

**Low Back Injury
Chiropractic Treatment Parameters and
Guidelines**

**Proposed by the
New York State
Chiropractic Association**

**To the
New York State Workers' Compensation
Board**

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INTRODUCTION TO LUMBAR SPINE INJURY

General Summary of Recommendations as adapted by the proposed low back injury medical treatment guidelines from the State of New York Insurance Department to the New York State Workers' Compensation Board and revised for the chiropractic management of the injured worker.

Standard procedures that should be utilized when initially diagnosing a work-related spinal complaint are listed below. These procedures have been developed through a panel consensus adapted for low back pain from the following documents: Low Back Pain Medical Treatment Guidelines from the proposed by the State of New York Department of Insurance to the Workers' Compensation Board; Cervical Spine Medical Treatment Guidelines from the proposed by the State of New York Department of Insurance to the Workers' Compensation Board; the Council on Chiropractic Guidelines and Practice Parameters (CCGPP); the Guidelines for Chiropractic Quality Assurance and Practice Parameters; State of Colorado Lumbar Spine Pain Medical Treatment Guidelines for Workers Compensation; State of Colorado Cervical Spine Pain Medical Treatment Guidelines for Workers Compensation.

- The initial assessment of patients with low back problems focuses on detecting indications of potentially serious disease, termed “red flags” (i.e., fever or major trauma).
- In the absence of red flags, low back problems can be effectively managed conservatively.
- At the first visit, the chiropractor should assure the patient that low back pain is common, has a good prognosis, and is not debilitating in most cases on a long-term basis.
- To avoid undue back irritation and debilitation from inactivity, some activity or job modification may be helpful in the acute period. Bed rest is not generally recommended for patients with low back pain and radicular pain other than those with unstable fractures of cauda equine syndrome with pending neurological catastrophe. Maintaining ordinary activity, as tolerated, leads to the most rapid recovery.
- All patients should be encouraged to return to work as soon as possible, as evidence suggests this leads to the best outcomes. This process may be best facilitated with modified duty particularly when the job demands exceed the patient's capabilities. Full-duty work is a reasonable option for those with low physical job demands, and the ability to control their job

demands and frequently alternate their posture, as well as for those with less severe presentations.

- Aerobic exercise has the best evidence of efficacy among the exercise regimens, whether for acute, subacute, or chronic low back pain patients.
- Specific types of stretching appear helpful while non-specific stretching is not recommended as it is not helpful. Strengthening exercises including lumbar stabilization exercises are recommended, but not until the acute period of low back pain has subsided.
 - Manipulation for treatment of non-specific low back pain does have efficacy.
 - Many invasive and noninvasive therapies are intended to cure or manage low back pain, but no strong evidence exists that they accomplish this as successfully as therapies that focus on restoring functional ability without focusing on pain. Furthermore, patients should be aware that returning to normal activities most often aids functional recovery.
 - Patients should be encouraged to accept responsibility for managing their recovery rather than expecting the provider to provide an easy “cure.” This process will promote using activity rather than pain as a guide, and it will make the treatment goal of return to occupational and non-occupational activities more obvious.
 - If symptoms persist without improvement, further evaluation is recommended.
 - Within the first three months of low back symptoms, only patients with evidence of severe spinal disease or severe, debilitating symptoms, and physiologic evidence of specific nerve root compromise confirmed by appropriate imaging studies, can be expected to potentially benefit from surgery.
 - The vast majority of patients with symptoms of lumbosacral nerve root irritation due to herniated discs (nucleus pulposus) eventually recover with or without surgery. Quality evidence is present that those more severely affected and with sequestered disc fragments also benefit from conservative management.

- Nonphysical factors (such as psychiatric, psychosocial, workplace or socioeconomic problems) can be investigated and should be addressed in cases of delayed recovery or delayed return to work.
- Chiropractors can greatly improve patient response to back symptoms by providing assurance, encouraging activity. While patients may be looking for a clear-cut diagnosis for their low back pain, the risk to them of a suggested “cure” for this assumed diagnosis, resulting in failed expectations, may be worse than their symptoms.
- Chiropractors should be aware that “abnormal” findings on x-rays, magnetic resonance images, and other diagnostic tests are frequently seen by age 40 even in asymptomatic individuals. Bulging discs continue to increase after that point and by approximately age 60, will be encountered in a majority of patients. This requires that a careful history and physical examination be conducted by a chiropractor in order to correlate historical, clinical, and imaging findings prior to diagnosing and assigning the finding on imaging to a patient’s complaints. The focus of treatment should be improving symptoms and function, and not the correction of abnormalities on imaging studies.

A. Initial Diagnostic Procedures

1. History Taking and Physical Examination

Taking a history taking and performing a physical examination establish the foundational basis for and dictates the subsequent stages of diagnostic and therapeutic procedures. Patients are unique and present with variation in both manifestation of their condition and response to care. When the findings of clinical evaluations and other diagnostic procedures are not complementing one another, and may be contradictory, the objective clinical findings should have preference.

The medical record should reasonably document the following:

a. History of Present Injury

A detailed history, taken in temporal proximity to the time of injury, should guide evaluation and treatment. The history should include:

i. **Mechanism of Injury**

This includes details concerning the onset and progression of injury symptoms. The mechanism of injury should include a reasonably detailed description of the incident, the position of the body before, during, and at the post-incident, and any other factor(s) that will assist in ascribing both causation and potential extent of the injury.

ii. **Injury Gradation**

Injury gradation marks the onset of the injury and its triggering factors. The location of pain (including patterns of pain distribution, radiation and referral), nature of symptoms (e.g., provocation – exacerbations and remissions – what makes it feel better or what makes it feel worse, what has the patient done or taken to alleviate the pain of injury (e.g., sleep positions); the quality of the injury symptoms and pain – constant, intermittent, on movement, dull, sharp, aching, burning, boring pain, severity – on a scale of 10, 10 being the worst, and timing – how long), and any other factors. Of particular importance is whether raising the arm over the head alleviates radicular-type symptoms.

The history should include both the primary and secondary complaints (e.g., primary lumbar pain, secondary hip, and thigh or leg complaints). The history should include the use of a patient completed pain drawing, Visual Analog Scale (VAS) or other outcome assessment tools as are recommended, both during initial evaluation and during the course of treatment to assure that all work related symptoms are being addressed.

- iii. Presence and distribution of upper and/or lower extremity numbness, paresthesias, or weakness, especially if precipitated by coughing or sneezing.
- iv. Prior occupational and non-occupational injuries to the same area, including specific prior treatment, history of prior motor vehicle accidents, chronic or

recurring symptoms, and the patient's final status (including subjective and functional limitations) which may have resulted from prior injury or complaint.

- A key component is documenting the patient's ability to perform their usual and customary daily work and home activities immediately preceding the new incident which caused them to seek your evaluation.
- v. Ability to perform job duties and activities of daily living.

b. Past History:

- i. Comprehensive past medical and familial history.
- ii. Review of systems includes symptoms of rheumatologic, neurologic, endocrine, neoplastic, infectious, and other systemic diseases.
- iii. Smoking history.
- iv. Vocational and recreational pursuits. Note activity levels (pre and post injury), and potential aggravating factors (e.g., strenuous activities, prolonged sustained postures, exposure to vibration, and deconditioning).
- v. History of depression, anxiety, or other psychiatric illness.
- vi. Assess for other predictors of recurrence, absenteeism and chronicity not referenced above (e.g., time off work, psychosocial issues, symptom magnification).

c. Physical Examination

A physical examination should include accepted tests and exam techniques applicable to the area being examined, including:

- i. Visual inspection, including posture (noting integumentary and structural deformities and indicators of potential underlying pathology, e.g., skin lesions, step deformity, faun's beard, etc.).

