end of July?

A. That's the month of July.

Q. The month of July.

A. As the average, and if you recall, I mentioned that it takes about 10 to 14 days for the hair to grow out from the follicle, …

Q. Right.

A. … so if you'll notice in all my interpretations, there's about a 10-day delay between the window of detection and the date of hair sampling. So Malique's sample was taken August 10th, therefore the earliest time period we are stating is July of 2005. It's excluding those first 10 days of August because that's not really represented. That hair was still underneath the scalp growing at the time of sampling.

Q. You'd agree with me it's possible that hair could grow even faster than 2 centimetres a month?

A. I'm not aware offhand what the top end of recorded amount is, yeah.

Q. So you just don't know?

A. I can't say with certainty the exact number.

Q. Okay. And I believe in your evidence in-chief you indicated you don't have specific ranges of exposure for toddlers?

A. Yeah, for children of this age.

Q. Okay. And I understand that you tested the

hair of Steve Fitz-Charles.

A. That's correct, yes.

Q. And how long was that hair?

A. It was 2.5 centimetres.

Q. 2.5 centimetres? That would indicate to you that it had been recently cut?

A. Yes.

Q. Okay. And that would prohibit you from determining using your hair analysis whether he had ingested or had exposure to cocaine around the time of Malique's admission into hospital?

A. That's correct, yes.

Q. So really, the time period for which you took his hair sample was, what time?; what was that time period? I'm sorry.

A. I don't have a copy of Mr. Fitz-Charles' results with me.

Q. I'll see if I can find it for you.

A. But the sample date should be on the results report.

Q. Right. Report date - oh, here it is. Sample date 25 of April 2006; would that be ….

A. Mm-hmm.

Q. Yeah, 25th of April 2006. I will show it to you and you can just confirm.

A. Yeah.

Q. So that would have been, Malique was admitted to hospital in August of 2005.

A. Mm-hmm.

Q. Eight months subsequent?

A. That sounds correct, yes.

Q. Okay. And just so I understand it, your conclusions regarding Steve Fitz-Charles, is that you couldn't say for certainty that he had ingested cocaine.

A. Because it's just a trace amount of benzoylecgonine …

Q. Right.

A. … it's possible that it was extensive second-hand exposure, but it's more likely the he may have used cocaine during that time period. It could have been one occasion, or he could have used cocaine at a higher level prior to the time period that we tested.

Q. Okay. And are you aware of when Mr. Fitz-Charles was asked to give a sample of his hair?

A. No, I am not.

MR. MERCURY: Okay. Those are my questions. Thank you.

THE COURT: Thank you. Any re-examination, Mr. Levy?

MR. LEVY: Yes.

RE-EXAMINATION BY MR. LEVY:

Q. I just wonder before, if I might, if my friend would be good enough to provide with the report that I haven't seen that he's - ….

MR. MERCURY: Yes, absolutely.

THE COURT: The report or the article?

MR. LEVY: Sorry, the article.

THE WITNESS: The article.

MR. LEVY: Q. And before I look at this short article here I just wanted to clarify in one of my friend's questions he indicated, it may have just been the phrasing of the question, talked about the cocaine moving along the hair shaft, and just for clarification, thus far you have described the timing that the cocaine or the, is it a metabolite you call that?

A. Yes.

Q. Is deposited on the hair shaft?

A. Mm-hmm.

Q. What?, does it move up or down the shaft after it's deposited or is it - ….

A. No. I believe when they say moving along the hair shaft they're talking about the analysis along the hair shaft.

Q. Right.

A. So there will a distribution. So when the cocaine starts to be incorporated it follow a pattern where it will start to enter into the matrix and then there will be a lot, and then it will peter out following the blood concentration. So, within a very, very small time period you'll have when the cocaine was incorporated. But in terms of when that cocaine was ingested you won't see cocaine from, you know, from now, then migrating along the hair shaft to the distal end from the proximal end, no.

Q. Doesn't happen?

A. That does not happen.

Q. Okay. Just give me a moment. All right,

first of all, I take it from what you said in response to my friend's question, you don't know the authors of this report as to whether they're authorities in the field or not?

