Office of the Registrar of Regulations,
Legislative Council,
State of Delaware

DEPARTMENT OF LABOR
DIVISION OF INDUSTRIAL AFFAIRS
OFFICE OF WORKERS' COMPENSATION
Statutory Authority: 19 Delaware Code, Section 2322B (19 **Del.C.** §2322B)

FINAL

ORDER

1340 Workers' Compensation

A public hearing was held on April 14, 2008 to receive public comments relating to the certification process for the Health Care Provider Application for Certification ("Certification Rules and Regulations" and "Certification Form") for adoption by the Delaware Department of Labor. The members of the Health Care Advisory Panel ("Panel") present recommend that the Secretary of Labor adopt this proposal as it was published in the *Register of Regulations*, Vol. 11, Issue 9 (March 1, 2008).

Summary of the Evidence and Information Submitted

Exhibits Admitted:

- Exhibit 1 – *News Journal* Affidavit of publication of notice of public hearing.
- Exhibit 2 – *Delaware State News* Affidavit of publication of notice of public hearing.

No written comments or public comments made.

The Panel detected a scriber's error in the Certification Form. Since it was never the intent of the Panel to limit the Certification to only Delaware health care practioners, the panel agreed to delete the reference to Delaware ("DE") on the Certification. The Panel voted unanimously to recommend approval of the proposed Certification Rules and Regulations and the Certification Form.

Recommended Findings of Fact with respect to the Evidence and Information

The Panel is persuaded that the proposals are consistent with administrating the statutory directives in the new workers compensation law.

Recommendation

The proposals are respectfully submitted to the Secretary of Labor for consideration with a recommendation for adoption this 15th day of April, 2008.

HEALTH CARE ADVISORY PANEL

Bruce Rudin, M.D., Chair
George B. Heckler, Esquire, Vice Chair
Wayne Smith
Linda Cho
Matthew Eppley, M.D.
Walter Powell, M.D.
Marcia DeWit, J.D.
Glenn Brown
Joseph Rhoades, Esquire
Barry Baskt, D.O.
Josette Covington, M.D.
Wayne Collison
Richard Hefron

Decision and Effective Date

Having reviewed and considered the record and recommendations of members of the Health Care Advisory Panel, the proposals (1) Certification Rules and Regulations and (2) Certification Form are hereby adopted and made effective **May 23, 2008**.

Text and Citation

The Certification Notice appeared in the *Register of Regulations*, Vol. 11, Issue 9 (March 1, 2008). The Certification Rules and Regulation and Certification Form are available from the Department of Labor, Division of Industrial Affairs, Office of Workers' Compensation or on the department's website: www.delawareworks.com.

DEPARTMENT OF LABOR

Thomas B. Sharp, Secretary of Labor

Health Care Payment System

1.0 Purpose and Scope

Section 2322B, Chapter 23, Section 19, **Delaware Code**, authorizes and directs the Health Care Advisory Panel to adopt and recommend, a coordinated set of instructions and guidelines to accompany the health care payment system, to the Department for adoption by regulation.

State of Delaware Workers' Compensation Act
Workers' Compensation Health Care Payment Rates for Physicians and Hospitals (the "Fee Schedule")

Instructions and Guidelines

Introduction and Purpose

The intent of the health care payment system developed pursuant to Delaware's Workers' Compensation Act ("Act") is not to establish a "pushdown" system, but is instead to establish a system that eliminates outlier charges and streamlines payments by creating a presumption of acceptability of charges implemented through a transparent process, involving relevant interested parties, that prospectively responds to the cost of maintaining a health care practice, eliminating cost shifting among health care service categories, and avoiding institutionalization of upward rate creep.

The maximum allowable payment for health care treatment and procedures covered under the Workers' Compensation Act shall be the lesser of the health care provider's actual charges or the fee set by the payment system. The payment system will set fees at ninety percent (90%) of the 75^{th} percentile of actual charges within the geozip where the service or treatment is rendered, utilizing information contained in employers' and insurance carriers' national databases. For purposes of the Act, "geozip" means an area defined by reference to United States ZIP Codes; Delaware shall consist of one "197 geozip" (comprised of all areas within the State where the address has a ZIP Code beginning with the three digits 197 or 198), and one "199 geozip" (comprised of all areas within the State where the address has a ZIP Code beginning with the three digits 199). If a geozip does not have the necessary number of charges and fees to calculate a valid percentile for a specific procedure, treatment or service, the Health Care Advisory Panel created pursuant to 19 **Del.C.** §2322(A), in its discretion may combine data from Delaware's two geozips for a specific procedure, treatment, or service. In the event that the Health Care Advisory Panel determines that there is insufficient data to calculate a valid percentile for a procedure, treatment or service, or that data from a commercial vendor is not sufficiently reliable to implement a payment system for professional services for a specific procedure, treatment or service, then the Health Care Advisory Panel may recommend an alternative method for a payment system for professional charges.

Three (3) years after the effective date of the Act, January 17, 2007, the Health Care Advisory panel shall

review the geozip reporting system and make a recommendation concerning whether the State should operate its workers' compensation health care payment system on a geozip basis or on a single statewide basis.

If an employer or an insurance carrier contracts with a provider for the purpose of providing services under the Act, the rate negotiated in any such contract shall prevail.

This document is intended to assist with fee schedule application, and to ensure correct billing and reimbursement on workers' compensation medical claims. This document is NOT intended, and should not be construed, as a utilization review guide or practice manual.

Reference Materials

The health care payment system and fee schedule is in accordance with the following documents, including codes, guidelines and modifiers:

Current Procedural Terminology, copyright, American Medical Association, 515 N. State St., Chicago, IL 60610, Chicago, 2006;

HCPCS Level II, U.S. Department of Health and Human Services, Centers for Medicare and Medicaid Services, 7500 Security Blvd., Baltimore, MD 21244, Baltimore, 2006;

National Correct Coding Policy Manual in Comprehensive Code Sequence for Part B Medicare Carriers, Version 12.0, U.S. Department of Health and Human Services, Centers for Medicare and Medicaid Services, 7500 Security Blvd., Baltimore, MD 21244, Baltimore, 2006;

Relative Value Guide, copyright, American Society of Anesthesiologists, 520 N. Northwest Highway, Park Ridge, IL 60068-2573, Park Ridge, 2006;

Diagnosis-Related Group (DRG) classification system, Centers for Medicare and Medicaid Services (CMS), *Federal Register*, Vol. 70, No. 155, August 2005.

HCPCS (Healthcare Common Procedure Coding System) (Level II)

The health care payment system requires that services be reported with the Healthcare Common Procedural Coding System Level 2 ("HCPCS Level 2"), or CPT codes that most comprehensively describe the services performed. Proprietary bundling edits more restrictive than the National Correct Coding Policy Manual in Comprehensive Code Sequence for Part B Medicare Carriers, Version 12.0, U.S. Department of Health and Human Services, Centers for Medicare and Medicare Services, 7500 Security Boulevard, Baltimore, Maryland, 21244, 2006, no later dates or editions, shall be prohibited. Bundling edits is the process of reporting codes so that they most comprehensively describe the services performed.

Professional Services/CPT Code Set

Unless otherwise specified herein, the payment system for professional services shall conform to the Current Procedural Terminology ("CPT"), American Medical Association, 515 North State Street, Chicago, Illinois, 60610, 2006, no later dates or editions.

The fee schedule defers to guides and descriptions in the CPT Code Set in establishing the correct classification for health care services.

Physician/Health Care Provider Services

The maximum allowable payment for health care treatment and procedures shall be the lesser of the health care provider's actual charges or ninety percent (90%) of the 75^{th} percentile of actual charges within the geozip where the service or treatment is rendered, utilizing information contained in employers' and insurance carriers' national databases. If an employer or insurance carrier contracts with a provider for the purpose of providing services under the Act, the rate negotiated in such contract shall prevail.

Whenever the health care payment system does not set a specific fee for a procedure, treatment or service in the schedule, the amount of reimbursement shall be eighty-five percent (85%) of actual charge ("POC 85"), which actual charge will be fixed as of 11/1/08 and subsequent to such date will be subject to verification, audit and/or review by the Department of Insurance. Reasonable costs of such review or audit shall be reimbursed to the Department of Insurance by the health care provider whose billing is audited. From the effective date of this regulation through and including 10/31/08, the "POC 85" charges, if contested, will be subject to review pursuant to Hearing to be conducted before the Industrial Accident Board.

The payment system will be adjusted yearly from the date the Health Care Advisory Panel recommended

adoption of the fee schedule, November 14, 2007, based on percentage changes to the Consumer Price Index--Urban, U.S. City Average, All Items, as published by the United States Bureau of Labor Statistics.

Modifiers

Modifiers augment CPT codes to more accurately describe the circumstances of services provided. When applicable, the circumstances should be identified by a modifier code: a two-digit number placed after the usual procedure code. If more than one modifier is needed, place modifier 99 after the procedure code to indicate that two or more modifiers will follow. Some modifier descriptions in this fee schedule have been changed from the CPT language.

Anesthesia Services

The maximum allowable payment for anesthesia treatment, procedures or services shall be the lesser of the health care provider's actual charges or ninety percent (90%) of the 75th percentile of actual charges within the geozip where the treatment, procedure or service is rendered, utilizing information contained in employers' and insurance carriers' national databases. If an employer or insurance carrier contracts with a provider for the purpose of providing services under the Act, the rate negotiated in such contract shall prevail.

Whenever the health care payment system does not set a specific fee for an anesthesia treatment, procedure or service in the schedule, the amount of reimbursement shall be eighty-five percent (85%) of actual charge ("POC 85") for such service as of October 31, 2006, subject to verification, review and/or audit by the Department of Insurance. Reasonable costs of such review or audit shall be reimbursed to the Department of Insurance by the health care provider whose billing is audited.

The payment system will be adjusted yearly from the date the Health Care Advisory Panel recommended adoption of the fee schedule, November 14, 2007, and each year thereafter the Department of Labor shall make an automatic adjustment to the maximum payment for an anesthesia treatment, procedure and/or service in effect in January of that year. The Department of Labor shall increase or decrease the maximum payment by the percentage change of increase or decrease in the Consumer Price Index-Urban, U.S. City Average, All Items, as published in the United States Bureau of Labor Statistics.

Ambulatory Surgical Treatment

Fees billed for services provided to injured workers pursuant to the Act by an Ambulatory Surgical Treatment Center ("ASTC") shall be reimbursed at a rate equal to eighty-five percent (85%) of each ASTC's actual charges for services as of October 31, 2006. Verification that such billing is performed in compliance with 19 **Del.C.** §2322B(i)(1) shall be provided by each ASTC to the Office of Workers' Compensation within sixty (60) days of the completion and issuance of audited financial statements to the ASTC by its independent financial auditors. Such verification shall be subject to further review or audit by the Department of Insurance. Reasonable costs of such review or audit for purposes of the above-referenced section of the Act shall be reimbursed to the Department of Insurance by the ASTC whose billing is audited. The ASTC fee determination mechanism adopted pursuant to this subsection shall apply to all services provided after the effective date of the regulation implementing the fee schedule and regardless of the date of injury.

The payment system will be adjusted yearly from the date the Health Care Advisory Panel recommended adoption of the fee schedule, November 14, 2007, and each year thereafter the Department of Labor shall make an automatic adjustment to each ASTC's reimbursement rates as derived pursuant to the above for procedures, treatments or services in effect in January of that year. The amount payable to each ASTC pursuant to the above shall be adjusted annually by the Department of Labor in accordance with the Consumer Price Index--Urban, U.S. City Average for Medical Care, as published by the United States Bureau of Labor Statistics. The adjustment factor referenced above shall be reviewed by the Health Care Advisory Panel three (3) years after the effective date of this section and the Panel shall make a recommendation concerning the continued use of the Consumer Price Index for Medical Care, or the adoption of a different index for cost adjustments in fees for ASTC services.

Dental Services

The maximum allowable payment for dental treatment, procedures or services shall be the lesser of the health care provider's actual charges of ninety percent (90%) of the 75th percentile of actual charges within the geozip where the treatment, procedure or service is rendered, utilizing information contained in employers' and

insurance carriers' national databases. If an employer or insurance carrier contracts with a provider for the purpose of providing services under the Act, the rate negotiated in such contract shall prevail.

Whenever the health care payment system does not set a specific fee for a dental treatment, procedure or service in the schedule, the amount of reimbursement shall be eighty-five percent (85%) of actual charge ("POC 85") for such service as of October 31, 2006, subject to verification, review and/or audit by the Department of Insurance. Reasonable costs of such review or audit shall be reimbursed to the Department of Insurance by the dental practitioner whose billing is audited.

The payment system will be adjusted yearly from the date the Health Care Advisory Panel recommended adoption of the fee schedule, November 14, 2007, and each year thereafter the Department of Labor shall make an automatic adjustment to the maximum payment for a dental treatment, procedure or service in effect in January of that year. The Department of Labor shall increase or decrease the maximum payment by the percentage change of increase or decrease in the Consumer Price Index-Urban, U.S. City Average, All Items, as published by the United States Bureau of Labor Statistics.

Emergency Department of a Hospital

Services provided by an emergency department of a hospital, or any other facility subject to the Federal Emergency Medical Treatment and Active Labor Act, 42 United States Code §1395dd, et seq., and any emergency medical services provided in a pre-hospital setting by ambulance attendants and/or paramedics, shall be exempt from the healthcare payment system and shall not be subject to the requirement that a health care provider be certified pursuant to 19 **Del.C.** §2322D, requirements for preauthorization of services, or the health care practice guidelines adopted pursuant to 19 **Del.C.** §2322C.

Upon admission to a hospital and discharge from an emergency department, hospital charges shall be subject to that which is set forth in the section below titled "Hospital".

Hospital

Hospital fees billed for inpatient and outpatient services provided to injured workers pursuant to the Act shall be reimbursed at a rate equal to eighty-five percent (85%) of each hospital's actual charges for such services as of October 31, 2006, subject to adjustment as provided below. Verification that such billing is performed in compliance with the above and 19 **Del.C.** §2322B(h) shall be provided by each hospital to the Office of Workers' Compensation within sixty (60) days of the completion and issuance of audited financial statements to the hospital by its independent financial auditors. Such verification shall be subject to further review or audit by the Department of Insurance. Reasonable costs of such review or audit for purposes of this section shall be reimbursed to the Department of Insurance by the hospital whose billing is audited.

The payment system will be adjusted yearly from the date the Health Care Advisory Panel recommended adoption of the fee schedule, November 14, 2007, with automatic adjustment to each hospital's reimbursement rates, as derived pursuant to 19 **Del.C.** §2322B(h), for procedures, treatments or services in effect in January of that year. The amount payable to each hospital pursuant to 19 **Del.C.** §2322B(h) shall be adjusted annually by the Department of Labor in accordance with the Consumer Price Index--Urban, U.S. City Average for Medical Care, as published by the United States Bureau of Labor Statistics. The adjustment factor referenced above shall be reviewed by the Health Care Advisory Panel three (3) years after the effective date of the regulation implementing the fee schedule, and the Panel shall make a recommendation concerning the continued use of the Consumer Price Index for medical care, or the adoption of a different index for cost adjustments in fees for hospital services.

Allied Health Care Professional

An allied health care professional, such as a certified registered nurse anesthetist ("CRNA"), physician assistant ("PA") or nurse practitioner ("NP"), shall be reimbursed at the same rate as other health care professionals when the allied health care professional is performing, coding and billing for the same services as other health care professionals if a physician health care provider is physically present when the service or treatment is rendered, and shall be reimbursed at eight percent (80%) of the primary health care provider's rate if a physician health care provider is not physically present when the service or treatment is rendered.

Independently Operated Diagnostic Testing Facility

Charges of an independently operated diagnostic testing facility shall be subject to the professional services and HCPCS Level II health care payment system where applicable. An independent diagnostic testing

facility is an entity independent of a hospital or physician's office, whether a fixed location, a mobile entity, or an individual non-physician practitioner, in which diagnostic tests are performed by licensed or certified non-physician personnel under appropriate physician supervision.

In the event that the professional services and HCPCS Level II health care payment system is inapplicable, the fee for reimbursement of independent diagnostic testing facility services shall be eight-five percent (85%) of actual charge ("POC 85") for such service as of October 31, 2006, subject to verification, review and/or audit by the Department of Insurance. Reasonable costs of such review or audit shall be reimbursed to the Department of Insurance by the health care provider whose billing is audited.

The payment system will be adjusted yearly from the date the Health Care Advisory Panel recommended adoption of the fee schedule, November 14, 2007, and each year thereafter the Department of Labor shall make an automatic adjustment to the maximum payment for a procedure, treatment or service in effect in January of that year. The Department of Labor shall increase or decrease the maximum payment by the percentage change of increase or decrease in the Consumer Price Index--Urban, U.S. City Average, All Items, as published by the United States Bureau of Labor Statistics.

Pathology

The maximum allowable payment for pathology services and procedures shall be the lesser of the health care provider's actual charges or ninety percent (90%) of the 75th percentile of actual charges within the geozip where the pathology service or procedure is rendered, utilizing information contained in employers' and insurance carriers' national databases. If an employer or insurance carrier contracts with a provider for the purpose of providing services under the Act, the rate negotiated in such contract shall prevail.

Whenever the health care payment system does not set forth a specific fee for a pathology service or procedure in the schedule, the amount of reimbursement shall be eighty-five percent (85%) of actual charge ("POC 85") for such service or procedure as of October 31, 2006, subject to verification, review and/or audit by the Department of Insurance. Reasonable costs of such review or audit shall be reimbursed to the Department of Insurance by the health care provider whose billing is audited.

The payment system will be adjusted yearly from the date the Health Care Advisory Panel recommended adoption of the fee schedule, November 14, 2007, and each year thereafter the Department of Labor shall make an automatic adjustment to the maximum payment for a procedure, treatment or service in effect in January of that year. The Department of Labor shall increase or decrease the maximum payment by the percentage change of increase or decrease in the Consumer Price Index--Urban, U.S. City Average, All Items, as published by the United States Bureau of Labor Statistics.

Radiology

The maximum allowable payment for radiology treatment, procedures or services shall be the lesser of the health care provider's actual charges or ninety percent (90%) of the 75th percentile of actual charges within the geozip where the service or treatment is rendered, utilizing information contained in the employers' and insurance carriers' national databases. If an employer or insurance carrier contracts with a provider for the purpose of providing services under the Act, the rate negotiated in such contract shall prevail.

Whenever the health care payment system does not set forth a specific fee for a radiology treatment, procedure or service in the schedule, the amount for reimburse-ment shall be eighty-five percent (85%) of actual charge ("POC 85") for such service as of October 31, 2006, subject to verification, review and/or audit by the Department of Insurance. Reasonable costs of such review or audit shall be reimbursed to the Department of Insurance by the health care provider whose billing is audited.

The payment system will be adjusted yearly from the date the Health Care Advisory Panel recommended adoption of the fee schedule, November 14, 2007, and each year thereafter the Department of Labor shall make an automatic adjustment to the maximum payment for a procedure, treatment or service in effect in January of that year. The Department of Labor shall increase or decrease the maximum payment by the percentage change of increase or decrease in the Consumer Price Index--Urban, U.S. City Average, All Items, as published by the United States Bureau of Labor Statistics.

Pharmacy

Reimbursement for pharmacy services, prescription drugs and other pharmaceuticals is 100% of the

Average Wholesale Price (AWP) as of October 31, 2006. Verification that such billing is performed in compliance with the above and 19 **Del.C.** §2322B is subject to review or audit by the Department of Insurance. Reasonable costs of such review or audit for purposes of the above shall be reimbursed to the Department of Insurance by the provided whose billing is audited.

The payment system will be adjusted yearly from the date the Health Care Advisory Panel recommended adoption of the fee schedule, November 14, 2007, and each year thereafter the Department of Labor shall make an automatic adjustment to the maximum payment for pharmacy services, prescription drugs and other pharmaceuticals in effect in January of that year. The Department of Labor shall increase or decrease the maximum payment by the percentage change of increase or decrease in the Consumer Price Index--Urban, U.S. City Average, All Items, as published by the United States Bureau of Labor Statistics.

A prescription drug formulary has been adopted and recommended by the Health Care Advisory Panel which designates preferred prescription drugs and encourages the use of generic drugs over name brand drugs.

Durable Medical Equipment

The maximum allowable payment for durable medical equipment shall be the lesser of the health care provider's actual charges or ninety percent (90%) of the 75th percentile of actual charges within the geozip where the durable medical equipment is provided, utilizing information contained in employers' and insurance carriers' national databases. If an employer or insurance carrier contracts with a provider for the purpose of providing durable medical equipment under the Act, the rate negotiated in such contract shall prevail.

Whenever the health care payment system does not set a specific fee for durable medical equipment in the schedule, the amount of reimbursement shall be eighty-five percent (85%) of the provider's actual charge for such equipment as of October 31, 2006, subject to adjustment as provided below. Verification that such billing is performed in compliance with 19 **Del.C.** §2322B(h) shall be subject to verification, review and/or audit by the Department of Insurance. Reasonable costs of such review or audit for purposes of the above and 19 **Del.C.** §2322B shall be reimbursed to the Department of Insurance by the provider whose billing is audited.

The payment system will be adjusted yearly from the date the Health Care Advisory Panel recommended adoption of the fee schedule, November 14, 2007, and each year thereafter the Department of Labor shall make an automatic adjustment to the maximum payment for durable medical equipment in effect in January of that year. The Department of Labor shall increase or decrease the maximum payment by the percentage change of increase or decrease in the Consumer Price Index--Urban, U.S. City Average, All Items, as published by the United States Bureau of Labor Statistics.

Total Component/Professional Component, Technical Component

A total fee includes both the professional component and the technical component needed to accomplish the procedure. Explanations of the professional component and the technical component are listed below. The values listed in the Amount column represent the total reimbursement. Under no circumstance shall the combined amounts of the professional and technical components exceed the amount of the total component.

Professional Component: The professional component represents the reimbursement allowance of the professional services of the physician and is identified by the use of modifier 26. This includes examination of the patient when indicated, performance or supervision of the procedure, interpretation and written report of the examination, and consultation with the referring physician. Values in the PC Amount column are intended for the services of the professional for the professional component only and do not include any other charges. To identify a charge for a professional component only, use the five-digit code followed by modifier 26.

Technical Component: The technical component includes charges made by the institution or clinic to cover the services of the facilities. To identify a charge for a technical component only, use of the five-digit code followed by HCPCS Level II modifier TC.

Out-Of-State Service

If any procedure, treatment or service is rendered outside of the State of Delaware, the amount of reimbursement shall be the greater of (1) the amount set forth in a workers' compensation health care payment system or fee schedule adopted by the state in which the procedure, treatment or service is rendered, if such a schedule has been adopted, or (2) the amount that would be authorized by the payment system adopted pursuant to Delaware's Workers' Compensation Act if the service or treatment were performed in the geozip where the injury

occurred or where the employee was principally assigned. Charges for a procedure, treatment or service outside the State of Delaware shall be subject to the instructions, guidelines, and payment guides and policies in the health care payment system.

Billing and Payment for Health Care Services

Pursuant to 19 **Del.C.** §2322F, charges for medical evaluation, treatment and therapy, including all drugs, supplies, tests and associated chargeable items and events, shall be submitted to the employer or insurance carrier along with a bill or invoice for such charges, accompanied by records or notes, concerning the treatment or services submitted for payment, documenting the employee's condition and the appropriateness of the evaluation, treatment or therapy, with reference to the health care practice guidelines adopted pursuant to 19 **Del.C.** §2322C, or documenting the preauthorization of such evaluation, treatment or therapy. The initial copy of the supporting notes or records shall be produced without separate or additional charge to the employer, insurance carrier or employee.

Those healthcare providers who obtained certification pursuant to 19 **Del.C.** §2322D are not required to first preauthorize each health care procedure, office visit or health care service to be provided to an injured employee with the employer or insurance carrier.

Charges for hospital services and items supplied by a hospital, including all drugs, supplies, tests and associated chargeable items and events, shall be submitted to the employer or insurance carrier along with a bill or invoice which shall be documented in a nationally recognized uniform billing code format and as reference above, in sufficient detail to document the services or items provided, and any preauthorization of the services and items shall also be documented. The initial copy of the supporting medical notes or records shall be produced without separate or additional charge to the employer, insurance carrier or employee.

Payment for hospital services, including payment for invoices rendered for emergency department services, shall be made within thirty (30) days of the submission of a "clean claim" accompanied by notes documenting the employee's condition and the appropriateness of the evaluation, treatment or therapy.

Preauthorized evaluations, treatments or therapy shall be paid at the agreed fee within thirty (30) days of the date of submission of the invoice, unless the compliance with the preauthorization is contested, in good faith, pursuant to the utilization review system set forth in 19 **Del.C.** §2322F(j) [see the rules and regulation regarding Utilization Review].

Treatments, evaluations and therapy provided by a certified health care provider shall be paid within thirty (30) days of receipt of the health care provider's bill or invoice together with records or notes as provided above and pursuant to 19 **Del.C.** §2322F, unless compliance with the health care payment system or practice guidelines adopted pursuant to 19 **Del.C.** §§2322B or 2322C is contested, in good faith, pursuant to the utilization review system as referenced above.

Denial of payment of health care services provided pursuant to the Act, whether in whole or in part, shall be accompanied with written explanation for reason for denial.

In the event that a portion of a health care invoice is contested, the uncontested portion shall be paid without prejudice to the right to contest the remainder. The time limits set forth above and in §2322F shall apply to payment of all uncontested portions of health care payments.

An employer or insurance carrier shall be required to pay a health care invoice within thirty (30) days of receipt of the invoice as long as the claim contains substantially all the required data elements necessary to adjudicate the invoice, unless the invoice is contested in good faith. If the contested invoice pertains to an acknowledged compensable claim and the denial is based upon compliance with the health care payment system and/or health care practice guidelines, it shall be referred to utilization review. Unpaid invoices shall incur interest at a rate of one percent (1%) per month payable to the provider. A provider shall not hold an employee liable for costs related to non-disputed services for a compensable injury and shall not bill or attempt to recover from the employee the difference between the provider's charge and the amount paid by the employer or insurance carrier on a compensable injury.

If, following a hearing, the Industrial Accident Board determines that an employer, an insurance carrier, or health care provider failed in its responsibilities under 19 **Del.C.** §§2322B, 2322C, 2322D, 2322E or 2322F, it shall assess a fine of not less than $1,000.00 nor more than $5,000.00 for violations of said sections, such fines shall be payable to the Workers' Compensation Fund.

Fees for Non-Clinical Services

Pursuant to 19 **Del.C.** §2322B(m), fees for certain non-clinical services are set as follows, and will be periodically revised upon recommendation of the Health Care Advisory Panel to reflect changes in the cost of providing such services:

1. Retrieving, copying and transmitting existing medical reports and records, to include copying of medical notes and/or records supporting a bill or invoice for charges for treatment or services:
   $25.00 for search and retrieval
   $1.25 per page for first 20 pages
   $.90 per page for pages 21 through 60
   $.30 per page for pages 61 and thereafter
2. Testimony by a physician for non-video deposition shall not exceed $2,000.00; for video deposition: $500.00 additional;
3. Live testimony by a physician at any hearing or proceeding shall not exceed $3,500.00;
4. Completion and transmission of any Statutorily required report, form or document by a physician/health care provider: $30.00.

Effective Date

The health care payment system shall apply to all services provided after the effective date of the health care payment system regulations and regardless of date of injury.

The Department of Labor of the State of Delaware reserves the authority to determine applicability of all rules of the fee schedule. Any physician, other medical professional, or other entity having questions regarding applicability to their individual reimbursement as it applies to the fee schedule, should direct any such question to the Department of Labor or to such other authority as directed by the Department of Labor.

DOWC PREFERRED DRUG LIST

Use the formulary below only for NSAID analgesics, opiod analagesics, skeletal muscle relaxants. Physicians are encouraged to prescribe generic drugs. If the physician feels it is medically necessary to prescribe a non-preferred drug and there is no generic equivalent then it can be done without prior authorization. Please note that the Reference Trade Name listed below is used only as an example of the generic drug.

The use of sustained release/controlled release medication may be used when a continuous around-the-clock analgesic is needed for moderate to severe pain requiring treatment for an extended period of time.

ANALGESICS: NSAIDs	
PREFERRED DRUG	**Reference Trade Name**
DICLOFENAC POTASSIUM 50MG TABLET ORAL	*CATAFLAM 50 MG TABLET*
DICLOFENAC SODIUM 100MG TAB.SR 24H ORAL	*VOLTAREN-XR 100 MG TABLET*
DICLOFENAC SODIUM 25MG TABLET DR ORAL	*VOLTAREN 25 MG TABLET EC*
DICLOFENAC SODIUM 50MG TABLET DR ORAL	*VOLTAREN 50 MG TABLET EC*
DICLOFENAC SODIUM 75MG TABLET DR ORAL	*VOLTAREN 75 MG TABLET EC*
DIFLUNISAL 250MG TABLET ORAL	*DOLOBID 250MG TABLET*
DIFLUNISAL 500MG TABLET ORAL	*DOLOBID 500 MG TABLET*
ETODOLAC 200MG CAPSULE ORAL	*LODINE 200 MG CAPSULE*
ETODOLAC 300MG CAPSULE ORAL	*LODINE 300 MG CAPSULE*
ETODOLAC 400MG TAB.SR 24H ORAL	*LODINE XL 400MG TABLET SA*
ETODOLAC 400MG TABLET ORAL	*LODINE 400 MG TABLET*
ETODOLAC 500MG TAB.SR 24H ORAL	*LODINE XL 500 MG TABLET SA*
ETODOLAC 500MG TABLET ORAL	*LODINE 500MG TABLET*
ETODOLAC 600MG TAB.SR 24H ORAL	*LODINE XL 600MG TABLET SA*
FENOPROFEN CALCIUM 200MG CAPSULE ORAL	*NALFON 200 MG PULVULE*
FENOPROFEN CALCIUM 300MG CAPSULE ORAL	*NALFON 300 MG CAPSULE*
FENOPROFEN CALCIUM 600MG TABLET ORAL	*NALFON 600MG TABLET*

FLURBIPROFEN 100MG TABLET ORAL	*ANSAID 100 MG TABLET*
FLURBIPROFEN 50MG TABLET ORAL	*ANSAID 50MG TABLET*
IBUPROFEN 100MG TAB CHEW ORAL	*ADVIL 100 MG TABLET CHEW*
IBUPROFEN 100MG TABLET ORAL	*MOTRIN 100MG CAPLET*
IBUPROFEN 100MG/5ML GEL ORAL	*ELIXSURE IB SUSPENSION*
IBUPROFEN 100MG/5ML ORAL SUSP ORAL	*MOTRIN 100 MG/5 ML SUSPENSION*
IBUPROFEN 200MG CAPSULE ORAL	*ADVIL MIGRAINE 200 MG CAPSULE*
IBUPROFEN 200MG TABLET ORAL	*MOTRIN IB 200 MG CAPLET*
IBUPROFEN 300MG TABLET ORAL	*MOTRIN 300 MG TABLET*
IBUPROFEN 400MG TABLET ORAL	*MOTRIN 400 MG TABLET*
IBUPROFEN 40MG/ML DROPS SUSP ORAL	*MOTRIN 40MG/ML SUSP DROPS*
IBUPROFEN 50MG TAB CHEW ORAL	*MOTRIN 50MG TABLET CHEWABLE*
IBUPROFEN 600MG TABLET ORAL	*MOTRIN 600 MG TABLET*
IBUPROFEN 800MG TABLET ORAL	*MOTRIN 800 MG TABLET*
INDOMETHACIN 25MG CAPSULE ORAL	*INDOCIN 25MG CAPSULE*
INDOMETHACIN 25MG/5ML ORAL SUSP ORAL	*INDOCIN 25 MG/5 ML SUSPENSION*
INDOMETHACIN 50MG CAPSULE ORAL	*INDOCIN 50MG CAPSULE*
INDOMETHACIN 50MG RECTAL SUPPOSITORY	*INDOCIN 50 MG SUPPOSITORY*
INDOMETHACIN 75MG CAPSULE SA ORAL	*INDOCIN SR 75MG CAPSULE SA*
KETOPROFEN 100MG PELLETED 24HR CAPSULE ORAL	*ORUVAIL 100MG CAPSULE SA*
KETOPROFEN 12.5MG TABLET ORAL	*ORUDIS KT 12.5 MG TABLET*
KETOPROFEN 150MG PELLETED 24HR CAPSULE ORAL	*ORUVAIL 150MG CAPSULE SA*
KETOPROFEN 200MG PELLETED 24HR CAPSULE ORAL	*ORUVAIL 200 MG CAPSULE SA*
KETOPROFEN 25MG CAPSULE ORAL	*ORUDIS 25MG CAPSULE*
KETOPROFEN 50MG CAPSULE ORAL	*ORUDIS 50MG CAPSULE*
KETOPROFEN 75MG CAPSULE ORAL	*ORUDIS 75MG CAPSULE*
KETOROLAC TROMETHAMINE 10MG TABLET ORAL	*TORADOL 10 MG TABLET*
MECLOFENAMATE SODIUM 100MG CAPSULE ORAL	*MECLOMEN 100MG CAPSULE*
MECLOFENAMATE SODIUM 50MG CAPSULE ORAL	*MECLOMEN 50MG CAPSULE*
NABUMETONE 500MG TABLET ORAL	*RELAFEN 500 MG TABLET*
NABUMETONE 750MG TABLET ORAL	*RELAFEN 750 MG TABLET*
NAPROXEN 125MG/5ML ORAL SUSP ORAL	*NAPROSYN 125 MG/5 ML SUSPENSION*
NAPROXEN 250MG TABLET ORAL	*NAPROSYN 250 MG TABLET*
NAPROXEN 375MG TABLET DELAYED-RELEASE ORAL	*EC-NAPROSYN 375 MG TABLET*
NAPROXEN 375MG TABLET ORAL	*NAPROSYN 375 MG TABLET*
NAPROXEN 500MG TABLET DELAYED-RELEASE ORAL	*EC-NAPROSYN 500 MG TABLET*
NAPROXEN 500MG TABLET ORAL	*NAPROSYN 500 MG TABLET*
NAPROXEN SODIUM 220MG TABLET ORAL	*ALEVE 220 MG TABLET*
NAPROXEN SODIUM 275MG TABLET ORAL	*ANAPROX 275 MG TABLET*
NAPROXEN SODIUM 550MG TABLET ORAL	*ANAPROX DS 550 MG TABLET*
NAPROXEN SODIUM 550MG TABLET SA ORAL	*NAPRELAN 500 TABLET SA*
OXAPROZIN 600MG TABLET ORAL	*DAYPRO 600 MG CAPLET*
PIROXICAM 10MG CAPSULE ORAL	*FELDENE 10 MG CAPSULE*
PIROXICAM 20MG CAPSULE ORAL	*FELDENE 20MG CAPSULE*

PREDNISONE TAB5 MG	*STERAPRED 5MG UNIPACK*
PREDNISONE TAB10 MG	*STERAPRED DS UNIPACK*
SALSALATE 500MG, 750MG CAPSULE/TABLET	*DISALCID CAPSULE/TABLET*
SULINDAC 150MG TABLET ORAL	*CLINORIL 150MG TABLET*
SULINDAC 200MG TABLET ORAL	*CLINORIL 200 MG TABLET*
TOLMETIN SODIUM 200MG TABLET ORAL	*TOLECTIN 200MG TABLET*
TOLMETIN SODIUM 400MG CAPSULE ORAL	*TOLECTIN DS 400MG CAPSULE*
TOLMETIN SODIUM 600MG TABLET ORAL	*TOLECTIN 600MG TABLET*
SKELETAL MUSCLE RELAXANTS	
PREFERRED DRUG	**Reference Trade Name**
BACLOFEN 10MG TABLET ORAL	*LIORESAL 10MG TABLET*
BACLOFEN 20MG TABLET ORAL	*LIORESAL 20MG TABLET*
CHLORZOXAZONE 250MG TABLET ORAL	*REMULAR-S 250MG TABLET*
CHLORZOXAZONE 500MG TABLET ORAL	*PARAFON FORTE DSC 500MG CAPSULE*
CYCLOBENZAPRINE HCL 10MG TABLET ORAL	*FLEXERIL 10 MG TABLET*
DIAZEPAM 5 MG TABLET ORAL	*VALIMUM 5 MG TABLET*
METHOCARBAMOL 500MG TABLET ORAL	*ROBAXIN 500 MG TABLET*
METHOCARBAMOL 750MG TABLET ORAL	*ROBAXIN-750 TABLET*
METHOCARBAMOL/ASPIRIN 400-325MG TABLET ORAL	*ROBAXISAL TABLET*
ORPHENADRINE CITRATE 100MG TABLET SA ORAL	*NORFLEX 100 MG TABLET SA*
ORPHENADRINE/ASPIRIN/CAFFEINE 25-385-30 TABLET ORAL	*NORGESIC TABLET*
ORPHENADRINE/ASPIRIN/CAFFEINE 50-770-60 TABLET ORAL	*NORGESIC FORTE TABLET*
TIZANIDINE HCL 2MG TABLET ORAL	*ZANAFLEX 2 MG TABLET*
TIZANIDINE HCL 4MG TABLET ORAL	*ZANAFLEX 4 MG TABLET*
OPOID ANALGESICS	
PREFERRED DRUG	**Reference Trade Name**
BUTORPHANOL TARTRATE 10MG/ML SPRAY NASAL	*STADOL NS 10MG/ML SPRAY*
CODEINE PHOS 15MG/5ML SOLUTION ORAL	*N/A*
CODEINE PHOS 30MG TABLET SOL ORAL	*N/A*
CODEINE PHOS 60MG TABLET SOL ORAL	*N/A*
CODEINE PHOS/ACETAMINOPHEN 12-120MG/5 ELIXIR ORAL	*TYLENOL W/CODEINE ELIXIR*
CODEINE PHOS/ACETAMINOPHEN 12-120MG/5 ORAL SUSP ORAL	*CAPITAL W/CODEINE ORAL SUSPENSION*
CODEINE PHOS/ACETAMINOPHEN 15-300MG TABLET ORAL	*TYLENOL W/CODEINE #2 TABLET*
CODEINE PHOS/ACETAMINOPHEN 30-300MG TABLET ORAL	*TYLENOL W/CODEINE #3 TABLET*
CODEINE PHOS/ACETAMINOPHEN 30-650MG TABLET ORAL	*PHENAPHEN-650 W/CODEINE TABLET*
CODEINE PHOS/ACETAMINOPHEN 60-300MG TABLET ORAL	*TYLENOL W/CODEINE #4 TABLET*
CODEINE PHOS/ASPIRIN 30-325MG TABLET ORAL	*EMPIRIN W/CODEINE 30MG TABLET*
CODEINE PHOS/ASPIRIN 60-325MG TABLET ORAL	*EMPIRIN W/CODEINE 60MG TABLET*
CODEINE SULF 15MG TABLET ORAL	*N/A*
CODEINE SULF 30MG TABLET ORAL	*N/A*
CODEINE SULF 60MG TABLET ORAL	*N/A*

CODEINE/APAP/CAFFEIN/BUTALB 30MG CAPSULE ORAL	*FIORICET W/CODEINE CAPSULE*
CODEINE/ASA/CAFFEINE/BUTALB 30MG CAPSULE ORAL	*FIORINAL/CODEINE #3 CAPSULE*
HYDROCODONE BIT/ACETAMINOPHEN 10-250MG TABLET ORAL	*STAGESIC-10 CAPLET*
HYDROCODONE BIT/ACETAMINOPHEN 10-325MG TABLET ORAL	*NORCO 10/325 TABLET*
HYDROCODONE BIT/ACETAMINOPHEN 10-500MG TABLET ORAL	*LORTAB 10/500 TABLET*
HYDROCODONE BIT/ACETAMINOPHEN 10-650MG TABLET ORAL	*LORCET 10/650 TABLET*
HYDROCODONE BIT/ACETAMINOPHEN 10-660MG TABLET ORAL	*VICODIN HP TABLET*
HYDROCODONE BIT/ACETAMINOPHEN 10-750MG TABLET ORAL	*MAXIDONE 10/750 MG TABLET*
HYDROCODONE BIT/ACETAMINOPHEN 2.5-167/5 ELIXIR ORAL	*LORTAB ELIXIR*
HYDROCODONE BIT/ACETAMINOPHEN 2.5-167/5 SOLUTION ORAL	*N/A*
HYDROCODONE BIT/ACETAMINOPHEN 2.5-500MG TABLET ORAL	*LORTAB 2.5/500 TABLET*
HYDROCODONE BIT/ACETAMINOPHEN 5-325MG TABLET ORAL	*NORCO 5/325 TABLET*
HYDROCODONE BIT/ACETAMINOPHEN 5-500MG CAPSULE ORAL	*LORCET HD CAPSULE*
HYDROCODONE BIT/ACETAMINOPHEN 5-500MG TABLET ORAL	*VICODIN 5/500 TABLET*
HYDROCODONE BIT/ACETAMINOPHEN 7.5-325MG TABLET ORAL	*NORCO 7.5/325 TABLET*
HYDROCODONE BIT/ACETAMINOPHEN 7.5-500MG TABLET ORAL	*LORTAB 7.5/500 TABLET*
HYDROCODONE BIT/ACETAMINOPHEN 7.5-650MG TABLET ORAL	*LORCET PLUS TABLET*
HYDROCODONE BIT/ACETAMINOPHEN 7.5-750MG TABLET ORAL	*VICODIN ES TABLET*
HYDROCODONE BIT/ASPIRIN 5-500MG TABLET ORAL	*LORTAB ASA TABLET*
HYDROMORPHONE HCL 1MG/ML LIQUID ORAL	*DILAUDID-5 1 MG/ML LIQUID*
HYDROMORPHONE HCL 2MG TABLET ORAL	*DILAUDID 2 MG TABLET*
HYDROMORPHONE HCL 4MG TABLET ORAL	*DILAUDID 4 MG TABLET*
HYDROMORPHONE HCL 8MG TABLET ORAL	*DILAUDID 8 MG TABLET*
IBUPROFEN/HYDROCODONE BIT 200-7.5MG TABLET ORAL	*VICOPROFEN TABLET*
MEPERIDINE HCL 100MG TABLET ORAL	*DEMEROL 100MG TABLET*
MEPERIDINE HCL 50MG TABLET ORAL	*DEMEROL 50 MG TABLET*
MEPERIDINE HCL 50MG/5ML SYRUP ORAL	*DEMEROL 50 MG/5 ML SYRUP*
MEPERIDINE HCL/PROMETH HCL 50-25MG CAPSULE ORAL	*MEPROZINE 50/25 CAPSULE*
METHADONE HCL 10MG TABLET ORAL	*DOLOPHINE HCL 10 MG TABLET*
OPIOID ANALGESICS	
PREFERRED DRUG	**Reference Trade Name**
METHADONE HCL 10MG/5ML SOLUTION ORAL	*N/A*

METHADONE HCL 10MG/ML ORAL CONC. ORAL	*METHADOSE 10 MG/ML ORAL CON*
METHADONE HCL 40MG TABLET SOL ORAL	*METHADOSE 40 MG TABLET DISP*
METHADONE HCL 5MG TABLET ORAL	*DOLOPHINE HCL 5 MG TABLET*
METHADONE HCL 5MG/5ML SOLUTION ORAL	*N/A*
MORPHINE SULFATE 10MG RECTAL SUPPOSITORY	*ROXANOL 10MG SUPPOSITORY*
MORPHINE SULFATE 10MG SOLUBLE TABLET	*N/A*
MORPHINE SULFATE 10MG/5ML SOLUTION ORAL	*MSIR 10 MG/5 ML ORAL SOLUTION*
MORPHINE SULFATE 15MG SOLUBLE TABLET	*N/A*
MORPHINE SULFATE 15MG TABLET ORAL	*MSIR 15MG TABLET*
MORPHINE SULFATE 20MG RECTAL SUPPOSITORY	*ROXANOL 20MG SUPPOSITORY*
MORPHINE SULFATE 20MG/5ML SOLUTION ORAL	*MSIR 20 MG/5 ML ORAL SOLUTION*
MORPHINE SULFATE 20MG/ML SOLUTION ORAL	*ROXANOL 20 MG/ML SOLUTION*
MORPHINE SULFATE 30MG RECTAL SUPPOSITORY	*ROXANOL 30MG SUPPOSITORY*
MORPHINE SULFATE 30MG SOLUBLE TABLET	*N/A*
MORPHINE SULFATE 30MG TABLET ORAL	*MSIR 30MG TABLET*
MORPHINE SULFATE 5MG RECTAL SUPPOSITORY	*ROXANOL 5MG SUPPOSITORY*
OXYCODONE HCL 15MG TABLET ORAL	*ROXICODONE 15 MG TABLET*
OXYCODONE HCL 20MG/ML ORAL CONC. ORAL	*OXYFAST 20 MG/ML SOLUTION*
OXYCODONE HCL 30MG TABLET ORAL	*ROXICODONE 30 MG TABLET*
OXYCODONE HCL 5MG CAPSULE ORAL	*OXYIR 5 MG CAPSULE*
OXYCODONE HCL 5MG TABLET ORAL	*ROXICODONE 5 MG TABLET*
OXYCODONE HCL 5MG/5ML SOLUTION ORAL	*ROXICODONE 5 MG/5 ML SOLUTION*
OXYCODONE HCL/ACETAMINOPHEN 10-325MG TABLET ORAL	*PERCOCET 10/325 MG TABLET*
OXYCODONE HCL/ACETAMINOPHEN 10-650MG TABLET ORAL	*PERCOCET 10/650 MG TABLET*
OXYCODONE HCL/ACETAMINOPHEN 2.5-325MG TABLET ORAL	*PERCOCET 2.5/325 MG TABLET*
OXYCODONE HCL/ACETAMINOPHEN 5-325/5ML SOLUTION ORAL	*ROXICET 5/325 ORAL SOLUTION*
OXYCODONE HCL/ACETAMINOPHEN 5-325MG TABLET ORAL	*PERCOCET 5/325 MG TABLET*
OXYCODONE HCL/ACETAMINOPHEN 5-500MG CAPSULE ORAL	*TYLOX 5/500 CAPSULE*
OXYCODONE HCL/ACETAMINOPHEN 7.5-325MG TABLET ORAL	*PERCOCET 7.5/325 MG TABLET*
OXYCODONE HCL/ACETAMINOPHEN 7.5-500MG TABLET ORAL	*PERCOCET 7.5/500 MG TABLET*
OXYCODONE/ASPIRIN 4.88-325MG TABLET ORAL	*PERCODAN TABLET*
OXYMORPHONE HCL 5MG RECTAL SUPPOSITORY	*NUMORPHAN 5 MG SUPPOSITORY*
PENTAZOCINE/ACETAMINOPHEN CAPLET	*TALACEN CAPLET*
PENTAZOCINE/NALOXONE TABLET	*TALWIN NX TABLET*
PROPOXYPHENE HCL 65MG CAPSULE ORAL	*DARVON 65 MG PULVULE*
PROPOXYPHENE HCL/ACETAMINOPHEN 65-650MG TABLET ORAL	*WYGESIC 65/650 TABLET*
PROPOXYPHENE HCL/ASA/CAFFEINE 32-389-32 CAPSULE ORAL	*DARVON COMPOUND-32 PULVULE*
PROPOXYPHENE HCL/ASA/CAFFEINE 65-389 CAPSULE ORAL	*DARVON COMPOUND-65 PULVULE*
PROPOXYPHENE NAPSYL 100MG TABLET ORAL	*DARVON-N 100 MG TABLET*

PROPOXYPHENE/ACETAMINOPHEN 100-325MG TABLET ORAL	*TRYCET 100/325 MG TABLET*
PROPOXYPHENE/ACETAMINOPHEN 100-650MG TABLET ORAL	*DARVOCET-N 100 TABLET*
PROPOXYPHENE/ACETAMINOPHEN 50-325MG TABLET ORAL	*DARVOCET-N 50 TABLET*
TRAMADOL HCL 50MG TABLET ORAL	*ULTRAM 50 MG TABLET*
TRAMADOL HCL/ACETAMINOPHEN 37.5-325MG TABLET ORAL	*ULTRACET TABLET*
ADJUVANTS	
PREFERRED DRUG	**Reference Trade Name**
AMITRIPTYLINE HCL 10MG, 25MG, 50MG, 75MG, 100MG	ELAVIL TABLETS
DESYREL TABLETS 50MG, 100MG	TAZADONE HCL
GABAPENTIN CAPSULES 100MG, 300MG, 400MG	NEURONTIN CAPSULES
NORTRIPTYLINE HCL CAPSULES 10MG, 25MG, 50MG, 75MG	PAMELOR CAPSULES

Utilization Review

1.0 Definitions

As used in this regulation:

"**Utilization Review**" means the utilization review program and associated procedures to guide utilization of health care treatments in workers' compensation as set forth in Section 2322F(j), Chapter 23, Title 19, **Delaware Code.**

2.0 Purpose and Scope

Section 2322B, Chapter 23, Section 19, **Delaware Code**, authorizes and directs the Health Care Advisory Panel to adopt and recommend, a coordinated set of instructions and guidelines to accompany the health care payment system, to the Department for adoption by regulation.

3.0 Utilization Review

3.1 Pursuant to chapter 101, title 29 of the **Delaware Code**, the Department of Labor has developed a utilization review program with the intent of providing reference for employers, insurance carriers, and health care providers for evaluation of health care and charges. The intended purpose of utilization review services is to provide prompt resolution of issues related to treatment and/or compliance with the health care payment system or practice guidelines for those claims which have been acknowledged to be compensable.

3.2 An employer or insurance carrier may engage in utilization review to evaluate the quality, reasonableness and/or necessity of proposed or provided health care services for acknowledged compensable claims. Any person conducting a utilization review program for workers' compensation shall be required to register with the Office of Workers' Compensation once every two (2) years and certify compliance with Workers' Compensation Utilization Management Standards or Health Utilization Management Standards of Utilization Review Accreditation Council ("URAC") sufficient to achieve URAC accreditation or submit evidence of accreditation by URAC.

3.3 At this time, Utilization Review is limited to health care recommendations subject to practice guidelines developed by the HCAP.

