

NECK PAIN - TREATMENT GUIDELINES

recommended by the

PHYSICIAN ADVISORY COMMITTEE

(Adopted by the Administrator of the Oklahoma Workers' Compensation Court on January 2, 1997)

Effective January 2, 1997

Introduction

The Physician Advisory Committee (PAC), a statutorily created advisory body to the Oklahoma Workers' Compensation Court, has been directed by Oklahoma Statute to propose, adopt, and recommend treatment guidelines for injured Oklahoma workers. The PAC is composed of nine members; three appointed by the Governor, three appointed by the President pro Tempore of the State Senate, and three appointed by the Speaker of the Oklahoma House of Representatives. By statute, the Governor's appointees must include a doctor of medicine and surgery, a family practitioner in a rural community of the state, and an osteopathic physician; the President Pro Tempore's appointees must include a doctor of medicine and surgery, a doctor of medicine or an osteopathic physician, and a podiatric physician; and the Speaker's appointees must include an osteopathic physician, a doctor of medicine or an osteopathic physician, and a chiropractic physician.

We received input from a wide variety of sources including employers, insurance carriers, and health care providers. Appropriate scientific literature has been reviewed. Practice parameters of the various specialty societies (North American Spine Society, American Academy of Orthopaedic Surgeons) were reviewed as well. Additionally, The Guidelines for Chiropractic Quality Assurance and Practice Parameters, and treatment protocols from Texas, Colorado, Minnesota, and California, were also utilized.

The philosophy of this Committee has been "keep it simple". We also believe that, for the guidelines to stand the test of time, they must be **fair** and **reasonable**.

Cervical problems are very common among workers. Rapid recovery is expected for the majority of soft tissue injuries to the neck.

Guidelines deal with the diagnosis and treatment of neck problems of the workers of Oklahoma. Evaluation and treatment with these Guidelines is divided into two phases. The initial (less than one month) and then the chronic (greater than one month) phases. The treatment parameters reflect the reality of progressive severity in the chronic phase. The primary objective of these Guidelines is to provide standards for prompt, reasonable and appropriate treatment for workplace injuries and to expedite optimum recovery and return to work, while containing medical costs in the workers' compensation system.

The first step in achieving this objective requires that an employer report a compensable injury in a timely fashion to ensure there is no delay in the treatment of the compensable injury. It is important that the employer work with the insurance carrier and health care providers to ensure the injured worker is given the opportunity to return to work in either a modified or full duty status as quickly as medically possible.

These guidelines are not to be used as a fixed treatment protocol, but rather identify a normal course of treatment, and reflect the typical courses of intervention. It is anticipated that there will be injured workers who will require less or more treatment than the average. It is acknowledged that in atypical cases, treatment falling outside these guidelines will occasionally be necessary. However, those cases that exceed the guidelines' level of treatment will be subject to more careful scrutiny and review and will require documentation of the special circumstances that justify the treatment. These guidelines should not be seen as prescribing the type and frequency or length of intervention. Treatment must be based on patient need and professional judgment. This document is designed to function as a guideline and should not be used as the sole reason for denial of treatments and services. These guidelines do not affect any determination of liability for an injury under the Oklahoma Workers' Compensation Act, 85 O.S., Section 1, et seq., and are not intended to expand or restrict a health care provider's scope of practice under any other statutes. These guidelines are not intended to supersede applicable provisions of the Oklahoma Workers' Compensation Court's Schedule of Medical Fees.

I. GENERAL PRINCIPLES

- A. Education of patients, employers, insurance carriers, judges, and health care providers is critical to the appropriate treatment of neck injuries. Most often the most inexpensive, yet effective treatment, involves education through direct communication which leads to effective self-management of symptoms.
- B. Timeliness of treatment cannot be emphasized enough. It is well documented that prognosis for a favorable outcome drops precipitously once an injured worker has been off work for greater than six months. Significant delays in medical care for whatever reason are a detriment to the injured Oklahoma worker.

II. GENERAL GUIDELINES PRINCIPLES

The principles summarized in this section are key to the intended implementation of these guidelines and critical to the reader's application of the guidelines in this document.

- A. ***Re-evaluate Treatment Every 2-4 Weeks:*** If a given treatment or modality is not producing positive functional results within 2-4 weeks, the treatment should be either modified or discontinued. Reconsideration of diagnosis should also occur in the event of poor response to a seemingly rational intervention.
- B. ***Positive Patient Response:*** Positive results are defined primarily as functional and/or physiologic gains which can be objectively measured. Objective functional gains include, but are not limited to, positional tolerances, strength, endurance, range of motion, decreased muscle tension and efficiency/velocity measures which can be quantified. Subjective reports of pain and function should be considered and given relative weight when the pain has anatomic and physiologic correlation. Anatomic correlation must be based on objective findings.
- C. ***Modalities and Therapeutic Procedures:***

"Modality" means any physical agent applied to produce therapeutic changes in biologic tissue, including, but not limited to, thermal, acoustic, light, mechanical, or electric energy.

