Currently the "image gently" concept tailors imaging protocols to patient size and limits scanning to only the region of interest, as determined by the clinical findings. Manufacturers are also being encouraged to improve and optimize dose efficiency and to develop software targeted at low-dose performance.

While the above steps are essential to lowering the radiation dose from CT, it is incumbent upon referring physicians and other health care providers to be aware of the appropriate clinical indications for CT examination and to avoid over utilization of this most important diagnostic tool.

The Goudge Inquiry and the role of medical expert witnesses. Hon. Frank Iacobucci, Graeme Hamilton. *CMAJ* 2010;182:53-56. (from Toronto, Canada)

Written by a retired Justice of the Supreme Court of Canada and a private lawyer from Toronto, this analysis of the Goudge inquiry begins with defining the goals of the adversarial system of law that exists in Canada, Australia, the UK, and the United States. This process rests on the premise that an oppositional presentation of the relevant evidence before an impartial decision-maker is the best means of seeking the truth while ensuring that the other goals of the justice system are met.

Although expert witnesses have served this process since the middle ages, today the gap between the layperson's knowledge and that of an expert is vast and growing. Expert witnesses are permitted to offer opinions because someone with a layperson's knowledge is unlikely to reach the correct inference from the facts alone. But limitations must apply.

The authors list four reasons to control the use of expert witnesses:

1. The unfettered use of experts tends to undermine the rationality of the legal process. Impressive credentials can sway juries, judges, and even lawyers for opposing parties. Hired guns sometimes skew their testimony toward the side that hired them and the use of experts tends to increase the complexity of trials since often the only means of rebutting an opposing party's expert opinion is through the conflicting opinion of another expert.
2. The justice system's pursuit of the truth is not absolute; it is attenuated to ensure fairness. The high cost of retaining experts impedes equal access. Moreover, "parad(ing) experts advancing dubious pseudoscientific theories in front of the judge or juries..." brings the "administration of justice into disrepute."
3. Courts are not qualified to assess the reliability of an expert's testimony.
4. The justice system requires that the judge or jury resolve questions of fact and there is often a fine line between aiding the fact-finder and usurping him or her.

The Supreme Court of Canada has laid down a four-part test for determining the admissibility of expert evidence:

1. The evidence must be relevant, meaning it must tend to establish a fact in issue. Also, the value of the evidence must outweigh the costs of introducing it into the trial process.
2. The evidence must be necessary to assist the judge or jury.
3. The expert evidence must not be inadmissible on any other basis, meaning that there should be no introduction of evidence through the "back door" of the expert witness.
4. The expert must have specialized knowledge of the subject about which he or she is testifying and testimony that is beyond the expert's area of expertise is inadmissible.

The authors state that "unfortunately, the legal rules described have proven insufficient to safeguard the integrity of the justice system." They go on to discuss the Goudge report's examination of Dr. Charles Smith's work. Smith was a Toronto-based pathologist who testified often in cases during the 1990s. His autopsy records were reviewed by five "eminent forensic pathologists," who questioned Smith's opinion in 20 of 45 cases they examined. In his report, Goudge expressed concerns about how forensic pathologists interact with the justice system. Smith had been allowed to give opinions he was unqualified to give and he routinely offered opinions without stating the underlying evidence for those opinions. In addition, Smith's opinions were found to be vulnerable to misinterpretation and were sometimes ambiguous. Smith also was considered to be

unaware that "experts are expected to provide impartial testimony and that their overriding duty is to assist the court. Instead, Smith sometimes acted like a partisan advocate for the prosecution, overstating his level of confidence in his opinions and failing to identify plausible alternative theories where they existed." For the opposing lawyer, cross-examining such a witness is difficult due to the lawyer's incomplete knowledge of the science involved.

The article concludes with the opinion that "There is no one particular cure that will guarantee the integrity of the system."

Reviewed by Robert M. Reece, M.D.

Editor's Note:
This is a well-meaning analysis of the problems raised by the Goudge report. It can be added to all of the policy statements of various medical and legal organizations. The problem, of course, is one of controlling irresponsible medical testimony; this can arise on either side of a case. Defining the limits of an expert's expertise is a Herculean task, one that requires the wisdom of all of the philosophers of all the ages. Until we can learn how to control zealotry and hubris, I fear that ensuring the integrity of expert witness testimony will be a constantly elusive goal.

Screening injured children for physical abuse or neglect in emergency departments: A systematic review. J Woodman, F Lecky, D Hodes et al. *Child: Care Health Dev* 2010;3:153-164. (from Manchester, London and Exeter UK)

These authors conducted a systematic review of the utility of three markers — young age, repeat attendance, and injury type — to differentiate abused children from other emergency department (ED) patients. Using a robust search strategy, the paper culled six published articles and one unpublished article, including three studies of hospital inpatients. They defined a marker as clinically useful if it was associated with a positive likelihood ratio of 10 or more.

The authors applied strict criteria, using the QUADAS assessment tool, to determine that all studies were of poor quality by the normal standards of a systematic review. In the specific case of infants admitted to the hospital, two studies did find very elevated likelihood ratios for abuse. More broadly though, none of the markers were found to be sufficiently sensitive or specific for abuse.

The authors conclude that abuse should be carefully considered, even in the absence of these markers, and that referrals should not be made for these markers alone.

Reviewed by Daniel Lindberg, M.D.

Reviewer's Note:
Of course, this is not the first review to note that the reality of child abuse precludes the sort of robust methods normally seen in a systematic review. And by examining only broad categories of injury type, such as burns or fractures, rather than specific injuries such as posterior rib fractures or subdural hematomas, the authors limit their ability to comment on particularly concerning injury types. Finally, the authors' decision to set a high standard (LR+ >10) essentially asks whether we should refer all infants in the ED, or all repeat attendees, for abuse evaluation. No one will be shocked when the answer is "no."

The authors do explain these limitations carefully and thoroughly, however, and they avoid the trap of concluding that absence of evidence equals evidence of absence. They are not, for example, trying to deny the epidemiologic importance of age, or the specificity of certain injuries. In the end, this paper is a lucid and elegant summary of the current state of the art for these markers. The paper deserves credit for displaying the substance of the selected articles, weaknesses and strengths, with a minimum of fluff and distraction.

With all these limitations in mind, I think it is time to move on from the assumption that repeat ED attendance alone is a marker for child abuse. The authors correctly note that frequent ED use is laden with social factors and confounds likely to affect both the presence, and the detection, of abuse. It would be good if measuring ED "frequent flyers" was an easy and sensitive way to find abuse. Unfortunately, it is not. Surprise! Abuse screening is complicated.