- ii. Lumbar 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.
- iii. Examination of related areas (e.g., thoracic spine, pelvis, lower extremities).
- iv. Palpation of spinous processes, sacroiliac joints, pelvis, and muscles noting myofascial tightness, tenderness, and trigger points.
- v. Motor and sensory examination of the lower muscle groups with specific nerve root focus, as well as sensation to light touch, pin prick, temperature, position and vibration. More than 2 centimeter (cm) difference in the circumferential measurements of the two lower extremities may indicate chronic muscle wasting.
- vi. Deep tendon reflexes. Asymmetry or other abnormality of reflexes may indicate pathology. Pathologic reflexes include Babinski, ankle clonus, grasp reflex, and Hoffman's sign.
- vii. Special tests, such as leg raise, root tension tests, Valsalva maneuver, or other tests as indicated by the nature of the presenting condition.
- viii. Gait and ability to maneuver during examination (e.g., difficulty rising from a seated position).

d. Relationship to Work

The relationship to work includes a statement of the probability that the illness or injury is work-related. If further information is necessary to determine work relatedness, the physician should clearly state what additional diagnostic studies or job information is required.

e. 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:

- i. Sharp and light touch, deep pressure, temperature, and proprioceptive sensory function;
- ii. Strength testing;
- iii. Anal sphincter tone and/or perianal sensation;
- iv. Presence of pathological reflexes of the upper and lower extremities; or
- v. Evidence of an Incomplete Spinal Cord Injury Syndrome:
 - *Spinal Cord Injury 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.
 - *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.
 - *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.

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

vi. Spinal cord lesions should be classified according to the **American Spine Injury Association (ASIA)** impairment scale.

ASIA Impairment Scale

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.

B. Follow-Up Diagnostic Imaging and Testing Procedures

1. Imaging Studies

In the absence of red flags, the need for imaging and other tests should be based on history, physical examination findings and the doctor's clinical determination. Potential diagnostic benefit must be weighed against the risk of ionizing radiation and cost effectiveness. Routine radiography of the patient as a screening is inappropriate. Basic views are the anteroposterior (AP), lateral and oblique. Special views are done to evaluate instability but may have a limited role in the acute setting. MRI or CT is indicated when spinal cord injury is suspected.

The mechanism of injury and specific indications for the imaging should be listed on the request form to aid the radiologist and x-ray technician. Alert, non-intoxicated patients, who have isolated complaints without palpable midline tenderness, neurologic findings, or other acute or distracting injuries elsewhere in the body, may not require imaging. The following suggested indications are:

- a. History of significant trauma, especially high impact motor vehicle accident, rollover, ejection, bicycle, or recreational vehicle collision or fall from height greater than one meter.
- b. Age over 65 years.
- c. Suspicion of fracture, dislocation, instability, or neurologic deficit
- d. Unexplained or persistent pain for at least 6 weeks or pain that is worse with rest.
- e. Localized pain, fever, constitutional symptoms, suspected tumor, history of cancer, or suspected systemic illness such as a rheumatic/rheumatoid disorder or endocrinopathy.

When the findings of the diagnostic imaging and testing procedures are not consistent with the clinical examination, clinical findings should have preference. There is good evidence that in the asymptomatic population more than 40 years in age, the prevalence of disc degeneration is greater than fifty percent (50%). Disc degeneration, seen as loss of signal intensity on MRI, may be due to accelerated changes causing biochemical and

structural changes separate and distinct from traumatic injury and may not have pathological significance.

Disc bulging and posterior disc protrusion, while not rare, may be symptomatic. Mild reduction in the cross-sectional area of the spinal cord may be seen without myelopathy in patients older than 40, therefore, clinical correlation is required.

The studies below are listed in frequency of use, not importance. Like any diagnostic test, the selection of the most appropriate imaging test is predicated upon the suspected pathology which is best visualized by the mode of imaging selected by the injured workers' health care provider.

a. Magnetic Resonance Imaging

Magnetic Resonance Imaging (MRI) is useful in cases of suspected nerve root compression, in myelopathy to evaluate the spinal cord and/or differentiate or rule out masses or 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 injury.

MRI should be performed immediately if there is a question of infection, tumor or metastatic disease with cord compression. MRI is contraindicated in patients with certain implanted devices. [Ferrous material/metallic objects present in the tissues are a contraindication for the performance of an MRI.]

In general, the high field, conventional, MRI provides better resolution. A lower field scan with lower magnetic intensity may be indicated when a patient cannot fit into a high field scanner or is too claustrophobic despite sedation and an open high field unit is not available.

Inadequate resolution on the first scan may require a second MRI using a different technique. A subsequent diagnostic MRI may be a repeat of the same procedure when the rehabilitation physician, radiologist or surgeon documents that the study was of inadequate quality to make a diagnosis. All questions in this regard should be discussed with the MRI center and/or radiologist.

Specialized MRI Scans:

i. MRI with 3-dimensional reconstruction

On rare occasions, an MRI with 3-dimensional reconstruction views 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.

ii. Dynamic-kinetic MRI of the spine

Dynamic-kinetic MRI of the spine uses an MRI unit configured with a top-front open design which enables upright, weight-bearing patient positioning in a variety of postures not obtainable with the recumbent images derived from conventional, closed unit MRI systems.

Imaging can be obtained in flexion, extension, and rotation of the spine, as well as in erect positioning. There is a theoretical advantage to imaging sequences obtained under more physiologic conditions than in the supine position. There is currently ongoing research to establish whether the theoretical advantages of positional and kinetic MRI result in improved sensitivity and specificity in detecting spine pathology. Currently it remains investigational, and is not recommended until the correlation with clinical syndromes is firmly established.

iii. Enhanced MRI with Gadolinium

Enhanced MRI with Gadolinium may be useful in cases of neoplasia, Failed Low Back Surgery Syndrome and the need to distinguish scar tissue from other space-occupying lesions.

b. Computed Axial Tomography (CT)

CT scans provide excellent visualization of bone and are used to further evaluate bony masses and suspected fractures 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. CT is usually utilized for suspected

lumbar spine fracture in a patient with negative plain films, during acute, emergent situations where MRI may be potentially contraindicated, or to further delineate a lumbar fracture. Instrument-scatter reduction software provides better resolution when metallic artifact is of concern. When ferrous/ metallic materials are present in the tissues, CT should be ordered rather than an MRI.

c. Myelography

Myelography involves the injection of radiopaque material into the spinal subarachnoid space followed by x-rays images then taken to define the relevant 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. Myelography is an invasive procedure with complications including nausea, vomiting, headache, convulsion, arachnoiditis, CSF leakage, allergic reactions, bleeding, and infection. Therefore, myelography should only be considered when CT and MRI are unavailable, for morbidly obese patients or those who have undergone multiple operations, and when other tests prove non-diagnostic in the surgical candidate. The use of small needles and a less toxic, water-soluble, nonionic contrast is recommended.

d. CT Myelogram

CT Myelography provides more detailed information about relationships between neural elements and surrounding anatomy and is appropriate in patients with multiple prior operations or tumorous conditions only for presurgical testing.

e. Lineal Tomography

Lineal tomography is infrequently used, yet may be helpful in the evaluation of bone surfaces, bony fusion, or pseudarthrosis.

f. Bone Scan (Radioisotope Bone Scanning).

A bone scanning is more sensitive but less specific than MRI. Technetium diphosphonate (^{99m}Tc) uptake reflects osteoblastic activity and may be useful in diagnosing metastatic/primary bone tumors, stress and non-displaced fractures,

osteomyelitis, and inflammatory lesions, but cannot distinguish between these entities.

The usual indication is to evaluate for neoplastic conditions. It is indicated with persistent symptoms with otherwise normal diagnostic tests or to differentiate old vs. new lesions. Other indications include occult fracture or infection.

g. Other Radioisotope Scanning.

Indium and gallium scans are other methods of creating scanned images and are usually used to help diagnose lesions seen on other diagnostic imaging studies. Gallium citrate (Ga 67) scans are used to localize tumor, infection, and abscesses.

h. Dynamic [Digital] Fluoroscopy.