"Therapeutic procedure" means a manner of effecting changes through the application of clinical skills and/or services that attempt to improve function. Therapeutic procedures include, but are not limited to, education, massage, manual traction, myofascial release, manipulation, and joint mobilization.

- D. ***Surgical Intervention:*** Surgery should be contemplated within the context of expected functional outcome and not purely for the purpose of pain relief. The concept of "cure" with respect to surgical treatment of neck pain by itself is generally a misnomer. 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 condition(s).
- E. ***Active Interventions:*** Interventions involving therapeutic exercise and emphasizing patient responsibility are generally emphasized over passive modalities, especially as treatment progresses. Generally, passive and palliative interventions are viewed as a means to facilitate progress in an active rehabilitation program with concomitant attainment of objective functional gains.
- F. ***Active Therapeutic Exercise Program:*** An exercise program should contain elements of improving patient strength, endurance, flexibility and education.
- G. ***Delayed Recovery:*** A psychological screen may be considered, as well as initiating interdisciplinary rehabilitation treatment, for those patients who are failing to make expected progress 6-12 weeks after treatment. The Physician Advisory Committee recognizes that 3-10% of all industrially injured patients with neck pain will not recover within the time lines outlined in this document despite optimal care. Such individuals may require treatment 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.
- H. ***Treatment Parameter Duration:*** Time frames 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 availability of services. Clinical judgment may substantiate the need to accelerate or decelerate the time frames discussed in this document.
- I. ***Return to Work:*** Even if there is residual chronic pain, return-to-work is **not** necessarily contraindicated. Return-to-work may be therapeutic, assuming the work is not likely to aggravate the basic problem. The practitioner must write detailed restrictions when returning a patient to limited duty. At a minimum, the following functions should be addressed: lifting, flexion /extension and/or rotation of the neck and overhead work, pushing, pulling, crouching, use of stairs, bending at the waist, and tolerance for sitting and standing. The patient should never be released to "light duty" without specific physical limitations. The practitioner should understand the physical demands of the patient's job position before returning the patient to full duty and should request clarification from the employer, if necessary.

III. INITIAL ASSESSMENT

- A. ***Purpose of initial assessment is to assign patients into one of four categories***

1. Axial neck pain - See Appendix A
2. Radicular neck problems - See Appendix B
3. Serious spinal pathology, cancer, infection, fracture.
4. Inflammatory neck pain.

B. *Appropriate assessment methods*

1. History and physical.
2. Serious spinal pathology - history of significant trauma, prolonged use of cortical steroids, alcohol or substance abuse.
3. Red flags - age greater than 50, history of cancer, unexplained weight loss, neck pain unimproved with rest, fever, i.v. drug use, history of UTI.
4. Deterioration must be documented.

C. *Inflammatory arthritis of the spine* can cause neck symptoms including ankylosing spondylitis and rare spondyloarthropathies. These conditions are not typically included as a work related injury but may be guided by the results of the radiographic findings.

D. *Distinguish between axial neck pain or radicular problems.*

1. The vast majority of patients can be separated into these two categories based on the location and characteristics of the symptoms.
2. Axial neck problems are located in the neck, shoulder, upper arm and the interscapular region. Often there is a nonspecific headache and the neurologic exam is typically normal.
3. Radicular cervical spine problems are those with significant radiation of pain or numbness in several fingers. The pain patterns should be a long known neurologic pattern. Pain drawings are helpful in this regard.
4. Look for and document other factors. It is important to include in the history smoking, illegal drug use, obesity, previous neck injuries, surgeries, litigation or disability, compensation claims and psychosocial issues. Nonorganic physical findings such as nonanatomic tenderness, abnormal response to stimulation/distraction such as axial loading, and over reaction should be considered. Also an evaluation of psychological factors that may modulate response to injury and treatment should be considered.

E. *Initial assessment methods.*

1. Laboratory studies are not done routinely. If an underlying illness is suspected on the basis of the history and physical, then appropriate tests are performed.

Laboratory Tests. Various laboratory diagnostic tests are generally accepted, well established and widely used procedures. Laboratory tests are not commonly indicated at the time of initial evaluation for a patient with neck pain. When a patient's history and physical examination suggests infection, metabolic-endocrinologic disorders, tumorous conditions, systemic musculoskeletal disorders (e.g., rheumatoid arthritis or ankylosing spondylitis), or prolonged use of medications (e.g., non-steroidal anti-inflammatory medications), laboratory tests, including, but not limited to, the following can provide useful diagnostic information.

- a. Sedimentation rate: non-specific, but elevated in infection, neoplastic conditions and systemic arthritic conditions. Helpful to rule out non-mechanical sources of neck pain.

