

**TITLE 19 LABOR  
DELAWARE ADMINISTRATIVE CODE**

**1000 DEPARTMENT OF LABOR  
1300 Division of Industrial Affairs  
1340 The Office of Workers' Compensation**

**1342 Health Care Practice Guidelines**

**PART F Cervical Treatment Guidelines**

**1.0 Introduction**

Pursuant to 19 **Del.C.** §2322C, health care practice guidelines have been adopted and recommended by the Health Care Advisory Panel to guide utilization of health care treatments in workers' compensation including, but not limited to, care provided for the treatment of employees by or under the supervision of a licensed health care provider, prescription drug utilization, inpatient hospitalization and length of stay, diagnostic testing, physical therapy, chiropractic care and palliative care. The health care practice guidelines apply to all treatments provided after the effective date of the regulation adopted by the Department of Labor, May 23, 2008, and regardless of the date of injury. The cervical treatment guidelines were added to the list of treatment guidelines, effective June 1, 2009. The guidelines are, to the extent permitted by the most current medical science or applicable science, based on well-documented scientific research concerning efficacious treatment for injuries and occupational disease. To the extent that well-documented scientific research regarding the above is not available at the time of, adoption of the guidelines, or is not available at the time of any revision to the guidelines, the guidelines have been and will be based upon the best available information concerning national consensus regarding best health care practices in the relevant health care community.

The guidelines, to the extent practical and consistent with the Act, address treatment of those physical conditions which occur with the greatest frequency, or which require the most expensive treatments, for work-related injuries based upon currently available Delaware data.

Services rendered by any health care provider certified pursuant to 19 **Del.C.** §2322D(a) to provide treatment or services for injured employees shall be presumed, in the absence of contrary evidence, to be reasonable and necessary if such treatment and/or services conform to the most current version of the Delaware health care practice guidelines.

Services rendered outside the Guidelines and/or variation in treatment recommendations from the Guidelines may represent acceptable medical care, be considered reasonable and necessary treatment and, therefore, determined to be compensable, absent evidence to the contrary, and may be payable in accordance with the Fee Schedule and Statute, accordingly.

Services provided by any health care provider that is not certified pursuant to 19 **Del.C.** §2322D(a) shall not be presumed reasonable and necessary unless such services are preauthorized by the employer or insurance carrier, subject to the exception set forth in 19 **Del.C.** §2322D(b).

Treatment of conditions unrelated to the injuries sustained in an industrial accident may be denied as unauthorized if the treatment is directed toward the non-industrial condition, unless the treatment of the unrelated injury is rendered necessary as a result of the industrial accident.

The Health Care Advisory Panel and Department of Labor recognized that acceptable medical practice may include deviations from these Guidelines, as individual cases dictate. Therefore, these Guidelines are not relevant as evidence of a provider's legal standard of professional care.

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In accordance with the requirements of the Act, the development of the health care guidelines has been directed by a predominantly medical or other health professional panel, with recommendations then made to the Health Care Advisory Panel.

### 2.0 General Guideline Principles

- 2.1 **TREATMENT PARAMETER** With respect to Therapy (Active or Passive), time frames/visits for specific interventions commence once treatments have been initiated, not on the date of injury. Obviously, duration will be impacted by patient compliance, as well as comorbidities and availability of services. Clinical judgment may substantiate the need to accelerate or decelerate modify the time frames total number of visits discussed in this document. The majority of injured workers with Cervical pain often will achieve resolution of their condition within 8 to 24 visits (Guide to Physical Therapy Practice - Second Edition). It is anticipated that most injured workers will not require the maximum number of visits described in these guidelines. They are designed to be a ceiling and care extending beyond the maximum allowed visits may warrant utilization review.
- 2.2 **ACTIVE INTERVENTIONS** emphasizing patient responsibility, such as therapeutic exercise and/or functional treatment, are generally emphasized over passive modalities, especially as treatment progresses. Generally, passive interventions are viewed as a means to facilitate progress in an active rehabilitation program with concomitant attainment of objective functional gains. All rehabilitation programs must incorporate "Active Interventions" no later than twelve visits or three weeks after the onset of treatment. Reimbursement for passive modalities only after the first twelve visits three weeks of treatment without clear evidence of Active Interventions will require supportive documentation.
- 2.3 **ACTIVE THERAPEUTIC EXERCISE PROGRAM** goals should incorporate patient strength, endurance, flexibility, coordination, and education. This includes functional application in vocational or community settings.
- 2.4 **POSITIVE PATIENT RESPONSE** results are defined primarily as functional gains that can be objectively measured. Objective functional gains include, but are not limited to, positional tolerances, range of motion (ROM), strength, endurance, activities of daily living, cognition, behavior, and efficiency/velocity measures that can be quantified. Subjective reports of pain and function should be considered and given relative weight when the pain has anatomic and physiologic correlation.
- 2.5 **RE-EVALUATE TREATMENT EVERY 3 TO 4 WEEKS** With respect to Therapy (Active or Passive), if a given treatment or modality is not producing positive results within 3 to 4 weeks, the treatment may be either modified or discontinued. Reconsideration of diagnosis should also occur in the event of poor response to a seemingly rational intervention.
- 2.6 **SURGICAL INTERVENTIONS** should be contemplated within the context of expected functional outcome and not purely for the purpose of pain relief. All operative interventions must be based upon positive correlation of clinical findings, clinical course, and diagnostic tests. A comprehensive assimilation of these factors must lead to a specific diagnosis with positive identification of pathologic conditions.
- 2.7 **SIX-MONTH TIME FRAME** The prognosis drops precipitously for returning an injured worker to work once he/she has been temporarily totally disabled for more than six months. The emphasis within these guidelines is to move patients along a continuum of care and return to work within a six-month time frame, whenever possible. It is important to note that time frames may not be pertinent to injuries that do not involve work-time loss or are not occupationally related.

- 2.8 **RETURN-TO-WORK** is therapeutic, assuming the work is not likely to aggravate the basic problem or increase long-term pain. The following physical limitations should be considered and modified as recommended: lifting, pushing, pulling, crouching, walking, using stairs, bending at the waist, awkward and/or sustained postures, tolerance for sitting or standing, hot and cold environments, data entry and other repetitive motion tasks, sustained grip, tool usage and vibration factors. Even if there is residual chronic pain, return-to-work is not necessarily contraindicated. The practitioner should understand all of the physical demands of the patient's job position before returning the patient to full duty and should receive clarification of the patient's job duties.
- 2.9 **GUIDELINE RECOMMENDATIONS AND INCLUSION OF MEDICAL EVIDENCE.** Recommendations are based on available evidence and/or consensus recommendations of the standard of care within Delaware. Those procedures considered inappropriate, unreasonable, or unnecessary are designated in the guideline as being "not recommended."
- 2.10 **DELAYED RECOVERY.** The Department recognizes that not all industrially injured patients will recover within the time lines outlined in this document despite optimal care. Such individuals may require treatments beyond the limits discussed within this document, but such treatment will require clear documentation by the authorized treating practitioner focusing on objective functional gains afforded by further treatment and impact upon prognosis.

### 3.0 Initial Diagnostic Procedures

The Division recommends the following diagnostic procedures be considered, at least initially, the responsibility of the workers' compensation carrier to ensure that an accurate diagnosis and treatment plan can be established. Standard procedures, that should be utilized when initially diagnosing a work-related Cervical pain complaint, are listed below.

- 3.1 **HISTORY-TAKING AND PHYSICAL EXAMINATION (Hx & PE)** are generally accepted, well established and widely used procedures that establish the foundation/basis for and dictates subsequent stages of diagnostic and therapeutic procedures. When findings of clinical evaluations and those of other diagnostic procedures are not complementing each other, the objective clinical findings should have preference. The medical records should reasonably document the following.
- 3.1.1 **History of Present Injury** A detailed history, taken in temporal proximity to the time of injury should primarily guide evaluation and treatment.
- 3.1.2 **Physical Examination:** may include accepted tests and exam techniques applicable to the area being examined:
- 3.1.2.1 Visual inspection, including posture;
- 3.1.2.2 Cervical range-of-motion, quality of motion, and presence of muscle spasm. Motion evaluation of specific joints may be indicated. Range-of-motion should not be checked in acute trauma cases until fracture and instability have been ruled out on clinical examination, with or without radiographic evaluation;
- 3.1.2.3 Examination of thoracic spine
- 3.1.2.4 Palpation of spinous processes, facets, and muscles noting myofascial tightness, tenderness, and trigger points;
- 3.1.2.5 Motor and sensory examination of the upper muscle groups with specific nerve root focus, as well as sensation to light touch, pin prick, temperature, position and vibration. More than 2 cm difference in the circumferential measurements of the two upper extremities may indicate chronic muscle wasting; and

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3.1.2.6 Deep tendon reflexes. Asymmetry may indicate pathology. Inverted reflexes (e.g. arm flexion or triceps tap) may indicate nerve root or spinal cord pathology at the tested level. Pathologic reflexes include wrist, clonus, grasp reflex, and Hoffman's sign.

3.1.3 **Spinal Cord Evaluation:** In cases where the mechanism of injury, history, or clinical presentation suggests a possible severe injury, additional evaluation is indicated. A full neurological examination for possible spinal cord injury may include:

3.1.3.1 Sharp and light touch, deep pressure, temperature, and proprioceptive sensory function;

3.1.3.2 Strength testing;

3.1.3.3 Anal sphincter tone and/or perianal sensation;

3.1.3.4 Presence of pathological reflexes of the upper and lower extremities; or

3.1.3.5 Evidence of an Incomplete Spinal Cord Injury Syndrome-

3.1.3.5.1 Anterior Cord Syndrome is characterized by the loss of motor function and perception of pain and temperature below the level of the lesion with preservation of touch, vibration, and proprioception. This is typically seen after a significant compressive or flexion injury. Emergent CT or MRI is necessary to look for a possible reversible compressive lesion requiring immediate surgical intervention. The prognosis for recovery is the worst of the incomplete syndromes.

3.1.3.5.2 Brown-Sequard Syndrome is characterized by ipsilateral motor weakness and proprioceptive disturbance with contralateral alteration in pain and temperature perception below the level of the lesion. This is usually seen in cases of penetrating trauma or lateral mass fracture. Surgery is not specifically required, although debridement of the open wound may be.

3.1.3.5.3 Central Cord Syndrome is characterized by sensory and motor disturbance of all limbs, often upper extremity more than lower, and loss of bowel and bladder function with preservation of perianal sensation. This is typically seen in elderly patients with a rigid spine following hyperextension injuries. Surgery is not usually required.

