

INFORMED CONSENT IN CHIROPRACTIC: COMMENTARY ON BROWN & LEHMAN'S "INFORMED CONSENT REGARDING RISK OF STROKE FROM CERVICAL SPINE MANIPULATION"

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ABSTRACT

Background: A recent article by Brown and Lehman [2025] advocates for the universal inclusion of cervical artery dissection (CAD) and stroke risk in informed consent for cervical spine manipulation (CSM). Their narrative review appears to rely on anecdotal and low-level evidence, raising concerns regarding its validity and potential impact on clinical and legal standards.

Objective: To critically evaluate the scientific, ethical, and legal foundations of Brown and Lehman's 2025 recommendations and to propose alternative recommendations based on current evidence-based standards and informed consent jurisprudence.

Methods: A detailed appraisal of the papers cited in Brown and Lehman's review was conducted. High-level evidence, including epidemiologic studies, systematic reviews, and biomechanical analyses, was contrasted against the narrative sources used by the authors. Legal and ethical standards surrounding informed consent across U.S. jurisdictions were also reviewed.

Results: Brown and Lehman's article may exhibit confirmation bias, selective citation, and a reliance on case reports, commentaries, and narrative reviews that do not support the concept of universal informed consent related to CSM, CAD, and stroke. Major epidemiological and biomechanical studies appear to contradict their claims. Their review did not include

contrary evidence, may have misinterpreted key studies, and contained logical inconsistencies. Legal analysis reveals that informed consent standards vary by jurisdiction, with no legal mandate for blanket disclosure of statistically unproven risks such as CAD post-CSM.

Conclusion: The conclusions presented in the Brown-Lehman review article appear to be based primarily on low-level evidence, including narrative reports, commentaries, and case series, which may not meet the threshold necessary to guide clinical standards or establish legal norms. Their recommendation for universal disclosure of CAD risk in informed consent, despite the absence of causative evidence, raises important considerations regarding clinical relevance and medicolegal implications. Informed consent practices should be aligned with the best available evidence, applicable jurisdictional statutes, and professional standards. Chiropractors are encouraged to consult current clinical guidelines, review applicable laws and rules, and seek legal counsel when determining appropriate disclosures within the informed consent process. (*J Contemporary Chiropr* 2025;8:259-265)

Key Indexing Terms: Cervical spine manipulation, cervical artery dissection, informed consent, chiropractic, medico-legal standards, narrative review, causation, stroke risk

INTRODUCTION

Informed consent is a cornerstone of ethical and legal healthcare practice, empowering patients with the necessary information to make informed decisions

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about their care. (1, 2) In chiropractic, CSM is a widely used intervention for managing neck pain and related disorders. (3)

However, concerns persist within the medical and public discourse regarding the alleged association between CSM and CAD, a rare but potentially serious vascular event that can lead to ischemic stroke. (4) There has been extensive biomechanical research to show that CSM does not stretch or injure vertebral arteries (10-17), and extensive epidemiologic research to show that CSM does not cause dissection or stroke when compared to medical treatment. (4,6,7,26,27)

In a recent narrative review, Brown and Lehman (1) advocate for the universal inclusion of CAD and stroke risks in the informed consent process for CSM. While increasing patient awareness is essential, their recommendation raises complex questions about the evidentiary threshold required to warrant such disclosures. The authors appear to rely primarily on low-level evidence, including case reports and anecdotal observations, to support a theoretical risk that remains scientifically unvalidated.

There are numerous published case reports in which CAD occurs after minor events (such as sports, hobbies, massage, beauty parlor visits, and spinal manipulation), but case reports are incapable of providing substantial evidence to support any theory of causation. (5)

Our commentary critically examines the clinical, legal, and ethical underpinnings of such a position. We explore whether the inclusion of CAD and stroke in routine consent is justified, given the current absence of a demonstrated causal relation between CSM, vascular injury, and stroke.

In doing so, we underscore the importance of aligning informed consent practices with the best available evidence, including current epidemiological and scientific research, prevailing jurisdictional standards, and professional guidelines. We should balance the patient's right to know with the practitioner's duty to communicate material risks, which are inherently foreseeable and causally attributable to chiropractic treatment.

