



## Complete Summary

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### GUIDELINE TITLE

Chiropractic clinical practice guideline: evidence-based treatment of adult neck pain not due to whiplash.

### BIBLIOGRAPHIC SOURCE(S)

The Canadian Chiropractic Association, Canadian Federation of Chiropractic Regulatory Boards, Clinical Practice Guidelines Development Initiative, Guidelines Development Committee (GDC). Chiropractic clinical practice guideline: evidence-based treatment of adult neck pain not due to whiplash. J Can Chiropr Assoc 2005;49(3):158-209. [218 references]

### GUIDELINE STATUS

This is the current release of the guideline.

## COMPLETE SUMMARY CONTENT

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INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES  
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## SCOPE

### DISEASE/CONDITION(S)

Adult neck pain not due to whiplash

### GUIDELINE CATEGORY

Assessment of Therapeutic Effectiveness  
Management  
Treatment

### CLINICAL SPECIALTY

Chiropractic

## **INTENDED USERS**

Chiropractors

## **GUIDELINE OBJECTIVE(S)**

To provide an evidence-based clinical practice guideline for the chiropractic cervical treatment of adults with acute or chronic neck pain not due to whiplash

## **TARGET POPULATION**

Adults with acute or chronic neck pain not due to whiplash

## **INTERVENTIONS AND PRACTICES CONSIDERED**

### **Treatment**

1. Manipulation
2. Mobilization
3. Ischemic pressure
4. Clinic- and home-based exercise
5. Traction
6. Education
7. Low-power laser treatment
8. Massage
9. Transcutaneous electrical nerve stimulation
10. Cervical pillow use
11. Pulsed electromagnetic therapy
12. Ultrasound
13. Multi-modal treatments

Interventions considered but not recommended because of no evidence of benefit: magnets in necklaces, education or relaxation alone, occipital release alone, head retraction-extension exercise combinations alone

### **Management**

1. Physical examination and assessment
2. Obtaining an informed consent prior to treatment
3. Adverse event management and referral where appropriate
4. Identifying the occurrence of dissection
5. Ongoing reassessment

## **MAJOR OUTCOMES CONSIDERED**

- Pain level
- Range of motion (ROM) of the cervical spine
- Adverse events (non-treatment and treatment associated)

## METHODOLOGY

### METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)  
Searches of Electronic Databases

### DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

#### Literature Searches

Four electronic literature searches were undertaken: treatment (English and German, up to August 2003); risk management (managing the risk of non-dissection adverse events, English and French, up to October 2004); dissection risk management (the theoretic association between manipulation and dissection or stroke, English, up to September 2003); and treatment update (English and French, for the period between September 2003 and November 2004 inclusive). The results of each search were downloaded into an electronic data set, and duplicates were manually removed. Some additional studies were added manually to each data set. The studies were retrieved and passed to the evidence-extraction team.

#### August 2003, Treatment

The purpose of this first-of-two treatment literature searches was to retrieve evidence related to treatment. This search was undertaken in August of 2003. It comprised electronic searches of various databases, citation tracking of key authors (see Appendix 1 of the technical version of the guideline document [see "Availability of Companion Documents" field]), and manual searches of reference lists of review articles and treatment studies. The databases included:

- National Library of Medicine's MEDLINE database via PubMed
- Cumulative Index to Nursing and Allied Health (CINAHL)
- Allied and Complementary Medicine Database (AMED)
- Manual Alternative and Natural Therapy Index System (MANTIS)
- Index to Chiropractic Literature (ICL)
- The Cochrane Library (includes the Cochrane Database of Systematic Reviews [CDSR] and the Cochrane Central Register of Controlled Trials [CENTRAL])
- EBSCO Information Services databases (Alternative HealthWatch, Biomedical Reference Collection, Nursing and Allied Health Collection, Psychological and Behavioral Sciences Collection).

The search design was specific to "mining" the literature for scientific treatment studies. Such studies are anchored around examining a condition (neck pain) and assessing the impact of an intervention on the condition using statistical, comparative methods. Thus any studies related to the condition of acute or chronic neck pain were identified. Search limiters guided by the operational definitions described in Section 1.3 of the technical version of the original guideline document were used to narrow the results to studies that were, or had a high probability of being, relevant to chiropractic cervical treatment.

The search limiters varied according to the structure of each database, but generally included search terms such as neck, neck pain, cervical vertebrae, neck muscles, neck injury, chiropractic, and manipulation. The search strategy was originally designed to find high-quality evidence, such as randomized controlled trials (RCT). However, the paucity of high-quality evidence forced expansion of the search to include lower-quality evidence, but expert opinion pieces such as editorials and letters to the editor remained excluded. The Guideline Development Committee is confident that the search methods captured all the higher-quality evidence, which carries the greatest clinical weight.