- b. Rheumatoid work-up: serum rheumatoid factor, ANA, HLA-B27 titre.
- c. Serum calcium, phosphorus, uric acid, alkaline and acid phosphatase for metabolic, endocrine and neoplastic conditions.
- d. CBC, liver and kidney function profiles for metabolic or endocrine disorders or for adverse effects of various medications.
- e. Endocrine work-up: diabetes mellitus, parathyroid or thyroid disease.
- f. Serum protein electrophoresis.
- g. Urinalysis: bacteria, calcium, phosphorus or hydroxyproline.
- h. Bacteriological (microorganism) work-up: wound, blood and tissue.

The Physician Advisory Committee recommends the above 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.

2. Radiographs are not indicated in all instances of work-related injury. However, if appropriate, an anteroposterior (AP) and lateral radiograph series of the cervical spine taken on 8" X 10" size film at the initial visit should be allowed. Additional radiographs are usually not needed unless supported by reasonable medical evidence. X-rays are considered the first step in the evaluation of degenerative and inflammatory disease, fracture, trauma, infection and neoplasm. The evaluation of biomechanical relationships is an important reason to require radiographs particularly transitional segments and bony abnormalities. Plain radiographs should follow history and clinical examination and be justified by clinical findings. Additional views are not necessary unless indicated by results of the AP and lateral series films. Flexion/extension lateral x-rays may be used to rule out significant soft tissue tear. Initial views such as oblique views may be used to demonstrate conditions which could exist given the findings of the clinical diagnosis. X-rays should be made available to subsequent physicians and reasonable attempts should be made to obtain them.

IV. FOLLOW-UP DIAGNOSTIC IMAGING AND TESTING PROCEDURES

One diagnostic imaging procedure may provide the same or distinctive information as obtained by other procedures. Therefore, prudent choice of procedure(s) for a single diagnostic procedure, a complimentary procedure in combination with other procedure(s), or a proper sequential order in multiple procedures will ensure maximum diagnostic accuracy, minimum adverse effect to patients and cost effectiveness by avoiding duplication or redundancy. The primary goal is accurate determination of the anatomic lesion.

All diagnostic imaging procedures have a significant percentage of specificity and sensitivity for various diagnoses. None is specifically characteristic of a certain diagnosis. Clinical information obtained by history taking and physical examination should be the basis for selection and interpretation of imaging procedure results.

Myelography, CT and MRI 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(s) can be a complimentary diagnostic procedure if the first or preceding procedures, in conjunction with clinical information, cannot provide an accurate diagnosis. Usually, preference of a procedure to others depends upon availability, a patient's tolerance and/or the treating practitioner or radiologist's familiarity with the

procedure.

- A. **CT, MRI, myelography and CT myelography:** These tests are only indicated in the first month of treatment if there is a suspicion of serious spinal pathology, cancer, infection, myelopathy or progressive motor deficit.
- B. **Technetium/Indium/Gallium Scanning:** A generally accepted, well established and widely used procedure. Isotope scanning procedures using Technetium are nonspecific scans to help to determine osteoblastic activity and may be useful in metastatic/primary bone tumors, stress fractures, osteomyelitis and inflammatory lesions. Gallium scanning is a more specific technique for evaluating infection and abscess. Interpretation of the results of these procedures should be made in conjunction with clinical information. These procedures are usually combined with other diagnostic imaging procedures.
- C. **Electro-Diagnostic Studies:** Procedures include, but are not limited to, electromyography (EMG), Nerve Conduction Studies and Somata-Sensory-Evoked Potentials (SSEP). EMG and nerve conduction studies are generally accepted, well established and widely used diagnostic procedures. The SSEP study is a generally accepted, well established diagnostic procedure but with limited use. Electro-diagnostic studies may be useful for patients with suspected neural involvement whose symptoms are persistent or unresponsive to initial conservative treatments. It is used to differentiate peripheral from radicular and spinal cord neural deficits and to rule out concomitant myopathy.

In general, these diagnostic procedures are used as complimentary diagnostic procedures to imaging procedures such as CT, MRI, and/or myelography or diagnostic injection procedures. Electro-diagnostic studies may provide useful, correlative neuropathophysiological information that would be otherwise unobtainable from the standard radiologic studies discussed above.

- D. **Discography:** Cervical discography is used to diagnose axial pain arising from a cervical disk. Commonly, patients complain of neck pain, scapula pain, shoulder pain, upper arm pain, chest wall pain and occipital headaches which arise from the upper posterior neck radiating to the occipital aspect of the skull. MRI, CAT scan and myelography studies rarely indicate the presence of a disk protrusion which results in nerve root compression.

Cervical discography is indicated when a patient has failed to respond to non-operative treatment and standard imaging studies, such as MRI and CAT scan do not provide a specific reason for the persistence of pain. Other precision diagnostic and therapeutic spine injection procedures have failed to either diagnose or treat the pain. Generally, discography should be considered at 3-4 months after the onset of symptoms and appropriate non-operative treatment.

Cervical discography is also indicated in evaluating patients after cervical spine surgery who have residual symptoms or develop new symptoms months or years after surgery that remain enigmatic on clinical evaluation and radiographic work-up.

