



Figure continues on page 2.

**FIGURE.** Proposed model for examination, diagnosis, and treatment planning for patients with neck pain. \*Clinicians are encouraged to refer to the International Classification of Headache Disorders<sup>93</sup> for a more inclusive list of headache types/classifications (<https://www.ichd-3.org/how-to-use-the-classification/>), and to The National Institute for Health and Care Excellence<sup>49</sup> for signs, symptoms, and conditions that should be considered in patients who present with a headache in addition to neck pain.

**Evaluation/Intervention Component 3: determination of condition stage (acute/subacute/chronic)**

Acute, subacute, and chronic stages are time-based stages helpful in classifying patient conditions. Time-based stages are helpful in making treatment decisions only in the sense that in the acute phase, the condition is usually highly irritable (pain experienced at rest or with initial to mid-range spinal movements: before tissue resistance); in the subacute phase, the condition often exhibits moderate irritability (pain experienced with mid-range motions that worsen with end-range spinal movements: with tissue resistance); and chronic conditions often have a low degree of irritability (pain that worsens with sustained end-range spinal movements or positions: overpressure into tissue resistance). There are cases where the alignment of irritability and the duration of symptoms does not match accordingly, requiring clinicians to make judgments when applying time-based research results on a patient-by-patient basis

**Evaluation/Intervention Component 4: intervention strategies for patients with neck pain**

Neck Pain With Mobility Deficits	Neck Pain With Movement Coordination Impairments (WAD)	Neck Pain With Headache (Cervicogenic)	Neck Pain With Radiating Pain (Radicular)
<p><b>Acute</b></p> <ul style="list-style-type: none"> <li>• Thoracic manipulation</li> <li>• Cervical mobilization or manipulation</li> <li>• Cervical ROM, stretching, and isometric strengthening exercise</li> <li>• Advice to stay active plus home cervical ROM and isometric exercise</li> <li>• Supervised exercise, including cervicospulothoracic and upper extremity stretching, strengthening, and endurance training</li> <li>• General fitness training (stay active)</li> </ul> <p><b>Subacute</b></p> <ul style="list-style-type: none"> <li>• Cervical mobilization or manipulation</li> <li>• Thoracic manipulation</li> <li>• Cervicospulothoracic endurance exercise</li> </ul> <p><b>Chronic</b></p> <ul style="list-style-type: none"> <li>• Thoracic manipulation</li> <li>• Cervical mobilization</li> <li>• Combined cervicospulothoracic exercise plus mobilization or manipulation</li> <li>• Mixed exercise for cervicospulothoracic regions—neuromuscular exercise: coordination, proprioception, and postural training; stretching; strengthening; endurance training; aerobic conditioning; and cognitive affective elements</li> <li>• Supervised individualized exercises</li> <li>• “Stay active” lifestyle approaches</li> <li>• Dry needling, low-level laser, pulsed or high-power ultrasound, intermittent mechanical traction, repetitive brain stimulation, TENS, electrical muscle stimulation</li> </ul>	<p><b>Acute if prognosis is for a quick and early recovery</b></p> <ul style="list-style-type: none"> <li>• Education: advice to remain active, act as usual</li> <li>• Home exercise: pain-free cervical ROM and postural element</li> <li>• Monitor for acceptable progress</li> <li>• Minimize collar use</li> </ul> <p><b>Subacute if prognosis is for a prolonged recovery trajectory</b></p> <ul style="list-style-type: none"> <li>• Education: activation and counseling</li> <li>• Combined exercise: active cervical ROM and isometric low-load strengthening plus manual therapy (cervical mobilization or manipulation) plus physical agents: ice, heat, TENS</li> <li>• Supervised exercise: active cervical ROM or stretching, strengthening, endurance, neuromuscular exercise including postural, coordination, and stabilization elements</li> </ul> <p><b>Chronic</b></p> <ul style="list-style-type: none"> <li>• Education: prognosis, encouragement, reassurance, pain management</li> <li>• Cervical mobilization plus individualized progressive exercise: low-load cervicospulothoracic strengthening, endurance, flexibility, functional training using cognitive behavioral therapy principles, vestibular rehabilitation, eye-head-neck coordination, and neuromuscular coordination elements</li> <li>• TENS</li> </ul>	<p><b>Acute</b></p> <ul style="list-style-type: none"> <li>• Exercise: C1-2 self-SNAG</li> </ul> <p><b>Subacute</b></p> <ul style="list-style-type: none"> <li>• Cervical manipulation and mobilization</li> <li>• Exercise: C1-2 self-SNAG</li> </ul> <p><b>Chronic</b></p> <ul style="list-style-type: none"> <li>• Cervical manipulation</li> <li>• Cervical and thoracic manipulation</li> <li>• Exercise for cervical and scapulothoracic region: strengthening and endurance exercise with neuromuscular training, including motor control and biofeedback elements</li> <li>• Combined manual therapy (mobilization or manipulation) plus exercise (stretching, strengthening, and endurance training elements)</li> </ul>	<p><b>Acute</b></p> <ul style="list-style-type: none"> <li>• Exercise: mobilizing and stabilizing elements</li> <li>• Low-level laser</li> <li>• Possible short-term collar use</li> </ul> <p><b>Chronic</b></p> <ul style="list-style-type: none"> <li>• Combined exercise: stretching and strengthening elements plus manual therapy for cervical and thoracic region: mobilization or manipulation</li> <li>• Education counseling to encourage participation in occupational and exercise activity</li> <li>• Intermittent traction</li> </ul>