Ultimately, for most electronic searches, no restriction was applied to study design. The exception was MEDLINE, which was limited to RCTs, clinical trials, consensus conferences, clinical practice guidelines (CPGs), meta-analyses, and reviews. The searches were limited to English or German.

### **October 2004, Risk Management (Adverse-Events)**

The purpose of this search was to retrieve evidence related to adverse events relevant to chiropractic. The literature search was undertaken in October of 2004. No restrictions were applied to study design, but the search was limited to English and otherwise as above. The search comprised electronic searches of various databases and citation tracking of key authors. The databases included:

- National Library of Medicine's MEDLINE database via EBSCO from 1966 to 2004 (search strategy in Appendix 2 of the technical version of the original guideline document)
- EMBASE via OVID from 1980 to 2004 (search strategy in Appendix 3 of the technical version of the original guideline document)
- Cochrane Library (CDSR, CENTRAL and Database of Abstracts of Reviews of Effects [DARE]), issue #2, 2004 (search strategy in Appendix 4 of the technical version of the original guideline document)
- CINAHL via EBSCO from 1982 to 2004 (search strategy in Appendix 5 of the technical version of the original guideline document)
- AMED via EBSCO from 1985 to 2004 (search strategy in Appendix 6 of the technical version of the original guideline document)
- Alternative Health Watch via EBSCO from 1990 to 2004 (for search strategy see Appendix 7 of the technical version of the original guideline document)
- ICL via Chiropractic Library Consortium from 1985 to 2004 (search strategy in Appendix 8 of the technical version of the original guideline document)

Databases were searched in the order above, and the strategies listed in Appendices 2-8 of the technical version of the original guideline document reflect automated attempts to eliminate the redundancy of later searches with earlier ones.

### **September 2003, Risk Management (Dissection)**

The purpose of this search was to retrieve evidence up to the summer of 2003 related to the theoretic association between manipulation and dissection. The search method was poorly tracked, but the search was considered "complete" by the literature search team. The search was limited as above.

## **December 2004, Treatment Update**

The purpose of this second-of-two treatment literature searches was to update the 2003 data-set of evidence related to treatment. This search was undertaken in December of 2004, and generally replicated the first search, except that it was for the period from August of 2003 to November of 2004 for English articles, and from 1990 to November of 2004 for French articles (using MEDLINE only).

Appendices 9-14 of the technical version of the original guideline document describe or list the search strategies for various databases. Databases were searched in order, and the strategies listed in Appendices 9-14 of the technical version of the original guideline document reflect automated attempts to eliminate the redundancy of later searches with earlier ones.

### **NUMBER OF SOURCE DOCUMENTS**

Not stated

### **METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE**

Expert Consensus  
Weighting According to a Rating Scheme (Scheme Given)

### **RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE**

#### **Levels of Evidence**

The categorization below is adapted from the Oxford Centre for Evidence-Based Medicine (OCEBM) levels of evidence:

**1a:** Systematic review of randomized controlled trials (RCTs) (with homogeneity)

**1b:** Individual RCT (with narrow Confidence Interval)

**1c:** All or none

**2a:** Systematic review of cohort studies (with homogeneity)

**2b:** Individual cohort study, low quality RCT

**2c:** Outcomes research, ecological studies

**3a:** Systematic review of case-control studies (with homogeneity)

**3b:** Individual case-control study

**4:** Case-series, poor quality cohort and case-control studies

**5:** Expert opinion with explicit critical appraisal, and based on one of physiology, bench research, first principles; or studies of Levels 1-4 that are inconclusive due to flaws in their design or analytic logic, but that present authored conclusions; or other (e.g., literature review, clinical practice guideline, reviews of reviews)

### **Interpretation of Meaning of Evidence Levels in the Opinion of the Guideline Development Committee (GDC)**

**1a, 1b, 1c:** Study results are almost certain; results are interpreted objectively; recommendations directly supported by evidence are very likely reliable and valid.

**2a, 2b, 2c, 3a, 3b:** Study results are strongly suggestive; results are interpreted objectively; recommendations directly supported by evidence are very likely reliable and valid.

**4:** Study results are suggestive; results are interpreted objectively; recommendations directly supported by evidence may be reliable and valid.

**5:** Study results are inconclusive; results are interpreted objectively; reliability and validity of recommendations uncertain.

N.B., if any results are interpreted subjectively, reliability and validity of recommendations uncertain.

## **METHODS USED TO ANALYZE THE EVIDENCE**

Review of Published Meta-Analyses  
Systematic Review with Evidence Tables

## **DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE**

### **Treatment Extractions**

Studies were tagged with tracking numbers, and then 2 evidence extractors were allocated alternately numbered studies. The active exclusion of irrelevant study results was undertaken; some complete studies and some results from other studies were excluded during a manual review of all studies the searches found.