A. No. If I could have a look at it again I can take a look at the institution.

Q. I take it the journal itself is a …

A. Well, it's …

Q. … reputable - ….

A. … a reputable journal, yeah.

Q. Reputable journal; and the articles are typically peer reviewed?

A. Mm-hmm. They are peer reviewed. It's a very good journal, and for what it is ,I have no qualms with their actual results. In terms of how the phrasing is interpreted, this is an analytical toxicology journal. So when you're looking at analytical science a lot of it has to do with these small degrees of variability that you'll see between people. So, for example, anybody being tested in almost any matrix will almost never have the exact same result come back twice. Even with the same vial of blood you will never have the exact result twice. All medical instruments are calibrated within an acceptable variability. So, for standardized tests that variability can often be even as high 10 percent, so for your standard glucose or haemoglobin. So the exact same vial of blood can produce results that have a difference of 10 percent with them. So in terms of interpretation, that's built into clinical guidelines. When you're interpreting a result you are taking into account the analytical variabilities that are involved. So when you're

looking at an analytical journal a lot of what's going to be discussed is those analytical variabilities that may not be of consequence to the end user.

Q. All right. Now, the cocaine according to this article, that it was deuterium-labelled cocaine, …

A. That's right.

Q. … cocaine d-5. What is that?

A. That's cocaine that has heavy, deuterium is heavy water, so it's a water that's been proteinated and it's radioactive, so that's how they are able to visualize the cocaine. So there will be slight differences in how it's incorporated. Not very large differences from non-labelled cocaine, so it's essentially the cocaine molecule with an altered water attached to it, so it's the method by which they will visualize that.

Q. All right, so do I understand you correctly that it's not a significant difference between say what was used in this test and what you might buy out on the street?

A. Not a huge difference, no. I can't say that in terms of that cocaine itself. Cocaine is not regulated, no street drugs are; so, you don't know what purity you're going to get in the street, and that can be highly variable. So, in terms of the actual drug cocaine, it's not very different, but purity, you know, how much you're going to use for a dose. See that's 25 to 35 milligrams in that study, but you don't know if a user would be using that amount or if they would be using more because it's adulterated with another compound or cutting agent.

Q. And in this particular study 25 volunteers

were used. In terms of a statistically significant result, do you have any comment on the fact that 25 were used?

A. I have no real comments. It's a small study. The fact that they're dosing cocaine indicates that they're relatively low doses.

Q. Would your confidence in the result be altered if they had used 1500 volunteers?

A. I can't really state that I have any confidence or lack of confidence in the results because I don't see the actual numbers there. The numbers make a big difference, so that the details really do matter in terms of when they say there's a difference between Caucasian and non-Caucasian, what is the value of difference? So, for example, I could say to you after a person has stopped using there will still be cocaine in their hair. Now, if I don't qualify that that sounds like hair testing is inaccurate, but then if I tell you, well, the difference should be six to tenfold lower, then that makes a very big difference beyond just stating, well, there will still be cocaine in the hair for a time after you've stopped using. As well, it's best being assessed by a qualified professional, so I always encourage social workers and anybody working with us to contact us, to contact me for an interpretation to know whether or not a person's story is consistent with their hair test results, because dosing itself is very variable. So, one user could use cocaine only on the weekends, responsibly. Cocaine can be used as a recreational drug, let's face it. If that exact same dose is used, broken down on a daily basis for somebody that's having a little bit of cocaine to get through their day, their pattern of use is

drastically different, but their hair result may be exactly the same. So there's a lot of variables that are involved in terms of what can a result mean.

Q. And looking at this in terms of - ....

A. It doesn't change my opinion on the results whatsoever, especially in terms of the significance of the level in the young child.

MR. LEVY: All right, thank you. Those are all my questions.

THE COURT: Okay, thank you, sir, for coming.

THE WITNESS: Thank you, Your Honour.

THE COURT: You are free to go now. Thank you. All right, I note the time. I take it we are not going to have any more witnesses this afternoon.

MR. LEVY: Yes, thank you for staying late, Your Honour.