- E. **Zygapophysial Joint Injections:** The cervical zygapophysial joint can be a source of pain generation. The pattern of pain can encompass the neck, head, shoulder girdle and scapula regions. Imaging studies are not diagnostic in identifying symptomatic zygapophysial joint pain.

The use of zygapophysial joint injections are indicated when a patient fails to improve with non-operative therapy and the specific diagnosis of pain generation has not been established. The cervical zygapophysial joint can be evaluated by either performing an intra-articular joint injection of a local anesthetic and/or denervating the joint by performing a medial branch nerve block with a local anesthetic. Both techniques require the use of real-time fluoroscopic imaging. A positive response to a second confirmatory zygapophysial joint denervation is required to establish the diagnosis of cervical zygapophysial joint pain. The injection of cervical facet joints for diagnostic and therapeutic purposes requires fluoroscopy for accuracy and safety.

- F. **Transforaminal Selective Epidural Nerve Root Blocks:** Unilateral or bilateral upper extremity pain can have an origin in the cervical spine. The pain may have a classic radicular component or the pain may be non-radicular. In either circumstance, the specific nerve root involved with the transmission of the pain can be evaluated with an analgesic epidural nerve root block. Information about the specific cervical motion segment level contributing to the patient's pain is also obtained when a transforaminal selective epidural nerve root block is employed. The transforaminal selective epidural nerve root block is indicated when the suspected origin of upper extremity pain is the neuroaxial column and the confirmation is required.

The selective epidural nerve root block requires the use of real-time fluoroscopy and epiduroradiculography is necessary to assure precision needle placement.

- G. **Sympathetic Denervation:** Persistent pain of the upper extremity may be sympathetically maintained. The cervico-thoracic sympathetic block (stellate) can be used to distinguish between the presence of sympathetically maintained pain versus sympathetically independent pain.

The cervico-thoracic sympathetic block is indicated when upper extremity pain is persistent and unresponsive to non-operative treatment, and other cervical diagnostic analgesic injections have failed to yield a diagnosis regarding the origin of pain generation.

- H. **Epidural Corticosteroid Injections:** The purpose of epidural steroid injections are to treat non-compressive inflammatory mediated nerve root radicular upper extremity pain. Epidural steroid injections are considered to be part of a non-operative conservative therapy. Therefore, their use should be employed during the initial management of neck pain and upper extremity pain.

Steroids can be delivered to the epidural space by using either the dorsal interlaminar or the transforaminal selective epidural nerve canal technique. Epidural steroid injections should be performed with fluoroscopic guidance. If the injection is performed with fluoroscopic guidance and epidurography is used to confirm successful access of the epidural space, epidural steroid injections should be limited to one injection, if the patient does not respond and the target structures were successfully anesthetized with the initial injection of local anesthetic.

- I. **Zygapophysial Joint Procedures:** The cervical zygapophysial joint can be a source of axial non-radicular pain. Therapeutic injection procedures can be performed for this type of pain arising from the joint. These include:

1. Intra-articular steroid injections.
 2. Neuroablative procedures - radio frequency and chemical rhizolysis. Prior to any neuroablative procedure, the diagnosis of cervical zygapophysial joint pain must be established by a positive response to two Z-joint analgesic injections.
- J. ***Cervico-thoracic Sympathetic Procedures:*** Sympathetically maintained pain can be treated using sympathetic blocks or neuroablative percutaneous procedures. Initially, sympathetically maintained pain should be treated by combining analgesic sympathetic blockade (either intermittent or continuous) and aggressive physical therapy. If the pain is persistent and has shown short term responsiveness to cervico-thoracic blocks (stellate) then neuroablative procedures of the cervico-thoracic sympathetic chain can be employed.
- K. ***Physical or Functional Capacity Evaluations/Assessment:*** These evaluating tests include, but are not limited to, determinations of consistency of effort, range of motion, aerobic capacity, strength evaluation, lifting capacity, functional sitting/standing tolerances and/or functional correlation with vocational goals. These generally accepted, established evaluative procedures have widespread utility in the sub-acute and chronic neck pain population, but with limited use in the acute neck pain population. Physical Capacity Evaluations are an extension of the basic physical examination and may be useful for determination of impairments, setting functional restrictions and for the determination of progress, planning and monitoring of rehabilitation.
- L. ***Personality/Psychological/Psychosocial Evaluations:*** These are generally accepted and well established diagnostic procedures with selected use in the acute neck pain population, but with more widespread use in the sub-acute and chronic neck pain population. These procedures may be useful for patients with delayed recovery or chronic pain, recurrent painful conditions, suspected concomitant closed head injury, disability problems and for pre-op evaluation, as well as a possible predictive value for post-op response. The results of these diagnostic procedures may provide clinicians with a better understanding of the patient, thus allowing for more effective rehabilitation. Formal psychological or psychosocial screening to determine if further psychosocial interventions are indicated, should be implemented in patients not making expected progress within 6-12 weeks following treatment and whose subjective symptoms do not correlate with objective signs and tests. Screening should be performed by an individual with a Ph.D., PSY.D., LPC, MASTERS PSYCH or PSYCHIATRIC M.D./D.O. credentials with further testing as indicated.

