Agency for Healthcare Research and Quality
Advancing Excellence in Health Care

NATIONAL GUIDELINE CLEARINGHOUSE

General

Guideline Title

Evidence-based guidelines for the chiropractic treatment of adults with neck pain.

Bibliographic Source(s)

Bryans R, Decina P, Descarreaux M, Duranleau M, Marcoux H, Potter B, Ruegg RP, Shaw L, Watkin R, White E. Evidence-based guidelines for the chiropractic treatment of adults with neck pain. J Manipulative Physiol Ther. 2014 Jan;37(1):42-63. [104 references] PubMed

Guideline Status

Note: This guideline has been updated. The National Guideline Clearinghouse (NGC) is working to update this summary.

Recommendations

Major Recommendations

Note: This guideline has been updated. The National Guideline Clearinghouse (NGC) is working to update this summary. The recommendations that follow are based on the previous version of the guideline.

Definitions of the strength of evidence and recommendations (Strong, Moderate, Weak, Inconsistent) are provided at the end of the "Major Recommendations" field.

Treatment Recommendations

Manipulation

Manipulation/Multimodal—Acute Neck Pain

Spinal manipulative therapy is recommended for the treatment of acute neck pain for both short- and long-term benefit (pain and the number of days to recover) when used in combination with other treatment modalities (advice, exercise, and mobilization; grade of recommendation—moderate).

This recommendation is based on 3 low-risk-of-bias studies, 2 with limiting factors. These 3 studies used several treatment sessions (4 and 5, or an average of 15) for 2 or 12 weeks, respectively.

Manipulation—Chronic Neck Pain

Spinal manipulative therapy is recommended in the treatment of chronic neck pain for short- and long-term benefit (pain, disability; grade of recommendation—weak).

This recommendation is based on 1 low-risk-of-bias study with a limiting factor that used 2 treatments per week for 9 weeks.

Manipulation/Multimodal—Chronic Neck Pain

Spinal manipulative therapy is recommended in the treatment of chronic neck pain as part of a multimodal approach (including advice, upper thoracic high velocity low amplitude thrust, low-level laser therapy, soft tissue therapy, mobilizations, pulsed short wave diathermy, exercise, massage, and stretching) for both short- and long-term benefit (pain, disability, cervical range of motion [cROM]; grade of recommendation—strong).

This recommendation was graded strong owing to 2 low-risk-of-bias studies. This recommendation is also supported by 5 low-risk-of-bias studies with limiting factors that used a number of treatments over several weeks, in addition to assessing the impact of a single treatment over the short term.

Mobilization

Mobilization/Multimodal—Acute Neck Pain

Mobilization is recommended for the treatment of acute neck pain for short-term (up to 12 weeks) and long-term benefit (days to recovery, pain) in combination with advice and exercise (grade of recommendation—moderate).

This recommendation is supported by 2 low-risk-of-bias studies with limiting factors. One study used 4 treatment sessions over a 2-week period).

Mobilization—Chronic Neck Pain

Mobilization is recommended for the treatment of chronic neck pain for short-term (immediate) benefit (pain, cROM; grade of recommendation—moderate).

This recommendation is based on 3 low-risk-of-bias studies with limiting factors.

Manual Therapy

Manual Therapy/Multimodal—Chronic Neck Pain

Manual therapy is recommended in the treatment of chronic neck pain for the short- and long-term benefit (pain, disability, cROM, strength) in combination with advice, stretching, and exercise (grade of recommendation—strong).

This recommendation is based on 2 low-risk-of-bias studies. This recommendation is also supported by 2 low-risk-of-bias studies with limiting factors.

Exercise

Exercise—Acute Neck Pain

Home exercise with advice or training is recommended in the treatment of acute neck pain for both long- and short-term benefits (neck pain; grade of recommendation—weak).

This recommendation is based on 1 low-risk-of-bias study with a limiting factor. This study used a regime of daily home exercise (6–8 repetitions per day) for 12 weeks with two 1-hour advice/training sessions 1 to 2 weeks apart.

Exercise—Chronic Neck Pain

Regular home stretching (3–5 times per week) with advice/training is recommended in the treatment of chronic neck pain for long- and short-term benefits in reducing pain and analgesic intake (grade of recommendation—strong).

This recommendation is based on 3 low-risk-of-bias studies.

Home strengthening and endurance exercises with advice/training/supervision are recommended for both short- and long-term benefits (neck pain, cROM) in the treatment of chronic neck pain (grade of recommendation—strong).