THE COURT: No problem. I don't know if the trial coordinator has now gone, because I was going to ask both of you to go and see if you could see her before you left today to replace the two dates that we lost, before July. I don't want you to wait until July and then come and say, oh, yeah, I guess we have to get a couple of days for continuation. So you may want to go and see if she is still here and if you can do that before you leave. You don't have to come back here, but just if you can

CNC forensic toxicology services

This is Exhibit 2 referred to in the affidavit of Dr C. Chatterton sworn before me this 2nd day of March 2013

A COMMISSIONER FOR TAKING AFFIDAVITS

WITNESS STATEMENT

Statement of: **Dr CRAIG NICHOLAS CHATTERTON**
B.Sc, M.Sc, CChem, MRSC

Occupation of Witness: Deputy Chief Toxicologist
Office of the Chief Medical Examiner
Edmonton, Alberta
Canada

Relating to: Reference: CNCFTS 28-12

I declare that:

This statement consisting of 22 pages each signed by me, is true to the best of my knowledge and belief and I make it knowing that if it is tendered in evidence I shall be liable to prosecution if I have wilfully stated in it anything which I know to be false or do not believe to be true.

Signature:

Dated **18 July 2012**

Signature:

QUALIFICATIONS

The University of Liverpool awarded me the degrees of Bachelor of Science (Hons), Master of Science and Doctor in Philosophy (Chemistry). I am a Chartered Chemist (CChem) and a Member of the Royal Society of Chemistry (MRSC). I am also a member of the following societies: The Society of Forensic Toxicologists (SOFT); The International Association of Forensic Toxicologists (TIAFT); The Society of Hair Testing (SOHT); The United Kingdom and Ireland Association of Forensic Toxicologists (UKIAFT); The Alberta Society for Human Toxicology (ASHT).

From March 2001 until October 2009 I was employed by the Forensic Science Service as a forensic toxicologist, that is, I was responsible for the analysis and interpretation of biological samples (including hair) for the presence of alcohol, drugs of abuse and a wide range of medicinal/pharmaceutical drugs. During this time I was approved as an Authorised Analyst by the Home Secretary. In addition, I was registered with, and an assessor for the Council of Registered Forensic Practitioners (CRFP) until this organisation ceased business in 2009.

As a senior reporting officer within the Forensic Science Service, I was fully trained and responsible for the analysis and subsequent interpretation of biological samples (including hair) for the presence of alcohol, drugs of abuse and a wide range of medicinal/pharmaceutical drugs, using knowledge derived from the study of the medical/scientific literature and experience derived from case work.

From 2004 to 2006 I held the position within the Forensic Science Service of Service Delivery Team Leader for the national Road Traffic Alcohol (RTA) and Drug-Driving Unit (DDU), where I managed a large number of staff to process and deliver in excess of 15,000 case samples per year.

I returned to forensic toxicology casework in December 2006 and continued to report (and peer review) a full range of case-types including criminal toxicology, road traffic offences (including alcohol technical (hip-flask) defence), HM Coroners' casework and private toxicology casework. This work included reporting, interpreting and peer reviewing the analysis of hair samples. I have presented aspects of my work internationally (Society of Forensic Toxicologists) and to local police forces throughout the United Kingdom. I have given oral testimony in many courts throughout the United Kingdom and have given television and media interviews in relation to my work and involvement in major investigations, including the Shannon Matthews and John Worboys' investigations, where I was the senior scientist responsible for the toxicology aspects of these cases.

In October 2009 I left the Forensic Science Service in order to take up the position of Consultant Toxicologist / Business Development Manager (UK and Ireland) for Eurofins Forensic Services. I was appointed as an External Examiner for Bournemouth University in 2010 (BSc (Hons) Forensic and Biological Sciences). I established my own forensic toxicology business (CNC Forensic Toxicology Services Ltd) in September 2010.

In July 2011 I was appointed Deputy Chief Toxicologist, Office of The Chief Medical Examiner, Edmonton, Alberta.