V. INITIAL TREATMENT

- A. Purpose
1. For the first month, appropriate treatment methods for neck problems are the same. The purpose of treatment is to allow patients to resume necessary activities as quickly as possible. Treatment of radicular neck problems with neurological deficits may require more aggressive therapy while monitoring for neurological deterioration and may require imaging tests with possible surgical intervention.

Treatment should include education about neck problems, activity

modifications, medication and/or physical treatment. Chronic recurrent problems require more intensive effort. With respect to education, the patient should be given reassurance that rapid recovery is expected and should be taught principles related to posture, daily activity, and work. The best method of limiting recurrence is return to normal range and strength by an active, progressive exercise program.

2. Job modifications to include possible limitation of work activities that might aggravate or lead to neck problems should be considered to promote a safe return to work.
3. Medications
 - a. Acetaminophen - this is safe and acceptable for treating patients with cervical pain problems. Patient should be cautioned about side effects.
 - b. Nonsteroidal anti-inflammatories are acceptable for treating patients with acute cervical problems. At the present time, there is no specific understanding as to which nonsteroidal anti-inflammatory is best.
 - c. Oral opioids may be used for severe disabling pain in the neck but their routine use is discouraged. It is recommended that these be used for no longer than two weeks. Patient should be cautioned about the potential harm of dependence and side effects.
 - d. Muscle relaxers for a period not to exceed 2 weeks in most cases.
4. Modalities, therapeutic procedures, and other treatment methods
Non-Operative Treatment Methods:

All non-operative treatment methods referred to in these guidelines are subject to the Oklahoma Workers' Compensation Court's Schedule of Medical Fees.

All treatment modalities are generally accepted treatment procedures, although lacking valid scientific proof of efficacy. Each procedure has a certain duration of supervised implementation to produce its effect and has an optimum duration for treatment. Prolonged continuation of non-effective treatment modalities may produce adverse effects of increased disability and deconditioning. Certain modalities may be shown on a case-by-case basis to be efficacious in maintaining objective measures of function. These interventions would be cost effective via patient self-application and may be utilized beyond the duration of treatment recommended for supervised treatment procedures.

- a. Mobilization. Mobilization is passive movement within the physiologic joint space and is administered for the purpose of increasing overall joint motion. Cervical mobilization may be effective in controlling initial symptoms. Cervical mobilization may be helpful in patients with acute problems when used within the first month of symptoms. Functional improvement should be demonstrable as well as symptomatic in benefit. Manual therapy should not be used as the sole form of treatment but should be combined with an active progressive exercise program as tolerated.

Time to produce effect: 4-10 treatments

Frequency of treatment: 2-3 times per week, decreasing with improvement
Optimum duration: 3 months

- b. Manipulation. Manipulation to include passive movement of high velocity which moves the joint in a physiologic range and has been shown to result in increased joint motion compared to simple mobilization alone. Progressive neurologic deficits should be investigated before manipulation is undertaken. Cervical manipulation may be effective in controlling initial symptoms. Cervical manipulation may be helpful in patients with acute problems when used within the first 1-2 months of symptoms. Functional improvement should be demonstrable as well as symptomatic treatment but should be combined with an active exercise program.

Time to produce effect: 4-10 treatments
Frequency of treatment: 3-5 times per week, decreasing with improvement
Optimum duration 2-4 months

Up to two modalities/procedures are allowed with each manipulation provided they will enhance patient response and do not significantly overlap physiological effects. Reassessment at 10 visits should show significant functional and/or physiological improvement. Ongoing care beyond 18 visits may be appropriate if there is demonstrated continual improvement and active care components are clearly a part of the treatment plan. If no improvement is noted, then consideration for referral to a medical or osteopathic physician may be needed.

Relapses may occur from time to time and follow-up treatment for documented relapses may be needed within the first 4 - 6 months of initiation of treatment. Generally, treatment does not exceed 3 - 4 visits per relapse. Repeat relapses indicate failure to improve and necessitates referral to an M.D. or D.O., or to a physical therapist, if referred by a physician as provided by law. Documentation for relapses must show relation to initial injury.

Conversely, M.D. or D.O. referral for manipulation is often indicated and appropriate, particularly within the first week following injury.

- c. Transcutaneous Electrical Nerve Stimulation (TENS). Therapeutic modalities in this group are generally accepted, established and widely used but the mode of action is poorly understood.

Time to produce effect: 1 or 2 sessions per trial, up to 3 trials.
Frequency of treatment: 2 times per week (supervised) for 3 weeks; during this supervised period, the patient may utilize the TENS unit daily on a self-monitored basis after receiving instructions.