Dynamic [Digital] Fluoroscopy of the lumbar spine measures the motion of intervertebral segments using a videofluoroscopy unit to capture images as the subject performs lumbar flexion and extension, storing the anatomic motion of the spine in a computer. Dynamic Fluoroscopy may be used in designated trauma centers to evaluate the lumbar spine. Its superiority over MRI has not been established.

2. Other Tests

a. Electrodiagnostic Testing

i. Needle EMG

- Needle EMG for low back pain is recommended where a CT or MRI is equivocal and there are ongoing pain complaints that raise questions about whether there may be a neurological compromise that may be identifiable. This means leg symptoms consistent with radiculopathy, spinal stenosis, peripheral neuropathy, etc. EMG is not recommended for patients with acute, subacute, or chronic back pain who do not have significant leg pain or numbness. Nerve conduction studies are done in addition to the needle EMG

both to rule out other potential causes for the symptoms (co-morbidity or alternate diagnosis involving peripheral nerves) and to confirm radiculopathy, but the testing must include needle EMG. (Preston 05)

Indications: Failure of suspected radicular pain to resolve or plateau after waiting 4 to 6 weeks (to provide for sufficient time to develop EMG abnormalities as well as time for conservative treatment to resolve the problems), equivocal imaging findings such as CT or MRI, and suspicion by history and physical examination that a neurologic condition other than radiculopathy may be present instead of or in addition to radiculopathy.

ii. Surface Electromyography

- The diagnostic effectiveness of this procedure for low back pain needs to be investigated further at this time.

iii. Ultrasound (Diagnostic)

- The diagnostic effectiveness of this procedure for low back pain needs to be investigated further at this time.
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b. Provocation Discography

i. Lumbar Discography

- The diagnostic effectiveness of this procedure for low back pain needs to be investigated further at this time.

ii. MRI Discography

- The diagnostic effectiveness of this procedure for low back pain needs to be investigated further at this time.

iii. Myeloscopy

- The diagnostic effectiveness of this procedure for low back pain needs to be investigated further at this time.

c. Thermography

- i. The diagnostic effectiveness of this procedure for low back pain needs to be investigated further at this time.
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C. Chiropractic Therapeutic Procedures

(Per panel consensus adapted for low back pain from the following: Low Back Pain Medical Treatment Guidelines from the proposed by the State of New York Department of Insurance to the Workers' Compensation Board; Cervical Spine Medical Treatment Guidelines from the proposed by the State of New York Department of Insurance to the Workers' Compensation Board; the Council on Chiropractic Guidelines and Practice Parameters (CCGPP); the Guidelines for Chiropractic Quality Assurance and Practice Parameters; State of Colorado Lumbar Spine Pain Medical Treatment Guidelines for Workers Compensation; State of Colorado Cervical Spine Pain Medical Treatment Guidelines for Workers Compensation).

1. Overview of Chiropractic Care

Important issues in the care of the patient

Before initiation of any therapeutic procedure, the authorized treating provider, employer, and insurer must consider these important issues in the care of the patient:

- 1) Patients undergoing therapeutic procedure(s) who were not able to perform their usual and customary work duties should be released or returned to modified or restricted duty during their rehabilitation at the earliest appropriate time.
- 2) 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 are not responding within the recommended duration periods,

alternative treatment interventions, further diagnostic studies or consultations should be pursued.

- 3) 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.
- 4) For those patients who fail to make expected progress 6-12 weeks after initiation of care and/or those patient's whose subjective symptoms do not correlate with objective signs and tests, reexamination in order to confirm the accuracy of the diagnosis should be made. Formal psychological or psychosocial evaluation may be considered.

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, abnormal muscle tone, and restoring functional activities.

2. Chiropractic Spinal Adjustment / Manipulation

(As developed by panel consensus and adapted from the Council on Chiropractic Guidelines and Practice Parameters (CCGPP) low back pain treatment parameters, and the Guidelines for Chiropractic Quality Assurance and Practice Parameters)

- Chiropractic Spinal Adjustment / Manipulation is recommended for treatment of acute, subacute and chronic low back pain when tied to objective measures of improvement. Chiropractic Spinal Adjustment / Manipulation is indicated for acute, subacute, chronic low back pain and radicular pain syndromes.
- *Cautions and Contraindications*

Chiropractic care, including patient education, passive and active care therapy, is a safe and effective form of healthcare for low back disorders. There are certain clinical situations where high velocity, low amplitude manipulation or other manual therapies may be contraindicated. It is incumbent upon the treating doctor of chiropractic to evaluate the need for care and the risks associated with any treatment to be applied.

Many contraindications are considered relative to the location and stage of severity of the morbidity, whether there is co-management with one or more specialists, and the therapeutic methods being employed by the chiropractic physician.

- Contraindications for High-Velocity Manipulation Techniques on the Lumbar Spine (red flags):

A spinal manipulation or chiropractic adjustment is a therapeutic force or maneuver delivered by the physician during manipulation in the anatomic region of involvement. A relative contraindication is a condition that adds significant risk of injury to the patient from manipulation, but does not rule out its use. The doctor should discuss this risk with the patient and record this in the chart.

- Region of local unstable fractures
- Severe osteoporosis
- Multiple myeloma
- Osteomyelitis
- Local primary bone tumors where osseous integrity is in question
- Local metastatic bone tumors
- Paget's disease
- Progressive or sudden (i.e. cauda equine syndrome) neurologic deficit
- Spinal cord tumors that clinically demonstrate neurological compromise or require specialty referral. In cases where the neoplasm has been properly assessed and is considered to be clinically quiescent and/or perhaps distant to therapeutic target site, then chiropractic manipulative therapy may be utilized.
- Region of hypermobile joints
- Rheumatoid arthritis in the active systemic stage, or locally in the presence of inflammation or instability.
- Inflammatory phase of ankylosing spondylitis
- Inflammatory phase of psoriatic arthritis
- Reactive arthritis (Reiter's syndrome)
- Unstable congenital bleeding disorders, typically requiring specialty co-management

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- Unstable acquired bleeding disorders, typically requiring specialty co-management
 - Inadequate physical examination
 - clinicians with inadequately-trained manipulative skills
 - Under certain procedures soft tissue low velocity, low amplitude manipulation or mobilization procedures may still be clinically reasonable and safe.
 - Conditions contraindicating certain chiropractic directed treatments such as spinal manipulation and passive therapy.

Generally the procedure or therapy is contraindicated over the relevant anatomy and not necessarily contraindicated for other areas:

- Local open wound or burn.
 - Prolonged bleeding time/hemophilia.
 - Artificial joint implants.
 - Pacemaker (contraindicated modality - Electrotherapy).
 - Joint infection
 - Tumors/cancer
 - Recent/healing fracture
- *Chiropractic Management of Low Back Disorders*

Initial Course of Treatments for Low Back Disorders

The treatment recommendations that follow, based on clinical experience combined with the best available evidence, are posited for the ‘typical’ patient and do not include risk stratification for complicating factors. The frequency and duration trials for the various stages of treatment have been developed through a panel consensus based on the following: the Council on Chiropractic Guidelines and Practice Parameters (CCGPP), and the Guidelines for Chiropractic Quality Assurance and Practice Parameters, and State of Colorado Low Back Pain Medical Treatment Guidelines for Workers Compensation)

- *Frequency and Duration for Initial (Trial) Course of Chiropractic Treatments:*

Stage of Condition	Frequency/Duration of Treatment with Re-evaluation:
Acute:	typically 2-3x weekly 2-4 weeks (range: 1-14 visits over 4 weeks)*
Sub-Acute:	2-3x weekly for 2-4 weeks
Chronic:	2-3x weekly for 2-4 weeks
Recurrent/ Flare-up	1-3x weekly for 1-4 weeks

*Treatment frequency and duration are predicated upon individual patient need, as determined by the treating provider. Severity factors (both admitting and during the course of care) may dictate higher or lower frequencies and duration of care, resulting in a range of 1 to 14 visits during the initial acute stage of care).