3.4 An employer or insurance carrier may request utilization review by complying with all the terms and conditions set forth on the forms attached hereto. Upon completion and submission of the forms, information package and medical records package by the employer or insurance carrier, the designated utilization review company will review treatment to determine if it is in compliance with the practice guidelines developed by the Health Care Advisory Panel and adopted and implemented by the Department of Labor. All past, prospective and concurrent health care decisions must be reviewed and a Utilization Review determination made no later than

three (3) working days from receipt of the aforementioned information, for emergency care, but no later than 15 calendar days from the date of the treatment recommended by the physician or less if set forth in URAC guidelines.

3.5 If a party disagrees with the findings following utilization review, a petition may be filed with the Industrial Accident Board for *de novo* review.

3.6 If there are no current practice guidelines applicable to the health care provided, a party may file a petition with the Industrial Accident Board seeking a determination of the appropriateness of treatment.

DELAWARE DEPARTMENT OF LABOR
MEDICAL UTILIZATION REVIEW PROGRAM

REQUEST FOR UTILIZATION REVIEW
(Pursuant to 19 Del.C. §2322 F(j))

PLEASE TYPE OR CLEARLY PRINT ALL INFORMATION. All information and addresses must be verified as current and accurate.

1. Date of Request _____
2. WC Number(s) _____ Date(s) of injury _____
3. Nature of injury _____
4. Claimant's Name_____
   Age_____ Sex_____ Marital Status_____
   Address _____Tel No _____
   City _____State _____ Zip _____
   Attorney's Name_____
   Address _____Tel No _____
   City_____State _____ Zip _____

5. Employer_____ Occupation_____ Job Title_____
6. Party Requesting Review_____
   Primary Contact at Party's Office _____
   Address_____Tel No _____
   City _____ State _____ Zip_____

   Attorney's Name_____
   Address _____Tel No_____
   City _____State _____ Zip _____

7. Health Care Provider to be Reviewed_____
   Specialty (if applicable) _____
   Address_____Tel No_____
   City_____ State _____ Zip_____

8. Attach copies of all admissions and/or orders filed or entered in this case.

My signature certifies the following: a) all names and addresses on this form have been verified as current and accurate; b) seven identical copies of associated medical material are being submitted for review; and c) all items listed in the table of contents are in each copy of the medical material.

_____ _____
Print Name of Requester Signature of Requester

COPY THIS FORM OR REPRODUCE EXACTLY IN APPEARANCE AND CONTENT
SEE INSTRUCTIONS ON BACK

REQUIRED CONTENT, PRESENTATION AND BINDING METHOD FOR ALL MATERIALS SUBMITTED FOR UTILIZATION REVIEW

In accordance with 19 **Del.C.** §2322 F(j) and the regulations adopted pursuant thereto, all information and medical records submitted to the Department of Labor, Office of Workers' Compensation must represent all of the facts of this case.

INFORMATION PACKAGE - REQUIRED CONTENT

Completed and signed Request for Utilization Review Form.

A list containing the full names and medical specialties of all providers under review and individuals who performed defense medical examinations relevant to the matter under review.

MEDICAL RECORDS PACKAGE - REQUIRED CONTENT

1. **Case Report** - The case report shall contain the following:
   a. Name, discipline of care and specialty of the Provider under review; date the provider first treated the claimant.
   b. Claimant's standard demographic information (age, sex, marital status, etc.).
   c. Claimant's employer and occupation/job title.
   d. Date(s) and nature of claimant's work-related injury/exposure.
   e. Date of initial treatment, a brief chronological history of treatment to the present date, and any significant contributing factors which may have had a direct effect on the length of treatment (e.g., diabetes).
   f. Treatment to be reviewed (specify each treatment modality to be reviewed).
2. **Table of Contents**
   Section 1. A copy of the Employer's First Report of Injury.
   Section 2. All reports, notes, etc., from provider being reviewed as submitted to the requesting party.
   Section 3. All reports, notes, etc., of other treating providers as submitted to the requesting party.
   Section 4. All reports resulting from referrals, consultations, DME's and second opinions as submitted to the requesting party.
   Section *5.* All diagnostic test results as submitted to the requesting party.
   Section 6. All medical management reports as submitted to the requesting party.
   Section 7. All hospital/clinic records related to the injury as submitted to the requesting party.

NOTE Do not include copies of any billing statements or comments/instructions directed to the Utilization Review panel. All material **must** be presented in identified sections; each section's content presented in chronological order.

REQUIRED PRESENTATION AND BINDING METHOD FOR ALL SUBMITTED MATERIALS

INFORMATION PACKAGE - SUBMIT ONE COPY ONLY -- staple in upper-left-hand corner.
MEDICAL RECORDS PACKAGE - SUBMIT SEVEN (7) COPIES
   a. All submitted material must be presented in seven (7) identical bound copies.
   b. If tabs are used for the sections, they must be positioned to the right side of the document.

Mail or Deliver to: **Department of Labor**
Office of Workers' Compensation
4425 N. Market St.

P.O. Box 9954
Wilmington, DE 19809
302-761-8200

Health Care Practice Guidelines
Carpal Tunnel Syndrome Guidelines

A. Introduction

Pursuant to 19 **Del.C.** §2322C, health care practice guidelines have been adopted and recommended by the Health Care Advisory Panel to guide utilization of health care treatments in workers' compensation including, but not limited to, care provided for the treatment of employees by or under the supervision of a licensed health care provider, prescription drug utilization, inpatient hospitalization and length of stay, diagnostic testing, physical therapy, chiropractic care and palliative care. The health care practice guidelines apply to all treatments provided after the effective date of the regulation adopted by the Department of Labor, May 23, 2008, and regardless of the date of injury.

The guidelines are, to the extent permitted by the most current medical science or applicable science, based on well-documented scientific research concerning efficacious treatment for injuries and occupational disease. To the extent that well-documented scientific research regarding the above is not available at the time of adoption of the guidelines, or is not available at the time of any revision to the guidelines, the guidelines have been and will be based upon the best available information concerning national consensus regarding best health care practices in the relevant health care community.

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

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

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

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

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

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

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

B. General Guideline Principles

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

1. **Education** of the patient and family, as well as the employer, insurer, policy makers and the community should be the primary emphasis in the treatment of CTS and disability. Currently, practitioners often

think of education last, after medications, manual therapy and surgery. Practitioners must develop and implement an effective strategy and skills to educate patients, employers, insurance systems, policy makers and the community as a whole. An education-based paradigm should always start with inexpensive communication providing reassuring information to the patient. More in-depth education currently exists within a treatment regime employing functional restorative and innovative programs of prevention and rehabilitation. No treatment plan is complete without addressing issues of individual and/or group patient education as a means of facilitating self-management of symptoms and prevention.

2. **Treatment Parameter** 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 ascomorbitities and availability of services. Clinical judgment may substantiate the need to accelerate or deceleratemodify the time framestotal number of visits discussed in this document. The majority of injured workers with Capal Tunnel Syndrome often will achieve resolution of their condition within 12 to 56 visits (Guide To Physical Therapy Practice – Second Edition). It is anticipated that most injured workers will not require the maximum number of visits described in these guidelines. They are designed to be a ceiling and care extending beyond the maximum allowed visits may warrant utilization review.

3. **Active Interventions** emphasizing patient responsibility, such as therapeutic exercise and/or functional treatment, are generally emphasized over passive modalities, especially as treatment progresses. Generally, passive interventions are viewed as a means to facilitate progress in an active rehabilitation program with concomitant attainment of objective functional gains. All rehabilitation programs must incorporate “Active Interventions” no later than three weeks after the onset of treatment. Reimbursement for passive modalities only after the first three weeks of treatment without clear evidence of Active Interventions will require supportive documentation.

4. **Active Therapeutic Exercise Program** Exercise program goals should incorporate patient strength, endurance, flexibility, coordination, and education. This includes functional application in vocational or community settings.

5. **Positive Patient Response** Positive results are defined primarily as functional gains that can be objectively measured. Objective functional gains include, but are not limited to, positional tolerances, range-of-motion, strength, endurance, activities of daily living, cognition, behavior, and efficiency/velocity measures that can be quantified. Subjective reports of pain and function should be considered and given relative weight when the pain has anatomic and physiologic correlation. Anatomic correlation must be based on objective findings.

6. **Re-evaluate Treatment Every 3 To 4 Weeks** If a given treatment or modality is not producing positive results within 3 to 4 weeks, the treatment should be either modified or discontinued. Reconsideration of diagnosis should also occur in the event of poor response to a seemingly rational intervention.

7. **Surgical Interventions** 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 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 conditions.

8. **Six-month Time-frame** The prognosis drops precipitously for returning an injured worker to work once he/she has been temporarily totally disabled for more than six months. The emphasis within these guidelines is to move patients along a continuum of care and return-to-work within a six-month time frame, whenever possible. It is important to note that time frames may not be pertinent to injuries that do not involve work-time loss or are not occupationally related.

9. **Return-to-work** is therapeutic, assuming the work is not likely to aggravate the basic problem or increase long-term pain. The practitioner must provide specific physical limitations per the Physician’s Form. The following physical limitations should be considered and modified as recommended: lifting, pushing, pulling, crouching, walking, using stairs, bending at the waist, awkward and/or sustained postures, tolerance for sitting or standing, hot and cold environments, data entry and other repetitive motion tasks, sustained grip, tool usage and vibration factors. Even if there is residual chronic pain, return-to-work is not necessarily contraindicated.
The practitioner should understand all of the physical demands of the patient’s job position before returning the patient to full duty and should receive clarification of the patient’s job duties.

10. **Delayed Recovery** Strongly consider a psychological evaluation, if not previously provided, as well as initiating interdisciplinary rehabilitation treatment and vocational goal setting, for those patients who are failing to make expected progress 6 to 12 weeks after an injury. The Division recognizes that 3 to 10% of all

industrially injured patients will not recover within the timelines outlined in this document despite optimal care. Such individuals may require treatments beyond the limits discussed within this document, but such treatment will require clear documentation by the authorized treating practitioner focusing on objective functional gains afforded by further treatment and impact upon prognosis.

11. **Guideline Recommendations and Inclusion of Medical Evidence** Guidelines are recommendations based on available evidence and/or consensus recommendations.

Those procedures considered inappropriate, unreasonable, or unnecessary are designated in the guideline as being "not recommended."

12. **Care Beyond Maximum Medical Improvement (MMI)** MMI should be declared when a patient's condition has plateaued to the point where the authorized treating physician no longer believes further medical intervention is likely to result in improved function. However, some patients may require treatment after MMI has been declared in order to maintain their functional state. The recommendations in this guideline are for pre-MMI care and are not intended to limit post-MMI treatment.

The remainder of this document should be interpreted within the parameters of these guideline principles that may lead to more optimal medical and functional outcomes for injured workers.

C. Definition

Carpal tunnel syndrome (CTS) is one of the most common mononeuropathies (a disorder involving only a single nerve). The median nerve is extremely vulnerable to compression and injury in the region of the wrist and palm. In this area, the nerve is bounded by the wrist bones and the transverse carpal ligament. The most common site of compression is at the proximal edge of the flexor retinaculum (an area near the crease of the wrist). There is often a myofascial component in the patient's presentation. This should be considered when proceeding with the diagnostic workup and therapeutic intervention.

Studies have repeatedly confirmed that the diagnosis cannot be made based on any single historical factor or physical examination finding. Electrodiagnostic tests may be negative in surgically confirmed cases. Conversely, electrodiagnostic testing may be positive in asymptomatic individuals. The diagnosis of CTS, therefore, remains a clinical diagnosis based on a preponderance of supportive findings.

Classic findings of CTS include subjective numbness or dysesthesias confined to the median nerve distribution, worsening of symptoms at night, and positive exam findings. Please refer to other appropriate upper extremity guidelines as necessary.

D. Initial Diagnostic Procedures

1. **Introduction** The two standard procedures that are to be utilized when initially evaluating a work-related carpal tunnel complaint are History Taking, and Physical Examination.

History-taking and Physical Examination are generally accepted, well-established, and widely used procedures which establish the foundation/basis for and dictate all ensuing stages of diagnostic and therapeutic procedures. When findings of clinical evaluation and those of other diagnostic procedures do not complement each other, the objective clinical findings should have preference.

2. **History**

a. **Description of symptoms - should address at least the following:**

i. Numbness, tingling, and/or burning of the hand involving the distal median nerve distribution; however, distribution of the sensory symptoms may vary considerably between individuals. Although the classic median nerve distribution is to the palmar aspect of the thumb, the index finger, the middle finger and radial half of the ring finger, patients may report symptoms in any or all of the fingers. The Katz Hand diagram (see Fig. 1) may be useful in documenting the distribution of symptoms; the classic pattern of carpal tunnel affects at least two of the first three digits and does not involve dorsal and palmar aspects of the hand. A probable pattern involves the palmar but not dorsal aspect of the hand (excluding digits).

ii. Nocturnal symptoms frequently disrupt sleep and consist of paresthesias and/or pain in the hand and/or arm.

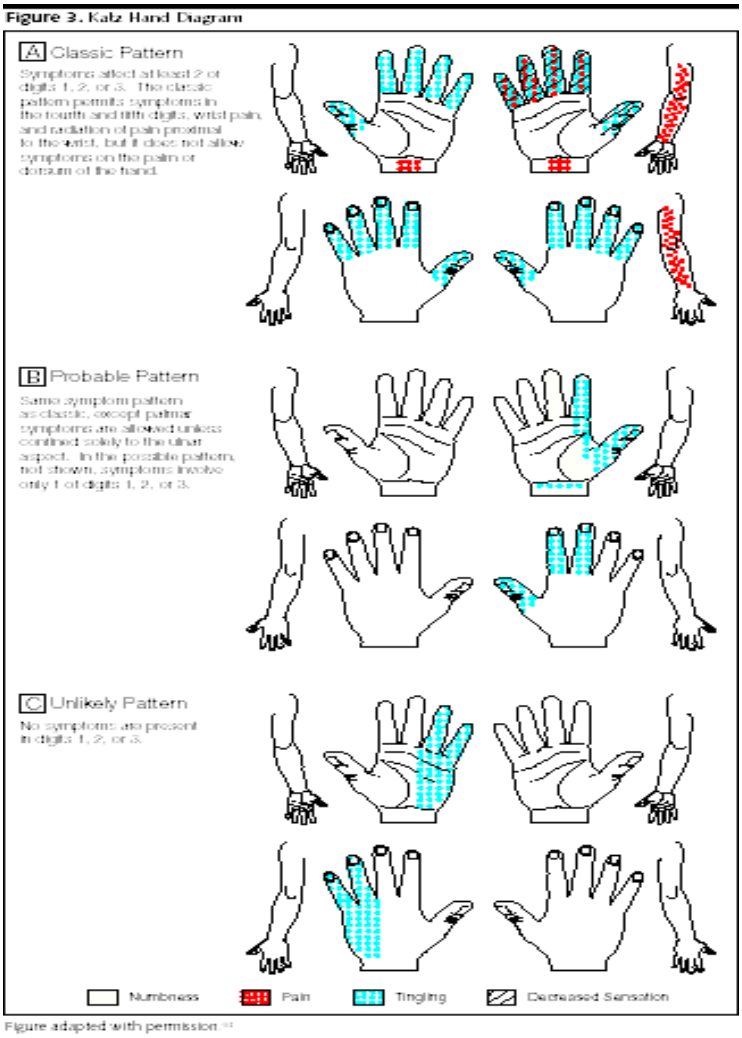
iii. Pain in the wrist occurs frequently and may even occur in the forearm, elbow or shoulder. While proximal pain is not uncommon, its presence warrants evaluation for other pathology in the cervical spine, shoulder and upper extremity.

iv. Shaking the symptomatic hand to relieve symptoms may be reported.

v. Clumsiness of the hand or dropping objects is often reported, but may not be

present early in the course.

Figure 1 – Katz Hand Diagram. Used with permission. *JAMA 2000; 283 (23): 3110-17. Copyrighted 2000, American Medical Association*



b. **<u>Identification of Occupational Risk Factors:</u>** Job title alone is <u>not</u> sufficient information. The clinician is responsible for documenting specific information regarding repetition, force and other risk factors, as listed in the table entitled, 'Risk Factors Associated with CTS'- Table 2. A job site evaluation may be required.

c. **<u>Demographics:</u>** Age, hand dominance, gender, etc.

d. **<u>Past Medical History and Review of Systems</u>:** A study of CTS patients showed a 33% prevalence of related disease. Risk factors for CTS include female gender; obesity; Native American, Hispanic, or Black heritage, and certain medical conditions:

i. Pregnancy

ii. Arthropathies including connective tissue disorders, rheumatoid arthritis, systemic lupus erythematosus, gout, osteoarthritis and spondyloarthropathy

iii. Colles' fracture or other acute trauma

iv. Amyloidosis

v. Hypothyroidism, especially in older females

vi. Diabetes mellitus, including family history or gestational diabetes

vii. Acromegaly
viii. Use of corticosteroids or estrogens
ix. Vitamin B6 deficiency

e. **Activities of Daily Living (ADLs):** include such activities as self care and personal hygiene, communication, ambulation, attaining all normal living postures, travel, non-specialized hand activities, sexual function, sleep, and social and recreational activities. Specific movements in this category include pinching or grasping keys/pens/other small objects, grasping telephone receivers or cups or other similar-sized objects, and opening jars. The quality of these activities is judged by their independence, appropriateness, and effectiveness. Assess not simply the number of restricted activities but the overall degree of restriction or combination of restrictions.

f. **Avocational Activities:** Information must be obtained regarding sports, recreational, and other avocational activities that might contribute to or be impacted by CTD development. Activities such as hand-operated video games, crocheting/needlepoint, home computer operation, golf, racquet sports, bowling, and gardening are included in this category.

g. **Social History:** Exercise habits, alcohol consumption, and psychosocial factors.

3. **Physical Examination** Please refer to Table 1 for respective sensitivities and specificities for findings used to diagnose CTS (a-f).

a. Sensory loss to pinprick, light touch, two-point discrimination or Semmes-Weinstein Monofilament tests in a median nerve distribution may occur

b. Thenar atrophy may appear, but usually late in the course

c. Weakness of the abductor pollicis brevis may be present

d. Phalen's / Reverse Phalen's signs may be positive

e. Tinel's sign over the carpal tunnel may be positive

f. Closed Fist test – holding fist closed for 60 seconds reproduces median nerve paresthesia

g. Evaluation of the contralateral wrist is recommended due to the frequency of bilateral involvement

h. Evaluation of the proximal upper extremity and cervical spine for other disorders including cervical radiculopathy, thoracic outlet syndrome, other peripheral neuropathies, and other musculoskeletal disorders

i. Signs of underlying medical disorders associated with CTS, e.g., diabetes mellitus, arthropathy, and hypothyroidism

j. Myofascial findings requiring treatment may present in soft tissue areas near other CTD pathology, and should be documented. Refer to the Division's Cumulative Trauma Disorder Medical Treatment Guidelines.

Table 1: Sensitivities and Specificities and Evidence Level for Physical Examination findings

Procedure	**Sensitivity (%)**	**Specificity (%)**	**Validity**
1. Sensory testing			
Hypesthesia	15-51	85-93	Good
Katz Hand Diagram	62-89	73-88	Good
Two-point discrimination	22-33	81-100	Some
Semmes-Weinstein	52-91	59-80	Some
Vibration	20-61	71-81	None
2. Phalen's	51-88	32-86	Some
3. Tinel's	25-73	55-94	Some
4. Carpal tunnel compression	28-87	33-95	Some
5. Thenar atrophy	3-28	82-100	Good
Abductor pollicis brevis weakness	63-66	62-66	Good
6. Closed fist test	61	92	Some
7. Tourniquet test	16-65	36-87	None

4. **Risk Factors** A critical review of epidemiologic literature identified a number of physical exposures associated with CTS. For example, trauma and fractures of the hand and wrist may result in CTS. Other physical exposures considered risk factors include: repetition, force, vibration, pinching and gripping, and cold environment. When workers are exposed to several risk factors simultaneously, there is an increased likelihood of CTS. Not all risk factors have been extensively studied. Exposure to cold environment, for example, was not examined independently; however, there is good evidence that combined with other risk factors cold environment increases the likelihood of a CTS. -Table 2 at the end of this section entitled, "Risk Factors Associated CTS," summarizes the results of currently available literature.

No single epidemiologic study will fulfill all criteria for causality. The clinician must recognize that currently available epidemiologic data is based on population results, and that individual variability lies outside the scope of these studies. Many published studies are limited in design and methodology, and, thus, preclude conclusive results. Most studies' limitations tend to attenuate, rather than inflate, associations between workplace exposures and CTS.

These guidelines are based on current epidemiologic knowledge. As with any scientific work, the guidelines are expected to change with advancing knowledge. The clinician should remain flexible and incorporate new information revealed in future studies.

Table 2: Risk Factors Associated with Carpal Tunnel Syndrome

Diagnosis	Strong evidence	Good evidence	Some evidence	Insufficient or conflicting evidence
Carpal Tunnel Syndrome	Combination of high exertional force (Varied from greater than 6 kg) and high repetition (work cycles less than 30 sec or greater than 50% of cycle time performing same task, length of shortest task less than 10 sec).	Repetition or force independently, use of vibration hand tools.	Wrist ulnar deviation and extension.	Pinch/grip, keyboarding.

5. **Laboratory Tests** Laboratory tests are generally accepted, well-established, and widely used procedures. Patients should be carefully screened at the initial exam for signs or symptoms of diabetes, hypothyroidism, arthritis, and related inflammatory diseases. The presence of concurrent disease does not negate work-relatedness of any specific case. When a patient's history and physical examination suggest infection, metabolic or endocrinologic disorders, tumorous conditions, systemic musculoskeletal disorders (e.g., rheumatoid arthritis), or potential problems related to prescription of medication (e.g., renal disease and nonsteroidal anti-inflammatory medications), then laboratory tests, including, but not limited to, the following can provide useful diagnostic information:

a. Serum rheumatoid factor and Antinuclear Antigen (ANA) for rheumatoid work-up;

b. Thyroid Stimulating Hormone (TSH) for hypothyroidism;

c. Fasting glucose - recommended for obese men and women over 40 years of age, patients with a history of family diabetes, those from high-risk ethnic groups, and with a previous history of impaired glucose tolerance. A fasting blood glucose greater than 125mg/dl is diagnostic for diabetes. Urine dipstick positive for glucose is a specific but not sensitive screening test. Quantitative urine glucose is sensitive and specific in high-risk populations;

d. Serum protein electrophoresis;

e. Sedimentation rate, nonspecific, but elevated in infection, neoplastic conditions and rheumatoid arthritis;

f. Serum calcium, phosphorus, uric acid, alkaline and acid phosphatase for metabolic, endocrine and neoplastic conditions;

g. Complete Blood Count (CBC), liver and kidney function profiles for metabolic or endocrine disorders or for adverse effects of various medications;

h. Bacteriological (microorganism) work-up for wound, blood and tissue;

i. Serum B6 – routine screening is not recommended due to the fact that vitamin B6 supplementation has not been proven to affect the course of carpal tunnel syndrome. However, it may be appropriate for patients on medications that interfere with the effects of vitamin B6, or for those with significant nutritional problems.

The Department 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.

E. Follow-up Diagnostic Testing Procedures

1. **Electrodiagnostic (Edx) Studies** are well established and widely accepted for evaluation of patients suspected of having CTS. The results are highly sensitive and specific for the diagnosis. Studies may confirm the diagnosis or direct the examiner to alternative disorders. Studies require clinical correlation due to the occurrence of false positive and false negative results. Symptoms of CTS may occur with normal EDX studies, especially early in the clinical course.

EDX findings in CTS reflect slowing of median motor and sensory conduction across the carpal tunnel region due to demyelination. Axonal loss, when present, is demonstrated by needle electromyography in median nerve-supplied thenar muscles. Findings include fibrillations, fasciculations, neurogenic recruitment and polyphasic units (reinnervation).

a. Needle electromyography of a sample of muscles innervated by the C5 to T1 spinal roots, including a thenar muscle innervated by the median nerve of the symptomatic limb, is frequently required.

b. The following EDX studies are not recommended to confirm a clinical diagnosis of CTS:

i. Low sensitivity and specificity compared to other EDX studies: multiple median F wave parameters, median motor nerve residual latency, and sympathetic skin response

ii. Investigational studies: evaluation of the effect on median NCS of limb ischemia, dynamic hand exercises, and brief or sustained wrist positioning

c. To assure accurate testing, temperature should be maintained at 30-34C preferably recorded from the hand/digits. For temperature below 30C the hand should be warmed.

d. All studies must include normative values for their laboratories.

e. Positive Findings – Any of these nerve conduction study findings must be accompanied by median nerve symptoms to establish the diagnosis.

i. Slowing of median distal sensory and/or motor conduction through the carpal tunnel region

ii. Electromyographic changes in the median thenar muscles in the absence of proximal abnormalities

f. Because laboratories establish their own norms, a degree of variability from the suggested guideline values is acceptable.

g. In all cases, normative values are to be provided with the neurodiagnostic evaluation.

h. Suggested grading scheme by electrodiagnostic criteria for writing a consultation or report may be:

i. Mild CTS-prolonged (relative or absolute) median sensory or mixed action potential distal latency (orthodromic, antidromic, or palmar).

ii. Moderate CTS-abnormal median sensory latencies as above, and prolongation (relative or absolute) of median motor distal latency.

iii. Severe CTS-prolonged median motor and sensory distal latencies, with either absent sensory or palmar potential, or low amplitude or absent thenar motor action potential. Needle examination reveals evidence of acute and chronic denervation with axonal loss.

i. Frequency of Studies/Maximum Number of Studies:

i. Indications for Initial Testing:

A) Patients who do not improve symptomatically or functionally with

conservative measures for carpal tunnel syndrome over a 3-4 week period

B) Patients in whom the diagnosis is in question

C) Patients for whom surgery is contemplated

D) To rule out other nerve entrapments or a radiculopathy

ii. Repeated studies may be performed:

A) To determine disease progression. 8-12 weeks is most useful when the initial studies were normal and CTS is still suspected

B) For inadequate improvement with non-surgical treatment for 8-12 weeks

C) For persistent or recurrent symptoms following carpal tunnel release, post-op 3-6 months, unless an earlier evaluation is required by the surgeon

2. Imaging Studies

a. Radiographic Imaging: Not generally required for most CTS diagnoses. However, it may be necessary to rule out other pathology in the cervical spine, shoulder, elbow, wrist or hand. Wrist and elbow radiographs would detect degenerative joint disease, particularly scapholunate dissociation and thumb carpometacarpal abnormalities which occasionally occur with CTS.

b. Magnetic Resonance Imaging (MRI): Considered experimental and not recommended for diagnosis of Carpal Tunnel Syndrome. Trained neuroradiologists have not identified a single MRI parameter that is highly sensitive and specific. MRI is less accurate than standard electrodiagnostic testing, and its use as a diagnostic tool is not recommended.

c. Sonography: This tool has not been sufficiently studied to define its diagnostic performance relative to electrodiagnostic studies. It is not a widely applied test. Sonography may detect synovial thickening in CTS caused by rheumatoid arthritis. It may be useful if space-occupying lesions, such as, lipomas, hemangiomas, fibromas, and ganglion cysts, are suspected. Its routine use in CTS is not recommended.

3. Adjunctive Testing Clinical indications for the use of tests and measurements are predicated on the history and systems review findings, signs observed on physical examination, and information derived from other sources and records. They are not designed to be the definitive indicator of dysfunction.

a. Electromyography: is a generally accepted, well-established procedure. It is indicated when acute and/or chronic neurogenic changes in the thenar eminence are associated with the conduction abnormalities discussed above.

b. Electroneurometer: May serve as a diagnostic tool as it helps to detect early distal sensorineural impairment.

c. Portable Automated Electrodiagnostic Device: Measures distal median nerve motor latency and F-wave latency at the wrist and has been tested in one research setting. It performed well in this setting following extensive calibration of the device. Motor nerve latency compared favorably with conventional electrodiagnostic testing, but F-wave latency added little to diagnostic accuracy. It remains an investigational instrument whose performance in a primary care setting is as yet not established, and is not recommended as a substitute for conventional electrodiagnostic testing in clinical decision-making.

d. Quantitative Sensory Testing (QST): May be used as a screening tool in clinical settings pre- and post-operatively. Results of tests and measurements of sensory integrity are integrated with the history and systems review findings and the results of other tests and measures. QST has been divided into two types of testing:

i. Threshold tests measure topognosis, the ability to exactly localize a cutaneous sensation, and pallesthesia, the ability to sense mechanical using vibration discrimination testing (quickly adapting fibers); Semmes-Wienstein monofilament testing (slowly adapting fibers);

ii. Density Tests also measure topognosis and pallesthesia using static two-point discrimination (slowly adapting fibers); moving two-point discrimination (quickly adapting fibers).

e. Pinch and Grip Strength Measurements: May be accepted as a diagnostic tool for CTS. Strength is defined as the muscle force exerted by a muscle or group of muscles to overcome a resistance under a specific set of circumstances. Pain, the perception of pain secondary to abnormal sensory feedback, and/or the presence of abnormal sensory feedback affecting the sensation of the power used in grip/pinch may cause a decrease in the force. When all five handle settings of the dynamometer are used, a bell-shaped curve, reflecting maximum strength at the most comfortable handle setting, should be present. These measures provide a method for quantifying strength that can be used to follow a patient's progress and to assess response to therapy. In the absence of a bell-shaped curve, clinical reassessment is indicated.

f. **Laboratory Tests** In one study of carpal tunnel patients seen by specialists, 9% of patients were diagnosed with diabetes, 7% with hypothyroidism, and 15% with chronic inflammatory disease including spondyloarthropathy, arthritis, and systemic lupus erythematosis. Up to two thirds of the patients were not aware of their concurrent disease. Estimates of the prevalence of hypothyroidism in the general population vary widely, but data collected from the Colorado Thyroid Disease Prevalence Study revealed subclinical hypothyroidism in 8.5% of participants not taking thyroid medication. The prevalence of chronic joint symptoms in the Behavioral Risk Factor Surveillance System (BRFSS) from the Centers for Disease Control (CDC) was 12.3%. If after 2-3 weeks, the patient is not improving the physician should strongly consider the following laboratory studies: thyroid function studies, rheumatoid screens, chemical panels, and others, if clinically indicated.
Laboratory testing may be required periodically to monitor patients on chronic medications.

F. Therapeutic Procedures – Non-operative

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

First, patients undergoing therapeutic procedure(s) should be released or returned to modified or restricted duty during their rehabilitation at the earliest appropriate time. Refer to “Return-to-Work” in this section for detailed information.

Second, 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.

Third, 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.

In cases where a patient is unable to attend an outpatient center, home therapy may be necessary. Home therapy may include active and passive therapeutic procedures as well as other modalities to assist in alleviating pain, swelling, and abnormal muscle tone. Home therapy is usually of short duration and continues until the patient is able to tolerate coming to an outpatient center.

Non-operative treatment procedures for CTS can be divided into two groups: conservative care and rehabilitation. Conservative care is treatment applied to a problem in which spontaneous improvement is expected in 90% of the cases within three months. It is usually provided during the tissue-healing phase and lasts no more than six months, and often considerably less. Rehabilitation is treatment applied to a more chronic and complex problem in a patient with de-conditioning and disability. It is provided during the period after tissue healing to obtain maximal medical recovery. Treatment modalities may be utilized sequentially or concomitantly depending on chronicity and complexity of the problem, and treatment plans should always be based on a diagnosis utilizing appropriate diagnostic procedures.

The following procedures are listed in alphabetical order.

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

a. **Definition:** Acupuncture is the insertion and removal of filiform needles to stimulate acupoints (acupuncture points). Needles may be inserted, manipulated, and retained for a period of time. Acupuncture can be used to reduce pain, reduce inflammation, increase blood flow, increase range of motion, decrease the side effect of medication-induced nausea, promote relaxation in an anxious patient, and reduce muscle spasm.

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

- Time to produce effect: 3 to 6 treatments
- Frequency: 1 to 3 times per week
- Course duration: 14 treatments

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

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

- Time to produce effect: 3 to 6 treatments
- Frequency: 1 to 3 times per week
- Course duration: 14 treatments

c. **Other Acupuncture Modalities:** Acupuncture treatment is based on individual patient needs and therefore treatment may include a combination of procedures to enhance treatment effect. Other procedures may include the use of heat, soft tissue manipulation/massage, and exercise. Refer to sections F 12 and 13 Active Therapy and Passive Therapy for a description of these adjunctive acupuncture modalities.

- Time to produce effect: 3 to 6 treatments
- Frequency: 1 to 3 times per week
- Course duration: 14 treatments

Any of the above acupuncture treatments may extend longer if objective functional gains can be documented or when symptomatic benefits facilitate progression in the patient's treatment program. Treatment beyond 14 treatments may be documented with respect to need and ability to facilitate positive symptomatic or functional gains. Such care should be re-evaluated and documented with each series of treatments.

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

Treatment is individualized to the patient's work-related diagnosis and needs. Home practice of skills is required for mastery and may be facilitated by the use of home training tapes. The ultimate goal in biofeedback treatment is normalizing the physiology to the pre-injury status to the extent possible and involves transfer of learned skills to the workplace and daily life. Candidates for biofeedback therapy or training must be motivated to learn and practice biofeedback and self-regulation techniques.

Indications for biofeedback include individuals who are suffering from musculoskeletal injury where muscle dysfunction or other physiological indicators of excessive or prolonged stress response affects and/or delays recovery. Other applications include training to improve self-management of emotional stress/pain responses such as anxiety, depression, anger, sleep disturbance, and other central and autonomic nervous system imbalances. Biofeedback is often utilized along with other treatment modalities.

- Time to produce effect: 3 to 4 sessions
- Frequency: 1 to 2 times per week
- Maximum duration: 10 to 12 sessions. Treatment beyond 12 sessions must be documented with respect to need, expectation, and ability to facilitate positive symptomatic or functional gains.

3. **Injections-therapeutic** Steroids Injections - Beneficial effects of injections are well-established, but generally considered to be temporary. Recurrence of symptoms is frequent. It is not clear whether or not injections slow progression of electrodiagnostic changes. Therefore, although symptoms may be temporarily improved, nerve damage may be progressing. When motor changes are present, surgery is preferred over injections.

- Time to produce effect: 2-5 days
- Frequency: every 6-8 weeks
- Optimum number: 2 injections
- Maximum number: 3 injections in 6 months

If following the first injection, symptomatic relief is followed by recurrent symptoms, the

decision to perform a second injection must be weighed against alternative treatments such as surgery. Surgery may give more definitive relief of symptoms.

4. **Job Site Alteration** Early evaluation and training of body mechanics and other ergonomic factors are essential for every injured worker and should be done by a qualified individual. In some cases, this requires a job site evaluation. Some evidence supports alteration of the job site in the early treatment of Carpal Tunnel Syndrome (CTS). There is no single factor or combination of factors that is proven to prevent or ameliorate CTS, but a combination of ergonomic and psychosocial factors is generally considered to be important. Physical factors that may be considered include use of force, repetition, awkward positions, upper extremity vibration, cold environment, and contact pressure on the carpal tunnel. Psychosocial factors to be considered include pacing, degree of control over job duties, perception of job stress, and supervisory support.

The job analysis and modification should include input from the employee, employer, and ergonomist or other professional familiar with work place evaluation. The employee must be observed performing all job functions in order for the job site analysis to be valid. Periodic follow-up is recommended to evaluate effectiveness of the intervention and need for additional ergonomic changes.

a. **Ergonomic changes:** should be made to modify the hazards identified. In addition workers should be counseled to vary tasks throughout the day whenever possible. Occupational Safety and Health Administration (OSHA) suggests that workers who perform repetitive tasks, including keyboarding, take 15-30 second breaks every 10 to 20 minutes, or 5-minute breaks every hour. Mini breaks should include stretching exercises.

b. **Interventions:** should consider engineering controls, e.g., mechanizing the task, changing the tool used, or adjusting the work site, or administrative controls, e.g., adjusting the time an individual performs the task.

c. **Seating Description:** The following description may aid in evaluating seated work positions: The head should incline only slightly forward, and if a monitor is used, there should be 18-24 inches of viewing distance with no glare. Arms should rest naturally, with forearms parallel to the floor, elbows at the sides, and wrists straight or minimally extended. The back must be properly supported by a chair, which allows change in position and backrest adjustment. There must be good knee and legroom, with the feet resting comfortably on the floor or footrest. Tools should be within easy reach, and twisting or bending should be avoided.

d. **Job Hazard Checklist:** The following Table 3 is adopted from Washington State's job hazard checklist, and may be used as a generally accepted guide for identifying job duties which may pose ergonomic hazards. The fact that an ergonomic hazard exists at a specific job, or is suggested in the table, does not establish a causal relationship between the job and the individual with a musculoskeletal injury. However, when an individual has a work-related injury and ergonomic hazards exist that affect the injury, appropriate job modifications should be made. Proper correction of hazards may prevent future injuries to others, as well as aid in the recovery of the injured worker.

Table 3: Identifying Job Duties Which May Pose Ergonomic Hazards

Type of Job Duty	Hours per Day
Pinching an unsupported object(s) weighing 2 lbs or more per hand, or pinching with a force of 4 lbs or more per hand (comparable to pinching a half a ream of paper):	
1. Highly repetitive motion	
2. Palmar flexion greater than 30 degrees, dorsiflexion greater than 45 degrees, or radial deviation greater than 30 degrees	More than **3 hours total/day**
3. No other risk factors	More than **4 hours total/day**

Gripping an unsupported object(s) weighing 10 lbs or more/hand, or gripping with a force of 10 lbs or more/hand (comparable to clamping light duty automotive jumper cables onto a battery): *Handles should be rounded and soft, with at least 1-2.5" in diameter grips at least 5" long. 1. Highly repetitive motion 2. Palmar flexion greater than 30 degrees, dorsiflexion greater than 45 degrees, or radial deviation greater than 30 degrees --- 3. No other risk factors	More than **3 hours total/day** --- More than **4 hours total/day**
Repetitive Motion (using the same motion with little or no variation every few seconds), excluding keying activities: 1. High, forceful exertions with the hands, with palmar flexion greater than 30 degrees, dorsiflexion greater than 45 degrees, or radial deviation greater than 30 degrees --- 2. No other risk factors	More than **2 hours total/day** --- More than **6 hours total/day**
Intensive Keying: 1. Palmar flexion greater than 30 degrees, dorsiflexion greater than 45 degrees, or radial deviation greater than 30 degrees --- 2. No other risk factors	More than **4 hours total/day** --- More than **7 hours total/day**
Repeated Impact: 1. Using the hand (heel/base of palm) as a hammer more than once/minute	More than **2 hours total/day**
Vibration: Two determinants of the tolerability of segmental vibration of the hand are the frequency and the acceleration of the motion of the vibrating tool, with lower frequencies being more poorly tolerated at a given level of imposed acceleration, expressed below in multiples of the acceleration due to gravity (10m/sec/sec). 1. Frequency range 8-15 Hz and acceleration 6 g 2. Frequency range 80 Hz and acceleration 40 g 3. Frequency range 250 Hz and acceleration 250 g --- 4. Frequency range 8-15 Hz and acceleration 1.5 g 5. Frequency range 80 Hz and acceleration 6 g 6. Frequency range 250 Hz and acceleration 20 g	More than **30 minutes at a time** --- More than **4 hours at a time**

5. **Medications** including nonsteroidal anti-inflammatory medications (NSAIDS), oral steroids, diuretics, and pyridoxine (Vitamin B6) have not been shown to have significant long-term beneficial effect in treating Carpal Tunnel Syndrome. Although NSAIDS are not curative, they and other analgesics may provide symptomatic relief. All narcotics and habituating medications should be prescribed with strict time, quantity, and duration guidelines with a definite cessation parameter.

a. **Vitamin B6:** Randomized trials have demonstrated conflicting results. Higher doses may result in development of a toxic peripheral neuropathy. In the absence of definitive literature showing a beneficial effect, use of Vitamin B6 cannot be recommended.

b. **Oral Steroids:** have been shown to have short-term symptomatic benefit but no long-term functional benefit and are only rarely recommended due to possible side effects.

6. **Occupational Rehabilitation Programs**

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

achieve treatment and/or simulated/real work.

i. Work Conditioning/Simulation

This program may begin once a patient is out of the acute phase of injury and will be able to tolerate this program.

These programs are usually initiated after the acute phase has been completed and offered at any time throughout the recovery phase. Work conditioning should be initiated when imminent return of a patient to modified or full duty is not an option, but the prognosis for returning the patient to work at completion of the program is at least fair to good.

The need for work place simulation should be based upon the results of a Functional Capacity Evaluation and/or Jobsite Analysis.

- Length of visit: 1 to 4 hours per day.
- Frequency: 2 to 5 visits per week
- Maximum duration: 8 weeks. Participation in a program beyond six weeks must be documented with respect to need and the ability to facilitate positive symptomatic or functional gains.

ii. Work Hardening

Work Hardening is an interdisciplinary program addressing a patient's employability and return to work. It includes a progressive increase in the number of hours per day that a patient completes work simulation tasks until the patient can tolerate a full workday. This is accomplished by addressing the medical, behavioral, physical, functional, and vocational components of employability and return-to-work.

This can include a highly structured program involving a team approach or can involve any of the components thereof. The interdisciplinary team should, at a minimum, be comprised of a qualified medical director who is board certified with documented training in occupational rehabilitation; team physicians having experience in occupational rehabilitation; occupational therapist; physical therapist; case manager; and psychologist. As appropriate, the team may also include: chiropractor, RN, vocational specialist or Certified Biofeedback Therapist**.**

- Length of visit: Up to 8 hours/day
- Frequency: 2 to 5 visits per week
- Maximum duration: 8 weeks. Participation in a program beyond six weeks must be documented with respect to need and the ability to facilitate positive symptomatic or functional gains.

7. **Orthotics/immobilization With Splinting** is a generally accepted, well-established and widely used therapeutic procedure. There is some evidence that splinting leads to more improvement in symptoms and hand function than watchful waiting alone. Because of limited patient compliance with day and night splinting in published studies, evidence of effectiveness is limited to nocturnal splinting alone. Splints should be loose and soft enough to maintain comfort while supporting the wrist in a relatively neutral position. This can be accomplished using a soft or rigid splint with a metal or plastic support. Splint comfort is critical and may affect compliance. Although off-the-shelf splints are usually sufficient, custom thermoplastic splints may provide better fit for certain patients.

Splints may be effective when worn at night or during portions of the day, depending on activities. Most studies show that full time night splinting for a total of 4 to 6 weeks is the most effective protocol. Depending on job activities, intermittent daytime splinting can also be helpful. Splint use is rarely mandatory. Providers should be aware that over-usage is counterproductive, and should counsel patients to minimize daytime splint use in order avoid detrimental effects such as stiffness and dependency over time.

Splinting is generally effective for milder cases of CTS. Long-term benefit has not been established. An effect should be seen in 2-4 weeks.

- Time to produce effect: 1-4 weeks. If, after 4 weeks, the patient has partial improvement, continue to follow since neuropathy may worsen, even in the face of diminished symptoms.
- Frequency: Nightly. Daytime intermittent, depending on symptoms and activities
- Maximum duration: 2 to 4 months. If symptoms persist, consideration should be given to either repeating electrodiagnostic studies or to more aggressive treatment.

8. **Patient Education** No treatment plan is complete without addressing issues of individual and/or group patient education as a means of prolonging the beneficial effects of treatment, as well as facilitating

self-management of symptoms and injury prevention. The patient should be encouraged to take an active role in the establishment of functional outcome goals. They should be educated on their specific injury, assessment findings, and plan of treatment. Instruction on proper body mechanics and posture, positions to avoid, self-care for exacerbation of symptoms, and home exercise should also be addressed.
Time to produce effect: Varies with individual patient
Frequency: Should occur at every visit

9. **Restriction of Activities** Continuation of normal daily activities is the recommendation for acute and chronic pain without neurologic symptoms. There is good evidence against the use of bed rest in cases without neurologic symptoms. Bed rest may lead to de-conditioning and impair rehabilitation. 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 injured workers with Carpal Tunnel Syndrome

Medication use in the treatment of Carpal Tunnel Syndrome is appropriate for controlling acute and chronic pain and inflammation. Use of medications will vary widely due to the spectrum of injuries from simple strains to post-surgical healing. All drugs should be used according to patient needs. A thorough medication history, including use of alternative and over the counter medications, should be performed at the time of the initial visit and updated periodically.

10. **Return to Work** Early return-to-work should be a prime goal in treating Carpal Tunnel Syndrome given the poor prognosis for the injured employee who is out of work for more than six months. The employee and employer should be educated in the benefits of early return-to-work. When attempting to return an employee with CTS to the workplace, clear, objective physical restrictions that apply to both work and non-work related activities should be specified by the provider. Good communication between the provider, employee, and employer is essential.

Return-to-work is any work or duty that the employee can safely perform, which may not be the worker's regular job activities. Due to the large variety of jobs and the spectrum of severity of CTS, it is not possible for the Division to make specific return-to-work guidelines, but the following general approach is recommended:

a. **Establishment of Return-To-Work:** Ascertainment of return-to-work status is part of the medical treatment and rehabilitation plan, and should be addressed at every visit. Limitations in ADLs should also be reviewed at every encounter, and help to provide the basis for work restrictions provided they are consistent with objective findings. The Division recognizes that employers vary in their ability to accommodate restricted duty, but encourages employers to be active participants and advocates for early return-to-work. In most cases, the patient can be returned to work in some capacity, either at a modified job or alternate position, immediately unless there are extenuating circumstances, which should be thoroughly documented and communicated to the employer. Return-to-work status should be periodically reevaluated, at intervals generally not to exceed three weeks, and should show steady progression towards full activities and full duty.

b. **Establishment of Activity Level Restrictions:** It is the responsibility of the physician/provider to provide both the employee and employer clear, concise, and specific restrictions that apply to both work and non-work related activities. The employer is responsible to determine whether modified duty can be provided within the medically determined restrictions.

c. **Compliance with Activity Level Restrictions:** The employee's compliance with the activity level restrictions is an important part of the treatment plan and should be reviewed at each visit. In some cases, a job site analysis, a functional capacity evaluation, or other special testing may be required to facilitate return-to-work and document compliance. Refer to the “Job Site Alteration” and “Work Tolerance Screening” sections.

11. **Therapy-passive** Passive therapy includes those treatment modalities that do not require energy expenditure on the part of the patient. They are principally effective during the early phases of treatment and are directed at controlling symptoms such as pain, inflammation and swelling and to improve the rate of healing soft tissue injuries. They should be used in adjunct with active therapies. They may be used intermittently as a therapist deems appropriate or regularly if there are specific goals with objectively measured functional improvements during treatment. Diathermies have not been shown to be beneficial to patients with CTS and may interfere with nerve conduction.

a. **Manual Therapy Techniques:** are passive interventions in which the providers use his or her hands to administer skilled movements designed to modulate pain; increase joint range of motion;

reduce/eliminate soft tissue swelling, inflammation, or restriction; induce relaxation; and improve contractile and non-contractile tissue extensibility. These techniques are applied only after a thorough examination is performed to identify those for whom manual therapy would be contraindicated or for whom manual therapy must be applied with caution.

i. Mobilization (Soft Tissue)

Mobilization of soft tissue is the skilled application of manual techniques designed to normalize movement patterns through the reduction of soft tissue pain and restrictions. Indications include muscle spasm around a joint, trigger points, adhesions, and neural compression.

Nerve Gliding: consist of a series of flexion and extension movements of the hand, wrist, elbow, shoulder, and neck that produce tension and longitudinal movement along the length of the median and other nerves of the upper extremity. These exercises are based on the principle that the tissues of the peripheral nervous system are designed for movement, and that tension and glide (excursion) of nerves may have an effect on neurophysiology through alterations in vascular and axoplasmic flow. Biomechanical principles have been more thoroughly studied than clinical outcomes. Nerve gliding performed on a patient by the clinician should be reinforced by patient performance of similar techniques as part of a home exercise program at least twice per day.

- Time to produce effect: 4 to 6 treatments
- Frequency: 2 to 3 times per week
- Maximum duration: 30 visits (CPT codes 97124 and 97140 can not exceed 30 visits in combination).

ii. Massage: Manual or Mechanical - Massage is 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, muscle spasm, adhesions, the need to improve peripheral circulation and range of motion, or to increase muscle relaxation and flexibility prior to exercise.

- Time to produce effect: Immediate.
- Frequency: 1 to 3 times per week
- Maximum duration: 12 visits

b. Ultrasound: There is some evidence that ultrasound may be effective in symptom relief and in improving nerve conduction in mild to moderate cases of CTS. No studies have demonstrated long-term functional benefit. It may be used in conjunction with an active therapy program for non-surgical patients who do not improve with splinting and activity modification. It is not known if there are any long-term deleterious neurological effects from ultrasound.

c. Microcurrent TENS and LASER: There is some evidence that concurrent application of microamperage TENS applied to distinct acupuncture points and low-level laser treatment may be useful in treatment of mild to moderate CTS. This treatment may be useful for patients not responding to initial conservative treatment or who wish to avoid surgery. Patient selection criteria should include absence of denervation on EMG and motor latencies not exceeding 7 ms. The effects of microamperage TENS and low-level laser have not been differentiated; there is no evidence to suggest whether only one component is effective or the combination of both is required.

- Time to produce effect: 1 week
- Frequency: 3 sessions per week
- Maximum duration: 4 weeks

d. Other Passive Therapy: For associated myofascial symptoms, please refer to the Cumulative Trauma Disorder guideline.

12. Therapy-active Active therapies are based on the philosophy that therapeutic exercises and/or activities are beneficial for restoring flexibility, strength, endurance, function, range of motion, and alleviating discomfort. Active therapy requires an internal effort by the individual to complete a specific exercise or task, and thus assists in developing skills promoting independence to allow self-care to continue after discharge. This form of therapy requires supervision from a therapist or medical provider such as verbal, visual, and/or tactile instructions(s). At times a 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. Home exercise can include exercise with or without mechanical assistance or resistance and functional activities with assistance devices.