Confirmation Bias

Brown and Lehman may exhibit confirmation bias by selectively citing studies that support their hypothesis that CSM causes stroke in the presence of an existing CAD, or by interpreting studies in a manner inconsistent

with the main conclusions of the study.

The Cassidy et al. study, widely regarded as a landmark, concluded that there was no increased risk of vertebrobasilar artery (VBA) stroke after chiropractic care compared to visits to primary care physicians. This suggests that patients who were later found to have cerebral ischemia were likely already experiencing dissection-related symptoms, which prompted their chiropractic care. (6)

Kosloff et al. "found no significant association between exposure to chiropractic care and the risk of VBA stroke." (7) The Church et al. systematic review found no causal link between CSM and cervical artery dissection CAD, concluding that the evidence did not support a cause-and-effect relation. (8) Whedon et al. [2023] stated, "Our findings therefore suggest that the association between CSM and CeAD (cervical artery dissection) is not causal in nature." (4) Tuchin [2012] (9) and Church et al. (8) each applied the Hill criteria to assess whether there was sufficient evidence to establish causation for cervical artery dissection following chiropractic manipulation and separately concluded that the evidence did not show causation had been established.

Despite citing these studies, Brown and Lehman draw conclusions that are contrary to the conclusions of the studies. Brown and Lehman continue to claim that CSM may provoke a thromboembolic event in the presence of preexisting dissection, thereby justifying universal stroke-related informed consent. This position directly contradicts the conclusions of those studies, ignoring the quality and meaning of the evidence.

Flawed Reasoning

Brown and Lehman's conclusions are largely drawn from low-level evidence and speculative mechanisms, rather than rigorous scientific validation. Central to their argument is the suggestion that manipulation could dislodge a pre-existing thrombus, leading to a stroke. However, they provide no biomechanical data or high-quality clinical evidence to support this claim.

Multiple high-level biomechanical research studies consistently demonstrate that CSM does not produce sufficient force to injure or significantly stretch the vertebral arteries in healthy individuals. (10-17)

Brown and Lehman cite Haldeman (18) as supporting their position on informed consent, but Haldeman actually wrote, "At this writing, a physician wishing to

advise a patient considering cervical manipulation is limited in the information that can be offered.”

Brown and Lehman cite Biller et al. (19), who performed a narrative review and concluded that biomechanical evidence was insufficient to establish the claim that CSM causes CAD.

Studies of “unhealthy” arteries, or arteries with a dissection or thrombus, have not been performed on humans. Due to the rarity of arterial dissection and the advanced imaging needed to identify the arterial anomaly, such a study would be very difficult to complete. One study utilized an animal model and demonstrated that CMT did not exacerbate lesions to the vertebral artery wall, which were created by angioplasty in 10 anesthetized canines. (20) The implication is that SMT in the presence of a VAD does not exacerbate the VAD without regard to liberating a thrombus.

Reliance on Low-Level and Anecdotal Evidence

The Brown-Lehman review draws heavily from narrative reviews, case reports, commentaries, case series, and an anti-chiropractic website, which are forms of evidence that are subject to reporting and confirmation bias and do not establish causation. According to Sackett’s hierarchy of evidence (21), such sources fall into Levels 4–5, representing the weakest basis for informing clinical standards or medico-legal policy.

The Brown-Lehman paper cites as its first reference a 2024 narrative review by Dr. Brown, entitled “Plausible Mechanisms of Causation of Immediate Stroke by Cervical Spine Manipulation: A Narrative Review.” In this narrative review, Dr. Brown concludes, “There are plausible thromboembolic and thrombotic mechanisms of immediate stroke by CSM in the literature.” (22) The cited literature includes only case reports, case series, case control studies, and narrative reviews. No biomechanical or vascular studies were cited to support this hypothesis.

Narrative reviews are non-systematic and susceptible to selection bias due to subjective study selection, lack of comprehensive literature synthesis, and poor reproducibility. As such, conclusions drawn from narrative reviews, particularly those advocating for standardized informed consent practices, should be interpreted with caution and are insufficient to define clinical norms.

