

Expert medical witnesses: scientists or advocates

By Susan Wishart and Mayland McKimm Q.C.

On November 12, 2007 the Honourable Stephen T. Goudge commenced public hearings in the Inquiry into Pediatric Forensic Pathology in Ontario (the “Goudge Inquiry”). Those hearings concluded on February 29, 2008 and Commissioner Goudge is scheduled to release his report on September 30, 2008. The inquiry was commissioned to conduct a systemic review of the practice of pediatric forensic pathology and its oversight mechanisms in Ontario from 1981 to present, as they relate to the criminal justice system.

The impetus for the inquiry was the discovery that Dr. Charles Smith, a pediatric forensic pathologist, had drawn erroneous conclusions in several infant death cases in Ontario. Dr. Smith testified on behalf of the Crown in criminal trials that the infant deaths he had examined were not accidental. It was subsequently determined that many of Dr. Smith’s findings were incorrect and in fact the deaths were not the result of any criminal act. His testimony led to the convictions of innocent people. His expert testimony in criminal trials ruined lives and tore apart families already grieving the loss of a child. The enormity of the consequences of his expert evidence cannot be overstated.

In his testimony at the Goudge Inquiry Dr. Smith gave a number of reasons for his errors: poor training; lack of oversight; and pressure to make his findings consistent with the prevailing theory of the police to name a few. Over the course of the inquiry, policy roundtables were conducted and research papers submitted that examine the entire criminal justice system and medical expert witnesses in an effort to prevent future miscarriages of justice.¹ One of the issues raised in several of the research papers is the phenomenon of medical expert witnesses acting as advocates for a particular theory rather than providing an opinion based on scientifically tested medical evidence.

When an expert medical witness testifies as an advocate, he or she rules out possible explanations for injuries that do not fit with their theory. Instead of limiting their testimony to a diagnosis and the mechanism of injury, the advocate goes further and offers a single theory as to causation. The danger for an accused in a criminal trial is that there are often several viable

causes for the injury but only one is presented to the court. Judges and counsel rely heavily on medical experts as they have knowledge that is, practically speaking, not obtainable by the other participants in a criminal trial. When a doctor testifies as an expert witness on such issues as the mechanics of injury causation, there is an assumption that the opinion given represents the current medical science that is universally accepted by medical experts. Unfortunately, this is not always the case.

In most cases it will be impossible for counsel or the court to know that there is a division in the medical community on a particular issue. There may be only a handful of experts on the topic in a particular geographical area, all of whom hold the same view. In other parts of the country or the world, experts in the same field may hold the contrary view. Due to a lack of time and resources, particularly for the defence, this contrary view may not be discovered or explored at trial. When an expert medical witness testifies and only discloses her or his view, the witness is acting as an advocate. This has resulted in miscarriages of justice.

Expert medical witnesses and Shaken Baby Syndrome

A clear example of the dangers of the expert medical witness as advocate phenomenon is found in what has become to be known as Shaken Baby Syndrome (“SBS”). The syndrome was first referred to in 1972 by Dr. John Caffey to describe the mechanism of causation for subdural hematomas in infants where there was no sign of external injuries to the scalp.² Caffey hypothesized that shaking or even swinging an infant in play could result in brain injuries with no blunt force trauma. He referred to this as “Whiplash Shaken Infant Syndrome”.

In the 1980s SBS took on a more sinister connotation and was used to describe physical abuse on an infant whereby the infant is held around the rib cage and shaken violently causing the infant’s head to snap back and forth. The defining symptoms of SBS are stated to be: subdural hematoma, encephalopathy (usually manifest in fatal cases by brain swelling) and retinal hemorrhage. These symptoms are commonly referred to as “the triad.” Although there are no accounts of anyone witnessing an infant being shaken in this manner with the resultant triad of symptoms, doctors offered SBS as an explanation for these injuries where there was no apparent

impact injury to the head. For some doctors SBS became not only a possible explanation for the triad of symptoms, but the *only* explanation.³

Over the past three decades thousands of individuals around the world have been charged and convicted of murder/manslaughter/assaults on infants with the mechanism of brain injury defined as SBS. Proponents of the syndrome have attended annual medical conferences on SBS and some have declared themselves to be experts. Doctors have testified on behalf of the prosecution at criminal trials and stated as fact that when the triad of symptoms is present, the only mechanism of injury is SBS. Parents who testified that their child fell and hit his head were disbelieved in the face of the unquestioned expert medical opinion.