This recommendation is based on 4 low-risk-of-bias studies. One additional study with a limiting factor supported this recommendation. In all 5 studies, regular home exercises were performed daily to 3 times per week. Two additional low-risk citations with limiting factors found exercises of no benefit. Despite the conflicting results, this recommendation was graded strong owing to the 4 low-risk-of-bias studies.

Exercise/Multimodal—Chronic Neck Pain

Exercise (including stretching, isometric, stabilization, and strengthening) is recommended for short- and long-term benefits (pain, disability, muscle strength, quality of life [QoL], cROM) as part of a multimodal approach to the treatment of chronic neck pain when combined with infrared radiation, massage, or other physical therapies (grade of recommendation—strong).

This recommendation is based on 4 low-risk-of-bias studies. Exercises were typically done 2 to 5 times per week for several weeks.

Laser

Laser—Chronic Neck Pain

Based on inconsistent findings from 3 low-risk-of-bias studies, there is insufficient evidence that supports a recommendation for the use of infrared laser (830 nm) in the treatment of chronic neck pain.

Massage

Massage/Multimodal—Chronic Neck Pain

Massage is recommended for the treatment of chronic neck pains for short-term (up to 1 month) benefit (pain, disability, and cROM) when provided in combination with self-care, stretching, and/or exercise (grade of recommendation—moderate).

This recommendation is based on 1 low-risk-of-bias study and 1 low-risk-of-bias study with a limiting factor. In both studies, 5 to 10 upper body/neck massage sessions lasting 1 hour to 75 minutes were provided.

Transcutaneous Nerve Stimulation

Transcutaneous Nerve Stimulation/Multimodal—Chronic Neck Pain

There is insufficient evidence that supports a recommendation for transcutaneous nerve stimulation (TENS) for the treatment of chronic neck pain.

This conclusion is based on 1 low-risk-of-bias study with more than 1 limiting factor.

Thoracic Manipulation

Thoracic Manipulation—Acute Neck Pain

Based on inconsistent findings from 2 low-risk-of-bias studies, there is insufficient evidence that supports a recommendation for the use of thoracic manipulation in combination with electrotherapy or exercise for the treatment of acute neck pain.

Thoracic Manipulation—Chronic Neck Pain

Based on inconsistent findings from 3 low-risk-of-bias studies, there is insufficient evidence that supports a recommendation for the use of thoracic manipulation for the treatment of chronic neck pain.

Traction

Traction—Chronic Neck Pain

There is insufficient evidence to support a recommendation for intermittent mechanical traction for the treatment of chronic neck pain.

This conclusion is based on 1 low-risk-of-bias study that found no additional improvement in pain or disability after 10 to 12 treatment sessions when combined with nontherapeutic infrared irradiation.

Trigger Point Therapy

Trigger Point Therapy—Acute Neck Pain

There is insufficient evidence that supports a recommendation for activator, ischemic compression, and trigger point pressure release for the treatment of acute neck pain based on 2 low-risk-of-bias studies. Both studies report a clinical improvement, but there was no indication of a significant statistical change.

Definitions:

Strength of Evidence and Recommendations

Evidence	Strength of Recommendation
Consistent findings among ≥2 low-risk-of-bias controlled trials with no limiting factors	Strong
Consistent findings among ≥2 low-risk-of-bias controlled trials with minor limiting factors *or* 1 low-risk-of-bias controlled trial with no limiting factors	Moderate
1 low-risk-of-bias controlled trial with limiting factors	Weak
Unresolvable differences between the findings of 2 or more low-risk-of-bias controlled trials	Inconsistent

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

Nonspecific (mechanical) neck pain

Guideline Category

Assessment of Therapeutic Effectiveness

Management

Treatment

Clinical Specialty

Chiropractic

Intended Users

Chiropractors

Guideline Objective(s)

To develop evidence-based treatment recommendations for the treatment of nonspecific (mechanical) neck pain in adults

Target Population

Adults with nonspecific (mechanical) neck pain

Interventions and Practices Considered

1. Manipulation alone
2. Manipulation combined with other treatment modalities (advice, exercise, mobilization, upper thoracic high velocity low amplitude thrust, low-level laser therapy, soft tissue therapy, pulsed short wave diathermy, massage, and stretching)
3. Mobilization alone
4. Mobilization combined with advice and exercise
5. Manual therapy combined with advice, stretching, and exercise
6. Home exercise with advice or training
7. Exercise combined with infrared radiation, massage, or other physical therapies
8. Infrared laser alone (insufficient evidence to make a recommendation)
9. Massage combined with self-care, stretching, and/or exercise
10. Transcutaneous electrical nerve stimulation (insufficient evidence to make a recommendation)
11. Thoracic manipulation (insufficient evidence to make a recommendation)
12. Traction (insufficient evidence to make a recommendation)
13. Trigger point therapy (insufficient evidence to make a recommendation)