REQUEST

I have been instructed by Lockyer Campbell Posner, Barristers and Solicitors, to comment on the case of R v **Tamara BROOMFIELD.**

DOCUMENTATION PROVIDED

I have been provided with the following documentation:

Pamphlet: "The Use of Hair Testing to Establish Illicit Drug Use"

Letter from Children's Aid Society dated August 1, 2005

Toxicology Hair Test request

Letter from Dr MIAN dated August 9, 2005 requesting hair analysis

Letter from Ragini SHARMA of Children's Aid Society requesting segmented hair analysis

Motherisk 'file' containing:

Hair Analysis Report dated August 12, 2005 - Reference 9223

Hair Analysis Report dated December 20, 2005 - Reference 10175, 10175(2), 10175(3)

Letter from Joey GARERI of Motherisk Laboratory (to Ragini Sharma) offering an interpretation of the analytical results, dated January 30, 2006

Tatyana KARASKOV's Willsay, dated January 14, 2009

Letter from Joey GARERI of Motherisk Laboratory (to Detective Timothy Johnstone) offering an interpretation of the analytical results, dated October 14, 2009

Dr KOREN's *Curriculum Vitae*

The Society of Hair Testing Certificates

Transcript of Dr Tatyana KARASKOV's trial evidence

Transcript of Dr Gideon KOREN's trial evidence

Transcript of Dr Peter COX's trial evidence

Transcript of Mr Joey GARERI's preliminary hearing evidence

Published paper: "Chronic Cocaine exposure in a Toddler Revealed by Hair Test"

Decision of the Discipline Committee of College of Physicians and Surgeons of Ontario and related documentation

NOTE:

Motherisk Laboratory provided its file to Lockyer Campbell Posner. The file did not contain a copy of Motherisk's analytical protocols, standard operating procedures and/or certificates providing evidence of laboratory accreditation. Laboratory notes and instrumentation maintenance logs and service records for **Malique's** case, together with daily calibration data, if they exist, were not provided.

LABORATORY ACCREDITATION

Any analytical method used in forensic toxicology casework should be rigorously tested, validated and finally accredited before it is implemented and deemed acceptable for 'live' casework. Furthermore, the laboratory undertaking such work is typically an accredited facility. Analytical method accreditation is provided by professional, recognised external bodies such as the American Board of Forensic Toxicology (ABFT); laboratory procedures and quality management systems are typically governed by Standards Council of Canada (SCC) and/or The International Organisation for Standardisation (ISO). The Society of Hair Testing guidelines (Cooper et al, 2012) state that '*implementation of quality assurance is recognised as a fundamental principle for all testing laboratories and accreditation to the international standard ISO/IEC 17025 an industry requirement.*' I have been provided with documentation which shows that Motherisk Laboratory participated in Proficiency Testing on Drugs of Abuse in Hair; the results of the proficiency tests were not provided. Information regarding analytical method validation and laboratory accreditation, if it exists, was not provided.

REFERENCE NUMBER

The reference number for this case is **CNCFTS 28-12**

INFORMATION

On the evening of July 31, 2005 Ms **BROOMFIELD** rushed her son, **Malique**, to the hospital because he was having a seizure. Presumptive tests of his gastric aspirate and urine revealed the presence of cocaine, suggesting the seizures were caused by a cocaine overdose.

Eight days later, a sample of **Malique's** hair was seized and subsequently analysed (on two separate occasions) for the presence of cocaine/cocaine metabolite at Motherisk Laboratory.

Analyses claimed to identify the presence of cocaine and benzoylecgonine in the hair sample. The findings were reported by the Director of Motherisk Laboratory and interpretation was provided by Dr KOREN, Mr GARERI (Assistant Director, Motherisk Laboratory) and Ms KARASKOV (Manager, Motherisk Laboratory), who stated that **Malique** had ingested substantial quantities of cocaine over the course of the previous 15 months.

Motherisk Laboratory Hair Analysis Results (Report August 12, 2005 : Reference 9223)

Segment	Cocaine (ng/mg)	Benzoylecgonine (ng/mg)
0-1cm	8.37	0.47
1-15cms	41.00	4.43

The hair sample was collected on August 9, 2005.