An initial course of chiropractic treatment typically includes one or more “passive” (i.e. non-exercise) manual therapeutic procedures (i.e. spinal manipulation or mobilization) and physiotherapeutic modalities for pain reduction, in addition to patient education designed to reassure and instill optimal concepts for independent management. The initial visits allow the doctor to explain that the clinician and the patient must work as a pro-active team and to outline the patient’s responsibilities. While passive care methods for pain or discomfort may be initially emphasized, “Active” (i.e. exercise) care should be increasingly integrated to increase function and return the patient to regular activities.

- *Re-evaluation and Re-examination*

A detailed or focused re-evaluation designed to determine the patient’s progress and response to treatment should be conducted at the end of each trial of treatment. Additionally, a brief assessment of the patients response to treatment

should be noted after each treatment is completed, and recorded in progress notes (e.g., SOAP notes). A patient's condition should be monitored for progress with each visit. Near the midway point of a trial of care (i.e., end of the second week of a 4 week trial), the practitioner should reassess whether the current course of care is continuing to produce satisfactory clinical gains utilizing commonly accepted outcomes assessment methods. When a patient expected progress is delayed (i.e., stalled functional gains), the doctor of chiropractic should reassess and consider other clinically appropriate options – other chiropractic methods, outside referral/treatment, diagnostic testing and co-management. A separate re-examination procedure should be performed at the end of the trial of care or in the event of an unexpected, significant change in the patient's condition. Patients who fail to achieve measurable gains should be considered for a modified treatment plan, additional diagnostic evaluation and/or specialist referral, co-management or an alternative therapeutic approach.

After an initial course of treatment has been concluded, a detailed or focused re-evaluation should be performed. The purpose of this re-evaluation is to determine whether the patient has made clinically meaningful improvement. A determination of the necessity for additional treatment should be based upon the response to the initial trial of care and the likelihood that additional gains can be achieved. As patients begin to plateau in their response to treatment, further care should be tapered or discontinued depending on the presentation. A final re-evaluation is recommended to confirm that the condition has resolved or a clinical plateau has occurred and for the practitioner to provide final patient education and instructions in effective self-management.

When a patient reaches complete or partial resolution of their condition and all reasonable treatment and diagnostic studies have been provided then this should be considered a final plateau (maximal therapeutic benefit). The doctor of chiropractic should perform a final examination to verify that maximum therapeutic benefit (MTB) has been achieved, and provide any necessary patient education and instructions in effective future self-management.

If the criteria to support continuing chiropractic care (as described in the under additional care) have been achieved, a follow-up course of treatment may be indicated. However, one of the goals of any treatment plan should be to reduce the

frequency of treatments to the point where maximum therapeutic benefit continues to be achieved while encouraging more active self-therapy, such as independent strengthening and range of motion exercises, and rehabilitative exercises. Patients also need to be encouraged to return to usual activity levels despite residual pain, as well as to avoid overdependence on physicians, including doctors of chiropractic.

The frequency of continued treatment generally depends upon the severity and duration of the condition. Upon completion of the initial trial of care, if the appropriate criteria have been met, the following parameters of continued treatment are recommended, based on clinical experience combined with the best available evidence.

- *Frequency and Duration for Continuing Courses of Treatments:*

Stage of Condition	Frequency/Duration of Treatment with Re-evaluation:
Acute:	2-3x weekly for 2-4 weeks, 4-12 treatments
Sub-Acute:	2-3x weekly for 2-4 weeks, 4-12 treatments
Chronic:	1-3x weekly for 2-4 weeks, 2-12 treatments
Recurrent/ Flare-up	1-3x weekly for 1-2 weeks, 1-6 treatments

When the patient's condition reaches a plateau, or no longer shows ongoing improvement from the therapy, a decision must be made on whether the patient will need to continue treatment. Generally, progressively longer trials of therapeutic withdrawal may be useful in ascertaining whether therapeutic gains can be maintained absent treatment.

- *Additional Care:*

In a case where a patient reaches a clinical plateau in their recovery (also sometimes referred to as “maximal therapeutic benefit”) and has been provided reasonable trials of interdisciplinary treatments, additional chiropractic care may be indicated in cases of exacerbation/flare-up, or when withdrawal of care results in substantial, measurable decline in functional or work status.

Additional chiropractic care may be indicated in cases of exacerbation/flare-up in patients who have previously reached MTB, if criteria to support such care (substantive, measurable prior functional gains with recurrence of functional deficits) have been established in the patient.

The following parameters for passive and active therapies have been derived from panel consensus adapted for low back pain from the following: Low Back Pain Medical Treatment Guidelines from the proposed by the State of New York Department of Insurance to the Workers’ Compensation Board; Cervical Spine Medical Treatment Guidelines from the proposed by the State of New York Department of Insurance to the Workers’ Compensation Board; the Council on Chiropractic Guidelines and Practice Parameters (CCGPP); the Guidelines for Chiropractic Quality Assurance and Practice Parameters; State of Colorado Lumbar Spine Pain Medical Treatment Guidelines for Workers Compensation; State of Colorado Cervical Spine Pain Medical Treatment Guidelines for Workers Compensation.

3. Therapy, Passive

Passive therapies include 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. If employed, 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. 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.

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” has been completed, alternative treatment interventions,

a. Mobilization (Joint)

Joint mobilization consists of 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. 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, and signs of progressive neurologic deficits, myelopathy, vertebrobasilar insufficiency, or carotid artery disease. Relative contraindications include stenosis, spondylosis, and disc herniation.

- Time to Produce Effect: 6 to 9 treatments.
- Frequency: Up to 3 times per week.
- Optimum Duration: 4 to 6 weeks.

b. Mobilization (Soft Tissue)

Mobilization of soft tissue is the skilled application of muscle energy, strain/counter strain, myofascial release, manual trigger point release, and other 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.

- Time to Produce Effect: 4 to 9 treatments.
- Frequency: Up to 3 times per week.
- Optimum Duration: 4 to 6 weeks.

- Maximum Duration: 6 weeks.

c. Massage (Manual or Mechanical)

Manual or Mechanical massage consists of manipulation of soft tissue with broad-ranging relaxation and circulatory benefits. This may include stimulation of acupuncture points and acupuncture channels (acupressure), application of suction cups and 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. As with all passive therapies, massage must be accompanied by exercise and patient education.

- Massage is recommended for select use in subacute and chronic low back pain as an adjunct to more efficacious treatments consisting primarily of joint manipulation / mobilization and/or a graded aerobic and strengthening exercise program.

Indication: Consideration for time-limited use in subacute and chronic low back pain patients without underlying serious pathology is as an adjunct to a conditioning program that has both graded aerobic exercise and strengthening exercises. The intervention is only recommended to assist in increasing functional activity levels more rapidly and the primary attention should remain on the conditioning program. In those not involved in a conditioning program, or who are non-compliant with graded increases in activity levels, this intervention is not recommended.

Frequency/Duration: The two highest quality studies of massage as a treatment for low back pain showed benefit from participants undergoing massage therapy 1 or 2 times a week for 4 to 10 weeks for a total of between 6 and 10 sessions. Each session lasted 30 to 35 minutes. Objective improvements should be shown approximately halfway through the treatment regimen to continue this course of treatment.

Indications for Discontinuation: Resolution, intolerance, lack of benefit, or noncompliance with aerobic and strengthening exercises.

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- Massage is recommended as a treatment for acute low back pain and chronic radicular syndromes in which low back pain is a substantial symptom component.

Indications: Patients with sub-acute and chronic low back pain without underlying serious pathology, such as fracture, tumor, or infection.

Frequency/Duration: It is suggested that objective benefit (functional improvement along with symptom reduction) be demonstrated after a trial of 2 sessions in order for further treatment to continue, for up to 10 visits during which a transition to a conditioning program is accomplished.