Interventions are selected based on the complexity of the presenting dysfunction with ongoing examination, evaluation and modification of the plan of care as improvement or lack thereof occurs. Change and/or discontinuation of an intervention should occur if there is attainment of expected goals/outcome, lack of progress, lack of tolerance and/or lack of motivation. Passive interventions/ modalities may only be used as adjuncts to the active program.

a. **Activities of Daily Living:** Supervised instruction, active-assisted training, and/or adaptation of activities or equipment to improve a person's capacity in normal daily living activities such as self-care, work re-integration training, homemaking, and driving.

Time to produce effect: 4 to 5 treatments
Maximum of 10 sessions

b. **Functional Activities:** are the use of therapeutic activity to enhance mobility, body mechanics, employability, coordination, and sensory motor integration.

- Time to produce effect: 4 to 5 treatments
- Frequency: 3 to 5 times per week
- Maximum duration: 24 visits
- Total number of visit 97110 and 97530 should not exceed 36 visits without pre-authorization

c. **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, coordination education of movement, balance, and posture. Indications include the need to promote neuromuscular responses through carefully timed proprioceptive stimuli, to elicit and improve motor activity in patterns similar to normal neurologically developed sequences, and improve neuromotor response with independent control.

- Time to produce effect: 2 to 6 treatments
- Frequency: 3-5 times per week
- Maximum duration: 24 visits

d. **Proper Work Techniques:** Please refer to the "Job Site Evaluation" and "Job Site Alteration" sections of these guidelines.

e. **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, increased range of motion, and are used to promote normal movement patterns. Can also include complementary/alternative exercise movement therapy.

- Time to produce effect: 2 to 6 treatments
- Frequency: 3 to 5 times per week
- Maximum duration: 36 visits
- Total number of visit 97110 and 97530 should not exceed 36 visits without pre-authorization

G. **Therapeutic Procedures – Operative**

1. **SURGICAL DECOMPRESSION** is well-established, generally accepted, and widely used and includes open and endoscopic techniques. There is good evidence that surgery is more effective than splinting in producing long-term symptom relief and normalization of median nerve conduction velocity.

a. **Endoscopic Techniques:** have had a higher incidence of serious complications (up to 5%) compared to open techniques (less than 1%). The most commonly seen serious complications are incomplete transection of the transverse carpal ligament and inadvertent nerve or vessel injuries. The incidence of complications may be lower for surgeons who have extensive experience and familiarity with certain endoscopic techniques. Choice of technique should be left to the discretion of the surgeon.

b. **Indications for Surgery:** include positive history, abnormal electrodiagnostic studies, and/or failure of conservative management. Job modification should be considered prior to surgery. Please refer to the "Job Site Alteration" section for additional information on job modification.

c. **Surgery as an Initial Therapy:** Surgery should be considered as an

initial therapy in situations where:

i. Median nerve trauma has occurred; “acute carpal tunnel syndrome”, or

ii. Electrodiagnostic evidence of moderate to severe neuropathy. EMG findings showing evidence of acute or chronic motor denervation suggest the possibility that irreversible damage may be occurring.

d. Surgery When Electrodiagnostic Testing is Normal: Surgery may be considered in cases where electrodiagnostic testing is normal. An opinion from a hand surgeon mayshouldmay be considered. The following criteria should be considered in deciding whether to proceed with surgery:

i. The patient experiences significant temporary relief following steroid injection into the carpal tunnel; or

ii. The patient has failed 3-6 months of conservative treatment including work site change, if such changes are available; and

iii. The patient's signs and symptoms are specific for carpal tunnel syndrome

e. Suggested parameters for return-to-work are:

Time Frame	**Activity Level**
2 Days	Return to Work with Restrictions on utilizing the affected extremity
2-3 Weeks	Sedentary and non-repetitive work
4-6 Weeks	Case-by-case basis
6-12 Weeks	Heavy Labor, forceful and repetitive

Note: All return-to-work decisions are based upon clinical outcome.

2. Neurolysis has not been proven advantageous for carpal tunnel syndrome. Internal neurolysis should never be done. Very few indications exist for external neurolysis.

3. Tenosynovectomy has not proven to be of benefit in primary carpal tunnel syndrome but occasionally can be beneficial in certain patients with co-existing or systemic disorders.

4. Considerations For Repeat Surgery The single most important factor in predicting symptomatic improvement following carpal tunnel release is the severity of preoperative neuropathy. Patients with moderate electrodiagnostic abnormalities have better results than those with either very severe or no abnormalities. Incomplete cutting of the transverse carpal ligament or iatrogenic injury to the median nerve are rare.

If median nerve symptoms do not improve following initial surgery or symptoms improve initially and then recur, but are unresponsive to non-operative therapy (see Section.F, Therapeutic Procedures, Non-Operative) consider the following:

a. Recurrent synovitis;
b. Repetitive work activities may be causing “dynamic” CTS;
c. Scarring;
d. Work-up of systemic diseases

A second opinion by a hand surgeon and new electodiagnosticelectrodiagnostic studies required if repeat surgery is contemplated. The decision to undertake repeat surgery must factor in all of the above possibilities. Results of surgery for recurrent carpal tunnel syndrome vary widely depending on the etiology of recurrent symptoms.

5. Post-operative Treatment Considerations for post-operative therapy are:

a. Immobilization: There is some evidence showing that immediate mobilization of the wrist following surgery is associated with less scar pain and faster return to work. Final decisions regarding the need for splinting post-operatively should be left to the discretion of the treating physician

based upon his/her understanding of the surgical technique used and the specific conditions of the patient.

b. **Home Program:** It is generally accepted that all patients should receive a home therapy protocol involving stretching, ROM, scar care, and resistive exercises. Patients should be encouraged to use the hand as much as possible for daily activities, allowing pain to guide their activities.

c. **Supervised Therapy Program:** may be helpful in patients who do not show functional improvements post-operatively, in patients with heavy or repetitive job activities and certain high-risk patients. The therapy program may include some of the generally accepted elements of soft tissue healing and return to function:

i. Soft tissue healing/remodeling: May be used after the incision has healed. It may include all of the following: evaluation, whirlpool, electrical stimulation, soft tissue mobilization, scar desensitivation, heat/cold application, splinting or edema control may be used as indicated. Following wound healing, ultrasound and iontophoresis with Sodium Chloride (NaCl) may be considered for soft tissue remodeling. Diathermy is a non-acceptable adjunct.

ii. Return to function: Range of motion and stretching exercises, strengthening, activity of daily living adaptations, joint protection instruction, posture/body mechanics education; worksite modifications may be indicated.

- Time to produce effect: 2-4 weeks
- Frequency: 2-5 times/week
- Maximum duration: 36 visits

Chronic Pain Treatment Guidelines

A. Introduction

Pursuant to 19 **Del.C.** §2322C, health care practice guidelines have been adopted and recommended by the Health Care Advisory Panel to guide utilization of health care treatments in workers' compensation including, but not limited to, care provided for the treatment of employees by or under the supervision of a licensed health care provider, prescription drug utilization, inpatient hospitalization and length of stay, diagnostic testing, physical therapy, chiropractic care and palliative care. The health care practice guidelines apply to all treatments provided after the effective date of the regulation adopted by the Department of Labor, May 23, 2008, and regardless of the date of injury.

The guidelines are, to the extent permitted by the most current medical science or applicable science, based on well-documented scientific research concerning efficacious treatment for injuries and occupational disease. To the extent that well-documented scientific research regarding the above is not available at the time of adoption of the guidelines, or is not available at the time of any revision to the guidelines, the guidelines have been and will be based upon the best available information concerning national consensus regarding best health care practices in the relevant health care community.

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

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

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

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

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

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

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

B. General Guideline Principles

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

1. **Treatment Parameter Duration** Timeframes 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 timeframes discussed in this document.

2. **Active Interventions** emphasizing patient responsibility, such as therapeutic exercise and/or functional treatment, are generally emphasized over passive modalities, especially as treatment progresses. Generally, passive interventions are viewed as a means to facilitate progress in an active rehabilitation program with concomitant attainment of objective functional gains.

3. **Active Therapeutic Exercise Program** Exercise program goals should incorporate patient strength, endurance, flexibility, coordination, and education. This includes functional application in vocational or community settings.

4. **Positive Patient Response** Positive results are defined primarily as functional gains that can be objectively measured. Objective functional gains include, but are not limited to, positional tolerances, range of motion (ROM), strength, endurance activities of daily living cognition, psychological behavior, and efficiency/velocity measures that can be quantified. Subjective reports of pain and function should be considered and given relative weight when the pain has anatomic and physiologic correlation.

5. **Re-evaluation Of Treatment Every 3 To 4 Weeks** With respect to Therapy (Active or Passive),if a given treatment or modality is not producing positive results within 3 to 4 weeks, the treatment should be either modified or discontinued. Reconsideration of diagnosis should also occur in the event of poor response to a seemingly rational intervention.

6. **Surgical Interventions** 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 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 identification of pathologic conditions.

7. **Return-to-work** is therapeutic, assuming the work is not likely to aggravate the basic problem or increase long-term pain. The practitioner must provide specific written physical limitations and the patient should never be released to "sedentary" or "light duty." The following physical limitations should be considered and modified as recommended: lifting, pushing, pulling, crouching, walking, using stairs, overhead work, bending at the waist, awkward and/or sustained postures, tolerance for sitting or standing, hot and cold environments, data entry and other repetitive motion tasks, sustained grip, tool usage and vibration factors. Even if there is residual chronic pain, return-to-work is not necessarily contraindicated.

The practitioner should understand all of the physical demands of the patient's job position before returning the patient to full duty and should request clarification of the patient's job duties.

8. **Delayed Recovery** Strongly consider a psychological evaluation, if not previously provided, as well as initiating interdisciplinary rehabilitation treatment and vocational goal setting, for those patients who are failing to make expected progress 6 to 12 weeks after an injury. The Division recognizes that 3 to 10% of all industrially injured patients will not recover within the timelines outlined in this document despite optimal care. Such individuals may require treatments beyond the limits discussed within this document, but such treatment will require clear documentation by the authorized treating practitioner focusing on objective functional gains afforded by further treatment and impact upon prognosis.

9. **Guideline Recommendations And Inclusion Of Medical Evidence** recommendations are based on available evidence and/or consensus recommendations of the standard of care within Delaware. **Those procedures considered inappropriate, unreasonable, or unnecessary are designated in the guideline as being "not recommended."**

10. **Treatment Of Pre-existing Conditions** that preexisted the work injury/disease will need to be managed under two circumstances: (a) A pre-existing condition exacerbated by a work injury/ disease should be treated until the patient has returned to their prior level of functioning or MMI; and (b) A pre-existing condition not directly caused by a work injury/disease but which may prevent recovery from that injury should be treated until its negative impact has been controlled. The focus of treatment should remain on the work injury/disease.

C. Introduction To Chronic Pain

The International Association for the Study of Pain (IASP) defines pain as "an unpleasant sensory and emotional experience with actual or potential tissue damage." Pain is a complex experience embracing physical, mental, social, and behavioral processes that often compromises the quality of life of many individuals. Pain is an unpleasant subjective perception usually in the context of tissue damage.

Pain is subjective and cannot be measured or indicated objectively. Pain evokes negative emotional reactions such as fear, anxiety, anger, and depression. People usually regard pain as an indicator of physical harm, despite the fact that pain can exist without tissue damage and tissue damage can exist without pain. Many people report pain in the absence of tissue damage or any likely pathophysiologic cause. There is no way to distinguish their experience from that due to actual tissue damage. If they regard their experience as pain and they report it the same way as pain caused by tissue damage, it should be accepted as pain.

Pain can generally be classified as:

Nociceptive which includes pain from visceral origins or damage to other tissues. Myofascial pain is a nociceptive type of pain characterized by myofascial trigger points limited to a specific muscle or muscles.

Neuropathic including that originating from brain, peripheral nerves or both; and Psychogenic that originates in mood, characterological, social, or psychophysiological processes.

Recent advances in the neurosciences reveal additional mechanisms involved in chronic pain. In the past, pain was seen as a sensation arising from the stimulation of pain receptors by damaged tissue, initiating a sequence of nerve signals ending in the brain and there recognized as pain. A consequence of this model was that ongoing pain following resolution of tissue damage was seen as less physiological and more psychological than acute pain with identifiable tissue injury. Current research indicates that chronic pain involves additional mechanisms that cause: 1) neural remodeling at the level of the spinal cord and higher levels of the central nervous system; 2) changes in membrane responsiveness and connectivity leading to activation of larger pain pathways; and 3) recruitment of distinct neurotransmitters.

Changes in gene function and expression may occur, with lasting functional consequences. These physiologic functional changes cause chronic pain to be experienced in body regions beyond the original

injury and to be exacerbated by little or no stimulation. The chronic pain experience clearly represents both psychologic and complex physiologic mechanisms, many of which are just beginning to be understood.

Chronic Pain is defined as "pain that persists for at least 30 days beyond the usual course of an acute disease or a reasonable time for an injury to heal or that is associated with a chronic pathological process that causes continuous pain (e.g., reflex sympathetic dystrophy)." The very definition of chronic pain describes a delay or outright failure to relieve pain associated with some specific illness or accident. Delayed recovery should prompt a clinical review of the case and a psychological evaluation by the health care provider. Referral to a recognized pain specialist for further evaluation is recommended. Consideration may be given to new diagnostic testing or a change in treatment plan.

Chronic pain is a phenomenon not specifically relegated to anatomical or physiologic parameters. The prevailing biomedical model (which focuses on identified disease pathology as the sole cause of pain) cannot capture all of the important variables in pain behavior. While diagnostic labels may pinpoint contributory physical and/or psychological factors and lead to specific treatment interventions that are helpful, a large number of patients defy precise taxonomic classification. Furthermore, such diagnostic labeling often overlooks important social contributions to the chronic pain experience. Failure to address these operational parameters of the chronic pain experience may lead to incomplete or faulty treatment plans. The term "pain disorder" is perhaps the most useful term in the medical literature today, in that it captures the multi-factorial nature of the chronic pain experience.

It is recognized that some health care practitioners, by virtue of their experience, additional training, and/or accreditation by pain specialty organizations, have much greater expertise in the area of chronic pain evaluation and treatment than others. Referrals for the treatment of chronic pain should be to such recognized specialists. Chronic pain treatment plans should be monitored and coordinated by pain medicine physicians with such specialty training, in conjunction with other health care specialists.

Most acute and some chronic pain problems are adequately addressed in other Division treatment guidelines, and are generally beyond the scope of these guidelines. However, because chronic pain is more often than not multi-factorial, involving more than one pathophysiologic or mental disorder, some overlap with other guidelines is inevitable. These guidelines are meant to apply to any patient who fits the operational definition of chronic pain discussed at the beginning of this section.

D. Definitions

Aftersensation Refers to the abnormal persistence of a sensory perception, provoked by a stimulus even though the stimulus has ceased.

Allodynia Pain due to a non-noxious stimulus that does not normally provoke pain.

> **Mechanical Allodynia** – Refers to the abnormal perception of pain from usually non-painful mechanical stimulation.
>
> **Static Mechanical Allodynia** – Refers to pain obtained by applying a single stimulus such as light pressure to a defined area.
>
> **Dynamic Mechanical Allodynia** – Obtained by moving the stimulus such as a brush or cotton tip across the abnormal hypersensitive area.
>
> **Thermal Allodynia** – Refers to the abnormal sensation of pain from usually non-painful thermal stimulation such as cold or warmth.

Analgesia Absence of pain in response to stimulation that would normally be painful.

Biopsychosocial A term that reflects the multiple facets of any clinical situation; namely, the biological, psychological, and social situation of the patient.

Central Pain Pain initiated or caused by a primary lesion or dysfunction in the central nervous system.

Central Sensitization The experience of pain evoked by the excitation of non-nociceptive neurons or of nerve fibers that normally relay non-painful sensations to the spinal cord. This results when non-nociceptive afferent neurons act on a sensitized central nervous system (CNS).

Dysesthesia An abnormal sensation described by the patient as unpleasant. As with paresthesia, dysesthesia may be spontaneous or evoked by maneuvers on physical examination.

Hyperalgesia Refers to an exaggerated pain response from a usually painful stimulation.

Hyperesthesia (Positive Sensory Phenomena) Includes allodynia, hyperalgesia, and hyperpathia. Elicited by light touch, pin prick, cold, warm, vibration, joint position sensation or two-point discrimination, which is perceived as increased or more.

Hyperpathia Refers to an abnormally painful and exaggerated reaction to stimulus, especially to a repetitive stimulus.

Hypoalgesia Diminished pain perception in response to a normally painful stimulus.

Hypoesthesia (Negative Sensory Phenomena) Refers to a stimulus such as light touch, pin prick, cold, point position sensation, two-point discrimination, or sensory neglect which is perceived as decreased.

Malingering Intentional feigning of illness or disability in order to escape work or gain compensation.

Myofascial Pain A regional pain characterized by tender points in taut bands of muscle that produce pain in a characteristic reference zone.

Myofascial Trigger Point A physical sign in a muscle which includes a) exquisite tenderness in a taut muscle band; and b) referred pain elicited by mechanical stimulation of the trigger point. The following findings may be associated with myofascial trigger points: 1) Local twitch or contraction of the taut band when the trigger point is mechanically stimulated; 2) Reproduction of the patient's spontaneous pain pattern when the trigger point is mechanically stimulated; 3) Weakness without muscle atrophy; 4) Restricted range of motion of the affected muscle; and 5) Autonomic dysfunction associated with the trigger point such as changes in skin or limb temperature.

Neuralgia Pain in the distribution of a nerve or nerves.

Neuritis Inflammation of a nerve or nerves.

Neurogenic Pain Pain initiated or caused by a primary lesion, dysfunction, or transitory perturbation in the peripheral or central nervous system.

Neuropathic Pain Pain due to an injured or dysfunctional central or peripheral nervous system.

Neuropathy A disturbance of function or pathological change in a nerve: in one nerve, mononeuropathy; in several nerves, mononeuropathy multiplex; if diffuse and bilateral, polyneuropathy.

Nociceptor A receptor preferentially sensitive to a noxious stimulus or to a stimulus which would become noxious if prolonged.

Pain Behavior The non-verbal actions (such as grimacing, groaning, limping, using visible pain relieving or support devices and requisition of pain medications, among others) that are outward manifestations of pain, and through which a person may communicate that pain is being experienced.

Pain Threshold The smallest stimulus perceived by a subject as painful.

Paresthesia An abnormal sensation that is not described as pain. It can be either a spontaneous sensation (such as pins and needles) or a sensation evoked from non-painful or painful stimulation, such as light touch, thermal, or pinprick stimulus on physical examination.

Peripheral Neurogenic Pain Pain initiated or caused by a primary lesion or dysfunction or transitory perturbation in the peripheral nervous system.

Peripheral Neuropathic Pain Pain initiated or caused by a primary lesion or dysfunction in the peripheral nervous system.

Summation Refers to abnormally painful sensation to a repeated stimulus although the actual stimulus remains constant. The patient describes the pain as growing and growing as the same intensity stimulus continues.

Sympathetically Maintained Pain (Smp) A pain that is maintained by sympathetic efferent innervations or by circulating catecholamines.

Tender Points Tenderness on palpation at a tendon insertion, muscle belly or over bone. Palpation should be done with the thumb or forefinger, applying pressure approximately equal to a force of 4 kilograms (blanching of the entire nail bed).

E. Initial Evaluation & Diagnostic Procedures

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

1. **History And Physical Examination (Hx & PE)**

   a. Medical History: As in other fields of medicine, a thorough patient history is an important part of the evaluation of chronic pain. In taking such a history, factors influencing a patient's current status can be made clear and taken into account when planning diagnostic evaluation and treatment. One efficient manner in which to obtain historical information is by using a questionnaire. The questionnaire may be sent to the patient prior to the initial visit or administered at the time of the office visit.

   b. Pain History: Characterization of the patient's pain and of the patient's response to pain is one of the key elements in treatment.

   c Medical Management History

   d. Substance Use/Abuse

   e. Other Factors Affecting Treatment Outcome

   f. Physical Examination

2. **Diagnostic Studies**

   Imaging of the spine and/or extremities is a generally accepted, well-established, and widely used diagnostic procedure when specific indications, based on history and physical examination, are present.

   a. Radiographic Imaging, MRI, CT, bone scan, radiography, and other special imaging studies may provide useful information for many musculoskeletal disorders causing chronic pain.

   b. Electrodiagnostic studies may be useful in the evaluation of patients with suspected myopathic or neuropathic disease and may include Nerve Conduction Studies (NCS), Standard Needle Electromyography, or Somatosensory Evoked Potential (SSEP). The evaluation of electrical studies is difficult and should be relegated to specialists who are well trained in the use of this diagnostic procedure.

   c. Special Testing Procedures may be considered when attempting to confirm the current diagnosis or reveal alternative diagnosis. In doing so, other special tests may be performed at the discretion of the physician.

3. **Laboratory Testing** is generally accepted well-established and widely used procedures and can provide useful diagnostic and monitoring information. They may be used when there is suspicion of systemic illness, infection, neoplasia, or underlying rheumatologic disorder, connective tissue disorder, or based on history and/or physical examination. Tests include, but are not limited to:

a. Complete Blood Count (CBC) with differential can detect infection, blood dyscrasias, and medication side effects;

b. Erythrocyte sedimentation rate, rheumatoid factor, antinuclear antigen (ANA), human leukocyte antigen (HLA), and C-reactive protein can be used to detect evidence of a rheumatologic, infection, or connective tissue disorder;

c. Thyroid, glucose and other tests to detect endocrine disorders;

d. Serum calcium, phosphorous, uric acid, alkaline phosphatase, and acid phosphatase can detect metabolic bone disease;

e. Urinalysis to detect bacteria (usually with culture and sensitivity), calcium, phosphorus, hydroxyproline, or hematuria;

f. Liver and kidney function may be performed for baseline testing and monitoring of medications; and

g. Toxicology Screen and/or Blood Alcohol Level if suspected drug or alcohol abuse.

4. **Injections–Diagnostic**

a. Spinal Diagnostic Injections:

Description — generally accepted, well-established procedures. These injections may be useful for localizing the source of pain, and may have added therapeutic value when combined with injection of therapeutic medication(s). Selection of patients, choice of procedure, and localization of the level for injection should be determined by clinical information indicating strong suspicion for pathologic condition(s) and the source of pain symptoms.

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

Regarding diagnostic injections, it is obligatory that sufficient data be accumulated by the examiner performing this procedure such that the diagnostic value of the procedure is evident to other reviewers. A log must be recorded as part of the medical record which documents response, if any, on an hourly basis for, at a minimum, the expected duration of the local anesthetic phase of the procedure. Responses should be identified as to specific body part (e.g., low back, neck, leg, or arm pain).

Special Requirements for Diagnostic Injections æ Since multi-planar, fluoroscopy during procedures is required to document technique and needle placement, an experienced physician should perform the procedure. Permanent images are required to verify needle placement for all spinal procedures. The subspecialty disciplines of the physicians performing injections may be varied, including, but not limited to: anesthesiology, radiology, surgery, or physiatry. The practitioner who performs spinal injections should document hands-on training through workshops of the type offered by organizations such as the International Spine Intervention Society (ISIS) and/or completed fellowship training with interventional training. Practitioners performing spinal injections for low back and cervical pain must also be knowledgeable in radiation safety.

Specific Diagnostic Injections: In general, relief should last for at least the duration of the local anesthetic used and/or should significantly relieve pain and result in functional improvement. The following injections are used primarily for diagnosis:

i. <u>Medial Branch Blocks:</u>

Medial Branch Blocks are primarily diagnostic injections, used to determine whether a patient is a candidate for radiofrequency medial branch neurotomy (also known as facet rhizotomy). To be a positive diagnostic block, the patient should report a reduction of pain of 50% or greater relief from baseline for the length of time appropriate for the local anesthetic used. It is suggested that this be reported on a form.

A separate block on a different date should be performed to confirm the level of involvement.

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

ii. Transforaminal Injections are useful in identifying spinal pathology. When performed for diagnosis, small amounts of local anesthetic up to a total volume of 1.0 cc should be used to determine the level of nerve root irritation. A positive diagnostic block should result in a 50% reduction in nerve-root generated pain appropriate for the anesthetic used as measured by accepted pain scales (such as a VAS).

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

iii. Zygapophyseal (facet) blocks: Facet blocks are generally.

They may be used diagnostically to direct functional rehabilitation programs. A positive diagnostic block should result in a positive diagnostic functional benefit and/or a 50% reduction in pain appropriate for the anesthetic used as measured by accepted pain scales (such as a Visual Analog Scale). They then may be repeated per the therapeutic guidelines

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

iv. Atlanto-Axial and Atlanto-Occipital Injections: are generally accepted for diagnosis and treatment but do not lend themselves to denervation techniques owing to variable neuroanatomy.

Frequency and Maximum Duration: Once per side

v. Sacroiliac Joint Injection:

Description -- a generally accepted injection of local anesthetic in an intra-articular fashion into the sacroiliac joint under fluoroscopic guidance.

Indications -- Primarily diagnostic to rule out sacroiliac joint dysfunction versus other pain generators. Intra-articular injection can be of value in diagnosing the pain generator. There should be at least 50% pain relief..

Frequency and Maximum Duration: 1 may be repeated for confirmation.

F. Therapeutic Procedures – Non-operative

Non-operative therapeutic rehabilitation is applied to patients with chronic and complex problems of de-conditioning and functional disability. Treatment modalities may be utilized sequentially or concomitantly depending on chronicity and complexity of the problem, and treatment plans should always be based on a diagnosis utilizing appropriate diagnostic procedures.

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

a. Patients undergoing therapeutic procedure(s) should be released or returned to modified or restricted duty during their rehabilitation at the earliest appropriate time. Refer to F.12, Return-to-Work in this section for detailed information.

b. Reassessment of the patient's status in terms of functional improvement should be documented after each treatment. If patients are not responding within the recommended time periods, alternative treatment interventions, further diagnostic studies or consultations should be pursued. Continued treatment should be monitored using objective measures such as:

Return-to-work or maintaining work status

Fewer restrictions at work or performing activities of daily living.

Decrease in usage of medications

Measurable functional gains, such as increased range of motion or documented increase in strength.

c. Clinicians 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.

d. Psychological or psychosocial screening should be performed on all chronic pain patients.

The following procedures are listed in alphabetical order.

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

a. **Acupuncture:** is the insertion and removal of filiform needles to stimulate acupoints (acupuncture points). Needles may be inserted, manipulated, and retained for a period of time. Acupuncture can be used to reduce pain, reduce inflammation, increase blood flow, increase range of motion, decrease the side effect of medication-induced nausea, promote relaxation in an anxious patient, and reduce muscle spasm.

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

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

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

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

Time to produce effect: 3 to 6 treatments

Frequency: 1 to 3 times per week

Maximum course duration: 14 treatments (one course)

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

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

2. **Biofeedback** is a generally well-accepted form of behavioral medicine that helps patients learn self-awareness and self-regulation skills for the purpose of gaining greater control of their physiology. Stress-related psycho physiological reactions may arise as a reaction to organic pain and in some cases may cause pain. Electronic instrumentation is used to monitor the targeted physiology and then displayed or fed back to the patient visually, auditorially, or tactilely with coaching by a biofeedback specialist.

Indications for biofeedback include individuals who are suffering from musculoskeletal injury where muscle dysfunction or other physiological indicators of excessive or prolonged stress response affects and/or delays recovery. Other applications include training to improve self-management of pain, anxiety, panic, anger or emotional distress, narcotic withdrawal, insomnia/ sleep disturbance, and other central and autonomic nervous system imbalances. Biofeedback is often utilized for relaxation training. Mental health professionals may also utilize it as a component of psychotherapy, where biofeedback and other behavioral techniques are integrated with psychotherapeutic interventions. Biofeedback is often used in conjunction with physical therapy or medical treatment.

Recognized types of biofeedback include the following:

a. **Electromyogram (EMG):** Used for self-management of pain and stress reactions involving muscle tension.

b. **Skin Temperature:** Used for self-management of pain and stress reactions, especially vascular headaches.

c. **Respiration Feedback (RFB):** Used for self-management of pain and stress reactions via breathing control.

d. **Respiratory Sinus Arrhythmia (RSA):** Used for self-management of pain and stress reactions via synchronous control of heart rate and respiration. Respiratory sinus arrhythmia is a benign phenomena which consists of a small rise in heart rate during inhalation, and a corresponding decrease during exhalation. This phenomenon has been observed in meditators and athletes, and is thought to be a psycho physiological indicator of health.

e. **Heart Rate Variability (HRV):** Used for self-management of stress via managing cardiac reactivity.

f. **Electrodermal Response (EDR,):** Used for self-management of stress involving palmar sweating or galvanic skin response.

g. **Electroencephalograph (EEG, QEEG):** Used for self-management of various psychological states by controlling brainwaves.

The goal in biofeedback treatment is normalizing the physiology to the pre-injury status to the extent possible and involves transfer of learned skills to the workplace and daily life. Candidates for biofeedback therapy or training must be motivated to learn and practice biofeedback and self-regulation techniques. In the course of biofeedback treatment, patient stressors are discussed and self-management strategies are devised. If the patient has not been previously evaluated, a psychological evaluation should be performed prior to beginning biofeedback treatment for chronic pain. The psychological evaluation may reveal cognitive difficulties, belief system conflicts, somatic delusions, secondary gain issues, hypochondriasis, and possible biases in patient self-reports, which can affect biofeedback. Home practice of skills is often helpful for mastery and may be facilitated by the use of home training tapes.

Psychologists or psychiatrists, who provide psychophysiological therapy which integrates biofeedback with psychotherapy, should be either Biofeedback Certification Institute of America (BCIA) certified or practicing within the scope of their training. All other providers of Biofeedback for chronic pain patients must be BCIA certified and shall have their biofeedback treatment plan approved by the authorized treating psychologist or psychiatrist. Biofeedback treatment must be done in conjunction with the patient's psychosocial intervention. Biofeedback may also be provided by unlicensed health care providers, who follow a set treatment and educational protocol. Such treatment may utilize standardized material or relaxation tapes.

Time to produce effect: 3 to 4 sessions

Frequency: 1 to 2 times per week

Optimum duration: 6 to 8 sessions

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

3. **Complementary Alternative Medicine (CAM)** is a term used to describe a broad range of treatment modalities, a number of which are generally accepted and supported by some scientific evidence, and others which still remain outside the generally accepted practice of conventional Western Medicine. In many of these approaches, there is attention given to the relationship between physical, emotional, and spiritual well-being. While CAM may be performed by a myriad of both licensed and non-licensed health practitioners with training in one or more forms of therapy, credentialed practitioners should be used when available or applicable.

Although CAM practices are diverse and too numerous to list, they can be generally classified into five domains:

a. **Alternative Medical Systems:** These are defined as medical practices that have developed their own systems of theory, diagnosis and treatment and have evolved independent of and usually prior to conventional Western Medicine. Some examples are Traditional Chinese Medicine, Ayurvedic Medicine, Homeopathy, and Naturopathy.

b. **Mind-Body Interventions:** These include practices such as hypnosis, meditation, bioenergetics, and prayer.

c. **Biological-based Practices:** These include herbal and dietary therapy as well as the use of nutritional supplements. To avoid potential drug interactions, supplements should be used in consultation with the authorized treating physician.

d. **Body-Based Therapy:** Included in this category are the practices of Yoga and Rolfing bodywork.

e. **Energy-Based Practices:** Energy-based practices include a wide range of modalities that support physical as well as spiritual and/or emotional healing. Some of the more well-known energy practices include Qi Gong, Tai Chi, Healing Touch and Reiki. Practices such as Qi Gong and Tai Chi are taught to the patient and are based on exercises the patient can practice independently at home. Other energy-based practices such as Healing Touch and Reiki involve a practitioner/patient relationship.

Methods used to evaluate chronic pain patients for participation in CAM will differ with various approaches and with the training and experience of individual practitioners. A patient may be referred for CAM therapy when the patient's cultural background, religious beliefs, or personal concepts of health suggest that an unconventional medical approach might assist in the patient's recovery or when the physician's experience and clinical judgment support a CAM approach. The patient must demonstrate a high degree of motivation to return to work and improve their functional activity level while participating in therapy. Other more traditional conservative treatments should generally be attempted before referral to CAM. Treatment with CAM requires prior authorization.

Frequency: Per CAM therapy selected

Optimum duration: Should be based upon the physician's clinical judgment and demonstration by the patient of positive symptomatic and functional gains. Practitioner provided CAM therapy is generally not recommended on a maintenance basis.

4. **Disturbances Of Sleep** are common in chronic pain. Although primary insomnia may accompany pain as an independent co-morbid condition, it more commonly occurs secondary to the pain condition itself. Exacerbations of pain often are accompanied by exacerbations of insomnia; the reverse can also occur. Sleep laboratory studies have shown disturbances of sleep architecture in pain patients. Loss of deep slow-wave sleep and increase in light sleep occur and sleep efficiency, the proportion of time in bed spent asleep, is decreased. These changes are associated with patient reports of non-restorative sleep.

Many chronic pain patients develop behavioral habits that exacerbate and maintain sleep disturbances. Excessive time in bed, irregular sleep routine, napping, low activity, and worrying in bed are all maladaptive responses that can arise in the absence of any psychopathology. There is some evidence that behavioral modification, such as patient education and group or individual counseling, can be effective in reversing the effects of insomnia. Behavioral modifications are easily implemented and can include:

a. Maintaining a regular sleep schedule, retiring and rising at approximately the same time on weekdays and weekends.

b. Avoiding daytime napping.

c. Avoiding caffeinated beverages after lunchtime

d. Making the bedroom quiet and comfortable, eliminating disruptive lights, sounds, television sets, and keeping a bedroom temperature of about 65°F.

e. Avoiding alcohol or nicotine within two hours of bedtime.

f. Avoiding large meals within two hours of bedtime.

g. Exercising vigorously during the day, but not within two hours of bedtime, since this may raise core temperature and activate the nervous system.

h. Associating the bed with sleep and sexual activity only, using other parts of the home for television, reading and talking on the telephone.

i. Leaving the bedroom when unable to sleep for more than 20 minutes, retuning to the bedroom when ready to sleep again.

These modifications should be undertaken before sleeping medication is prescribed for long term use.

5. Injections—Therapeutic

When considering the use of injections in chronic pain management, the treating physician must carefully consider the inherent risks and benefits.

Any continued use of injections should be monitored using objective measures such as:

i. Return-to-work or maintaining work status.

ii. Fewer restrictions at work or performing activities of daily living

iii. Decrease in usage of medications

Measurable functional gains, such as increased range of motion for documented increase in strength.

Reduction of reported pain scores

a. Spinal Therapeutic Injections

General Description – The following injections are considered to be reasonable treatment for patients with chronic pain. Other injections not listed may be beneficial. Therapeutic spinal injections typically may be used after initial conservative treatments, such as physical and occupational therapy, medication, manual therapy, exercise, acupuncture, etc., have been undertaken.

Special Considerations – For all spinal injections (excluding trigger point, botox and occipital or peripheral nerve blocks) multi-planar fluoroscopy, during procedures is required to document technique and needle placement, and should be performed by a physician experienced in the procedure. Permanent images are required to verify needle placement. The subspecialty disciplines of the physicians may be varied, including, but not limited to: anesthesiology, radiology, surgery, or physiatry. The practitioner who performs injections for low back pain should document hands on training through workshops of the type offered by organizations such as the International Spine Intervention Society (ISIS) and**/**or completed fellowship training with interventional training. Practitioners who perform spinal injections must also be knowledgeable of radiation safety.

i. Epidural Steroid Spinal Injections:

Description – Epidural steroid injections (ESI) deliver corticosteroid into the epidural space. The purpose of ESI is to reduce pain and inflammation, restoring range of motion and thereby facilitating progress in more active treatment programs. ESI uses three approaches: transforaminal, translaminar (midline), and caudal.

For ESI in the low back, the transforaminal approach is the preferred method for unilateral, single-level pathology and for post-surgical patients. Also for the low back, there is good evidence that the transforaminal approach can deliver medication to the target tissue with few complications and can be used to identify the specific site of pathology.

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

Indications – There is some evidence that epidural steroid injections are effective for patients with radicular pain or radiculopathy (sensory or motor loss in a specific dermatome or myotome). Although there is no evidence regarding the effectiveness of ESI for non-radicular pain, it is a generally accepted intervention.

Frequency: Up to 3 treatments (a treatment may be a one or two level injection) over a period of six months, depending upon each patient's response.

Maximum: Two sessions (consisting of up to three injections each) may be done in one year based upon the patient's response.

ii. Zygapophyseal (Facet) Injection**:**

Description – A generally accepted intra-articular or pericapsular injection of local anesthetic and corticosteroid. There is conflicting evidence to support a long-term therapeutic effect using facet injections.

Indications patients with pain suspected to be of facet origin – Patients with recurrent pain should be evaluated, to determine the need for a rhizotomy.

Facet injections may be repeated if they result in documented functional benefit and/ or at least an 50% initial improvement in pain as measured by accepted pain scales (such as VAS).

Maximum Duration: 4 per level per year. Prior authorization must be obtained for injections beyond three levels.

iii. Sacro-iliac Joint Injection**:**

Description – A generally accepted injection of local anesthetic in an intra-articular fashion into the sacro-iliac joint under radiographic guidance. May include the use of corticosteroids**.** Long-term therapeutic effect has not yet been established.

Indications – Primarily diagnostic to rule out sacroiliac joint dysfunction vs. other pain generators. Intra-articular injection can be of value in diagnosing the pain generator. These injections may be repeated if they result in increased documented functional benefit and/or at least an 50% initial improvement in pain scales as measured by accepted pain scales (such as VAS).

Maximum Duration: 3 injections per year.

b. Trigger Point Injections:

Description – Trigger point injection consists of dry needling or injection of local anesthetic with or without corticosteroid into highly localized, extremely sensitive bands of skeletal muscle fibers that produce local and referred pain when activated. Medication is injected in the area of maximum tenderness. Injection efficacy can be enhanced if injections are immediately followed by myofascial therapeutic interventions, such as vapo-coolant spray and stretch, ischemic pressure massage (myotherapy), specific soft tissue mobilization and physical modalities.

The effectiveness of trigger point injection is uncertain, in part due to the difficulty of demonstrating advantages of active medication over injection of saline. Needling alone may be responsible for some of the therapeutic response.

Indications – Trigger point injections may be used to relieve myofascial pain and facilitate active therapy and stretching of the affected areas. They are to be used as an adjunctive

treatment in combination with other active treatment modalities. Trigger point injections should be utilized primarily for the purpose of facilitating functional progress. Trigger point injections are indicated in those patients where well-circumscribed trigger points have been consistently observed. Generally, these injections are not necessary unless consistently observed trigger points are not responding to specific, noninvasive, myofascial interventions within approximately a 4-week timeframe.

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

Optimum duration: 4 sessions.

Maximum duration: 8 weeks. Some patients may require 2 to 4 repetitions of trigger point injection series over a 1 to 2 year period.

c. Botulinum Toxin (Botox) Injection:

Description – Used to temporarily weaken or paralyze muscles. May reduce muscle pain in conditions associated with spasticity, dystonia, or other types of painful muscle spasm. Neutralizing antibodies develop in at least 4% of patients treated with botulinum toxin type A, rendering it ineffective. Several antigenic types of botulinum toxin have been described. Botulinum toxin type B, first approved by the Food and Drug Administration (FDA) in 2001, is similar pharmacologically to botulinum toxin type A, and there is good evidence of its efficacy in improving function in cervical dystonia (torticollis). It appears to be effective in patients who have become resistant to the type A toxin. The immune responses to botulinum toxins type A and B are not cross-reactive, allowing type B toxin to be used when type A action is blocked by antibody. Experimental work with healthy human volunteers suggests that muscle paralysis from type B toxin is not as complete or as long lasting as that resulting from type A. The duration of treatment effect of botulinum toxin type B for cervical dystonia has been estimated to be 12 to 16 weeks. EMG needle guidance may permit more precise delivery of botulinum toxin to the target area.

Indications – To improve range of motion and reduce painful muscle spasm. May be useful in musculoskeletal conditions associated with muscle spasm or headaches. There should be evidence of limited range of motion prior to the injection. May be useful in central neurologic conditions that produce spasticity or dystonia (e.g., brain injury, spinal cord injury, or stroke). Use is recommended according to current FDA guidelines.

Frequency: No less than 3 months between re-administration.

Optimum duration: 3 to 4 months.

Maximum duration: Currently unknown. Repeat injections should be based upon functional improvement and therefore used sparingly in order to avoid development of antibodies that might render future injections ineffective.

6. Medications

There is no single formula for pharmacological treatment of patients with chronic nonmalignant pain.

Control of chronic non-malignant pain is expected to involve the use of medication. Strategies for pharmacological control of pain cannot be precisely specified in advance. Rather, drug treatment requires close monitoring of the patient's response to therapy, flexibility on the part of the prescriber and a willingness to change treatment when circumstances change. Many of the drugs discussed in the medication section were licensed for indications other than analgesia, but are effective in the control of many types of chronic pain. Consensus regarding the use of opioids has generally been reached in the field of cancer pain, where nociceptive mechanisms are generally identifiable, expected survival may be short, and symptomatic relief is emphasized more than functional outcomes. In injured workers, by contrast, central and

neuropathic mechanisms frequently overshadow nociceptive processes, expected survival is relatively long, and return to a high level of function is a major goal of treatment. Approaches to pain, which were developed in the context of malignant pain, therefore may not be transferable to chronic non-malignant pain.

All medications should be given an appropriate trial in order to test for therapeutic effect. Trials of medication requiring specific therapeutic drug levels may take several months to achieve, depending upon the half-life of the drug. It is recommended that patients with chronic nonmalignant pain be maintained on drugs that have the least serious side effects.

For the clinician to interpret the following material, it should be noted that: (1) drug profiles listed are not complete; (2) dosing of drugs will depend upon the specific drug, especially for off-label use; and (3) not all drugs within each class are listed, and other drugs within the class may be appropriate. Clinicians should refer to informational texts or consult a pharmacist before prescribing unfamiliar medications or when there is a concern for drug interactions.

The following drug classes are listed in alphabetical order, not in order of suggested use. The following list is not all inclusive. It is acknowledged that medications not on this list may be appropriate choices for the care of injured workers.

a. **Alpha-Acting Agents:** Noradrenergic pain-modulating systems are present in the central nervous system, and the alpha-2 adrenergic receptor may be involved in the functioning of these pathways. Alpha-2 agonists may act by stimulating receptors in the substantia gelatinosa of the dorsal horn of the spinal cord, inhibiting the transmission of nociceptive signals. Spasticity may be reduced by presynaptic inhibition of motor neurons. Given limited experience with their use, they cannot be considered first-line analgesics, but a trial of their use may be warranted in many cases of refractory pain.

i. Clonidine (Catapres)

A) Description – Central alpha 2 agonist

B) Indications – Sympathetically mediated pain, treatment of withdrawal from opioids.

C) Dosing and Time to Therapeutic Effect – Increase dosage weekly to therapeutic effect.

D) Recommended Laboratory Monitoring – Renal function.

ii. Tizanidine (Zanaflex)

A) Description – Alpha 2 adrenergic agonist.

B) Indications – Spasticity, musculoskeletal disorders.

C) Dosing and Time to Therapeutic Effect – As needed (PRN) or titrate to effective dose.

D) Recommended Laboratory Monitoring – Hepatic and renal function.

b. **Anticonvulsants:** Although the mechanism of action of anticonvulsant drugs in neuropathic pain states remains to be fully defined, they appear to act as nonselective sodium channel blocking agents. A large variety of sodium channels are present in nervous tissue, and some of these are important mediators of nociception, as they are found primarily in unmyelinated fibers and their density increases following nerve injury. While the pharmacodynamic effects of the various anticonvulsant drugs are similar, the pharmacokinetic effects differ significantly. Carbamazepine has important effects as an inducer of hepatic enzymes and may influence the metabolism of other drugs enough to present problems in patients taking more than one drug. Gabapentin

and oxcarbazepine, by contrast, are relatively non-significant enzyme inducers, creating fewer drug interactions.

i. Gabapentin (Neurontin)

A) Description – Structurally related to gamma-aminobutyric acid (GABA) but does not interact with GABA receptors.

B) Indications – Neuropathic pain.

C) Dosing and Time to Therapeutic Effect – Dosage may be increased over several days.

D) Recommended Laboratory Monitoring – Renal function.

ii. Oxcarbazepine (Trileptal)

A) Description – The mechanism of action resembles that of carbamazepine, but has an advantage in being a less potent inducer of hepatic enzymes. Controlled trials of its effectiveness in chronic pain are lacking.

B) Indications – Neuropathic pain.

C) Dosing and Time to Therapeutic Effect – Dosage may be increased weekly.

D) Recommended Laboratory Monitoring – Drug levels, renal and hepatic function.

iii. Carbamazepine (Tegretol)

A) Description – Anticonvulsant structurally related to tricyclic antidepressants.

B) Indications – Trigeminal neuralgia and other neuropathic pain.

C) Dosing and Time to Therapeutic Effect – Dosage levels typically exceed those utilized for seizure prophylaxis. Titrate to desired effect.

D) Recommended Laboratory Monitoring – Drug levels, renal and hepatic function, complete blood count.

c. **Antidepressants:** are classified into a number of categories based on their chemical structure and their effects on neurotransmitter systems. Their effects on depression are attributed to their actions on disposition of norepinephrine and serotonin at the level of the synapse; although these synaptic actions are immediate, the symptomatic response in depression is delayed by several weeks. When used for chronic pain, the effects may in part arise from treatment of underlying depression, but may also involve additional neuromodulatory effects on endogenous opioid systems, raising pain thresholds at the level of the spinal cord.

Pain responses may occur at lower drug doses with shorter times to symptomatic response than are observed when the same compounds are used in the treatment of mood disorders. Neuropathic pain, diabetic neuropathy, post-herpetic neuralgia, and cancer-related pain may respond to antidepressant doses low enough to avoid adverse effects that often complicate the treatment of depression.

i. Tricyclics (e.g., amitriptyline [Elavil], nortriptyline [Pamelor, Aventyl], doxepin [Sinequan, Adapin])

A) Description – Serotonergics, typically tricyclic antidepressants (TCAs), are utilized for their serotonergic properties as increasing CNS serotonergic tone can help decrease pain perception in non-antidepressant dosages. Amitriptyline is known for its ability to repair Stage 4 sleep architecture, a frequent problem found in chronic pain patients and to treat depression, frequently associated with chronic pain.

B) Indications – Chronic musculoskeletal and/or neuropathic pain, insomnia. Second line drug treatment for depression.

C) Dosing and Time to Therapeutic Effect – Varies by specific tricyclic. Low dosages are commonly used for chronic pain and/or insomnia.

D) Recommended Laboratory Monitoring – Renal and hepatic function. EKG for those on high dosages or with cardiac risk.

ii. Selective serotonin reuptake inhibitors (SSRIs) (e.g., citalopram [Celexa], fluoxetine [Prozac], paroxetine [Paxil], sertraline [Zoloft]).

A) Description – SSRIs are characterized by the predominance of inhibition of serotonin reuptake at the pre-synaptic nerve terminal.

B) Indications – Depression, chronic pain with depression and/or anxiety.

C) Time to Produce Therapeutic Effect – 3 to 4 weeks.

D) Recommended Laboratory Monitoring – Renal and hepatic function.

iii. Atypical Antidepressants/Other Agents

A) Description – Venlafaxine, (Effexor), nefazadone (Serzone), trazodone (Deseryl), and mirtazapine (Remeron) share adjuvant analgesic effects with tricyclic antidepressants. They differ in their side effect and drug interaction profiles.

B) Indications – Venlafaxine is approved for generalized anxiety disorder, bupropion for smoking cessation.

C) Recommended Laboratory Monitoring – Drug specific.

d. **<u>Hypnotics and Sedatives:</u>** Sedative and hypnotic drugs decrease activity, induce drowsiness, and moderate agitation. Many drugs produce these effects incidental to their usual intended effects, similar to the side effects of many antihistamines and antidepressants.

i. Zaleplon (Sonata)

A) Description – A nonbenzodiazepine hypnotic.

B) Indications – Insomnia.

C) Dosing and Time to Therapeutic Effect – Time of onset is 30 to 60 minutes. Due to rapid elimination, may be taken as little as 4 hours before awakening.

D) Recommended Laboratory Monitoring – Hepatic function.

ii. Zolpidem (Ambien)

A) Description – A nonbenzodiazepine hypnotic, which does not appear to cause rebound insomnia. It has little respiratory depression and insignificant anxiolytic or muscle relaxant activity.

B) Indications – Short-term use for insomnia

C) Time to Therapeutic Effect – Onset of action is 30 to 60 minutes

D) Recommended Laboratory Monitoring – Hepatic function.

e. **<u>Skeletal Muscle Relaxants:</u>** are most useful for acute musculoskeletal injury or exacerbation of injury.

i. Cyclobenzaprine (Flexeril)

A) Description – Structurally related to tricyclics.

B) Indications – Chronic pain associated with muscle spasm.

C) Dosing and Time to Therapeutic Effect – Variable, onset of action is 1 hour.

D) Recommended Laboratory Monitoring – Hepatic and renal function.

ii. Carisoprodol (Soma)

A) Description – Mode of action may be central; meprobamate is an active metabolite.

B) Indications – Chronic pain associated with muscle spasm.

C) Recommended Laboratory Monitoring – Renal and hepatic function.

iii. Metazalone (Skelaxin)

A) Description – Central acting muscle relaxant.

B) Indications – Muscle spasm.

C) Dosing and Time to Therapeutic Effect – Onset of action 1 hour.

D) Recommended Laboratory Monitoring – Hepatic function.

f. **Opioids:** are the most powerful analgesics.

Opioids include some of the oldest and most effective drugs used in the control of severe pain. The discovery of opioids receptors and their endogenous peptide ligands has led to an understanding of effects at the binding sites of these naturally occurring substances. Most of their analgesic effects have been attributed to their modification of activity in pain pathways within the central nervous system; however, it has become evident that they also are active in the peripheral nervous system. Activation of receptors on the peripheral terminals of primary afferent nerves can mediate antinociceptive effects, including inhibition of neuronal excitability and release of inflammatory peptides. Some of their undesirable effects on inhibiting gastrointestinal motility are peripherally mediated by receptors in the bowel wall.

The central nervous system actions of these drugs account for much of their analgesic effect.