Major Outcomes Considered

- Validated measures of neck pain or neck disability
- Cervical range of motion
- Activities of daily living
- Quality of life
- Time to recovery

Methodology

Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Primary Sources)

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Data Sources and Searches

A systematic search of the literature was conducted. The search strategy was developed by the Guidelines Development Committee (GDC) in conjunction with an experienced medical research librarian in MEDLINE by exploring MeSH terms related to chiropractic and specific interventions (see Appendix A in the original guideline document). The databases searched included the following: MEDLINE, EMBASE, EMCARE, Index to Chiropractic Literature, and the Cochrane Library. Searches included articles published in English or with English abstracts. The search strategy was limited to adults (≥18 years). A study population was considered to be adult when drawn from a "workplace." The search spanned the period January 2004 to December 2011. Reference lists provided in systematic reviews (SRs) were also reviewed to avoid missing relevant articles. Some of the treatment modalities included in this guideline are not exclusive to doctors of chiropractic (DCs) but include those that may also be delivered by other health care professionals.

Evidence Selection Criteria

Search results were screened electronically, and a multistage screening was conducted (see Appendix B in the original guideline document): level 1 (title and abstract), duplicate citations were removed, and remaining articles were retrieved as electronic and/or hard copies for detailed analysis; level 2 (full-text methodology and relevance); level 3 (screening randomized controlled trials [RCTs] and systematically conducted reviews); and level 4 (full-text final screening for relevant clinical content and risk of bias assessment and identification of potential methodological flaws).

The primary outcome measures for this guideline were validated measures of neck pain or neck disability. Secondary outcomes included the following: cervical range of motion (cROM), activities of daily living, quality of life (QoL), and time to recovery.

Only RCTs were selected as the evidence base for this guideline consistent with current standards for interpreting clinical findings. The selected literature was next categorized according to intervention type and the articles in each category assessed by the Evidence Rating Team for quality, relevance to common chiropractic practice, and the suitability for further analysis and inclusion in this guideline. The inclusion or exclusion of a treatment category was predetermined by consensus among stakeholders in the profession.

The evidence base did not permit the assignment of any RCTs to a separate subacute category. As a result, RCTs were assigned to an acute or chronic category for each of the interventions. In instances where the experimental participants were of a variable duration of symptom(s) (both acute and chronic), the assignment to a category was determined by the predominance (average or mean) of symptom duration. Studies that included participants with subacute symptom duration were assigned to the acute category. In instances where the mix of participants could not be determined or was relatively equal, the study was excluded.

Number of Source Documents

The search identified 555 citations that were subsequently augmented by a hand search of the systematic reviews (SRs), for a total of 560 publications. A total of 41 citations (see Tables 3 and 4 in the original guideline document) were used to develop the recommendations. In the discussion, findings of 24 SRs are compared with the recommendations of this clinical practice guideline. Excluded citations (randomized controlled trials and SRs) are shown in Table 5 in the original guideline document. See Figure 1 in the original guideline for a screening flowchart.

Methods Used to Assess the Quality and Strength of the Evidence

Expert Consensus

Weighting According to a Rating Scheme (Scheme Not Given)

Rating Scheme for the Strength of the Evidence

Refer to the "Description of Methods Used to Analyze the Evidence" field for a description of the process used to assign quality ratings to individual randomized controlled trials and systematic reviews.

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

Developing Recommendations

Two processes were used to assess the randomized controlled trials (RCTs). The first was to assess the risk of bias of the methods, and the second was to assess any factors that may influence the interpretation and subsequent grading of the results.