- Time to Produce Effect: Immediate.
- Frequency: 1 to 2 times per week.
- Optimum Duration: 6 weeks.

Indications for Discontinuation: Resolution, intolerance or lack of benefit.

- *Mechanical Devices for Massage*

The therapeutic effectiveness of this procedure for low back pain needs to be investigated further at this time

d. Superficial Heat and Cold Therapy

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. It 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. May be used in conjunction with other active therapy and may be self-administered by the patient.

- Time to Produce Effect: Immediate.
- Frequency: 2 to 5 times per week.
- Optimum Duration: 3 weeks as primary or intermittently as an adjunct to other therapeutic procedures up to 2 months.

e. Traction – Manual

Manual traction is 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.

- Time to Produce Effect: 1 to 3 sessions.
- Frequency: 2 to 3 times per week.
- Optimum Duration: 30 days.

f. Traction – Mechanical

Mechanical traction is most commonly used for patients with radicular findings. Mechanical traction includes spinal decompression devices such as vertebral-axial decompression (VAX-D and DRX 2000). It is used to treat symptoms from decreased joint space and muscle spasm around the joints. If successful it should be shifted to home traction. 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. A home lumbar spine traction unit may be purchased if therapy proves effective.

- 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 lumbar spine traction unit may be purchased if therapy proves effective.
 - Optimum Duration: 4-8 weeks.
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g. Transcutaneous Electrical Nerve Stimulation (TENS)

TENS is recommended for select use in chronic low back pain or chronic radicular pain syndrome as an adjunct for more efficacious treatments.

Indications: TENS (single or dual channel) may be recommended as treatment for chronic low back pain when clear objective and functional goals are being achieved, which includes reductions in medication use. TENS is used as adjunctive treatment in chronic pain conditions to support graded aerobic exercise and strengthening exercises. In those not involved in a conditioning program, or who are non-compliant with graded increases in activity levels, this intervention is not recommended. There is no quality evidence that more complex TENS units beyond the single or dual channel models are more efficacious, thus those models are not recommended.

TENS treatment should include at least one instructional session for proper application and use. Indications include muscle spasm and control of concomitant pain in the office setting. Minimal TENS unit parameters should include pulse rate, pulse width and amplitude modulation. Consistent, measurable, functional improvement must be documented and determination of the likelihood of chronicity prior to the provision of a home unit. TENS treatment should be used in conjunction with active physical therapy.

- Time to Produce Effect: Immediate.
- Frequency: Variable.
- Optimum Duration: 3 sessions.

TENS units should be tried prior to purchase to demonstrate efficacy and increase function. Two or three visits with a therapist may be necessary to instruct the patient in the application and use of the unit and to determine the most effective electrode placement and current parameters. When a patient has a TENS unit, electrical stimulation for pain management should not be performed as part of any ongoing rehabilitative program.

Indications for Discontinuation: Resolution, intolerance or non-compliance, including non-compliance with aerobic and strengthening exercises.

h. Neuromuscular Electrical Stimulation

For purposes of this section, neuromuscular electrical muscle stimulation includes galvanic stimulation, transcutaneous electrical nerve stimulation, interferential and microcurrent therapies.

Electrical Stimulation (Unattended): unattended means that the physician, chiropractor or therapist is not physically present with the patient on a 1:1 basis when treatment is being administered. Nerve and muscle stimulation can be useful in any disorder in which the patient has lost or never had adequate voluntary control over skeletal muscle. This type of stimulation strengthens and retrains muscle following surgery, soft tissue injury or after weakness occurs. The application of unattended electrical muscle stimulation, in and of itself, has not been found to have any significant long term therapeutic benefit; however, by providing a temporary pain modulating effect, it may assist the chiropractor in preparing the soft tissue for chiropractic manipulative therapy.

i. Ultrasound (Including Phonophoresis)

In situations where deeper heating is desirable, a limited trial of ultrasound for the treatment of low back pain is reasonable. 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 through the use of sonic generators to the target tissue to control inflammation and pain. 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.
- Optimum Duration: 4 to 8 weeks.

j. Biofeedback

Biofeedback is recommended for select patients with chronic low back pain, as a component of an interdisciplinary approach.

Indications: Moderate to severe chronic low back pain with sufficient symptoms that multiple treatment options have failed, particularly including NSAIDs, progressive aerobic exercise program, other exercises, and potentially manipulation or acupuncture. These select patients must also be willing to learn about biofeedback and motivated to comply with the treatment regimen which requires self discipline.

k. Reflexology

The therapeutic effectiveness of this procedure for low back pain needs to be investigated further at this time

l. Myofascial Release

Myofascial release is a form of soft tissue therapy intended for pain relief, increasing range of motion and balancing the body. Techniques include manual massage for stretching the fascia and releasing bonds between fascia, integument, muscles, and bones are applied. The fascia is manipulated, directly or indirectly, supposedly to allow the connective tissue fibers to reorganize themselves in a more flexible, functional fashion.

The therapeutic effectiveness of this procedure for low back pain needs to be investigated further at this time

m. Diathermy

Electrically induced heat is commonly used for muscle relaxation. It is also a method of heating tissue electromagnetically or ultrasonically for therapeutic purposes in medicine.

Indications: In situations where deeper heating is desirable, a limited trial of diathermy or the treatment of low back pain is reasonable, but only if performed as an adjunct with joint mobilization, manipulation and/or exercise.

n. Infrared Therapy

Indications: In situations where deeper heating is desirable, a limited trial of heat therapy for the treatment of low back pain is reasonable, but only if performed as an adjunct with joint mobilization, manipulation and/or exercise.

o. Low Level Laser Therapy

The therapeutic effectiveness of this procedure for low back pain needs to be investigated further at this time

p. Manipulation of the Spine under General Anesthesia (MUA) and Medication-Assisted Spinal Manipulation (MASM)

There is sufficient evidence to warrant limited trials of care for a defined subset of patients with significant joint fixation which is non-responsive to joint manipulation and mobilization techniques.

As per the resolution statement from the American Chiropractic Association, it is recognized and supported that Manipulation Under Anesthesia has a well established clinical history within the chiropractic profession, accredited chiropractic academic institutions, chiropractic clinical research, and chiropractic private practice sector in both hospital and ambulatory surgical center settings, and moreover MUA procedures are appropriate in a selected patient population pursuant to established clinical guidelines promulgated by established chiropractic authoritative sources including accredited academic institutions' MUA training programs, state regulatory agencies rules and regulations, and qualified instructors of MUA procedures who teach the MUA courses under the auspices of accredited academic institutions.

There is growing evidence that Medication-Assisted spinal manipulation produces measurable reduction in pain and disability, which remained apparent at 1 year. MUA should only be contemplated for qualified candidates as the final conservative treatment prior to consideration of more invasive procedures such as surgery. MUA should only be performed once conservative care (i.e., physical therapy and manipulative therapy accompanied by an aggressive active care program), has been exhausted. The goal is to improve function and to decrease pain. MUA should be restricted to those patients who fit strict utilization review criteria. MUA should be followed by appropriate re-conditioning stabilization program.

Risks associated with MUA and MASM performed by an adequately trained medical or osteopathic physician or doctor of chiropractic are the same as those associated with manipulative therapy and those specific to the accompanying agents.

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4. Nutritional Therapy

(as adopted from the New York State Workers Compensation Low Back Pain Guidelines).

- **Vitamins**
 - The therapeutic effectiveness of this procedure for low back pain needs to be investigated further at this time.
- **Herbal and Other Preparations**

General Herbal Treatments

The therapeutic effectiveness of this procedure for low back pain needs to be investigated further at this time.