Consultation or referral to a pain specialist should be considered when the pain persists but the underlying tissue pathology is minimal or absent and correlation between the original injury and the severity of impairment is not clear. Consider consultation if suffering and pain behaviors are present and the patient continues to request medication, or when standard treatment measures have not been successful or are not indicated.

i. On-Going, Long-Term Management – Actions may include:

A) Prescriptions from a single practitioner,

B) Ongoing review and documentation of pain relief, functional status, appropriate medication use, and side effects,

C) Ongoing effort to gain improvement of social and physical function as a result of pain relief,

D) Contract detailing reasons for termination of supply, with appropriate tapering of dose,

E) Use of random drug screening as deemed appropriate by the prescribing physician,

F) Use of more than two opioids: a long acting opioid for maintenance of pain relief and a short acting opioid for limited rescue use when pain exceeds the routine level. If more than two opioids are prescribed for long-term use, a second opinion from specialist who is Board Certified in Neurology, Physical Medicine and Rehabilitation, or Anesthesiology with recognized training and/or certification in pharmacological pain management is strongly recommended.

G) Use of acetaminophen-containing medications in patients with liver disease should be limited; and

H) Continuing review of overall situation with regard to nonopioid means of pain control.

g. <u>Nonsteroidal Anti-Inflammatory Drugs</u>:

Nonsteroidal Anti-Inflammatory Drugs (NSAIDs) are useful for pain and inflammation. In mild cases, they may be the only drugs required for analgesia. There are several classes of NSAIDs and the response of the individual injured worker to a specific medication is unpredictable. For this reason a range of NSAIDs may be tried in each case with the most effective preparation being continued.

Non-selective Nonsteroidal Anti-Inflammatory Drugs

Selective Cyclo**-**oxygenase-2 (COX-2) Inhibitors

COX-2 inhibitors are more recent NSAIDs and differ in adverse side effect profiles from the traditional NSAIDs. The major advantages of selective COX-2 inhibitors over traditional NSAIDs are that they have less gastrointestinal toxicity and no platelet effects. COX-2 inhibitors can worsen renal function in patients with renal insufficiency; thus, renal function may need monitoring.

h. <u>Topical Drug Delivery</u>:

i. Description – Topical medications may be an alternative treatment for localized musculoskeletal disorders and is an acceptable form of treatment in selected.

ii. Indications – Generalized musculoskeletal or joint pain. Patient selection must be rigorous to select those patients with the highest probability of compliance.

iii. Dosing and Time to Therapeutic Effect – It is necessary that all topical agents be used with strict instructions for application as well as maximum number of applications per day to obtain the desired benefit and avoid potential toxicity.

i. <u>Other Agents</u>:

i. Tramadol (Ultram)

A) Description – An opioid partial agonist that is generally well tolerated, does not cause GI ulceration, or exacerbate hypertension or congestive heart failure.

B) Indications – Mild to moderate pain relief. This drug has been shown to provide pain relief equivalent to that of commonly prescribed NSAIDs.

ii. Baclofen (Lioresal)

A) Description – May be effective due to stimulation of Gamma Aminobutyric Acid (GABA) receptors.

B) Indications – Pain from muscle rigidity.

C) Recommended Laboratory Monitoring – Renal function.

iii. Mexilitene (Mexitil)

A) Description – An antiarrhythmic drug, which, like some anticonvulsive agents, may act on ion channels in neuronal tissue and reduce its pathological activity to a more stable level. Low concentrations may suffice to abolish impulses in damaged nerves, and mexilitene has been used successfully to treat neuropathic pain.

B) Indications – Neuropathic pain.

C) Recommended Laboratory Monitoring – Hepatic function, CBC. Plasma levels may also be necessary.

8. **Orthotics/prosthetics/equipment** Devices and adaptive equipment may be necessary in order to reduce impairment and disability, to facilitate medical recovery, to avoid re-aggravation of the injury, and to maintain maximum medical improvement. Indications would be to provide relief of the industrial injury or prevent further injury and include the need to control neurological and orthopedic injuries for reduced stress during functional activities. In addition, they may be used to modify tasks through instruction in the use of a device or physical modification of a device. Equipment needs may need to be reassessed periodically.

Equipment may include high and low technology assistive devices, computer interface or seating, crutch or walker training, and self-care aids. It should improve safety and reduce risk of re-injury. Standard equipment to alleviate the effects of the injury on the performance of activities of daily living may vary from simple to complex adaptive devices to enhance independence and safety. Certain equipment related to cognitive impairments may also be required.

Ergonomic modifications may be necessary to facilitate medical recovery, to avoid re-aggravation of the injury, and to maintain maximum medical improvement. Ergonomic evaluations with subsequent recommendations may assist with the patients' return-to-work.

For chronic pain disorders, equipment such as foot orthoses or lumbar support devices may be helpful. The injured worker should be educated as to the potential harm from using a lumbar support for a period of time greater than which is prescribed. Special cervical orthosis and/or equipment may have a role in the rehabilitation of a cervical injury such as those injuries to a cervical nerve root resulting in upper extremity weakness or a spinal cord injury with some degree of paraparesis or tetraparesis. Fabrication/modification of orthotics, including splints, would be used when there is need to normalize weight-bearing, facilitate better motion response, stabilize a joint with insufficient muscle or proprioceptive/reflex competencies, to protect subacute conditions as needed during movement, and correct biomechanical problems.

Orthotic/prosthetic training is the skilled instruction (preferably by qualified providers) in the proper use of orthotic devices and/or prosthetic limbs.

For information regarding specific types of orthotics/prosthetics/equipment, refer to individual medical treatment guidelines.

9. **Personality/Psychological/Psychosocial Intervention** Psychosocial treatment is a generally accepted, well-established therapeutic and diagnostic procedure with selected use in acute pain problems, but with more widespread use in sub-acute and chronic pain populations. Psychosocial treatment may be important component in the total management of a patient with chronic pain and should be implemented as soon as the problem is identified.

Once a diagnosis consistent with the standards of the American Psychiatric Association Diagnostic Statistical Manual of Mental Disorders has been determined, the patient should be evaluated for the potential need for psychiatric medications. Use of any medication to treat a diagnosed condition may be ordered by the authorized treating physician or by the consulting psychiatrist. Visits for management of psychiatric medications are medical in nature and are not a component of psychosocial treatment. Therefore, separate visits for medication management may be necessary, depending upon the patient and medications selected.

The screening or diagnostic workup should have clarified and distinguished between pre-existing, aggravated, and/or purely causative psychological conditions. Therapeutic and diagnostic modalities include, but are not limited to, individual counseling, and group therapy. Treatment can occur within an individualized model, a multi-disciplinary model, or within a structured pain management program.

A psychologist with a PhD, PsyD, EdD credentials, or a Psychiatric MD/DO may perform psychosocial treatments. Other licensed mental health providers working in consultation with a PhD, PsyD, EdD, or Psychiatric MD/DO, and with experience in treating chronic pain disorders in injured workers may also perform treatment.

- Frequency: 1 to 5 times weekly for the first 4 weeks (excluding hospitalization, if required), decreasing to 1 to 2 times per week for the second month. Thereafter, 2 to 4 times monthly with the exception of exacerbations which may require increased frequency of visits. Not to include visits for medication management.
- Maximum duration: 6 to 12 months, not to include visits for medication management. For select patients, longer supervised treatment may be required.

10. **Restriction Of Activities** Continuation of normal daily activities is the goal for chronic pain patients since immobility will negatively affect rehabilitation. Prolonged immobility results in a wide range of deleterious effects, such as a reduction in aerobic capacity and conditioning, loss of muscle strength and flexibility, increased segmental stiffness, promotion of bone demineralization, impaired disc nutrition, and the facilitation of the illness role.

11. **Return-to-work** is one of the major components in chronic pain management.

Rehabilitation – It is understood Individuals with Chronic Pain may require additional visits due to acute exacerbations. The practitioner is required to document the rationale for care and may be subject to Utilization Review. All visit limits pertain to an annual amount. It is also understood that practitioners should only provide treatment that is consistent with impairments and dysfunctions identified by a comprehensive physical assessment.

12. **Therapy–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 alleviating discomfort. Active therapy requires an internal effort by the individual to complete a specific exercise or task, and thus assists in developing skills promoting independence to allow self-care after discharge. This form of therapy requires supervision from a therapist or medical provider such as verbal, visual, and/or tactile instructions. At times a 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. Home exercise can include exercise with or without mechanical assistance or resistance and functional activities with assistive devices.

Interventions are selected based on the complexity of the presenting dysfunction with ongoing examination, evaluation and modification of the plan of care as improvement or lack thereof occurs. Change and/or discontinuation of an intervention should occur if there is attainment of expected goals/outcome, lack of progress, lack of tolerance and/or lack of motivation. Passive interventions/modalities may only be used as adjuncts to the active program.

a. **Activities of Daily Living:** Supervised instruction, active-assisted training, and/or adaptation of activities or equipment to improve a person's capacity in normal daily living activities such as self-care, work re-integration training, homemaking, and driving.

b. **Functional Activities:** are the use of therapeutic activity to enhance mobility, body mechanics, employability, coordination, and sensory motor integration.

c. **Nerve Gliding:** exercises consist of a series of flexion and extension movements of the hand, wrist, elbow, shoulder, and neck that produce tension and longitudinal movement along the length of the median and other nerves of the upper extremity. These exercises are based on the principle that the tissues of the peripheral nervous system are designed for movement, and that tension and glide (excursion) of nerves may have an effect on neurophysiology through alterations in vascular and axoplasmic flow. Biomechanical principles have been more thoroughly studied than clinical outcomes.

d. **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, 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.

Maximum number of visits 36

e. **Proper Work Techniques:** Please refer to the “Job Site Evaluation” and “Job Site Alteration” sections of these guidelines.

f. **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, increased range of motion, and are used to promote normal movement patterns. Can also include complementary/alternative exercise movement therapy.

Time to produce effect: 2 to 6 treatments

Frequency: 3 to 5 times per week

Optimum duration: 4 to 8 weeks

Maximum duration: 36 visits

13. **Therapy — Passive** ost of the following passive therapies and modalities are generally accepted methods of care for a variety of work-related injuries. Passive therapy includes those treatment modalities that do not require energy expenditure on the part of the patient. They are principally effective during the early phases of treatment and are directed at controlling symptoms such as pain, inflammation and swelling and to improve the rate of healing soft tissue injuries. They should be used adjunctively with active therapies such as postural stabilization and exercise programs to help control swelling, pain, and inflammation during the active rehabilitation process. Please refer to Section B. 4. General Guideline Principles, Active Interventions. Passive therapies may be used intermittently as a provider 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 comorbidities may also extend durations of care. Specific goals with objectively measured functional improvement during treatment must be cited to justify extended durations of care. It is recommended that, if no functional gain is observed after the number of treatments under “time to produce effect” have been completed,

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

The following passive therapies are listed below:

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

Time to produce effect: 2 to 4 treatments

Maximum duration: 26 visits

b. **Iontophoresis:** is an accepted treatment which consists of the transfer of medication, including, but not limited to, steroidal anti-inflammatories and anesthetics, through the use of electrical stimulation. Indications include pain (Lidocaine), inflammation (hydrocortisone, salicylate), edema (mecholyl, hyaluronidase, salicylate), ischemia (magnesium, mecholyl, iodine), muscle spasm (magnesium, calcium), calcific deposits (acetate), scars, and keloids (sodium chloride, iodine, acetate). There is no proven benefit for this therapy in the low back

Time to produce effect: 1 to 4 treatments

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

Maximum duration: 8 visits per body region

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

High velocity, low amplitude (HVLA) technique, chiropractic manipulation, osteopathic manipulation, muscle energy techniques, counter strain, and non-force techniques are all types of manipulative treatment. This may be applied by osteopathic physicians (D.O.), chiropractors (D.C.), properly trained physical therapists (P.T.), or properly trained medical physicians. Under these different types of manipulation exist many subsets of different techniques that can be described as a) direct- a forceful engagement of a restrictive/pathologic barrier, b) indirect- a gentle/non-forceful disengagement of a restrictive/pathologic barrier, c) the patient actively assists in the treatment and d) the patient relaxing, allowing the practitioner to move the body tissues. When the proper diagnosis is made and coupled with the appropriate technique, manipulation has no contraindications and can be applied to all tissues of the body. Pre-treatment assessment should be performed as part of each manipulative treatment visit to ensure that the correct diagnosis and correct treatment is employed.

High velocity, low amplitude (HVLA) manipulation is performed by taking a joint to its end range of motion and moving the articulation into the zone of accessory joint movement, well within the limits of anatomical integrity. There is good scientific evidence to suggest that HVLA manipulation can be helpful for patients with acute low back pain problems without radiculopathy when used within the first 4 to 6 weeks of symptoms. Although the evidence for sub-acute and chronic low back pain and low back pain with radiculopathy is less convincing, it is a generally accepted and well-established intervention for these conditions. Indications for manipulation include joint pain, decreased joint motion, and joint adhesions. Contraindications to HVLA

manipulation include joint instability, fractures, severe osteoporosis, infection, metastatic cancer, active inflammatory arthritides, aortic aneurysm, and signs of progressive neurologic deficits.

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

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

Maximum duration: 26 visits.

The combination of 97140 plus either CMT or OMT code is equal to one visit when performed on the same day. Any combination of manual theraputic intervention exceeding 26 visits (not units) need to go to UR.

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

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

Time to produce effect: Immediate

Frequency: 1 to 3 times per week

Maximum duration: 12 visits (CPT codes 97124 and 97140 can not exceed 26 visits in combination).

g. **Mobilization (Joint):** is a generally well-accepted treatment. Mobilization is passive movement involving oscillatory motions to the vertebral segment(s). The passive mobility is performed in a graded manner (I, II, III, IV, or V), which depicts the speed and depth of joint motion during the maneuver. For further discussion on Level V joint mobilization please see section on HVLA manipulation [Refer to section 12. d.]. It may include skilled manual joint tissue stretching. Indications include the need to improve joint play, segmental alignment, improve intracapsular arthrokinematics, or reduce pain associated with tissue impingement. Mobilization should be accompanied by active therapy. For Level V mobilization contraindications include joint instability, fractures, severe osteoporosis, infection, metastatic cancer, active inflammatory arthritides, aortic aneurysm, and signs of progressive neurologic deficits.

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

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

Maximum duration: 26 visits.

CPT codes 97124 and 97140 can not exceed 48 visits in combination

h. **Mobilization (Soft Tissue):** is a generally well-accepted treatment. Mobilization of soft tissue is the skilled application of muscle energy, strain/counter strain, myofascial release, manual trigger point release, and manual therapy techniques designed to improve or normalize movement patterns through the reduction of soft tissue pain and restrictions. These can be interactive with the patient participating or can be with the patient relaxing and letting the practitioner move the body tissues. Indications include muscle spasm around a joint, trigger points, adhesions, and neural compression. Mobilization should be accompanied by active therapy.

Maximum duration: 26 visits

CPT codes 97124 and 97140 can not exceed 48 visits in combination.

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

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

Time to produce effect: Immediate

Frequency: 2 to 5 times per week

Maximum duration: 24 visits

k. **Traction—Mechanical:** Traction modalities are contraindicated in patients with tumor, infections, fracture, or fracture dislocation. Non**-**oscillating inversion traction methods are contraindicated in patients with glaucoma or hypertension. Motorized traction devices are included (ie. VAX-D, DRX9000, etc.)

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 traction unit can be purchased if therapy proves effective.

Maximum duration: 24 visits

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

Time to produce effect: Immediate

Frequency: Variable

Duration: 3 visits

m. **Ultrasound (Including Phonophoresis):** is an accepted treatment. Ultrasound uses sonic generators to deliver acoustic energy for therapeutic thermal and/or non-thermal soft tissue effects. Indications include scar tissue, adhesions, collagen fiber and muscle spasm, and the need to extend muscle tissue or accelerate the soft tissue healing. Ultrasound with electrical stimulation is concurrent delivery of electrical energy that involves dispersive electrode placement. Indications include muscle spasm, scar tissue, pain modulation, and muscle facilitation.

Phonophoresis is the transfer of medication to the target tissue to control inflammation and pain through the use of sonic generators. These topical medications include, but are not limited to, steroidal anti-inflammatory and anesthetics. Phonopheresis is not recommended for Low Back Pain.

Time to produce effect: 6 to 15 treatments

Frequency: 3 times per week

Maximum duration: 24 visits

14. **Therapy—active** The following active therapies are widely used and accepted methods of care for a variety of work-related injuries. They are based on the philosophy that therapeutic exercise and/or activity are beneficial for restoring flexibility, strength, endurance, function, range of motion, and can alleviate discomfort. Active therapy requires an internal effort by the individual to complete a specific exercise or task. This form of therapy requires supervision from a 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)**are well-established interventions which involve instruction, active-assisted training, and/or adaptation of activities or equipment to improve a person's capacity in normal daily activities such as self-care, work re-integration training, homemaking, and driving.

Time to produce effect: 4 to 5 treatments

Maximum duration: 10 visits

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

Cannot tolerate active land-based or full-weight bearing therapeutic procedures require increased support in the presence of proprioceptive deficit;

Are at risk of compression fracture due to decreased bone density;

Have symptoms that are exacerbated in a dry environment;

Would have a higher probability of meeting active therapeutic goals than in a land-based environment.

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

Time to produce effect: 4 to 5 treatments

Frequency: 3 to 5 times per week

Maximum duration: 26 visits

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

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

Time to produce effect: 4 to 5 treatments

Frequency: 3 to 5 times per week

Maximum duration: 26 visits

Total number of visit 97110 and 97530 should not exceed 40 visits without pre-auhorization.

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

Time to produce effect: 2 to 6 treatments

Frequency: 3 times per week

Maximum duration: 26 visits inclusive of electrical stimulation codes. If beneficial, provide with home unit.

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

Time to produce effect: 2 to 6 treatments

Frequency: 3-5 times per week

Maximum duration: 26 visits

Therapeutic Exercise: is a generally well-accepted treatment. Therapeutic exercise, with or without mechanical assistance or resistance, may include isoinertial, isotonic, isometric and isokinetic types of exercises. Indications include the need for cardiovascular fitness, reduced edema, improved muscle strength, improved connective tissue strength and integrity, increased bone density, promotion of

circulation to enhance soft tissue healing, improvement of muscle recruitment, improved proprioception, and coordination, increased range of motion. Therapeutic exercises are used to promote normal movement patterns, and can also include complementary/alternative exercise movement therapy (with oversight of a physician or appropriate healthcare professional).

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

Time to produce effect: 2 to 6 treatments

Frequency: 3 to 5 times per week

Maximum duration: 26 visits

Total number of visits of 97110 & 97530 may not exceed 40 visits without pre-authorization.

G. THERAPEUTIC PROCEDURES – OPERATIVE

When considering operative intervention in chronic pain management, the treating physician must carefully consider the inherent risk and benefit of the procedure. All operative intervention should be based on a positive correlation with clinical findings, the clinical course, and diagnostic tests. A comprehensive assessment of these factors should have led to a specific diagnosis with positive identification of the pathologic condition.

Surgical procedures are seldom meant to be curative and would be employed in conjunction with other treatment modalities for maximum functional benefit. Functional benefit should be objectively measured and includes the following:

a. Return-to-work or maintaining work status.

b. Fewer restrictions at work or performing activities of daily living.

c. Decrease in usage of medications.

d. Measurable functional gains, such as increased range of motion or documented increase in strength.

e. Education of the patient should include the proposed goals of the surgery, expected gains, risks or complications, and alternative treatment.

1. **Neurostimulation**

a. Description — Neurostimulation is the delivery of low-voltage electrical stimulation to the spinal cord or peripheral nerves to inhibit or block the sensation of pain. This is a generally accepted procedure that has limited use. May be most effective in patients with chronic, intractable limb pain who have not achieved relief with oral medications, rehabilitation therapy, or therapeutic nerve blocks, and in whom the pain has persisted for longer than 6 months.

Particular technical expertise is required to perform this procedure and is available in some neurosurgical, rehabilitation, and anesthesiology training programs and fellowships. Physicians performing this procedure must be experienced in neurostimulation implantation and participate in ongoing injection training workshops, such as those sponsored by the Internal Society for Injection Studies or as sponsored by implant manufacturers.

b. Indications — Failure of conservative therapy including active and/or passive therapy, medication management, or therapeutic injections. Habituation to narcotic analgesics in the absence of a history of addictive behavior does not preclude the use of neurostimulation. Only patients who meet the following criteria should be considered candidates for neurostimulation:

i. A diagnosis of a specific physical condition known to be chronically painful has been made on the basis of objective findings; and

ii. All reasonable non-surgical treatment has been exhausted; and

iii. Pre-surgical psychiatric or psychological evaluation has been performed and has demonstrated motivation and long-term commitment without issues of secondary gain; and

iv. There is no evidence of addictive behavior. (Tolerance and dependence to narcotic analgesics are not addictive behaviors and do not preclude implantation.); and

v. The topography of pain and its underlying pathophysiology are amenable to stimulation coverage; and

vi. A successful neurostimulation screening test of 2-3 days. A screening test is considered successful if the patient (a) experiences a 50% decrease in pain, which may be confirmed by visual analogue scale (VAS.

vii. For spinal cord stimulation, a temporary lead is implanted and attached to an external source to validate therapy effectiveness.

c. Operative Treatment – Implantation of stimulating leads connected by extensions to either an implanted neurostimulator or an implanted receiver powered by an external transmitter. The procedure may be performed either as an open or a percutaneous procedure, depending on the presence of epidural fibrosis and the anatomical placement required for optimal efficacy.

d. Post-Operative Considerations – MRI is contraindicated after placement of neurostimulators.

e. A mandatory second opinion is required to confirm the rationale for the procedure for non malignant pain.

2. **INTRATHECAL DRUG DELIVERY**

a. Description - This mode of therapy delivers small doses of medications directly into the cerebrospinal fluid. Clinical studies are conflicting regarding long-term, effective pain relief in patients with non-malignant pain. As with other routes of drug administration, escalation of dose may be required. Typically, pump refills are needed every 2-3 months.

b. General Indications – It may be considered only in rare cases where all other commonly used methods to control pain have failed and must be based on the recommendation of at least one physician experienced in chronic pain management in consultation with the primary treating physician. Patients should only be selected for intrathecal drug delivery if they have opioid-responsive pain but cannot tolerate the effects of systemic administration. The patient must have good to excellent pain relief with a test dose prior to pump implantation. The patient must be motivated for the procedure, and must understand the potential for complications and requirements of treatment maintenance.

c. Surgical Indications – Failure of conservative therapy including active and/or passive therapy, medication management, or therapeutic injections. Only patients who meet

the following criteria should be considered candidates for intraspinal analgesic infusions:

i. A diagnosis of a specific physical condition known to be chronically painful has been made on the basis of objective findings; and

ii. All reasonable non-surgical treatment has been exhausted; and

iii. Pre-surgical psychiatric or psychological evaluation has been performed and has demonstrated motivation and long-term commitment without issues of secondary gain;

iv. There is no evidence of addictive behavior. (Tolerance and dependence to narcotic analgesics are not addictive behaviors and do not preclude implantation.); and

v. A successful trial. A screening test is considered successful if the patient (a) experiences a 50% decrease in pain, which may be confirmed by VAS.

A mandatory second opinion is required to confirm the rationale for the procedure in non malignant pain.

3. <u>Facet Rhizotomy</u>

a. Description – A procedure designed to denervate the facet joint by ablating the periarticular facet nerve branches. There is good evidence to support this procedure for the cervical spine and some evidence in lumbar spine.

b. Indications – Pain of facet origin, unresponsive to active and/or passive therapy. All patients must have a successful response to diagnostic medial nerve branch blocks. A successful response is considered to be a 50% or greater relief of pain for the length of time appropriate to the local anesthetic.

c. Operative Treatment – Percutaneous radio-frequency rhizotomy is the procedure of choice over alcohol, phenol, or cryoablation. Position of the probe using fluoroscopic guidance is required.

H. MAINTENANCE MANAGEMENT

Successful management of chronic pain conditions results in fewer relapses requiring intense medical care. Failure to address long-term management as part of the overall treatment program may lead to higher costs and greater dependence on the health care system. Management of CRPS and CPD continues after the patient has met the definition of maximum medical improvement (MMI). MMI is declared when a patient's condition has plateaued and the authorized treating physician believes no further medical intervention is likely to result in improved function. However, MMI does not mean the end of active medical intervention.

Maintenance care in CRPS and CPD requires a close working relationship between the carrier, the providers, and the patient. Providers and patients have an obligation to design a cost-effective, medically appropriate program that is predictable and allows the carrier to set aside appropriate reserves. Carriers and adjusters have an obligation to assure that medical providers can design medically appropriate programs. A designated primary physician for maintenance team management is recommended.

Maintenance care will be based on principles of patient self-management. When developing a maintenance plan of care, the patient, physician and insurer should attempt to meet the following goals:

a. Maximal independence will be achieved through the use of home exercise programs or exercise programs requiring special facilities (e.g., pool, health club) and educational programs;

b. Modalities will emphasize self-management and self-applied treatment;

c. Management of pain or injury exacerbations will emphasize initiation of active therapy techniques and may require anesthetic injection blocks.

d. Dependence on treatment provided by practitioners other than the authorized treating physician will be minimized;

e. Periodic reassessment of the patient's condition will occur as appropriate.

f. Patients will understand that failure to comply with the elements of the self-management program or therapeutic plan of care may affect consideration of other interventions.

The following are Specific Maintenance Interventions and Parameters:

1. **Home Exercise Programs And Exercise Equipment** Most patients have the ability to participate in a home exercise program after completion of a supervised exercise rehabilitation program. Programs should incorporate an exercise prescription including the continuation of an age-adjusted and diagnosis-specific program for aerobic conditioning, flexibility, stabilization, and strength. Some patients may benefit from the purchase or rental of equipment to maintain a home exercise program. Determination for the need of home equipment should be based on medical necessity to maintain MMI, compliance with an independent exercise program, and reasonable cost. Before the purchase or long-term rental of equipment, the patient should be able to demonstrate the proper use and effectiveness of the equipment. Effectiveness of equipment should be evaluated on its ability to improve or maintain functional areas related to activities of daily living or work activity. Occasionally, compliance evaluations may be made through a 4-week membership at a facility offering similar equipment. Home exercise programs are most effective when done 3 to 5 times a week.

2. **Exercise Programs Requiring Special Facilities** Some patients may have higher compliance with an independent exercise program at a health club versus participation in a home program. All exercise programs completed through a health club facility should focus on the same parameters of an age-adjusted and diagnosis-specific program for aerobic conditioning, flexibility, stabilization, and strength. Selection of health club facilities should be limited to those able to track attendance and utilization, and provide records available for physician and insurer review. Prior to purchasing a membership, a therapist and/or exercise specialist who has treated the patient may visit the facility with the patient to assure proper use of the equipment.

Frequency: 2 to 3 times per week.

Optimal duration: 1 to 3 months.

Maximum maintenance duration: 3 months. Continuation beyond 3 months should be based on functional benefit and patient compliance. Health club membership should not extend beyond 3 months if attendance drops below 2 times per week on a regular basis.

3. **Patient Education Management** Educational classes, sessions, or programs may be necessary to reinforce self-management techniques. This may be performed as formal or informal programs, either group or individual.

Maintenance duration: 2 to 6 educational sessions during one 12-month period.

4. **Psychological Management** An ideal maintenance program will emphasize management options implemented in the following order: (a) individual self-management (pain control, relaxation and stress management, etc.), (b) group counseling, (c) individual counseling, by a psychologist or psychiatrist, and (d) in-patient treatment. Aggravation of the injury may require psychological treatment to restore the patient to baseline.

Maintenance duration: 6 to 10 visits during one 12-month period.

5. **Non-narcotic Medication Management** In some cases, self-management of pain and injury exacerbations can be handled with medications, such as those listed in the Medication section. Physicians must follow patients who are on any chronic medication or prescription

regimen for efficacy and side effects. Laboratory or other testing may be appropriate to monitor medication effects on organ function.

Maintenance duration: Usually, four medication reviews within a 12-month period. Frequency depends on the medications prescribed. Laboratory and other monitoring as appropriate.

6. **Narcotic Medication Management** As compared with other pain syndromes, there may be a role for chronic augmentation of the maintenance program with narcotic medications. In selected cases, scheduled medications may prove to be the most cost effective means of insuring the highest function and quality of life. A patient should have met the criteria in the opioids section of these guidelines before beginning maintenance narcotics. Laboratory or other testing may be appropriate to monitor medication effects on organ function. The following management is suggested for maintenance narcotics:

   a. A narcotic medication regimen should be defined, which may increase or decrease over time. Dosages will need to be adjusted based on side effects of the medication and objective function of the patient. A patient may frequently be maintained on additional non-narcotic medications to control side effects, treat mood disorders, or control neuropathic pain; however, only one long-acting narcotic and one short acting narcotic for rescue use should be prescribed in most cases.

   b. All patients on chronic narcotic medication dosages need to sign an appropriate narcotic contract with their physician for prescribing the narcotics.

   c. The patient must understand that continuation of the medication is contingent on their cooperation with the maintenance program. Use of non-prescribed drugs may result in tapering of the medication. The clinician may order random drug testing when deemed appropriate to monitor medication compliance.

   d. Patients on chronic narcotic medication dosages must receive them through one prescribing physician or physician group.

      Maintenance: Up to 12 visits within a 12-month period to review the narcotic plan. Laboratory and other monitoring as appropriate.

7. **Therapy Management** Some treatment may be helpful on a continued basis during maintenance care if the therapy maintains objective function and decreases medication use. Aggravation the injury may require intensive treatment to get the patient back to baseline. In those cases, treatments and timeframe parameters listed in the Active and Passive Therapy sections apply.

   Active Therapy, Acupuncture, and Manipulation maintenance duration: 10 visits in a 12-month period.

8. **Injection Therapy**

   a. Sympathetic Blocks - These injections are considered appropriate if they maintain or increase function. Maintenance blocks are usually combined with and enhanced by the appropriate neuropharmacological medication(s) and other care. It is anticipated that the frequency of the maintenance blocks may increase in the cold winter months or with stress.

      Maintenance duration: Not to exceed 6 to 8 blocks in a 12-month period for a single. Increased frequency may need to be considered for multiple extremity involvement or for acute recurrences of pain and symptoms. For treatment of acute exacerbations, consider 2 to 6 blocks with a short time interval between blocks.

   b. Trigger Point Injections - These injections may occasionally be necessary to maintain function in those with myofascial problems.

Maintenance duration: Not more than 4 injections per session not to exceed 6 sessions per 12-month period.

c. Epidural and Selective Nerve Root Injections - Patients who have experienced functional benefits from these injections in the past may require injection for exacerbations of the condition.

Maintenance duration: 6 treatments per 12-month period (a treatment may involve injection at one or two levels.)

9. **Purchase Or Rental Of Durable Medical Equipment** It is recognized that some patients may require ongoing use of self-directed modalities for the purpose of maintaining function and/or analgesic effect. Purchase or rental of modality based equipment should be done only if the assessment by the physician and/or therapist has determined the effectiveness, compliance, and improved or maintained function by its application. It is generally felt that large expense purchases such as spas, whirlpools, and special mattresses are not necessary to maintain function beyond the areas listed above.

Maintenance duration: Not to exceed 3 months for rental equipment. Purchase if effective.

Cumulative Trauma Disorder Medical Treatment Guidelines

A. Introduction

Pursuant to 19 **Del.C.** §2322C, health care practice guidelines have been adopted and recommended by the Health Care Advisory Panel to guide utilization of health care treatments in workers' compensation including, but not limited to, care provided for the treatment of employees by or under the supervision of a licensed health care provider, prescription drug utilization, inpatient hospitalization and length of stay, diagnostic testing, physical therapy, chiropractic care and palliative care. The health care practice guidelines apply to all treatments provided after the effective date of the regulation adopted by the Department of Labor, May 23, 2008, and regardless of the date of injury.

The guidelines are, to the extent permitted by the most current medical science or applicable science, based on well-documented scientific research concerning efficacious treatment for injuries and occupational disease. To the extent that well-documented scientific research regarding the above is not available at the time of adoption of the guidelines, or is not available at the time of any revision to the guidelines, the guidelines have been and will be based upon the best available information concerning national consensus regarding best health care practices in the relevant health care community.

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

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

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

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

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

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

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

B. General Guideline Principles

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

1. **Education** of the patient and family, as well as the employer, insurer, policy makers and the community should be emphasized in the treatment of CTD and disability. Practitioners may develop and implement an effective strategy and skills to educate patients, employers, insurance systems, policy makers and the community as a whole..

2. **Treatment Paramater 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, comorbities and availability of services. Clinical judgment may substantiate the need to modify the total number of visits discussed in this document. The majority of injured workers with Cumulative Trauma Disorders often will achieve resolution of their condition within 6 to 36 visits (Guide To Physical Therapy Practice – Second Edition). It is anticipated that most injured workers will not require the maximum number of visits described in these guidelines. They are designed to be a ceiling and care extending beyond the maximum allowed visits may warrant utilization review.

3. **Active Interventions** emphasizing patient responsibility, such as therapeutic exercise and/or functional treatment, are generally emphasized over passive modalities, especially as treatment progresses. Generally, passive interventions are viewed as a means to facilitate progress in an active rehabilitation program with concomitant attainment of objective functional gains. All rehabilitation programs must incorporate "Active Interventions" no later than three weeks after the onset of treatment. Reimbursement for passive modalities only after the first three weeks of treatment without clear evidence of Active Interventions will require supportive documentation.

4. **Active Therapeutic Exercise Program** Exercise program goals should incorporate patient strength, endurance, flexibility, coordination, and education. This includes functional application in vocational or community settings

5. **Positive Patient Response** results are defined primarily as functional gains that can be objectively measured. Objective functional gains include, but are not limited to, positional tolerances, range of motion, strength, endurance, activities of daily living, cognition, psychological behavior, and efficiency/velocity measures that can be quantified. Subjective reports of pain and function should be considered and given relative weight when the pain has anatomic and physiologic correlation. Anatomic correlation must be based on objective findings.

6. **Re-evaluate Treatment Every 3 To 4 Weeks** If a given treatment or modality is not producing positive results within 3 to 4 weeks, the treatment should be either modified or discontinued. Reconsideration of diagnosis should also occur in the event of poor response to a seemingly rational intervention.

7. **Surgical Interventions** Surgery should be contemplated within the context of expected functional outcome and not purely for the purpose of pain relief. All operative interventions must be based upon positive correlation of clinical findings, clinical course, and diagnostic tests. A comprehensive

assimilation of these factors must lead to a specific diagnosis with positive identification of pathologic conditions.

8. **Six-month Time Frame** The prognosis drops precipitously for returning an injured worker to work once he/she has been temporarily totally disabled for more than six months. The emphasis within these guidelines is to move patients along a continuum of care and return-to-work within a six-month time frame, whenever possible. It is important to note that time frames may not be pertinent to injuries that do not involve work-time loss or are not occupationally related.

9. **Return-to-work** is therapeutic, assuming the work is not likely to aggravate the basic problem or increase long-term pain. The practitioner must provide specific physical limitations per the Physician's Report form. The following physical limitations should be considered and modified as recommended: lifting, pushing, pulling, crouching, walking, using stairs, bending at the waist, awkward and/or sustained postures, tolerance for sitting or standing, hot and cold environments, data entry and other repetitive motion tasks, sustained grip, tool usage and vibration factors. Even if there is residual chronic pain, return-to-work is not necessarily contraindicated.

   The practitioner should understand all of the physical demands of the patient's job position before returning the patient to full duty and should receive clarification of the patient's job duties.

10. **Delayed Recovery** Strongly consider a psychological evaluation, if not previously provided, as well as initiating interdisciplinary rehabilitation treatment and vocational goal setting, for those patients who are failing to make expected progress 6 to 12 weeks after an injury. The Division recognizes that 3 to 10% of all industrially injured patients will not recover within the timelines outlined in this document despite optimal care. Such individuals may require treatments beyond the limits discussed within this document, but such treatment will require clear documentation by the authorized treating practitioner focusing on objective functional gains afforded by further treatment and impact upon prognosis.

11. **Guideline Recommendations And Inclusion Of Medical Evidence** are recommendations based on available evidence and/or consensus recommendations. When possible, guideline recommendations will note the level of evidence supporting the treatment recommendation.

    All recommendations in the guideline are considered to represent reasonable care in appropriately selected cases, regardless of the level of evidence or consensus statement attached to it. Those procedures considered inappropriate, unreasonable, or unnecessary are designated in the guideline as being "not recommended."

12. **Care Beyond Maximum Medical Improvement (MMI)** should be declared when a patient's condition has plateaued to the point where the authorized treating physician no longer believes further medical intervention is likely to result in improved function. However, some patients may require treatment after MMI has been declared in order to maintain their functional state. The recommendations in this guideline are for pre-MMI care and are not intended to limit post-MMI treatment.

    The remainder of this document should be interpreted within the parameters of these guideline principles that may lead to more optimal medical and functional outcomes for injured workers.

C. Definitions And Mechanisms Of Injury

Cumulative Trauma Disorders (CTDs) of the upper extremity comprise a heterogeneous group of diagnoses which include numerous specific clinical entities, including disorders of the muscles, tendons and tendon sheaths, nerve entrapment syndromes, joint disorders, and neurovascular disorders.

The terms "cumulative trauma disorder", "repetitive motion syndrome", "repetitive strain injury" and other similar nomenclatures are umbrella terms that are not acceptable diagnoses. The health care provider must provide specific diagnoses in order to appropriately educate, evaluate, and treat the patient. Examples include DeQuervain's tendonitis, cubital tunnel syndrome, lateral/medial epicondylitis, olecranon bursitis, and hand-arm vibration syndrome. Many patients present with more than one diagnosis, which

requires thorough upper extremity and cervical evaluation by the health care provider. Furthermore, there must be a causal relationship between work activities and the diagnosis (see Initial Diagnostic Procedures). The mere presence of a diagnosis that may be associated with cumulative trauma does not presume work-relatedness unless the appropriate work exposure is present.

Mechanisms of injury for the development of CTDs remain controversial. Posture, repetition, force, vibration, cold exposure, and combinations thereof are postulated and generally accepted as risk factors for the development of CTDs. Evaluation of a CTD requires an integrated approach that incorporates ergonomics, clinical assessment, and psychosocial evaluation on a case-by-case basis.

D. Initial Diagnostic Procedures

History and physical examination (Hx & PE) are generally accepted, well-established and widely used procedures which establish the foundation/basis for and dictate all other diagnostic and therapeutic procedures. When findings of clinical evaluations and those of other diagnostic procedures do not complement each other, the objective clinical findings should have preference.

1. **History** Should inquire about the following issues, where relevant, and document pertinent positives and negatives where appropriate. In evaluating potential CTDs, the following actions should be taken:

a. **Description of Symptoms:**

i. Onset: date of onset, sudden vs. gradual;

ii. Nature of Symptoms: pain, numbness, weakness, swelling, stiffness, temperature change, color change;

iii. Intensity: pain scale (0 = no pain, and 10 = worst imaginable pain) may be used.

iv. Location and Radiation: use of a pain diagram is encouraged for characterizing sensory symptoms; use comprehensive diagrams and do not use limited diagrams depicting only the hand or arm, as it is important to solicit the reporting of more proximal symptoms;

v. Provocative and Alleviating Factors (occupational and non-occupational): Attempt to identify the specific physical factors that are aggravating or alleviating the problem;

vi. Sleep disturbances;

vii. Other associated signs and symptoms noted by the injured worker;

b. **Identification of Occupational Risk Factors:** Job title alone is not sufficient information. The clinician is responsible for documenting specific information regarding repetition, force and other risk factors, as listed in the Risk Factors Associated with Cumulative Trauma Table. A job site evaluation may be required.

c. **Demographics: age, hand dominance, gender, etc.**

d. **Past Medical History and Review of Systems:**

i. Past injury/symptoms involving the upper extremities, trunk and cervical spine;

ii. Past work-related injury or occupational disease;

iii. Past personal injury or disease that resulted in temporary or permanent job limitation;

iv. Medical conditions associated with CTD - A study of work-related upper extremity disorder patients showed a 30% prevalence of co-existing disease. Medical conditions commonly occurring with CTD include:

A) Pregnancy,

B) Arthropathies including connective tissue disorders, rheumatoid arthritis, systemic lupus erythematosus, gout, osteoarthritis and spondyloarthropathy,

C) Amyloidosis,

D) Hypothyroidism, especially in older females,

E) Diabetes mellitus, including family history or gestational diabetes,

F) Acromegaly,

G) Use of corticosteroids.

e. **Activities of Daily Living (ADLs:** ADLs include such activities as self care and personal hygiene, communication, ambulation, attaining all normal living postures, travel, non-specialized hand activities, sexual function, sleep, and social and recreational activities. Specific movements in this category include pinching or grasping keys/pens/other small objects, grasping telephone receivers or cups or other similar-sized objects, and opening jars. The quality of these activities is judged by their independence, appropriateness, and effectiveness. Assess not simply the number of restricted activities but the overall degree of restriction or combination of restrictions.

f. **Avocational Activities:** Information must be obtained regarding sports, recreational, and other avocational activities that might contribute to or be impacted by CTD development. Activities such as hand-operated video games, crocheting/needlepoint, home computer operation, golf, tennis, and gardening are included in this category.

g. **Social History::** Exercise habits, alcohol consumption, and psychosocial factors.

2. **Physical Examination** The evaluation of any upper extremity complaint should begin at the neck and upper back and then proceed down to the fingers and include the contralateral region. It should include evaluation of vascular and neurologic status, and describe any dystrophic changes or variation in skin color or turgor.

Table 1: Physical Examination Findings Reference Table

DIAGNOSIS	SYMPTOMS	SIGNS
DeQuervain's Tenosynovitis	Pain and swelling in the anatomical snuffbox; pain radiating into the hand and forearm; pain worsened by thumb abduction and/ or extension.	Pain worsened by active thumb abduction and/ or extension; crepitus along the radial forearm; positive Finkelstein's.
Extensor Tendinous Disorders	Pain localized to the affected tendon(s); pain worsened by active and/or resisted wrist or finger extension.	Swelling along the dorsal aspects of the hand/ wrist/ forearm, and pain with active and/or resisted wrist/ digit extension, or creaking/ crepitus with wrist extension.
Flexor Tendinous Disorders	Pain localized to the affected tendons; pain in the affected tendons associated with wrist flexion and ulnar deviation, especially against resistance.	Pain with wrist/digit flexion and ulnar deviation, or crepitus with active motion of the flexor tendons.
Lateral Epicondylitis	Lateral elbow pain exacerbated by repetitive wrist motions; pain emanating from the lateral aspect of the elbow.	Pain localized to lateral epicondyle with resisted wrist extension and/or resisted supination.

Medial Epicondylitis	Pain emanating from the medial elbow; mild grip weakness; medial elbow pain exacerbated by repetitive wrist motions.	Pain localized to the medial epicondyle with resisted wrist flexion and resisted pronation.
Cubital tunnel syndrome	Activity-related pain/paresthesias involving the 4^{th} and 5^{th} fingers coupled with pain in the medial aspect of the elbow; pain/ paresthesias worse at night; decreased sensation of the 5th finger and ulnar half of the ring finger (including dorsum 5th finger); progressive inability to separate fingers; loss of power grip and dexterity; atrophy/weakness of the ulnar intrinsic hand muscles (late sign).	Diminished sensation of the fifth and ulnar half of the ring fingers; elbow flexion/ulnar compression test; Tinels' sign between olecranon process and medial epicondyle; Later stages manifested by intrinsic atrophy and ulnar innervated intrinsic weakness. Specific physical signs include clawing of the ulnar 2 digits (Benediction posture), ulnar drift of the 5^{th} finger (Wartenberg's sign), or flexion at the thumb IP joint during pinch (Froment's sign).
Hand-Arm Vibration Syndrome	Pain/paresthesias in the digits; blanching of the digits; cold intolerance; tenderness/swelling of the digits/hand/forearm; muscle weakness of the hand; joint pains in hand/wrist/elbow/neck/ shoulders; trophic skin changes and cyanotic color in hand/digits.	Sensory deficits in the digits/hand; blanching of digits; swelling of the digits/hand/forearm; muscle weakness of the hand; arthropathy at the hand/wrist/elbow; trophic skin changes and cyanotic color in hand/digits.
Guyon Canal (Tunnel) Syndrome	Numbness/tingling in ulnar nerve distribution distal to wrist.	Positive Tinel's at hook of hamate. Numbness or paresthesias of the palmar surface of the ring and small fingers. Later stages may affect ulnar innervated intrinsic muscle strength.
Pronator Syndrome	Pain/numbness/tingling in median nerve distribution distal to elbow.	Tingling in median nerve distribution on resisted pronation with elbow flexed at 90^{o} Tenderness or Tinel's at the proximal edge of the pronator teres muscle over the median nerve.
Radial Tunnel Syndrome	Numbness/tingling or pain in the lateral posterior forearm.	Tenderness over the radial nerve near the proximal edge of the supinator muscle. Rarely, paresthesias in the radial nerve distribution or weakness of thumb or finger extension.

3. **<u>Pain Behavior Evaluation</u>**

a. Evaluate the patient's overall pain behavior. The behavior should be consistent with the current pain levels reported by the patient.

b. Use a measurement tool to quantify and/or qualify pain. Reference the pain scale (0-10) with the worst pain imaginable being the top end of the scale (10) and/or other pain scales such as the Visual Analog Scale, Pain Drawing, Neck Disability Index, or McGill Pain Questionnaire.

4. **<u>Risk Factors</u>** A critical review of epidemiologic literature identifies a number of physical exposures associated with CTDs. Physical exposures considered risk factors include: repetition, force, vibration, pinching and gripping, and cold environment. When workers are exposed to several risk factors simultaneously, there is an increased likelihood of a CTD. Not all risk factors have been extensively studied. Exposure to cold environment, for example, was not examined independently; however, there is good evidence that combined with other risk factors, cold environment increases the likelihood of a CTD. The table at the end of this section entitled, "Risk Factors Associated CTDs," summarizes the results of currently available literature.

No single epidemiologic study will fulfill all criteria for causality. The clinician must recognize that currently available epidemiologic data is based on population results, and that individual variability lies outside the scope of these studies. Many published studies are limited in design and methodology, and, thus, preclude conclusive results. Most studies' limitations tend to attenuate, rather than inflate, associations between workplace exposures and CTDs.

Many specific disorders, such as ulnar neuropathy (at the elbow and wrist) and pronator teres syndrome, have not been studied sufficiently to formulate evidence statements regarding causality. Based on the present understanding of mechanism of injury and utilizing the rationale of analogy, it is generally accepted that these disorders are similar to other CTDs at the elbow and wrist and are susceptible to the same risk factors. No studies examined the relationship between the development of ganglion cysts and work activities; however, work activities may aggravate existing ganglion cysts. It is generally accepted that keyboarding less than four hours per day is unlikely to be associated with a CTD when no other risk factors are present. It remains unclear how computer mouse use affects CTDs. The posture involved in mouse use should always be evaluated when assessing risk factors.

Studies measured posture, repetition, and force in variable manners. In general, jobs that require less than 50% of maximum voluntary contractile strength for the individual are not considered "high force." Likewise, jobs with wrist postures less than or equal to 25^{o} flexion or extension, or ulnar deviation less than or equal to 10^{o} are not likely to cause posture problems.

These guidelines are based on current epidemiologic knowledge. As with any scientific work, the guidelines are expected to change with advancing knowledge. The clinician should remain flexible and consider new information revealed in future studies.

Table 2: Risk Factors Associated with Cumulative Trauma

Diagnosis	Strong evidence	Good evidence	Some evidence	Insufficient or conflicting evidence
Elbow Musculoskeletal Disorders (Epicondylitis)	Combination high force and high repetition (Exposures were based on EMG data, observation or video analysis of job tasks, or categorization by job title. Observed movements include repeated extension, flexion, pronation and supination. Repetition work cycles less than 30 sec or greater than 50% of cycle time performing same task, and number of items assembled in one hour).	High force alone.		Repetition alone, extreme wrist posture.

Wrist Tendonitis, including DeQuervain's Tenosynovitis	Combination of risk factors: High repetition, forceful hand/ wrist exertions, extreme wrist postures (Assessed by direct observation, EMG, and video analysis. One study measured time spent in deviated wrist posture).	Repetition, (as previously defined), not including keyboarding or force independently.	Posture	
Trigger Finger			Forceful grip (Holding tools, knives. Assessed by direct observation and video analysis).	

E. Follow-up Diagnostic Imaging And Testing Procedures

1. <u>Electrodiagnostic (EDX) Studies</u>

a. Electrodiagnostic (EDX) studies are well-established and widely accepted for evaluation of patients suspected of having peripheral nerve pathology. Studies may confirm the diagnosis or direct the examiner to alternative disorders. Studies may require clinical correlation due to the occurrence of false positive and false negative results. Symptoms of peripheral nerve pathology may occur with normal EDX studies, especially early in the clinical course. Findings include fibrillations, fasciculations, neurogenic recruitment, and polyphasic units (reinnervation).

b. To assure accurate testing, temperature should be maintained at 30-34C preferably recorded from the hand/digits. For temperature below 30C the hand should be warmed.

c. All studies must include normative values for their laboratories.

2. <u>Imaging Studies</u>

a. <u>Radiographic Imaging:</u> Not generally required for most CTD diagnoses. However, it may be necessary to rule out other pathology in the cervical spine, shoulder, elbow, wrist, or hand. Wrist and elbow radiographs would detect degenerative joint disease, particularly scapholunate dissociation and thumb carpometacarpal abnormalities which occasionally occur with CTD.

b. <u>MRI:</u> May show increased T2-weighted signal intensity of the common extensor tendon in lateral epicondylitis, but this finding has commonly been found in the asymptomatic contralateral elbow and may not be sufficiently specific to warrant the use of MRI as a diagnostic test for epicondylitis. Its routine use for CTD is not recommended.

3. <u>Adjunctive Testing</u>

a. <u>Personality/Psychological/Psychosocial Evaluations:</u> are generally accepted and well-established diagnostic procedures with selective use in the CTD population, but have more widespread use in sub-acute and chronic pain populations.

