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## **Cervical Spine Post-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 is familiar with the current clinical practice guidelines and treatment-based classifications systems 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. Range of motion expectations will vary depending on the level of fusion as well as the number of levels fused and may remain similar to pre-operative levels.

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.

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

- New or recent trauma
- Recent change in neurological status (new onset of falls, nausea/vertigo/vomiting, dysphagia)
- Severe loss of coordination

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 Post-operative Guidelines**

### *Acute Care Phase: Week 1*

#### **PRECAUTIONS**

- Precautions if indicated by MD - no bending, lifting, or twisting (“BLT”)
  - Lifting restriction is not specified, generally accepted as lifting nothing heavier than 5 pounds
- Brace if indicated by MD

#### **ASSESSMENT**

- Activity Measure for Post-Acute Care (AmPAC)
- Mental status: A&O x 3
- Positional headaches (red flag for possible dural tear)
- Numeric Pain Rating Scale (NPRS)
- Wound status
- Post-anesthesia sensory motor screening
  - Post-operative numbness/weakness
- Functional status

#### **TREATMENT RECOMMENDATIONS**

- Ankle pumps & quadriceps sets
- Log roll transfers into and out of bed
- Gait training using appropriate device (with or without brace, as indicated by MD), progressing from walker to cane or no device
- ADL training (possible OT consult)
- Positioning recommendations – side-lying, supine, seated in chair
- Bracing based on surgeon recommendations
- Initiate and emphasize importance of progressive home ambulation program

#### **CRITERIA FOR ADVANCEMENT (DISCHARGE HOME)**

- Length of stay ranges from discharging day of surgery up to 4 days based on complexity of surgery and post-operative complications, e.g. increased drainage, pain
- Independent with all transfers
- Independent ambulation with appropriate assistive device
- Independent stair climbing if needed
- Observes spine precautions if indicated by MD



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- Patient/family expresses understanding of progressive home activity program
  - Change positions every hour, e.g. walk to bathroom, sit in chair, roll over, get a drink of water
  - Ambulate greater than 3x per day - length dependent on fatigue/endurance/pain; progress as tolerated

**EMPHASIZE**

- Demonstration of proper body mechanics and practice of good spine health, regardless of precaution protocol
- Activity/walking as tolerated
- Positional changes



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## **Cervical Spine Post-operative Guidelines**

### *Phase I: Activity Modification (High to Moderate Irritability)*

#### **PRECAUTIONS**

- Adhere to surgeon's precautions, as applicable
- Avoid exacerbating recurring symptoms
- Limit lifting to reduce activation of neck musculature

#### **ASSESSMENT**

- Screen for sinister pathology- if present, refer back to MD
  - Red flag screen
  - Sensory and motor baselines
- Neck Disability Index (NDI)
- Fear Avoidance Belief Questionnaire (FABQ)
- NPRS
- Incision/scar assessment
- Functional mobility
  - Bed mobility
  - Transfer skills
  - Gait efficiency and safety
  - Stair safety
- Balance assessment
  - Single leg stance (eyes open/eyes closed)
- Postural control and ability to self-correct posture
  - Statically and dynamically
- Neurologic and neurodynamic examinations
  - Cranial nerve testing
  - Vestibular screen as indicated

#### **TREATMENT RECOMMENDATIONS**

- Functional mobility training
- Core activation
- Proprioceptive exercises to improve general balance, e.g. postural correction
- Thoracic mobility
- Address upper quarter strength and motor sequencing
- Strength of scapular musculature
- Consider regional interdependence
- Manual therapy as indicated for joint and soft tissue restrictions



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#### **CRITERIA FOR ADVANCEMENT**

- No red flags or sinister pathology
- Adequate symptom control
- Adequate strength to lift light to medium weights positioned conveniently, e.g., carry one gallon of milk
- Postural awareness with appropriate scapular positioning and mobility

#### **EMPHASIZE**

- Ability to perform appropriate therapeutic exercise
- ADL's within pain tolerance
- Reinforce lifting limits



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## **Cervical Spine Post-operative Guidelines**

### *Phase 2: Activity Impairments (Moderate Progressing to Low Irritability)*

#### **PRECAUTIONS**

- Avoid exacerbating recurrent symptoms (radiculopathy and neural tension)

