

DIAGNOSTIC IMAGING PRACTICE GUIDELINES FOR MUSCULOSKELETAL COMPLAINTS IN ADULTS—AN EVIDENCE-BASED APPROACH—PART 3: SPINAL DISORDERS

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ABSTRACT

Purpose: To develop evidence-based diagnostic imaging practice guidelines to assist chiropractors and other primary care providers in decision making for the appropriate use of diagnostic imaging for spinal disorders.

Methods: A comprehensive search of the English and French language literature was conducted using a combination of subject headings and keywords. The quality of the citations was assessed using the Quality of diagnostic accuracy studies (QUADAS), the Appraisal of Guidelines Research and Evaluation (AGREE), and the Stroke Prevention and Educational Awareness Diffusion (SPREAD) evaluation tools. The Referral Guidelines for Imaging (radiation protection 118) coordinated by the European Commission served as the initial template. The first draft was sent for an external review. A Delphi panel composed of international experts on the topic of musculoskeletal disorders in chiropractic radiology, clinical sciences, and research were invited to review and propose recommendations on the indications for diagnostic imaging. The guidelines were pilot tested and peer reviewed by practicing chiropractors, and by chiropractic and medical specialists. Recommendations were graded according to the strength of the evidence.

Results: Recommendations for diagnostic imaging guidelines of adult spine disorders are provided, supported by more than 385 primary and secondary citations. The overall quality of available literature is low, however. On average, 45 Delphi panelists completed 1 of 2 rounds, reaching more than 85% agreement on all 55 recommendations. Peer review by specialists reflected high levels of agreement, perceived ease of use of guidelines, and implementation feasibility. Dissemination and implementation strategies are discussed.

Conclusions: The guidelines are intended to be used in conjunction with sound clinical judgment and experience and should be updated regularly. Future research is needed to validate their content. (*J Manipulative Physiol Ther* 2008;31:33-88)

Key Indexing Terms: *Practice Guideline; Guideline; Diagnostic Imaging; Radiology; Diagnostic X-Ray; Radiography; Adult; Musculoskeletal System; Pain; Cervical Spine; Thoracic Spine; Lumbar Spine; Trauma*

REPORTING OF TOPICS INCLUDED IN THE DEVELOPMENT OF THE DIAGNOSTIC IMAGING PRACTICE GUIDELINES¹

An initial literature review considered 10 clinical questions pertaining to imaging of musculoskeletal conditions to evaluate the pertinence of developing diagnostic

imaging guidelines. This initial review led to a research project divided into 9 phases: (1) literature search; (2) independent literature assessment; (3) guideline development specific recommendations; (4) first external review; (5) consensus panel (modified Delphi); (6) public website; (7) second external review; (8) final draft and grading of the recommendations; and (9) dissemination and implementation. Details of this study are published elsewhere.²

Focus

These diagnostic imaging guidelines concern adult musculoskeletal disorders of the spine where conventional radiography and specialized imaging studies are deemed useful for diagnostic purposes. Special consideration for manual therapy intervention is integrated within these guidelines.

Objectives

Reasons for developing these guidelines include assisting current and future health care providers to make appropriate use of imaging studies, providing indications for the need of

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imaging studies according to current literature, and expert consensus, and assisting in optimizing the utilization of limited available resources. These proposed guidelines are intended to reduce unnecessary radiation exposure and the use of specialized imaging studies, increase examination precision and decrease health care costs—all without compromising quality of care.

Target Users/Setting

Intended users of the guidelines are chiropractors and other primary health care providers prescribing diagnostic imaging studies. The setting in which these guidelines may be used include private clinics, outpatient clinics, and hospital emergency rooms.

Target Population

The patient population eligible for guideline recommendations are adult patients presenting with musculoskeletal disorders of the spine. Children and pregnant patients are excluded from these guideline recommendations.

Developers

The proposed guidelines are developed from the results of 9 distinct phases overseen by a research team composed of the 3 investigators with postgraduate education from 3 independent teaching institutions. The guidelines were further developed and peer reviewed by more than 60 chiropractic clinicians, academics, and researchers.

Evidence Collection

Electronic searches in English and French language literature occurred and cross references were repeated on 3 different occasions between 2003 and 2006.

METHODS FOR SYNTHESIZING EVIDENCE

- (a) Literature search and independent literature assessment of spinal disorders: Quality of diagnostic accuracy studies (QUADAS),³ Appraisal of Guidelines Research and Evaluation (AGREE),⁴ and Stroke Prevention and Educational Awareness Diffusion (SPREAD).⁵
- (b) Initial draft: template based on European Commission classification (2001).⁶
- (c) Expert consensus: a 2-round modified Delphi process was used to generate consensus among an international panel of more than 60 experts in musculoskeletal disorders.

Recommendation Grading Criteria

The evaluation tool used was designed by the Scottish Intercollegiate Guidelines Network (SIGN) and adapted by the Stroke Prevention and Educational Awareness Diffusion (SPREAD) group.^{5,7}

Patient Preferences

Condition specific imaging guidelines. Integral to evidence-based health care, decisions regarding the use of imaging studies should be based on the best available evidence, the

experience, and judgment of the clinician, while considering the patient preference. A public member reviewed all documents and provided comments and suggestions.

Stakeholders and Editorial Independence

- (a) *Prerelease review*: Before the release of the guidelines, the reliability of proposed recommendations was tested on specialists both in chiropractic and in medicine as well as on practicing chiropractors.
- (b) *Potential conflict of interest*: The research team involved in the development of these guidelines declare no existing or potential conflict of interest. No investigators have received nor will receive any personal financial benefits or derive any salary from this project.
- (c) Funding sources/sponsors:
 1. Canadian Memorial Chiropractic College Post Graduate Education and Research (2005)
 2. National Institute of Health Student Grant (2006)
 3. Canadian Chiropractic Protective Association (2006)

Updating/Revision

The literature review and the guidelines should be updated every 2 to 3 years.

Potential Benefits and Harm

Selection of appropriate radiologic imaging procedures for evaluation of patients with musculoskeletal disorders of the spine; decrease unnecessary ionizing radiation exposure, decrease costs, and improve accessibility.

Dissemination/Implementation Considerations

Publication; applying to National Guideline Clearinghouse; posting of the electronic document on various websites (malpractice insurance carriers, outpatient teaching clinics); educational intervention strategies (e-learning, community pilot studies); referral guidelines; reinforced by request checking and clinical management algorithms; promotion by national, provincial and state organizations, conferences.

Definitions, Patient Presentations, Recommendations, and Rationale

These topics are integral parts of each 1 of the 3 diagnostic imaging guidelines: lower extremity disorders, upper extremity disorders, and spine disorders. Results of the 9 phases of the research project are published elsewhere.²

PRELIMINARY CONSIDERATIONS AND DISCLAIMER

What Is the Role of These Guidelines?

These evidence-based diagnostic imaging practice guidelines are intended to assist primary care providers and students in decision making regarding the appropriate use of diagnostic imaging for specific clinical presentations. The guidelines are intended to be used in conjunction with sound clinical judgment and experience. For example, other special circumstances for radiographic imaging studies may include: patient unable to give a reliable history; crippling cancer phobia focused on back pain; need for immediate decision

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