The 2 evidence extractors manually applied the operational definitions described in Section 1.3 of the technical version of the original guideline document (see "Availability of Companion Documents" field) and other criteria to reject studies or data where it was clear the study did not respect these (see Table 1 of the technical version of the original guideline document). Studies that contained both acceptable and unacceptable information were not rejected, but the unacceptable data were. Statistically significant results from all acceptable data were recorded, as well as non-significant findings where deemed appropriate.

Study results were categorized by duration (acute, chronic) and the cause of pain (idiopathic, identified cause), because these factors were deemed to have an effect on the best choice of treatment modality. Where study results suggested that patient groups were mixed, the term *mixed-duration* or *mixed-cause* was

used. However, once completed, in considering the clinical relevance of results, the Guideline Development Committee (GDC) concluded that the reported treatment modalities applied to all patient groups in varying dosages (although results did not clearly suggest which dosages were best for each patient group). Therefore, the distinction between acute and chronic, or idiopathic and identified-cause patient groups was abolished.

A Table (see Appendix 15 of the technical version of the original guideline document and "Rating Scheme for the Strength of the Evidence" in this summary) adapted from The Oxford Centre for Evidence-based Medicine (OCEBM) levels of evidence was used to categorize results into rated "evidence extractions." The evidence extractors together used the OCEBM levels of evidence to rate the quality of each extraction, and then reached unanimity about all aspects of each extraction.

The extractors accepted all Level 1 to 4 evidence, but Level 5 evidence only if it arose from a Level 1 to 4 study (e.g., if it was the study authors' extrapolation from the study data). Where applicable, the rating of extractions is cited in parentheses (e.g., [L-4]). Where relevant, the GDC's interpretations of study results are included as Level 5 evidence extractions and cited as such.

Evidence extractions were ultimately verified by the GDC in the course of recommendation-development workgroups (see Section 2.4 of the technical version of the original guideline document).

### **Risk-Management Extractions**

Studies were tagged with tracking numbers, and then one extractor undertook the active exclusion of irrelevant study results; some complete studies and some results from other studies were excluded during a manual review of all studies the searches found.

The evidence extractor manually applied the operational definitions described in Section 1.3 of the technical version of the original guideline document to reject studies or data where it was clear the study did not respect these. Studies that contained both acceptable and unacceptable information were not rejected, but clearly unacceptable data within these studies were rejected. Statistically significant results were then extracted from all acceptable data, and non-significant findings noted where appropriate.

The extractor used the OCEBM levels of evidence to categorize results into rated "evidence extractions." For risk-management evidence, all Levels of evidence were accepted.

For the extractions related to dissection, both evidence extractors together examined all used studies to reach unanimity about all aspects of each extraction. The extractions related to other adverse events were almost all expert opinions, and thus, as there was no room for dispute about evidence rating (these were all Level 5 evidence), the 2 extractors independently completed the work of recording these opinions, which were later tabulated by one.

Where applicable, the rating of extractions is cited in parentheses (e.g., [L-4]). Where relevant, the GDC's interpretations of study results are included as Level 5 evidence extractions and cited as such.

Evidence extractions were ultimately verified by the GDC in the course of recommendation-development workgroups.

### **Evidence Syntheses**

The caliber of the studies precluded quantitative syntheses (e.g., statistical pooling). Therefore, topic related evidence extractions from individual studies were qualitatively summarized in evidence syntheses for ease of reading, by amalgamating related findings. The extractions report all relevant study outcomes, but the syntheses focus on pain and range of motion (ROM) because these two outcomes were the most consistently reported.

The best quality evidence the GDC could find in the extractions was used to make each pertinent point in the syntheses, and the quality of this evidence is cited.

Treatment extractions rated better than Level 4 (suggestive) were synthesized. The resulting syntheses include extractions that ranged in quality from Level 4 up to Level 1b (almost certain). Risk-management extractions of all levels of evidence (Levels 1 to 5) were synthesized.

One extractor completed all the treatment syntheses, and then the 2 extractors together examined these to reach unanimity. One extractor completed all the risk-management syntheses.

Evidence syntheses were ultimately verified by the GDC in the course of recommendation-development workgroups.

## **METHODS USED TO FORMULATE THE RECOMMENDATIONS**

Expert Consensus

### **DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS**

The 10 members of the Guideline Development Committee (GDC) qualitatively interpreted the clinical relevance of the evidence extractions and syntheses. Therefore, all recommendations should be considered to be a subjective extrapolation, "equivalent" to an Oxford Centre for Evidence-based Medicine (OCEBM) Level 5 rating.

Extractions and syntheses were used to formulate treatment, risk-management or research recommendations during collaborative work sessions. Figure 2 of the technical version of the original guideline document illustrates the flow of evidence from the literature into the recommendations. Risk-management and research recommendations incorporated a substantial amount of the GDC's (unpublished) expertise, whereas treatment recommendations purposefully incorporated little.

