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Cervical Spine Non-Operative Guidelines

Adapted from Hospital for Special Surgery PT Program

The following guidelines developed by HSS Rehabilitation are categorized into levels of irritability as well as treatment sub-groups. These guidelines are intended to assist the clinician in structuring an individualized criteria-based treatment plan. They are based on the most current evidence and clinical pearls from experienced clinicians, however, are not meant to be a substitute for clinical reasoning and decision making. It is the clinician's responsibility to determine the most reasonable treatment model based on sound clinical judgement and assessment of objective clinical findings. For appropriate utilization of these guidelines, it is imperative that the clinician be familiar with the current clinical practice guidelines, treatment-based classifications systems and the influence of regional interdependence to make the most appropriate evidence-based decisions.

The clinician should use a patient-centered approach to promote function and general health. As the goals and plan of care are developed, the patient must take an active role in making informed decisions about their activities and behavior. The language used by the clinician during the evaluation and throughout all treatments has a substantial impact on outcomes. It is recommended that the clinician de-emphasize pathoanatomical explanations, and instead empower the patient by using language that promotes functional gains towards overall goals. It is recommended that the patient be provided with an appropriate home exercise program to promote active participation in the treatment plan throughout all phases of rehabilitation.

If any of these symptoms are present in conjunction with neck pain, refer for medical work up:

- New or recent trauma including:
 - Fall from elevation >3 feet or stairs
 - Axial load to head, e.g. diving, football
 - Motor vehicle collision at high speed (>60 miles per hour), rollover, ejection
 - Bicycle accident
- New onset of bowel and bladder dysfunction (retention/incontinence)
- Recent change in neurological status including paresthesias/numbness, dermatomal or myotomal abnormalities, upper motor neuron signs
- Sudden changes in auditory system, visual system, vestibular system and/or speech
- Severe/loss of coordination, recent increase in falls, fainting, drop attacks, nausea/vomiting, dizziness
- Recent concussion
- Include review of Systems/Red Flag screening, for example:
 - Previous history of cancer
 - Age < 20 years or >50 years (malignancy), >70 years (fracture)
 - Failure to improve with conservative care



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If any of these yellow flag risk factors (see reference #2) are present in conjunction with neck pain, consider the impact on patient progression and consider the possibility for psychological referral:

- Depression/anxiety
- Psychosocial issues (e.g. secondary gain issues, No-Fault cases)
- Work related conditions (e.g. job dissatisfaction, Worker's Compensation)
- Substance abuse or chronic opioid use

Follow physician modifications as prescribed.



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Cervical Spine Pain Non-Operative Clinical Guidelines

Phase I: Activity Modification (High to Moderate Irritability)

PRECAUTIONS

- Red, yellow, black flags
- Avoid exacerbating recurring symptoms

ASSESSMENT

- Neck Disability Index (NDI)
- Fear-Avoidance Belief Questionnaire Back (FABQ)
- Numeric Pain Rating Scale (NPRS)
- Static/Dynamic posture
- Bed posturing
- ROM (Active/Accessory/Physiologic ROM)
- Function based assessment of impairments
- Lifting, carrying, reaching
- Neurologic and neurodynamic examinations (include cranial nerve screen)
- Cluster testing for differential diagnosis
- Specific strength testing
- Core, neck, scapulothoracic, upper quarter
- Flexibility
- Neck-specific special tests, e.g. cranial cervical flexion test, neck flexor endurance test, cervical flexion-rotation test

TREATMENT RECOMMENDATIONS FOR ALL CATEGORIES OF NECK PAIN

SYMPTOM MODULATION – PAIN CONTROL

- Utilize directional preferences
- Encourage movement / activity vs. inactivity
- Traction: manual/mechanical
- Proprioceptive taping/bracing
- Soft tissue mobilization
- Joint mobilization/manipulation (see Blanpied et al, page A32)
- Provide education regarding proper posture and activity modification for work, home and leisure activities
- Consider an ergonomic evaluation



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TREATMENT RECOMMENDATIONS BY CATEGORY

Based on evaluative findings, patients are assigned to one or more of the following treatment categories:

NECK PAIN WITH MOBILITY DEFICITS

- Cervical and/or thoracic mobilization/manipulation
- Cervical range of motion
- Selective tissue stretching/mobilization

NECK PAIN WITH MOVEMENT COORDINATION IMPAIRMENTS

- Education of the patient to return to normal, non-provocative pre-accident activities as soon as possible
- Minimize use of soft collar
- Cervical isometrics
- Perform postural and mid-range mobility exercises to decrease pain and increase ROM
- Reassure patient that gradual recovery is expected

NECK PAIN WITH HEADACHES

- Cervical and/or thoracic mobilization/manipulation
- Upper cervical mobility (C1-2-3)
- Scapular and rib cage mobility
- Selective tissue stretching/mobilization

NECK PAIN WITH RADIATING PAIN

- Cervical mobilization to reduce nerve irritation
- Traction: manual/mechanical
- Proprioceptive training with laser (head lamp)
- Selective tissue stretching/mobilization

CRITERIA FOR ADVANCEMENT

- Independent symptom management
- Symptom improvement

EMPHASIZE

- Importance of being an active participant in recovery process
- Provide posture/activity modifications
- Function based language to describe symptoms



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Phase 2: Addressing Impairments (Moderate Progressing to Low Irritability)

PRECAUTIONS

- Avoid exacerbating recurrent symptoms
- Avoid loading spine if it results in symptomatic exacerbation/decline in neurological status