Diagnostic testing procedures may be useful for patients with symptoms of depression, delayed recovery, chronic pain, recurrent painful conditions, disability problems, and for pre-operative evaluation as well as a possible predictive value for post-operative response.

Psychological testing should provide differentiation between pre-existing depression versus injury-caused depression, as well as post-traumatic stress disorder.

Formal psychological or psychosocial evaluation should be performed on patients not making expected progress within 6-12 weeks following injury and whose subjective symptoms do not correlate with objective signs and tests. In addition to the customary initial exam, the evaluation of the injured worker should specifically address the following areas:

i. Employment history;

ii. Interpersonal relationships — both social and work;

iii. Leisure activities;

iv. Current perception of the medical system;

v. Results of current treatment;

vi. Perceived locus of control; and

vii. Childhood history, including abuse and family history of disability.

Results should provide clinicians with a better understanding of the patient, thus allowing for more effective rehabilitation. The evaluation will determine the need for further psychosocial interventions, and in those cases, a Diagnostic Statistical Manual for Mental Disorders (DSM) diagnosis should be determined and documented. An individual with a PhD, PsyD, or Psychiatric MD/DO credentials may perform initial evaluations, which are generally completed within one to two hours. When issues of chronic pain are identified, the evaluation should be more extensive and follow testing procedures as outlined in the Division's Chronic Pain Disorder Medical Treatment Guidelines.

- Frequency: One time visit for evaluation. If psychometric testing is indicated as a portion of the initial evaluation, time for such testing should not exceed an additional two hours of professional time.

b. **<u>Laboratory Tests:</u>** Generally accepted, well-established and widely used procedures. Patients should be carefully screened at the initial exam for signs or symptoms of diabetes, hypothyroidism, arthritis, and related inflammatory diseases. The presence of concurrent disease does not negate work-relatedness of any specific case. In one study of patients with cumulative trauma disorder other than Carpal Tunnel Syndrome, seen by specialists, 3% of patients were diagnosed with diabetes, 6% with hypothyroidism, and 9% with chronic inflammatory disease including spondyloarthropathy, arthritis, and systemic lupus erythematosis. Up to two thirds of the patients were not aware of their concurrent disease. When a patient's history and physical examination suggest infection, metabolic or endocrinologic disorders, tumorous conditions, systemic musculoskeletal disorders (e.g., rheumatoid arthritis or ankylosing spondylitis), or problems potentially related to medication (e.g., renal disease and nonsteroidal anti-inflammatory medications), then laboratory tests, including, but not limited to, the following can provide useful diagnostic information:

i. Serum rheumatoid factor, Antinuclear Antigen (ANA), Human Leukocyte Antigen (HLA)-B27 titre for rheumatoid work-up;

ii. Thyroid stimulating hormone (TSH) for hypothyroidism;

iii. Fasting glucose - recommended for obese men and women over 40 years of age, patients with a history of family diabetes, those from high risk ethnic groups, and with a previous history of impaired glucose tolerance. A fasting blood glucose greater than 125mg/dl is diagnostic for diabetes. Urine dipstick positive for glucose is a specific but not sensitive screening test. Quantitative urine glucose is sensitive and specific in high risk populations;

iv. Serum protein electrophoresis;

v. Sedimentation rate and C-Reactive Protein are nonspecific, but elevated in infection, neoplastic conditions and rheumatoid arthritis;

vi. Serum calcium, phosphorus, uric acid, alkaline and acid phosphatase for metabolic, endocrine and neo-plastic conditions;

vii. Complete blood count (CBC), liver and kidney function profiles for metabolic or endocrine disorders or for adverse effects of various medications;

viii. Bacteriological (microorganism) work-up for wound, blood and tissue.

The Division 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. Laboratory testing may be required periodically to monitor patients on chronic medications.

c. **Pinch and Grip Strength Measurements:** May be accepted as a diagnostic tool for CTD. Strength is defined as the muscle force exerted by a muscle or group of muscles to overcome a resistance under a specific set of circumstances. Pain, the perception of pain secondary to abnormal sensory feedback, and/or the presence of abnormal sensory feedback affecting the sensation of the power used in grip/pinch may cause a decrease in the force exerted. When a bell-shaped curve is present, these measures provide a method for quantifying strength that can be used to follow a patient's progress and to assess response to therapy. In the absence of a bell-shaped curve, clinical reassessment is indicated.

d. **Quantitative Sensory Testing (QST):** May be used as a screening tool in clinical settings pre- and post-operatively. Results of tests and measurements of sensory integrity are integrated with the history and review of systems findings and the results of other tests and measures. QST tests the entire sensory pathway, limiting its ability to localize a deficit precisely. It depends on the patient’s report of perception and may not be objective. Cutaneous conditions may alter sensory thresholds.

i. Threshold tests measure topognosis, the ability to exactly localize a cutaneous sensation, and pallesthesia, the ability to detect mechanical sensation using vibration discrimination testing (quickly adapting fibers); and/or Semmes-Wienstein monofilament testing (slowly adapting fibers);

ii. Density Tests also measure topognosis and pallesthesia using static two-point discrimination (slowly adapting fibers); and/or moving two-point discrimination (quickly adapting fibers).

F. Therapeutic Procedures – Non-operative

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

First, patients undergoing therapeutic procedure(s) should be released or returned to modified or restricted duty during their rehabilitation at the earliest appropriate time. Refer to “Return-to-Work” in this section for detailed information.

Second, 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.

Third, 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.

Last, formal psychological or psychosocial screening should be performed on patients not making expected progress within 6 to 12 weeks following injury and whose subjective symptoms do not correlate with objective signs and tests.

In cases where a patient is unable to attend an outpatient center, home therapy may be necessary. Home therapy may include active and passive therapeutic procedures as well as other modalities to assist in alleviating pain, swelling, and abnormal muscle tone. Home therapy is usually of short duration and continues until the patient is able to tolerate coming to an outpatient center.

The following procedures are listed in alphabetical order.

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

   a. **Acupuncture:** is the insertion and removal of filiform needles to stimulate acupoints (acupuncture points). Needles may be inserted, manipulated and retained for a period of time. Acupuncture can be used to reduce pain and inflammation, and to increase blood flow to an area and increase range of motion. Indications include joint pain, joint stiffness, soft tissue pain and inflammation, paresthesia, post-surgical pain relief, muscle spasm, and scar tissue pain.
      - Time to produce effect: 3 to 6 treatments
      - Frequency: 1 to 3 times per week
      - Course duration: 14 treatments

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

      It is indicated to treat chronic pain conditions, radiating pain along a nerve pathway, muscle spasm, inflammation, scar tissue pain, and pain located in multiple sites.
      - Time to produce effect: 3 to 6 treatments
      - Frequency: 1 to 3 times per week
      - Course duration: 14 treatments

   c. **Other Acupuncture Modalities:** Acupuncture treatment is based on individual patient needs and therefore treatment may include a combination of procedures to enhance treatment effect. Other procedures may include the use of heat, soft tissue manipulation/massage, and exercise.
      - Time to produce effect: 3 to 6 treatments
      - Frequency: 1 to 3 times per week
      - Course duration: 14 treatments

      Any of the above acupuncture treatments may extend longer if objective functional gains can be documented or when symptomatic benefits facilitate progression in the patient's treatment program. Treatment beyond 14 sessions (1 course) may be documented with respect to need and ability to facilitate positive symptomatic or functional gains.

2. **Biofeedback** is a form of behavioral medicine that helps patients learn self-awareness and self-regulation skills for the purpose of gaining greater control of their physiology, such as muscle activity, brain waves, and measures of autonomic nervous system activity. Electronic instrumentation is used to monitor the targeted physiology and then displayed or fed back to the patient visually, auditorially, or tactilely, with coaching by a biofeedback specialist. Biofeedback is provided by clinicians certified in biofeedback and/or

who have documented specialized education, advanced training, or direct or supervised experience qualifying them to provide the specialized treatment needed (e.g., surface EMG, EEG, or other).

Treatment is individualized to the patient's work-related diagnosis and needs. Home practice of skills is required for mastery and may be facilitated by the use of home training tapes. The ultimate goal in biofeedback treatment is normalizing the physiology to the pre-injury status to the extent possible and involves transfer of learned skills to the workplace and daily life. Candidates for biofeedback therapy or training must be motivated to learn and practice biofeedback and self-regulation techniques.

Indications for biofeedback include individuals who are suffering from musculoskeletal injury where muscle dysfunction or other physiological indicators of excessive or prolonged stress response affects and/or delays recovery. Other applications include training to improve self-management of emotional stress/pain responses such as anxiety, depression, anger, sleep disturbance, and other central and autonomic nervous system imbalances. Biofeedback is often utilized along with other treatment modalities.

- Time to produce effect: 3 to 4 sessions
- Frequency: 1 to 2 times per week
- Maximum duration: 10 to 12 sessions. Treatment beyond 12 sessions must be documented with respect to need, expectation, and ability to facilitate positive symptomatic or functional gains.

3. **Injections – Therapeutic** are generally accepted, well-established procedures that may play a significant role in the treatment of patients with upper extremity pain or pathology. Therapeutic injections involve the delivery of anesthetic and/or anti-inflammatory medications to the painful structure. Therapeutic injections have many potential benefits. Ideally, a therapeutic injection will: (a) reduce inflammation in a specific target area; (b) relieve secondary muscle spasm; and (c) diminish pain and support therapy directed to functional recovery. Diagnostic and therapeutic injections should be used early and selectively to establish a diagnosis and support rehabilitation. If injections are overused or used outside the context of a monitored rehabilitation program, they may be of significantly less value.

a. **Steroid Injections:** may provide both diagnostic and therapeutic value in treating a variety of upper extremity cumulative trauma disorders. These include neuropathies, tendonitis or bursitis about the elbow, wrist, or hand. In contrast, there is no evidence to support their therapeutic use in other upper extremity compressive neuropathies; however, it is a widely accepted procedure.

Steroid injections provide a potent anti-inflammatory effect, which is usually short term in duration, lasting weeks or months. Injections should always be used as an adjunctive treatment in the context of a physical exercise and rehabilitation program.

For epicondylitis, there is good evidence that although steroid injections with physical therapy may provide short-term symptomatic relief, there is no benefit over placebo injections at 6 months. A program of physical rehabilitation in combination with judicious use of anti-inflammatory medications should be the core treatment for epicondylitis.

When performing tendon injections, the risk of tendon rupture should be discussed with the patient and the need for temporary restricted duty emphasized.

Contraindications: General contraindications include local or systemic infection, bleeding disorders, and allergy to medications used.

Local Steroid Injections:

- Time to produce effect: 3 days
- Frequency: monthly
- Maximum duration: 3 injections

b. **Trigger Point Injections:** are generally accepted, although used infrequently in uncomplicated cases. They may, however, be used to relieve myofascial pain and facilitate active therapy and stretching of the affected areas, and as an adjunctive treatment in combination with other treatment modalities, such as functional restoration programs, including stretching therapeutic

exercise. Trigger point injections should be utilized primarily for the purpose of facilitating functional progress. The Division does not recommend their routine use in the treatment of upper extremity injuries.

- Time to produce effect: Local anesthetic 30 minutes; 24 to 48 hours for no anesthesia.
- Frequency: Weekly. Suggest no more than 4 injection sites per session per week to avoid significant post-injection soreness.
- Maximum duration: 8 weeks. Occasional patients may require 2 to 4 repetitions of trigger point injection series over a 1 to 2 year period.

c. **Other Injections**: Some early evidence exists to support Autologous Blood Injection may be used for medial/lateral epicondylitis. This can be repeated for a total of 2-3 injections given roughly 6 weeks apart.

4. **Job Site Alteration** Early evaluation and training of body mechanics and other ergonomic factors are essential for every injured worker and should be done by a qualified individual. In some cases, this requires a job site evaluation. Some evidence supports alteration of the work site in the early treatment of Cumulative Trauma Disorder. There is no single factor or combination of factors that is proven to prevent or ameliorate CTD, but a combination of ergonomic and psychosocial factors are generally considered to be important. Physical factors that may be considered include use of force, repetition, awkward positions, upper extremity vibration, cold environment, and contact pressure on the nerve. Psychosocial factors to be considered include pacing, degree of control over job duties, perception of job stress, and supervisory support.

The job analysis and modification should include input from the employee, employer, and ergonomist or other professional familiar with work place evaluation. The employee must be observed performing all job functions in order for the job site analysis to be valid. Periodic follow-up is recommended to evaluate effectiveness of the intervention and need for additional ergonomic changes.

a. **Ergonomic changes:** should be made to modify the hazards identified. In addition, workers should be counseled to vary tasks throughout the day whenever possible. OSHA suggests that workers who perform repetitive tasks, including keyboarding, take 15-30 second breaks every 10 to 20 minutes, or 5-minute breaks every hour. Mini breaks should include stretching exercises.

b. **Interventions::** should consider engineering controls, e.g., mechanizing the task, changing the tool used, or adjusting the job site; or administrative controls, e.g., adjusting the time an individual performs the task.

c. **Seating Description:** The following description may aid in evaluating seated work positions: The head should incline only slightly forward, and if a monitor is used, there should be 18-24 inches of viewing distance with no glare. Arms should rest naturally, with forearms parallel to the floor, elbows at the sides, and wrists straight or minimally extended. The back must be properly supported by a chair, which allows change in position and backrest adjustment. There must be good knee and legroom, with the feet resting comfortably on the floor or footrest. Tools should be within easy reach, and twisting or bending should be avoided.

d. **Job Hazard Checklist:** The following Table 4 is adopted from Washington State's job hazard checklist, and may be used as a generally accepted guide for identifying job duties which may pose ergonomic hazards. The fact that an ergonomic hazard exists at a specific job, or is suggested in the table, does not establish a causal relationship between the job and the individual with a musculoskeletal injury. However, when an individual has a work-related injury and ergonomic hazards exist that affect the injury, appropriate job modifications should be made. Proper correction of hazards may prevent future injuries to others, as well as aid in the recovery of the injured worker.

Table 4: Identifying Job Duties Which May Pose Ergonomic Hazards

Type of Job Duty	Hours per Day

Pinching an unsupported object(s) weighing 2 lbs or more per hand, or pinching with a force of 4 lbs or more per hand (comparable to pinching a half a ream of paper): 1. Highly repetitive motion 2. Palmar flexion greater than 30 degrees, dorsiflexion greater than 45 degrees, or radial deviation greater than 30 degrees --- 3. No other risk factors	More than **3 hours total/day** --- More than **4 hours total/day**
Gripping an unsupported object(s) weighing 10 lbs or more/hand, or gripping with a force of 10 lbs or more/hand (comparable to clamping light duty automotive jumper cables onto a battery): *Handles should be rounded and soft, with at least 1-2.5" in diameter grips at least 5" long. 1. Highly repetitive motion 2. Palmar flexion greater than 30 degrees, dorsiflexion greater than 45 degrees, or radial deviation greater than 30 degrees --- 3. No other risk factors	More than **3 hours total/day** --- More than **4 hours total/day**
Repetitive Motion (using the same motion with little or no variation every few seconds) excluding keying activities: 1. High, forceful exertions with the hands, with palmar flexion greater than 30 degrees, dorsiflexion greater than 45 degrees, or radial deviation greater than 30 degrees --- 2. No other risk factors	More than **2 hours total/day** --- More than **6 hours total/day**
Intensive Keying: 1. Palmar flexion greater than 30 degrees, dorsiflexion greater than 45 degrees, or radial deviation greater than 30 degrees --- 2. No other risk factors	More than **4 hours total/day** --- More than **7 hours total/day**
Repeated Impact: 1. Using the hand (heel/base of palm) as a hammer more than once/minute	More than **2 hours total/day**
Vibration: Two determinants of the tolerability of segmental vibration of the hand are the frequency and the acceleration of the motion of the vibrating tool, with lower frequencies being more poorly tolerated at a given level of imposed acceleration, expressed below in multiples of the acceleration due to gravity (10m/sec/sec). 1. Frequency range 8-15 Hz and acceleration 6 g 2. Frequency range 80 Hz and acceleration 40 g 3. Frequency range 250 Hz and acceleration 250 g --- 4. Frequency range 8-15 Hz and acceleration 1.5 g 5. Frequency range 80 Hz and acceleration 6 g 6. Frequency range 250 Hz and acceleration 20 g	More than **30 minutes at a time** --- More than **4 hours at a time**

5. **Medications** Medication use in the treatment of CTD is appropriate for controlling acute and chronic pain and inflammation. Use of medications will vary widely due to the spectrum of injuries from simple strains to post-surgical analgesia. A thorough medication history, including use of alternative and over the counter medications, should be performed at the time of the initial visit and updated periodically.

   Acetaminophen is an effective and safe initial analgesic. Nonsteroidal anti-inflammatory drugs (NSAIDs) are useful in the treatment of inflammation, and for pain control. Pain is subjective in nature and should be evaluated using a scale to rate effectiveness of the analgesic in terms of functional gain. Other medications, including antidepressants, may be useful in selected patients with chronic pain (Refer to the

Division's Chronic Pain Guidelines). Narcotics are rarely indicated for treatment of upper extremity CTDs, and they should be primarily reserved for the treatment of acute severe pain for a limited time on a case-by-case basis. Topical agents may be beneficial in the management of localized upper extremity pain.

The following are listed in alphabetical order:

a. **Acetaminophen::** is an effective analgesic with antipyretic but not anti-inflammatory activity. Acetaminophen is generally well tolerated, causes little or no gastrointestinal irritation and is not associated with ulcer formation. Acetaminophen has been associated with liver toxicity in doses over 10 gm/day or in chronic alcohol use.

b. **Minor Tranquilizer/Muscle Relaxants:** are appropriate for muscle spasm, mild pain and sleep disorders.

c. **Narcotics:** medications should be prescribed with strict time, quantity and duration guidelines, and with definitive cessation parameters. Adverse effects include respiratory depression, impaired alertness, and the development of physical and psychological dependence.

- treatment.

d. **Nonsteroidal Anti-Inflammatory Drugs (NSAIDs)):** are useful for pain and inflammation. In mild cases, they may be the only drugs required for analgesia. There are several classes of NSAIDs, and the response of the individual injured worker to a specific medication is unpredictable. For this reason, a range of NSAIDs may be tried in each case with the most effective preparation being continued. Patients should be closely monitored for adverse reactions. The US Food and Drug Administration advises that many NSAIDs may cause an increased risk of serious cardiovascular thrombotic events, myocardial infraction, and stroke, which can be fatal. Naproxen sodium does not appear to be associated with increased risk of vascular events. Administration of proton pump inhibitors, histamine 2 blockers, or prostaglandin analog misoprostol along with these NSAIDs may reduce the risk of duodenal and gastric ulceration but do not impact possible cardiovascular complications. Due to the cross-reactivity between aspirin and NSAIDs, NSAIDs should not be used in aspirin-sensitive patients, and should be used with caution in all asthma patients. NSAIDs maybe associated with abnormal renal function, including renal failure, as well as, abnormal liver function. Certain NSAIDs may have interactions with various other medications. Individuals may have adverse events not listed above. Intervals for metabolic screening are dependent upon the patient's age, general health status and should be within parameters listed for each specific medication. Complete Blood Count (CBC) and liver and renal function should be monitored at least every six months in patients on chronic NSAIDs and initially when indicated.

i. Non-selective Nonsteroidal Anti-Inflammatory Drugs –

Includes NSAIDsand acetylsalicylic acid (aspirin). Serious GI toxicity, such as bleeding, perforation, and ulceration can occur at any time, with or without warning symptoms in patients treated with traditional NSAIDs. Physicians should inform patients about the signs and/or symptoms of serious gastrointestinal toxicity and what steps to take if they occur. Anaphylactoid reactions may occur in patients taking NSAIDs. NSAIDs may interfere with platelet function. Fluid retention and edema have been observed in some patients taking NSAIDs.

Selective Cyclo-oxygenase-2 (COX-2) Inhibitors –

COX-2 inhibitors are more recent NSAIDs and differ in adverse side effect profiles from the traditional NSAIDs. The major advantages of selective COX-2 inhibitors over traditional NSAIDs are that they have less gastrointestinal toxicity and no platelet effects. COX-2 inhibitors can worsen renal function in patients with renal insufficiency, thus renal function may need monitoring.

COX-2 inhibitors should not be first-line for low risk patients who will be using an NSAID short-term but are indicated in select patients for whom traditional NSAIDs are not tolerated. Serious upper GI adverse events can occur even in asymptomatic patients. Patients at high

risk for GI bleed include those who use alcohol, smoke, are older than 65, take corticosteroids or anti-coagulants, or have a longer duration of therapy. Celecoxib is contraindicated in sulfonamide allergic patients.

e. **Psychotropic/Anti-anxiety/Hypnotic Agents:** may be useful for treatment of mild and chronic pain, dysesthesias, sleep disorders, and depression. Antidepressant medications, such as tricyclics and Selective Serotonin Reuptake Inhibitors (SSRIs), are useful for affective disorders and chronic pain management. Tricyclic antidepressant agents, in low dose, are useful for chronic pain but have more frequent side effects.

Anti-anxiety medications are best used for short-term treatment (i.e., less than 6 months). Accompanying sleep disorders are best treated with sedating antidepressants prior to bedtime. Frequently, combinations of the above agents are useful. As a general rule, physicians should assess the patient for a prior history of substance abuse or depression prior to prescribing any of these agents.

f. **Tramadol:** is useful in relief of upper extremity pain and has been shown to provide pain relief equivalent to that of commonly prescribed narcotics. Although Tramadol may cause impaired alertness, it is generally well tolerated, does not cause gastrointestinal ulceration, or exacerbate hypertension or congestive heart failure. Tramadol should be used cautiously in patients who have a history of seizures or who are taking medication that may lower the seizure threshold, such as monoamine oxidase (MAO) inhibiters, SSRIs, and tricyclic antidepressants. This medication has physically addictive properties and withdrawal may follow abrupt discontinuation. It is not recommended for those with prior opioid addiction.

g. **Topical Drug Delivery:** may be an alternative treatment for localized musculoskeletal disorders and is an acceptable form of treatment in selected patients although there is no scientific evidence to support its use. It is necessary that all topical agents be used with strict instructions for application as well as maximum number of applications per day to obtain the desired benefit and avoid potential toxicity. As with all medications, patient selection must be rigorous to choose those patients with the highest probability of compliance. Refer to “Iontophoresis” in the Passive Therapy section for information regarding topical iontophoretic agents.

6. Occupational Rehabilitation Programs

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

i. Work Conditioning/Simulation

This program may begin once a patient is out of the acute phase of injury and will be able to tolerate this program.

These programs are usually initiated after the acute phase has been completed and offered at any time throughout the recovery phase. Work conditioning should be initiated when imminent return of a patient to modified or full duty is not an option, but the prognosis for returning the patient to work at completion of the program is at least fair to good.

The need for work place simulation should be based upon the results of a Functional Capacity Evaluation and/or Jobsite Analysis.

Length of visit: 1 to 4 hours per day.

Frequency: 2 to 5 visits per week

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

ii. Work Hardening

Work Hardening is an interdisciplinary program addressing a patient's employability and return to work. It includes a progressive increase in the number of hours per day that a patient completes work simulation tasks until the patient can tolerate a full workday. This is accomplished by addressing the medical, psychological, behavioral, physical, functional, and vocational components of employability and return-to-work.

This can include a highly structured program involving a team approach or can involve any of the components thereof. The interdisciplinary team should, at a minimum, be comprised of a qualified medical director who is board certified with documented training in occupational rehabilitation; team physicians having experience in occupational rehabilitation; occupational therapist; physical therapist; case manager; and psychologist. As appropriate, the team may also include: chiropractor, RN, vocational specialist or Certified Biofeedback Therapist**.**

- Length of visit: Up to 8 hours/day
- Frequency: 2 to 5 visits per week
- Maximum duration: 8 weeks. Participation in a program beyond six weeks must be documented with respect to need and the ability to facilitate positive symptomatic or functional gains**.**

7. **Patient Education** No treatment plan is complete without addressing issues of individual patient and/or group 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 take an active role in the establishment of functional outcome goals, and should be educated on his or her specific injury, assessment findings, and plan of treatment. Education and instruction in proper body mechanics and posture, positions to avoid task/tool adaptation, self-care for exacerbation of symptoms, and home exercise/task adaptation should also be addressed.

8. **Return-to-work** is therapeutic, assuming the work is not likely to aggravate the basic problem or increase long-term pain. The practitioner must provide specific physical limitations per the Physician's Form. The following physical limitations should be considered and modified as recommended: lifting, pushing, pulling, crouching, walking, using stairs, bending at the waist, awkward and/or sustained postures, tolerance for sitting or standing, hot and cold environments, data entry and other repetitive motion tasks, sustained grip, tool usage and vibration factors. Even if there is residual chronic pain, return-to-work is not necessarily contraindicated.

   The practitioner should understand all of the physical demands of the patient's job position before returning the patient to full duty and should receive clarification of the patient's job duties. Clarification must be provided by the employer or, if necessary, including, but not limited to, an occupational health nurse, occupational therapist, vocational rehabilitation specialist, or an industrial hygienist.

9. **Sleep Disturbances** are a common secondary symptom of CTD. Although primary insomnia may accompany pain as an independent co-morbid condition, it more commonly occurs, secondary to the pain condition itself. Exacerbations of pain often are accompanied by exacerbations of insomnia; the reverse can also occur. Sleep laboratory studies have shown disturbances of sleep architecture in pain patients. Loss of deep slow-wave sleep and increase in light sleep occur and sleep efficiency, the proportion of time in bed spent asleep, is decreased. These changes are associated with patient reports of non-restorative sleep.

   Many affected patients develop behavioral habits that exacerbate and maintain sleep disturbances. Excessive time in bed, irregular sleep routine, napping, low activity, and worrying in bed are all maladaptive responses that can arise in the absence of any psychopathology. There is some evidence that

behavioral modification, such as patient education and group or individual counseling, can be effective in reversing the effects of insomnia. Behavioral modifications are easily implemented and can include:

a. Maintaining a regular sleep schedule, retiring and rising at approximately the same time on weekdays and weekends.

b. Avoiding daytime napping.

c. Avoiding caffeinated beverages after lunchtime

d. Making the bedroom quiet and comfortable, eliminating disruptive lights, sounds, television sets, and keeping a bedroom temperature of about 65°F.

e. Avoiding alcohol or nicotine within two hours of bedtime.

f. Avoiding large meals within two hours of bedtime.

g. Exercising vigorously during the day, but not within two hours of bedtime, since this may raise core temperature and activate the nervous system.

h. Associating the bed with sleep and sexual activity only, using other parts of the home for television, reading and talking on the telephone.

i. Leaving the bedroom when unable to sleep for more than 20 minutes, retuning to the bedroom when ready to sleep again.

These modifications should be undertaken before sleeping medication is prescribed for long term use.

10 **Therapy–passive** includes those treatment modalities that do not require energy expenditure on the part of the patient. They are principally effective during the early phases of treatment and are directed at controlling symptoms such as pain, inflammation and swelling and to improve the rate of healing soft tissue injuries. They should be used in adjunct with active therapies to help control swelling, pain and inflammation during the rehabilitation process. They may be used intermittently as a therapist deems appropriate or regularly if there are specific goals with objectively measured functional improvements during treatment.

a. **Electrical Stimulation (Unattended and Attended):** once applied, requires minimal on-site supervision by the physician or non-physician provider. Indications include pain, inflammation, muscle spasm, atrophy, and decreased circulation.

b. **Extracorporeal shock wave treatment:** Consists of the application of pulses of high pressure sound to soft tissues, similar to lithotriptors. It has been investigated for its effectiveness in the treatment of lateral epicondylitis. It has not been shown to have an advantage over other conservative treatments and remains investigational. It is not recommended.

c. **Iontophoresis::** is the transfer of medication, including, but not limited to, steroidal anti-inflammatories and anesthetics, through the use of electrical stimulation. Indications include pain (Lidocaine), inflammation (hydrocortisone, salicylate), edema (mecholyl, hyaluronidase, salicylate), ischemia (magnesium, mecholyl, iodine), muscle spasm (magnesium, calcium), calcific deposits (acetate), scars and keloids (chlorine, iodine, acetate).

d. **Laser irradiation:** Consists of the external application of an array of visible and infrared wavelengths to soft tissues. Time and frequency dependent on severity and chronicity of problem.

e. **Manual Therapy Techniques:** are passive interventions in which the providers use his or her hands to administer skilled movements designed to modulate pain; increase joint range of motion; reduce/eliminate soft tissue swelling, inflammation, or restriction; induce relaxation; and improve contractile and non-contractile tissue extensibility. These techniques are applied only after a thorough examination is performed to identify those for whom manual therapy would be contraindicated or for whom manual therapy must be applied with caution.

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

High velocity, low amplitude (HVLA) technique, chiropractic manipulation, osteopathic manipulation, muscle energy techniques, counter strain, and non-force techniques are all types of manipulative treatment. This may be applied by osteopathic physicians (D.O.), chiropractors (D.C.), properly trained physical therapists (P.T.), or properly trained medical physicians. Under these different types of manipulation exist many subsets of different techniques that can be described as

a) direct- a forceful engagement of a restrictive/pathologic barrier,

b) indirect- a gentle/non-forceful disengagement of a restrictive/pathologic barrier,

c) the patient actively assists in the treatment and

d) the patient relaxing, allowing the practitioner to move the body tissues.

When the proper diagnosis is made and coupled with the appropriate technique, manipulation has no contraindications and can be applied to all tissues of the body. Pre-treatment assessment should be performed as part of each manipulative treatment visit to ensure that the correct diagnosis and correct treatment is employed.

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

- Time to produce effect for all types of manipulative treatment: 1 to 6 treatments.
- Frequency: Up to 3 times per week for the first 4 weeks as indicated by the severity of involvement and the desired effect, then up to 2 treatments per week for the next 4 weeks. For further treatments, twice per week or less to maintain function.
- Maximum duration: 30 visits. Extended durations of care beyond what is considered “maximum” may be necessary in cases of re-injury, interrupted continuity of care, exacerbation of symptoms, and in those patients with comorbidities. Refer to the Chronic Pain Guidelines for care beyond 6 months.

The combination of 97140 plus either CMT or OMT code is equal to one visit when performed on the same day. Any combination of manual therapeutic intervention exceeding 30 visits (not units) need to go to UR.

ii. Mobilization (Joint) /Manipulation

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

- Time to produce effect: 4 to 6 treatments
- Frequency: 2 to 3 times per week
- Maximum duration: 30 visits (CPT codes 97124 and 97140 can not exceed 30 visits in combination).

iii. Mobilization (Soft Tissue)

Mobilization of soft tissue is the skilled application of manual techniques designed to normalize movement patterns through the reduction of soft tissue pain and restrictions. Indications include muscle spasm around a joint, trigger points, adhesions, and neural compression.

Nerve Gliding: consist of a series of flexion and extension movements of the hand, wrist, elbow, shoulder, and neck that produce tension and longitudinal movement along the length of the median and other nerves of the upper extremity. These exercises are based on the principle that the tissues of the peripheral nervous system are designed for movement, and that tension and glide (excursion) of nerves may have an effect on neurophysiology through alterations in vascular and axoplasmic flow. Biomechanical principles have been more thoroughly studied than clinical outcomes. Nerve gliding performed on a patient by the clinician should be reinforced by patient performance of similar techniques as part of a home exercise program at least twice per day.

- Time to produce effect: 4 to 6 treatments
- Frequency: 2 to 3 times per week
- Maximum duration: 30 visits (CPT codes 97124 and 97140 can not exceed 30 visits in combination).

f. **Massage:** Manual or Mechanical - Massage is 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 practitioners' hands. Indications include edema, muscle spasm, adhesions, the need to improve peripheral circulation and range of motion, or to increase muscle relaxation and flexibility prior to exercise.

- Time to produce effect: Immediate.
- Frequency: 1 to 3 times per week
- Maximum duration: 12 visits (CPT codes 97124 and 97140 can not exceed 30 visits in combination).

g. **Orthotics/Immobilization with Splinting:** is a generally accepted, well-established and widely used therapeutic procedure. Splints may be effective when worn at night or during portions of the day, depending on activities. Splints should be loose and soft enough to maintain comfort while supporting the involved joint in a relatively neutral position. Splint comfort is critical and may affect compliance. Although off-the-shelf splints are usually sufficient, custom thermoplastic splints may provide better fit for certain patients.

Splints may be effective when worn at night or during portions of the day, depending on activities; however, splint use is rarely mandatory. Providers should be aware that over-usage is counterproductive, and counsel patients to minimize daytime splint use in order avoid detrimental effects, such as, stiffness and dependency over time.

- Time to produce effect: 1-4 weeks
- Frequency: Daytime intermittent or night use, depending on symptoms and activities.
- Maximum duration: 2 to 4 months. If symptoms persist, consideration should be given to further diagnostic studies or to other treatment options.

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

- Time to produce effect: Immediate
- Frequency: 2 to 5 times per week (clinic). Home treatment as needed.
- Maximum duration: 18 visits. If symptoms persist, consideration should be given to further diagnostic studies or other treatment options.

i. **Ultrasound:** uses sonic generators to deliver acoustic energy for therapeutic thermal and/or nonthermal soft tissue effects. Indications include scar tissue, adhesions, collagen fiber and muscle spasm, and to improve muscle tissue extensibility and soft tissue healing. Ultrasound with electrical stimulation is concurrent delivery of electrical energy that involves dispersive electrode placement. Indications include muscle spasm, scar tissue, pain modulation and muscle facilitation. Phonophoresis is the transfer of medication to the target tissue to control inflammation and pain through the use of sonic generators. These topical medications include, but are not limited to, steroidal anti-inflammatory and anesthetics.

- Time to produce effect: 4 to 8 treatments
- Frequency: 2-3 times per week
- Maximum duration: 18 visits

11. **Therapy–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 alleviating discomfort. Active therapy requires an internal effort by the individual to complete a specific exercise or task, and thus assists in developing skills promoting independence to allow self-care after discharge. This form of therapy requires supervision from a therapist or medical provider such as verbal, visual, and/or tactile instructions. At times a 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. Home exercise can include exercise with or without mechanical assistance or resistance and functional activities with assistive devices.

    Interventions are selected based on the complexity of the presenting dysfunction with ongoing examination, evaluation and modification of the plan of care as improvement or lack thereof occurs. Change and/or discontinuation of an intervention should occur if there is attainment of expected goals/ outcome, lack of progress, lack of tolerance and/or lack of motivation. Passive interventions/modalities may only be used as adjuncts to the active program.

    a. **Activities of Daily Living:** Supervised instruction, active-assisted training, and/or adaptation of activities or equipment to improve a person's capacity in normal daily living activities such as self-care, work re-integration training, homemaking, and driving.

- Time to produce effect: 4 to 5 treatments
- Maximum of 10 sessions

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

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

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

- Time to produce effect: 4 to 5 treatments
- Frequency: 3 to 5 times per week
- Maximum duration: 24 visits

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

c. **Functional Activities:** are the use of therapeutic activity to enhance mobility, body mechanics, employability, coordination, and sensory motor integration.

- Time to produce effect: 4 to 5 treatments
- Frequency: 3 to 5 times per week
- Maximum duration: 24 visits

Total number of visit 97110 and 97530 should not exceed 36 visits without pre-authorization

d. **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, coordination education of movement, balance, and posture. Indications include the need to promote neuromuscular responses through carefully timed proprioceptive stimuli, to elicit and improve motor activity in patterns similar to normal neurologically developed sequences, and improve neuromotor response with independent control.

- Time to produce effect: 2 to 6 treatments
- Frequency: 3-5 times per week
- Maximum duration: 24 visits

e. **Proper Work Techniques:** Please refer to the "Job Site Evaluation" and "Job Site Alteration" sections of these guidelines.

f. **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, increased range of motion, and are used to promote normal movement patterns. Can also include complementary/alternative exercise movement therapy.

- Time to produce effect: 2 to 6 treatments
- Frequency: 3-5 times per week
- Maximum duration: 36 visits

Total number of visit 97110 and 97530 should not exceed 36 visits without pre-authorization

12. **Restriction Of Activities** Continuation of normal daily activities is the recommendation for Cumulative Trauma Disorders with or 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 injured workers with CTD.

13. **Vocational Rehabilitation** is a generally accepted intervention. Initiation of vocational rehabilitation requires adequate evaluation of patients for quantification of highest functional level, motivation, and achievement of maximum medical improvement. Vocational rehabilitation may be as simple as returning to the original job or as complicated as being retrained for a new occupation.

G. Operative Treatment

THE FOLLOWING SURGICAL GUIDELINES ARE NOT INTENDED TO REPLACE THE SURGEON'S JUDGMENT.

Operative treatment may be indicated when the individual component diagnoses that make up CTD prove unresponsive to the full complement of non-operative options, including job site analysis and modification.. Physical exam findings should be well localized and consistent with the diagnosis. Severe neurologic findings are an exception to these indications, and may suggest earlier surgical intervention. Surgical results must anticipate objective functional gains and improved activities of daily living.

Surgery in CTD usually falls into two broad categories: peripheral nerve decompression and muscle or tendon sheath release or debridement. The treating surgeon must determine the appropriate procedure and timing for the individual case. The most common surgical procedures that are performed in CTD patients are listed below; other procedures may be indicated in certain cases.

Since CTD often involves several areas in an upper extremity, surgical treatment of one problem should be performed in conjunction with conservative treatment of other problems in the upper extremity.

1. **Peripheral Nerve Decompression** Surgery may be considered when findings on history and physical exam correlate specifically with the diagnosis being considered. Subjective complaints should be localized and appropriate to the diagnosis, neurologic complaints should be consistent with the nerve distribution in question, and physical exam findings should correlate with the history. Surgery may be considered as an initial therapy in situations where there is clinical and/or electrodiagnostic evidence of severe or progressive neuropathy. Objective evidence should be present in all cases in which surgery is contemplated. Objective evidence may include: electrodiagnostic (EDX) studies, diagnostic peripheral nerve block which eradicates the majority of the patient's symptoms, or a motor deficit commensurate with the suspected neurologic lesion. Refer to Physical Examination Findings (section D.2, physical examination) for objective diagnostic findings. Job modification should be considered prior to surgery. Refer to the "Job Site Alteration" section for additional information on job modification.

   When no objective evidence is present and the patient continues to have signs and symptoms consistent with the diagnosis after six months of conservative treatment including a psychological evaluation, a second opinion should be obtained before operative treatment is considered.

   Specific procedures and their indications are outlined below:

   a. **Median Nerve Decompression at the Wrist (carpal tunnel release):** Please refer to the Division's, Carpal Tunnel Syndrome Medical Treatment Guidelines.

   b. **Median Nerve Decompression in the Forearm (pronator teres or flexor digitorum superficialis release):** Please refer to Physical Examination Findings Table (section D.2, physical examination) Electrodiagnostic (EDX) studies may show delayed median nerve conduction in the forearm. If nerve conduction velocity is normal with suggestive clinical findings, the study may be repeated after a 3-6 month period of continued conservative treatment. If the study is still normal, the decision on treatment is made on the consistency of clinical findings and the factors noted above.

   c. **Ulnar Nerve Decompression at the Wrist (ulnar tunnel release or Guyon's canal release** Please refer to Physical Examination Findings Reference Table (section D.2, physical examination) Electrodiagnostic testing may confirm the diagnosis and differentiate from ulnar entrapment neuropathy at the elbow.

   d. **Ulnar Nerve Decompression/Transposition at the Elbow:** Please refer to Physical Examination Findings Reference Table (section D.2, physical examination) Electrodiagnostic studies (EDX) may indicate an ulnar neuropathy at the elbow. In general, patients with minimal symptoms or without objective findings of weakness tend to respond better to conservative treatment than patients with measurable pinch or grip strength weakness. If objective findings persist despite conservative treatment, surgical options include: simple decompression, medial epicondylectomy with decompression, anterior subcutaneous transfer, and submuscular or intramuscular transfer.

   e. **Sensory Nerve Decompression at the Wrist:** Please refer to Physical Examination Findings Reference Table (section D.2, physical examination) of these guidelines. Electrodiagnostic (EDX) studies can be useful in establishing a diagnosis but negative studies do not exclude the diagnosis

   f. **Radial Nerve Decompression at the Elbow:** Please refer to Physical Examination Findings Reference Table (section D.2, physical examination) Electrodiagnostic (EDX) studies are helpful when positive, but negative studies do not exclude the diagnosis.

g. **Thoracic Outlet Syndrome:** Please refer to the Division's Thoracic Outlet Syndrome Medical Treatment Guidelines.

2. **Tendon Decompression Or Debridement** Surgery may be considered when several months of appropriate treatment have failed, and findings on history and physical exam correlate specifically with the diagnosis being considered. Subjective complaints should be localized and appropriate to the diagnosis, and physical exam findings should correlate with the history. Refer to the Physical Examination Findings Table (section D.2, physical examination). Job modification should be considered prior to surgery. Refer to Job Site Alteration (Section F.4) for additional information on job modification.

Specific procedures and their indications are outlined below:

a. **Subacromial Decompression:** Please refer to the Division's Shoulder Injury Medical Treatment Guidelines.

b. **Medial or Lateral Epicondyle Release/Debridement:** Please refer to Physical Examination Findings Reference Table (section D.2, physical examination). It is generally accepted that 80% of cases improve with conservative therapy. Intermittent discomfort may recur over six months to one year after initial conservative treatment. Surgery should only be performed to achieve functional gains on those with significant ongoing impaired activities of daily living. X-rays may be normal or demonstrate spur formation over the involved epicondyle.

c. **First Extensor Compartment Release (de Quervain's Tenosynovitis):** Please refer to Physical Examination Findings Reference Table (section D.2, physical examination). Surgery should be performed to achieve functional gains on those with significant ongoing impaired activities of daily living.

d. **Trigger Finger/Thumb Release:** Please refer to Physical Examination Findings Reference Table (section D.2, physical examination). Surgery should be performed to achieve functional gains on those with significant ongoing impaired activities of daily living.

3. **Considerations For Post-operative Therapy**

a. **Immobilization:** Controlled mobilization, and/or formal physical/occupational therapy should begin as soon as possible following surgery at the discretion of the treating surgeon. Final decisions regarding the need for splinting post-operatively should be left to the discretion of the treating physician based upon his/her understanding of the surgical technique used and the specific conditions of the patient.

b. **Home Program:** It is generally accepted that all patients should receive a home therapy protocol involving stretching, ROM, scar care, and resistive exercises. Once they have been cleared for increased activity by the surgeon, patients should be encouraged to use the hand as much as possible for daily activities, allowing pain to guide their level of activity.

c. **Supervised Therapy Program:** may be helpful in patients who do not show functional improvements post-operatively or in patients with heavy or repetitive job activities. The therapy program may include some of the generally accepted elements of soft tissue healing and return to function:

i. Soft tissue healing/remodeling:

May be used after the incision has healed. It may include any of the following: evaluation, whirlpool, electrical stimulation, soft tissue mobilization, scar compression pad, heat/cold application, splinting or edema control may be used as indicated. Following wound healing, ultrasound and iontophoresis with sodium chloride (NaCl) may be considered for soft tissue remodeling. Diathermy is not an acceptable adjunct.

ii. Return to function:

Range of motion and stretching exercises, strengthening, activity of daily living adaptations, joint protection instruction, posture/body mechanics education. Job site modifications may be indicated.

- Time to produce effect: 2-4 weeks
- Frequency: 2-5 times/week
- Maximum duration: 36 visits

Low Back Treatment Guidelines

A. Introduction

Pursuant to 19 **Del.C**. §2322C, health care practice guidelines have been adopted and recommended by the Health Care Advisory Panel to guide utilization of health care treatments in workers' compensation including, but not limited to, care provided for the treatment of employees by or under the supervision of a licensed health care provider, prescription drug utilization, inpatient hospitalization and length of stay, diagnostic testing, physical therapy, chiropractic care and palliative care. The health care practice guidelines apply to all treatments provided after the effective date of the regulation adopted by the Department of Labor, May 23, 2008, and regardless of the date of injury.

The guidelines are, to the extent permitted by the most current medical science or applicable science, based on well-documented scientific research concerning efficacious treatment for injuries and occupational disease. To the extent that well-documented scientific research regarding the above is not available at the time of adoption of the guidelines, or is not available at the time of any revision to the guidelines, the guidelines have been and will be based upon the best available information concerning national consensus regarding best health care practices in the relevant health care community.

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

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

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

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

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

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

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

B. General Guideline Principles

1. **Treatment Parameter** With respect to Therapy (Active or Passive), time frames/visits for specific interventions commence once treatments have been initiated, not on the date of injury. Obviously, duration will be impacted by patient compliance, as well as comorbitities and availability of services. Clinical judgment may substantiate the need to accelerate or decelerate modify the time frames total number of visits discussed in this document. The majority of injured workers with low back pain often will achieve resolution of their condition within

8 to 24 visits (Guide to Physical Therapy Practice – Second Edition). It is anticipated that most injured workers will not require the maximum number of visits described in these guidelines. They are designed to be a ceiling and care extending beyond the maximum allowed visits may warrant utilization review.

2. **Active Interventions** emphasizing patient responsibility, such as therapeutic exercise and/or functional treatment, are generally emphasized over passive modalities, especially as treatment progresses. Generally, passive interventions are viewed as a means to facilitate progress in an active rehabilitation program with concomitant attainment of objective functional gains. All rehabilitation programs must incorporate "Active Interventions" no later than twelve visits three weeks after the onset of treatment. Reimbursement for passive modalities only after the first twelve visits three weeks of treatment without clear evidence of Active Interventions will require supportive documentation.

3. **Active Therapeutic Exercise Program** goals should incorporate patient strength, endurance, flexibility, coordination, and education. This includes functional application in vocational or community settings.

4. **Positive Patient Response** results are defined primarily as functional gains that can be objectively measured. Objective functional gains include, but are not limited to, positional tolerances, range of motion (ROM), strength, endurance, activities of daily living, cognition, behavior, and efficiency/velocity measures that can be quantified. Subjective reports of pain and function should be considered and given relative weight when the pain has anatomic and physiologic correlation.

5. **Re-evaluate Treatment Every 3 To 4 Weeks** With respect to Therapy (Active or Passive), if a given treatment or modality is not producing positive results within 3 to 4 weeks, the treatment may be either modified or discontinued. Reconsideration of diagnosis should also occur in the event of poor response to a seemingly rational intervention.

6. **Surgical Interventions** 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 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 conditions.

7. **Six-month Time Frame** The prognosis drops precipitously for returning an injured worker to work once he/she has been temporarily totally disabled for more than six months. The emphasis within these guidelines is to move patients along a continuum of care and return to work within a six-month time frame, whenever possible. It is important to note that time frames may not be pertinent to injuries that do not involve work-time loss or are not occupationally related.

8. **Return-to-work** Is therapeutic, assuming the work is not likely to aggravate the basic problem or increase long-term pain. The following physical limitations should be considered and modified as recommended: lifting, pushing, pulling, crouching, walking, using stairs, bending at the waist, awkward and/or sustained postures, tolerance for sitting or standing, hot and cold environments, data entry and other repetitive motion tasks, sustained grip, tool usage and vibration factors. Even if there is residual chronic pain, return-to-work is not necessarily contraindicated.

The practitioner should understand all of the physical demands of the patient's job position before returning the patient to full duty and should receive clarification of the patient's job duties.

9. **Guideline Recommendations and Inclusion of Medical Evidence** Recommendations are based on available evidence and/or consensus recommendations of the standard of care within Delaware. **Those procedures considered inappropriate, unreasonable, or unnecessary are designated in the guideline as being "not recommended."**

10. **Delayed Recovery** The Department recognizes that not of all industrially injured patients will not recover within the timelines outlined in this document despite optimal care. Such individuals may require treatments beyond the limits discussed within this document, but such treatment will require clear documentation by the authorized treating practitioner focusing on objective functional gains afforded by further treatment and impact upon prognosis.

11. **Care Beyond Maximum Medical Improvement (Mmi)** should be declared when a patient's condition has plateaued to the point where the authorized treating physician no longer believes further medical intervention is likely to result in improved function. However, some patients may require treatment after MMI has been declared in order to maintain their functional state. The recommendations in this guideline are for pre-MMI care and are not intended to limit post-MMI treatment.

The remainder of this document should be interpreted within the parameters of these guideline

principles that may lead to more optimal medical and functional outcomes for injured workers.

C. Initial Diagnostic Procedures

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

1. **History-taking and Physical Examination (Hx & PE)** are generally accepted, well-established and widely used procedures that establish the foundation/basis for and dictates subsequent stages of diagnostic and therapeutic procedures. When findings of clinical evaluations and those of other diagnostic procedures are not complementing each other, the objective clinical findings should have preference. The medical records should reasonably document the following.

a. **History of Present Injury A** detailed history, taken in temporal proximity to the time of injury should primarily guide evaluation and treatment.

b. **Past History:**

c. **Physical Examination:** Should include accepted tests and exam techniques applicable to the area being examined.

2. **Radiographic Imaging** of the lumbosacral spine is a generally accepted, well-established and widely used diagnostic procedure when specific indications based on history and/or physical examination are present. There is some evidence that early radiographic imaging without clear indications is associated with prolonged care, but no difference in functional outcomes. Therefore, it should not be routinely performed without indications. The mechanism of injury and specific indications for the radiograph should be listed on the request form to aid the radiologist and x-ray technician. Suggested indications may include:

a. History of significant trauma, especially blunt trauma or fall from a height;

b. Age over 55 years;

c. Unexplained or persistent low back pain for at least 6 weeks or pain that is worse with rest;

d. Localized pain, fever, constitutional symptoms, or history or exam suggestive of intravenous drug abuse, prolonged steroid use, or osteomyelitis;

e. Suspected lesion in the lumbosacral spine due to systemic illness such as a rheumatic/ rheumatoid disorder or endocrinopathy. Suspected lesions may require special views;

f. Past medical history suggestive of pre-existing spinal disease, osteoporosis, spinal instrumentation, or cancer; and

g. Prior to high-velocity/low amplitude manipulation or Grade IV to V mobilization.