Risk of Bias Assessment

The rating of the treatment literature was conducted using methods recommended by the Cochrane Back Review Group (CBRG) (http://back.cochrane.org). Only RCTs were rated for risk of bias using a template adapted from the CBRG. In this instance, a "low risk of bias" equates to a "high quality" study and "high risk of bias" equates to "low quality." The CBRG rating instrument for randomized trials identifies 5 inclusion criteria scored "yes" or "no." Twelve criteria were identified for risks of bias that can be scored as "low risk (score 1)" or "high risk (score 0)/unclear (score 0)" as follows:

1. Was the method of randomization adequate?

2. Was the treatment allocation concealed?
3. Was the patient blinded to the intervention?
4. Was the care provider blinded to the intervention?
5. Was the outcome assessor blinded to the intervention?
6. Were incomplete outcome data adequately addressed?
7. Are reports of the study free of suggestion of selective outcome reporting?
8. Were the groups similar at baseline regarding the most important prognostic indicators?
9. Were cointerventions avoided or similar in all groups?
10. Was compliance acceptable in all groups?
11. Are all patients reported and analyzed in the group to which they were allocated (intention-to-treat)?
12. Was the timing of outcome assessment similar in all groups?

No weighting factor was applied to individual criteria, and possible bias ratings ranged from 0 (greatest number of risk of bias criteria) to 12 (no risk of bias criteria). Observational studies, case series, or case reports were excluded because of their uncontrolled nature and inappropriate design to assess treatment effect.

In many instances (particularly when the intervention is a form of manual therapy), it is difficult (if not impossible) to blind either the participant or care provider. Therefore criteria 3 and 4 were scored low risk only when blinding was reported and deemed to be possible by the raters. Whenever an outcome was determined by a participant-directed questionnaire (e.g., Neck Disability Index), the outcome assessor was considered to be free of bias (criterion 5). Where the baseline characteristics of study groups have not undergone statistical analysis, the source of bias (criterion 8) was scored high risk, unless all significant prognostic indicators were similar upon inspection by the raters. In studies that tested the "immediate effect" of an intervention, the domains of cointervention (criterion 9) and compliance (criterion 10) for the rating instrument were deemed to be "not applicable" (N/A). In these cases, rather than artificially inflating the scores by rating these domains as low risk, the domain was not scored and the score totalled out of 10 rather than 12. When the identified sources of bias (method of randomization, allocation concealment, blinding, reporting of missing data, cointerventions, compliance, or intention-to-treat) were not reported, a high risk was scored.

Two assessors independently rated the literature for risk of bias and were not blinded as to study authors, institutions, and source journals. Two members of the Evidence Rating Team (ERT) corroborated quality rating methods by completing quality assessments on a subset of 8 citations. Consensus of all individual ratings was established by discussion among the ERT.

Studies are rated as having a low risk of bias when at least 50% of CBRG criteria were met (i.e., 6/12 or 5/10 for scores of 10). Studies with fewer than 50% of the criteria met were rated as having a high risk of bias. There is empirical evidence from a methodological study conducted with data from the CBRG that a scoring threshold of less than 50% of the criteria is associated with bias. A high level of agreement was confirmed across quality ratings. Complete agreement on all items was achieved for most studies. All discrepancies were easily resolved through discussion.

Use of Systematic Reviews (SRs)

SRs were identified as a source of comparison for the recommendations developed for this guideline. The SRs were assessed by the ERT for quality using procedures described by Oxman and Guyatt. Quality rating of SRs included 9 criteria answered by yes (score 1) or no (score 0)/do not know (score 0) and a determination of overall scientific quality (no flaws, minor flaws or major flaws), based on the literature raters' answers to the 9 items. Possible ratings ranged from 0 to 9. Systematic reviews scoring more than half of the total possible rating (i.e., ≥5) with no or minor flaws were rated as high quality. Systematic reviews scoring 4 or less and/or having major flaws identified were excluded.

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

Grading the Strength of Treatment Recommendations

Recent advances in the development of treatment recommendations have led to a systematic approach to developing and grading the recommendations that aid in interpretation and minimizes bias. A comparable approach has been used by the Cochrane Collaboration (http://back.cochrane.org/) and has been adapted here. The results of the randomized controlled trials (RCTs) in each treatment category were evaluated by the Guideline Development Committee (GDC) for factors concerning the final interpretation of the results for

grading as reported in the Literature Summary. These factors included limitations in study design and/or execution, inconsistency of results, indirectness of evidence, imprecision of results, and clinical relevance. To assign an overall strength of recommendation (strong, moderate, weak, or inconsistent), the GDC considered the number, quality, and consistency of research results.

A "strong" recommendation was considered only when 2 or more low-risk-of-bias RCTs had consistent findings and were free of limiting factors. Recommendations were graded "moderate" with the support of 2 or more low-risk-of-bias RCTs with limiting factors, or 1 high-quality RCT free of limiting factors. A "weak" recommendation is supported by only 1 low-risk-of-bias RCT with methodological flaws. In instances where conflicting evidence (inconsistency of results) was found, the GDC reviewed all study findings to determine if these differences could be resolved, for example, a clear prevalence of positive studies over negative studies. Whenever the differences were resolved, the recommendation was graded (strong, moderate or weak) according to the number and ratio of positive to negative studies. Recommendations for practice were developed in collaborative working group meetings. No recommendations were made when consistent findings could not be established or if there was no evidence (see "Rating Scheme for the Strength of the Recommendations" field).