Motherisk Laboratory Hair Analysis Results (Report December 20, 2005 : Reference 10175)

Segment	Cocaine (ng/mg)	Benzoylecgonine (ng/mg)
0-1cm	7.56	1.90
1-2cm	6.22	4.40
2-3cm	11.66	11.45
3-4cm	25.43	16.41
4-5cm	17.81	11.95
5-6cm	62.04	24.27
6-7cm	75.88	35.99
7-8cm	44.31	34.56
8-9cm	52.85	32.06
9-10cm	22.64	20.36
10-11cm	28.14	14.30
11-12cm	31.89	11.46
12-13cm	30.80	14.30
13-14cm	11.45	4.65
14-15cm	7.66	4.16

The hair sample was collected on August 9, 2005.

Ms **BROOMFIELD** was convicted of aggravated assault and administering a noxious substance based on these findings. She was convicted of additional offences related to other allegations of abuse.

I have been asked to review the data and provide my opinion on the reliability of the hair analysis.

THE CHOICE OF ANALYSIS USED IN THIS CASE

Analytical strategies in forensic toxicology, as well as adjacent disciplines, utilise a variety of procedures, including screening procedures for well-defined subgroups (e.g., drugs of abuse) to be followed by a further process which will provide specific confirmation and quantification of individual compounds.

Drug in hair analysis is an important component of modern forensic science. The hair matrix offers a number of findings that are not given by other matrices, e.g., oral fluid, urine and blood which can be used to demonstrate only recent drug use; recent being defined as a number of hours or days prior to sample collection. The wide range of detection available through the hair matrix, the ease of sample collection and storage, the stability of the analytes at ambient temperature and the presence of multiple metabolites for some drugs provide and clarify interpretation of results over extended time periods.

There are two primary roles (or applications) for drugs in hair analysis:

1. **Screening** procedures are available that distinguish, on a presumptive basis, between negative (non-users) and positive (users) populations, including individuals who may have been indirectly exposed to drugs.

Testing for drug use by employees and applicants for employment is a common practice in the USA, where corporations often model their drug programs after the federal Drug Free Workplace programs (Levine, 2006).

2. **Forensic** procedures are available **which unequivocally identify and quantify** (where necessary) the drug (or drugs) which have been consumed, knowingly or otherwise by an individual.

Drugs in hair analysis has been utilised and accepted as a powerful evidential tool in many criminal cases in the last decade. For example, major police investigations in the United Kingdom involving Dr Harold Shipman, Shannon Matthews and John Worboys utilised drugs in hair analysis to help prove drug administration to, and/or ingestion by the victim(s) of homicide, abduction and sexual assault respectively.

The circumstances of Ms **BROOMFIELD's** case, in my opinion, required the use of a 'forensic' analytical investigation as opposed to the less robust preliminary screening methodology that was utilised by Motherisk in order to determine whether **Malique** had ingested cocaine before July 31, 2005 and, if so, for what extended time period. Motherisk Laboratory used the screening technique of Radioimmunoassay (RIA) in **Malique's** case. This analytical technique is designed to be used only as a form of preliminary screening. In this regard, the following information is taken from the manufacturer's instructions on the kit used by Motherisk:

The Immunalysis Cocaine/Cocaine Metabolite Direct RIA Kit is intended for detection and semi-quantitation of benzoylecgonine and cocaine. The Immunalysis Cocaine/Cocaine metabolite Direct RIA Kit provides only a preliminary analytical test result. A more specific alternate chemical method must be used in order to obtain a confirmed analytical result. Gas chromatography/mass spectrometry (GC-MS) is the preferred confirmatory method.

The Society of Hair Testing guidelines support the manufacturer's instructions by stating that, ***'All presumptive positive immunoassay screening tests must be confirmed using a more specific test for the target analytes, e.g., mass spectrometry.'***

Motherisk's conclusions were based exclusively on the Radioimmunassay technique.

Specific Gas Chromatography Mass Spectroscopy (GC-MS), Liquid Chromatography Mass Spectroscopy (LC-MS) or Liquid Chromatography Tandem Mass Spectroscopy (LC-MS/MS) analysis for cocaine, benzoylecgonine, norcocaine, methylecgonine and cocaethylene are the forensic processes used to unequivocally identify and quantify the drug (or drugs) consumed by a person. These methods of analysis were not used in **Malique's** case. In my opinion they should have been and accordingly, Motherisk's conclusions are not reliable.