Brown and Lehman reported that their literature search yielded 2 practice guidelines, two case-control studies, 3 narrative reviews, and one case series, all of which

recommended informed consent regarding the risk of stroke from CSM. In fact, one 2007 practice guideline is no longer accessible (21), while the other calls for non-specific informed consent. (22) Neither of the 2 case controls (6,7) nor the lone case series (18) addressed informed consent. This is in direct conflict with their statement, “There was unanimous support for informed consent to the risk of stroke from CSM in the results.”

Selective Citation and Omission of Contradictory Evidence

The objectivity of Brown and Lehman’s review is further compromised by their exclusion of well-conducted studies that contradict their thesis.

Whedon et al. stated, “Carotid artery dissection patients as compared to stroke patients, as well as for both vertebral artery dissection and CAD patients in comparison with population controls and case-crossover analysis, prior receipt of medical evaluation and management was more likely than CSM.” (26) The authors did not propose universal disclosure of CAD.

Whedon et al. In a different study, reviewed over 300 million person-years of data and stated, “Our findings therefore suggest that the association between CSM and CeAD (cervical artery dissection) is not causal in nature.” (4) Whedon et al. also reviewed over 53 million Medicare beneficiaries aged 65 and old and concluded, “...CSM does not appear to be a significant risk factor for CeAD in this population group.” (27)

Brown and Lehman included only two (12,28) of many biomechanical studies (10-17) that have shown that CSM does not cause meaningful stretch to the cervical arteries.

Chaibi and Russell proposed a nuanced risk-benefit assessment model and did not propose universal disclosure of CAD. (29)

By omitting such evidence, Brown and Lehman fail to present a balanced view of the literature, reducing the credibility and utility of their conclusions.

Misreporting of Prior Studies

Brown and Lehman cite Gorrell [2023] (12) and Symons (28) and conclude, “Multiple biomechanical studies performed on healthy cadaveric vertebral arteries support that CSM is unlikely to cause CAD.” This is incorrect, as neither study differentiated between “healthy” or non-healthy arteries. Gorrell concluded after evaluation of seven human cadavers that the “VA elongated but were not stretched during the

[manipulation] intervention.” Symons reported the results of 4 prior biomechanical studies, “It is clear from these data that Diversified-style cSMT exerts roughly half or less of the strain that the vessel VA or ICA undergoes during ROM movements of the neck, such as shoulder checking while driving.”

Brown and Lehman cite Brown, (22) Haneline, et al (25) and Paulus and Thayer (30) as support for their statement, “Plausible thromboembolic and thrombotic mechanisms of causation of immediate stroke from cervical spine manipulation (CSM) have been reported in the literature” However, Haneline concluded “There is currently no credible evidence to support the opinion that cervical manipulation causes ICAD.” Paulus and Thayer opined, “It is biologically plausible that the mechanical nature of cervical manipulation is another potential trigger of dissection”, but gave no literature support for that opinion. Brown’s prior paper is also a narrative review and is considered low-level evidence.

Internal Contradictions and Logical Incoherence

The Brown-Lehman review contains several inconsistencies that undermine its core assertions.

While the authors state there is no convincing evidence that neck manipulation can cause dissection in healthy arteries, they paradoxically advocate for a consent process that implies manipulation might cause the dissection, even in asymptomatic individuals.

They reference Kosloff et al., who found no statistical association between CSM and stroke, yet speculate that sudden neck movement could dislodge a thrombus, without citing supporting data. They claim that Kosloff’s study supports their theory of universal consent for the risk of stroke from CSM; however, Kosloff did not comment on informed consent. (7)

They admit that biomechanical studies show minimal stretch on cervical arteries during manipulation, but still suggest that such manipulation could provoke vascular injury, a claim directly contradicted by the very research they cite. (10-17)

The 5 most extensive epidemiologic studies on the topics of whether CSM causes stroke [Cassidy (6), Kosloff (7), Whedon [2015] (26)], or whether CSM causes CAD [Whedon 2022 (27), and Whedon [2023] (4)] have reviewed an aggregate of over 500 million-person-years of data. Each study had a prior exposure period (to either chiropractic or PCP care) of at least 30 days. Each of these studies concluded that the group with chiropractic

exposure had no more strokes or dissections than the control group. Brown and Lehman cite three of these studies (6,7,26), yet continue to speculate, without evidence, that “Sudden neck movement from CSM could dislodge a loosely adherent thrombus from an existing cervical artery dissection (CAD).”