#### **ASSESSMENT**

- NDI
- FABQ
- NPRS
- Red & yellow flags
- Posture
- Gait
- Cervical AROM (mid-range/neutral planes)
- Balance assessment
  - Single leg stance (eyes open/eyes closed)
  - Romberg test/Tandem stance
- Functional movements
  - Upper quarter screening
    - Arm elevation, forward reach
    - Rotational thoracic mobility
- Neurologic and neurodynamic examinations as indicated
  - Cranial nerve testing
  - Vestibular screen

#### **TREATMENT RECOMMENDATIONS**

- Progression of Phase I exercises/activities
- Advance neutral spine activities with upper and lower extremity strengthening
- Normalize AROM
  - Thoracic and lumbar spine
  - Upper and lower extremities
  - Scapulothoracic mobility and positioning
- Manual therapy as indicated for joint and soft tissue restrictions
- Stationary biking and elliptical endurance training
- Postural strengthening and endurance activities
- Upper extremity (UE) strengthening activities
  - Scapular strengthening
  - Modified UE closed chain strengthening
    - Modified planks, yoga poses



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- Functional progressions through seated, standing, supine, side-lying, prone, quadruped
- Neuromuscular control exercises
  - PNF
- Balance exercises
  - Static progressing to dynamic as tolerated
- Impairment-based strengthening program
  - Combined upper extremity (UE)/lower extremity (LE) exercise
  - Core control

#### **CRITERIA FOR ADVANCEMENT**

- Minimal symptoms during functional activities
- Able to lift light to medium weights if placed appropriately, e.g. bags of groceries
- Independent with progressive HEP

#### **EMPHASIZE**

- Understanding of precautions
- ADL's within symptom tolerance
- Postural re-education endurance exercises
- Balance near normative values
- AROM as tolerated
- Functional return to work tasks



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## **Cervical Spine Post-operative Guidelines**

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

#### **PRECAUTIONS**

- Avoid exacerbating symptoms (radiculopathy and neural tension)

#### **ASSESSMENT**

- NDI
- FABQ
- NPRS
- Posture
- Cervicothoracic AROM (combined patterns)
- Functional movements
  - Upper quarter screening
    - Overhead lifting/reaching
    - Carrying appropriate weight for functional activity
    - UE plyometrics

#### **TREATMENT RECOMMENDATIONS**

- Manual therapy as indicated for joint and soft tissue restrictions
- Progression of Phase 2 exercises/activities
- Postural strengthening and endurance activities
  - Head/neck/shoulder relationship
- Begin multi-planar AROM spine activities
  - Include overhead UE AROM
  - Combined UE – spine – LE motions
- Progress UE resistive activities
  - Closed chain UE strengthening
    - Full planks, full yoga poses
  - Overhead scapular strengthening
  - Include LE resisted activities
- Advanced neuromuscular control
  - PNF patterns with resistance or weight
- Plyometric UE/LE training
- Impact training
  - Return to run (if applicable)





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**CRITERIA FOR DISCHARGE (OR ADVANCEMENT IF RETURN IF RETURNING TO SPORT)**

- Independent with progressive home/community-based activity programs
- Adequate strength and neuromuscular control of UE and LE
- ROM WFL
- Symptoms managed during work and functional activities
- Able to lift moderate or appropriately heavy weights without additional pain
- Independent with ADL's and progressive exercise routine
- Discharge or move onto phase 4 if the goal is to return to sport or advanced functional activities

**EMPHASIZE**

- Advanced functional mobility
- Promote independent return to work and ADL's
- Self-monitor signs and symptoms during ADL's and occupational activities
- Postural awareness in a variety of activities



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## **Cervical Spine Post-operative Guidelines**

### *Phase 4: Return to Sport (if applicable)*

#### **PRECAUTIONS**

- Clearance by MD for return to sport

#### **ASSESSMENT**

- NPRS
- Posture
- AROM in combined patterns
- Functional screening tools
  - Upper quarter screening
    - Sport or activity specific
  - Lower quarter screening

#### **CRITERIA FOR ADVANCEMENT OR DISCHARGE**

- Full activity participation
- Independent symptom management

#### **EMPHASIZE**

- Self-monitoring volume of exercise and load progressions
- Functional progressions
- Speed and accuracy
- Communication with appropriate Sports Performance expert



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