- Recommendation: Harpagoside
For acute, subacute, or chronic back pain syndromes there is evidence that harpagoside reduces pain more than a placebo in a dose-dependent manner. In carefully selected patients, harpagoside is recommended for treatment of low back pain.
- Indications: For acute, subacute, chronic low back pain in patients in whom NSAIDs are contraindicated or not tolerated, harpagoside is a reasonable consideration. However, longterm safety is unclear and caution is warranted about long-term treatment with this compound.
- Indications for Discontinuation: Resolution of low back pain, lack of efficacy, or development of adverse effects necessitate discontinuation. Not recommended for use more than 3 months until more evidence of efficacy is available.

Capsaicin, “Sports Creams” and Other Creams and Ointments

Capsicum is recommended for treatment of acute and subacute back pain, or temporary flare-ups of chronic lumbar spine pain.. Long-term use is not recommended. Capsicum appears superior to Spiroflor. Other creams and ointments may be useful, although there is no quality evidence to guide recommendations.

- Indications: For acute and subacute, and for temporary flare-ups of chronic lumbar spine pain, capsaicin is recommended for treatment. Providers should be aware that there are other treatments that appear to likely have greater efficacy

(e.g., medications, progressive exercise program, etc.). However, capsicum may be a useful adjunct. These compounds may also be used in those patients who prefer topical treatments over oral treatments and other more efficacious treatments, but have only mild lumbar spine pain.

- Indications for Discontinuation: Resolution of lumbar spine pain, lack of efficacy, or development of adverse effects that necessitate discontinuation. Recommended not to be used more than 1 month as the costs become high and the patient should be transitioning to an active treatment program.

5. Acupuncture

(As adopted from the proposed New York State Workers Compensation Low Back Pain Guidelines and New York State Workers Compensation Cervical Spine Injury Guidelines).

Acupuncture is recommended for select use in chronic low back pain as an adjunct.

- Indications: Acupuncture may be recommended as treatment of chronic low back pain as a limited course during which time there are clear objective and functional goals that are to be achieved. Consideration for time-limited use in chronic low back pain patients without underlying serious pathology is as an adjunct to a conditioning program that has both graded aerobic exercise and strengthening exercises. Acupuncture is only recommended to assist in increasing functional activity levels more rapidly and the primary attention should remain on the conditioning program. This intervention is not recommended for patients not involved in a conditioning program, or who are noncompliant with graded increases in activity levels.
- Frequency/Duration: There are different patterns which are used in quality studies. These range from weekly for a month to 20 appointments over 6 months; however the norm is generally no more than 8 to 12 sessions. An initial trial of 5 to 6 appointments would appear reasonable in combination with a conditioning program of aerobic and strengthening exercises. Future appointments should be tied to improvements in objective measures and would justify an additional 6 sessions, for a total of 12 sessions.

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- Indications for Discontinuation: Resolution, intolerance, or non-compliance, including non-compliance with aerobic and strengthening exercises.
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6. Lumbar Orthoses

(Developed through a panel consensus based on the following: the Council on Chiropractic Guidelines and Practice Parameters (CCGPP), and the Guidelines for Chiropractic Quality Assurance and Practice Parameters, and State of Colorado Low Back Pain Medical Treatment Guidelines for Workers Compensation)

a. Lumbar Supports

The use of lumbar supports may provide some relief during acute injury and may also serve as a reminder to avoid those activities which may aggravate the injured workers' condition (e.g., avoidance of improper postures, bending and lifting). The use of lumbar supports is not recommended as a primary or sole approach to patient care, and have been demonstrated to be less effective than traditional methods of treatment (e.g., spinal manipulation). Further investigation is warranted for chronic low back pain.

b. Other Orthoses, Devices and Equipment

i. Shoe Insoles and Shoe Lifts

These interventions are recommended for the treatment of acute, subacute, or chronic low back pain or radicular pain syndromes or other back-related conditions with leg-length discrepancy and other biomechanical postural deficiencies. It is used as an adjunct to passive and active therapies in facilitating the total rehabilitation of the patient.

ii. Kinesiotaping and Taping

The therapeutic effectiveness of this procedure for low back pain needs to be investigated further at this time.

iii. **Magnets**

The therapeutic effectiveness of this procedure for low back pain needs to be investigated further at this time.

7. Patient Education

(As adopted from the proposed New York State Workers Compensation Low Back Pain Guidelines and New York State Workers Compensation Cervical Spine Injury Guidelines).

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.

8. Restriction of Activities

(As adopted from the proposed New York State Workers Compensation Low Back Pain Guidelines and New York State Workers Compensation Cervical Spine Injury Guidelines).

There is some evidence to support the continuation of normal daily activities as the recommended treatment for acute and chronic lumbar spine injuries without neurologic symptoms. Complete work cessation should be avoided, if possible, since it often further aggravates the pain presentation. Modified return-to-work is almost always more efficacious and rarely contraindicated in the vast majority of patients with lumbar spine injuries.

9. Return-to-work

(As adopted from the proposed New York State Workers Compensation Low Back Pain Guidelines and New York State Workers Compensation Cervical Spine Injury Guidelines).

Communication is essential between the patient, employer, and provider to determine appropriate restrictions and return-to work dates. It is the responsibility of the physician to provide clear concise restrictions, and it is the employer's responsibility to determine if temporary duties can be provided within the restrictions.

a. Establishment of Activity Level Restrictions

For lumbar spine injuries, the following should be addressed when describing the patient's activity level:

- i. Total body position including upper trunk, especially rotation and flexion. To include duration and frequency.
- ii. Upper extremity requirements including reaching above the shoulder, repetitive motions, pushing, pulling, and lifting or carrying requirements. Duration and frequency should be included.
- iii. Sitting duration and frequency with regard to posture, work height(s), and movements of the head and thoracic spine.
- iv. Visual field requirements in respect to limitations in head and thoracic spine movements and tolerance to looking upward and downward.
- v. Use of adaptive devices or equipment for proper office ergonomics or to enhance capacities can be included.

b. Compliance with Activity Restrictions

In some cases, compliance with restriction of activity levels may require a complete jobsite evaluation, a functional capacity evaluation (FCE), or other special testing.

10. Therapy, Active

(As per panel consensus adapted for low back pain from the following: Low Back Pain Medical Treatment Guidelines from the proposed by the State of New York Department of Insurance to the Workers' Compensation Board; Cervical Spine Medical Treatment Guidelines from the proposed by the State of New York Department of Insurance to the Workers' Compensation Board; the Council on Chiropractic Guidelines and Practice Parameters (CCGPP); the Guidelines for Chiropractic Quality Assurance and Practice Parameters; State of Colorado Lumbar Spine Pain Medical Treatment Guidelines for Workers Compensation; State of Colorado Cervical Spine Pain Medical Treatment Guidelines for Workers Compensation).

The following active therapies 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:

a. Activities of Daily Living (ADL)

ADL 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.
- Frequency: 3 to 5 times per week.
- Optimum Duration: 4 to 6 weeks.

b. Functional Activities

Functional Activities are interventions which involve the use of therapeutic activities 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.
- Optimum Duration: 4 to 6 weeks.

c. Functional Electrical Stimulation (FES)

Functional Electrical Stimulation is the application of electrical current to elicit involuntary or assisted contractions of atrophied and/or impaired muscles. Indications include muscle atrophy, weakness, and sluggish muscle contraction secondary to pain, injury, neuromuscular dysfunction or where the potential for atrophy exists. May be an appropriate treatment in conjunction with an active exercise program.

- Time to Produce Effect: 2 to 6 treatments.
- Frequency: 3 times per week.
- Optimum Duration: 8 weeks.

d. Neuromuscular Re-education

Neuromuscular Re-education 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 times per week.
- Optimum Duration: 4 to 8 weeks.

e. Spinal Stabilization

The goal of Spinal Stabilization 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: 4 to 8 treatments.
- Frequency: 3 to 5 times per week.
- Optimum Duration: 4 to 8 weeks.
- Maximum Duration: 8 weeks.