Brown and Lehman state that such theoretical movement of a thrombus after chiropractic manipulation is possible and strongly imply that such thrombus movement would not have been captured or represented in these retrospective studies, which evaluated treatment exposure (chiropractic vs. PCP care) for at least 30 days.

These contradictions highlight a pattern of selective reasoning that raises doubts about the integrity of the review’s conclusions.

Misapplication of Informed Consent Standards

Brown and Lehman recommend that informed consent include a statistically unproven, rare complication. While informed consent should address material risks, a risk must be both foreseeable and causally attributable to warrant discussion. (31, 32)

In clinical ethics, material risk is typically defined by its prevalence and preventability rather than hypothetical plausibility. The duty to disclose rare medical risks, especially those with no causal relation to a procedure, is governed by jurisdictional informed consent standards, which vary by state. The key distinction lies in whether the jurisdiction follows a physician-based (professional standard) or patient-based (material risk standard) approach. (33, 34)

Conflict with Existing State Regulations

The universal informed consent proposed by Brown and Lehman conflicts with several states that have statutes or administrative rules governing the provision of informed consent by chiropractors to their patients. (31) Preceding case law in a specific state may impose additional requirements.

A blanket informed consent approach should not be recommended nationwide due to its ethical shortcomings, legal vulnerabilities, and incompatibility with established state laws and medical norms.

Competing Interests

Generally, transparency in academic publishing requires the disclosure of potential conflicts of interest. The

Brown-Lehman article did not contain such a disclosure. Both authors advertise themselves as chiropractic expert witnesses. (35-37)

DISCUSSION

Informed consent is a legally and ethically mandated process integral to chiropractic clinical care. Based upon the best quality, peer-reviewed literature (3-17, 26-27), it is well established that CSM does not cause CAD or stroke. Despite the lack of a demonstrable causal relation, media and case reports may promote the perception of a common association between CSM and CAD among the public and the medical community.

The threshold for informed consent disclosure is jurisdictionally dependent and may be based on either a physician-centered or patient-centered standard, and may be subject to a particular state's statutes, rules, or case law. Moreover, no uniform national standard exists in chiropractic or medical jurisprudence regarding the disclosure of rare adverse events lacking causal attribution.

Given this ambiguity, the authors recommend that chiropractors exercise caution and professional diligence. Regarding informed consent, practitioners may consider the following:

- Follow the standards set forth in their accredited training and professional education.
- Incorporate current evidence-based practices in conjunction with clinical experience.
- Comply with all applicable statutory and regulatory requirements in their jurisdiction.
- Seek guidance from qualified legal counsel regarding the inclusion of CAD, stroke, or other rare events in informed consent documents.
- Keep current with the evolving literature on this topic, as new evidence may emerge over time.

In the absence of a clearly defined legal standard, the sufficiency of informed consent remains a fact-specific inquiry likely to be adjudicated in future malpractice actions. As such, a balanced, transparent, and legally informed approach to patient communication is not only advisable but may serve as a critical safeguard in reducing professional liability.

CONCLUSION

The Brown and Lehman narrative review is a document that appears to selectively present data supporting a predetermined conclusion. We find no evidentiary support for their theory that CSM can cause a pre-existing vascular clot to move, and therefore, no support for their call for a universal informed consent for the risk of stroke from CSM.

While patient autonomy and transparency are core tenets of ethical care, consent processes must reflect actual rather than hypothetical risks. The authors' call for universal consent to the risk of stroke from cervical manipulation lacks evidentiary support and may contribute to unwarranted medico-legal anxiety and stigmatization of chiropractic care. Informed consent must be rooted in evidence, not hypothetical associations. Introducing rare and unproven risks into standard disclosure without established causation may not only mislead patients but also unjustly burden practitioners with the expectation of defending against events that are unrelated to their care.

DISCLAIMER

This article presents a critical academic analysis of the published literature, aiming to foster evidence-based discourse.

DISCLOSURE AND COMPETING INTERESTS

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CONTRIBUTIONS

All authors were actively involved in the preparation and revision of this article.

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