3.1.3.5.4 Posterior Cord Syndrome, a rare condition, is characterized by loss of sensation below the level of the injury, but intact motor function.

3.1.3.6 Spinal cord lesions may be classified according to the American Spine Injury Association (ASIA) impairment scale.

<b>ASIA IMPAIRMENT SCALE</b>
A = Complete: No motor or sensory function is preserved in the sacral segments S4-S5
B = Incomplete: Sensory but not motor function is preserved below the neurological level and includes the sacral segments S4-S5
C = Incomplete: Motor function is preserved below the neurological level, and more than half of key muscles below the neurological level have a muscle grade less than 3
D = Incomplete: Motor function is preserved below the neurological level, and at least half of key muscles below the neurological level have a grade of 3 or more
E = Normal: motor and sensory function are normal

A worksheet which details dermatomes and muscle testing required is available from ASIA.

- 3.1.4 **Soft Tissue Injury Evaluation:** Soft tissue injuries are traumatic injuries to the muscles, ligaments, tendons, and/or connective tissue. The most common mechanism is sudden hyperextension and/or hyperflexion of the neck. Acceleration/deceleration on the lateral plane may also result in one of these syndromes. A true isolated cervical strain is not associated with focal neurological symptoms. The signs and pathophysiology of these injuries are not well understood. Soft tissue injuries may include cervical strain, myofascial syndromes, somatic dysfunction, and fractures.

- 3.2 **RADIOGRAPHIC IMAGING** of the Cervical spine is a generally accepted, well-established and widely used diagnostic procedure when specific indications based on history and/or physical examination are present. The mechanism of injury and specific indications for the radiograph should be listed on the request form to aid the radiologist and x-ray technician. Suggested indications may include:

- 3.2.1 History of trauma,
- 3.2.2 Age over 55 years;
- 3.2.3 Unexplained or persistent Cervical pain for at least 6 weeks or pain that is worse with rest;
- 3.2.4 Localized pain, fever, constitutional symptoms, or history or exam suggestive of intravenous drug abuse, prolonged steroid use, or osteomyelitis;
- 3.2.5 Suspected lesion in the Cervical spine due to systemic illness such as a rheumatic/rheumatoid disorder or endocrinopathy. Suspected lesions may require special views;
- 3.2.6 Past medical history suggestive of pre-existing spinal disease, osteoporosis, spinal instrumentation, or cancer; and
- 3.2.7 Prior to high-velocity/low amplitude manipulation or Grade IV to V mobilization.

- 3.3 **LABORATORY TESTING** Laboratory tests are generally accepted, well-established and widely used procedures. They are, however, rarely indicated at the time of initial evaluation,

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unless there is suspicion of systemic illness, infection, neoplasia, or underlying rheumatologic disorder, connective tissue disorder, or based on history and/or physical examination. Laboratory tests can provide useful diagnostic information. Tests include, but are not limited to:

- 3.3.1 Complete blood count (CBC) with differential can detect infection, blood dyscrasias, and medication side effects;
- 3.3.2 Erythrocyte sedimentation rate (ESR), rheumatoid factor (RF), antinuclear antigen (ANA), human leukocyte antigen (HLA), and C-reactive protein (CRP), can be used to detect evidence of a rheumatologic, infectious, or connective tissue disorder;
- 3.3.3 Serum calcium, phosphorous, uric acid, alkaline phosphatase, and acid phosphatase can detect metabolic bone disease;
- 3.3.4 Urinalysis for bacteria (usually with culture and sensitivity), calcium, phosphorus, hydroxyproline, or hematuria; and
- 3.3.5 Liver and kidney function may be performed for prolonged anti-inflammatory use or other medications requiring monitoring.

#### 4.0 Diagnostic Imaging and Testing Procedures

One diagnostic imaging procedure may provide the same or distinctive information as does another procedure. Therefore, the prudent choice of a single diagnostic procedure, a complement of procedures or a sequence of procedures will optimize diagnostic accuracy; maximize cost effectiveness (by avoiding redundancy), and minimize potential adverse effects to patients. All imaging procedures have a degree of specificity and sensitivity for various diagnoses. No isolated imaging test can assure a correct diagnosis. Clinical information obtained by history taking and physical examination should form the basis for selecting an imaging procedure and interpreting its results. Magnetic resonance imaging (MRI), myelography, or Computed Axial Tomography (CT) scanning following myelography may provide useful information for many spinal disorders. When a diagnostic procedure, in conjunction with clinical information, can provide sufficient information to establish an accurate diagnosis, the second diagnostic procedure will become a redundant procedure. At the same time, a subsequent diagnostic procedure can be a complementary diagnostic procedure if the first or preceding procedures, in conjunction with clinical information, cannot provide an accurate diagnosis. Usually, preference of a procedure over others depends upon availability, a patient's tolerance, and/or the treating practitioner's familiarity with the procedure.

- 4.1 **IMAGING STUDIES** are generally accepted, well-established and widely used diagnostic procedures. When indicated, imaging studies can be utilized for further evaluation of the Cervical spine, based upon the mechanism of injury, symptoms, and patient history. Prudent choice of a single diagnostic study, a complementary combination of studies, or a proper sequential order of complementary studies will help ensure maximum diagnostic accuracy and minimize adverse effect to the patient. When the findings of the diagnostic imaging and testing procedures are not consistent with the clinical examination, the clinical findings should have preference.

The studies below are listed in frequency of use, not importance:

- 4.1.1 **Magnetic Resonance Imaging (MRI):** is the imaging study of choice for most abnormalities of the cervical spine. MRI is useful in suspected nerve root compression, in myelopathy to evaluate the spinal cord and/or masses, infections such as epidural abscesses or disc space infection, bone marrow involvement by metastatic

disease, and/or suspected disc herniation or cord contusion following severe neck injury. MRI should be performed immediately if there is a question of infection or metastatic disease with cord compression. MRI is contraindicated in patients with certain implanted devices. In general, the high field, conventional, MRI provides better resolution. A lower field scan may be indicated when a patient cannot fit into a high field scanner or is too claustrophobic despite sedation. Inadequate resolution on the first scan may require a second MRI using a different technique. All questions in this regard should be discussed with the MRI center and/or radiologist.

- 4.1.2 **Computed Axial Tomography (CT)** provides excellent visualization of bone and is used to further evaluate bony masses and suspected fractures and joints not clearly identified on radiographic evaluation. It may sometimes be done as a complement to MRI scanning to better delineate bony osteophyte formation in the neural foramen. Instrument-scatter reduction software provides better resolution when metallic artifact is of concern.
- 4.1.3 **Myelography** is the injection of radiopaque material into the spinal subarachnoid space, with x-rays then taken to define anatomy. It may be used as a pre-surgical diagnostic procedure to obtain accurate information of characteristics, location, and spatial relationships among soft tissue and bony structures. The use of small needles and a less toxic, water-soluble, nonionic contrast is recommended.
- 4.1.4 **CT Myelogram** provides more detailed information about relationships between neural elements and surrounding anatomy.
- 4.1.5 **Bone Scan (Radioisotope Bone Scanning)** is generally accepted, well established, and widely used. Bone scanning is more sensitive but less specific than MRI. <sup>99m</sup>Techneium diphosphonate uptake reflects osteoblastic activity and may be useful in diagnosing metastatic/primary bone tumors, stress fractures, osteomyelitis, and inflammatory lesions, but cannot distinguish between these entities.
- 4.1.6 **Other Radioisotope Scanning:** Indium and gallium scans are generally accepted, well-established, and widely used procedures usually to help diagnose lesions seen on other diagnostic imaging studies. <sup>67</sup>Gallium citrate scans are used to localize tumor, infection, and abscesses. <sup>111</sup>Indium-labeled leukocyte scanning is utilized for localizing infection or inflammation.
- 4.1.7 **Dynamic [Digital] Fluoroscopy:** Dynamic [Digital] Fluoroscopy of the Cervical spine measures the motion of intervertebral segments using a videofluoroscopy unit to capture images as the subject performs Cervical flexion and extension, storing the anatomic motion of the spine in a computer. Currently it is not recommended for use in the diagnosis of Cervical instability, since there is limited information on normal segmental motion for the age groups commonly presenting with Cervical pain, and diagnostic criteria for specific spinal conditions are not yet defined. No studies have yet demonstrated predictive value in terms of standard operative and non-operative therapeutic outcomes.
- 4.1.8 **Diagnostic Spinal Ultrasound** is not recommended in the Cervical, Thoracic and Lumbar Spine
- 4.2 **OTHER TESTS** The following diagnostic procedures in this subsection are listed in alphabetical order, not by importance:
- 4.2.1 **Electrodiagnostic Testing:**
- 4.2.1.1 Electromyography (EMG), Nerve Conduction Studies (NCS) are generally accepted, well-established and widely used diagnostic procedures. EMG and NCS, when performed and interpreted by a trained physician/electrophysiologist, may be useful for patients with suspected neural involvement whose symptoms are persistent or unresponsive to initial

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conservative treatments. They are used to differentiate peripheral neural deficits from radicular and spinal cord neural deficits and to rule out concomitant myopathy. However, F-Wave Latencies are not diagnostic for radiculopathy. NCS without needle EMG is not diagnostic for radiculopathy and therefore is not recommended.

In general, EMG and NCS are complementary to imaging procedures such as CT, MRI, and/or myelography or diagnostic injection procedures. Electrodiagnostic studies may provide useful, correlative neuropathophysiological information that would be otherwise unobtainable from the radiologic studies discussed above.

4.2.1.2 Portable Automated Electrodiagnostic Device (also known as Surface EMG) is not a substitute for conventional diagnostic testing in clinical decision-making, and therefore, is not recommended.

4.2.1.3 Somatosensory Evoked Potential (SSEP) is not recommended to identify radiculopathy. It may be used to evaluate myelopathy and other rare neurological disorders such as neurogenic bladder and sexual dysfunction.

4.2.1.4 Current Perception Threshold (CPT) Evaluation may be useful as a screening tool, but its diagnostic efficacy in the evaluation of industrial Cervical pain has not been determined. Therefore, CPT is not recommended as a diagnostic tool.

### 4.2.2 Injections - Diagnostic

4.2.2.1 Description - Diagnostic spinal injections are generally accepted, well-established procedures. These injections may be useful for localizing the source of pain, and may have added therapeutic value when combined with injection of therapeutic medication(s).