Optimum duration: 1-2 months

Initially, TENS should be prescribed within a supervised setting in order to assure proper electrode placement and patient education. TENS can be used for short-term pain control. If the response to these treatments is beneficial, it may be continued for 1-2 months and for intermittent unsupervised use thereafter if it facilitates objective functional gains. The Physician Advisory Committee recommends rental of a TENS unit with reassessment after 30 days. It may be occasionally useful in specific myofascial pain cases within the above time frames.

- d. Traction. Therapeutic modalities in this group are generally accepted, established and widely used. In and of itself, traction should never be the sole modality of treatment in a supervised setting. Traction modalities are contraindicated in patients with tumor, infection, pregnancy, hypermobility, fracture or dislocation. Bed traction is not an accepted modality. Manual traction is considered as a therapeutic procedure, rather than as a modality.

Time to produce effect: 3 treatments; if the response is negative after treatments, discontinue this modality.

Optimum duration: 1-2 months, may continue this modality as needed (unsupervised) if this modality facilitates objective functional gains.

- e. Thermal Treatment. Includes applications of heat and cold (superficial and deep, including ultrasound); therapeutic modalities in this group are generally accepted, established and widely used procedures:

Time to produce effect: 2-4 treatments

Frequency of treatment: 3-5 times per week, decreasing to 2 times per week after one month

Optimum duration: 2-3 months in conjunction with other therapies

- f. Electrical Stimulation. This modality includes application of electrical stimulation. It is used to reduce swelling and inflammation arising from various musculoskeletal conditions or as a precursor to more active therapy.

Time to produce effect: 2-3 treatments

Frequency of treatments: 3 times one week

Optimum duration: One month in conjunction with other therapies

- g. Exercise. The key to a successful conservative treatment program

for cervical disorders is the rapid return to normal activity. This therapeutic procedure is generally accepted, well established and widely used. The current trend is a balanced program of exercise focusing on the pain source as a means of determining the pattern of treatment. Exercise is one of the three prospective methods demonstrated to be effective in the treatment of cervical pain. An effective exercise program should include aerobic (target heart rate at least 20 minutes per day, 5 days per week) and anaerobic strengthening and stabilization activities. The Physician Advisory Committee recommends utilization of Guidelines for Exercise Testing published by the Joint American College of Cardiology/American Heart Association with respect to cardiovascular risk reduction in the formulation of an exercise prescription. Exercises should be individualized to the patient's requirements and address the functional deficits. Every patient should have a home exercise program within one week of initiating care. The home exercise program should be progressively upgraded as the patient's condition warrants.

The timing of the active exercise and rehabilitation treatment is as important as the treatment chosen. Exercise must be progressed or reduced in accordance with the patient's clinical response and must be clearly and openly oriented toward the goal of returning the patient to normal and productive living. In general, some type of therapeutic exercise should be implemented within the first 1-2 weeks following an injury. Objective measurements of function and physiologic status are recommended to determine baseline exercise thresholds as well as to monitor progress.

- h. Therapeutic Exercise; Neuromuscular Re-education; Therapeutic Activities; and Therapeutic Procedure, Group. These therapeutic procedures are generally accepted, well established and widely used. These procedures should be included in any standard therapeutic exercise program. Therapeutic exercise develops strength and endurance, range of motion and flexibility. Neuromuscular re-education is re-education of movement, balance, coordination, kinesthetic sense, posture and proprioception. Therapeutic activity is direct one-on-one patient contact by the provider with use of dynamic activities to improve functional performance. Therapeutic procedure, group is defined as activities involving two or more individuals instructed at any one time by a physician or by a licensed physical therapist, licensed physical therapy assistant, exercise physiologist, or occupational therapist, under the direction of a physician.

The injured worker is expected to be an active participant in this process attempting to reach a higher level of activity than was previously utilized during the disabling episode. The exercises must be individualized and tailored to the individual's deficits and requirements. The exercise program needs to be taught by the physical therapist or physician to ensure that they are properly taught and carried out. Every patient should have begun a home exercise program within one week of initiating care. In non-surgical cases of cervical pain, the Physician Advisory Committee recommends initiation of a supervised reconditioning program and implementation of a less-active treatment plan if:

- a. The patient has not demonstrated objective carry-over and benefit from an assigned home exercise program; or
- b. The patient has not objectively progressed within a preceding 3 week period; or
- c. The patient has not been released to return to full duty or modified work within 3 weeks.

This does not preclude an earlier implementation or an active, supervised reconditioning program.

Time to produce effect:	2-6 weeks
Frequency of treatment:	2-5 times per week supervised for the first 3-4 weeks, decreasing to 2-4 times per week thereafter
Optimum duration:	4-8 weeks
Maximum duration:	3-4 months, exclusive of intervening medical complications

A self monitored program with periodic monitoring is recommended thereafter.