ASSESSMENT

- NDI
- FABQ
- NPRS
- Static/Dynamic posture
- Bed posturing
- ROM (Active/Accessory/Physiologic ROM)
- Function based assessment of impairments
 - Lifting, carrying, reaching
- Neurologic and neurodynamic examinations (include cranial nerve screen)
- Cluster testing for differential diagnosis
- Specific strength testing
 - Core, neck, scapulothoracic, upper quarter
- Flexibility
- Neck-specific special tests, e.g. cranial cervical flexion test, neck flexor endurance test, cervical flexion-rotation test

TREATMENT RECOMMENDATIONS

- Treat based on impairments and Treatment Based Classification
- Pain science education
- Proprioception training
- Laser
- PNF Patterns
- Neck and periscapular endurance exercises, e.g.
- Cranio-cervical flexion endurance
- Chin tuck progression
- I, T, Y Series exercises
- Strengthening and cardiovascular conditioning as indicated



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NECK PAIN WITH MOBILITY DEFICITS

- Cervical and/or thoracic mobilization/manipulation
- Selective tissue stretching and mobilization
- Cervical and thoracic range of motion
- Scapulothoracic and UE strengthening
- Neck and periscapular endurance exercises as above

NECK PAIN WITH MOVEMENT COORDINATION IMPAIRMENTS

- Cervical and/or thoracic mobilization/manipulation
- Proprioception training as above
- Scapulothoracic and UE strengthening
- Neck and periscapular endurance exercises as above
- Balance progressions

NECK PAIN WITH HEADACHES

- Cervical and/or thoracic mobilization/manipulation
 - Upper cervical mobility (C1-2-3)
 - Scapular and rib cage mobility
- Selective tissue stretching/mobilization
- Suboccipital release
- Proprioception training as above
- Neck and periscapular endurance exercises as above

NECK PAIN WITH RADIATING PAIN

- Cervical and/or thoracic mobilization/manipulation
- Selective tissue stretching and mobilization
- Mechanical Intermittent Traction
- Proprioception training as above
- Neck and periscapular endurance exercises as above

CRITERIA FOR ADVANCEMENT

- Independent symptom modulation
- No increase in symptoms with progressive activities
- Functional strength and range of motion

EMPHASIZE

- Patient education regarding recurrence rates with acute cervical pain
- Normalize mobility and ADL function
- Symptom modulation through posture control and sequencing in multiple planes



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Phase 3: Restoration of Function (Low to No Irritability)

PRECAUTIONS

- Symptom provocation with high impact/loading activities (i.e. jumping, tumbling, throwing, rapid head movements)

ASSESSMENT

- NDI
- FABQ
- NPRS
- Static/Dynamic posture
- Bed posturing
- ROM (Active/Accessory/Physiologic ROM)
- Function based assessment of impairments
 - Lifting, carrying, reaching
- Neurologic and neurodynamic examinations (include cranial nerve screen)
- Cluster testing for differential diagnosis
- Specific strength testing
 - Core, neck, scapulothoracic, upper quarter
- Flexibility
- Neck-specific special tests, e.g. cranial cervical flexion test, neck flexor endurance test, cervical flexion-rotation test

TREATMENT RECOMMENDATIONS

- Phase out manual therapy as appropriate
- Progress cervical and thoracic spine mobility exercises
- Progress proprioception training to incorporate full body coordination
- Dynamic balance activities
- Postural strengthening and endurance activities
 - Head/neck/shoulder relationship
- Begin multi-planar active range of motion spine activities
 - Include overhead UE AROM
 - Thoracic spine
 - PNF patterns
 - Upper extremity neuromuscular control
- Progress UE resistive activities
 - Closed chain UE strengthening, e.g.
 - Full planks, full yoga poses
 - Overhead scapular strengthening
 - Include LE resisted activities



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- Advanced neuromuscular control
 - PNF patterns with resistance or weight
- Plyometric UE/LE training
- Impact training
 - Return to run (if applicable)

CRITERIA FOR DISCHARGE (OR ADVANCEMENT IF RETURNING TO SPORT)

- Independent with progressive home/community-based activity programs
- Adequate strength and neuromuscular control of UE and LE
- ROM WFL
- Minimal to no pain with functional activities
- Independent with ADL's
- Independent symptom management
- **Discharge or move onto Phase 4 if the goal is to return to sport or advanced functional activities**

EMPHASIZE

- Advanced functional mobility
- Graded return to activity / work
- Maximize multi-planar and multi-joint function, neuromuscular control, and sequencing
- Self-monitor signs and symptoms during ADLs and occupational activities



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Phase 4: Return to Sport (if applicable)

PRECAUTIONS

- Avoid too much too soon- monitor exercise dosing
- Don't ignore functional progression
- Be certain to incorporate rest and recovery

ASSESSMENT

- NDI
- FABQ
- NPRS
- Static/Dynamic posture
- Bed posturing
- ROM (Active/Accessory/Physiologic ROM)
- Function based assessment of impairments
 - Lifting, carrying, reaching
- Neurologic and neurodynamic examinations (include cranial nerve screen)
- Cluster testing for differential diagnosis
- Specific strength testing
 - Core, neck, scapulothoracic, upper quarter
- Flexibility

TREATMENT RECOMMENDATIONS

- Activity specific training
- Sport specific warm up and activities
- High resistance training
- Dynamic neuromuscular re-education
- Agility and coordination drills as necessary for sport
- Multi-planar and rotational movement patterns
- Gradual loading of the spine to meet sport-specific demands
- Abdominal strength to meet sport-specific demands

CRITERIA FOR DISCHARGE (OR ADVANCEMENT IF RETURNING TO SPORT)

- Full activity participation
- **Independent symptom management**

EMPHASIZE

- Self-monitoring volume of exercise
- Self-monitoring of load progressions



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- Speed and accuracy
- Communication with appropriate Sports Performance expert



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