At the same time that the SBS experts were testifying in this manner, other doctors and scientists were conducting studies and demonstrating that the mechanism of SBS could not cause the injuries associated with the syndrome. One research study demonstrated that the forces needed to cause a subdural hematoma far exceeded the amount of force that could be generated by shaking.⁴ The forces generated inside the skull by impact with a rotational component, such as with some falls, are 50 times greater than the forces that can be generated by shaking alone, and still 40 times greater than shaking when the impact is onto a soft surface. Another study determined that impact injuries to an infant's head did not always result in any injury to the skull or scalp.⁵

Even more compelling are the studies involving documented short distance falls that resulted in the triad of symptoms, with no external head injury. The documentation included falls witnessed by disinterested third parties and falls that were caught on film.⁶

These studies all indicate that the triad of symptoms that are said to be the signature of SBS can also result from accidental short distance falls. The biomechanical studies go even further to suggest that the triad of symptoms attributed to SBS cannot be caused by shaking alone. Despite this body of scientific evidence expert SBS doctors continued to testify at criminal trials and routinely denied that the injuries could be caused by anything other than intentional assaultive shaking.

Process excluded non-SBS explanations

To make matters worse, those doctors and scientists who had effectively debunked SBS as a mechanism of causation for the triad of symptoms were not called to testify at criminal trials. This identifies two problems when the legal and medical system overlap: the inability of counsel to access all of the relevant medical literature on a given subject; and the lack of any mechanism within the medical profession for monitoring expert medical opinions given in criminal trials. The former may be due to a lack of time, funding or knowledge on the part of counsel. The latter is a systemic problem within the medical community whereby there is no requirement for the hypothesis that underlies a medical theory to be universally accepted before it can be offered as an “expert” medical opinion.

It has only been in the last few years that this division in the medical profession surrounding SBS has come to light in criminal trials. Courts have now heard evidence from doctors and scientists that calls into question the very nature of SBS and any link between the triad of symptoms and assaultive conduct. As a result of the scientific studies debunking SBS prior convictions that were based on SBS have been overturned in some jurisdictions and reviews of other convictions continue.⁷

Unlike a decade ago, we now have a pool of physicians, at least in the United States, who can testify about the mechanism of injuries in infants to counter the evidence of the SBS advocates.⁸ Unfortunately, there are still expert medical witnesses who continue to act as advocates for SBS and testify that it is the only possible explanation for the triad of symptoms. Instead of testifying in an objective manner such experts take on the role of disproving the accused’s explanation for the infant’s injuries.⁹

There appears to be a significant lack of training or guidelines for doctors testifying in an expert witness capacity. The issue of doctors testifying as advocates is not new, and is one that has been raised in the medical community in the past. John Plunkett M.D., a forensic pathologist in Minnesota, has published several papers on the myth of SBS. He has also criticized his fellow physicians for testifying in criminal cases as to causation (shaking) instead of limiting their opinion to a diagnosis (child died from a subdural hematoma) and mechanics (rapid deceleration

injury). In 1998 Dr. Plunkett submitted a letter to the American Journal of Forensic Medicine Pathology criticizing the profession for the manner in which doctors were acting as advocates in SBS cases:

We need to differentiate between what we scientifically know to be true, and what we think or hope to be true. We don't need advocates in front of audiences, including juries, demonstrating the mechanism of shaking in a syndrome we do not understand. We don't need a third or fourth National "Shaken Baby Conference" to promote more unfounded theories for infant head injuries and to suggest prosecution methods to counter "untruth" defences. The concept of a "shaken infant syndrome" deserves to be examined and re-examined, even when we finally think we have it "right".

Too many of my colleagues (and most other physicians and almost the entire general public) think our profession is the "whodunit" discipline. It is not. Forensic pathology is the "what happened" specialty. When our focus is the "who" we forget the "what" or may consider it unimportant. Worse, we may alter our explanation/interpretation of the "what" to make it conform to our opinion of the "who." The need to consider alternative explanations ceases, doors to further inquiry close: do not go beyond, you will find nothing there. Objectivity fails because we are forced to defend an advocacy role, be it for the state or the defendant. We must not forget that our only responsibility is to bear witness within the limits of science.¹⁰

Towards a "demonstrably reliable" standard of expert evidence

While situations like SBS will hopefully be rare, it raises the issue of the *admissibility* of expert medical testimony in criminal cases. In his paper submitted to the Goudge Inquiry titled "Pathological Science? Demonstrable Reliability and Expert Forensic Pathology Evidence," Dr. Gary Edmond suggests that judges should not admit expert evidence adduced by the prosecution unless it is demonstrably reliable.¹¹ That is, the prosecution must demonstrate that the techniques and theories used by its experts and the opinions they present in court are reliable. Reliable in this context means the opinion is one that is based on scientific evidence and is accepted by the medical community.