The work-groups considered outcomes, the caliber of evidence, and an assessment of clinical relevance to reach unanimity about each recommendation. Clinical relevance included the deemed importance of the practice in chiropractic, the deemed over- or under-use of the practice in chiropractic, and the deemed importance of reported outcomes (calculated effect sizes were unavailable).

## **RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS**

Not applicable

## **COST ANALYSIS**

A formal cost analysis was not performed and published cost analyses were not reviewed.

## **METHOD OF GUIDELINE VALIDATION**

Peer Review

## **DESCRIPTION OF METHOD OF GUIDELINE VALIDATION**

A 5-member panel reviewed a draft set of the treatment evidence syntheses and the treatment recommendations, and advised the Guideline Development Committee (GDC) about these. The GDC determined with unanimity how to incorporate this advice into the clinical practice guideline (CPG).

Two drafts of the guideline were released online for profession-wide critiques using an automated Internet-based questionnaire and a structured text feedback mechanism based on the Appraisal of Guidelines for Research and Evaluation (AGREE) instrument.

# **RECOMMENDATIONS**

## **MAJOR RECOMMENDATIONS**

All recommendations should be considered to be expert extrapolations from the evidence, "equivalent" to an Oxford Centre for Evidence-based Medicine (OCEBM) Grade D rating.

### **Treatment**

Most of the following treatment recommendations are based on the evidence discussed in greater detail in the technical version of the original guideline document:

1. The Guideline Development Committee (GDC) recommends the 3 sequential steps in the decision algorithm (see Figure 1 of the original guideline document)--diagnosis (or assessment leading to diagnosis), treatment, reassessment--to treat patients with acute pain, an acute exacerbation of a recurrent pain, or chronic pain. Similarly, the GDC recommends the 3

- sequential steps to treat patients with idiopathic pain or pain with an identified cause. The selection and dosages of treatment modalities will differentiate best practices for each unique combination of pain condition and patient. The selection and dosage of treatment modalities should respect recommendation 2 below.
2. The GDC also recommends manipulation, mobilization, ischemic pressure, clinic- and home-based exercise, traction, education, low-power laser, massage, transcutaneous electrical nerve stimulation (TENS), pillows, pulsed electromagnetic therapy, or ultrasound--for patients with acute or chronic pain, where the origin of pain is known or unknown, to improve pain and some range of motion (ROM)--in dosages and methods based on the practitioner's experience and the patient's specific situation, as there is insufficient published evidence to support or refute narrow generalizations about the use of these treatment modalities.
  3. In the absence of objective findings with neck pain not due to whiplash (e.g., ROM, muscle hypertonicity), the GDC does not recommend that treatment be initiated. If, after a complete examination, all findings except for pain are normal, the GDC recommends discharge of the patient from chiropractic care and, possibly, referral based on the practitioner's experience.
  4. In addition to the details of the 3-step sequence in recommendation #1, if home exercise is prescribed, the GDC recommends frequent monitoring of its quality and a reassessment of the quality and effect of the home exercise after 2 to 4 weeks.
  5. Based on the short- and medium-term benefit from manipulation, the GDC does not recommend crossed bilateral transverse pisiform or anterior thoracic manipulations to be added to a course of cervical manipulations to improve pain and some ROM, unless where required for non-cervical benefits.
  6. Based on the summary exercise benefit statement and the short-, medium-, and long-term benefit from home exercise with or without education or ultrasound, the GDC does not recommend generic home exercise designed to improve pain or ROM that is not tailored to the individual patient. The GDC recommends tailored home exercise treatment, as rigorous as the patient can tolerate, if a loss of ROM, strength, or endurance is found. It can be as frequent as once daily, with its rigor adjusted progressively.
  7. Based on the medium term benefit from pillows, in addition to the details of the 3-step sequence in the first recommendation (above), the GDC recommends a cervical pillow as a secondary treatment that should be initiated only after at least one cycle of diagnosis (or assessment leading to diagnosis), treatment, and reassessment--and if prescribed, the pillow should be used nightly.
  8. Based on the short- and medium-term benefit from pulsed electromagnetic field therapy, in addition to the details of the 3-step sequence in the first recommendation (above), the GDC recommends pulsed electromagnetic field treatment as an adjunctive, secondary treatment that should be initiated only after at least one cycle of diagnosis (or assessment leading to diagnosis), treatment, and reassessment.
  9. Based on no additional benefit from magnets in necklaces, the GDC does not recommend permanent magnet necklaces to improve pain, specifically because the monetary and lifestyle costs of a magnetic necklace do not appear to be counter-balanced by a clinical benefit.
  10. Based on no benefit from education or relaxation alone, the GDC does not recommend education or relaxation alone to improve pain or ROM.