Rating Scheme for the Strength of the Recommendations

Strength of Evidence and Recommendations

Evidence	Strength of Recommendation
Consistent findings among ≥2 low-risk-of-bias controlled trials with no limiting factors	Strong
Consistent findings among ≥2 low-risk-of-bias controlled trials with minor limiting factors *or* 1 low-risk-of-bias controlled trial with no limiting factors	Moderate
1 low-risk-of-bias controlled trial with limiting factors	Weak
Unresolvable differences between the findings of 2 or more low-risk-of-bias controlled trials	Inconsistent

Cost Analysis

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

Method of Guideline Validation

Not stated

Description of Method of Guideline Validation

Not applicable

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see the "Major Recommendations" field).

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Appropriate treatment of adults with neck pain

Potential Harms

Adverse Events

There were no serious adverse events reported in any of the citations used in developing these treatment recommendations. A summary of the adverse event reporting from the literature summary (see Table 4 in the original guideline document) is shown in Table 7 in the original guideline document. Of the 43 studies included in this summary, 14 made no mention of adverse events. Of the remaining 33, all studies reported either none or only minor adverse events from a total of 1682 study participants and several treatment sessions (on average) per participant.

Qualifying Statements

Qualifying Statements

This guideline is a supportive tool for practitioners and for their patients and is not intended as a standard of care. The intent of this guideline is to link clinical practice to the best available published evidence and is only one component of an evidence-based approach to patient care, which should include clinical judgment and patient values.

Limitations

- The limitations of this study are consistent with those of systematic reviews (SRs) and clinical guidelines development. Although the Guidelines Development Committee (GDC) made every attempt to include all relevant studies, it is possible that other relevant literature was missed. This study is limited in that literature was searched through December 2011; therefore, more recent literature studies in the publication process were not included in the recommendations. Thus, best judgment should be used to incorporate new high-quality evidence.
- Although the focus of the guideline development was on chiropractic treatments, other stakeholders or contributions to what doctors of chiropractic (DCs) do in practice could have been missed. The literature searched may have included procedures that DCs perform, but the research did not include practicing DCs and thus was omitted from the study. As with any use of the literature, the GDC is limited by what has been published. Thus, publication bias may have an influence in the types of studies or topics included in the searches.
- There are inherent limitations in guideline development. Expert opinion and interpretation are necessary procedures for guideline development. Thus, some subjectivity in judgments is present when assessing the strength of the evidence. Also, when evidence is lacking, expert opinion is required.

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Implementation Tools

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)

Bryans R, Decina P, Descarreaux M, Duranleau M, Marcoux H, Potter B, Ruegg RP, Shaw L, Watkin R, White E. Evidence-based guidelines for the chiropractic treatment of adults with neck pain. J Manipulative Physiol Ther. 2014 Jan;37(1):42-63. [104 references] PubMed

Adaptation

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

Date Released

2005 (revised 2014 Jan)

Guideline Developer(s)

Canadian Chiropractic Association - Professional Association

Canadian Federation of Chiropractic Regulatory and Educational Accrediting Boards (Federation) - National Government Agency [Non-U.S.]

Source(s) of Funding

Sponsorship and funding were provided by the Canadian Chiropractic Association, Canadian Chiropractic Protective Association, and the Canadian Federation of Chiropractic Regulatory and Educational Accrediting Boards (The "Federation").

Guideline Committee

Guidelines Development Committee (GDC)

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Financial Disclosures/Conflicts of Interest

No conflicts of interest were reported for this study.

Guideline Status

Note: This guideline has been updated. The National Guideline Clearinghouse (NGC) is working to update this summary.

Guideline Availability

Available from the Canadian Chiropractic Association Web site .

Availability of Companion Documents

The following are available:

- Clinical practice guideline for the chiropractic treatment of adults with neck pain. Practitioner guide. 2014 Mar. 12 p. Electronic copies: Available from the Canadian Chiropractic Association 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 from the Journal of the Canadian Chiropractic Association Web site .

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. This NGC summary was updated by ECRI Institute on April 3, 2014. The information was verified by the guideline developer on April 8, 2014.

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