This approach has been utilized in the United States and evidence of SBS was excluded in a case where the triad of symptoms was present but there were no other signs of abuse.¹² The difficulty

with this approach is that it still requires defence counsel to present medical evidence contrary to the expert opinion proposed by the state on a case by case basis. The underlying problem doesn't change: the existence of various expert medical opinions that are based on theories as opposed to scientific evidence. Dr. Edmond concludes his paper with the following:

If courts and reformers are genuinely interested in reducing wrongful convictions, improving accuracy, and enhancing fairness, regardless of organizational and structural changes to forensic science and medicine, then refining and enforcing admissibility standards will have a major systemic effect. Requiring demonstrably reliable expert evidence would compel institutionalized forensic science and medicine to reform their approaches to investigation, evidence, and proof. The need for demonstrable reliability is, in reality, just another way of requiring forensic scientific, medical, and technical evidence to be based on solid foundations. Mirroring developments in the mainstream biomedical sciences, it seems desirable for techniques, theories, and opinions relied upon by the state to be *evidence-based*.

Such standardization within the medical profession would hopefully result in limiting expert opinions to diagnosis and mechanics of injury and prohibit speculation as to causation. Reform of this magnitude will take years to realize. In the meantime, counsel may be able to challenge the admissibility of medical testimony where the opinion is not based on scientifically tested evidence.

Other issues have been identified during the Gouge Inquiry that contribute to inaccurate expert medical testimony that can be remedied more easily: forensic education requirements for judges and lawyers involved in serious criminal cases; early participation by a defence expert in forensic examinations; videotaping of forensic procedures; and greater resources from legal aid for defence counsel to retain experts both as witnesses and consultants.

The issues referred to in this paper are not limited to SBS or to medical experts. In any area where the scientific community is divided the same cautions apply in accepting expert opinions. This is an evolving issue in that expert opinions change with further studies and advancements in technology. What is now considered to be fact may soon be fiction. The current state of affairs places a significant burden on counsel to be up to date on the latest medical research and to challenge expert opinions that encroach into the realm of advocacy. With assistance from the

medical profession through standardization and guidelines for expert witnesses this burden can be eased and may prevent wrongful convictions.

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¹ All of the research papers are available on the Goudge Inquiry website: www.goudgeinquiry.ca

² Caffey J. M.D. On the Theory and Practice of Shaking Infants. *Amer J Dis Child*/Vol 124 August 1972; Caffey J. M.D. The Whiplash Shaken Infant Syndrome: Manual Shaking by the Extremities With Whiplash Induced Intracranial and Intraocular Bleedings, Linked with Residual Permanent Brain Damage and Mental Retardation. *Pediatrics* Vol. 54 No. 4 October 1974

³ Uscinski R. Shaken Baby Syndrome: fundamental questions. *British Journal of Neurosurgery* 2002; 16(3): 217-219

⁴ Duhaime A. M.D. The Shaken Baby Syndrome: A clinical, pathological, and biomedical study. *J. Neurosurg.* Vol. 66 March 1987

⁵ Reiber G.D. M.D. Fatal Falls in Childhood. *The American Journal of Forensic Medicine and Pathology.* 14(3):201-207 1993

⁶ Root I. M.D. Head Injuries from Short Distance Falls. *The American Journal of Forensic Medicine and Pathology* 13(1):85-87 1992; Piatt, J.H. M.D. A Pitfall in the Diagnosis of Child Abuse: external hydrocephalus, subdural hematoma, and retinal hemorrhages. *Neurosurg Focus* 7(4): Article 4, 1999; Christian C.W. M.D. Retinal Hemorrhages Caused by Accidental Trauma. *The Journal of Pediatrics* 135:125-7 1999; Kim K.A., Wang M.Y. M.D. et al. Analysis of Pediatric Head Injuries from Falls. *Neurological Focus* 8(1):Article 3 2000; Plunkett, J. M.D. Fatal Pediatric Head Injuries Caused by Short Distance Falls. *American Journal of Forensic Medicine and Pathology* Vol. 22 No. 1-12 2001

⁷ “Shaken Baby Syndrome - questioned by British court; conviction overturned”. *Association of American Physicians and Surgeons, News of the Day...In Perspective* 8/2/2005 [www.aapsonline.org/nod/newsofday203.htm]

⁸ see for example Miller M.S. M.D. et al “A Sojourn in the Abyss: Hypothesis, Theory, and Established Truth in Infant Head Injury” *Pediatrics* Vol. 114 No. 1 July 2004;

⁹ R. v. Tom 2007 BCSC 1407

¹⁰ Plunkett J. M.D. Shaken Baby Syndrome and Other Mysteries – a letter submitted to the *American Journal of Forensic Medicine and Pathology*, Spring 1998 [www.portia.org/chapter08/mystery.html]

¹¹ see footnote 1

¹² Cordner S. et al Pediatric Forensic Pathology: Limits and Controversies at page 84. Paper Commissioned by the Goudge Inquiry [see footnote 1].