Before analysing a forensic sample using GC-MS, LC-MS or LC-MS/MS, the gas (or liquid) chromatography mass spectroscopy methodology is fully calibrated with 5 or 6 external, matrix-matched calibrating standards. The system should also include an internal standard, quality control standards and blank extractions to verify extraction efficiency, to exclude contamination and/or carry-over between analyses and to confirm the precision and accuracy of the results obtained. This is a far superior and more robust methodology when compared with presumptive, non-specific, semi-quantitative immunoassay techniques.

Dr KOREN, Mr GARERI and Ms KARASKOV depended entirely on the results of the non-specific, semi-quantitative immunoassay methodology.

In my opinion, cocaine and benzoylecgonine cannot be unequivocally identified using immunoassay techniques. In fact, the manufacturer's instructions highlight analytical and interpretation limitations, stating that ***'There is a possibility that other substances and/or factors not listed above may interfere with the test and cause false results e.g., technical or procedural errors.'***

For the same reasons, accurate quantitative data concerning these drugs cannot be obtained by immunoassay because of the potential for compounds, which are unrelated to cocaine and benzoylecgonine, contributing to the magnitude of a positive result, based on their cross-reactivity.

INTERPRETING MOTHERISK LABORATORY RESULTS

The analytical results presented by Motherisk Laboratory raise immediate concerns because the reported concentrations of cocaine and benzoylecgonine are extraordinarily high. They are so high that they call into question their validity. They are higher than the results that would be expected for an adult cocaine (or crack) addict.

For guidance, research has suggested that concentrations of cocaine below 4ng/mg are suggestive of occasional or low-dose abuse for users who typically use up to 0.3 grams of cocaine per day; concentrations in the range 4 to 20ng/mg are suggestive of moderate drug abuse for users who typically use in excess of 1 gram of the drug per day (Pepin and Gaillard, 1997).

Talking of Motherisk's results in **Malique's** case, Mr GARERI himself stated that, '*these are very unusual results for a small child to have....*'. He further stated that '*.....this child's lowest result in any of the time periods was still greater than 50 percent of the adult cocaine users that we test in our laboratory.....*'

Nine of the fifteen sections of **Malique's** hair analysed reportedly contained cocaine at a concentration in excess of 20ng/mg; four of these sections reportedly contained cocaine at a concentration in excess of 40ng/mg. I have never encountered cocaine (or BZE) concentrations of this magnitude in a child's hair. In my experience, cocaine concentrations of the magnitude reported in this case are encountered, albeit rarely, in the hair of crack cocaine addicts who use/abuse the drug in very high doses.

As a forensic toxicologist, it is outside my field of expertise to offer specific comments on how a child who regularly used cocaine in the quantities suggested by Motherisk's results may appear to third party observers, or how such observers would identify the characteristic signs associated with regular cocaine use/abuse. Whilst the aforementioned drug concentration ranges refer to adult subjects, it is difficult to comprehend how a child of just over 2 years of age could, over a period of several months, ingest (knowingly or otherwise) such amounts of cocaine without suffering repeated and obvious outward effects and likely death.

Mr GARERI stated, *'In terms of looking at this as an analytical toxicologist given this to interpret, I say that there is in this situation is extremely high risk of death in this child due to the potency of the drug in question and the extremely high level of exposure.'*

In considering this statement of Mr GARERI, it should be borne in mind that the results reported by Motherisk on which Mr GARERI is commenting did not include the cocaine allegedly consumed by **Malique** on July 31, 2005 (see below).

Dr KOREN testified that '*...it depends upon the quality of the care giving. A child may not show much. A child may not do too well, may not eat well, may eat well and may not understand well and may not catch up with milestones...*' Dr KOREN further testified that '*...there's a lot of evidence that a lot of kids exposed to cocaine not showing overt signs such as seizures and so on, but still accumulative damage.*'

I would expect that the quantities in this case, if they are accurate, overwhelm Dr KOREN's claims. You may wish to consult a child psychiatrist in this regard.