(McGill S. Low Back Disorders: Evidence-Based Prevention and Rehabilitation. Human Kinetics, Champaign, IL: Stabilization Protocols pp. 137-147; Developing Protocols pp. 239-259).

f. Therapeutic Exercise

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, increased range of motion and are used to promote normal movement patterns. Therapeutic exercise can also include complementary/ alternative exercise movement therapy (with oversight of a physician or appropriate healthcare professional).

- Time to Produce Effect: 2 to 6 treatments.
- Frequency: 3 to 5 times per week.
- Optimum Duration: 4 to 8 weeks.

g. Neuroreflexotherapy

Neuroreflexotherapy is recommended for treatment of moderate to severe chronic low back pain in patients who have failed management with NSAIDs, progressive aerobic exercise program or other exercises, and manipulation.

11. Activity modification and exercise

a. Bed Rest

(as adopted from the proposed New York State Workers Compensation Low Back Pain Guidelines and New York State Workers Compensation Cervical Spine Injury Guidelines).

Bed rest is not recommended for the management of acute low back pain. Though bed rest is non-invasive, it is costly and associated with high morbidity.

Bed rest is not recommended for the management of subacute and chronic low back pain. It is suspected that it is just as ineffective for these situations as it is for acute low back pain; however, there is less evidence on which to rely.

There is no quality evidence that other back pain related problems are successfully treated with bed rest, including spondylolisthesis, spondylolysis, spinal stenosis, facet related pain, or pain thought to be related to the sacroiliac joint. There also are likely adverse effects. Bed rest is costly, has no documented benefits, and is expected to be associated with higher morbidity, although it is non-invasive. This treatment strategy is not recommended.

There is no quality evidence regarding the use of bed rest or other activity limitations for the treatment of stable spinal fractures, such as transverse process fractures or compression fractures. In those settings, bed rest is costly, has no documented benefits, and is expected to be associated with higher morbidity, although it is noninvasive. This treatment strategy is not recommended. Instead, gentle activity within tolerance is recommended.

There are no quality studies evaluating the role of bed rest in the management of unstable spinal fractures or cauda equina syndrome. There is consensus that these require bed rest or other marked activity limitations to prevent adverse events. Although bed rest is costly and has no documented benefits, the hazard of mobilization in this setting is theoretically catastrophic, thus this treatment strategy is considered to be recommended.

Bed rest is not recommended for the management of radicular pain syndromes, including sciatica. It is suspected that it is as unhelpful as it is for acute low back pain, but there are not as many studies.

b. Sleep Posture

(As adopted from the proposed New York State Workers Compensation Low Back Pain Guidelines and New York State Workers Compensation Cervical Spine Injury Guidelines).

The most appropriate sleep posture is that which is most comfortable for the patient. If a patient habitually chooses a particular sleep posture, it would appear reasonable to recommend altering posture to determine if there is reduction in pain or other symptoms.

Criteria for Initiation: Acute, subacute or chronic low back pain that results in nocturnal awakening, particularly if not amenable to other treatments.

Criteria for Discontinuation: Non-tolerance.

c. General Exercise

(As adopted from the proposed New York State Workers Compensation Low Back Pain Guidelines and New York State Workers Compensation Cervical Spine Injury Guidelines).

Stretching and aerobic exercise are recommended, while strengthening is not, as there is insufficient time for deconditioning to occur and there is a potential for aggravation of low back pain. Pain control modalities may be needed as a complement to exercise.

Classification-based exercise management may be beneficial in selection of specific exercises. The recommended frequency is 1 to 3 sessions a week for up to 4 weeks as long as periodically documented functional improvement and symptom reduction is occurring.

The treatment strategy is the same as for acute low back pain. However, movements that centralize low back pain may be used to guide exercise selection. Concentration on radicular symptoms is emphasized over axial pain. Rapid progression of radicular symptoms and objective signs may necessitate discontinuation of exercise and consideration of further diagnostic testing.

For patients with no prior treatment, the treatment plan is similar to nonspecific low back pain. The frequency is 1 to 3 sessions per week for 4 weeks as long as periodically documented functional improvement and symptom reduction is occurring.

For those who failed acute treatment, a trial of more intensive reconditioning that includes strengthening exercises is recommended. Particular attention should be paid to psychosocial factors that may impair compliance with exercise recommendations among those with subacute low back pain, as it is believed possible to reduce risk for the low back pain to become chronic. Providers should educate patients to help motivate, encourage, and facilitate recovery. The frequency is 2 to 5 sessions per week for 4 weeks as long as there is objective functional improvement, symptom reduction, patient compliance and efficacy. Progress should be reassessed after 8 sessions. Visit frequency depends on work status, symptom severity, comorbidities and functional status.

Subacute radicular pain is treated similarly to subacute low back pain above, except if there is rapid progression of radicular symptoms and objective signs. If this occurs it may be necessary to discontinue exercise and to consider further diagnostic testing.

Postoperative progressive exercise programs should first emphasize flexibility and aerobic exercises, and then progress to strengthening. Treatment frequency of 1 to 3 sessions per week progressing to 2 to 4 sessions per week is recommended depending on patient compliance, periodically documented functional improvement and

symptom reduction. Reassessment should occur after 10 sessions, with continuation based on demonstration of functional improvement. The upper range is 20 sessions.

For patients with mild symptoms or a flare-up of symptoms, the treatment focus is on education regarding home management and exercise. Individuals with mild symptoms and minimal functional limitations may receive a therapy evaluation and 1 follow-up visit to adjust the home therapy program.

For individuals with moderate to severe flare-up with mild to severe disability, treatment should consist of a progressive exercise program first emphasizing flexibility and aerobic exercises, and progressing to strengthening treatment frequency of 1 to 3 visits per week up to a maximum of 12 visits. Reassessment should occur after the 6th visit, with continuation based on patient compliance, periodically documented functional improvement and symptom reduction.

For individuals with mild symptoms and minimal disability, treatment should consist of a therapy evaluation to instruct the patient in home based exercise program, with 1 to 2 follow-up visits.

For individuals who had failure of prior treatment and have moderate symptoms and some functional deficits, if the patient had no previous exposure to exercise therapy, he or she should be treated the same as a patient with subacute symptoms (outlined above). If the patient failed prior exercise therapy, consider 6 additional exercise visits, or consider an interdisciplinary approach.

(McGill, S. Low Back Disorders: Evidence-Based Prevention and Rehabilitation. Human Kinetics, Champlain, IL Reducing the Risk at Work , pg. 161-186.)

d. Aerobic Exercises

(As adopted from the proposed New York State Workers Compensation Low Back Pain Guidelines and New York State Workers Compensation Cervical Spine Injury Guidelines).

Aerobic exercise is recommended for treatment of acute, subacute and chronic low back pain, although most available evidence is from studies treating chronic low back pain patients. For most patients, a structured, progressive walking program on level ground or no incline on a treadmill is recommended. There has been some controversy about whether bicycling is helpful or harmful from a biomechanical perspective (lordosis) and the back muscles are less active with bicycling, thus it may be less appropriate. Yet, if bicycling is the preferred exercise for the patient, it is believed to be far superior to obtaining no aerobic exercise. For those patients who desire other aerobic exercises, there are no specific data, although there are indications that imply that there is a direct correlation between benefit and the amount of aerobic activity that results in higher MET expenditure. Therefore, the activity that the patient will adhere to is believed to be the one most likely to be effective, given that compliance is a recognized problem.

Indications: All patients with acute, subacute and chronic low back pain appear to benefit from aerobic exercises. However, those with significant cardiac disease, or significant potential for cardiovascular disease should be considered for whether an evaluation is required prior to institution of vigorous exercises.

Frequency/Duration: For patients with chronic low back pain, walking at least 4 times per week at 60% of predicted maximum heart rate ($220 - \text{age} = \text{maximum heart rate}$) is recommended. One successful study benchmarked 20 minutes during Week 1, 30 minutes during Week 2, and 45 minutes after that point. For acute or subacute low back pain patients, a graded walking program is generally desired, often using distance or time as minimum benchmarks. For example, a patient can start with 10 to 15 minutes twice a day for 1 week, and increase in 10 to 15 minute increments per week until at least 30 minutes per day is achieved.