3. **Laboratory Testing** Laboratory tests are generally accepted**,** well-established and widely used procedures. They are, however, rarely indicated at the time of initial evaluation, unless there is suspicion of systemic illness, infection, neoplasia, or underlying rheumatologic disorder, connective tissue disorder, or based on history and/or physical examination. Laboratory tests can provide useful diagnostic information. Tests include, but are not limited to:

a. Complete blood count (CBC) with differential can detect infection, blood dyscrasias, and medication side effects;

b. Erythrocyte sedimentation rate (ESR), rheumatoid factor (RF), antinuclear antigen (ANA), human leukocyte antigen (HLA), and C-reactive protein (CRP), can be used to detect evidence of a rheumatologic, infectious, or connective tissue disorder;

c. Serum calcium, phosphorous, uric acid, alkaline phosphatase, and acid phosphatase can detect metabolic bone disease;

d. Urinalysis for bacteria (usually with culture and sensitivity), calcium, phosphorus, hydroxyproline, or hematuria; and

e. Liver and kidney function may be performed for prolonged anti-inflammatory use or other medications requiring monitoring.

D. Follow-up Diagnostic Imaging and Testing Procedures

One diagnostic imaging procedure may provide the same or distinctive information as does another procedure. Therefore, the prudent choice of a single diagnostic procedure, a complement of procedure**s** or a sequence of procedures will optimize diagnostic accuracy; maximize cost effectiveness (by avoiding redundancy),

and minimize potential adverse effects to patients.

All imaging procedures have a degree of specificity and sensitivity for various diagnoses. No isolated imaging test can assure a correct diagnosis. Clinical information obtained by history taking and physical examination should form the basis for selecting an imaging procedure and interpreting its results.

Magnetic resonance imaging (MRI), myelography, or Computed Axial Tomography (CT) scanning following myelography may provide useful information for many spinal disorders. When a diagnostic procedure, in conjunction with clinical information, can provide sufficient information to establish an accurate diagnosis, the second diagnostic procedure will become a redundant procedure. At the same time, a subsequent diagnostic procedure can be a complementary diagnostic procedure if the first or preceding procedures, in conjunction with clinical information, cannot provide an accurate diagnosis. Usually, preference of a procedure over others depends upon availability, a patient's tolerance**,** and/or the treating practitioner's familiarity with the procedure.

1. **Imaging Studies** are generally accepted, well-established and widely used diagnostic procedures. In the absence of myelopathy**,** or progressive neurological changes, or neurologic deficit, or history of cancer, imaging usually is not appropriate until conservative therapy has been tried and failed. Four to six weeks of treatment are usually an adequate period of time before an imaging procedure is in order, but the clinician should use judgment in this regard. When indicated, imaging studies can be utilized for further evaluation of the low back, based upon the mechanism of injury, symptoms, and patient history. Prudent choice of a single diagnostic procedure, a complementary combination of procedures, or a proper sequential order of complementary procedures will help ensure maximum diagnostic accuracy and minimize adverse effect to the patient. When the findings of the diagnostic imaging and testing procedures are not consistent with the clinical examination, the clinical findings should have preference.

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

a. **Magnetic Resonance Imaging (MRI):** is rarely indicated in patients with non-traumatic acute low back pain with no neuropathic signs or symptoms. It is generally the first follow-up imaging study in individuals who respond poorly to proper initial conservative care. MRI is useful in suspected nerve root compression, myelopathy, masses, infections, metastatic disease, disc herniation, annular tear, and cord contusion. MRI is contraindicated in patients with certain implants.

In general, the high field, conventional, MRI provides better resolution. A lower field scan may be indicated when a patient cannot fit into a high field scanner or who is too claustrophobic despite sedation. Inadequate resolution on the first scan may require a second MRI using a different technique.

b. **Computed Axial Tomography (CT)** provides excellent visualization of bone and is used to further evaluate bony masses and suspected fractures and joints not clearly identified on radiographic evaluation. It may sometimes be done as a complement to MRI scanning to better delineate bony osteophyte formation in the neural foramen. Instrument-scatter reduction software provides better resolution when metallic artifact is of concern.

c. **Myelography** is the injection of radiopaque material into the spinal subarachnoid space**,** with x-rays then taken to define anatomy. It may be used as a pre-surgical diagnostic procedure to obtain accurate information of characteristics, location, and spatial relationships among soft tissue and bony structures. The use of small needles and a less toxic, water-soluble, nonionic contrast is recommended.

d. **CT Myelogram** provides more detailed information about relationships between neural elements and surrounding anatomy.

e. **Lineal Tomography** is infrequently used, yet may be helpful in the evaluation of bone surfaces, bony fusion, or pseudoarthrosis.

f. **Bone Scan (Radioisotope Bone Scanning)** is generally accepted, well established, and widely used. Bone scanning is more sensitive but less specific than MRI. ^{99m}Technetium diphosphonate uptake reflects osteoblastic activity and may be useful in diagnosing metastatic/primary bone tumors, stress fractures, osteomyelitis, and inflammatory lesions, but cannot distinguish between these entities.

g. **Other Radioisotope Scanning:** Indium and gallium scans are generally accepted, well-established, and widely used procedures usually to help diagnose lesions seen on other diagnostic imaging studies. ^{67}Gallium citrate scans are used to localize tumor, infection, and abscesses. ^{111}Indium-labeled leukocyte scanning is utilized for localizing infection or inflammation.

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. Currently it is not recommended for use in the diagnosis of lumbar instability, since there is limited information on normal segmental motion for the age groups commonly presenting with low back pain, and diagnostic criteria for specific spinal conditions are not yet defined. No studies have yet demonstrated predictive value in terms of standard operative and non-operative therapeutic outcomes.

2. **Other Tests** The following diagnostic procedures in this subsection are listed in alphabetical order, not by importance:

a. **Electrodiagnostic Testing:**

i. **Electromyography (EMG), Nerve Conduction Studies (NCS)** These are generally accepted, well-established and widely used diagnostic procedures. EMG and NCS, when performed and interpreted by a trained physician/electrophysiologist, may be useful for patients with suspected neural involvement whose symptoms are persistent or unresponsive to initial conservative treatments. They are used to differentiate peripheral neural deficits from radicular and spinal cord neural deficits and to rule out concomitant myopathy. However, F-Wave Latencies are not diagnostic for radiculopathy.

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

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

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

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

v. **Large Array Surface Electromyography** measures low back muscle activity using a fixed array of 63 electrodes arranged in 9 rows and 7 columns between the seventh thoracic spinous process and the iliac crest. The array simultaneously collects myoelectric data from multifidus, iliocostalis, quadratus lumborum, and other lumbar muscles, which is analyzed for patterns of activity in these muscle groups. It is used in researching physiologic changes and adaptations to back pain, but is not recommended as a diagnostic procedure for individuals with back pain due to a lack of interpretive standards.

vi **Surface EMG in combination with Range of Motion and/or Functional Capacity Evaluation**

This is designed to detect differences between persons with and without low back pain, measuring signals in lumbar flexion which show that painful paraspinal muscles fail to relax fully. It may show aspects of the pathophysiology of muscle activity which advance the scientific understanding of low back pain. The test also purports to determine the significance of disc pathology and the age of an injury. It has not been evaluated in a setting which tests a spectrum of patients commonly seen in clinical practice, using an interpretation which is tested against a diagnostic reference standard. Therefore, it is not suitable as a diagnostic test for low back pain and its use for this purpose is not recommended.

b. **Injections — Diagnostic**

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

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

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

diagnose low back pain.

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

iv. Special Requirements for Diagnostic Injections æ Since multi-planar fluoroscopy during procedures is required to document technique and needle placement**,** an experienced physician should perform the procedure. Permanent images are required to verify needle placement. The subspecialty disciplines of the physicians performing the injections may be varied, including, but not limited to: anesthesiology, radiology, surgery, or physiatry. The practitioner should document hands-on training through workshops of the type offered by organizations such as the International Spine Intervention Society (ISIS) and**/**or completed fellowship training with interventional training. They must also be knowledgeable in radiation safety.

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

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

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

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

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

C) Zygapophyseal (Facet) Blocks:

Facet blocks are generally accepted.

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

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

D) Sacroiliac Joint Injection:

1) Description æ A generally accepted Injection of local anesthetic in an intra-articular fashion into the sacroiliac joint under fluoroscopic guidance. Long-term therapeutic effect has not yet been established.

2) Indications - Primarily diagnostic to rule out sacroiliac joint dysfunction versus other pain generators. Intra-articular injection can be of value in diagnosing the pain generator. There should be documented at least 50% pain relief (as measured by accepted pain scales such as a VAS)

Frequency and Maximum Duration:

May be repeated for confirmation.

c. Provocation Discography:

i. Description - Discography is an accepted diagnostic procedure to identify or refute a discogenic source of pain for patients who are surgical candidates. Discography should only be performed by physicians who are experienced and have been proctored in the technique. It is essential that all indications, pre-conditions, special considerations, procedures, reporting requirements, and results are carefully and specifically followed. Results should be interpreted judiciously.

ii. Indications - Discography may be indicated when a patient has a history of functionally limiting, unremitting low back pain of greater than four months duration, with or without leg pain, which

has been unresponsive to all conservative interventions. A patient who would not consider operative therapeutic intervention is not a candidate for an invasive non-therapeutic intervention, such as provocation discography.

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

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

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

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

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

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

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

iv. Special Considerations:

A) Discography should not be performed by the physician expected to perform the therapeutic procedure. The procedure should be carried out by an experienced individual who has received specialized training in the technique of provocation discography.

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

C) Sterile technique must be utilized.

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

E) The discography should be performed using a manometer to record pressure.

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

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

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

When discography is performed to identify the source of a patient's low-back pain, both a concordant pain response and morphological abnormalities must be present at the pathological level prior to

initiating any treatment directed at that level. The patient must be awake during the provocation phase of the procedure; therefore, sedative medication must be carefully titrated.

A) Reporting disc morphology as visualized by the post-injection CT scan (when available) should follow the Modified Dallas Discogram Scale where:

Grade 0 = Normal Nucleus

Grade 1 = Annular tear confined to inner one-third of annulus fibrosis.

Grade 2 = Annular tear extending to the middle third of the annulus fibrosis.

Grade 3 = Annular tear extending to the outer one-third of the annulus fibrosis.

Grade 4 = A grade 3 tear plus dissection within the outer annulus to involve more than 30× of the disc circumference.

Grade 5 = Full thickness tear with extra-annular leakage of contrast, either focal or diffuse.

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

1) Unequivocal Discogenic Pain

Stimulation of the target disc reproduces concordant pain
The pain is registered as at least 6 on a 10-point VAS.
The pain is reproduced at a pressure of less than 15 psi above opening pressure; and
Stimulation of two adjacent discs does not produce pain at all

2 Definite Discogenic Pain

Stimulation of the target disc reproduces concordant pain
The pain is registered as at least 6 on a 10-point VAS.
The pain is reproduced at a pressure of less than 15 psi above opening pressure; and
Stimulation of at least one adjacent disc does not produce pain at all

3) Highly Probable Discogenic Pain

Stimulation of the target disc reproduces concordant pain
That pain is registered as at least 6 on a 10-point VAS.
That the pain is reproduced at a pressure of less than 50 psi above opening pressure; and
Stimulation of two adjacent discs does not produce pain at all

4) Probable Discogenic Pain

Stimulation of the target disc reproduces concordant pain
That pain is registered as at least 6 on a 10-point VAS.
The pain is reproduced at a pressure of less than 50 psi above opening pressure; and
Stimulation of one adjacent disc does not produce pain at all, and stimulation of another adjacent discs at greater than 50 psi, produces pain, but the pain is not concordant.

Multiple combinations of factors are possible. However, if the patient does not qualify for at least a 'Probable Discogenic Pain' level, then the discogram should probably be considered negative. The VAS score prior to the discogram should be taken into account when interpreting the VAS score reported by the patient during the discogram.

e. **Thermography:** is an accepted and established procedure, but has no use as a diagnostic test for low back pain and is not recommended.

E. Therapeutic Procedures — Non-operative

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

Cessation and/or review of treatment modalities should be undertaken when no further significant subjective or objective improvement in the patient's condition is noted. If patients are not responding within the recommended duration periods, alternative treatment interventions, further diagnostic studies or consultations should be pursued.

Providers should provide and document education to the patient. No treatment plan is complete without addressing issues of individual and/or group patient education as a means of facilitating self-management of symptoms.

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

The following procedures are listed in alphabetical order.

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

a. **Acupuncture:** is the insertion and removal of filiform needles to stimulate acupoints (acupuncture points). Needles may be inserted, manipulated, and retained for a period of time. Acupuncture can be used to reduce pain, reduce inflammation, increase blood flow, increase range of motion, decrease the side effect of medication-induced nausea, promote relaxation in an anxious patient, and reduce muscle spasm.

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

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

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

c. **Total Time Frames For Acupuncture and Acupuncture with Electrical**

Stimulation: Time frames are not meant to be applied to each of the above sections separately. The time frames are to be applied to all acupuncture treatments regardless of the type or combination of therapies being provided.

- Time to produce effect: 3 to 6 treatments
- Frequency: 1 to 3 times per week
- Maximum course duration: 14 treatments (one course)

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

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

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

Treatment is individualized to the patient's work-related diagnosis and needs. Home practice of skills is required for mastery and may be facilitated by the use of home training tapes. The ultimate goal of biofeedback treatment is to normalize physiology to the pre-injury status to the extent possible**,** and involves transfer of learned skills to the workplace and daily life. Candidates for biofeedback therapy or training must be motivated to learn and practice biofeedback and self-regulation techniques.

Indications for biofeedback include individuals who are suffering from musculoskeletal injury in which muscle dysfunction or other physiological indicators of excessive or prolonged stress response affects and/or delays recovery. Other applications include training to improve self-management of emotional stress/pain responses such as anxiety, depression, anger, sleep disturbance, and other central and autonomic nervous system imbalances. Biofeedback is often used in conjunction with other treatment modalities.

- Time to produce effect: 3 to 4 visits
- Frequency: 1 to 2 times per week
- Maximum duration: 10 to 12 visits. Treatment beyond 12 visits must be documented with respect to need, expectation, and ability to facilitate positive functional gains.

3. Injections — Therapeutic

a. Therapeutic Spinal Injections:

Description - Therapeutic spinal injections may be used after initial conservative treatments have been undertaken. Therapeutic injections should be used only after imaging studies and/or diagnostic injections have established pathology**.**

Special Considerations - For all injections (excluding trigger point), multi-planar fluoroscopic guidance during procedures is required to document technique and needle placement, and should be performed by a physician experienced in the procedure. Permanent images are required to verify needle replacement. The subspecialty disciplines of the physicians performing injections may be varied, including, but not limited to: anesthesiology, radiology, surgery, or physiatry. The practitioner should document hands-on training through workshops of the type offered by organizations such as the International Spine Intervention Society (ISIS) and/or completed fellowship training in pain medicine with interventional training. They must also be knowledgeable in radiation safety.

i. Epidural Steroid Injection (ESI)

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

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

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

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

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

ii. Zygapophyseal (Facet) Injection

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

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

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

iii. Sacroiliac Joint Injection:

A) Description - A generally accepted injection of local anesthetic in an intra-articular fashion into the sacroiliac joint under radiographic guidance. May include the use of corticosteroids. Long-term therapeutic effect has not yet been established.

B) Indications - Primarily diagnostic to rule out sacroiliac joint dysfunction vs. other pain generators. Intra-articular injection can be of value in diagnosing the pain generator. These injections may be repeated if they result in increased documented functional benefit for at least 6 weeks and/or at least an 50% initial improvement in pain scales as measured by accepted pain scales (such as VAS).

Maximum duration: 4 injections per year.

iv. Intradiscal Steroid Therapy:

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

b. <u>Radio Frequency Medial Branch Neurotomy/facet rhizotomy:</u>

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

There is good evidence to support Radio Frequency Medial Branch Neurotomy in the cervical spine but benefits beyond one year are not yet established. Evidence in the lumbar spine is conflicting**;** however, the procedure is generally accepted. In one study, 60% of patients maintained at least 90% pain relief at 12 months. Radio-frequency–Medial Branch Neurotomy is the procedure of choice over alcohol, phenol, or cryoablation. Precise positioning of the probe using fluoroscopic guidance is required. Permanent images should be recorded to verify placement of the device.

ii. Indications - Those patients with significant, facetogenic pain.

Individuals should have met all of the following indications: Pain of well-documented facet origin, unresponsive to active and/or passive therapy. It is generally recommended that this procedure not be performed until three months of conservative therapy have been completed. All patients should continue appropriate exercise with functionally directed rehabilitation. Active treatment, which patients will have had prior to the procedure, will frequently require a repeat of the sessions previously ordered.

All patients should have a successful response to a diagnostic medial

nerve branch block and a separate comparative block. To be a positive diagnostic block the patient should report a reduction of pain of 50% or greater from baseline for the length of time appropriate for the local anesthetic used. It is suggested that this be recorded on a form.

A separate comparative block on a different date may be performed to confirm the level of involvement. A comparative block uses anesthetics with varying lengths of activity.

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

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

c. **Sacro-iliac (SI) Joint Radiofrequency Denervation:** is a denervation of the SI joint. This procedure is not recommended.

d. **Trigger Point Injections and Dry Needling Treatment:**

i. Description - Trigger point injections are a generally accepted treatment. Trigger point treatment can consist of dry needling or injection of local anesthetic, with or without corticosteroid, into highly localized, extremely sensitive bands of skeletal muscle fibers that produce local and referred pain when activated. Injection efficacy may be enhanced if injections are immediately followed by myofascial therapeutic interventions, such as vapo-coolant spray and stretch, ischemic pressure massage (myotherapy), specific soft tissue mobilization and physical modalities. A truly blinded study comparing dry needle treatment of trigger points is not feasible. There is no evidence that injection of medications improves the results of trigger-point injections. Needling alone may account for some of the therapeutic response.

There is no indication for conscious sedation for patients receiving trigger point injections. The patient must be alert to help identify the site of the injection.

ii. Indications æ Trigger point injections may be used to relieve myofascial pain and facilitate active therapy and stretching of the affected areas. They are to be used as an adjunctive treatment in combination with other treatment modalities such as functional restoration programs. Trigger point injections should be utilized primarily for the purpose of facilitating functional progress. Patients should continue in therapeutic exercise program as tolerated throughout the time period they are undergoing intensive myofascial interventions. Myofascial pain is often associated with other underlying structural problems and any abnormalities need to be ruled out prior to injection.

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

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

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

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

There are conflicting studies concerning the effectiveness of Prolotherapy in the low back. Lasting functional improvement has not been shown. The injections are invasive, may be painful to the patient, and are not generally accepted or widely used. Therefore, the use of Prolotherapy for low back pain is not recommended.

f. **Epiduroscopy and Epidural Lysis of Adhesions:** is an investigational treatment of low back pain. It involves the introduction of a fiberoptic endoscope into the epidural space via the sacral hiatus. With cephalad advancement of the endoscope under direct visualization, the epidural space is irrigated with saline. Adhesiolysis may be done mechanically with a fiberoptic endoscope. The saline irrigation is performed with or

without epiduroscopy and is intended to distend the epidural space in order to obtain an adequate visual field. It is designed to produce lysis of adhesions, which are conjectured to produce symptoms due to traction on painful nerve roots. Saline irrigation is associated with risks of elevated pressures which may impede blood flow and venous return, possibly causing ischemia of the cauda equina and retinal hemorrhage.

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

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

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

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

The following are listed in alphabetical order:

a. **Acetaminophen**: is an effective analgesic with antipyretic but not anti-inflammatory activity. Acetaminophen is generally well tolerated, causes little or no gastrointestinal irritation, and is not associated with ulcer formation. Acetaminophen has been associated with liver toxicity in overdose situations or in chronic alcohol use. Patients may not realize that many over-the-counter preparations may contain acetaminophen. The total daily dose of acetaminophen is recommended not to exceed 4 grams per 24-hour period, from all sources, including narcotic-acetaminophen combination preparations.

b. **Muscle Relaxants:** are appropriate for muscle spasm with pain. There is strong evidence that muscle relaxants are more effective than placebo for providing short-term pain relief in acute low back pain. When prescribing these agents, physicians must seriously consider side effects of drowsiness or dizziness and the fact that benzodiazepines may be habit-forming

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

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

d. **Nonsteroidal Anti-Inflammatory Drugs (NSAIDs):** are useful for pain and inflammation. In mild cases, they may be the only drugs required for analgesia. There are several classes of NSAIDs, and the response of the individual injured worker to a specific medication is unpredictable. For this reason, a range of NSAIDs may be tried in each case with the most effective preparation being continued. Patients should be closely monitored for adverse reactions. Naproxen sodium does not appear to be associated with increased risk of vascular events. Administration of proton pump inhibitors, Histamine 2 Blockers or prostaglandin analog misoprostol along with these NSAIDs may reduce the risk of duodenal and gastric ulceration. Intervals for metabolic screening are dependent upon the patient's age, general health status and should be within parameters listed for each specific medication. Complete Blood Count (CBC), and liver and renal function should be monitored in patients on chronic NSAIDs and initially when indicated.

i. Selective Cyclo-oxygenase-2 (COX-2) Inhibitors

COX-2 inhibitors are more recent NSAIDs and differ in adverse side effect profiles from the traditional NSAIDs. The major advantages of selective COX-2 inhibitors over traditional NSAIDs are that they have less gastrointestinal toxicity and no platelet effects.

COX-2 inhibitors should not be first-line for low risk patients who will be using an NSAID short term but are indicated in select patients for whom traditional NSAIDs are not tolerated.

Serious upper GI adverse events can occur even in asymptomatic patients. Patients at high risk for GI bleed include those who use alcohol, smoke, are older than 65, take corticosteroids or anti-coagulants, or have a longer duration of therapy.

e. **Psychotropic/Anti-anxiety/Hypnotic Agents:** may be useful for treatment of mild and chronic pain, dysesthesias, sleep disorders, and depression. Antidepressant medications, such as tricyclics and Selective Serotonin Reuptake Inhibitors (SSRIs), are useful for affective disorder and chronic pain management. Tricyclic antidepressant agents, in low dose, are useful for chronic pain.

Anti-anxiety medications should generally be limited to short-term use. Combinations of the above agents may be useful.

As a general rule, physicians should access the patient's prior history of substance abuse or depression prior to prescribing any of these agents. Due to the habit-forming potential of the benzodiazepines and other drugs found in this class, they are not routinely recommended.

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

5. **Occupational Rehabilitation Programs**

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

i. Work Conditioning/Simulation

This program may begin once a patient is out of the acute phase of injury and will be able to tolerate this program.

These programs are usually initiated after the acute phase has been completed and offered at any time throughout the recovery phase. Work conditioning should be initiated when imminent return of a patient to modified or full duty is not an option, but the prognosis for returning the patient to work at completion of the program is at least fair to good.

The need for work place simulation should be based upon the results of a Functional Capacity Evaluation and/or Jobsite Analysis.

Length of visit: 1 to 4 hours per day.

Frequency: 2 to 5 visits per week

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

ii. Work Hardening

Work Hardening is an interdisciplinary program addressing a patient's employability and return to work. It includes a progressive increase in the number of hours per day that a patient completes work simulation tasks until the patient can tolerate a full workday. This is accomplished by addressing the medical, behavioral, physical, functional, and vocational components of employability and return-to-work.

This can include a highly structured program involving a team approach or can involve any of the components thereof. The interdisciplinary team should, at a minimum, be comprised of a qualified medical director who is board certified with documented training in occupational rehabilitation; team physicians having experience in occupational rehabilitation; occupational therapist; physical therapist; case manager; and psychologist. As appropriate, the team may also include: chiropractor, RN, vocational specialist or Certified Biofeedback Therapist**.**

Length of visit: Up to 8 hours/day

Frequency: 2 to 5 visits per week

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

ii. Spinal Cord Programs

Spinal Cord Systems of Care provide coordinated, case-managed, and

integrated service for people with spinal cord dysfunction, whether due to trauma or disease. The system includes an inpatient component in an organization licensed as a hospital and an outpatient component. Each component endorses the active participation and choice of the persons served throughout the entire program. The Spinal Cord System of Care also provides or formally links with key components of care that address the lifelong needs of the persons served.

This can include a highly structured program involving a team approach or can involve any of the components thereof. The interdisciplinary team should, at a minimum, be comprised of a qualified medical director who is board certified and trained in rehabilitation, a case manager, occupational therapy, physical therapy, psychologist, rehabilitation RN and MD, and therapeutic recreation specialist. As appropriate, the team may also include: rehabilitation counselor, respiratory therapist, social worker, or speech-language pathologist.

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

6. Orthotics

a. Foot Orthoses and Inserts: are accepted interventions for spinal disorders that are due to aggravated mechanical abnormalities, such as leg length discrepancy, scoliosis, or lower extremity misalignment. Shoe insoles or inserts may be effective for patients with acute low back problems who stand for prolonged periods of time.

b. Lumbar Support Devices: include backrests for chairs and car seats. Lumbar supports may provide symptomatic relief of pain and movement reduction in cases of chronic low back problems.

c. Lumbar Corsets and Back Belts: The injured worker should be advised of the potential harm from using a lumbar support for a period of time greater than that which is prescribed. Harmful effects include de-conditioning of the trunk musculature, skin irritation, and general discomfort.

d. Lumbosacral Bracing: Rigid bracing devices are well accepted and commonly used for post-fusion, scoliosis, and vertebral fractures.

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

Time to produce effect: Varies with individual patient

Frequency: Should occur at every visit.

8. Restriction of Activities Continuation of normal daily activities is the recommendation for acute and chronic low back pain without neurologic symptoms. There is good evidence against the use of bed rest in cases without neurologic symptoms. Bed rest may lead to de-conditioning and impair rehabilitation. Modified return-to-work is almost always more efficacious and rarely contraindicated in the vast majority of injured workers with low back pain.

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

Employers should be prepared to offer transitional work. This may consist of temporary work in a less demanding position, return to the regular job with restrictions, or gradual return to the regular job. Company policies which encourage return-to-work with positive communication are most likely to have decreased worker disability. This may require a jobsite evaluation. When an appropriate a Jobsite Analysis may be necessary.

Return-to-work is defined as any work or duty that the patient is able to perform safely. It may not be the patient's regular work. Due to the large spectrum of injuries of varying severity and varying physical demands in the work place, it is not possible to make specific return-to-work guidelines for each injury.

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 — Passive** Most of the following passive therapies and modalities are generally accepted methods of care for a variety of work-related injuries. Passive therapy includes those treatment modalities that do not require energy expenditure on the part of the patient. They are principally effective during the early phases of treatment and are directed at controlling symptoms such as pain, inflammation and swelling and to improve the rate of healing soft tissue injuries. They should be used adjunctively with active therapies such as postural stabilization and exercise programs to help control swelling, pain, and inflammation during the active rehabilitation process. Please refer to Section B. 4. General Guideline Principles, Active Interventions. Passive therapies may be used intermittently as a therapist deems appropriate or regularly if there are specific goals with objectively measured functional improvements during treatment.

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

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

The following passive therapies are listed in alphabetical order:

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

Time to produce effect: 2 to 4 treatments
Maximum duration: 24 visits

b. **Iontophoresis:** is an accepted treatment which consists of the transfer of medication, including, but not limited to, steroidal anti-inflammatories and anesthetics, through the use of electrical stimulation. Indications include pain (Lidocaine), inflammation (hydrocortisone, salicylate), edema (mecholyl, hyaluronidase, salicylate), ischemia (magnesium, mecholyl, iodine), muscle spasm (magnesium, calcium), calcific deposits (acetate), scars, and keloids (sodium chloride, iodine, acetate). There is no proven benefit for this therapy in the low back.

Time to produce effect: 1 to 4 treatments
Frequency: 3 times per week with at least 48 hours between treatments
Maximum duration: 8 visits per body region

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

High velocity, low amplitude (HVLA) technique, chiropractic manipulation, osteopathic manipulation, muscle energy techniques, counter strain, and non-force techniques are all types of manipulative treatment. This may be applied by osteopathic physicians (D.O.), chiropractors (D.C.), properly trained physical therapists (P.T.), or properly trained medical physicians. Under these different types of manipulation exist many subsets of different techniques that can be described as a) direct- a forceful engagement of a restrictive/pathologic barrier, b) indirect- a gentle/non-forceful disengagement of a restrictive/pathologic barrier, c) the patient actively assists in the treatment and d) the patient relaxing, allowing the practitioner to move the body tissues. When the proper diagnosis is made and coupled with the appropriate technique, manipulation has no contraindications and can be applied to all tissues of the body. Pre-treatment assessment should be performed as part of each manipulative treatment visit to ensure that the correct diagnosis and correct treatment is employed.

High velocity, low amplitude (HVLA) manipulation is performed by taking a joint to its end range of motion and moving the articulation into the zone of accessory joint movement, well within the limits

of anatomical integrity. Indications for manipulation include joint pain, decreased joint motion, and joint adhesions. Contraindications to HVLA manipulation include joint instability, fractures, severe osteoporosis, infection, metastatic cancer, active inflammatory arthritides, aortic aneurysm, and signs of progressive neurologic deficits.

- Time to produce effect for all types of manipulative treatment: 1 to 6 treatments.
- Frequency: Up to 3 times per week for the first 4 weeks as indicated by the severity of involvement and the desired effect, then up to 2 treatments per week for the next 4 weeks. For further treatments, twice per week or less to maintain function.
- Maximum duration: 30 visits. Extended durations of care beyond what is considered "maximum" may be necessary in cases of re-injury, interrupted continuity of care, exacerbation of symptoms, and in those patients with comorbidities. Refer to the Chronic Pain Guidelines for care beyond 6 months.

The combination of 97140 plus either CMT or OMT code is equal to one visit when performed on the same day. Any combination of manual therapeutic intervention exceeding 30 visits (not units) need to go to UR.

i. Mobilization (Joint) /Manipulation

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

- Time to produce effect: 4 to 6 treatments
- Frequency: 2 to 3 times per week
- Maximum duration: 30 visits (CPT codes 97124 and 97140 can not exceed 30 visits in combination).

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

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

Time to produce effect: Immediate

Frequency: 1 to 3 times per week

Maximum duration: 12 visits (CPT codes 97124 and 97140 can not exceed 48 visits in combination).

e. **Mobilization (Joint):** is a generally well-accepted treatment. Mobilization is passive movement involving oscillatory motions to the vertebral segment(s). The passive mobility is performed in a graded manner (I, II, III, IV, or V), which depicts the speed and depth of joint motion during the maneuver. For further discussion on Level V joint mobilization please see section on HVLA manipulation [Refer to section 12. d.]. It may include skilled manual joint tissue stretching. Indications include the need to improve joint play, segmental alignment, improve intracapsular arthrokinematics, or reduce pain associated with tissue impingement. Mobilization should be accompanied by active therapy. For Level V mobilization contraindications include joint instability, fractures, severe osteoporosis, infection, metastatic cancer, active inflammatory arthritides, aortic aneurysm, and signs of progressive neurologic deficits.

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

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

treatments, twice per week or less to maintain function.

Maximum duration: 48 visits. Extended durations of care beyond what is considered “maximum” may be necessary in cases of re-injury, interrupted continuity of care, exacerbation of symptoms, and in those patients with comorbitities. Refer to the Chronic Pain Guidelines for care beyond 6 months.

Re-evaluate Treatment Every 3 To 4 Weeks If a given treatment or modality is not producing positive results within 3 to 4 weeks, the treatment may be either modified or discontinued. Reconsideration of diagnosis should also occur in the event of poor response to a seemingly rational intervention. CPT codes 97124 and 97140 can not exceed 48 visits in combination

f. Mobilization (Soft Tissue): is a generally well-accepted treatment. Mobilization of soft tissue is the skilled application of muscle energy, strain/counter strain, myofascial release, manual trigger point release, and manual therapy techniques designed to improve or normalize movement patterns through the reduction of soft tissue pain and restrictions. These can be interactive with the patient participating or can be with the patient relaxing and letting the practitioner move the body tissues. Indications include muscle spasm around a joint, trigger points, adhesions, and neural compression. Mobilization should be accompanied by active therapy. Maximum duration: 48 visits

Re-evaluate Treatment Every 3 To 4 Weeks If a given treatment or modality is not producing positive results within 3 to 4 weeks, the treatment may be either modified or discontinued. Reconsideration of diagnosis should also occur in the event of poor response to a seemingly rational intervention. CPT codes 97124 and 97140 can not exceed 48 visits in combination.

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

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

Time to produce effect: Immediate
Frequency: 2 to 5 times per week
Maximum duration: 24 visits

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

j. Traction—Mechanical: Traction modalities are contraindicated in patients with tumor, infections, fracture, or fracture dislocation. Non**-**oscillating inversion traction methods are contraindicated in patients with glaucoma or hypertension. Motorized traction/decompression devices are included (i.e. VAX-D, DRX9000,etc.) A home lumbar traction unit can 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 traction unit can be purchased if therapy proves effective.

Maximum duration: 24 visits

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

Time to produce effect: Immediate

Frequency: Variable

l. **Ultrasound (Including Phonophoresis):** is an accepted treatment. Ultrasound uses sonic generators to deliver acoustic energy for therapeutic thermal and/or non-thermal soft tissue effects. Indications include scar tissue, adhesions, collagen fiber and muscle spasm, and the need to extend muscle tissue or accelerate the soft tissue healing. Ultrasound with electrical stimulation is concurrent delivery of electrical energy that involves dispersive electrode placement. Indications include muscle spasm, scar tissue, pain modulation, and muscle facilitation.

Phonophoresis is the transfer of medication to the target tissue to control inflammation and pain through the use of sonic generators. These topical medications include, but are not limited to, steroidal anti-inflammatory and anesthetics. Phonopheresis is not recommended for Low Back Pain.

Time to produce effect: 6 to 15 treatments

Frequency: 3 times per week

Maximum duration: 24 visits

m. **Whirlpool/Hubbard Tank:** is a generally accepted treatment in which conductive exposure to water at varied temperatures that best elicits the desired effect. It generally includes massage by water propelled by a turbine or Jacuzzi jet system and has the same thermal effects as hot packs, if water temperature exceeds tissue temperature. It has the same thermal effects as cold application, if comparable temperature water is used. Indications include the need for analgesia, relaxing muscle spasm, reducing joint stiffness, and facilitating and preparing for exercise. **This is not recommended for Low Back Pain.**

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

Patients should be instructed to continue active therapies at home as an extension of the treatment process in order to maintain improvement levels. Follow-up visits to reinforce and monitor progress and proper technique are recommended. Home exercise can include exercise with or without mechanical assistance or resistance and functional activities with assistive devices.

The following active therapies are listed in alphabetical order:

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

Time to produce effect: 4 to 5 treatments

Maximum duration: 10 visits

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

- Cannot tolerate active land-based or full-weight bearing therapeutic procedures
- Require increased support in the presence of proprioceptive deficit;
- Are at risk of compression fracture due to decreased bone density;
- Have symptoms that are exacerbated in a dry environment;
- Would have a higher probability of meeting active therapeutic goals than in a land-based environment.
- The pool should be large enough to allow full extremity range of motion and fully erect posture. Aquatic vests, belts and other devices can be used to provide stability, balance, buoyancy, and resistance.

Time to produce effect: 4 to 5 treatments

Frequency: 3 to 5 times per week
Maximum duration: 25 visits

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

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

Time to produce effect: 4 to 5 treatments
Frequency: 3 to 5 times per week
Maximum duration: 24 visits

Total number of visit 97110 and 97530 should not exceed 40 visits without pre-authorization.

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

Time to produce effect: 2 to 6 treatments
Frequency: 3 times per week
Maximum duration: 24 visits inclusive of electrical muscle stimulation codes if beneficial provide with home unit.

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

Time to produce effect: 2 to 6 treatments
Frequency: 3-5 times per week
Maximum duration: 36 visits

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

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

Time to produce effect: 2 to 6 treatments
Frequency: 3 to 5 times per week
Maximum duration: 36 visits

Total number of visits of 97110 & 97530 may not exceed 40 visits without pre-authorization.

12. **Vocational Rehabilitation** is a generally accepted intervention. Initiation of vocational rehabilitation requires adequate evaluation of patients for quantification of highest functional level, motivation, and achievement of maximum medical improvement. Vocational rehabilitation may be as simple as returning to the original job or as complicated as being retrained for a new occupation.

It may also be beneficial for full vocational rehabilitation to be started before MMI if it is evident that the injured worker will be unable to return to his/her previous occupation. A positive goal and direction may aid the patient in decreasing stress and depression, and promote optimum rehabilitation.

F. Therapeutic Procedures — Operative

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). It is important to consider non-physiologic modifiers of pain presentation or non-operative conditions mimicking radiculopathy or instability prior to consideration of elective surgical intervention.

While sufficient time allowances for non-operative treatment are required to determine the natural cause and response to non-operative treatment of low back pain disorders, timely decision making for operative intervention is critical to avoid de-conditioning and increased disability (exclusive of "emergent" or urgent pathology such as cauda equina syndrome or associated rapidly progressive neurologic loss).

In general, if the program of non-operative treatment fails, operative treatment is indicated when:

- Improvement of the symptoms has plateaued and the residual symptoms of pain and functional disability are unacceptable at the end of active treatment, or at the end of longer duration of non-operative programs for debilitated patients with complex problems; and/or
- Frequent recurrences of symptoms cause serious functional limitations even if a non-operative active treatment program provides satisfactory relief of symptoms, and restoration of function on each recurrence.
- Mere passage of time with poorly guided treatment is not considered an active treatment program.

Surgical evaluation for simple decompression of patients with herniated nucleus pulposus and sciatica should occur within 6 to 12 weeks after injury at the latest, within the above stated contingencies. For patients with true, refractory mechanical low back pain in whom fusion is being considered, it is recommended that a surgical evaluation or interventions occur within 4 months following injury.

Spinal decompression surgeries and fusion have re-operation rates of approximately 10% or more over the following five years. Re-operation is indicated only when the outcome following the re-operation is expected to be better, within a reasonable degree of certainty, than the outcome of other non-invasive or less invasive treatment procedures. “Outcomes” refer to the patient’s ability to improve functional tolerances such as sitting, standing, walking, strength, endurance, and/or vocational status and pain level. While timely surgical decision-making is critical to avoid de-conditioning and increased disability, a time limited trial of reconditioning may be tried prior to re-operation.

Every post-operative patient should be involved in an active treatment program. The non-surgical rehab guidelines listed above do not apply to post-operative rehabilitation and work conditioning. Interdisciplinary interventions should be strongly considered post-operatively in any patient not making functional progress within expected time frames.

1. Discectomy and Nerve Root Decompression

a. Description: To enter into and partially remove the disc and/or Decompress Nerve Root.

b. Surgical Indications: May include any of the following: Primary radicular symptoms, radiculopathy on exam, correlating imaging study, and failure of non-surgical care.

c. Post-Operative Therapy*:* A formal physical therapy program should be implemented post-operatively. Active treatment, which patients should have had prior to surgery, will frequently require a repeat of the visits previously ordered. The non-surgical rehab guidelines listed above do not apply to post-operative rehabilitation and work conditioning

2. Percutaneous Discectomy

a. Description: An invasive operative procedure to accomplish partial removal of the disc through a needle which allows aspiration of a portion of the disc trocar under imaging control.

b. Surgical Indications: Percutaneous discectomy is indicated only in cases of suspected septic discitis in order to obtain diagnostic tissue. The procedure is not recommended for contained disc herniations or bulges with associated radiculopathy due to lack of evidence to support long-term improvement.

3. Laminotomy/laminectomy/foramenotomy/facetectomy

a. Description: These procedures provide access to produce neural decompression by partial or total removal of various parts of vertebral bone.

b. Surgical Indications: May include all of the following: Primary radicular symptoms, radiculopathy on exam, correlating imaging study, and failure of non-surgical care.

c. Post-Operative Therapy: A formal rehab program should be implemented post-operatively. Active treatment, which patients should have had prior to surgery, will frequently require a repeat of

the visits previously ordered. The implementation of a gentle aerobic reconditioning program (e.g., walking) and back education within the first post-operative week is appropriate in uncomplicated post-surgical cases. Some patients may benefit from several occupational therapy visits to improve performance of ADLs. Participation in an active therapy program which includes restoration of ROM, core stabilization, strengthening, and endurance is recommended. The goals of the therapy program should include instruction in a long-term home based exercise program. The non-surgical physical therapy guidelines listed above do not apply to post-operative rehabilitation and work conditioning

4. Spinal Fusion

a. Description: Production of a rigid connection between two or more adjacent vertebrae.

b. Surgical Indications: A timely decision-making process is recommended when considering patients for possible fusion. For chronic low back problems, fusion should not be considered within the first 4 months of symptoms, except for fracture, dislocation, recurrent herniation, or gross instability

Indications for spinal fusion may include:

i. Neural arch defect – Spondylolytic spondylolisthesis, congenital unilateral neural arch hypoplasia.

ii. Segmental Instability - Excessive motion, as in degenerative spondylolisthesis, surgically induced segmental instability.

iii. Primary Mechanical Back Pain/Functional Spinal Unit Failure - Multiple pain generators objectively involving two or more of the following: (a) internal disc disruption (poor success rate if more than two disc involved), (b) painful motion segment, as in annular tears, (c) disc resorption, (d) facet syndrome, and or (e) ligamentous tear. (f) Degenerative disc disease.

iv. Revision surgery for failed previous operation(s) if significant functional gains are anticipated.

v. History of multiple recurrent herniated discs.

c. Pre-operative Surgical Indications: Required pre-operative clinical surgical indications for spinal fusion include all of the following:

i. Planned fusion to exceed two levels requires confirmatory second opinion.

ii. For any potential fusion surgery, it is recommended that the injured worker be encouraged to refrain from smoking for at least six weeks prior to surgery and during the period of fusion healing. Because smokers have a higher risk of non-union and higher post-operative costs, it is recommended that insurers cover a smoking cessation program peri-operatively.

d. Post-operative Therapy: A formal rehab program should be implemented post-operatively. Active treatment, which patients should have had prior to surgery, will frequently require a repeat of the visits previously ordered. The implementation of a gentle aerobic reconditioning program (e.g., walking), and back education within the first post-operative week is appropriate in uncomplicated post-surgical cases. Some patients may benefit from several occupational therapy visits to improve performance of ADLs. Participation in an active therapy program which includes core stabilization, strengthening, and endurance is recommended the goals of the therapy program should include instruction in a long-term home-based exercise program. The non-surgical physical therapy guidelines listed above do not apply to post-operative rehabilitation and work conditioning

e. Return-to-Work: Barring complications, patients responding favorably to spinal fusion may be able to return to sedentary-to-light work within 6 to 12 weeks post-operatively, light-to-medium work within 6 to 9 months post-operatively and medium-to-medium/heavy work within 6 to 12 months post-operatively. Patients requiring fusion whose previous occupation involved heavy-to-very-heavy labor should be considered for vocational assessment as soon as reasonable restrictions can be predicted. The practitioner should release the patient with specific physical restrictions and should obtain a clear job description from the employer, if necessary. Once an injured worker is off work greater than 6 months, the functional prognosis with or without fusion becomes guarded for that individual.

5. Sacroiliac Joint Fusion

a. Description: Use of bone grafts, sometimes combined with metal devices, to produce a rigid connection between two or more adjacent vertebrae providing symptomatic instability as a part of major pelvic ring disruption.

b. Surgical Indications: Sacroiliac (SI) joint fusion may be indicated for stabilization

of a traumatic severe disruption of the pelvic ring. This procedure has limited use in minor trauma and would be considered only on an individual case-by-case basis. In patients with typical mechanical low back pain, this procedure is considered to be investigational. Until the efficacy of this procedure for mechanical low back pain is determined by an independent valid prospective outcome study, this procedure is not recommended for mechanical low back pain.

6. **Implantable Spinal Cord Stimulators** are reserved for those low back pain patients with pain of greater than 6 months duration who have not responded to the standard non-operative or operative interventions previously discussed within this document. Refer to Division's Chronic Pain Disorder Medical Treatment Guidelines.

7. **Intradiscal Electrothermal Annuloplasty (Idea) (More Commonly Called Idet, Or Intradiscal Electrothermal Therapy)**

a. **Description:** An outpatient non-operative procedure. A wire is guided into the identified painful disc using fluoroscopy. The wire is then heated at the nuclear annular junction within the disc. Physicians performing this procedure must have been trained in the procedure and should have performed at least 25 prior discograms. Prior authorization is required for IDET.

b. **Surgical Indications:** Failure of conservative therapy including physical therapy, medication management, or therapeutic injections. Indications may include those with chronic low back pain, disc related back pain, or pain lasting greater than 6 months. There is conflicting evidence regarding its effectiveness. In one of the most recent studies only approximately 40% of patients had greater than 50% relief of pain. Patients should be aware of these percentages. Strict adherence to the indications is recommended

The candidate should meet the following criteria:

i. Age not above 60 or under 18; and

ii. Normal neurological exam; and

iii. No evidence of nerve root compression on MRI; and

iv. Concordant pain reproduced with provocation discography (low pressure); and

v. Functionally limiting low back pain far in excess of leg pain for at least 6 months; and

vi. No evidence of inflammatory arthritis, spinal conditions mimicking low back pain, moderate to severe spinal stenosis, spinal instability, disc herniation, or medical or metabolic diseases precluding follow-up rehabilitation; and

vii. Disc height greater than 50% of adjacent normal disc; and

viii. No previous IDET procedure at the same level.

c. **Post-Procedure Therapy:** Some cases may require epidural injection after the IDET procedure has been performed. A corset should be used for the first 6 weeks. Sitting upright is limited to 30 to 45 minutes for the first two weeks. A formal physical therapy program should be implemented post-operatively. Some patients may benefit from several occupational therapy visits to improve performance of ADLs. Rehabilitation may take as long as 6 months and include stretching during the first month, floor exercises in the second month, 3 to 5 consecutive months of progressive exercise program, and sport activities in the 5^{th} and 6^{th} months as tolerated. The goals of the therapy program should include instruction in a long-term home-based exercise program. . The non-surgical physical therapy guidelines listed above do not apply to post-operative rehabilitation and work conditioning

Return to Work: Barring complications, may be able to return to limited duty after one to two weeks. A corset should be used for the first six weeks. Sitting upright is limited to 30 to 45 minutes for the first two weeks. Zero to 10 pounds lifting limits for first 6 weeks post-procedure. If successful, patients may return to medium work category (20 to 50 pounds per DOT standards) at 4 to 6 months.

8. **Laser Discectomy** involves the delivery of laser energy into the center of the nucleus pulposus using a fluoroscopically guided laser fiber under local anesthesia. The energy denatures protein in the nucleus, causing a structural change which is intended to reduce intradiscal pressure. Its effectiveness has not been shown. Laser discectomy is not recommended.

9. **Artificial Lumbar Disc Replacement**

a. **Description:** involves the insertion of a prosthetic device into an intervertebral space from which a degenerated disc has been removed, sparing only the peripheral annulus. The endplates are

positioned under intraoperative fluoroscopic guidance for optimal placement in the sagittal and frontal planes. The prosthetic device is designed to distribute the mechanical load of the vertebrae in a physiologic manner and maintain range of motion.

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

The theoretical advantage of total disc arthroplasty is that it preserves range of motion and physiologic loading of the disc. This could be an advantage for adults who are physically active. Studies do not demonstrate a long-term advantage of measured function or pain over comparison groups undergoing fusion. The longevity of this prosthetic device has not yet been determined. Significant technical training and experience is required to perform this procedure successfully. Surgeons must be well-versed in anterior spinal techniques and should have attended appropriate training courses, or have undergone training during a fellowship. Mentoring and proctoring of procedures is highly recommended. Reasonable pre-operative evaluation may include an angiogram to identify great vessel location. The angiogram may be either with contrast or with magnetic resonance imaging. An assistant surgeon with anterior access experience is required**. It is intended that if the FDA approves TDA for multiple levels then the HCAP will modify the treatment guidelines to reflect this change.**

b. <u>Surgical Indications</u>:

- Symptomatic one-level degenerative disc disease established by objective testing (CT or MRI scan followed by positive provocation discogram)
- Symptoms unrelieved after six months of active non-surgical treatment
- Physical medicine and manual therapy interventions are completed
- Spine pathology limited to one level

c. <u>Contraindications:</u>

- Significant spinal deformity/scoliosis
- Facet joint arthrosis
- Spinal instability
- Deficient posterior elements
- Infection
- Any contraindications to an anterior abdominal approach (including multiple prior abdominal procedures)
- Previous compression or burst fracture at the surgical level
- Spinal canal stenosis
- Spondylolysis
- Spondylolisthesis greater than 3 mm
- Osteoporosis or any metabolic bone disease
- Chronic steroid use or use of other medication known to interfere with bone or soft tissue healing
- Autoimmune disorder
- Allergy to device components/materials
- Morbid obesity (e.g., body/mass index [BMI] of greater than 40, over 100 pounds overweight)
- Active malignancy

d. <u>Post-operative Therapy:</u> Bracing may be appropriate. A formal physical therapy program should be implemented post-operatively. Active treatment, which patients should have had prior to surgery, will frequently require a repeat of the visits previously ordered. The implementation of a gentle aerobic reconditioning program (e.g., walking) and back education within the first post-operative week is appropriate in uncomplicated post-surgical cases. Some patients may benefit from several occupational therapy visits to improve performance of ADLs. Participation in an active therapy program which includes restoration of ROM, core stabilization, strengthening, and endurance is recommended to be initiated at the discretion of the surgeon. Lifting and bending are usually limited for several months at least. Sedentary duty may be able to begin within six weeks in uncomplicated cases. The goals of the therapy program should include instruction in a long-term home based exercise program. The non-surgical physical therapy guidelines listed above do not apply to post-operative

rehabilitation and work conditioning

10. Kyphoplasty

a. Description: A surgical procedure for the treatment of symptomatic thoracic or lumbar vertebral compression fractures, most commonly due to osteoporosis or other metabolic bone disease, and occasionally with post-traumatic compression fractures and minor burst fractures that do not significantly compromise the posterior cortex of the vertebral body. Pain relief can be expected in approximately 90% of patients. Vertebral height correction is inconsistent, with approximately 35% to 40% of procedures failing to restore height or kyphotic angle.

b. Operative Treatment: Kyphoplasty involves the percutaneous insertion of a trocar and inflatable balloon or expanding polymer into the vertebral body, which re-expands the body, elevating the endplates and reducing the compression deformity. Polymethylmethacrylate (PMMA) bone cement is injected under low pressure into the cavity created by the balloon inflation. In contrast to vertebroplasty, which introduces PMMA cement under high pressure, the space created by balloon inflation allows a higher viscosity PMMA to be injected under lower pressure, which may reduce the risks associated with extravertebral extravasation of the material. There may be an advantage to performing the procedure within one month of the fracture, since the elevation of the endplates may be more readily achieved than when the procedure is delayed.

c. Surgical Indications: Kyphoplasty is an accepted treatment for the following indications:

- Compression fracture vertebral height loss between 20% and 85%
- Vertebral height restoration.
- Kyphoplasty is more likely to increase vertebral height if performed within
- 30 days of fracture occurrence

d. Contraindications:

- The presence of neurologic compromise related to fracture
- High-velocity fractures with a significant burst component
- Significant posterior vertebral body wall fracture
- Severe vertebral collapse (vertebra plana)
- Infection, and
- Coagulopathy

11. Vertebroplasty

a. Description: a procedure for the treatment of painful thoracic and lumbar vertebral compression fractures caused by osteoporosis or other metabolic bone disease. Polymethylmethacrylate (PMMA) bone cement is injected with high pressure into the vertebral body via an 11- to 13-gauge needle, with the goal of stabilizing the spine and relieving pain. The procedure does not correct spinal deformity. Pain relief can be expected in approximately 90% of patients. Vertebral height correction is inconsistent, with approximately 35% to 40% of procedures failing to restore height or kyphotic angle.

b. Indications:

- Compression fracture of preferably less than 30 days
- Vertebral height loss between 20% and 85%
- Intact posterior wall

c. Contraindications:

- The presence of neurologic compromise related to the fracture;
- High velocity fractures with a significant burst component.
- Posterior vertebral body wall fracture;
- Severe vertebral collapse (vertebra plana); and
- Infection; and
- Coagulopathy

12. Percutaneous Radiofrequency Disc Decompression is an investigational procedure which introduces a 17 gauge cannula under local anesthesia and fluoroscopic guidance into the nucleus pulposus of the contained herniated disc, using radiofrequency energy to dissolve and remove disc material. Pressure inside the disc is lowered as a result. There have been no randomized clinical trials of this procedure at this time. Percutaneous radiofrequency disc decompression is not recommended.