THE QUANTITY/WEIGHT OF HAIR TESTED

Although it is not entirely clear, Ms KARASKOV seemed to testify that 2 milligrams (2mg) of hair was used during the first analysis and 2-4mg of hair was used in the second analysis. In my experience, forensic hair analysis for the presence of drugs is typically undertaken on samples weighing between 25 and 50mg. The Society of Hair Testing guidelines state that, '*Hair samples that have been washed and dried should be cut into smaller pieces or milled to a powder, and then typically 10-50mg of hair accurately weighed prior to analysis.*'

In my opinion 2-4mg of hair sample is too small a quantity to be used for analysis. Firstly it is very difficult to accurately weigh out such a small amount of hair. Secondly, the likelihood of inaccuracy resulting in poor precision of test results is greatly increased with such a small sample volume; the margin for error becomes very significant.

POTENTIAL SOURCES OF CONTAMINATION

The Society of Hair Testing guidelines for drug testing in hair state that the potential role of external contamination must be considered when interpreting hair testing findings. The washing of hair samples prior to analysis has two main purposes. First, washings remove hair care products, sweat, sebum or other surface material that may interfere with the analysis or that may reduce extraction recovery. Second, it removes potential external contamination of drugs from the environment.

It should have been determined whether **Malique's** hair sample was contaminated by, for example, vomit. I understand (from the medical records) that **Malique** was vomiting frequently, likely as a result of very recently having ingested cocaine. Direct contact between cocaine-contaminated gastric contents and a hair sample will likely result in external contamination which could offer an explanation for the presence of cocaine and benzoylecgonine along the hair shaft, and could account for the massive quantities. In addition, **Malique**, having recently consumed cocaine, was apparently sweating profusely (according to the evidence) and this could also have significantly affected the results.

Additionally, the presence of cocaine and benzoylecgonine in **Malique's** hair sample could be as a result of the hair coming into direct contact with a cocaine substance, perhaps as a result of poor housekeeping and/or as a result of direct contact with the smoke produced during drug use.

There is no record in the laboratory material that **Malique's** hair sample was washed which is something that I would have expected if it had been. Dr KOREN's testimony on this matter is confusing. When initially asked if the hair was washed in this case, Dr KOREN stated, '*I'll have to check. Yeah, in this case the hair was washed, sir.*' However, during cross-examination, Dr KOREN was not able to confirm whether the hair sample in this case was washed; he was not able to produce documentation, i.e., an original record, which would have confirmed if the sample had been washed. Dr KOREN also stated that, '*...if we do a test on a child we generally do not wash because any exposure of a child (to cocaine) is a place the child should not be unlike an adult.*'

In relation to whether the hair sample was washed, Mr GARERI was asked at the preliminary hearing, 'Did you wash off his hair?' Mr GARERI replied, '*I don't believe so based on these results, but I don't know whether or not we did a secondary analysis with a washed sample.*'

Ms KARASKOV made no mention of washing **Malique's** hair sample.

If the hair sample was washed, it would be important to have analysed the washings for the presence of cocaine and/or benzoylecgonine. The absence of cocaine and/or benzoylecgonine in the washings of a hair sample would demonstrate that no 'surface drug' was present on the sample on the day of its collection; conversely, the presence of cocaine and/or benzoylecgonine in the washings would support the view that the hair sample had been directly exposed to, or in contact with, cocaine and/or benzoylecgonine at some point prior to collection.

AN ANALYSIS OF THE RESULTS OBTAINED BY MOTHERISK LABORATORY

The presence of metabolites (breakdown products produced by the body) in hair can, in some instances, be used to demonstrate that a drug has passed through the body, i.e., their presence demonstrates active drug use.

Firstly, in **Malique's** case, the immunoassay results are not satisfactory proof of the presence of cocaine in the hair or in the quantities claimed for the reasons already explained.

Ignoring this caveat and accepting the immunoassay results at face value, it cannot be determined whether the positive results are due to active drug use and/or drug exposure because benzoylecgonine can be formed by spontaneous hydrolysis* of cocaine. The results of the hair strand immunoassay analysis could therefore be due either to active cocaine use or the result of exposure to the drug through passive inhalation, or contact, or both.