4.2.2.2 Indications - Since these procedures are invasive, less invasive or non-invasive procedures should be considered first. Selection of patients, choice of procedure, and localization of the level for injection should be determined by clinical information.

4.2.2.3 The interpretation of the test results are primarily based on functional change, symptom report, and pain response (via a recognized pain scale), before and at an appropriate time period after the injection. The diagnostic significance of the test result should be evaluated in conjunction with clinical information and the results of other diagnostic procedures. Injections with local anesthetics of differing duration may be used to support a diagnosis. In some cases, injections at multiple levels may be required to accurately diagnose neck pain.

Multiple injections provided at the same session without staging may seriously dilute the diagnostic value of these procedures. Practitioners must carefully weigh the diagnostic value of the procedure against the possible therapeutic value.

4.2.2.4 Special Requirements for Diagnostic Injections Since multi-planar fluoroscopy during procedures is required to document technique and needle placement, an experienced physician should perform the procedure. Permanent images are required to verify needle placement. The subspecialty disciplines of the physicians performing the injections may be varied, including,



but not limited to: anesthesiology, radiology, surgery, or physiatry. The practitioner should document hands-on training through workshops of the type offered by organizations such as the International Spine Intervention Society (ISIS) and/or completed fellowship training with interventional training. They must also be knowledgeable in radiation safety.

4.2.2.5 Specific Diagnostic Injections In general, relief should last for at least the duration of the local anesthetic used and should significantly relieve pain and result in functional improvement. Refer to "Injections - Therapeutic" for information on specific therapeutic injections.

4.2.2.5.1 Medial Branch Blocks are generally accepted diagnostic injections, used to determine whether a patient is a candidate for radiofrequency medial branch neurotomy (also known as facet rhizotomy). To be a positive diagnostic block, the patient should report a reduction of pain of 50% or greater relief from baseline or the length of time appropriate for the local anesthetic used. A separate comparative block on a different date may be performed to confirm the level of involvement. A comparative block uses anesthetics of varying lengths of activity.

Frequency and Maximum Duration: May be repeated once for comparative blocks. Limited to 4 levels

4.2.2.5.2 Transforaminal injections are generally accepted and useful in identifying spinal pathology. When performed for diagnosis, small amounts of local anesthetic up to a total volume of 1.0 cc should be used to determine the level of nerve root irritation. A positive diagnostic block should result in a positive diagnostic functional benefit and an 50% reduction in nerve-root generated pain appropriate for the anesthetic used as measured by accepted pain scales (such as a VAS). The use of a non-particulate steroid is recommended.

Frequency and Maximum Duration: Once per suspected level. Limited to three levels. May be repeated once for confirmation.

4.2.2.5.3 Zygapophyseal (Facet) Blocks: Facet blocks are generally accepted. They may be used diagnostically to direct functional rehabilitation programs. A positive diagnostic block should result in a positive diagnostic functional benefit and an 50% reduction in pain appropriate for the anesthetic used as measured by accepted pain scales (such as a VAS). They then may be repeated per the therapeutic guidelines.

Frequency and maximum Duration: Once per suspected level, limited to three levels. May be repeated for confirmation.

Atlanto-Axial and Atlanto-Occipital injections are generally accepted for diagnosis and treatment but do not lend themselves to denervation techniques owing to variable neuroanatomy. Injection of this articulation is complicated by the proximity of the vertebral artery, which may be tortuous at the level of the C1 joint. Inadvertent injection of the vertebral artery may cause respiratory arrest, seizure, stroke, or permanent neurological sequelae. Only practitioners skilled in these injections should perform them.

Frequency and Maximum Duration: Once per side

#### 4.2.3 **Provocation Discography**

4.2.3.1 Description - Discography is an accepted diagnostic procedure to identify or refute a discogenic source of pain for patients who are surgical candidates. Discography should only be performed by physicians who

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are experienced and have been proctored in the technique. It is essential that all indications, pre-conditions, special considerations, procedures, reporting requirements, and results are carefully and specifically followed. Results should be interpreted judiciously.

4.2.3.2 Indications - Discography may be indicated when a patient has a history of functionally limiting, unremitting Cervical pain of greater than four months duration, with or without arm pain, which has been unresponsive to all conservative interventions. A patient who would not consider operative therapeutic intervention is not a candidate for an invasive nontherapeutic intervention, such as provocation discography.

Discography may prove useful for the evaluation of the pre-surgical spine, such as pseudarthrosis, discogenic pain at levels above or below a prior spinal fusion, annular tear, or internal disc disruption.

Discography may show disc degeneration and annular disruption in the absence of low neck pain. Discography may also elicit concordant pain in patients with mild and functionally inconsequential neck pain. Because patients with mild neck pain should not be considered for invasive treatment, discography should not be performed on these patients. In symptomatic patients with annular tears on discography, the side of the tear does not necessarily correlate with the side on which the symptoms occur. The presence of an annular tear does not necessarily identify the tear as the pain generator.

Discography may have a limited place in the work-up of pseudarthrosis. Discography may prove useful in evaluating the number of Cervical spine levels that might require fusion. CTDiscography provides further detailed information about morphological abnormalities of the disc and possible lateral disc herniations.

4.2.3.3 Pre-conditions for provocation discography include all of the following:

4.2.3.3.1 A patient with functionally limiting, unremitting neck and/or leg pain of greater than four months duration in whom conservative treatment has been unsuccessful and in whom the specific diagnosis of the pain generator has not been made apparent on the basis of other noninvasive imaging studies (e.g., MRI, CT, plain films, etc.). It is recommended that discography be reserved for use in patients with equivocal MRI findings, especially at levels adjacent to clearly pathological levels. Discography may be more sensitive than MRI or CT in detecting radial annular tears. However, radial tears must always be correlated with clinical presentation.

4.2.3.3.2 Patients who are considered surgical candidates (e.g., symptoms are of sufficient magnitude and the patient has been informed of the possible surgical options that may be available based upon the results of discography).

4.2.3.3.3 Informed consent regarding the risks and potential diagnostic benefits of discography has been obtained.

4.2.3.4 Special Considerations:

4.2.3.4.1 Discography should not be performed by the physician expected to perform the therapeutic procedure. The procedure

should be carried out by an experienced individual who has received specialized training in the technique of provocation discography.

4.2.3.4.2 Discography should be performed in a blinded format that avoids leading the patient with anticipated responses. The procedure should include one or more disc levels thought to be normal or non-painful in order to serve as an internal control. The patient should not know what level is being injected in order to avoid spurious results. Abnormal disc levels may be repeated to confirm concordance.

4.2.3.4.3 Sterile technique must be utilized.

4.2.3.4.4 Judicious use of light sedation during the procedure is acceptable, represents the most common practice nationally at the current time, and is recommended by most experts in the field. The patient must be awake and able to accurately report pain levels during the provocation portion of the procedure.

4.2.3.4.5 The discography may be performed using a manometer to record pressure.

4.2.3.4.6 Intradiscal injection of local anesthetic may be carried out after the provocation portion of the examination and the patient's response.

4.2.3.4.7 It is recommended that a post-discogram CT be considered as it frequently provides additional useful information about disc morphology or other pathology.

4.2.3.5 Reporting of Discography - In addition to a narrative report, the discography report should contain a standardized classification of (a) disc morphology (b) the pain response, and (c) the pressure at which pain is produced. All results should be clearly separated in the report from the narrative portion. Asymptomatic annular tears are common and the concordant pain response is an essential finding for a positive discogram.

4.2.3.5.1 When discography is performed to identify the source of a patient's neck pain, both a concordant pain response and morphological abnormalities must be present at the pathological level prior to initiating any treatment directed at that level. The patient must be awake during the provocation phase of the procedure; therefore, sedative medication must be carefully titrated.

4.2.3.5.2 Reporting of pain response should be consistent with the operational criteria of the International Spine Intervention Society (ISIS) Guidelines. The report must include the level of concordance for neck pain using a 10-point VAS, or similar quantitative assessment. It should be noted that change in the VAS scale before and after provocation is more important than the number reported.

4.2.4 **Thermography** is an accepted and established procedure, but has no use as a diagnostic test for Cervical pain and is not recommended.

## 5.0 Therapeutic Procedures - Non-Operative

Patients undergoing therapeutic procedure(s) are encouraged to return to modified or restricted duty during their rehabilitation at the earliest appropriate time. Refer to "Return-to-Work" in this section for detailed information.

Cessation and/or review of treatment modalities should be undertaken when no further significant subjective or objective improvement in the patient's condition is noted. If patients

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are not responding within the recommended duration periods, alternative treatment interventions, further diagnostic studies or consultations should be pursued. Providers should provide and document education to the patient. No treatment plan is complete without addressing issues of individual and/or group patient education as a means of facilitating self-management of symptoms.

Home therapy is an important component of therapy and may include active and passive therapeutic procedures, as well as, other modalities to assist in alleviating pain, swelling, and abnormal muscle tone.

The following procedures are listed in alphabetical order.

5.1 **ACUPUNCTURE** is an accepted and widely used procedure for the relief of pain and inflammation, and there is some scientific evidence to support its use. The exact mode of action is only partially understood. Western medicine studies suggest that acupuncture stimulates the nervous system at the level of the brain, promotes deep relaxation, and affects the release of neurotransmitters. Acupuncture is commonly used as an alternative or in addition to traditional Western pharmaceuticals. While it is commonly used when pain medication is reduced or not tolerated, it may be used as an adjunct to physical rehabilitation and/or surgical intervention to hasten the return of functional activity. Acupuncture should be performed by MD, DO or DC with appropriate training.

5.1.1 **Acupuncture:** is the insertion and removal of filiform needles to stimulate acupoints (acupuncture points). Needles may be inserted, manipulated, and retained for a period of time.

Acupuncture can be used to reduce pain, reduce inflammation, increase blood flow, increase range of motion, decrease the side effect of medication-induced nausea, promote relaxation in an anxious patient, and reduce muscle spasm.

Indications include joint pain, joint stiffness, soft tissue pain and inflammation, paresthesia, postsurgical pain relief, muscle spasm, and scar tissue pain.

5.1.2 **Acupuncture with Electrical Stimulation:** is the use of electrical current (micro-amperage or milli-amperage) on the needles at the acupuncture site. It is used to increase effectiveness of the needles by continuous stimulation of the acupoint. Physiological effects (depending on location and settings) can include endorphin release for pain relief, reduction of inflammation, increased blood circulation, analgesia through interruption of pain stimulus, and muscle relaxation.