“Passive modalities only” in the course of treatment (greater than 4 visits) without exercise and education is fruitless, expensive and actually detrimental to the injured worker. Passive modalities include hot packs, cold packs, electrical stimulation and ultrasound. These modalities in conjunction with active therapy can greatly aid in decreasing pain, swelling, and/or inflammation. Modalities are most successful when combined with manual therapy, exercise and education to allow the injured worker to move, function and exercise. Abuses arise when passive modalities to the exclusion of any other active treatment is provided or when too many passive modalities are administered at a single treatment session.

- i. Education. In various forms, education is a generally accepted, well established and widely used therapeutic procedure. Patient's understanding and active participation is fundamental for successful outcome of all treatments.
- j. Trigger Point Injections. Trigger point injections are generally accepted, well established procedures. Trigger point injections are

indicated in those patients where well circumscribed trigger points have been consistently observed, demonstrating a local twitch response, characteristic radiation of pain pattern and local autonomic reaction, such as persistent hyperemia following palpation. Generally, these injections are not necessary unless consistently observed trigger points are not responding to specific, non-invasive, interventions within a six-week time frame. However, trigger point injections may be effective when utilized in the patient with immediate, acute onset of cervical pain. Injection efficacy can be enhanced if injections are immediately followed by myofascial therapeutic interventions, such as vapocoolant spray and stretch, ischemic pressure massage (myotherapy), specific soft tissue mobilization and hot packs.

Potential, but rare, complications of trigger point injections include infection, pneumothorax, anaphylaxis, penetration of viscera, neuroapraxia and neuropathy. As with the therapeutic blocks discussed above, trigger point injections should be utilized primarily for the purpose of facilitating functional progress. Muscles requiring injection should be exercised carefully until post-injection soreness resolves and/or the trial of injections has been completed. However, patients should continue in an aerobic and stretching therapeutic exercise program as tolerated throughout the time period they are undergoing intensive myofascial interventions.

Frequency:	Weekly, several sites may be injected
Optimum duration:	2 weeks
Maximum duration:	3 weeks; occasionally patient may require 2-4 repetitions of trigger point injection series over a 1-2 year period

- k. Sclerotherapy/Prolotherapy. This procedure has no proven value via well controlled, double blind studies and may have harmful effects.
- l. Vocational Rehabilitation. 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.
- m. Vocational Assessment. Once an authorized practitioner has reasonably determined that a patient will not be able to return to his/her former employment and the practitioner can recommend permanent restrictions and date of maximum medical improvement, then implementation of a timely vocational assessment may provide valuable guidance in the determination of future rehabilitation program design. Clarification of rehabilitation goals optimize both patient motivation and utilization of rehabilitation resources. Except in the most extenuating circumstances, this process should be implemented within 3-12 months post-injury at the latest, if prognosis

for return to former occupation is determined to be guarded to poor. Declaration of Maximum Medical Improvement should not be delayed solely due to lack of attainment of a vocational assessment.

- n. Interdisciplinary Team Approach. These interventions are generally accepted, well established and widely used. This group includes work hardening programs, functional restoration programs and pain clinics. In general, these programs are more comprehensive, time consuming and costly and are, therefore, appropriate for patients with greater levels of (perceived) disability, dysfunction, deconditioning and psychological involvement. **Work hardening can often be avoided if honest early return-to-work programs are implemented.**

Work Hardening Programs. Work hardening programs are generally more comprehensive than the work simulation and include education, reconditioning and specific work simulation with respect to task quality, quantity, and intensity. Work hardening is generally initiated after reconditioning or functional restoration has been completed if 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. As discussed in this section, identification of realistic vocational goals is essential for the successful completion of a work hardening program. Generally, work hardening programs entail a progressive increase in the number of hours per day that a patient completes work simulation tasks until the patient can tolerate a full work day.

Time to produce effect:	2-4 weeks
Frequency of treatment:	2-5 times/week
Optimum duration:	4-6 weeks
Maximum duration:	2-3 months

- B. Inappropriate initial treatment
 - 1. Surgical treatment not indicated except for neurological deterioration with conservative treatment within 6 weeks. Hospitalization for nonsurgical treatment is seldom necessary. Bed rest for more than two or three days is not indicated.

VI. SECONDARY ASSESSMENT OF CHRONIC PROBLEMS GREATER THAN ONE MONTH

These can be divided into subacute which is one to three months versus chronic, greater than three months.

- A. The purpose of this re-assessment is to determine the reason for delayed recovery in patients who have not functionally improved and returned to regular work after one month of conservative treatment. The first step in reassessment is to determine if the problem is a regional or nonspecific neck problem, radicular neck problem, serious spinal pathology or inflammatory neck pain. Appropriate secondary assessment methods include CT, MRI, myelography, myelo/CT and EMGs/nerve conduction studies, discography, laboratory testing, functional capacity testing, ergonomic evaluation, diagnostic injections with x-ray guidance, and psychological

testing.

- B. Patients under treatment by their own physician, who fail to improve in 4 weeks after diagnosis, should be referred to an appropriate specialist with the intent of ruling in or out surgical interventions.