11. Based on no immediate benefit from head retraction-extension exercise combinations alone, the GDC does not recommend head retraction-extension exercise combinations to improve pain.
12. Based on no immediate benefit from occipital release treatments alone, the GDC does not recommend occipital release treatments to improve pain.

### **Natural History of Neck Pain**

13. The GDC does not recommend treatments that are expected to show less or slower improvement than the expected natural history of the treated pain in a particular patient, unless: a) the treatment also addresses non-pain problems that, left untreated, may have permanent sequelae, or b) it is deemed that treatment will halt the evolution of acute pain to a chronic condition.
14. If maximum clinical progress has been reached without all clinical goals being met, the GDC recommends continuing care only if the patient chooses support or maintenance care. If all clinical goals have been met, the GDC recommends continuing care only if the patient chooses "wellness" care.

### **The Role of Focusing on Immediate Clinical Outcomes**

15. The GDC recommends the planned one-time use of a treatment specifically and only to determine the utility of further treatments or to permit the immediate use of an otherwise painful intervention, both purposes therefore requiring an immediately-subsequent patient assessment. Thus, the GDC does not recommend the planned one-time use of a treatment to merely achieve an immediate clinical effect.

### **Multi-Sectoral Care**

16. The GDC recommends a concerted effort to mesh chiropractic care into that of other health disciplines to maximize patients' gains from their chiropractic treatments (recovery from pain, impairment, and disability, reduced costs, increased patient safety, increased satisfaction among patients and health care payers).

### **Managing the Risk of Adverse Events**

17. To manage the risk of adverse events associated with a treatment modality, if a chiropractor is uncertain about the caliber of any aspect of his or her technique with a particular patient, the GDC very strongly recommends discontinuance of care and referral to colleagues until this is addressed.

### **Managing the Risk of Adverse Events Not Associated With a Treatment Modality, but That Occur in the Clinical Setting (Non-Tx-AE)**

18. Before, during, or after treatment, the GDC recommends immediate, in-depth consideration of possible explanations and reconsideration of treatment options or referral to the appropriate health services when an adverse event (not known to be associated with a treatment) is noted (i.e., when a patient demonstrates signs or symptoms of an undiagnosed condition or signs or symptoms not known to be associated with a treatment).

### **Managing the Risk of Adverse Events Associated with a Treatment Modality, but not a Known or Observable Risk Factor (Unforeseen-Tx-AE)**

19. During or after treatment, the GDC recommends heightened vigilance for adverse events associated with a treatment modality, but not a known or observable risk factor (unforeseen-Tx-AE) when a relevant treatment is planned or administered--and immediate, in-depth consideration of possible explanations and reconsideration of treatment options or referral to the appropriate health services when an event is noted.

### **Managing the Risk of Adverse Events Associated with a Treatment Modality and Predicted by an Observable Risk Factor (Foreseen-Tx-AE)**

20. The GDC recommends respecting the absolute contraindications listed in Tables 3a to 3h of the original guideline document (and in the "Contraindications" field of this summary), and the best-practice patterns of absolute contraindications, treatment modality modification, and caution described in Sections 5.3.1, 5.3.2, and 5.3.3 of the original guideline document.

Please see the original guideline document for Research Recommendations 21 through 27.

### **Spotlight on Dissection**

#### **Informed Consent**

28. The GDC very strongly recommends obtaining informed consent based on current evidence, and respecting the 3 sequential steps in the decision algorithm (see Figure 1 of the original guideline document)--diagnosis (or assessment leading to diagnosis), treatment, reassessment--when caring for any patient.

#### **Predispositions to Dissection in a Patient's History**

29. The GDC recommends caution in treating a patient with trauma, a smoking habit, or known arterial tissue abnormalities to manage the risk for dissection, but the evidence does not warrant that these be contraindications to manipulation.

#### **Noting Predispositions During Physical Examination; Impaired Vertebral Artery Flow Doppler Identification of Impaired Vertebral Artery Flow**

30. The GDC recommends an assessment for signs and symptoms of unprovoked vertebrobasilar insufficiency (VBI) (differentiated from benign paroxysmal positional vertigo [BPPV]) to identify the possibility of impaired vertebral artery flow (signs and symptoms are nystagmus, nausea, numbness, diplopia, drop attacks, dysphagia, dysarthria, and ataxia), because the GDC recommends caution in treating a patient with suspected impairment of flow. However, the evidence does not warrant this being a contraindication to manipulation.

31. The GDC does not recommend an assessment for signs or symptoms of unprovoked VBI (differentiated from BPPV) to identify the presence of dissection or to identify patients with greater or lesser risk of symptomatic (ischemia-provoking) dissection subsequent to manipulation; the assessment lacks predictive value.
32. The GDC does not recommend Doppler or provocative pre-manipulative vertebral artery function tests (e.g., deKleyn's test) to identify impaired vertebral artery flow, the presence of dissection, or patients with greater or lesser risk of symptomatic (ischemia-provoking) dissection subsequent to manipulation; the assessment lacks predictive value.