It is indicated to treat chronic pain conditions, radiating pain along a nerve pathway, muscle spasm, inflammation, scar tissue pain, and pain located in multiple sites.

5.1.3 **Total Time Frames For Acupuncture and Acupuncture with Electrical Stimulation:** Time frames are not meant to be applied to each of the above sections separately. The time frames are to be applied to all acupuncture treatments regardless of the type or combination of therapies being provided.

Time to produce effect: 3 to 6 treatments

Frequency: 1 to 3 times per week Maximum course duration: 14 treatments (one course). Any of the above acupuncture treatments may extend longer if objective functional gains can be documented or when symptomatic benefits facilitate progression in the patient's treatment program. An additional course of treatment beyond 14 treatments may be documented with respect to need and ability to facilitate positive symptomatic or functional gains. Such care should be re-evaluated and documented with each series of treatments.

5.1.4 **Other Acupuncture Modalities:** Acupuncture treatment is based on individual patient needs and therefore treatment may include a combination of procedures to enhance treatment effect. Other procedures may include the use of heat, soft tissue manipulation/massage, and exercise. Refer to Active Therapy (Therapeutic Exercise) and Passive Therapy sections (Massage and Superficial Heat and Cold Therapy) for a description of these adjunctive acupuncture modalities and time frames.

5.2 **BIOFEEDBACK** is a form of behavioral medicine that helps patients learn self awareness and self-regulation skills for the purpose of gaining greater control of their physiology, such as muscle activity, brain waves, and measures of autonomic nervous system activity. Electronic instrumentation is used to monitor the targeted physiology and then displayed or fed back to the patient visually, auditorially, or tactilely, with coaching by a biofeedback specialist. Biofeedback is provided by clinicians certified in biofeedback and/or who have documented specialized education, advanced training, or direct or supervised experience qualifying them to provide the specialized treatment needed (e.g., surface EMG, EEG, or other).

Treatment is individualized to the patient's work-related diagnosis and needs. Home practice of skills is required for mastery and may be facilitated by the use of home training tapes. The ultimate goal of biofeedback treatment is to normalize physiology to the pre-injury status to the extent possible, and involves transfer of learned skills to the workplace and daily life. Candidates for biofeedback therapy or training must be motivated to learn and practice biofeedback and self-regulation techniques. Indications for biofeedback include individuals who are suffering from musculoskeletal injury in which muscle dysfunction or other physiological indicators of excessive or prolonged stress response affects and/or delays recovery. Other applications include training to improve self-management of emotional stress/pain responses such as anxiety, depression, anger, sleep disturbance, and other central and autonomic nervous system imbalances. Biofeedback is often used in conjunction with other treatment modalities.

Time to produce effect: 3 to 4 visits

Frequency: 1 to 2 times per week

Maximum duration: 10 to 12 visits. Treatment beyond 12 visits must be documented with respect to need, expectation, and ability to facilitate positive functional gains.

### 5.3 **INJECTIONS - THERAPEUTIC**

5.3.1 **Therapeutic Spinal Injections:** Description - Therapeutic spinal injections may be used after initial conservative treatments have been undertaken. Therapeutic injections should, with rare exceptions, be used only after imaging studies and/or diagnostic injections have established pathology. Special Considerations - For all injections (excluding trigger point), multi-planar fluoroscopic guidance during procedures is required to document technique and needle placement, and should be performed by a physician experienced in the procedure. Permanent images are required to verify needle placement. The subspecialty disciplines of the physicians performing injections may be varied, including, but not limited to: anesthesiology, radiology, surgery, or physiatry. The practitioner should document hands-on training through workshops of the type offered by organizations such as the International Spine Intervention Society (ISIS) and/or completed fellowship training in pain medicine with interventional training. They must also be knowledgeable in radiation safety.

5.3.1.1 **Epidural Steroid Injection (ESI)**

5.3.1.1.1 **Description -** Epidural steroid injections are injections of corticosteroid into the epidural space. The purpose of ESI is to reduce pain and inflammation in the acute or sub-acute phases of injury. ESI uses two approaches: transforaminal, interlaminar (midline).

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5.3.1.1.2 Needle Placement - Multi-planar fluoroscopic imaging is required for all epidural steroid injections. Contrast epidurograms allow one to verify the flow of medication into the epidural space. Permanent images are required to verify needle replacement.

5.3.1.1.3 Indications - There is some evidence that epidural steroid injections are effective for patients with radicular pain or radiculopathy (sensory or motor loss in a specific dermatome or myotome). Up to 80% of patients with radicular pain may have initial relief. However, only 25-57% are likely to have excellent long-term relief. Although there is no evidence regarding the effectiveness of ESI for nonradicular disc herniation, it is an accepted intervention.

Frequency: One or more levels can be injected in one session. Whether injections are repeated depends upon the patient's response to the previous injection. Subsequent injections may occur. Injections can be repeated if the patient has demonstrated functional gain and/or pain returns or worsens.

Maximum duration: Six treatments (a treatment may include injections at one or two levels) may be done in one year, as per the patient's response to pain and function. Patients should be reassessed for improvement in pain (as measured by accepted pain scales) and/or evidence of functional improvement.

5.3.1.2 Zygapophyseal (Facet) Injection

5.3.1.2.1 Description - A generally accepted intra-articular or pericapsular injection of local anesthetic and corticosteroid.

5.3.1.2.2 Indications- Patients with pain suspected to be facet mediated in origin. Facet injections may be repeated if they result in increased documented functional benefit for at least 4 to 6 weeks and/or at least an 50% initial improvement in pain scales as measured by accepted pain scales (such as VAS).

Maximum Duration: 4 per level per year. Maximum three levels

5.3.1.3 Intradiscal Steroid Therapy: Intradiscal Steroid Therapy consists of injection of a steroid preparation into the intervertebral disc under fluoroscopic guidance at the time of discography. There is good evidence that it is not effective in the treatment of suspected discogenic neck pain and its use is not recommended.

5.3.2 **Radio Frequency Medial Branch Neurotomy/facet rhizotomy:**

5.3.2.1 Description -A procedure designed to denervate the facet joint by ablating the corresponding sensory medial branches. Continuous percutaneous radiofrequency is the method generally used.

There is good evidence to support Radio Frequency Medial Branch Neurotomy in the cervical spine but benefits beyond one year are not established. Evidence in the Cervical spine is conflicting; however, the procedure is generally accepted. In one study, 60% of patients maintained at least 90% pain relief at 12 months. Radio-frequency Medial Branch Neurotomy is the procedure of choice over alcohol, phenol, or cryoablation. Precise positioning of the probe

using fluoroscopic guidance is required. Permanent images should be recorded to verify placement of the device.

5.3.2.2 Indications - Those patients with significant, facetogenic pain. Individuals should have met all of the following indications: Pain of well-documented facet origin, unresponsive to active and/or passive therapy. It is generally recommended that this procedure not be performed until three months of conservative therapy have been completed. All patients should have a successful response to a diagnostic medial nerve branch block and a separate comparative block. To be a positive diagnostic block the patient should report a reduction of pain of 50% or greater from baseline for the length of time appropriate for the local anesthetic used. It is suggested that this be recorded on a form. A separate comparative block on a different date may be performed to confirm the level of involvement.

5.3.2.3 Requirements for Repeat Radiofrequency Medial Branch Neurotomy (or additional-level RF Neurotomy): In some cases pain may recur. Successful RF Neurotomy usually provides from six to eighteen months of relief.

Before a repeat RF Neurotomy is done, a confirmatory medial branch injection should be performed if the patient's pain pattern presents differently than the initial evaluation. In occasional patients, additional levels of RF neurotomy may be necessary. The same indications and limitations apply.

### 5.3.3 **Trigger Point Injections and Dry Needling Treatment:**

5.3.3.1 Description -Trigger point injections are a generally accepted treatment. Trigger point treatment can consist of dry needling or injection of local anesthetic, with or without corticosteroid, into highly localized, extremely sensitive bands of skeletal muscle fibers that produce local and referred pain when activated. There is no indication for conscious sedation for patients receiving trigger point injections. The patient must be alert to help identify the site of the injection.

5.3.3.2 Indications - Trigger point injections may be used to relieve myofascial pain and facilitate active therapy and stretching of the affected areas.

Trigger point injections are indicated in those patients where well circumscribed trigger points have been consistently observed. Generally, these injections are not necessary unless consistently observed trigger points are not responding to specific, noninvasive, myofascial interventions within approximately a 6-week time frame. However, trigger point injections may be occasionally effective when utilized in the patient with immediate, acute onset of Cervical pain.

Frequency: Weekly. Suggest no more than 4 injection sites per session per week to avoid significant post-injection soreness.

Maximum duration: 8 weeks. Occasional patients may require 2 to 4 repetitions over a 1 to 2 year period.

5.3.4 **Prolotherapy:** also known as sclerotherapy consists of a series of injections of hypertonic dextrose, with or without glycerine and phenol, into the ligamentous structures of the Cervical Spine. Its proponents claim that the inflammatory response to the injections will recruit cytokine growth factors involved in the proliferation of connective tissue, stabilizing the ligaments of the Cervical when these structures have been damaged by mechanical insults.

There are conflicting studies concerning the effectiveness of Prolotherapy in the Cervical. Lasting functional improvement has not been shown. The injections are

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invasive, may be painful to the patient, and are not generally accepted or widely used. Therefore, the use of Prolotherapy for neck pain is not recommended.

- 5.3.5 **Epiduroscopy and Epidural Lysis of Adhesions:** is an investigational treatment of Cervical pain. It involves the introduction of a fiberoptic endoscope into the epidural space via the sacral hiatus. With cephalad advancement of the endoscope under direct visualization, the epidural space is irrigated with saline. Adhesiolysis may be done mechanically with a fiberoptic endoscope. The saline irrigation is performed with or without epiduroscopy and is intended to distend the epidural space in order to obtain an adequate visual field. It is designed to produce lysis of adhesions, which are conjectured to produce symptoms due to traction on painful nerve roots. Saline irrigation is associated with risks of elevated pressures which may impede blood flow and venous return, possibly causing ischemia of the cauda equina and retinal hemorrhage.

Other complications associated with instrumented lysis include catheter shearing, need for catheter surgical removal, infection (including meningitis), hematoma, and possible severe hemodynamic instability during application. Although epidural adhesions have been postulated to cause chronic Cervical pain, studies have failed to find a significant correlation between the level of fibrosis and pain or difficulty functioning. Studies of epidural lysis demonstrate no transient pain relief from the procedure. Given the low likelihood of a positive response, the additional costs and time requirement, and the possible complications from the procedure, epidural injection, or mechanical lysis, is not recommended.