VII. SECONDARY TREATMENT

The purpose of secondary treatment is to help the patient who is slow to recover and return the patient with persistent, chronic neck problems to productive work. Treatment is based on the findings of the diagnostic re-evaluation. This treatment should be active and supervised.

In general, surgical work-up and implementation for anterior cervical discectomy and fusion or posterior decompression for patients with HNP, stenosis and/or radiculopathy, should occur within 6 - 12 weeks from injury, at the latest. For patients with refractory, persistent axillary neck pain in whom fusion is being considered, the PAC recommends decisive commitment to surgical or nonsurgical interventions no sooner than 3-4 months following injury but no later than one year.

- A. Appropriate secondary treatment methods.
 - 1. Epidural steroid injections. For patients with acute, subacute radicular neck problems who are unable to participate in an exercise program, epidural steroids may be helpful for short term relief and for avoidance of surgery. Repeat injections, of more than two per year, are not recommended.
 - 2. Inpatient treatment.
 - a. Nonsurgical treatment - rarely, if ever, indicated
 - b. Surgical treatment
 - 1. Clinical indications
 - A. Radiculopathy consistent with appropriate nerve root compression or irritation, instability or motion segment dysfunction unresponsive to nonoperative treatment. Anterior cervical discectomy and fusion or posterior decompression are acceptable surgical treatments for radicular neck pathology.
 - B. Persistent axillary neck pain. The anatomic lesion must be identified. Anterior discectomy and fusion is the operative procedure of choice. Patients with more than two pathological disks are not considered good surgical candidates in most cases.

VIII. EXPECTED OUTCOMES

Successful surgical treatment for cervical problems at one level may result in permanent limitation of overhead work activities but, in general, return to work without significant restriction should be expected. For two or more level involvement, there may be diminished functional capacity due to diminished mobility and lifting capacities.

IX. INTERNAL FIXATION SYSTEMS

Various internal fixation systems are used as an adjunct to spinal fusion procedure. Some are generally accepted and well established procedures and are now the standard of care at many spine centers. These systems may be utilized in those cases including degenerative spinal disorder known to have a high rate of failure by spinal fusion procedure alone. They may be used to obtain and maintain alignment while a spinal fusion procedure heals. The operating surgeon's familiarity with the use of a given system is the most important factor in the successful use of a particular system.

Risk factors which lead to a high rate of failure of fusion which may benefit from enhanced fusion rates utilizing internal fixation include smoking, repeat fusion, multiple levels, diabetes, use of allograft, metabolic bone disease, history of spinal fusion non-union or delayed union at other levels.

Earlier rehabilitation and return to work is possible with internal fixation. Removal of implants may be needed following successful fusion.

Bone Growth Stimulator Indications:

- | | | | |
|---|-----------------|---|------------------------|
| * | Smoking | * | Allograft |
| * | Obesity | * | Metabolic Bone Disease |
| * | Floating Fusion | * | Multiple Fusion Levels |
| * | Diabetes | * | History of Nonunion |

APPENDIX A

Axial non-radicular pain arising from the cervical spine may be generated from the intervertebral disk, the zygapophysial joint, the neuroaxial column or the cervico-thoracic sympathetic chain. The location of the pain, the quality of pain or the intensity of the pain often times does not distinguish the exact anatomical structure that is the source of pain generation. Recent studies have shown the lack of correlation between axial pain and MRI studies. Therefore, precise injectional diagnostic cervical spine injections are necessary to confirm a suspected diagnosis. These diagnostic injection procedures include discography, zygapophysial joint denervation, transforaminal selective epidural nerve root block and cervico-thoracic sympathetic chain denervation.

APPENDIX B

Neurogenic pain from disk herniation is felt when the protrusion encroaches upon the nerve roots within the foraminal gutter. This more distal radiation is also accompanied by shoulder and interscapular pain from irritation into the posterior primary division of the nerve roots. Radicular pain varies from a deep, aching pain to a sharp pain superimposed on a dull, aching background. It is often common for radicular pain to be felt proximally and paresthesia or a sensation of numbness to be felt distally.

Neck pain is usually the first symptom and may or may not abate as the pain and paresthesia begin to radiate down the arm. The arm pain is often described as a sharp, shooting pain that radiates along the anatomic course of the nerve from proximal to distal. The onset may be sudden or insidious. The patient commonly leans or list to one side or the other. Motion of the spine is limited due to pain and muscle spasm. The neurological examination may be normal if the compressed nerve is still functional, or it may yield objective evidence of impaired nerve function (e.g. atrophy, weakness, sensory alteration or diminished reflex) depending upon the nerve root affected. Signs of nerve root tension (e.g. positive orthopedic tests) may also be present.

NECK PAIN TREATMENT GUIDELINES

Recommended by
PHYSICIAN ADVISORY COMMITTEE

Adopted by
**ADMINISTRATOR OF THE OKLAHOMA WORKERS'
COMPENSATION COURT**

Effective January 2, 1997