13. NUCLEUS PULPOSUS REPLACEMENT involves the introduction of a prosthetic implant into the intervertebral disc, replacing the nucleus while preserving the annulus fibrosus. It is limited to

investigational use in the United States at this time. It is not recommended.

14. **<u>Epiduroscopy and Epidural Lysis of Adhesions</u>** (Refer to Injections-Therapeutic).

15. **<u>Intraoperative Monitoring</u>** is a common intraoperative electrodiagnostic technique that may include somatosensory evoked potentials (SSEP), motor evoked potentials (MEP), or pedicle screw monitoring. The monitoring procedure may be used to evaluate spinal cord integrity and screw placement during the operative procedure. The use of intraoperative monitoring can be anticipated to become more common as percutaneous spinal procedures gain greater acceptance.

G. General Guidelines

Global Reimbursement

The reimbursement allowances for surgical procedures are based on a global reimbursement concept that covers performing the basic service and the normal range of care required after surgery.

Global reimbursement includes:

1. The operation per se
2. Local infiltration, metacarpal/metatarsal/digital block or topical anesthesia
3. Subsequent to the decision and/or authorization for surgery, one related E/M encounter on the date immediately prior to or on the date of the procedure (including history and physical), but does not include the initial consultation
4. Immediate postoperative care, including dictating operative notes, talking with the family and other physicians
5. Writing orders
6. Evaluating the patient in the post anesthesia recovery area
7. Normal, uncomplicated follow-up care for the time periods indicated in the follow-up days (FUD) column to the right of each procedure code. The number in that column establishes the days during which no additional reimbursement is allowed for the usual care provided following surgery, absent complications or unusual circumstances.
8. The maximum reimbursement allowances cover all normal postoperative care, including the removal of sutures by the surgeon or associate. Follow-up days are specified by procedure.

Follow-up days listed are for 0, 10, or 90 days and are listed in the Fee Schedule as 000, 010, or 090.

Implants

Bone morphogenetic protein is an FDA approved biologic fusion and fracture healing aid. Its use in spine and fracture surgery represents the standard of care in our community, and in both on-label and off-label applications is accepted and to be reimbursed to the facility providing the implant, at rates consistent with implant payment rates determined under the respective ASC and hospital reimbursement guidelines

Surgical Assistant

Physician surgical assistant — For the purpose of reimbursement, a physician who assists at surgery is reimbursed as a surgical assistant. Assistant surgeons should use modifier 80 and are allowed twenty percent (20%) of the maximum reimbursement allowance (MRA) for the procedure(s).

Registered Nurse Surgical Assistant or Physician Assistant

a. A physician assistant, or registered nurses who have completed an approved first assistant training course, may be allowed a fee when assisting a surgeon in the operating room (O.R.).

b. The maximum reimbursement allowance for the physician assistant or the registered nurse first assistant (RNFA) is twenty percent (20%) of the surgeon's fee for the procedure(s) performed.

c. Under no circumstances will a fee be allowed for an assistant surgeon and a physician assistant or RNFA at the same surgical encounter.

d. Registered nurses on staff in the O.R. of a hospital, clinic, or outpatient surgery center do not qualify for reimbursement as an RNFA.

Therapeutic Procedures

Therapeutic procedures (injecting into cavities, nerve blocks, etc.) (CPT codes 20526–20610, 64400, 64450) may be billed in addition to the medical care for a new patient. (Use appropriate level of service plus injection.) In follow-up cases for additional therapeutic injections and/or aspirations, an office visit is only indicated if it is necessary to re-evaluate the patient. In this case, a minimal visit may be listed in addition to the injection.

Documentation supporting the office visit charge must be submitted with the bill to the payer. This is clarified in the treatment guidelines in a more specific manner. Trigger point injection is considered one procedure and reimbursed as such regardless of the number of injection sites. Two codes are available for reporting trigger point injections. Use 20552 for injection(s) of single or multiple trigger point(s) in one or two muscles or 20553 when three or more muscles are involved.

Intervertebral Biomechanical Device(s) and Use of Code 22851

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

Spinal and Cranial Services Require Additional Surgeon

Certain spinal and cranial procedures require the services of an additional surgeon of a different specialty to gain exposure to the spine and brain. These typically are vascular, thoracic and ENT. The surgical exposure portion of these procedures will be billed, dictated and followed separately by the exposure surgeon for their portion of the procedure.

Multiple Procedure Reimbursement Rule

Multiple procedures performed during the same operative session at the same operative site are reimbursed at 100% of the allowable fee for the primary and all subsequent procedures.

External Spinal Stimulators Post Fusion

1. The following criteria are established for the medically accepted standard of care when determining applicability for the use of an external spinal stimulator. However, the medical necessity should be determined on a case-by-case basis.
    a. Patient has had a previously failed spinal fusion, and/or
    b. Patient is scheduled for revision or repair of pseudoarthrosis, and/or
    c. The patient smokes greater than a pack of cigarettes per day and is scheduled for spinal fusion
2. The external spinal stimulator is approved for use in primary spinal fusions, if medical co morbidities increase the likelihood of non-union
3. The external spinal stimulator will be reimbursed by report (BR).
4. The patient is metabolically in poor health, with other medical co morbidities such as diabetes, Rheumatoid arthritis, lupus or other illnesses requiring oral steroids or cytotoxic medications.
5. Precertification is required for use of the external spinal stimulator if the planned use falls outside the above indications.

Shoulder Treatment Guidelines

A. Introduction

Pursuant to 19 **Del.C.** §2322C, health care practice guidelines have been adopted and recommended by the Health Care Advisory Panel to guide utilization of health care treatments in workers' compensation including, but not limited to, care provided for the treatment of employees by or under the supervision of a licensed health care provider, prescription drug utilization, inpatient hospitalization and length of stay, diagnostic testing, physical therapy, chiropractic care and palliative care. The health care practice guidelines apply to all treatments provided after the effective date of the regulation adopted by the Department of Labor, May 23, 2008, and regardless of the date of injury.

The guidelines are, to the extent permitted by the most current medical science or applicable science,

based on well-documented scientific research concerning efficacious treatment for injuries and occupational disease. To the extent that well-documented scientific research regarding the above is not available at the time of adoption of the guidelines, or is not available at the time of any revision to the guidelines, the guidelines have been and will be based upon the best available information concerning national consensus regarding best health care practices in the relevant health care community.

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

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

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

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

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

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

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

B. General Guideline 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.

1. **Education** of the patient and family, as well as the employer, insurer, policy makers and the community should be the primary emphasis in the treatment of upper extremity pain and disability. Currently, practitioners often think of education last, after medications, manual therapy and surgery. Practitioners must develop and implement an effective strategy and skills to educate patients, employers, insurance systems, policy makers and the community as a whole. An education-based paradigm should always start with inexpensive communication providing reassuring information to the patient. More in-depth education currently exists within a treatment regime employing functional restorative and innovative programs of prevention and rehabilitation. No treatment plan is complete without addressing issues of individual and/or group patient education as a means of facilitating self-management of symptoms and prevention.

2. **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, comorbitities and availability of services. Clinical judgment may substantiate the need to modify the total number of visits discussed in this document. The majority of injured workers with Shoulder Disorders often will achieve resolution of their condition within 6 to 36 visits (Guide to Physical Therapy Practice – Second Edition). It is anticipated that most injured workers will not require the maximum number of visits described in these guidelines. They are designed to be a ceiling and care extending beyond the maximum allowed visits may warrant utilization review.

3. **Active Interventions** emphasizing patient responsibility, such as therapeutic exercise and/or functional treatment, are generally emphasized over passive modalities, especially as treatment progresses. Generally, passive interventions are viewed as a means to facilitate progress in an active rehabilitation program with concomitant attainment of objective functional gains. All rehabilitation programs must incorporate “Active Interventions” no later than three weeks after the onset of treatment. Reimbursement for passive modalities only

after the first three weeks of treatment without clear evidence of Active Interventions will require supportive documentation.

4. **Active Therapeutic Exercise Program** Exercise program goals should incorporate patient strength, endurance, flexibility, coordination, and education. This includes functional application in vocational or community settings.

5. **Positive Patient Response** Positive results are defined primarily as functional gains which can be objectively measured. Objective functional gains include, but are not limited to, positional tolerances, range of motion, strength, endurance, activities of daily living, cognition, 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.

6. **Re-evaluate Treatment Every 3-4 Weeks** If a given treatment or modality is not producing positive results within 3-4 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.

7. **Surgical Interventions** 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 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).

8. **Six-month Time Frame** Since the prognosis drops precipitously for returning an injured worker to work once he/she has been temporarily totally disabled for more than six months, the emphasis within these guidelines is to move patients along a continuum of care and return-to-work within a six-month time frame, whenever possible. It is important to note that time frames may not be pertinent to injuries which do not involve work-time loss or are not occupationally related.

9. **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 or increase long-term pain. The practitioner must write detailed restrictions when returning a patient to limited duty. The following functions should be considered and modified as recommended: lifting, pushing, pulling, crouching, walking, using stairs, bending at the waist, awkward and/or sustained postures, tolerance for sitting or standing, hot and cold environments, data entry and other repetitive motion tasks, sustained grip, tool usage and vibration factors. The patient should never be released to "sedentary or light duty" without specific physical limitations. The practitioner must understand all of the physical, demands of the patient's job position before returning the patient to full duty and should request clarification of the patient's job duties.

10. **Delayed Recovery** The Department recognizes that not of all industrially injured patients will not recover within the timelines outlined in this document despite optimal care. Such individuals may require treatments beyond the limits discussed within this document, but such treatment will require clear documentation by the authorized treating practitioner focusing on objective functional gains afforded by further treatment and impact upon prognosis.

The remainder of this document should be interpreted within the parameters of these guideline principles which will hopefully lead to more optimal medical and functional outcomes for injured workers.

C. Introduction To Shoulder Injury

This section addresses the shoulder and the ten most common work-related injuries/syndromes/disorders to or involving the shoulder complex. The following format was developed to reduce repetitive text:

1. **History Taking And Physical Examination** provides information common to all injuries through a discussion of provider procedures which should be applied to each patient, regardless of the injury and diagnosis (this subsection is standard to all Division medical treatment guidelines).

2. **Specific Diagnosis, Testing And Treatment Procedures** provides information unique to each of the following work-related injuries/syndromes/disorders:

- a. Acromioclavicular (AC) Joint Sprains/Dislocations
- b. Adhesive Capsulitis/Frozen Shoulder Disorders
- c. Bicipital Tendon Disorders
- d. Brachial Plexus Injuries
  - i. Brachial Plexus
  - ii. Axillary Nerve

iii. Long Thoracic Nerve
iv. Musculocutaneous Nerve
v. Spinal Accessory Nerve
vi. Suprascapular Nerve

e. Bursitis of the Shoulder
f. Impingement Syndrome
g. Rotator Cuff Tears
h. Rotator Cuff Tendinitis
i. Shoulder Fractures
i. Clavicular Fracture
ii. Proximal Humeral Fracture
iii. Humeral Shaft Fracture
iv. Scapular Fracture
v. Sternoclavicular Dislocation/Fracture
j. Shoulder Instability

Each diagnosis is presented in the following format:

a. A definition of the injury/disorder/syndrome;
b. Discussion of relevant physical findings;
c. Applicable testing and diagnostic procedures;
d. Diagnosis-based, non-operative therapeutic treatment procedures;
e. Options for operative/surgical treatment; and
f. Options for post-operative rehabilitation/treatment procedures.

3. **Medication** provides information common to all injuries through detailed discussions of referenced medications with indications for expected time to produce effect, frequency, and optimum and maximum durations.

4. **Non-operative Treatment Procedures** provides information common to all injuries through detailed discussions of referenced therapeutic procedures with indications for expected time to produce effect, frequency, and optimum and maximum durations.

As shoulder injuries frequently involve a complex of problems, it is always necessary to consider the possible interaction of the various parts of the shoulder mechanism when proceeding with a diagnostic workup and a therapeutic treatment plan. Injuries to the shoulder may require the provider to reference and/or use the other Division medical treatment guidelines (i.e., Thoracic Outlet Syndrome Cumulative Trauma Disorder, and/or Complex Regional Pain Syndrome/Reflex Sympathetic Dystrophy.

D. History Taking And Physical Examination (Hx & PE)

There are two standard procedures that should be utilized when initially diagnosing work-related shoulder instability. These procedures are generally accepted, well-established and widely used procedures that establish the foundation/basis for and dictate all other following stages of diagnostic and therapeutic procedures. When findings of clinical evaluations and those of other diagnostic procedures are not complementing each other, the objective clinical findings should have preference.

1. **History Taking** should address at least the following for each shoulder injury diagnosis:

a. Occupational relationship, and
b. History of non-occupational injury and avocational pursuits need to be specifically documented.

2. **Physical Findings** are specific to and addressed within each shoulder injury diagnosis noted in this section. Given the complexity of the shoulder mechanism, an evaluation for concomitant injury should be considered.

E. Specific Diagnosis, Testing And Treatment Procedures

1. **Acromioclavicular Joint Sprains/dislocations** An acute acromioclavicular (AC) joint injury is frequently referred to as a shoulder separation. There are six classifications of an AC joint separation which are based upon the extent of ligament damage and bony displacement:

Type I Partial disruption of the AC ligament and capsule.

Type II Sprains consisting of a ruptured AC ligament and capsule with incomplete injury to the coracoclavicular (CC) ligament, resulting in minimal AC joint subluxation.

Type III Separation or complete tearing of the AC ligament and/or CC ligaments, possible deltoid trapezius fascial injury, and dislocation of the AC joint.

Type IV Dislocation consisting of a displaced clavicle that penetrates posteriorly through or into the trapezius muscle.

Type V Dislocation consisting of complete separation of the AC and CC ligaments and dislocation of the acromioclavicular joint with a large coracoclavicular interval.

Type VI Dislocation consisting of a displaced clavicle that penetrates inferior to the coracoid.

Types I-III are common, while Types IV-VI are not and, when found, require surgical consultation. For AC joint degeneration from repetitive motion that is found to be work-related, see this Section E. 6, Impingement Syndrome.

a. History and Initial Diagnostic Procedures (AC Joint Sprains/Dislocations):

Occupational Relationship - generally, workers sustain an AC joint injury when they land on the point of the shoulder, driving the acromion downward, or fall on an outstretched hand or elbow, creating a backward and outward force on the shoulder. It is important to rule out other sources of shoulder pain from an acute injury, including rotator cuff tear, fracture and nerve injury.

b. Physical Findings (AC Joint Sprains/Dislocations) may include:

i. Tenderness at the AC joint with, at times, contusions and/or abrasions at the joint area; prominence/asymmetry of the shoulder can be seen; and/or

ii. One finds decreased shoulder motion and with palpation, the distal end of the clavicle is painful; there may be increased clavicular translation; cross-body adduction can cause exquisite pain.

c. Laboratory Tests (AC Joint Sprains/Dislocations): are not indicated unless a systemic illness or disease is suspected.

d. Testing Procedures (AC Joint Sprains/Dislocations):

i. Plain x-rays may include:

A) AP view;

B) AP radiograph of the shoulder with the beam angled 10× cephalad (Zanca view);

C) Axillary lateral views; and

D) Y-view also called a StrykerStyrker notch view;

E) Stress view; side-to-side comparison with 10-15 lbs. of weight in each hand.

ii. Adjunctive testing, such as standard radiographic techniques (sonography, arthrography or MRI), should be considered when shoulder pain is refractory to 4-6 weeks of non-operative conservative treatment and the diagnosis is not readily identified by a good history and clinical examination.

e. Non-operative Treatment Procedures (AC Joint Sprains/Dislocations): may include:

i. Procedures outlined in this Section G such as thermal treatment and immobilization (up-to-6 weeks for Type I-III AC joint separations). Immobilization treatments for Type III injuries are controversial and may range from a sling to surgery.

ii. Medication, such as nonsteroidal anti-inflammatories and analgesics, would be indicated; narcotics are not normally indicated but may be needed after an acute injury. In the face of chronic acromioclavicular joint pain, a series of injections with or without cortisone, may be injected 6-8 times per year.

iii. Physical medicine interventions, as outlined in Section G, should emphasize a progressive increase in range of motion without exacerbation of the AC joint injury. With increasing motion and pain control, a strengthening program should be instituted and return to modified/limited duty would be considered at this time. By 8-11 weeks, with restoration of full motion, return to full duty should be anticipated.

f. Operative Procedures (AC Joint Sprains/Dislocations):

i. With a Type III AC joint injury, an appropriate orthopedic consultation should be considered initially, but must be considered when conservative care fails to increase function.

ii. With a Type IV-VI AC joint injury, an orthopedic surgical consultation is recommended initially.

g. Post-Operative Procedures (AC Joint Sprains/Dislocations): should be coordinated by the orthopedic physician working with the interdisciplinary team. Keeping with the therapeutic and rehabilitation procedures found in this Section G. Non-operative Treatment Procedures, the patient could be immobilized for 2-3 weeks, restricted in activities, both work-related and avocational for 8-12 weeks while undergoing rehabilitation,

and be expected to progress to return to full duty based upon the his/her response to rehabilitation and the demands of the job.

2. **Adhesive Capsulitis/frozen Shoulder Disorders** Adhesive capsulitis of the shoulder, also known as frozen shoulder disorder, is a soft tissue lesion of the glenohumeral joint resulting in restrictions of passive and active range of motion. Occupational adhesive capsulitis arises secondarily to any chest or upper extremity trauma. Primary adhesive capsulitis is rarely occupational in origin. The disorder goes through stages, specifically:

Stage 1 Consists of acute pain with some limitation in range of motion; generally lasting 2-9 months.

Stage 2 Characterized by progressive stiffness, loss of range-of-motion, and muscular atrophy; it may last an additional 4-12 months beyond Stage 1.

Stage 3 Characterized by partial or complete resolution of symptoms and restoration of range-of-motion and strength; it usually takes an additional 6-9 months beyond Stage 2.

a. **History and Initial Diagnostic Procedures (Adhesive Capsulitis/Frozen Shoulder Disorder):**

i. Occupational Relationship - There should be some history of work related injury. Often adhesive capsulitis is seen with impingement syndrome or other shoulder disorders; refer to appropriate subsection of this guideline.

ii. Patient will usually complain of pain in the sub-deltoid region, but occasionally over the long head of the biceps or radiating down the lateral aspect of the arm to the forearm. Pain is often worse at night with difficulty sleeping on the involved side. Motion is restricted and painful.

b. **Physical Findings (Adhesive Capsulitis/Frozen Shoulder Disorder):** Restricted active and passive glenohumeral range of motion is the primary physical finding. It may be useful for the examiner to inject the glenohumeral joint with lidocaine and then repeat range of motion to rule out other shoulder pathology; lack of range of motion confirms the diagnosis. Postural changes and secondary trigger points along with atrophy of the deltoid and supraspinatus muscles may be seen.

c. **Laboratory Tests (Adhesive Capsulitis/Frozen Shoulder Disorder):** are not indicated unless systemic illness or disease is suspected.

d. **Testing Procedures (Adhesive Capsulitis/Frozen Shoulder Disorder):**

i. Plain x-rays are generally not helpful except to rule out concomitant pathology.

ii. Adjunctive testing, such as standard radiographic techniques (sonography, arthrography or MRI), to rule out concomitant pathology should be considered when shoulder pain is refractory to 4-6 weeks of non-operative conservative treatment and the diagnosis is not readily identified by a good history and clinical examination.

iii. Arthrography may be helpful in ruling out other pathology. Arthrography can also be therapeutic as steroids and/or anesthetics may be injected and a brisement or distension arthrogram can be done at the same time (refer to the next subsection on non-operative treatment procedures for further discussion).

e. **Non-operative Treatment (Adhesive Capsulitis/Frozen Shoulder Disorder):** address the goal to restore and maintain function and may include:

i. A home exercise program either alone or in conjunction with a supervised rehabilitation program is the mainstay of treatment. Additional interventions may include thermal treatment, ultrasound, TENS, manual therapy, and passive and active range-of-motion exercises; as the patient progresses, strengthening exercises should be included in the exercise regimen; refer to Section G, Non-operative Treatment Procedures.

ii. Medications, such as NSAIDs and analgesics, may be helpful. Rarely, the use of oral steroids is indicated to decrease acute inflammation. Narcotics narcotics can be used for short-term pain control; narcotics are indicated for post-manipulation or post-operative cases; refer to this Section F, Medications.

iii. Occasionally, subacromial bursal and/or glenohumeral steroid injections can decrease inflammation and allow the therapist to progress functional exercise and range of motion. Injections should be limited to two injections to any one site, given at least one month apart.

iv. In cases that are refractory to conservative therapy lasting at least 3-6 months and in whom range of motion remains significantly restricted (abduction less than 90×), the following more aggressive treatment may be considered:

A) Distension arthrography or "brisement" in which saline, an anesthetic and usually a steroid are forcefully injected into the shoulder joint causing disruption of the capsule. Early and

aggressive physical medicine to maintain range of motion and restore strength and function should follow distension arthrography or manipulation under anesthesia; return to work with restrictions should be expected within one week of the procedure; return to full duty is expected within 4-6 weeks.

f. Operative Procedures (Adhesive Capsulitis/Frozen Shoulder Disorder): For cases failing conservative therapy of at least 3-6 months duration and which are significantly limited in range-of-motion (abduction less than 90×), the following operative procedures may be considered:

i. Manipulation under anesthesia which may be done in combination with steroid injection(s) or distension arthrography; and

ii. In rare cases, refractory to conservative treatment and in which manipulation under anesthesia is contraindicated, an open capsular release or arthroscopy with resection of the coracohumeral and/or coracoacromial ligaments may be done; other disorders, such as impingement syndrome, may also be treated at the same time.

g. Post-Operative Procedures (Adhesive Capsulitis/Frozen Shoulder Disorder): would include an individualized rehabilitation program based upon communication between the surgeon and the therapist.

Early, aggressive and frequent physical medicine interventions are recommended to maintain range of motion and progress strengthening; return to work with restrictions after surgery should be discussed with the treating provider; patient should be approaching MMI within 8-12 weeks post-operative, however, coexistence of other pathology should be taken into consideration.

3. Bicipital Tendon Disorders Disorders may include 1) primary bicipital tendinitis which is exceedingly rare; 2) secondary bicipital tendinitis which is generally associated with rotator cuff tendinitis or impingement syndrome (see appropriate diagnosis subsections); 3) subluxation of the biceps tendon which occurs with dysfunction of the transverse intertubercular ligament and massive rotator cuff tears; and 4) acute disruption of the tendon which can result from an acute distractive force or transection of the tendon from direct trauma.

a. History and Initial Diagnostic Procedures (Bicipital Tendon Disorders):

i. Occupational Relationship - bicipital tendon disorders may include symptoms of pain and/or achiness that occur after repetitive use of the shoulder and/or blunt trauma to the shoulder. Secondary bicipital tendinitis may be associated with prolonged above-the-shoulder activities, and/or repeated shoulder flexion, external rotation and abduction. Acute trauma to the biceps tendon of the shoulder girdle may also give rise to occupational injury of the biceps tendon.

ii. Occupational disorders of the biceps tendon may accompany scapulothoracic dyskinesis, rotator cuff injury, AC joint separation, subdeltoid bursitis, shoulder instability or other shoulder pathology. Symptoms should be exacerbated or provoked by work that activated the biceps muscle. Symptoms may be exacerbated by other activities that are not necessarily work related.

iii. Symptoms may include aching, burning and/or stabbing pain in the shoulder, usually involving the anterior medial portion of the shoulder girdle. The symptoms are exacerbated with above-the-shoulder activities and those specifically engaging the biceps (flexion at the shoulder, flexion at the elbow and supination of the forearm). Relief occurs with rest. Patients may report nocturnal symptoms which interfere with sleep during the acute stages of inflammation; pain and weakness in shoulder during activities; repeated snapping phenomenon with a subluxing tendon; immediate sharp pain and tenderness along the course of the long head of the biceps following a sudden trauma which would raise suspicions of acute disruption of the tendon; and/or with predominant pain at the shoulder referral patterns which may extend pain into the cervical or distal structures, including the arm, elbow, forearm and wrist.

b. Physical Findings (Bicipital Tendon Disorders): may include:

i. If continuity of the tendon has been lost (biceps tendon rupture), inspection of the shoulder would reveal deformity (biceps bunching);

ii. Palpation demonstrates tenderness along the course of the bicipital tendon;

iii. Pain at end range of flexion and abduction as well as biceps tendon activation; and/or

iv. Provocative testing may include:

A) Yergason's sign - pain with resisted supination of forearm;

B) Speed's Test - pain with resisted flexion of the shoulder (elbow extended and forearm supinated); or

C) Ludington's Test - pain with contraction of the biceps (hands are placed

behind the head placing the shoulders in abduction and external rotation).

c. **Laboratory Tests (Bicipital Tendon Disorders):** are not indicated unless a systemic illness or disease is suspected.

d. **Testing Procedures (Bicipital Tendon Disorders):**

i. Plain x-rays include:

A) Anterior/Posterior (AP) view visualizes elevation of the humeral head, indicative of absence of the rotator cuff due to a tear;

B) Lateral view in the plane of the scapula and/or an axillary view determine if there is anterior or posterior dislocation or the presence of a defect in the humeral head (a Hill-Sachs lesion);

C) 30× caudally angulated AP view determines if there is a spur on the anterior/inferior surface of the acromion and/or the far end of the clavicle; and

D) Outlet view determines if there is a downwardly tipped acromion.

ii. Adjunctive testing, such as sonography, MRI or arthrography, should be considered when shoulder pain is refractory to 4-6 weeks of nonoperative conservative treatment and the diagnosis is not readily identified by standard radiographic techniques. These tests may be occasionally performed immediately after an injury if tendon injury is suspected based on history and physical examination.

e. **Non-operative Treatment Procedures (Bicipital Tendon Disorders):**

i. Benefit may be achieved through procedures outlined in Section G. Non-operative Treatment Procedures, such as thermal therapy, immobilization, alteration of occupation and/or work station, manual therapy and biofeedback.

ii. Medication, such as nonsteroidal anti-inflammatories and analgesics, would be indicated; narcotics are not normally indicated but may be needed in the acute phase. Refer to Section G. Non-operative Treatment Procedures for further discussions.

iii. Physical medicine and rehabilitation interventions, as outlined in Section G. Non-operative Treatment Procedures, should emphasize a progressive increase in range of motion. With increasing motion and pain control, a strengthening program should be instituted and return to modified/limited duty would be considered at this time. By 8-11 weeks, with restoration of full motion, return to full duty should be anticipated.

iv. Biceps tendon injections may be therapeutic if the patient responds positively to an injection of an anesthetic. Injection of the corticosteroids directly into the tendon should be avoided due to possible tendon breakdown and degeneration, limited to 3 injections per year at the same site, and avoided in patients under 30 years of age.

f. **Operative Procedures (Bicipital Tendon Disorders):**

i. Bicipital Tendinitis: Conservative care prior to potential surgery must address flexibility and strength imbalances. Surgical remedies would be considered after 12 weeks of appropriate conservative care has failed. Since impingement of the biceps tendon could cause continued irritation, an acromioplasty may be necessary, especially when the presence of an obstructing osteophyte is demonstrated on plain x-rays.

ii. Subluxing Bicipital Tendon: The decision to surgically stabilize the bicipital tendon is not commonly indicated. In the vast majority of cases, optimal outcome is achieved through successful rehabilitation procedures and appropriate conservative measures should be maximized prior to surgical intervention.

iii. Acute Disruption of the Bicipital Tendon: Surgical treatment shows variable responses. Conservative care should be the mainstay of treatment with particular attention given to the patient's age, work description and motivation. Rarely surgery is needed to address chronic mechanical symptoms which can occur from the intra articular residual biceps tendon stump or to stabilize severe biceps bunching.

g. **Post-Operative Procedures (Bicipital Tendon Disorders):** would include an individualized rehabilitation program either self-directed or in a supervised setting. Rehabilitation, lasting 6-12 weeks, is often necessary. Rehabilitation procedures discussed in Section G, Non-operative Treatment Procedures should be referenced and used.

4. **Brachial Plexus Injuries** to the nerves and shoulder girdle region resulting in loss of motor and sensory function, pain and instability of the shoulder. Signs and symptoms vary with the degree of mechanism of injury. The two modes of injury are: 1) acute direct trauma, and 2) repetitive motion or overuse. Transient compression, stretch or traction (neuropraxia) causes sensory and motor signs lasting days to weeks. Damage to the axon (axonomesis) without disruption of the nerve framework may cause similar symptoms. The recovery time

is delayed and depends upon axon regrowth distally from the site of injury. Laceration or disruption of the entire nerve with complete loss of framework (neuromesis) is the most severe form of nerve injury. Return of function is dependent upon regrowth of the nerve distal to the injury site.

Electromyography (EMG) is the most commonly used diagnostic modality to analyze nerve injuries. Electrophysiologic studies, such as electromyography and nerve conduction studies, are generally accepted, well-established and widely used for localizing the source of neurological symptoms. These studies should be utilized as an extension of the history and clinical examination.

Slowing of motor nerve conduction velocities due to demyelinization localizes regions of entrapment and injury. Denervation demonstrated on the electromyographic portion is indicative of motor axonal or anterior horn cell loss. Studies should be performed 3-4 weeks following injury or description of symptoms. If the symptoms have been present for longer than 3-4 weeks, studies may be performed immediately after the initial evaluation. Serial studies may be indicated if initial studies are negative and may also be useful for gauging prognosis. Limb temperature should be controlled at 30-40× centigrade. There are six relatively common nerve injuries to the shoulder girdle; each type will be addressed separately.

a. **Brachial Plexus:** is formed by the nerve roots of C5-C8 and T1; these nerve roots exit the cervical spine and pass through the scalene musculature; after leaving the scalene musculature, at the level of the clavicle, they form trunks, divisions and chords which ultimately form the peripheral nerves of the arm.

i. History and Initial Diagnostic Procedures (Brachial Plexus)

A) Occupational Relationship - direct injury to brachial plexus results in widespread sensory and motor loss. Direct trauma, subluxation to shoulder, clavicular fractures, shoulder depression, head deviation away to the arm may result in variable brachial plexus lesions. It is important to differentiate injuries to the brachial plexus from the acquired (nonwork-related) syndrome of brachial plexus neuritis, Parsonage-Turner Syndrome and/or neuralgia demyotrophy.

ii. Physical Findings (Brachial Plexus) may include:

A Inspection for evidence of trauma or deformity;

B) Identification of sensory loss and demonstration of weakness which relates to the severity and anatomy of the injury to the brachial plexus; and/or

C) Pain with recreation of the motions during the mechanism of injury.

iii. Laboratory Tests (Brachial Plexus) are not indicated unless a systemic illness or disease is suspected.

iv. Testing Procedures (Brachial Plexus) would include EMG and Nerve Conduction Studies. If they do not localize and give sufficient information, then additional information may be obtained from MRI and/or myelography. These studies are employed to differentiate root avulsion from severe brachial plexus injuries.

v. Non-operative Treatment Procedures (Brachial Plexus)

A) In closed injuries, observation is favored; repeat electro physiologic studies may be helpful to follow recovery.

B) Rehabilitation can be utilized using procedures set forth in this Section G, Non-operative Treatment Procedures. However, utilization of ultrasound, cold and heat should be discussed with the Physician since these modalities can aggravate nerve injury.

C) Medications, such as analgesics, nonsteroidal anti-inflammatories and anti-convulsants, are indicated; steroids may be prescribed to help diminish the inflammatory response, and narcotics may be indicated acutely; all medications should be prescribed as seen in this Section F, Medications.

vi. Operative Procedures (Brachial Plexus): In open injuries, exploration may be worthwhile if there is poor progression of recovery from a conservative approach; in closed injuries, if progressive weakness and loss of function is documented after 4-6 months of conservative care, then exploration is also warranted.

vii. Post-Operative Procedures (Brachial Plexus) would include an individualized rehabilitation program based upon communication between the surgeon and the therapist. This program would begin with 4-6 weeks of rest followed by progressive increase in motion and strength.

b. **Axillary Nerve:** is derived from the 5th and 6th cervical roots; it passes around the shoulder and supplies motor branches to the teres minor and the three heads of the deltoid; it gives sensation to the top of the shoulder at the level of the deltoid.

i. History and Initial Diagnostic Procedures (Axillary Nerve):

Occupational Relationship - direct injury and penetrating wounds to the shoulder and upward pressure on the axilla can cause injury to the axillary nerve; abnormalities of the nerve can also be seen with fractures of the surgical neck of the humerus and dislocation of the shoulder; finally, axillary nerve injury can be seen with shoulder surgery in and of itself.

ii. Physical Findings (Axillary Nerve) may include:

A) Weakness and atrophy of the deltoid muscle;

B) Strength is lost in abduction, flexion and extension of the shoulder; and/or

C) Sensory loss can be seen over the upper arm.

iii. Laboratory Tests (Axillary Nerve) are not indicated unless a systemic illness or disease is suspected.

iv. Testing Procedures (Axillary Nerve) would include EMG and Nerve Conduction Studies.

v. Nonoperative Treatment Procedures (Axillary Nerve)

A) Rehabilitation can be utilized using procedures set forth in this Section G. Non-operative Treatment Procedures. Utilization of ultrasound, cold and heat should be discussed with the Physician since these modalities can aggravate the nerve injury.

B) Medications such as analgesics, nonsteroidal anti-inflammatories and anti-convulsants are indicated and narcotics may be indicated acutely; all medications should be prescribed as seen in this Section F. Medications.

vi. Operative Procedures (Axillary Nerve) are usually not necessary, since most injuries to the axillary nerve are due to stretch and/or traction. One may consider surgery after 4-6 months with EMG/NCV documentation of ongoing denervation and loss of function.

vii. Post-Operative Procedures (Axillary Nerve) would include an individualized rehabilitation program based upon communication between the surgeon and the therapist. This program would begin with 4-6 weeks of rest followed by progressive increase in motion and strength.

c. Long Thoracic Nerve: is formed by the cervical fifth, sixth, and seventh roots; it crosses the border of the first rib and descends along the posterior surface of the thoracic wall to the serratus anterior.

i. History and Initial Diagnostic Procedures (Long Thoracic Nerve)

A) Occupational Relationship - injury can occur by direct trauma to the posterior triangle of the neck or trauma may be the result of chronically repeated or forceful shoulder depression. Repeated forward motion of the arms as well as stretch or compression of the nerve with the arms abducted can lead to long thoracic nerve dysfunction.

ii. Physical Findings (Long Thoracic Nerve) may include:

A) Dull ache in the region of the shoulder without sensory loss;

B) Scapular deformity and/or winging may be described by patient or family; and/or

C) Serratus Anterior (scapular winging) may be demonstrated by asking the patient to extend and lean on his arms, such as against a wall and/or the examiner resisting protraction.

iii. Laboratory Tests (Long Thoracic Nerve) are not indicated unless a systemic illness or disease is suspected

iv. Testing Procedures (Long Thoracic Nerve) EMG and Nerve Conduction Studies are used to define the anatomy and severity of the injury; side-to-side comparisons of the nerve can be helpful to confirm the diagnosis; studies may also exclude more widespread brachial plexus involvement.

v. Non-operative Treatment (Long Thoracic Nerve)

A) Rehabilitation can be utilized using procedures set forth in Section G. Non-operative Treatment Procedures. Utilization of ultrasound, cold, and heat should be discussed with the Physician since these modalities can aggravate nerve injury.

B) Medications, such as analgesics, nonsteroidal anti-inflammatories and anti-convulsants, are indicated and narcotics may be indicated acutely; all medications should be prescribed as seen in this Section F. Medications.

vi. Operative Procedures (Long Thoracic Nerve) such as scapular fixation, may be recommended but only in the most severe cases where there is documented significant loss of function.

vii. Post-Operative Procedures (Long Thoracic Nerve) should include an individualized rehabilitation program based upon communication between the surgeon and the therapist. This

program would begin with 8-10 weeks of rest followed by progressive increase in motion and strength.

d. **Musculocutaneous Nerve:** is derived from the fifth and sixth cervical roots; it innervates the coracobrachialis, biceps and brachioradialis muscles and also provides sensation to the lateral aspect of the forearm; trauma (including surgery) or penetrating wound to the brachial plexus, coracobrachialis, and shoulder often can cause nerve injury.

i. History and Initial Diagnostic Procedures (Musculocutaneous Nerve)

A) Occupational Relationship - most commonly a stretch/traction injury due to forceful extension of the elbow induces nerve dysfunction; trauma can be seen to the sensory component (lateral antebrachial cutaneous nerve) which delineates loss of sensation to the forearm.

ii. Physical Findings (Musculocutaneous Nerve) may include:

Pain in the arm;

Weakness and atrophy in the biceps and brachialis; and/or

Sensory loss over the lateral aspect of the forearm; however, is not always seen.

iii. Laboratory Tests (Musculocutaneous Nerve) are not indicated unless a systemic illness or disease is suspected.

iv. Testing Procedures (Musculocutaneous Nerve) include EMG and nerve conduction studies; side-to-side comparisons of the motor and sensory components of the nerve may be useful since standard norms are not always reliable.

v. Non-operative Treatment Procedures (Musculocutaneous Nerve)

A) Rehabilitation can be utilized using procedures set forth in this Section G. Non-operative Treatment Procedures. Utilization of ultrasound, cold, and heat should be discussed with the Physician, since these modalities can aggravate nerve injury.

B) Medications, such as analgesics, nonsteroidal anti-inflammatories and anticonvulsants, are indicated and narcotics may be indicated; all medications should be prescribed as seen in this Section F. Medications.

vi. Operative Procedures (Musculocutaneous Nerve) are usually not necessary unless there has been increasing loss of function over 4-6 months and/or a laceration to the nerve has been identified.

vii. Post-Operative Procedures (Musculocutaneous Nerve) would include an individualized rehabilitation program based upon communication between the surgeon and the therapist. This program would begin with 8-10 weeks of rest followed by progressive increase in motion and strength.

e. **Spinal Accessory Nerve:** is the eleventh cranial nerve; the nerve innervates the ipsilateral sternocleidomastoid and trapezius muscles which are extremely important for scapular control and ultimately shoulder function.

i. History and Initial Diagnostic Procedures (Spinal Accessory Nerve)

A) Occupational Relationship - direct trauma to the posterior neck, forceful compression of the shoulder downward and/or deviation of the head away from the traumatized shoulder can lead to injury to this nerve; surgical resection of the posterior neck can disrupt the nerve.

ii. Physical Findings (Spinal Accessory Nerve) may include:

Pain in the shoulder;

Weakness or paralysis of the trapezius which is seen as winging with the arms out to the side (abduction); and/or

Drooping of the shoulder.

iii. Laboratory Tests (Spinal Accessory Nerve) are not indicated unless a systemic illness or disease is suspected.

iv. Testing Procedures (Spinal Accessory Nerve) include EMG and Nerve Conduction Studies are used to define the anatomy and severity of the injury; side-to-side comparisons of the nerve can be helpful to confirm the diagnosis; radiographic procedures may be necessary to exclude lesion at the base of the brain or upper cervical spine.

v. Non-operative Treatment Procedures (Spinal Accessory Nerve)

A) Rehabilitation can be utilized using procedures set forth in Section G. Non-operative Treatment Procedures. Utilization of ultrasound, cold, and heat should be discussed with the Physician, since these modalities can aggravate nerve injury.

B) Medications, such as analgesics, nonsteroidal anti-inflammatories and

anticonvulsants, are indicated and narcotics may be indicated acutely; all medications should be prescribed as seen in Section F. Medications.

vi. Operative Procedures (Spinal Accessory Nerve) are usually not necessary unless increased loss of function over 4-6 months has been documented and/or a laceration to the nerve has been identified.

vii. Post-Operative Procedures (Spinal Accessory Nerve) would include an individualized rehabilitation program based upon communications between the surgeon and the therapist. This program would begin with 8-10 weeks of rest followed by progressive increase in motion and strength.

f. Suprascapular Nerve: is derived from the fifth and sixth cervical root, superior trunk of the brachialplexus, and it innervates the supraspinatus and infraspinatus muscles of the rotator cuff.

i. History and Initial Diagnostic Procedures (Suprascapular Nerve)

A) Occupational Relationship - supraclavicular trauma, stretch, and friction through the suprascapular notch or against the transverse ligament at the notch can cause injury to the nerve; repetitive use of the arm has been shown on occasion to cause traction to the nerve.

ii. Physical Findings (Suprascapular Nerve) may include:

- Pain at the shoulder;
- Wasting at the supraspinatus and/or infraspinatus muscles with weakness; and/or
- Tinel's can help to elicit a provocative pain response.

iii. Laboratory Tests (Suprascapular Nerve) are not indicated unless a systemic illness or disease is suspected.

iv. Testing Procedures (Suprascapular Nerve) include EMG and nerve conduction studies; side-to-side comparisons may be useful since standard norms are not always reliable. If one suspects a mass lesion at the suprascapular notch, then an MRI may be indicated.

v. Non-operative Treatment Procedures (Suprascapular Nerve)

A) Rehabilitation can be utilized using procedures set forth in Section G. Non-operative Treatment Procedures. Utilization of ultrasound, cold, and heat should be discussed with the Physician, since these modalities can aggravate nerve injury.

B) Medications, such as analgesics, nonsteroidal anti-inflammatories and anti-convulsants, are indicated and narcotics may be indicated acutely; all medications should be prescribed as seen in this Section F. Medications.

vi. Operative Treatment Procedures (Suprascapular Nerve) involving surgical release at the suprascapular notch or spinoglenoid region is warranted depending upon the results of the electrophysiologic studies and/or absence of improvement with conservative management.

vii. Post-Operative Procedures (Suprascapular Nerve) would include an individualized rehabilitation program based upon communication between the surgeon and the therapist. This program would begin with 8-10 weeks of rest followed by progressive increase in motion and strength.

5. **Bursitis Of The Shoulder** Acute or chronic inflammation of the bursa (a potential fluid filled sac) that may be caused by trauma, chronic overuse, inflammatory arthritis, and acute or chronic infection that generally presents with localized pain and tenderness of the shoulder.

a. History and Initial Diagnostic Procedures (Bursitis of the Shoulder):

- Occupational Relationship - onset of symptoms, date, mechanism of onset, and occupational history and current requirements should be correlated with the intensity, character, duration and frequency of associated pain and discomfort.
- History may include nocturnal pain, pain with over-the-shoulder activities, feeling of shoulder weakness, prior treatment for presenting complaint(s), specific limitations of movement and pertinent familial history.

b. Physical Findings (Bursitis of the Shoulder): may include:

- Palpation elicits localized tenderness over the particular bursa or inflamed tendon; loss of motion during activity;
- Painful arc may be seen between 40-120× and/or
- Bursitis may be associated with other shoulder injury diagnoses such as impingement, rotator cuff instability, tendinitis, etc.; refer to applicable diagnosis subsections for additional guidelines.

c. **Laboratory Tests (Bursitis of the Shoulder):** may be used to rule out systemic illness or disease when proper clinical presentation indicates the necessity for such testing. Testing could include sedimentation rate, rheumatoid profile, complete blood count (CBC) with differential, serum uric acid level, routine screening of other medical disorders may be necessary, as well as bursal aspiration with fluid analysis.

d. **Testing Procedures (Bursitis of the Shoulder):**

i. Plain x-rays include:

A) AP view visualizes elevation of the humeral head, indicative of absence of the rotator cuff due to a tear;

B) Lateral view in the plane of the scapula or an axillary view determines if there is anterior or posterior dislocation or the presence of a defect in the humeral head (a Hill-Sachs lesion);

C) 30× caudally angulated AP view determines if there is a spur on the anterior/ interior surface of the acromion and/or the far end of the clavicle; and

D) Outlet view determines if there is a downwardly tipped acromion.

ii. Adjunctive testing, such as standard radiographic techniques (sonography, arthrography or MRI), should be considered when shoulder pain is refractory to 4-6 weeks of non-operative conservative treatment and the diagnosis is not readily identified by a good history and clinical examination.

e. **Non-operative Treatment Procedures (Bursitis of the Shoulder):**

i. Benefits may be achieved through procedures outlined in Section G. Non-operative Treatment Procedures, such as immobilization, therapeutic exercise, alteration of occupation and work station, thermal therapy, TENS unit, and ultrasound.

ii. May return to work without overhead activities and lifting with involved arm until cleared by physician for those and heavier activities.

iii. Additional modalities/treatment procedures may include biofeedback; physical medicine and rehabilitation including instruction in therapeutic exercise, proper work technique and manual therapy; vocational rehabilitation, vocational assessment and interdisciplinary team approach.

iv. Medications such as nonsteroidal anti-inflammatories and analgesics. Subacromial space injection may be therapeutic but should be limited to 3 injections per year in the same location. Injection of the corticosteroids directly into the tendons should be avoided due to possible tendon breakdown and degeneration. There are rare occasions where intratendinous injections may be cautiously considered if calcific tendonitis is present.

Rarely are injections used in patients under 30 years of age.

f. **Operative Procedures (Bursitis of the Shoulder):** are not commonly indicated for pure bursitis; refer to other appropriate diagnoses in Section E. Specific Diagnosis Testing and Treatment.

6. **Impingement Syndrome** A collection of symptoms, not a pathologic diagnosis. The symptoms result from the encroachment of the acromion, coracoacromial ligament, coracoid process, and/or the AC joint of the rotator cuff mechanism that passes beneath them as the shoulder is moved. The cuff mechanism is intimately related to the coracoacromial arch. Separated only by the thin lubricating surfaces of the bursa, compression and friction can be minimized by several factors, such as

- Shape of the coracoacromial arch that allows passage of the subjacent rotator cuff;
- Normal undersurface of the AC Joint;
- Normal bursa;
- Normal capsular laxity; and
- Coordinated scapulothoracic function.