Epiduroscopy-directed steroid injections are also not recommended as there is no evidence to support an advantage for using an epiduroscope with steroid injections.

- 5.4 **MEDICATIONS** use in the treatment of Cervical injuries is appropriate for controlling acute and chronic pain and inflammation. Use of medications will vary widely due to the spectrum of injuries from simple strains to post-surgical healing. All drugs should be used according to patient needs. A thorough medication history, including use of alternative and over the counter medications, should be performed at the time of the initial visit and updated periodically. The patient should be educated regarding the interaction with prescription and over-the-counter medications as well as the contents of over-the-counter herbal products.

The use of generic medications is encouraged. The list below is not all inclusive. It is accepted that medications not on this list may be appropriate for use in the care of the injured worker.

The following are listed in alphabetical order:

- 5.4.1 **Acetaminophen:** is an effective analgesic with antipyretic but not anti-inflammatory activity. Acetaminophen is generally well tolerated, causes little or no gastrointestinal irritation, and is not associated with ulcer formation. Acetaminophen has been associated with liver toxicity in overdose situations or in chronic alcohol use. Patients may not realize that many over-the-counter preparations may contain acetaminophen. The total daily dose of acetaminophen is recommended not to exceed 4 grams per 24-hour period, from all sources, including narcoticacetaminophen combination preparations.
- 5.4.2 **Muscle Relaxants:** are appropriate for muscle spasm with pain. There is strong evidence that muscle relaxants are more effective than placebo for providing short-term pain relief in acute Cervical pain. When prescribing these agents, physicians must seriously consider side effects of drowsiness or dizziness and the fact that benzodiazepines may be habit-forming



5.4.3 **Narcotics:** should be primarily reserved for the treatment of severe Cervical pain. In mild to moderate cases of Cervical pain, narcotic medication should be used cautiously on a case-by-case basis. Adverse effects include respiratory depression, the development of physical and impaired alertness.

Narcotic medications should be prescribed with strict time, quantity, and duration guidelines, and with definitive cessation parameters. Pain is subjective in nature and should be evaluated using a scale to rate effectiveness of the narcotic prescribed.

5.4.4 **Nonsteroidal Anti-Inflammatory Drugs (NSAIDs):** are useful for pain and inflammation. In mild cases, they may be the only drugs required for analgesia. There are several classes of NSAIDs, and the response of the individual injured worker to a specific medication is unpredictable. For this reason, a range of NSAIDs may be tried in each case with the most effective preparation being continued. Patients should be closely monitored for adverse reactions. Administration of proton pump inhibitors, Histamine 2 Blockers or prostaglandin analog misoprostol along with these NSAIDs may reduce the risk of duodenal and gastric ulceration. Intervals for metabolic screening are dependent upon the patient's age, general health status and should be within parameters listed for each specific medication.

5.4.4.1 Selective Cyclo-oxygenase-2 (COX-2) Inhibitors COX-2 inhibitors are more recent NSAIDs and differ in adverse side effect profiles from the traditional NSAIDs. The major advantages of selective COX-2 inhibitors over traditional NSAIDs are that they have less gastrointestinal toxicity and no platelet effects. COX-2 inhibitors should not be first-line for low risk patients who will be using an NSAID short term but are indicated in select patients for whom traditional NSAIDs are not tolerated. Serious upper GI adverse events can occur even in asymptomatic patients. Patients at high risk for GI bleed include those who use alcohol, smoke, are older than 65, take corticosteroids or anti-coagulants, or have a longer duration of therapy.

5.4.5 **Psychotropic/Anti-anxiety/Hypnotic Agents:** may be useful for treatment of mild and chronic pain, dysesthesias, sleep disorders, and depression. Antidepressant medications, such as tricyclics and Selective Serotonin Reuptake Inhibitors (SSRIs), are useful for affective disorder and chronic pain management. Tricyclic antidepressant agents, in low dose, are useful for chronic pain. Anti-anxiety medications should generally be limited to short-term use. Combinations of the above agents may be useful. As a general rule, physicians should assess the patient's prior history of substance abuse or depression prior to prescribing any of these agents. Due to the habit-forming potential of the benzodiazepines and other drugs found in this class, they are not routinely recommended.

5.4.6 **Tramadol:** is useful in relief of Cervical pain and has been shown to provide pain relief equivalent to that of commonly prescribed NSAIDs. Although Tramadol may cause impaired alertness, it is generally well tolerated, does not cause gastrointestinal ulceration, or exacerbate hypertension or congestive heart failure.

## 5.5 OCCUPATIONAL REHABILITATION PROGRAMS

5.5.1 **Non-Interdisciplinary:** These generally accepted programs are work-related, outcome focused, individualized treatment programs. Objectives of the program include, but are not limited to, improvement of cardiopulmonary and neuromusculoskeletal functions (strength, endurance, movement, flexibility, stability, and motor control functions), patient education, and symptom relief. The goal is for patients to gain full or optimal function and return to work. The service may include the time-limited use of passive modalities with progression to active treatment and/or simulated/ real work.

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5.5.1.1

**Work Conditioning/Simulation:** This program may begin once a patient is out of the acute phase of injury and will be able to tolerate this program. These programs are usually initiated after the acute phase has been completed and offered at any time throughout the recovery phase. Work conditioning should be initiated when imminent return of a patient to modified or full duty is not an option, but the prognosis for returning the patient to work at completion of the program is at least fair to good. The need for work place simulation should be based upon the results of a Functional Capacity Evaluation and/or Jobsite Analysis.

Length of visit: 1 to 4 hours per day.

Frequency: 2 to 5 visits per week

Maximum duration: 8 weeks. Participation in a program beyond six weeks must be documented with respect to need and the ability to facilitate positive symptomatic or functional gains.

5.5.1.2

**Work Hardening:** Work Hardening is an interdisciplinary program addressing a patient's employability and return to work. It includes a progressive increase in the number of hours per day that a patient completes work simulation tasks until the patient can tolerate a full workday. This is accomplished by addressing the medical, behavioral, physical, functional, and vocational components of employability and return-to-work. This can include a highly structured program involving a team approach or can involve any of the components thereof. The interdisciplinary team should, at a minimum, be comprised of a qualified medical director who is board certified with documented training in occupational rehabilitation; team physicians having experience in occupational rehabilitation; occupational therapist; physical therapist; case manager; and psychologist. As appropriate, the team may also include: Chiropractor, RN, Vocational Specialist or Certified Biofeedback Therapist.

Length of visit: Up to 8 hours/day

Frequency: 2 to 5 visits per week

Maximum duration: 8 weeks. Participation in a program beyond six weeks must be documented with respect to need and the ability to facilitate positive symptomatic or functional gains.

5.5.1.3

**Spinal Cord Programs:** Spinal Cord Systems of Care provide coordinated, casemanaged, and integrated service for people with spinal cord dysfunction, whether due to trauma or disease. The system includes an inpatient component in an organization licensed as a hospital and an outpatient component. Each component endorses the active participation and choice of the persons served throughout the entire program.

The Spinal Cord System of Care also provides or formally links with key components of care that address the lifelong needs of the persons served. This can include a highly structured program involving a team approach or can involve any of the components thereof. The interdisciplinary team should, at a minimum, be comprised of a qualified medical director who is board certified and trained in rehabilitation, a case manager, occupational therapy, physical therapy, psychologist, rehabilitation RN and MD, and therapeutic recreation specialist. As appropriate, the team may also include: rehabilitation counselor, respiratory therapist, social worker, or speech-language pathologist.

Time frame durations for any spinal cord program should be determined based upon the extent of the patient's injury and at the discretion of the rehabilitation physician in charge.

5.6 **Cervical ORTHOTICS** Primary principles and objectives of the application of cervical orthosis include:

- aid in spinal stability when soft tissues or osteoligamentous structures cannot sufficiently perform their role as spinal stabilizers; and
- restrict spinal segment movement after acute trauma or surgical procedure.
- control of the position through the use of control forces;
- application of corrective forces to abnormal curvatures;

In cases of traumatic cervical injury, the most important objective is the protection of the spinal cord and nerve root.

5.6.1 **Cervical Supports:**

5.6.1.1 **Soft Collars** are well-tolerated by most patients cervical supports may provide symptomatic relief of pain and movement reduction in cases of acute cervical conditions. The injured worker should be advised of the potential harm from using a cervical support for a period of time greater than that which is prescribed. Harmful effects include de-conditioning of the musculature, skin irritation, and general discomfort.

5.6.1.2 **Rigid Collars**, such as a Philadelphia or Miami Orthosis, are useful post-operative or in emergency situations. These collars restrict flexion and extension motion, and to a lesser degree, lateral bending and rotation. Duration of wear is dependent upon the physician and degree of cervical healing but is generally not used beyond 8 weeks.

5.6.1.3 **Cervicothoracic Orthosis:** such as Yale and sternal occipital mandibular immobilization (SOMI) type braces, restrict flexion and extension motion to a fuller degree than the Philadelphia collar and to a better degree lateral bending and rotation. Not recommended in sprain or strain type injuries.

5.6.1.4 **Halo Devices:** are used in the treatment of cervical fracture, dislocation, and instability at the discretion of the treating surgeon. Refer to Halo Devices in the Operative Treatment section.

5.6.1.5 **Other Orthosis Devices and Equipment:** Special orthosis or equipment may have a role in the rehabilitation of a cervical injury such as those injuries to a cervical nerve root resulting in upper extremity weakness or a spinal cord injury with some degree of paraparesis or tetraparesis. Use of such devices would be in a structured rehabilitation setting as part of a comprehensive rehabilitation program.

5.7 **PATIENT EDUCATION** No treatment plan is complete without addressing issues of individual and/or group patient education as a means of prolonging the beneficial effects of treatment, as well as facilitating self-management of symptoms and injury prevention. The patient should be encouraged to take an active role in the establishment of functional outcome goals. They should be educated on their specific injury, assessment findings, and plan of treatment. Instruction on proper body mechanics and posture, positions to avoid, self-care for exacerbation of symptoms, and home exercise should also be addressed.

Time to produce effect: Varies with individual patient

Frequency: Should occur at every visit.