**FIGURE.** Proposed model for examination, diagnosis, and treatment planning for patients with neck pain. \*Clinicians are encouraged to refer to the International Classification of Headache Disorders<sup>93</sup> for a more inclusive list of headache types/classifications (<https://www.ichd-3.org/how-to-use-the-classification/>), and to The National Institute for Health and Care Excellence<sup>49</sup> for signs, symptoms, and conditions that should be considered in patients who present with a headache in addition to neck pain.

### Component 1<sup>III</sup>

Medical screening incorporates the findings of the history and physical examination to determine whether the patient's symptoms originate from a condition that requires referral to another health care provider. The 2012 IFOMPT International Framework for Examination of the Cervical Region, the CCR, and the NEXUS criteria, all discussed earlier, are examples of tools that may be helpful in this decision-making process. In addition to these conditions, clinicians should screen for the presence of psychosocial issues that may affect prognostication and treatment decision making for rehabilitation. For example, elevated scores on the Impact of Events Scale have been associated with other severe symptoms and a longer recovery in individuals with neck pain after whiplash injury.<sup>195</sup> Accordingly, identifying cognitive behavioral tendencies during the patient's evaluation can direct the therapist to employ specific patient education strategies to optimize patient outcomes to physical therapy interventions and potentially provide indications for referring the patient for consultation with another medical or mental health practitioner.<sup>8</sup>

### Component 2<sup>III</sup>

Differential evaluation of musculoskeletal clinical findings is used to determine the most relevant physical impairments associated with the patient's reported activity limitations and medical diagnosis. Clusters of these clinical findings, which commonly coexist in patients, are described as impairment patterns in the physical therapy literature<sup>4</sup> and for neck pain are classified according to the key impairment(s) of body function, along with the characteristic and distribution of pain associated with that classification. The ICD-10 and primary and secondary ICF codes associated with neck pain are provided in the 2008 ICF-based neck pain CPG.<sup>29</sup> These classifications are useful in determining interventions focused on normalizing the key impairments of body function, which in turn strive to improve the movement and function of the patient and lessen or alleviate pain and/or activity limitations. Key clinical findings to differentiate the classifications are shown in the **FIGURE**. In addition, when it comes to neck-related headaches, clinicians are encouraged to refer to the International Classification of Headache Disorders<sup>83</sup> for a more inclusive list of headache types/classifications (<https://www.ichd-3.org/how-to-use-the-classification/>), and to The National Institute for Health and Care Excellence<sup>149</sup> for additional signs, symptoms, and conditions that should be considered in patients who present with a headache in addi-

tion to neck pain. Overall, classification is critical for matching the intervention strategy that is most likely to provide the optimal outcome for a patient's condition. However, it is important for clinicians to understand that patients with neck pain often exhibit signs and symptoms that fit more than 1 classification, and that the most relevant impairments of body function and the associated intervention strategies often change during the patient's episode of care. Thus, continual re-evaluation of the patient's response to treatment and the patient's emerging clinical findings is important for providing the optimal interventions throughout the patient's episode of care.

### Component 3<sup>III</sup>

For research purposes, acute, subacute, and chronic stages are time-based stages helpful in classifying patient conditions and in making treatment decisions. In part, they define the stage of healing: in the acute phase, the condition is usually more irritable; in the subacute phase, the condition often exhibits moderate irritability; chronic conditions often have a lower degree of irritability. There are cases where the alignment of irritability and the duration of symptoms does not match, requiring clinicians to make judgments when applying time-based research results on a patient-by-patient basis. Irritability is a term used by rehabilitation practitioners to reflect the tissue's ability to handle physical stress,<sup>142</sup> and is presumably related to physical status and the extent of inflammatory activity that is present. Assessment of tissue irritability relies on clinical judgment, and is important for guiding the clinical decisions regarding treatment frequency, intensity, duration, and type, with the goal of matching the optimal dosage of treatment to the status of the tissue being treated. There are other biopsychosocial elements that may relate to staging of the condition, including, but not limited to, the level of disability reported by the patient, extent of interrupted sleep, medication dosage, and activity avoidance.<sup>34</sup>

### Component 4

Interventions are listed by category of neck pain, and ordered by stage (acute/subacute/chronic). Because irritability level often reflects the tissue's ability to accept physical stress, clinicians should match the most appropriate intervention strategies to the irritability level of the patient's condition.<sup>34,45,110,111</sup> Additionally, clinicians should attend to influences from psychosocial<sup>86</sup> and altered pain processing elements<sup>151</sup> in patients with conditions in all stages of recovery.