### **Dissection in the Chiropractic Clinic**

#### *Identifying the Occurrence of Dissection Before or During a Visit*

33. The GDC does not recommend manipulation for patients who present with active or existing vertebral artery dissection (VAD) or carotid artery dissection (CAD).
34. The GDC recommends caution in treating a patient who reports a recent (but not ongoing) neck or occipital pain with a sharp quality and severe intensity, or a severe and persistent headache, which was sudden and unlike any previously experienced pain or headache (even when it is suspected the pain was of a musculoskeletal or neuralgic origin).
35. The GDC recommends immediate discontinuance of treatment and referral to emergency health services when a patient complains in the course of care (diagnosis [or assessment leading to diagnosis], treatment, reassessment) of neck or occipital pain with a sharp quality and severe intensity, or a severe and persistent headache, which is sudden and unlike any previously experienced pain or headache (even when it is suspected the pain is of a musculoskeletal or neuralgic origin).

#### *Mitigating the Harm of VAD: A Stroke*

36. The GDC recommends immediate discontinuance of treatment and referral to emergency health services when, in the course of care (diagnosis [or assessment leading to diagnosis], treatment, reassessment), a patient demonstrates at least 1 of 4 signs or symptoms of neurovascular impairment (unilateral facial paresthesia, objective cerebellar signs, lateral medullary signs, visual field defects) or other signs or symptoms of neurovascular impairment with unknown cause, irrespective of complaints of neck or head pain. In addition, the GDC recommends immediate investigation for these 4 signs or symptoms of neurovascular impairment whenever a patient demonstrates vertigo--if none are present, the GDC recommends caution in treating the patient because of the continued risk for neurovascular impairment.

### **Stroke; An Adverse Event of the Rotation Component of Manipulation?**

37. Although the role (alleviating, neutral, exacerbating, causative) of manipulation in cerebrovascular (CV) accidents is unclear, the GDC recommends using a minimal rotation in administering an upper-cervical

spine manipulation until better information is available, to maximize the benefit to harm balance.

38. Extrapolating from their recommendation to use a minimal rotation in administering an upper-cervical spine manipulation, the GDC also recommends the use of a minimal rotation in administering any modality of upper-cervical spine treatment.

### **CLINICAL ALGORITHM(S)**

Algorithms are provided in the original guideline document for:

- Clinical decision algorithm
- Cervical spine manipulative therapy; decision algorithms coping with the theoretic risk of dissection

## **EVIDENCE SUPPORTING THE RECOMMENDATIONS**

### **TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS**

The type of supporting evidence for specific treatment recommendations is tabulated in Appendix 3 of the original guideline document.

Most of the recommendations concerning management of risk of adverse effects were based on level 5 evidence (subjective extrapolation or observation, frequently based on a case study), and only a very few being level 3 or better.

## **BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS**

### **POTENTIAL BENEFITS**

The expected benefits from the recommendations include more rapid recovery from pain, impairment, and disability (improved pain and range of motion).

### **POTENTIAL HARMS**

Adverse events of treatment were not addressed in most of the studies reviewed, but where they were, there were none or they were minor. The theoretical harm of vertebral artery dissection (VAD) was not reported but an analysis suggested that 1 VAD may occur subsequent to 1 million cervical manipulations.

## **CONTRAINDICATIONS**

### **CONTRAINDICATIONS**

#### **Risk Factors That Are Absolute Contraindications to All Chiropractic Cervical Treatment**

- Obvious medical emergencies (e.g., onset of myocardial infarct)
- In the course of care:

- 1 of 4 signs or symptoms of neurovascular impairment or any other signs or symptoms of neurovascular impairment with unknown cause
- Neck or occipital pain with a sharp quality and severe intensity that is sudden and unlike any previously experienced pain (even when it is suspected the pain is of a musculoskeletal or neuralgic origin)
- Severe and persistent headache that is sudden and unlike any previously experienced headache (even when it is suspected the pain is of a musculoskeletal or neuralgic origin)

