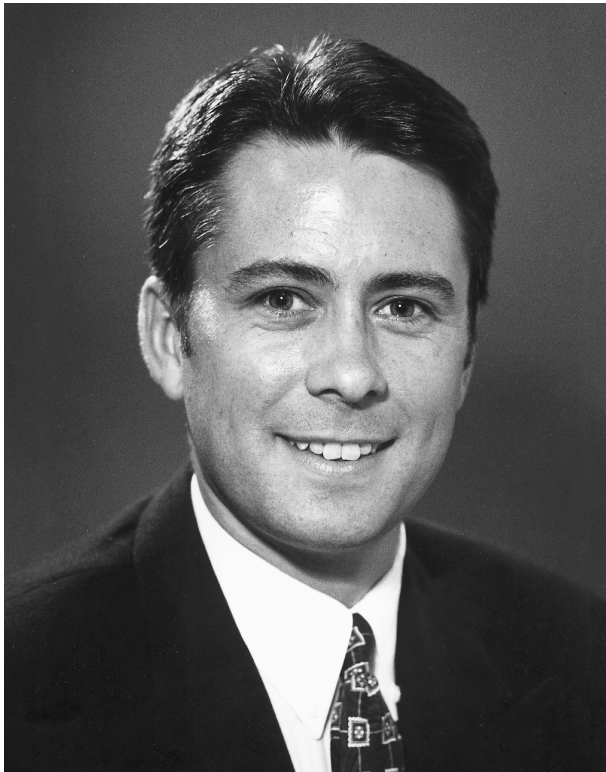


Screening for stroke: let's show some maturity!



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The recent events in Saskatchewan have put the issue of stroke following a cervical spine manipulation at the forefront of the clinical, legal and scientific agendas of Canadian chiropractors. Although we have very limited knowledge about the incidence and risk factors for post-manipulation stroke, the general view is that while it is very rare, we must take action to prevent its occurrence.

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However, because we have a limited understanding of its epidemiology, it is extremely difficult to prevent it, or to develop effective screening tools. Nevertheless, legal concerns have prompted the revival of stroke prevention by clinical screening.¹ This concept was recently endorsed by the Coroner's Jury in Saskatchewan who recommended that effective screening tests be developed and implemented in chiropractic offices as soon as possible.

Clinical screening involves the administration of a test, or questions that can identify patients at risk of developing an adverse health outcome. To be useful, a screening procedure must be valid, able to detect a condition in its preclinical stage, acceptable to patients and provide information that will improve health. Traditionally, chiropractors have relied on variations of the neck extension-rotation test to screen for patients who may be at risk of developing a cerebrovascular injury. These procedures, known as Houle's, Wallenberg's, deKlein's, George's or Hautant's tests do not meet any of the necessary criteria necessary for a procedure to be implemented in clinical practice. Specifically, these procedures are not valid and have not been shown to improve health.

The neck extension-rotation test has not been shown to be a valid screening tool for either a vertebral artery tear or reflexogenic vertebral artery spasm. Current knowledge suggests that the pathophysiology of most post-manipulation strokes may involve a rupture of the vertebral artery. The extension-rotation test purports to assess the patency of the vertebral artery in extreme neck position and to detect neurological signs and symptoms that may be associated with ischemia of the brainstem and cerebellum. Its purpose is not to screen for a vertebral artery tear. The other proposed mechanism of injury involves reflexogenic vertebral artery spasm leading to brainstem ischemia. Here again, scientific evidence suggests that the extension-rotation test is unable to predict who may be at risk of developing signs and symptoms related to vasospasm. Several studies have shown that the test cannot produce decreased blood flow through the vertebral arteries and that in fact blood flow may even increase when the test is per-

formed.²⁻⁵ Further, we have demonstrated in a previous study that the test has 0% sensitivity in detecting the association between reduced blood flow through the vertebral arteries and possible ischemic signs and symptoms.⁶ In other words, the test was unable to identify any of the subjects who had reduced blood flow and ischemic signs and symptoms. Consequently, members of the profession must ask themselves why they are still teaching, using and promoting a test of unproven validity.

A fundamental principle of clinical screening is that the benefits of the test must outweigh the risks. In this context, harm does not only refer to physical harm, but also undue anxiety, unjustified change in lifestyle or other psychological/behavioral consequences associated with using a test. This crucial principle requests at a minimum that a test yield valid information. Furthermore, when clinicians elect to use the extension-rotation test, they have several ethical responsibilities. First, if the test is positive, they must abstain from performing any other clinical procedure that may put the patient at risk. Second, they must clearly inform the patient about the meaning of the test result. Finally, they must refer the patient for further testing and adequate treatment aimed at preventing a catastrophic health problem. It is extremely difficult to understand how chiropractors can meet these responsibilities when the meaning of these tests are uncertain.

To contrast the above with an effective screening tool and illustrate how valid screening is used in clinical practice, I will describe the use of mammography in screening for breast cancer. Mammography is used to identify breast masses that may, or may not be detectable through a manual exam. Moreover, it is well established that mammography is extremely useful in identifying the preclinical stages of breast cancer, a stage at which early identification has been found to increase survival. The next test, a biopsy is then used to study the cytology of the breast mass. If malignant cells are found, effective treatments are then available to treat the cancer at an early stage. There is an obvious lack of parallel between the extension-rotation test and mammography. First, the extension-rotation test cannot detect those who are at risk of suffering from a stroke. Second, the only second-line test available, vertebral artery angiography, carries complication risks that would be unacceptable if used in patients who did not undergo adequate first-line screening. Third, alarming a patient about the risk of a pending stroke that is solely

based on an invalid test result would be ethically unwise. Finally, no treatments are currently available to prevent a cerebrovascular injury related to neck positioning. Therefore, the current pathophysiological, clinical, epidemiological and ethical evidence suggests that the extension-rotation tests have very limited clinical validity and that using their potentially misleading results may lead to patient anxiety and clinical confusion.

Given that the extension-rotation test is invalid, what do we do? The Canadian Chiropractic Protective Association (CCPA) has suggested that we should do one of the provocative maneuvers to show that we are aware of the possibility of a cerebrovascular injury.¹ However, there are better ways to demonstrate and communicate our knowledge of the possibility of stroke following a neck manipulation. The most obvious one is to obtain a clear written informed consent such as the one proposed by the CCPA. The consent form clearly explains that there is a risk of stroke and provides an opportunity for patients and clinicians to discuss the issue. An additional demonstration that a clinician is aware of the risk of stroke is to perform a complete history and physical exam that includes assessment of the currently known risk factors for cerebrovascular accidents. These factors include: high blood pressure, smoking, atrial fibrillation, previous transient ischemic attack, physical inactivity, diabetes mellitus and obesity.⁷ While the relative importance of these risk factors remains unknown, they nevertheless give the clinician a clear understanding of a patient's clinical profile. Additionally, asking about the presence of these risk factors allows the clinician to make an informed judgment about the cardio- and cerebrovascular health of a patient. Clinicians can then translate this information into a proper preventive and therapeutic strategy that may include a referral to a medical doctor for investigation and treatment of cardio- and cerebrovascular conditions. Until further pathophysiological and epidemiological research is conducted, we need to adopt a balanced approach combining the best available scientific evidence and sound clinical judgement in assessing the individual risk of stroke associated with cervical spine manipulation.

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