5.8 **RESTRICTION OF ACTIVITIES** There is some evidence to support the continuation of normal daily activities as the recommended treatment for acute and chronic cervical injuries without neurologic symptoms. Complete work cessation should be avoided, if possible, since

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it often further aggravates the pain presentation. Modified return-to-work is almost always more efficacious and rarely contraindicated in the vast majority of injured workers with cervical spine injuries.

- 5.9 **RETURN-TO-WORK** Early return-to-work should be a prime goal in treating occupational injuries given the poor return-to-work prognosis for an injured worker who has been out of work for more than six months. It is imperative that the patient be educated regarding the benefits of return-to-work, work restrictions, and follow-up if problems arise. When attempting to return a patient to work after a specific injury, clear objective physical capabilities of the injured worker should be outlined on the appropriate form. An accurate job description with detailed physical duty requirements is often necessary to assist the physician in making return-to-work recommendations.

Employers should be prepared to offer transitional work. This may consist of temporary work in a less demanding position, return to the regular job with restrictions, or gradual return to the regular job. Company policies which encourage return-to-work with positive communication are most likely to have decreased worker disability. When appropriate a Jobsite Analysis may be necessary. Return-to-work is defined as any work or duty that the patient is able to perform safely. It may not be the patient's regular work. Due to the large spectrum of injuries of varying severity and varying physical demands in the work place, it is not possible to make specific return-to-work guidelines for each injury.

- 5.9.1 **Compliance with Activity Restrictions:** In some cases, compliance with restriction of activity levels may require a complete job site evaluation, a functional capacity evaluation (FCE) or other special testing.

- 5.10 **THERAPY - PASSIVE** Most of the following passive therapies and modalities are generally accepted methods of care for a variety of work-related injuries. Passive therapy includes those treatment modalities that do not require energy expenditure on the part of the patient. They are principally effective during the early phases of treatment and are directed at controlling symptoms such as pain, inflammation and swelling and to improve the rate of healing soft tissue injuries. They should be used adjunctively with active therapies such as postural stabilization and exercise programs to help control swelling, pain, and inflammation during the active rehabilitation process.

Please refer to General Guideline Principles, Active Interventions. Passive therapies may be used intermittently as a therapist deems appropriate or regularly if there are specific goals with objectively measured functional improvements during treatment.

Generally, passive interventions are viewed as a means to facilitate progress in an active rehabilitation program with concomitant attainment of objective functional gains. All rehabilitation programs must incorporate "Active Interventions" no later than twelve visits or three weeks after the onset of treatment. Reimbursement for passive modalities only after the first twelve visits or three weeks of treatment without clear evidence of Active Interventions will require supportive documentation.

On occasion, specific diagnoses and post-surgical conditions may warrant durations of treatment beyond those listed as "maximum." Factors such as exacerbation of symptoms, re-injury, interrupted continuity of care, and co-morbidities may also extend durations of care. Specific goals with objectively measured functional improvement during treatment must be cited to justify extended durations of care. It is recommended that, if no functional gain is observed after the number of treatments under "time to produce effect" have been completed; alternative treatment interventions, further diagnostic studies, or further consultations should be pursued.

The following passive therapies are listed in alphabetical order:

- 5.10.1 **Electrical Stimulation (Unattended and Attended):** is an accepted treatment. Once applied, unattended electrical stimulation requires minimal on-site supervision by the provider. Indications include pain, inflammation, muscle spasm, atrophy, decreased circulation, and the need for osteogenic stimulation. A home unit should be purchased if treatment is effective and frequent use is recommended.

Time to produce effect: 2 to 4 treatments

Maximum duration: 24 visits

- 5.10.2 **Iontophoresis:** is an accepted treatment which consists of the transfer of medication, including, but not limited to, steroidal anti-inflammatories and anesthetics, through the use of electrical stimulation. Indications include pain (Lidocaine), inflammation (hydrocortisone, salicylate), edema (mecholy, hyaluronidase, salicylate), ischemia (magnesium, mecholy, iodine), muscle spasm (magnesium, calcium), calcific deposits (acetate), scars, and keloids (sodium chloride, iodine, acetate).

Time to produce effect: 1 to 4 treatments

Frequency: 3 times per week with at least 48 hours between treatments

Maximum duration: 8 visits per body region

- 5.10.3 **Manipulation:** Is generally accepted, well-established and widely used therapeutic intervention for Cervical pain. Manipulative Treatment (not therapy) is defined as the therapeutic application of manually guided forces by an operator to improve physiologic function and/or support homeostasis that has been altered by the injury or occupational disease, and has associated clinical significance.

High velocity, low amplitude (HVLA) technique, chiropractic manipulation, osteopathic manipulation, muscle energy techniques, counter strain, and non-force techniques are all types of manipulative treatment. This may be applied by osteopathic physicians (D.O.), chiropractors (D.C.), properly trained physical therapists (P.T.), properly trained occupational therapist (O.T.), or properly trained medical physicians.

Under these different types of manipulation exist many subsets of different techniques that can be described as a) direct- a forceful engagement of a restrictive/pathologic barrier, b) indirect- a gentle/non-forceful disengagement of a restrictive/pathologic barrier, c) the patient actively assists in the treatment and d) the patient relaxing, allowing the practitioner to move the body tissues. When the proper diagnosis is made and coupled with the appropriate technique, manipulation has no contraindications and can be applied to all tissues of the body. Pre-treatment assessment should be performed as part of each manipulative treatment visit to ensure that the correct diagnosis and correct treatment is employed.

High velocity, low amplitude (HVLA) manipulation is performed by taking a joint to its end range of motion and moving the articulation into the zone of accessory joint movement, well within the limits of anatomical integrity. Indications for manipulation include joint pain, decreased joint motion, and joint adhesions. Contraindications to HVLA manipulation include joint instability, fractures, severe osteoporosis, infection, metastatic cancer, active inflammatory arthritides, aortic aneurysm, and signs of progressive neurologic deficits.

Time to produce effect for all types of manipulative treatment: 1 to 6 treatments.

Frequency: Up to 3 times per week for the first 4 weeks as indicated by the severity of involvement and the desired effect, then up to 2 treatments per week for the next 4 weeks. For further treatments, twice per week or less to maintain function.

Maximum duration: 30 visits. Extended durations of care beyond what is considered "maximum" may be necessary in cases of re-injury, interrupted continuity of

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care, exacerbation of symptoms, and in those patients with co-morbidities. Refer to the Chronic Pain Guidelines for care beyond 6 months.

The combination of 97140 plus either CMT or OMT code is equal to one visit when performed on the same day. Any combination of manual therapeutic intervention exceeding 36 visits (not units) need to go to UR.

- 5.10.3.1 **Mobilization (Joint) / Manipulation:** Mobilization is passive movement involving oscillatory motions to the involved joints. The passive mobility is performed in a graded manner (I, II, III, IV, or V), which depicts the speed of the maneuver. It may include skilled manual joint tissue stretching. Indications include the need to improve joint play, improve intracapsular arthrokinematics, or reduce pain associated with tissue impingement.

Time to produce effect: 4 to 6 treatments

Frequency: 2 to 3 times per week

Maximum duration: 36 visits (CPT codes 97124 and 97140 cannot exceed 36 visits in combination).

- 5.10.4 **Massage - Manual or Mechanical:** Massage is manipulation of soft tissue with broad ranging relaxation and circulatory benefits. This may include techniques that include pressing, lifting, rubbing, pinching of soft tissues by, or with, the practitioner's hands. Indications include edema (peripheral or hard and non-pliable edema), muscle spasm, adhesions, the need to improve peripheral circulation and range of motion, or to increase muscle relaxation and flexibility prior to exercise.

In sub-acute Cervical pain populations there is good evidence that massage can increase function when combined with exercise and patient education. Some studies have demonstrated a decrease in provider visits and pain medication use with combined therapy. One study indicated improved results with acupuncture massage. It is recommended that all massage be performed by trained, experienced therapists and be accompanied by an active exercise program and patient education. In contrast to the sub-acute population, massage is a generally accepted treatment for the acute Cervical pain population, although no studies have demonstrated its efficacy for this set of patients.

Time to produce effect: Immediate

Frequency: 1 to 3 times per week

Maximum duration: 12 visits (CPT codes 97124 and 97140 cannot exceed 36 visits in combination).

- 5.10.5 **Mobilization (Joint):** is a generally well-accepted treatment. Mobilization is passive movement involving oscillatory motions to the vertebral segment(s). The passive mobility is performed in a graded manner (I, II, III, IV, or V), which depicts the speed and depth of joint motion during the maneuver. For further discussion on Level V joint mobilization please see section on HVLA manipulation [Refer to section 12. d.]. It may include skilled manual joint tissue stretching.

Indications include the need to improve joint play, segmental alignment, improve intracapsular arthrokinematics, or reduce pain associated with tissue impingement. Mobilization should be accompanied by active therapy. For Level V mobilization contraindications include joint instability, fractures, severe osteoporosis, infection, metastatic cancer, active inflammatory arthritides, aortic aneurysm, and signs of progressive neurologic deficits.

Time to produce effect for all types of manipulative treatment: 1 to 6 treatments.

Frequency: Up to 3 times per week for the first 4 weeks as indicated by the severity of involvement and the desired effect, then up to 2 treatments per week for the next 4 weeks. For further treatments, twice per week or less to maintain function.

Maximum duration: 36 visits. Extended durations of care beyond what is considered "maximum" may be necessary in cases of re-injury, interrupted continuity of care, exacerbation of symptoms, and in those patients with comorbidities. Refer to the Chronic Pain Guidelines for care beyond 6 months.

**RE-EVALUATE TREATMENT EVERY 3 TO 4 WEEKS** If a given treatment or modality is not producing positive results within 3 to 4 weeks, the treatment may be either modified or discontinued. Reconsideration of diagnosis should also occur in the event of poor response to a seemingly rational intervention.

CPT codes 97124 and 97140 cannot exceed 36 visits in combination

- 5.10.6 **Mobilization (Soft Tissue):** is a generally well-accepted treatment. Mobilization of soft tissue is the skilled application of muscle energy, strain/counter strain, myofascial release, manual trigger point release, and manual therapy techniques designed to improve or normalize movement patterns through the reduction of soft tissue pain and restrictions. These can be interactive with the patient participating or can be with the patient relaxing and letting the practitioner move the body tissues.

Indications include muscle spasm around a joint, trigger points, adhesions, and neural compression. Mobilization should be accompanied by active therapy.