### **Risk Factors That Are Absolute Contraindications to Cervical Manipulation (And Possibly Mobilization)**

- History of cervical artery dissection
- Active or existing vertebral artery dissection (VAD) or carotid artery dissection (CAD)
- Active cervical spine cord injury
- Symptomatic, significant, extracranial carotid stenosis
- Acute cardiac disease (e.g., unstable angina, atrial fibrillation, stages 3 or 4 congestive heart failure [both atria involved], acute myocardial infarction [MI], atrial fibrillation)
- Cardiac abnormalities that predispose to thrombus formation, because of potential for thrombi to be present in cervical arteries
- Contact with integumentary lesions
- Active inflammatory arthritides
- Mediolytic arteriopathy with widespread mucoid degeneration and cystic transformation of the vascular wall (caused by segmental degeneration of smooth muscle cells of the tunica media)
- Patient positioning cannot be achieved because of pain or resistance
- Known malingering
- Somatoform disorder with no physical involvement
- Hypochondriasis without a legitimate complaint
- Neurologic difficulties or symptoms
  - Evidence of involvement of spinal nerve root caused by space occupying lesions
  - Cervical myelopathy
- Pathology resulting in bone/joint/ligament weakening/malformation (e.g., osteogenesis imperfecta), including iatrogenic syndromes (e.g., those caused by prolonged corticoid use)
  - Moderate or severe (involves rupture/tears of ligaments/muscles/tendons) sprains and strains
  - Acute or unhealed cervical spine fracture
  - Infection (e.g., discitis, osteomyelitis, tuberculosis) localized to the neck
  - Congenital disorders leading to instability of the involved area (e.g., dysplasia, unstable os odontoideum)
  - Obvious misalignment of greater than 3 mm of translation
  - Ossification of the posterior longitudinal ligament
- Miscellaneous
  - Malignant thyroid tumors (to avoid metastases)
  - Malignancy involving the cervical spine
  - Hereditary disorders of connective tissue (Ehlers-Danlos Type III, Marfan syndromes)

- Chronic calcium deposit in the cervical musculature
- Gout
- Failed back surgery syndrome (FBSS) related segment fusion or instability

**Risk Factors That Can Be Absolute Contraindications to Cervical Manipulation in Specific Circumstances (and Possibly to Mobilization), or May Merely Require Modality Modification Based on a Learned Practitioner's Practice Experience and Expertise**

- Anticoagulant use
- Neurologic symptoms in a lower limb
- Spinal cord compression
- Nerve root compression with increasing neurological deficit
- Vascular difficulties
- Clotting disorders
- Anatomical variations from the norm of the vertebral arteries
- Prior trauma to the vertebral arteries
- Atherosclerosis (e.g., atherosclerotic plaque in carotid artery)
- Adverse reactions to previous manual therapy (e.g., pain)
- Inability of patient to relax
- Presence of spasm "protecting" target segment
- Poor psychological well-being without referral to psychology
- Pain intolerance
- Cervical spine trauma
- Anteroposterior spinal canal stenosis of 11 mm or less

**Risk Factors That Are Absolute Contraindications to Cervical Exercise**

With range of motion (ROM) exercise

- Inflammation resulting from motion

With resistance exercise (static/dynamic, weight-bearing/non-weight-bearing, manual/non-manual not differentiated [see original guideline document])

- Unstable joint involved in movement
- Unhealed fracture proximal to exercise site

With aquatic exercise

- Incipient cardiac failure, unstable angina, respiratory vital capacity less than 1 liter, severe peripheral vascular disease, danger of bleeding or hemorrhage, severe kidney disease, larger open wounds (e.g., colostomy), skin infection (e.g., ringworm), incontinence, water or air vector infectious disease (e.g., influenza, poliomyelitis), uncontrolled seizures

**Risk Factors That Can Be Absolute Contraindications to Cervical Exercise in Specific Circumstances, or May Merely Require Modality Modification Based on a Learned Practitioner's Experience and Expertise**

With ROM exercise

- Pain on motion

With resistance exercise (static/dynamic, weight-bearing/non-weight-bearing, manual/non-manual not differentiated [see original guideline document])

- Joint or muscle pain during un-resisted movement
- Muscle pain during resisted isometric contraction
- Pain that is not eliminated by resistance exercise
- Inflammatory neuromuscular disease
- Inflammation of an involved joint
- Severe cardiopulmonary disease
- Dizziness, "unusual or precipitous" shortness of breath during exercise
- Deficits undermining exercises (e.g., impaired mobility, balance, coordination)

### **Risk Factors That Are Absolute Contraindications to Cervical Traction**

- Marked ligament insufficiency or segmental instability
- Dizziness, nausea or feeling "sick" after traction
- Spondylotic cervical myelopathy
- Acute and active inflammatory arthritides
- Pathology causing thrombi in the cervical vasculature at points compressed by the traction apparatus, which may thereafter be released

### **Risk Factors That Can Be Absolute Contraindications to Cervical traction in Specific Circumstances, or May Merely Require Modality Modification based on a Learned Practitioner's Experience and Expertise**

- Herniated cervical discs
- Patient cannot relax

### **Risk Factors That Are Absolute Contraindications to Cervical Low-Level Laser Therapy**

- Cardiovascular disease
- Hypertension
- Coagulopathy
- Ulcer
- Recent severe hemorrhage
- Renal insufficiency
- Severe hepatic disease
- Neoplasia
- Epilepsy
- Cutaneous pathology
- Pain of "central" origin
- Pregnancy

## **QUALIFYING STATEMENTS**

### **QUALIFYING STATEMENTS**

- This clinical practice guideline (CPG) was not meant to be a replacement for a good text book of basic functional or anatomic knowledge; it is very specifically focused on the evidence-based treatment of adult neck pain not due to whiplash. This CPG does not provide a comprehensive overview of chiropractic treatment; any deficiency or omission directly reflects a deficiency or omission in the clinical literature.
- CPGs are not standards of care that dictate practice, but rather guides and tools for chiropractors and their patients. The distinction between a CPG and a standard of care is particularly important to uphold within the Canadian chiropractic profession--primarily because the distinction is poorly defined at the front line of practice.