Indications for Discontinuation: Aerobic exercise should be discontinued when there is intolerance (rarely occurs) or development of other disorders. Nearly all patients should be encouraged to maintain aerobic exercises on a long-term basis for both prevention of low back pain (see below), and to maintain optimal health.

- Aerobic exercise is believed to be strongly recommended for post-operative patients.

Unfortunately there is no quality evidence to support this recommendation. In the absence of evidence, it is suggested that the above guideline be used for treatment of post-operative low back pain patients.

e. Stretching and Flexibility

(As adopted from the proposed New York State Workers Compensation Low Back Pain Guidelines and New York State Workers Compensation Cervical Spine Injury Guidelines).

Evidence suggests specific stretching exercises are somewhat helpful for acute low back pain. However, aerobic exercise should be the first-line treatment and stretching exercises may be added for self-treatment if needed.

Indications: For acute, subacute, or chronic low back pain, either slump stretch-related exercises or directional preference stretching exercises are recommended. Generic stretching exercises are not recommended. Frequency/Duration: Three to five times per day for acute low back pain. Two to three times per day for subacute or chronic low back pain.

Indications for Discontinuation: Stretching exercises should be discontinued if there is a strain in the course of treatment, or failure to improve.

There is one reported low-quality RCT of aggressive stretching exercises for the treatment of chronic “myofascial” low back pain, (Khalil 1992), and there is no duplication of those results in the literature. Thus, there is no quality evidence base for aggressive stretching. There are concerns that over-stretching may result in additional injuries to patients. Aggressive stretching requires a health care provider for each session and thus costs are considerably greater than those for self-performed stretching exercises. While they were not invasive, there are concerns that the potential for harm outweighs the potential for benefit. There are many other interventions with evidence of efficacy.

Stretching exercises as an isolated prescription or program for purposes of preventing low back pain need further investigation

f. Strengthening and Stabilization Exercises

(As adopted from the proposed New York State Workers Compensation Low Back Pain Guidelines and New York State Workers Compensation Cervical Spine Injury Guidelines).

Specific strengthening exercises, such as stabilization exercises, are helpful for the prevention and treatment (including post-operative treatment) of low back pain. (Hides 01) (Filiz 05) (Soukup 99, 01).

Indications: For acute, subacute, or chronic low back pain, or post-operative low back pain patients, strengthening exercises are recommended for treatment of low back pain. However, as evidence of efficacy of aerobic exercises appears greater, these exercises should be added after either aerobic exercises have already been instituted and additional treatment is needed, or in situations where both are felt to be required. Exercises should be taught and then performed by the patient in a home exercise program. For those patients who do not improve, follow up appointments to verify technique and compliance (by exercise log books) are recommended. Some patients, particularly those lacking motivation to be in a home exercise program may benefit from a supervised exercise program, although strong questions about long-term compliance are apparent among patients with chronic low back pain. More intensive programs with more intensive exercises and direct supervision with active coaching appear warranted for chronic low back pain.

Frequency/Duration: Home program frequency is 1 to 2 times a day for acute low back pain, and two to three times a day for subacute or chronic low back pain. Supervised treatment frequency and duration is dependent on symptom severity and acuity, the presence of comorbid conditions and yellow flags.

Indications for Discontinuation: Indications to discontinue strengthening exercises include development of a strain in the course of treatment or failure to improve.

Strengthening of abdominal muscles (e.g., rectus abdominus and obliques with sit-up exercises) is a frequent goal of low back pain rehabilitation or prevention programs.

There are numerous studies that link abdominal strengthening, activation and breathing exercises to stability of the lumbar spine and training of these muscles to prevent low back pain.^{1, 2, 3, 4, 5, 6}

References for low back stabilization exercises:

1. Hodges PW, Jull GA. Spinal Segmental Stabilization Training. In: Liebenson C. (ed.) Rehabilitation of the Spine. 2nd Ed. Baltimore, MD: Lippincott Williams; 2007: p. 585-607
2. Cholewicki, McGill: Mechanical stability of the vivo lumbar spine: Implications for injury and chronic lowback pain. *Clin Biomech* 1996; 111-15.
3. Juker, McGill et al. Quant intramuscular myoelectric activity of lumbar portions of psaos and abdominal wall during side variety of tasks. *Med Sci Sports Ex* 1998; 30: 301-310.
4. McGill S. Lumbar Spine Stability: Mechanism of Injury and Restabilization. In: Liebenson C. (ed.) Rehabilitation of the Spine, 2nd Ed., Baltimore, MD: Lippincott Williams; 2007, p. 102-10.
5. Richardson, Jull, Hodges, Hides, Therapeutic ex. for spinal segmental stabilization in low back pain. Edinburgh: Churchill Livingstone, 1999.
6. Janda V, Vavrova M, Herbenova A, Veverkova M. Sensory Motor Stimulation. In: Liebenson C. (ed.) Rehabilitation of the Spine, 2nd Ed., Baltimore, MD: Lippincott Williams; 2007, p. 513-530.

g. Aquatic Therapy (Including Swimming)

(As adopted from the proposed New York State Workers Compensation Low Back Pain Guidelines and New York State Workers Compensation Cervical Spine Injury Guidelines).

If the patient has subacute or chronic low back pain and meets criteria for a referral for supervised exercise therapy and has co-morbidities (e.g., extreme obesity, significant degenerative joint disease, etc.) that preclude effective participation in a weight-bearing physical activity, then a trial of aquatic therapy is recommended for the treatment of subacute or chronic low back pain. Osteoarthritis of the knee is not a clear contraindication to a walking program, rather walking may be therapeutically indicated based on high quality evidence.

(Ettinger WH Jr., et al. A randomized trial comparing aerobic exercise and resistance exercise with a health education program in older adults with knee osteoarthritis. The Fitness Arthritis and Seniors Trial (FAST). *JAMA* 1997; 277(1): 25-31).

Frequency/Duration: A program should generally begin with 3 to 4 visits per week. The patient must have demonstrated evidence of functional improvement within the first 2 weeks to justify additional visits. The program should include up to 4 weeks of aquatic therapy with progression towards a land-based, self-directed physical activity or self-directed aquatic therapy program by 6 weeks.

Indications for Discontinuation: Non-tolerance, failure to progress, or reaching a 4 to 6 week time frame.

- *Recommendation: Acute, Subacute or Chronic Low Back Pain*

For all other subacute and chronic low back pain patients, and for all acute low back pain, aquatic therapy is not recommended as other therapies are believed to be more efficacious.

h. Yoga

There is some evidence to support the effectiveness of Yoga Therapy in alleviating symptoms and decreasing medication use in uncomplicated low back pain.

- Time to Produce Effect: 2 to 6 treatments
 - Frequency: 2 to 5 times per week
 - Optimum Duration: 4 weeks
 - Maximum Duration: Reassess after 8 weeks
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Sources:

This Low Back Chiropractic Treatment Parameters Guideline is adapted from panel consensus, with modification, from the following documents:

1. The proposed Low Back Injury Medical Treatment Guidelines from the State of New York Insurance Department to the New York State Workers' Compensation Board.
2. The proposed Cervical Spine Injury Medical Treatment Guidelines from the State of New York Insurance Department to the New York State Workers' Compensation Board.
3. State of Colorado's Lumbar Spine Injury Medical Treatment Guideline.
4. Council on Chiropractic Guidelines and Practice Parameters (CCGPP).
5. Guidelines for Chiropractic Quality Assurance and Practice Parameters.
6. American College of Occupational and Environmental Medicine (ACOEM) Occupational Medicine Treatment Guidelines.
7. State of Wisconsin Department of Workforce Development Worker's Compensation Division Medical Treatment Guidelines.
8. State of Minnesota Medical Treatment Guidelines.