Maximum duration: 36 visits re-evaluate treatment every 3 to 4 weeks if a given treatment or modality is not producing positive results within 3 to 4 weeks, the treatment may be either modified or discontinued. Reconsideration of diagnosis should also occur in the event of poor response to a seemingly rational intervention.

CPT codes 97124 and 97140 cannot exceed **36** visits in combination.

- 5.10.7 **Short-Wave Diathermy:** is an accepted treatment which involves the use of equipment that exposes soft tissue to a magnetic or electrical field. Indications include enhanced collagen extensibility before stretching, reduced muscle guarding, reduced inflammatory response, and enhanced re-absorption of hemorrhage/hematoma or edema. It is an accepted modality as an adjunct to acupuncture or situation where other forms of contact superficial heat are contraindicated.

- 5.10.8 **Superficial Heat and Cold Therapy (excluding Infrared Therapy):** is a generally accepted treatment. Superficial heat and cold are thermal agents applied in various manners that lower or raise the body tissue temperature for the reduction of pain, inflammation, and/or effusion resulting from injury or induced by exercise. Includes application of heat just above the surface of the skin at acupuncture points. Indications include acute pain, edema and hemorrhage, need to increase pain threshold, reduce muscle spasm, and promote stretching/flexibility. Cold and heat packs can be used at home as an extension of therapy in the clinic setting.

Time to produce effect: Immediate

Frequency: 2 to 5 times per week

Maximum duration: 12 visits with maximum visits 1 per day.

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5.10.9           **Traction-Manual:** is an accepted treatment and an integral part of manual manipulation or joint mobilization. Indications include decreased joint space, muscle spasm around joints, and the need for increased synovial nutrition and response. Manual traction is contraindicated in patients with tumor, infection, fracture, or fracture dislocation.

5.10.10           **Traction-Mechanical:** Traction modalities are contraindicated in patients with tumor, infections, fracture, or fracture dislocation. Non-oscillating inversion traction methods are contraindicated in patients with glaucoma or hypertension. Motorized traction/decompression devices are included and billed as mechanical traction (i.e. VAX-D, DRX9000, etc.). A home Cervical traction unit can be purchased if proves effective and the home unit can provide a similar treatment.

Time to produce effect: 1 to 3 sessions up to 30 minutes. If response is negative after 3 treatments, discontinue this modality.

Frequency: 2 to 3 times per week. A home Cervical traction unit can be purchased if therapy proves effective.

Maximum duration: 24 visits

5.10.11           **Transcutaneous Electrical Nerve Stimulation (TENS):** is a generally accepted treatment. TENS should include at least one instructional session for proper application and use. Indications include muscle spasm, atrophy, and decreased circulation and pain control. Minimal TENS unit parameters should include pulse rate, pulse width and amplitude modulation. Consistent, measurable functional improvement should be documented prior to the purchase of a home unit.

Time to produce effect: Immediate

Frequency: Variable

5.10.12           **Ultrasound (Including Phonophoresis):** is an accepted treatment. Ultrasound uses sonic generators to deliver acoustic energy for therapeutic thermal and/or non-thermal soft tissue effects. Indications include scar tissue, adhesions, collagen fiber and muscle spasm, and the need to extend muscle tissue or accelerate the soft tissue healing. Ultrasound with electrical stimulation is concurrent delivery of electrical energy that involves dispersive electrode placement. Indications include muscle spasm, scar tissue, pain modulation, and muscle facilitation. Phonophoresis is the transfer of medication to the target tissue to control inflammation and pain through the use of sonic generators. These topical medications include, but are not limited to, steroidal anti-inflammatory and anesthetics. Time to produce effect: 6 to 15 treatments

Frequency: 3 times per week

Maximum duration: 24 visits

5.11           **THERAPY-ACTIVE** The following active therapies are widely used and accepted methods of care for a variety of work-related injuries. They are based on the philosophy that therapeutic exercise and/or activity are beneficial for restoring flexibility, strength, endurance, function, range of motion, and can alleviate discomfort. Active therapy requires an internal effort by the individual to complete a specific exercise or task. This form of therapy requires supervision from a therapist or medical provider such as verbal, visual, and/or tactile instruction(s). At times, the provider may help stabilize the patient or guide the movement pattern but the energy required to complete the task is predominately executed by the patient.

Patients should be instructed to continue active therapies at home as an extension of the treatment process in order to maintain improvement levels. Follow-up visits to reinforce and



monitor progress and proper technique are recommended. Home exercise can include exercise with or without mechanical assistance or resistance and functional activities with assistive devices.

The following active therapies are listed in alphabetical order:

- 5.11.1 **Activities of Daily Living (ADL)** are well-established interventions which involve instruction, active-assisted training, and/or adaptation of activities or equipment to improve a person's capacity in normal daily activities such as self-care, work re-integration training, homemaking, and driving.

Time to produce effect: 4 to 5 treatments

Maximum duration: 10 visits

- 5.11.2 **Aquatic Therapy:** is a well-accepted treatment which consists of the therapeutic use of aquatic immersion for therapeutic exercise to promote strengthening, core stabilization, endurance, range of motion, flexibility, body mechanics, and pain management. Aquatic therapy includes the implementation of active therapeutic procedures in a swimming or therapeutic pool. The water provides a buoyancy force that lessens the amount of force gravity applies to the body. The decreased gravity effect allows the patient to have a mechanical advantage and more likely have a successful trial of therapeutic exercise. The therapy may be indicated for individuals who:

- Cannot tolerate active land-based or full-weight bearing therapeutic procedures;
- Require increased support in the presence of proprioceptive deficit;
- Are at risk of compression fracture due to decreased bone density;
- Have symptoms that are exacerbated in a dry environment;
- Would have a higher probability of meeting active therapeutic goals than in a land-based environment.

The pool should be large enough to allow full extremity range of motion and fully erect posture. Aquatic vests, belts and other devices can be used to provide stability, balance, buoyancy, and resistance.

Time to produce effect: 4 to 5 treatments

Frequency: 3 to 5 times per week

Maximum duration: 18 visits. A self-directed program is recommended after the supervised aquatics program has been established, or, alternatively a transition to a land-based environment exercise program.

- 5.11.3 **Functional Activities:** are well-established interventions which involve the use of therapeutic activity to enhance mobility, body mechanics, employability, coordination, balance, and sensory motor integration.

Time to produce effect: 4 to 5 treatments

Frequency: 3 to 5 times per week

Maximum duration: 24 visits Total number of visit 97110 and 97530 should not exceed 40 visits without preauthorization.

- 5.11.4 **Functional Electrical Stimulation:** is an accepted treatment in which the application of electrical current to elicit involuntary or assisted contractions of atrophied and/or impaired muscles. It may be indicated for impaired muscle function due to radiculopathy.

Time to produce effect: 2 to 6 treatments

Frequency: 3 times per week

Maximum duration: 24 visits inclusive of electrical muscle stimulation codes if beneficial provide with home unit.

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- 5.11.5 **Neuromuscular Re-education:** is a generally accepted treatment. It is the skilled application of exercise with manual, mechanical, or electrical facilitation to enhance strength; movement patterns; neuromuscular response; proprioception, kinesthetic sense and coordination; education of movement, balance, and posture. Indications include the need to promote neuromuscular responses through carefully timed proprioceptive stimuli, to elicit and improve motor activity in patterns similar to normal neurologically developed sequences, and improve Neuromotor response with independent control.

Time to produce effect: 2 to 6 treatments

Frequency: 3-5 times per week

Maximum duration: 36 visits

- 5.11.6 **Therapeutic Exercise:** is a generally well-accepted treatment. Therapeutic exercise, with or without mechanical assistance or resistance, may include isoinertial, isotonic, isometric and isokinetic types of exercises. Indications include the need for cardiovascular fitness, reduced edema, improved muscle strength, improved connective tissue strength and integrity, increased bone density, promotion of circulation to enhance soft tissue healing, improvement of muscle recruitment, improved proprioception, and coordination, and increased range of motion. Therapeutic exercises are used to promote normal movement patterns, and can also include complementary/ alternative exercise movement therapy (with oversight of a physician or appropriate healthcare professional).

- 5.11.7 **Spinal Stabilization:** is a generally well-accepted treatment. The goal of this therapeutic program is to strengthen the spine in its neural and anatomic position. The stabilization is dynamic which allows whole body movements while maintaining a stabilized spine. It is the ability to move and function normally through postures and activities without creating undue vertebral stress

Time to produce effect: 2 to 6 treatments

Frequency: 3 to 5 times per week

Maximum duration: 36 visits Total number of visits of 97110 & 97530 may not exceed 40 visits without preauthorization.

- 5.12 **VOCATIONAL REHABILITATION** is a generally accepted intervention. Initiation of vocational rehabilitation requires adequate evaluation of patients for quantification of highest functional level, motivation, and achievement of maximum medical improvement. Vocational rehabilitation may be as simple as returning to the original job or as complicated as being retrained for a new occupation. It may also be beneficial for full vocational rehabilitation to be started, if it is evident that the injured worker will be unable to return to his/her previous occupation. A positive goal and direction may aid the patient in decreasing stress and depression, and promote optimum rehabilitation.

### 6.0 THERAPEUTIC PROCEDURES - OPERATIVE

All operative interventions should be based on a positive correlation with clinical findings, the natural history of the disease, the clinical course, and diagnostic tests. A comprehensive assimilation of these factors should have led to a specific diagnosis with positive identification of the pathologic condition(s). It is imperative for the clinician to rule out non-physiologic modifiers of pain presentation, or non-operative conditions mimicking radiculopathy or instability (peripheral compressive neuropathy, chronic soft tissue injuries, and psychological conditions), prior to consideration of elective surgical intervention. Early intervention may be required in acute incapacitating pain or in the presence of severe or progressive neurological

deficits. Patients who are not candidates for or refuse surgical treatment should be treated with non-operative therapy as indicated.

Operative treatment is indicated when the natural history of surgically treated lesions is better than the natural history for non-operatively treated lesions. All patients being considered for surgical intervention should first undergo a comprehensive neuromusculoskeletal examination to identify mechanical pain generators that may respond to non-surgical techniques, or may be refractory to surgical intervention.