## IMPLEMENTATION OF THE GUIDELINE

### DESCRIPTION OF IMPLEMENTATION STRATEGY

#### Implementing the Recommendations

The following information tools are presented to aid in implementing this clinical practice guideline (CPG): a summary Table of the evidence-based cervical pain benefits of chiropractic treatment (see Appendix 3 of the original guideline document); algorithms that illustrate the process of individualizing care (see Figure 1 of the original guideline document) and managing the risk of dissection (see Figure 2, discussed in Appendix 1 of the original guideline document); and a clinical question and answer list (Section 7.1 of the original guideline document). As well, this CPG is reinforced by the extensive dissemination, implementation, evaluation, and revision activities described in the development, dissemination, implementation, evaluation, and revision plan (DevDIER) (see "Availability of Companion Documents" field). For researchers, a set of CPG development Questions and Answers (Q&As) is included in the first and second *Response to profession-wide feedback about the chiropractic clinical practice guideline: evidence-based treatment of adult neck pain not due to whiplash* documents available at [The Canadian Chiropractic Association \(CCA\) Web site](#).

### IMPLEMENTATION TOOLS

Audit Criteria/Indicators  
 Clinical Algorithm  
 Quick Reference Guides/Physician Guides

For information about [availability](#), see the "Availability of Companion Documents" and "Patient Resources" fields below.

## INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

### IOM CARE NEED

Getting Better  
 Living with Illness

## **IOM DOMAIN**

Effectiveness  
Patient-centeredness

## **IDENTIFYING INFORMATION AND AVAILABILITY**

### **BIBLIOGRAPHIC SOURCE(S)**

The Canadian Chiropractic Association, Canadian Federation of Chiropractic Regulatory Boards, Clinical Practice Guidelines Development Initiative, Guidelines Development Committee (GDC). Chiropractic clinical practice guideline: evidence-based treatment of adult neck pain not due to whiplash. *J Can Chiropr Assoc* 2005;49(3):158-209. [218 references]

### **ADAPTATION**

Not applicable: The guideline was not adapted from another source.

### **DATE RELEASED**

2005

### **GUIDELINE DEVELOPER(S)**

Canadian Chiropractic Association - Professional Association  
Canadian Federation of Chiropractic Regulatory Boards - National Government Agency [Non-U.S.]

### **SOURCE(S) OF FUNDING**

Unrestricted grant from the Ontario Ministry of Health and Long-term Care to the Ontario Chiropractic Association

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Guidelines Development Committee (GDC)

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## **FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST**

The contributing individuals declared no conflict of interest. Guideline Development Committee member Andrea Fulran and Janice Gross Stein received a per diem for their participation. The literature search and evidence extraction team were contracted.

## **GUIDELINE STATUS**

This is the current release of the guideline.

## **GUIDELINE AVAILABILITY**

Electronic copies: Available in Portable Document Format (PDF) from the [Journal of the Canadian Chiropractic Association Web site](#).

Print copies: Available from the Canadian Chiropractic Association, 1396 Eglinton Ave., West Toronto, Ontario M6C 2E4

## AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- Chiropractic clinical practice guideline: evidence-based treatment of adult neck pain not due to whiplash (unpublished technical version). 2005 Sep. 128 p. Available in Portable Document Format (PDF) from the [CCA/CFCRB-CPG Web site](#).
- Chiropractic clinical practice guideline: evidence-based treatment of adult neck pain not due to whiplash (interactive version). 2005 Sep. 4 p. Available from the [CCA/CFCRB-CPG Web site](#).
- The Canadian Chiropractic Association and the Canadian Federation of Chiropractic Regulatory Boards Clinical Practice Guidelines Development Initiative (The CCA/CFCRB-CPG) development, dissemination, implementation, evaluation, and revision (DevDIER) plan. J Can Chiropr Assoc 2004;48(1):56-72. Electronic copies: Available in Portable Document Format (PDF) from the [Journal of the Canadian Chiropractic Association Web site](#).

Print copies: Available from the Canadian Chiropractic Association, 1396 Eglinton Ave., West Toronto, Ontario M6C 2E4

## PATIENT RESOURCES

None available

## NGC STATUS

This NGC summary was completed by ECRI on January 19, 2006. The information was verified by the guideline developer on February 1, 2006.

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