The impingement syndrome may be associated with AC joint arthritis, both partial- and full-thickness rotator cuff tears, adhesive capsulitis/frozen shoulder and bursitis. Normal function of the rotator cuff mechanism and biceps tendon assist to diminish impingement syndrome.

a. **History and Initial Diagnostic Procedures (Impingement Syndrome):**

i Occupational Relationship - established repetitive overuse of the upper extremity; many times this is seen with constant overhead motion.

ii. History may include:

A) Delayed presentation; since the syndrome is usually not an acute problem; patients will access care if their symptoms have not resolved with rest, time and "trying to work it out";

B) Complaints of functional losses due to pain, stiffness, weakness and catching when the arm is flexed and internally rotated; and

C) Poor sleep is common and pain is often felt down the lateral aspect of the upper arm near the deltoid insertion or over the anterior proximal humerus.

b. **<u>Physical Findings (Impingement Syndrome)</u>:** may include:

i. Inspection of the shoulder may reveal deltoid and rotator cuff atrophy;

ii. Range of motion is limited particularly in internal rotation and in cross-body adduction;

iii. Passive motion through the 60-90× arc of flexion may be accompanied by pain and crepitus; this is accentuated as the shoulder is moved in-and-out of internal rotation;

iv. Active elevation of the shoulder is usually more uncomfortable than passive elevation;

v. Pain on maximum active forward flexion is frequently seen with impingement syndrome, but is not specific for diagnosis;

vi. Strength testing may reveal weakness of flexion and external rotation in the scapular plane; this weakness may be the result of disuse, tendon damage, or poor scapulothoracic mechanics;

vii. Pain on resisted abduction or external rotation may also indicate that The integrity of the rotator cuff tendons may be compromised; ond/or

vii. Weakness of the posterior scapular stabilizers can also be seen as a contributing factor to impingement syndrome by altering the mechanics of the glenohumeral joint.

c. **<u>Laboratory Tests (Impingement Syndrome)</u>:** are not indicated unless a systemic illness or disease is suspected.

d. **<u>Testing Procedures (Impingement Syndrome)</u>:**

i. Plain x-rays include:

A) AP view visualizes elevation of the humeral head, indicative of rotator cuff fiber failure with diminished space at the subacromial area;

B) Lateral view in the plane of the scapula or an axillary view can help to determine aspects of instability which can give symptoms similar to impingement syndrome;

C) 30× caudally angulated AP view can assess for a spur on the anterior/ inferior surface of the acromion and/or the distal end of the clavicle which can lead to encroachment on the rotator cuff mechanism with motion; and

D) Outlet view determines if there is a downwardly tipped acromion.

ii. Adjunctive testing, such as standard radiographic techniques (sonography, arthrography or MRI), should be considered when shoulder pain is refractory to 4-6 weeks of non-operative conservative treatment and the diagnosis is not readily identified by a good history and clinical examination.

e. **<u>Non-operative Treatment Procedures (Impingement Syndrome)</u>** may include**:**

i. Medications, such as nonsteroidal anti-inflammatories and analgesics, should be prescribed as seen in Section F. Medications. Subacromial space injection may be therapeutic. Injections of corticosteroids into the subacromial space should be limited to 3 injections per year at the same site, and rarely used in patients less than 30 years.

ii. In order to have the most favorable outcome from a conservative approach, an aggressive attempt should be made to define the contributing factors which are driving the syndrome, such as shoulder stiffness, humeral head depressor weakness (rotator cuff fiber failure), and subacromial crowding AC Joint arthritis.

iii. Procedures outlined in Section G. Non-operative Treatment Procedures should <u>be</u> considered, such as relative rest, immobilization, thermal treatment, ultrasound, therapeutic exercise and physical medicine and rehabilitation.

f. **<u>Operative Procedures (Impingement Syndrome)</u>:** should restore functional anatomy by reducing the potential for repeated impingement; procedures might include distal clavicular resection, coracoacromial ligament release, and/or acromioplasty.

g. **<u>Post-Operative Procedures (Impingement Syndrome)</u>:** would include an individualized rehabilitation program based upon communication between the surgeon and the therapist.

i. Individualized rehabilitation programs might include:

A) Sling or abduction splint;

B) Gentle pendulum exercise, passive glenohumeral range of motion and aggressive posterior scapular stabilizing training can be instituted;

C) At 4 weeks post-operative, begin isometrics and ADL involvement; and/or

D) Depending upon the patient's functional response, at 4 weeks post-operative consider beginning light resistive exercise; concomitantly, return to a light/modified duty may be plausible given the ability to accommodate "no repetitive overhead activities."

ii. Progressive resistive exercise from 2 months with gradual returning to full activity at 5-7 months; all active non-operative procedures listed in this Section G. Non-operative Treatment Procedures should be considered.

iii. Work restrictions should be evaluated every 4-6 weeks during post-operative recovery and rehabilitation with appropriate written communications to both the patient and the employer. Should progress plateau, the provider should reevaluate the patient's condition and make appropriate adjustments to the treatment plan.

7. **Rotator Cuff Tear** Partial- or full-thickness tears of the rotator cuff tendons, most often the supraspinatus can be caused by vascular, traumatic or degenerative factors or a combination. Further tear classification includes: a small tear is less than 1cm; medium tear is 1-3cm; large tear is 3-5cm; and massive tear is greater than 5cm, usually with retraction.

a. **History and Initial Diagnostic Procedures (Rotator Cuff Tear)**:

i. Occupational Relationship - established with sudden trauma to the shoulder or chronic over-use with repetitive overhead motion with internal or external rotation.

ii. History may include:

A) Partial-thickness cuff tears usually occur in age groups older than 30. Full-thickness tears can occur in younger age groups.

B) Complaints of pain along anterior, lateral or posterior glenohumeral joint.

b. **Physical Findings (Rotator Cuff Tear)** may include:

i. Partial-Thickness Tear

A) There will be pain at the end of range of motion with full passive range-of-motion for abduction, elevation, external rotation; internal rotation is attainable;

B) Active range of motion will be limited and painful for abduction and external rotation, as well as internal rotation and forward flexion;

C) A painful arc may be present with active elevation;

D) Pain will be positive for resisted tests (abduction, flexion, external rotation, internal rotation, abduction/internal rotation at 90×, and abduction/external rotation at 45×; and/or

E) If there are positive impingement signs, see this Section E.6, Impingement Syndrome.

ii. Full-Thickness Tears

A) Passive and resisted findings are similar to those for partial-thickness tears; and/or

B) Active elevation will be severely limited with substitution of scapular rotation being evident.

c. **Laboratory Tests (Rotator Cuff Tear):** are not indicated unless a systemic illness or disease is suspected.

d. **Testing Procedures (Rotator Cuff Tear):**

i. Plain x-rays include:

A) AP view visualizes elevation of the humeral head, indicative of absence of the rotator cuff due to a tear;

B) Lateral view in the plane of the scapula and/or an axillary view determines if there is anterior or posterior dislocation or the presence of a defect in the humeral head (a Hill-Sachs lesion);

C) 30× caudally angulated AP view determines if there is a spur on the anterior/inferior surface of the acromion and/or the far end of the clavicle; and

D) Outlet view determines if there is a downwardly tipped acromion.

ii. Adjunctive testing should be considered when shoulder pain is refractory to 4-6 weeks of non-operative conservative treatment and the diagnosis is not readily identified by standard radiographic techniques, then sonography, arthrography or MRI may be indicated. These tests may be occasionally performed immediately after an injury if rotator cuff tear is suspected based on history and physical exam.

e. **Non-operative Treatment Procedures (Rotator Cuff Tear):**

i. Medications, such as nonsteroidal anti-inflammatories and analgesics, would be indicated; acute rotator cuff tear could indicate the need for limited narcotics use.

ii Relative rest and procedures outlined in Section G. Non-operative Treatment Procedures, such as immobilization, therapeutic exercise, alteration of occupation/work station, thermal treatment, TENS unit, therapeutic ultrasound, return-to-work, biofeedback and physical medicine and rehabilitation. If no increase in function for a partial- or full-thickness tear is observed after 6-8 weeks, a surgical consultation is indicated. Early surgical intervention produces better surgical outcome due to healthier tissues and often less limitation of movement prior to and after surgery.

f. **Operative Procedures (Rotator Cuff Tear):** options would include arthroscopic repair or an open debridement and repair. Goals of surgical intervention are to restore functional anatomy by reestablishing continuity of the rotator cuff, and to reduce the potential for repeated impingement by the performance of procedures such as distal clavicular resection, coracoacromial ligament release, and/or anterior acromioplasty (subacromial decompression).

g. **Post-Operative Procedures (Rotator Cuff Tear):** would include an individualized rehabilitation program either home based or in conjunction with supervised therapy.

i. Individualized rehabilitation program might include:

- Sling or abduction splint;
- Gentle pendulum exercise, passive glenohumeral range of motion in flexion and external rotation to prevent adhesions and maintain mobilization with or without the assistance of a pulley;
- At 4 to 6 weeks post-operative begin isometrics and ADL involvement;
- Active assisted range-of-motion in supine with progression to sitting;
- At 6-8 weeks, depending on quality of tissue, begin light resistive exercise;
- Pool exercise, manual resistive exercise to 90×, scapula mobilization exercise with glenohumeral stabilization; and
- Scapular plane exercise.

ii. Progressive resistive exercise from 3-6 months, with gradual returning to full activity at 6-9 months. All active non-operative procedures listed in this Section G. Non-operative Treatment Procedures should be considered.

iii. Work restrictions should be evaluated every 4-6 weeks during post-operative recovery and rehabilitation with appropriate written communications to both the patient and employer. Should progress plateau, the provider should reevaluate the patient's condition and make appropriate adjustments to the treatment plan.

8. **Rotator Cuff Tendinitis** Inflammation of one or more of the four musculotendinous structures which arise from the scapula and insert on the lesser or greater tuberosity of the humerus. These structures include one internal rotator (subscapularis), and two external rotators (infraspinatus and teres minor), and the supraspinatus which assists in abduction.

a. **History and Initial Diagnostic Procedures (Rotator Cuff Tendinitis**):

- Occupational Relationship - may include symptoms of pain and/or achiness that occur after repetitive use of the shoulder and/or blunt trauma to the shoulder.

b. **Physical Findings (Rotator Cuff Tendinitis)** may include:

i. Pain with palpation to the shoulder with active or passive abduction and external rotation of the shoulder (painful arc);

ii. Pain with impingement signs; and/or

iii. Pain with specific activation of the involved muscles.

c. **Laboratory Tests (Rotator Cuff Tendinitis):** are not indicated unless a systemic illness or disease is suspected.

d. **Testing Procedures (Rotator Cuff Tendinitis)** may include:

i. Plain x-ray films including AP lateral, axillary, 30× caudally angulated AP, and Outlet view.

ii. If shoulder pain is refractory to 4-6 weeks of non-operative care and the diagnosis is not readily identified by standard radiographic techniques, then adjunctive testing, such as MRI, sonography or arthrography, may be indicated.

iii. Subacromial space injection can be used as a diagnostic procedure by injecting an anesthesia, such as sensorcaine or xylocaine solutions, into the space. If the pain is alleviated with the injection the diagnosis is confirmed.

e. **Non-operative Treatment Procedures (Rotator Cuff Tendinitis)** may include:

i. Medications, such as nonsteroidal anti-inflammatories and analgesics: Subacromial space injection may be therapeutic. Injections of corticosteroids into the subacromial space should be limited to 3 injections per year, rarely used in patients less than 30 years, and generally not injected into the tendon. Autologous blood product injections into areas of tendinopathy are an evolving treatment and may rarely be considered.

ii. Procedures outlined in Section G. Non-operative Treatment Procedures such as relative rest, immobilization, thermal treatment, ultrasound, therapeutic exercise, physical medicine and rehabilitation.

f. **Operative Procedures (Rotator Cuff Tendinitis):** are indicated after failure of conservative care. Surgical treatment and post operative care are similar to the surgical treatment of shoulder bursitis and impingement syndrome. See Section E 5 f-g and 6 f-g.

9. **Shoulder Fractures** There are five common types of shoulder fractures; each type will be addressed separately and in the order of most frequent occurrence.

a. **Clavicular Fracture:**

i. History and Initial Diagnostic Procedures (Clavicular Fracture)

- Occupational Relationship - can result from direct blows or axial loads applied to the upper limb; commonly associated injuries include rib fractures, long-bone fractures of the ipsilateral limb and scapulothoracic dislocations.

ii. Physical Findings (Clavicular Fracture) may include:

A) Pain in the clavicle;

B) Abrasions on the chest wall, clavicle and shoulder can be seen;

C) Deformities can be seen in the above regions; and/or

D) Pain with palpation and motion at the shoulder joint area.

iii. Laboratory Tests (Clavicular Fracture) are not indicated unless a systemic illness or disease is suspected.

iv. Testing Procedures (Clavicular Fracture) could include routine chest x-rays. Alternatively xrays centered on the clavicle, both straight AP and 20 degree cephalad AP views, would be indicated. Serial xrays should be performed to document healing.

v. Non-operative Treatment Procedures (Clavicular Fracture)

A. Most are adequately managed by closed techniques and do not require surgery. The arm is immobilized in a sling (figure-8 bracing shows limited success and should be used rarely). Shoulder rehabilitation is begun with pendulum exercises 10-14 days after injury. Subsequently, with pain control, the therapy program can be progressed with therapeutic approaches as seen in this Section G. Non-operative Treatment Procedures.

B) Medication, such as analgesics and nonsteroidal anti-inflammatories, would be indicated; narcotics may be indicated acutely for fracture and should be prescribed as indicated use is indicated in Section F. Medications.

vi. Operative Procedures (Clavicular Fracture) would be indicated for open fractures, significantly displaced fractures, vascular or neural injuries requiring repair, bilateral fractures, ipsilateral scapular or glenoid neck fractures, scapulothoracic dislocations, flail chest and nonunion displaced-closed fractures that show no evidence of union after 4-6 months. Also a Type II fracture/dislocation at the AC joint where the distal clavicular fragment remains with the acromion and the coracoid, and the large proximal fragment is displaced upwards.

vii. Post-Operative Procedures (Clavicular Fracture) would include an individualized rehabilitation program. This program would begin with 2-4 weeks of rest with a shoulder immobilizer or sling while encouraging isometric deltoid strengthening; pendulum exercises with progression to assisted forward flexion and external rotation would follow; strengthening exercises should be started at 10-12 weeks as seen in Section G. Non-operative Treatment Procedures.

b. **Proximal Humeral Fractures:**

i. History and Initial Diagnostic Procedures (Proximal Humeral Fractures)

A) Occupational Relationship - may be caused by a fall onto an abducted arm; may also be caused by high-energy (velocity or crush) trauma with an abducted or non-abducted arm; associated injuries are common, such as glenohumeral dislocation, stretch injuries to the axillary, musculocutaneous, and radial nerves; axillary artery injuries with high energy accident.

ii. Physical Findings (Proximal Humeral Fractures) may include:

A) Pain in the upper arm;

B) Swelling and bruising in the upper arm, shoulder and chest wall;

C) Abrasions about the shoulder; and/or

D) Pain with any attempted passive or active shoulder motion.

iii. Laboratory Tests (Proximal Humeral Fractures) are not indicated unless a systemic illness or disease is suspected.

iv. Testing Procedures (Proximal Humeral Fracture)

A) X-ray trauma series (3 views) are needed; AP view, axillary view and a lateral view in the plane of the scapula. Additionally, AP view may be done in externally rotation and also internal rotation

B) Vascular studies are obtained emergently if the radial and brachial pulses are absent.

C) Diagnostic testing including CT Scan or MRI to further evaluate the fracture and surrounding structures may be appropriate depending on the fracture configuration and need for pre-operative planning.

v. Non-operative Treatment Procedures (Proximal Humeral Fractures)

A) Impacted or minimally displaced fractures of the humeral neck or greater tuberosity are generally managed non-operatively.

B) Isolated and minimally displaced (less than 1cm) fractures are treated non-operatively.

C) Anterior or posterior dislocation associated with minimally displaced fractures can usually be reduced by closed means, but an anesthetic is needed.

D) Immobilization is provided with a sling, to support the elbow, and/or an abduction immobilizer if appropriate for the fracture configuration.

E) Immobilization is continued for 4-6 weeks

F) Shoulder rehabilitation is begun with pendulum exercises 10-14 days after injury. Subsequently, with pain control, the therapy program can be progressed with therapeutic approaches as seen in Section G. Non-operative Treatment Procedures.

vi. Operative Procedures (Proximal Humeral Fractures)

A) Indications for operative treatment would include:

1) Unstable surgical neck fractures (no contact between the fracture fragments).

2) Partially unstable fractures (only partial contact) with associated same upper extremity injuries.

3) Displaced 3- and 4-part fractures may be managed by internal fixation or a prosthetic hemiarthroplasty and reattachment of the tuberosities.

vii. Post-Operative Procedures (Proximal Humeral Fractures) would include an individualized rehabilitation program.

A) See this Section IV. G, Shoulder Fracture, Non-operative Treatment Procedures.

c. Humeral Shaft Fractures:

i. History and Initial Diagnostic Procedures (Humeral Shaft Fractures)

- Occupational Relationship - a direct blow can fracture the humeral shaft at the junction of its middle and distal thirds; twisting injuries to the arm will cause a spiral humeral shaft fracture; high energy (velocity or crush) will cause a comminuted humeral shaft fracture.

ii. Physical Findings (Humeral Shaft Fractures) may include:

A) Deformity of the arm;

B) Bruising and swelling; and/or

C) Possible sensory and/or motor dysfunction of the radial nerve.

iii. Laboratory Tests (Humeral Shaft Fractures) are not indicated unless a systemic illness or disease is suspected.

iv. Testing Procedures (Humeral Shaft Fractures)

A) Plain x-rays including AP view and lateral of the entire humeral shaft.

B) Vascular studies if the radial pulse is absent.

C) Compartment pressure measurements if the surrounding muscles are swollen, tense and painful and particularly if the fracture resulted from a crush injury.

v. Non-operative Treatment Procedures (Humeral Shaft Fractures)

A) Most isolated humeral shaft fractures can be managed non-operatively.

B) A coaptation splint may be applied. The splint is started in the axilla, extended around the elbow and brought up to the level of the acromion. It is held in place with large elastic bandages.

C) At 2-3 weeks after injury, a humeral fracture orthosis may be used to allow for full elbow motion.

vi. Operative Treatment (Humeral Shaft Fractures)

A) Indications for operative care would include:

- Open fracture;
- Associated forearm or elbow fracture (i.e., the floating elbow injury);
- Burned upper extremity;
- Associated paraplegia;
- Multiple injuries (polytrauma);
- A radial nerve palsy which came on after closed reduction; and/or
- Pathologic fracture related to an occupational injury.
- Some instable or significantly displaced fractures

B) Accepted methods of internal fixation include:

(1) A broad plate and screws; and/or

(2) Intramedullary rodding with or without cross-locking screws.

vii. Post-Operative Procedures (Humeral Shaft Fractures) would include an individualized rehabilitation program. Following rigid internal fixation, therapy may be started to obtain passive and later active shoulder motion using appropriate therapeutic approaches as seen in Section G. Non-operative Treatment Procedures. Active elbow and wrist motion may be started immediately.

d. Scapular Fractures:

i. History and Initial Diagnostic Procedures (Scapular Fractures)

- Occupational Relationship - these are the least common of the fractures about the shoulder and include acromial, glenoid, glenoid neck and scapular body fractures. With the exception of anterior glenoid lip fractures caused by an anterior shoulder dislocation, all other scapular fractures are due to a high energy injury.

ii. Physical Findings (Scapular Fractures) may include:

A) Pain about the shoulder and thorax;

B) Bruising and abrasions;

C) Possibility of associated humeral or rib fractures; and/or

D) Vascular problems (pulse evaluation and Doppler examination).

iii. Laboratory Tests (Scapular Fractures), because of the association of high energy trauma, may include a complete blood count, urinalysis and chest x-ray are warranted.

iv. Testing Procedures (Scapular Fractures)

A) Trauma x-ray series - AP view, axillary view and a lateral view in the plane of the scapula.

B) Arteriography if a vascular injury is suspected.

C) Electromyographic exam if nerve injuries are noted.

D) Diagnostic testing including CT Scan or MRI to evaluate fracture and surrounding structures.

v. Non-operative Treatment Procedures (Scapular Fractures)

A) Non-displaced acromial, coracoid, glenoid, glenoid neck and scapular body fractures may all be treated with the use of a shoulder immobilizer.

B) Pendulum exercises may be started within the first week.

C) Progress to assisted range of motion exercises at 3-4 weeks using appropriate therapeutic procedures as seen in this Section G. Non-operative Treatment Procedures.

vi Operative Treatment (Scapular Fractures)

A) Acromial fractures which are displaced should be internally fixed to prevent a nonunion. These fractures may be fixed with lag screws and/or a superiorly placed plate to neutralize the muscular forces.

B) Glenoid fractures which are displaced greater than 2-3 mm should be fixed internally. The approach is determined by studying the results of a CT scan.

C) Scapular body fractures require internal fixation if the lateral or medial borders are displaced to such a degree as to interfere with scapulothoracic motion.

D) Displaced fractures of the scapular neck and the ipsilateral clavicle require internal fixation of the clavicle to reduce the scapular neck fracture.

vii. Post-Operative Treatment (Scapular Fractures) would include an individualized rehabilitation program Non-operative Treatment Procedures, a shoulder immobilizer is utilized, pendulum exercises at one week, deltoid isometric exercises are started early, and, at 4-6 weeks, active range of motion is commenced.

e. Sternoclavicular Dislocation/Fracture:

i. History and Initial Diagnostic Procedures (Sternoclavicular Dislocation/Fracture)

- Occupational Relationship - established with sudden trauma to the shoulder/ anterior chest wall; anterior dislocations of the sternoclavicular joint usually do not require active treatment; however, symptomatic posterior dislocations will require reduction.

ii. Physical Findings (Sternoclavicular Dislocation/Fracture) may include:

A) Pain at the sternoclavicular area;

B) Abrasions on the chest wall, clavicle and shoulder can be seen;

C) Deformities can be seen in the above regions; and/or

D) Pain with palpation and motion at the sternoclavicular joint area.

iii. Laboratory Tests (Sternoclavicular Dislocation/Fracture) are not indicated unless a systemic illness or disease is suspected.

iv. Testing Procedures (Sternoclavicular Dislocation/Fracture)

A) Plain x-rays of the sternoclavicular joint are routinely done. When indicated, comparative views of the contralateral limb may be necessary.

B) X-rays of other shoulder areas and chest wall may be done if clinically indicated.

C) Vascular studies should be considered if the history and clinical examination indicate extensive injury.

D) Diagnostic tests such as CT Scan or MRI may be required to fully delineate the nature of injury and assist in treatment plan.

v. Non-operative Treatment Procedures (Sternoclavicular Dislocation /Fracture)

A) Symptomatic posterior dislocations should be reduced in the operating room under general anesthesia.

B) Immobilize with a sling for 3-4 weeks. Subsequently, further rehabilitation may be utilized using procedures set forth in Section G. Non-operative Treatment Procedures.

C) Medications, such as analgesics and nonsteroidal anti-inflammatories, would be indicated; narcotics may be indicated acutely for fracture and should be prescribed as indicated use is indicated in this Section F. Medications.

vi. Operative Procedures (Sternoclavicular Dislocation/Fracture) would be warranted following failure of reduction by manipulation with pointed reduction forceps. Caution should be utilized when pins or screws are used for stabilization secondary to migration.

vii. Post-Operative Procedures (Sternoclavicular Dislocation/Fracture) would include

an individualized rehabilitation program. This program would begin with 4-6 weeks of rest with a shoulder immobilizer and be followed by pendulum exercises with progression to assisted forward flexion and external rotation. Strengthening exercises should be started at 8-10 weeks.

10. **Shoulder Instability** Subluxation (partial dislocation) or dislocation of the glenohumeral joint in either an anterior, interior, posterior or multidirectional position.

a. **History and Initial Diagnostic Procedures (Shoulder Instability)**:

i. Occupational Relationship - instability should be apparent following a direct traumatic blow to the shoulder, or indirectly by falling on an outstretched arm, or while applying significant traction to the arm, or may also develop with a cumulative trauma to the shoulder. Symptoms should be exacerbated or provoked by work and initially alleviated with a period of rest. Symptoms may be exacerbated by other activities that are not necessarily work related (e.g., driving a car).

ii. History may include:

A) A slipping sensation in the arm;

B) Severe pain with inability to move the arm;

C) Abduction and external rotation produce a feeling that the shoulder might "come out"; or

D) Feeling of shoulder weakness.

iii. In subacute and/or chronic instabilities, age of onset of instability is important in the history. Older age group (over age 40) has a propensity not to re-dislocate. Younger age groups (under age 30) need a more aggressive treatment plan.

iv. Avoid any aggressive treatment in patients with history of voluntary subluxation or dislocation. These patients may need a psychiatric evaluation.

b. **Physical Findings (Shoulder Instability)** may include:

i. Anterior dislocations would likely include loss of normal shoulder contour; a fullness in the axilla; pain over the shoulder with any motion and often the patient holding the extremity in a very still position;

ii. Posterior dislocations usually occur with a direct fall on the shoulder or outstretched arm resulting in posteriorly directed forces to the humeral head. These patients present with inability to externally rotate the shoulder;

iii. Neurologic examination could reveal most commonly axillary nerve injuries, but occasionally musculocutaneous nerve injuries are seen; and/or

iv. Abduction and external rotation positioning will produce pain in those who have anterior instability. Direct posterior stress in a supine position will produce pain in those with posterior instability. Longitudinal traction will produce a "sulcus sign" (a large dimple on the lateral side of the shoulder) when there is inferior instability.

c. **Laboratory Tests (Shoulder Instability):** are not indicated unless a systemic illness or disease is suspected.

d. **Testing Procedures (Shoulder Instability):**

i. Plain x-rays to rule out bony deficit on the glenoid, including AP, axillary view, lateral in the plane of the scapula and possibly the West Point view. Axillary view to identify larger Hill-Sachs lesion of humeral head.

ii. On more difficult diagnostic cases with subtle history and physical findings suggesting instability, MRI, or a CT assisted arthrogram or MRI assisted arthrogram may be ordered for lateral detachment after 4-8 weeks of therapy. (This is done only after other conservative therapies have failed.)

iii. An MRI is indicated to rule out acute rotator cuff injury after shoulder dislocation in patients over age 45.

e. **Non-operative Treatment Procedures (Shoulder Instability):**

i. First-Time Acute Involvement:

A) Therapeutic Procedures

1) Immobilization

2) Therapeutic Exercise

3) Alteration of Occupation & Work Station

4) Thermal Treatment

5) TENS Unit

6) Ultrasound

B) May not return to work with overhead activity or lifting with involved arm until cleared by physician for heavier activities.

C) Additional modalities may include:

1) Biofeedback

2) Physical Medicine and Rehabilitation

a) Instruction in Therapeutic Exercise and Proper Work Techniques

b) Manual Therapy Techniques

3) Work Conditioning

a) Vocational Rehabilitation

b) Vocational Assessment

c) Interdisciplinary Team Approach

i. Work Hardening

ii. Functional Restoration Programs

iii. Pain Clinics

D) Medications - medication discussions are in Section F. Medications

1) Analgesics

2) Anti-inflammatories

ii. Acute or chronic dislocations with large fracture fragments contributing to instability;

a) Attempt to treat with immobilization if in acceptable position, otherwise repair surgically

b) Return-to-work may be directly related to time it takes for the fracture to heal

iii. Subacute and/or chronic instability:

a) Provocative dislocation should first be treated similarly to acute dislocation.

b) If acute treatment is unsuccessful, and still having findings of instability, would consider operative repair.

f. Operative Procedures (Shoulder Instability):

i. Identify causative agent for the instability (i.e., labral detachment, bony lesion, or multidirectional instability), then proceed with:

a) Bony block transfer;

b) Capsular tightening; or

c) Bankart lesion repair.

g. Post-Operative Procedures (Shoulder Instability): would include an individualized rehabilitation program. Depending upon the type of surgery, the patient will be immobilized for 3-6 weeks. As soon as it is safe to proceed without damaging the repair, progressive therapy, either home based or with consultation involving an occupational and/or physical therapist should begin with therapeutic exercise, physical medicine and rehabilitation (refer to Section G. Non-operative Treatment Procedures). During this period of time, the patient could resume working when:

i. A job assessment results in the treating physician's identification of needed modifications and restrictions;

ii. The patient has attained a general level of comfort;

iii. Medications which would predispose to injury are no longer being prescribed or used; and

iv. The treating physician has cleared the patient for the specific vocational activities.

MMI can be expected 6-9 months after operative intervention. Further job assessment and adjusted work restrictions may be needed prior to the patients return to full duty.

G. Therapeutic Procedures - Non-operative

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

First, patients undergoing therapeutic procedure(s) should be released or returned to modified or restricted

duty during their rehabilitation at the earliest appropriate time. Refer to “Return-to-Work” in this section for detailed information.

Second, 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.

Third, 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.

In cases where a patient is unable to attend an outpatient center, home therapy may be necessary. Home therapy may include active and passive therapeutic procedures as well as other modalities to assist in alleviating pain, swelling, and abnormal muscle tone. Home therapy is usually of short duration and continues until the patient is able to tolerate coming to an outpatient center.

The following procedures are listed in alphabetical order.

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

a. **Acupuncture::** is the insertion and removal of filiform needles to stimulate acupoints (acupuncture points). Needles may be inserted, manipulated and retained for a period of time. Acupuncture can be used to reduce pain and inflammation, and to increase blood flow to an area and increase range of motion. Indications include joint pain, joint stiffness, soft tissue pain and inflammation, paresthesia, post-surgical pain relief, muscle spasm, and scar tissue pain.

- Time to produce effect: 3 to 6 treatments
- Frequency: 1 to 3 times per week
- Course duration: 14 treatments

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

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

- Time to produce effect: 3 to 6 treatments
- Frequency: 1 to 3 times per week
- Course duration: 14 treatments

c. **Other Acupuncture Modalities:** Acupuncture treatment is based on individual patient needs and therefore treatment may include a combination of procedures to enhance treatment effect. Other procedures may include the use of heat, soft tissue manipulation/massage, and exercise.

- Time to produce effect: 3 to 6 treatments
- Frequency: 1 to 3 times per week
- Course duration: 14 treatments

Any of the above acupuncture treatments may extend longer if objective functional gains can be documented or when symptomatic benefits facilitate progression in the patient’s treatment program. Treatment beyond 14 sessions (1 course) may be documented with respect to need and ability to facilitate positive symptomatic or functional gains.

2. **Biofeedback** is a form of behavioral medicine that helps patients learn self-awareness and self-regulation skills for the purpose of gaining greater control of their physiology, such as muscle activity, brain waves, and measures of autonomic nervous system activity. Electronic instrumentation is used to monitor the targeted

physiology and then displayed or fed back to the patient visually, auditorially, or tactilely, with coaching by a biofeedback specialist. Biofeedback is provided by clinicians certified in biofeedback and/or who have documented specialized education, advanced training, or direct or supervised experience qualifying them to provide the specialized treatment needed (e.g., surface EMG, EEG, or other).

Treatment is individualized to the patient's work-related diagnosis and needs. Home practice of skills is required for mastery and may be facilitated by the use of home training tapes. The ultimate goal in biofeedback treatment is normalizing the physiology to the pre-injury status to the extent possible and involves transfer of learned skills to the workplace and daily life. Candidates for biofeedback therapy or training must be motivated to learn and practice biofeedback and self-regulation techniques.

Indications for biofeedback include individuals who are suffering from musculoskeletal injury where muscle dysfunction or other physiological indicators of excessive or prolonged stress response affects and/or delays recovery. Other applications include training to improve self-management of emotional stress/pain responses such as anxiety, depression, anger, sleep disturbance, and other central and autonomic nervous system imbalances. Biofeedback is often utilized along with other treatment modalities.

- Time to produce effect: 3 to 4 sessions
- Frequency: 1 to 2 times per week
- Maximum duration: 10 to 12 sessions. Treatment beyond 12 sessions must be documented with respect to need, expectation, and ability to facilitate positive symptomatic or functional gains.

3. **Injections – Therapeutic** are generally accepted, well-established procedures that may play a significant role in the treatment of patients with upper extremity pain or pathology. Therapeutic injections involve the delivery of anesthetic and/or anti-inflammatory medications to the painful structure. Therapeutic injections have many potential benefits. Ideally, a therapeutic injection will: (a) reduce inflammation in a specific target area; (b) relieve secondary muscle spasm; and (c) diminish pain and support therapy directed to functional recovery. Diagnostic and therapeutic injections should be used early and selectively to establish a diagnosis and support rehabilitation. If injections are overused or used outside the context of a monitored rehabilitation program, they may be of significantly less value.

a. **Steroid Injections:** may provide both diagnostic and therapeutic value in treating a variety of shoulder disorders. These include biceps tendonitis, bursitis, rotator cuff tendonitis and impingement syndrome.

Steroid injections provide a potent anti-inflammatory effect, which is usually short term in duration, lasting weeks or months. Injections should always be used as an adjunctive treatment in the context of a physical exercise and rehabilitation program.

When performing tendon injections, the risk of tendon rupture should be discussed with the patient and the need for temporary restricted duty emphasized. *

Contraindications: General contraindications include local or systemic infection, bleeding disorders, and allergy to medications used.

Local Steroid Injections:

- Time to produce effect: 3 days
- Frequency: monthly
- Maximum duration: 3 injections

b. **Trigger Point Injections:** are generally accepted, although used infrequently in uncomplicated cases. They may, however, be used to relieve myofascial pain and facilitate active therapy and stretching of the affected areas, and as an adjunctive treatment in combination with other treatment modalities, such as functional restoration programs, including stretching therapeutic exercise. Trigger point injections should be utilized primarily for the purpose of facilitating functional progress. The Division does not recommend their routine use in the treatment of upper extremity injuries.

- Time to produce effect: Local anesthetic 30 minutes; 24 to 48 hours for no anesthesia.
- Frequency: Weekly. Suggest no more than 4 injection sites per session per week to avoid significant post-injection soreness.
- Maximum duration: 8 weeks. Occasional patients may require 2 to 4 repetitions of trigger point injection series over a 1 to 2 year period.

4. **Job Site Alteration** Early evaluation and training of body mechanics and other ergonomic factors

are essential for every injured worker and should be done by a qualified individual. In some cases, this requires a job site evaluation. Some evidence supports alteration of the work site in the early treatment of non-traumatic Shoulder Disorders. There is no single factor or combination of factors that is proven to prevent or ameliorate Shoulder Disorders, but a combination of ergonomic are generally considered to be important. Physical factors that may be considered include use of force, repetition, awkward positions, upper extremity vibration, cold environment, and contact pressure on the nerve.

The job analysis and modification should include input from the employee, employer, and ergonomist or other professional familiar with work place evaluation. The employee must be observed performing all job functions in order for the job site analysis to be valid. Periodic follow-up is recommended to evaluate effectiveness of the intervention and need for additional ergonomic changes.

5. Medications

For shoulder disorders, medications play a secondary role and should never be the sole modality of treatment. If a patient's symptoms resolve quickly with medications or any other passive modality, the practitioner should still consider prescribing a brief course in shoulder and upper extremity education and safety. When required, a wide range of medication is available. Modalities in this group are generally accepted, established and widely used. All narcotics and habituating medications should be prescribed with strict time, quantity and duration guidelines with a definite cessation parameter. Prescribing these drugs on an as-needed basis (PRN) should almost always be avoided.

a. Nonsteroidal Anti-inflammatory Drugs (NSAIDs) are probably the most useful medications in acute and chronic shoulder injury. In mild cases, they may be the only drug required for analgesia. There are several classes of NSAIDs and the response of the individual patient to a specific medication is unpredictable. For this reason, a range of anti-inflammatory medications may be tried in each case with the most effective preparation being continued.

For prolonged use of NSAIDs greater than 1-3 months, patients should be monitored for adverse reactions. Appropriate intervals for metabolic screening are dependent upon the patient's age, general health status and should be within parameters listed for each specific medication.

b. Analgesics (acetaminophen and aspirin are the common choice for non-narcotic analgesia.

c. Psychotropic Medication may be used in patients with a high level of anxiety or depression. A variety of psychotropic drugs may be used. In acute or subacute shoulder injury, these medications are generally unnecessary except for the use of tricyclic antidepressants as substitutes for hypnotics and/or analgesics. In most cases, major tranquilizers, anxiolytics and antidepressants are reserved for chronic pain disorders. Patients, whose chief complaint is shoulder injury, but require use of major tranquilizers or anxiolytics for greater than two weeks. In particular, benzodiazepams are almost always contraindicated in patients with shoulder injury unless a severe anxiety state exist requiring psychiatric supervision or in cases of extremely severe, objectively visualized acute muscle spasm. In this type of acute scenario, the maximum duration for benzodiazepam administration should be limited to less than five days.

d. Hypnotics may be given to shoulder injury sufferers because of a chief complaint of "inability to sleep." Such medication must be used with caution because of their dependence-producing capabilities. The Division recommends consideration of sedating tricyclic antidepressants as an alternative when necessary. Physical methods of restoring a normal sleep pattern can usually be employed as an alternative to medication.

e. Narcotics should be primarily reserved for the treatment of acute shoulder injury or the treatment of patients with objectively documented acute exacerbations. The action of these drugs is central, affecting the patient's perception of pain rather than the pain process itself.

Narcotics are rarely indicated in the treatment of patients with pure shoulder injury without fracture. In mild to moderate cases of upper extremity pain, narcotic medication should not be used at all. Adverse effects include respiratory depression and the development of physical and psychological dependence.

f. Minor Tranquilizers/muscle Relaxants should be primarily reserved for the treatment of acute shoulder with muscle spasm or the treatment of patients with objectively documented acute exacerbations. Muscle relaxants may have a significant effect on the early phases of acute shoulder disorders. Their action is central and with no effect on the neuromuscular junction of the muscles themselves. Purported peripheral effects are difficult to separate from the anxiolytic central action.

6. Occupational Rehabilitation Programs

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

i. WORK CONDITIONING/SIMULATION

This program may begin once a patient is out of the acute phase of injury and will be able to tolerate this program.

These programs are usually initiated after the acute phase has been completed and offered at any time throughout the recovery phase. Work conditioning should be initiated when imminent return of a patient to modified or full duty is not an option, but the prognosis for returning the patient to work at completion of the program is at least fair to good.

The need for work place simulation should be based upon the results of a Functional Capacity Evaluation and/or Jobsite Analysis.

- Length of visit: 1 to 4 hours per day.
- Frequency: 2 to 5 visits per week
- Maximum duration: 8 weeks. Participation in a program beyond six weeks must be documented with respect to need and the ability to facilitate positive symptomatic or functional gains.

ii. WORK HARDENING

Work Hardening is an interdisciplinary program addressing a patient's employability and return to work. It includes a progressive increase in the number of hours per day that a patient completes work simulation tasks until the patient can tolerate a full workday. This is accomplished by addressing the medical, behavioral, physical, functional, and vocational components of employability and return-to-work.

This can include a highly structured program involving a team approach or can involve any of the components thereof. The interdisciplinary team should, at a minimum, be comprised of a qualified medical director who is board certified with documented training in occupational rehabilitation; team physicians having experience in occupational rehabilitation; occupational therapist; physical therapist; case manager; and psychologist. As appropriate, the team may also include: chiropractor, RN, vocational specialist or Certified Biofeedback Therapist**.**

- Length of visit: Up to 8 hours/day
- Frequency: 2 to 5 visits per week
- Maximum duration: 8 weeks. Participation in a program beyond six weeks must be documented with respect to need and the ability to facilitate positive symptomatic or functional gains.

7. Patient Education No treatment plan is complete without addressing issues of individual patient and/or group 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 take an active role in the establishment of functional outcome goals, and should be educated on his or her specific injury, assessment findings, and plan of treatment. Education and instruction in proper body mechanics and posture, positions to avoid task/tool adaptation, self-care for exacerbation of symptoms, and home exercise/task adaptation should also be addressed.

- Time to produce effect: Varies with individual patient.
- Frequency: Should occur at every visit.

8. Return-to-work is therapeutic, assuming the work is not likely to aggravate the basic problem or increase long-term pain. The practitioner must provide specific physical limitations per the Physician's Form. The following physical limitations should be considered and modified as recommended: lifting, pushing, pulling, crouching, walking, using stairs, bending at the waist, awkward and/or sustained postures, tolerance for sitting or standing, hot and cold environments, data entry and other repetitive motion tasks, sustained grip, tool usage and vibration factors. Even if there is residual chronic pain, return-to-work is not necessarily contraindicated.

The practitioner should understand all of the physical demands of the patient's job position before returning the patient to full duty and should receive clarification of the patient's job duties.

9. **Sleep Disturbances** are a common secondary symptom of CTD. Although primary insomnia may accompany pain as an independent co-morbid condition, it more commonly occurs, secondary to the pain condition itself. Exacerbations of pain often are accompanied by exacerbations of insomnia; the reverse can also occur. Sleep laboratory studies have shown disturbances of sleep architecture in pain patients. Loss of deep slow-wave sleep and increase in light sleep occur and sleep efficiency, the proportion of time in bed spent asleep, is decreased. These changes are associated with patient reports of non-restorative sleep.

Many affected patients develop behavioral habits that exacerbate and maintain sleep disturbances. Excessive time in bed, irregular sleep routine, napping, low activity, and worrying in bed are all maladaptive responses that can arise in the absence of any psychopathology. There is some evidence that behavioral modification, such as patient education and group or individual counseling, can be effective in reversing the effects of insomnia. Behavioral modifications are easily implemented and can include:

a. Maintaining a regular sleep schedule, retiring and rising at approximately the same time on weekdays and weekends.

b. Avoiding daytime napping.

c. Avoiding caffeinated beverages after lunchtime

d. Making the bedroom quiet and comfortable, eliminating disruptive lights, sounds, television sets, and keeping a bedroom temperature of about 65°F.

e. Avoiding alcohol or nicotine within two hours of bedtime.

f. Avoiding large meals within two hours of bedtime.

g. Exercising vigorously during the day, but not within two hours of bedtime, since this may raise core temperature and activate the nervous system.

h. Associating the bed with sleep and sexual activity only, using other parts of the home for television, reading and talking on the telephone.

i. Leaving the bedroom when unable to sleep for more than 20 minutes, retuning to the bedroom when ready to sleep again.

These modifications should be undertaken before sleeping medication is prescribed for long term use.

10. **Therapy–passive** includes those treatment modalities that do not require energy expenditure on the part of the patient. They are principally effective during the early phases of treatment and are directed at controlling symptoms such as pain, inflammation and swelling and to improve the rate of healing soft tissue injuries. They should be used in adjunct with active therapies to help control swelling, pain and inflammation during the rehabilitation process. They may be used intermittently as a therapist deems appropriate or regularly if there are specific goals with objectively measured functional improvements during treatment.

a. **Electrical Stimulation (Unattended and Attended):** once applied, requires minimal on-site supervision by the physician or non-physician provider. Indications include pain, inflammation, muscle spasm, atrophy, and decreased circulation.

- Time to produce effect: 2 to 4 treatments
- Frequency: Varies, depending upon indication, between 2 to 3 times/day to 1 time/ week. Provide home unit if frequent use.
- Maximum duration: 24 visits

b. **Extracorporeal shock wave treatment:** Consists of the application of pulses of high pressure sound to soft tissues, similar to lithotriptors. It has been investigated for its effectiveness in the treatment of Calcific Tendonitis. It has not been shown to have an advantage over other conservative treatments and remains investigational. It is not recommended.

c. **Iontophoresis::** is the transfer of medication, including, but not limited to, steroidal anti-inflammatories and anesthetics, through the use of electrical stimulation. Indications include pain (Lidocaine), inflammation (hydrocortisone, salicylate), edema (mecholyl, hyaluronidase, salicylate), ischemia (magnesium, mecholyl, iodine), muscle spasm (magnesium, calcium), calcific deposits (acetate), scars and keloids (chlorine, iodine, acetate).

- Time to produce effect: 1 to 4 treatments
- Frequency: 2-3 times per week with at least 48 hours between treatments.
- Maximum duration: 8 treatments per region

d. **Laser irradiation:** Consists of the external application of an array of visible and infrared wavelengths to soft tissues. Frequency and duration are dependent on severity and chronicity of problem.

e. **<u>Manual Therapy Techniques:</u>** are passive interventions in which the providers use his or her hands to administer skilled movements designed to modulate pain; increase joint range of motion; reduce/ eliminate soft tissue swelling, inflammation, or restriction; induce relaxation; and improve contractile and non-contractile tissue extensibility. These techniques are applied only after a thorough examination is performed to identify those for whom manual therapy would be contraindicated or for whom manual therapy must be applied with caution.

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

High velocity, low amplitude (HVLA) technique, chiropractic manipulation, osteopathic manipulation, muscle energy techniques, counter strain, and non-force techniques are all types of manipulative treatment. This may be applied by osteopathic physicians (D.O.), chiropractors (D.C.), properly trained physical therapists (P.T.), or properly trained medical physicians. Under these different types of manipulation exist many subsets of different techniques that can be described as a) direct- a forceful engagement of a restrictive/pathologic barrier, b) indirect- a gentle/non-forceful disengagement of a restrictive/pathologic barrier, c) the patient actively assists in the treatment and d) the patient relaxing, allowing the practitioner to move the body tissues. When the proper diagnosis is made and coupled with the appropriate technique, manipulation has no contraindications and can be applied to all tissues of the body. Pre-treatment assessment should be performed as part of each manipulative treatment visit to ensure that the correct diagnosis and correct treatment is employed.

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

- Time to produce effect for all types of manipulative treatment: 1 to 6 treatments.
- Frequency: Up to 3 times per week for the first 4 weeks as indicated by the severity of involvement and the desired effect, then up to 2 treatments per week for the next 4 weeks. For further treatments, twice per week or less to maintain function.
- Maximum duration: 30 visits. Extended durations of care beyond what is considered “maximum” may be necessary in cases of re-injury, interrupted continuity of care, exacerbation of symptoms, and in those patients with comorbidities. Refer to the Chronic Pain Guidelines for care beyond 6 months.

The combination of 97140 plus either CMT or OMT code is equal to one visit when performed on the same day. Any combination of manual theraputic intervention exceeding 30 visits (not units) needs to go to UR.

ii. MOBILIZATION (Joint) /Manipulation

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

- Time to produce effect: 4 to 6 treatments
- Frequency: 2 to 3 times per week
- Maximum duration: 30 visits (CPT codes 97124 and 97140 can not exceed 30 visits in combination).

iii. MOBILIZATION **(Soft Tissue)**

Mobilization of soft tissue is the skilled application of manual techniques designed to normalize movement patterns through the reduction of soft tissue pain and restrictions. Indications include muscle spasm around a joint, trigger points, adhesions, and neural compression.

Nerve Gliding: consist of a series of flexion and extension movements of the hand, wrist, elbow, shoulder, and neck that produce tension and longitudinal movement along the length of the

median and other nerves of the upper extremity. These exercises are based on the principle that the tissues of the peripheral nervous system are designed for movement, and that tension and glide (excursion) of nerves may have an effect on neurophysiology through alterations in vascular and axoplasmic flow. Biomechanical principles have been more thoroughly studied than clinical outcomes. Nerve gliding performed on a patient by the clinician should be reinforced by patient performance of similar techniques as part of a home exercise program at least twice per day.

- Time to produce effect: 4 to 6 treatments
- Frequency: 2 to 3 times per week
- Maximum duration: 30 visits (CPT codes 97124 and 97140 can not exceed 30 visits in combination).

f. **Massage:** Manual or Mechanical - Massage is 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, muscle spasm, adhesions, the need to improve peripheral circulation and range of motion, or to increase muscle relaxation and flexibility prior to exercise.

- Time to produce effect: Immediate.
- Frequency: 1 to 3 times per week
- Maximum duration: 12 visits (CPT codes 97124 and 97140 can not exceed 30 visits in combination).

g. **Orthotics/Immobilization with Splinting:** is a generally accepted, well-established and widely used therapeutic procedure. Splints may be effective when worn at night or during portions of the day, depending on activities. Splints should be loose and soft enough to maintain comfort while supporting the involved joint in a relatively neutral position. Splint comfort is critical and may affect compliance. Although off-the-shelf splints are usually sufficient, custom thermoplastic splints may provide better fit for certain patients.

Splints may be effective when worn at night or during portions of the day, depending on activities; however, splint use is rarely mandatory. Providers should be aware that over-usage is counterproductive, and counsel patients to minimize daytime splint use in order avoid detrimental effects, such as, stiffness and dependency over time.

- Time to produce effect: 1-4 weeks
- Frequency: Daytime intermittent or night use, depending on symptoms and activities.
- Maximum duration: 2 to 4 months. If symptoms persist, consideration should be given to further diagnostic studies or to other treatment options.

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

- Time to produce effect: Immediate
- Frequency: 2 to 5 times per week (clinic). Home treatment as needed.
- Maximum duration: 18 visits. If symptoms persist, consideration should be given to further diagnostic studies or other treatment options.

i. **Ultrasound:** uses sonic generators to deliver acoustic energy for therapeutic thermal and/ or nonthermal soft tissue effects. Indications include scar tissue, adhesions, collagen fiber and muscle spasm, and to improve muscle tissue extensibility and soft tissue healing. Ultrasound with electrical stimulation is concurrent delivery of electrical energy that involves dispersive electrode placement. Indications include muscle spasm, scar tissue, pain modulation and muscle facilitation. Phonophoresis is the transfer of medication to the target tissue to control inflammation and pain through the use of sonic generators. These topical medications include, but are not limited to, steroidal anti-inflammatory and anesthetics.

- Time to produce effect: 4 to 8 treatments
- Frequency: 2-3 times per week
- Maximum duration: 18 visits

11. **Therapy–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 alleviating discomfort. Active therapy requires an internal effort by the individual to complete a specific exercise or task, and thus assists in developing skills promoting independence to allow self-care after discharge. This form of therapy requires supervision from a therapist or medical provider such as verbal, visual, and/or tactile instructions. At times a 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. Home exercise can include exercise with or without mechanical assistance or resistance and functional activities with assistive devices.

Interventions are selected based on the complexity of the presenting dysfunction with ongoing examination, evaluation and modification of the plan of care as improvement or lack thereof occurs. Change and/or discontinuation of an intervention should occur if there is attainment of expected goals/outcome, lack of progress, lack of tolerance and/or lack of motivation. Passive interventions/modalities may only be used as adjuncts to the active program.

a. **Activities of Daily Living:** Supervised instruction, active-assisted training, and/or adaptation of activities or equipment to improve a person's capacity in normal daily living activities such as self-care, work re-integration training, homemaking, and driving.

- Time to produce effect: 4 to 5 treatments
- Maximum of 10 sessions

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

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

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

- Time to produce effect: 4 to 5 treatments
- Frequency: 3 to 5 times per week
- Maximum duration: 24 visits

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

c. **Functional Activities:** are the use of therapeutic activity to enhance mobility, body mechanics, employability, coordination, and sensory motor integration.

- Time to produce effect: 4 to 5 treatments
- Frequency: 3 to 5 times per week
- Maximum duration: 24 visits

Total number of visit 97110 and 97530 should not exceed 36 visits without pre-authorization

d. **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, coordination education of movement, balance, and posture. Indications include the need to promote neuromuscular responses through carefully timed proprioceptive stimuli, to elicit and improve motor activity in patterns similar to normal neurologically developed sequences, and improve neuromotor response with independent control.

- Time to produce effect: 2 to 6 treatments

- Frequency: 3-5 times per week
- Maximum duration: 24 visits

e. **Proper Work Techniques:** Please refer to the "Job Site Evaluation" and "Job Site Alteration" sections of these guidelines.

f. **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, increased range of motion, and are used to promote normal movement patterns. Can also include complimentary/ alternative exercise movement therapy.

- Time to produce effect: 2 to 6 treatments
- Frequency: 3 to 5 times per week
- Maximum duration: 36 visits

Total number of visit 97110 and 97530 should not exceed 36 visits without pre authorization

12. **Restriction Of Activities** Continuation of normal daily activities is the recommendation for most Shoulder Disorders with or 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 injured workers with Shoulder Disorders.

13. **Vocational Rehabilitation** is a generally accepted intervention. Initiation of vocational rehabilitation requires adequate evaluation of patients for quantification of highest functional level, motivation, and achievement of maximum medical improvement. Vocational rehabilitation may be as simple as returning to the original job or as complicated as being retrained for a new occupation.