In situations requiring the possible need for reoperation, and spinal fusions or total disc replacements over two levels, a second opinion may be necessary. Interdisciplinary interventions should be strongly considered post-operatively in patients not making functional progress within expected time

- 6.1 **General Recommendations** -If cervical fusion is being considered, it is recommended that the injured worker be encouraged to quit or decrease smoking for at least two weeks prior to surgery and during the time of healing. Because smokers have a higher risk of non-union and higher post-operative costs, it is recommended that insurers cover a smoking cessation program peri-operatively.
- 6.2 **General Indications for Surgery** - Operative intervention should be considered and a consultation obtained when improvement of symptoms has plateaued and the residual symptoms of pain and functional disability are unacceptable at the end of six weeks of treatment, or at the end of longer duration of non-operative intervention for debilitated patients with complex problems. Choice of hardware instrumentation is based on anatomy, the patient's pathology, and surgeon's experience and preference.
- 6.3 **Specific Indications include:**
- 6.3.1 **For Patients with Myelopathy:** immediate surgical evaluation and treatment is indicated.
- 6.3.2 **For Patients with Cervical Radiculopathy:**
- 6.3.2.1 Early intervention may be required for acute incapacitating pain or in the presence of severe or progressive neurological deficits.
- 6.3.2.2 Persistent or recurrent arm pain with functional limitations, unresponsive to conservative treatment after six weeks; or
- 6.3.2.3 Progressive functional neurological deficit; or
- 6.3.2.4 Static neurological deficit associated with significant radicular pain; and
- 6.3.2.5 Confirmatory imaging studies consistent with clinical findings.
- 6.3.3 **For Patients with Persistent Non-radicular Cervical Pain:** in the absence of a radiculopathy, it is recommended that a decisive commitment to surgical or nonsurgical interventions be made by 4 months following injury. The effectiveness of three-level cervical fusion for non-radicular pain has not been established. In patients with non-radicular cervical pain for whom fusion is being considered, required pre-operative indications include all of the following:
- 6.3.3.1 In general, if the program of non-operative treatment fails, operative treatment is indicated when:
- 6.3.3.1.1 Improvement of the symptoms has plateaued, and the residual symptoms of pain and functional disability are unacceptable at the end of 6 to 12 weeks of active treatment, or at the end of longer duration of non-operative programs for debilitated patients with complex problems; and/or

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6.3.3.1.2 Frequent recurrences of symptoms cause functional limitations even if a non-operative active treatment program provides satisfactory relief of symptoms, and restoration of function on each recurrence.

6.3.3.2 Pain generators are adequately defined and treated; and

6.3.3.3 Physical medicine and manual therapy interventions are completed

6.3.3.4 X-ray, MRI, or CT/discography demonstrating disc pathology or spinal instability.

6.3.3.5 Spine pathology is limited to two levels.

### 6.4 **Surgical Procedures include:**

#### 6.4.1 **Cervical Discectomy with or without Fusion:**

6.4.1.1 **Description** - Procedure to relieve pressure on one or more nerve roots or spinal cord. It may be performed with or without the use of a microscope.

6.4.1.2 **Surgical Indications** - Radiculopathy from ruptured disc or spondylosis, spinal instability, or patients with non-radicular neck pain meeting fusion criteria. Discectomy alone from a posterior approach may be considered in patients with pure radicular symptoms from their herniated disc and who have sufficiently large foramen that disc space collapse is unlikely to further compromise the nerve root. Failure rates increase with disease at more than two levels.

6.4.1.3 **Operative Treatment** - Cervical plating may be used to prevent graft dislodgment and facilitate fusion. It has the added advantage of eliminating the need for postoperative bracing and allowing faster functional recovery.

Recombinant Human Bone Morphogenetic Protein (rhBMP-2) is a member of a family of cytokines capable of inducing bone formation. It is produced from genetically modified cell lines using molecular cloning techniques. Use of rhBMP-2 in the cervical spine may carry a risk of swelling and ectopic bone formation which can encroach on neurovascular structures and on the esophagus. As of the date of adoption the FDA has not approved its use in the cervical spine. At the time of this guideline, cervical application of rhBMP-2 is investigational and remains outside the purview of the guidelines. Prior authorization is required.

6.4.1.4 **Post-Operative Therapy** - Cervical bracing may be used. Home programs with instruction in ADLs, sitting, posture, and a daily walking program should be an early part of the rehabilitation process. Referral to a formal rehabilitation program, with emphasis on cervical, scapular, and thoracic strengthening and restoration of ROM is appropriate and encouraged to expedite a return to higher function. Active treatment, which patients should have had prior to surgery, will frequently require a repeat of the sessions previously ordered. The goals of the therapy program should include instruction in a long-term home-based exercise program.

6.4.1.5 **Intervertebral Biomechanical Device(s) and Use of Code 22851**

Code 22851 describes the application of an intervertebral biomechanical device to a vertebral defect or interspace. Code 22851 should be listed in conjunction with a primary procedure without the use of modifier 51. The use of 22851 is limited to one instance per single interspace or single vertebral defect regardless of the number of devices applied and infers additional qualifying training, experience, sizing, and/or use of special surgical appliances to insert the biomechanical device. Qualifying devices include manufactured synthetic or allograft biomechanical devices, or methyl methacrylate constructs, and are not dependant on a specific manufacturer, shape, or material of which it is constructed. Qualifying devices are machine cut to specific dimensions for precise application to an intervertebral defect. (For example, the use of code 22851 would be appropriate during a cervical arthrodesis (22554) when applying a synthetic alloy cage, a threaded bone dowel, or a machine cut hexahedron cortical, cancellous, or cortico cancellous allograft biomechanical device. Surgeons utilizing generic non-machined bony allografts or autografts are referred to code sets 20930-20931, 20936-20938 respectively.)

#### 6.4.2 **Cervical Corpectomy**

6.4.2.1 **Description** - Removal of a portion or the entire vertebral body from the front of the spine. May also include removal of the adjacent discs. Usually involves fusion.

6.4.2.2 **Surgical Indications** - Single or two-level spinal stenosis, spondylolisthesis, or severe kyphosis, with cord compression.

6.4.2.3 **Operative Treatment** - Neural decompression, fusion with instrumentation, or halo vest placement to maintain cervical position. Hemisectomy may be done when only a portion of the vertebral body needs to be resected. Allografts may be used for single bone graft fusion; however, autografts are generally preferable for multi-level fusions unless a large strut graft is required.

6.4.2.4 **Post-Operative Therapy** - Dependent upon number of vertebral bodies involved, healing time may be longer than discectomy. Halo vest care is required. Home programs with instruction in ADLs, sitting, posture, and a daily walking program should be an early part of the rehabilitation process. Referral to a formal rehabilitation program with emphasis on cervical, scapular, and thoracic strengthening is appropriate for most patients once the cervical spine is deemed stable and without complication. The goals of the therapy program should include instruction in a long-term home-based exercise program.

#### 6.4.3 **Cervical Laminectomy with or without Foraminotomy or Fusion**

6.4.3.1 **Description** - Surgical removal of the posterior portion of a vertebrae in order to gain access to the spinal cord or nerve roots.

6.4.3.2 **Surgical Indications** - Neural compression.

6.4.3.3 **Operative Treatment** - Laminotomy, partial discectomy, and nerve root decompression.

6.4.3.4 **Post-Operative Therapy** - Cervical bracing may be appropriate (usually 6 to 12 weeks with fusion). Home programs with instruction in ADLs, sitting, posture, and a daily walking program should be an early part of the rehabilitation process. Referral to a formal rehabilitation program with emphasis on cervical, scapular, and thoracic strengthening and restoration of ROM is appropriate for most patients once the cervical spine is deemed stable and without complication. The goals of the therapy program should include instruction in a long-term home-based exercise program

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### 6.4.4 **Cervical Laminoplasty**

6.4.4.1 **Description** - Technique that increases anterior or posterior dimensions of the spinal canal while leaving posterior elements partially intact. It may be performed with or without the use of a microscope.

6.4.4.2 **Surgical Indications** - Multi-level disease: cervical spinal stenosis or spondylitic myelopathy. Not indicated in cervical kyphosis.

6.4.4.3 **Operative Treatment** - Posterior approach, with or without instrumentation.

6.4.4.4 **Post-Operative Therapy** - May include 4 to 12 weeks of cervical bracing. Home programs with instruction in ADLs, sitting, posture, and daily walking program should be an early part of the rehabilitation process. Referral to a formal rehabilitation program with emphasis on cervical, scapular, and thoracic strengthening and restoration of ROM is appropriate once the cervical spine is stable and without complication. Active treatment which patients should have had prior to surgery will frequently require a repeat of the sessions previously ordered. The goals of the therapy program should include instruction in a long-term, home-based exercise program.

### 6.4.5 **Artificial Cervical Disc Replacement**

6.4.5.1 **Description** - involves the insertion of a prosthetic device into an intervertebral space from which a degenerated disc has been removed, sparing only the peripheral annulus. The endplates are positioned under intraoperative fluoroscopic guidance for optimal placement in the sagittal and frontal planes. The prosthetic device is designed to distribute the mechanical load of the vertebrae in a physiologic manner and maintain range of motion.

6.4.5.2 **General Selection Criteria** - for cervical disc replacement includes symptomatic degenerative disc disease. The patient must also meet fusion surgery criteria, and if the patient is not a candidate for fusion, a disc replacement procedure should not be considered. Additionally, the patient should be able to comply with pre-and post-surgery protocol.

6.4.5.3 **The Theoretical Advantage** - of total disc arthroplasty is that it preserves range of motion and physiologic loading of the disc. This could be an advantage for adults who are physically active. Studies do not demonstrate a long-term advantage of measured function or pain over comparison groups undergoing fusion. The longevity of this prosthetic device has not yet been determined. Significant technical training and experience is required to perform this procedure successfully. Surgeons must be well-versed in anterior spinal techniques and should have attended appropriate training courses, or have undergone training during a fellowship. Mentoring and proctoring of procedures is highly recommended.

### 6.5 **External Spinal Stimulators Post Fusion**

6.5.1 The following criteria are established for the medically accepted standard of care when determining applicability for the use of an external spinal stimulator:

6.5.1.1 Patient has had a previously failed spinal fusion, and/or

6.5.1.2 Patient is scheduled for revision or repair of pseudoarthrosis,  
and/or

- 6.5.1.3                           The patient smokes greater than a pack of cigarettes per day and is scheduled for spinal fusion
- 6.5.1.4                           The external spinal stimulator is approved for use in primary spinal fusions, if medical co morbidities increase the likelihood of non-union
- 6.5.1.5                           The patient is metabolically in poor health, with other medical co morbidities such as diabetes, Rheumatoid arthritis, lupus or other illnesses requiring oral steroids or cytotoxic medications.
- 6.5.2                            Precertification is required for use of the external spinal stimulator if the planned use falls outside the above indications.

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