In his testimony Dr KOREN suggested otherwise when he stated that '*You need the body to produce the metabolite.*' Mr GARERI made the same claim when he stated that benzoylecgonine '*is uniquely present when an individual has used cocaine. So, for example, some individuals who are around people who smoke a lot of crack may be positive in their hair for cocaine, but negative for benzoylecgonine, so the presence of benzoylecgonine confirms that exposure in an adult is due to use of cocaine itself. With young children we can sometimes find small amounts of benzoylecgonine due to their higher rates of respiration and lower body weight over which second-hand exposures are spread. So, they have a higher dose per kilo, therefore very young children in a passive exposure situation may have a small amount of benzoylecgonine. That's speaking generally.*'

Dr KOREN and Mr GARERI are incorrect. Benzoylecgonine can be formed 'in-situ' by spontaneous hydrolysis of cocaine; cocaine can even degrade to benzoylecgonine and/or ecgonine methyl ester during sample preparation (Cordero et al, 2010). It is therefore possible to detect both cocaine and benzoylecgonine in the hair of an individual who has <u>not</u> actively used cocaine.

Cocaine and benzoylecgonine are also present in the smoke produced during drug use. To give another example, which would not be applicable to **Malique's** case, cocaine and benzoylecgonine can be passed to a child via breast milk, if the mother is an active drug user and the child is breast-fed (Kharasch et al, 1991).

***Hydrolysis** usually means the rupture of chemical bonds by the addition of water. In the context in which it is used in this report, hydrolysis is a step in the degradation of a substance.*

Once in the body, cocaine is broken down to form benzoylecgonine (BZE), methylecgonine (ME) and norcocaine (NC); if taken in combination with alcohol, cocaethylene (CE) is also formed. The active markers for cocaine use are norcocaine and/or cocaethylene; the presence of either of these compounds in a hair sample demonstrates active drug use. Radioimmunoassy will not identify these compounds.

LIMITATIONS ASSOCIATED WITH SAMPLE COLLECTION

Malique's hair sample was obtained on August 9, 2005. Following use/ingestion, drugs are incorporated into the hair (from the root) by a variety of mechanisms. The area of hair affected takes a few days to emerge above the scalp to become available in a cut sample. For this reason it is generally recommended that a period of 28 days be allowed to elapse before a sample is collected; this ensures that all relevant timeframes for consumption are included in the samples.

The time period represented by analysis of the hair sample in this case would not encompass July 31, 2005 when **Malique** was rushed to hospital. Any drugs which may have been present in his body at this time would not have been present in a cut head-hair sample taken on August 9, 2005.

If the hair sample had been collected by 'pulling' or 'plucking', it would probably have contained root material which could have been analysed to ascertain whether it contained drugs relevant to the time of this incident. Alternatively a further hair sample should have been taken from **Malique** three or more weeks after his admission to hospital.

I understand that presumptive tests of **Malique's** gastric aspirate and urine revealed the presence of cocaine. I further understand that Dr COX (attending physician) has stated that blood and spinal fluid tested positive for cocaine. I have not seen the analytical data relating to these tests. Again, the presence of cocaine in **Malique's** body at the time of admission to hospital on July 31, 2005 would not have resulted in his hair sample (collected on August 9, 2005) testing positive for cocaine and/or benzoylecgonine.

CONCLUSION

It is not possible to determine whether **Malique BROOMFIELD** had ingested (or been exposed to) cocaine over an extended time period, based on the results of the immunoassay analysis conducted by Motherisk Laboratory.

Signature:

REFERENCES

Cooper, G.A.A., Kronstrand, R., Kintz, P, *Forensic Science International*, 218, **2012**; 20-24

Levine, B., Principles of Forensic Toxicology. American Association for Clinical Chemistry, Washington, DC, **2006**

Henderson, G.L., *For. Sci. Int.* 63, **1993**;19-29.

Moeller, M.R., *Therap. Drug Monitoring*, **1996**; 18(4), 444-449.

Pepin, G., Gaillard, Y., *For. Soc. Int.* 84, **1997**, 37-41.

Cordero, R., Lee, Sooyeun, Paterson, S., *Journal of Analytical Toxicology*, 34, **2010**; 543-548.

Kharasch, S.J., Glotzer, D., Vinci, R., Weitzman, M., Sargent, J., *Am. J. Dis. Child.*, 145, **1991**; 204-206