A New Conceptual Model of Neck Pain

Linking Onset, Course, and Care: The Bone and Joint Decade 2000–2010 Task Force on Neck Pain and Its Associated Disorders

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Abstract

Study Design: Iterative discussion and consensus by a multidisciplinary task force scientific secretariat reviewing scientific evidence on neck pain and its associated disorders.

Objective: To provide an integrated model for linking the epidemiology of neck pain with its management and consequences, and to help organize and interpret existing knowledge, and to highlight gaps in the current literature.

Summary of Background Data: The wide variability of scientific and clinical approaches to neck pain described in the literature requires a unified conceptual model for appropriate interpretation of the research evidence.

Methods: The 12-member Scientific Secretariat of the Bone and Joint Decade 2000–2010 Task Force on Neck Pain and Its Associated Disorders critically reviewed and eventually accepted as scientifically admissible a total of 552 scientific papers. The group met face-to-face on 18 occasions and had frequent additional telephone conference meetings over a 6-year period to discuss and interpret this literature and to agree on a conceptual model, which would accommodate

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The manuscript submitted does not contain information about medical device(s)/drug(s).

No funds were received in support of this work. No benefits in any form have been or will be received from a commercial party related directly or indirectly to the subject of this manuscript.

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0161-4754/$36.00

doi:10.1016/j.jmpt.2008.11.007

findings. Models and definitions published in the scientific literature were discussed and repeatedly modified until the model and case definitions presented here were finally approved by the group.

Results: Our new conceptual model is centered on the person with neck pain or who is at risk for neck pain. Neck pain is viewed as an episodic occurrence over a lifetime with variable recovery between episodes. The model outlines the options available to individuals who are dealing with neck pain, along with factors that determine options, choices, and consequences. The short- and long-term impacts of neck pain are also considered. Finally, the model includes a 5-axis classification of neck pain studies based on how subjects were recruited into each study.

Conclusion: The Scientific Secretariat found the conceptual model helpful in interpreting the available scientific evidence. We believe it can assist people with neck pain, researchers, clinicians, and policy makers in framing their questions and decisions. (J Manipulative Physiol Ther 2009;32:S17-S28)

Key words: *neck pain; conceptual model; course; health care; impacts; management*

This article describes the Bone and Joint Decade 2000–2010 Task Force on Neck Pain and Its Associated Disorders (Neck Pain Task Force) conceptual model for the onset, course, and care of neck pain. We start with the scope and rationale for proposing a new conceptual model, followed by its purposes and premises. After describing the model's components and associated case definitions, we conclude with a discussion on implications of the model.

One of the first issues faced by the Neck Pain Task Force was to define its scope given the time and resources available. Neck pain may be a feature of virtually every disorder and disease that occurs above the shoulder blades,[1] although it is only rarely a symptom of tumors, infections, and other space-occupying lesions of the head and neck. Neck pain can also be a component of headaches, temporomandibular joint syndrome, disturbances of vision, certain types of stroke, disorders affecting the upper extremities, inflammatory arthropathies, and fibromyalgia.[2]

The Neck Pain Task Force mandate was to study what is frequently referred to as "nonspecific," "soft tissue," or "mechanical neck pain." Specifically, we excluded from our considerations neck pain associated with serious local pathology or systemic disease, and there was no attempt to review the literature on neck pain because of skin lesions, throat disorders, tumors, infections, fractures and dislocations (except where such literature informed screening practices or differential diagnosis), myelopathy, rheumatoid arthritis, or other inflammatory joint diseases.[3,4] The Neck Pain Task Force mandate was specific to pain located in the anatomic region of the neck as outlined in Figure 1, with or without radiation to the head, trunk, and upper limbs.

Pain has been described as "an unpleasant sensory and emotional experience"—a subjective experience.[5] As such, pain can usually best be ascertained by what the person reports about his or her pain, although we acknowledge that this way of assessing pain has its limitations. For example, self-reporting of the presence and severity of pain is not possible in some cases (*e.g.*, preverbal children or persons with limited communication capacity), and the accuracy of reports cannot be confirmed against external criteria. Although the conceptualization of pain as a personal, subjective experience is widely accepted, great variation exists in how neck pain is described and considered in the published literature. This variability makes it difficult to compare the results of different studies and to be confident that participant populations were similar.

Many authors approach the study of neck pain in a way which suggests a view that all neck pain has a local pathologic cause, and that this cause can be identified and treated. Other authors seem to consider neck pain as a primarily nonorganic problem with psychological and social roots. There is also a tendency to separate neck pain into categories based on their linkage to particular events or precipitating factors such as whiplash-associated disorders (WAD),[6] occupational neck pain,[7] sports-related neck pain,[8] and neck pain of unknown origin (often called "non-specific neck pain").[9] These varied approaches often imply different etiological models for neck pain.

It was necessary that the Neck Pain Task Force consider these models and approaches in the light of available scientific evidence, to develop an overarching conceptual model and meaningful subgroups of people with neck pain (case definitions). Having such a model allowed us to organize and properly interpret the available information and also to identify significant knowledge gaps.

This chapter presents the conceptual model for the onset, course, and care of neck pain used by the Neck Pain Task Force to inform our work, and includes a proposed classification system. The proposed model integrates concepts derived from the scientific literature relating to the impact of musculoskeletal symptoms and diseases, most notably from:

- the conceptual framework of the International Classification of Functioning Disability and Health (ICF).[10]
- von Korff *et al*'s classification of musculoskeletal pain according to intensity and impact.[11]
- the model proposed by the Québec Task Force to categorize WAD.[6]
- the model proposed by Côté *et al* to categorize prognosis literature in WAD.[12]
- the concepts underpinning decision analysis.[13]
- the conceptualization of musculoskeletal soft tissue symptoms as lifelong, episodic occurrences.[14,15]