

NIH Pain Consortium
Centers of Excellence in Pain Education



Acute Injury Farm Accident with Chronic Pain Instructor Guide



University of Iowa CoEPE



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Course Overview

This is an interactive multimedia presentation designed to focus on “acute on chronic” pain. The course takes you through a timeline of approximately one year in the life of a farmer who has an acute injury in his right arm and subsequently develops chronic pain in the right arm and has additional acute pain with his chronic pain.

The presentation has a pre-test and post-test, interactive activities and videos to help meet the learning objectives in pain education. The presentation demonstrates best practice and evidence based practice and some errors made in the care of our farmer, Mr. Lane.

There are video and audio integrated in this learning module, make sure your computer is equipped with speaker or headphone.

Navigation

Events 1 to 8: As you go through the case scenario of Mr. Lane, you will go through 8 events for the timeline to help you understand Mr. Lane and his situation. On the top right of the page, there are 8 buttons that indicate the date when the events occur. You can navigate by clicking on the button.

Tools: On the top left of the page, there are 3 buttons for tools of the pain assessment; Numeric Rating Scale (NRS) Quick Disability of the Arm Shoulder and Hand (QDASH) and the Functional Pain Scale (FPS). An additional tool is the Opioid Risk Tool (ORT). You can view the score of each tool by moving the mouse over the button of each instrument.

Information: For each event, you will be able to get information on the medical history, medications, psychosocial issues, work history, interventions, and additional information. The buttons are located at the bottom of the page.

For evidence-based practice, we have included a grading of evidence – strong, moderate, and weak.

National Institute of Health (NIH) Consortium Centers of Excellence in Pain Education (CoEPE)

In September 2015, the University of Iowa was named as one of eleven NIH Centers of Excellence in Pain Education (CoEPE) (NIDA contract #: HHSN271201500050C). In the 2011 Institute of Medicine (IOM) Report *Relieving Pain in America*, an urgency related to improving pain education for undergraduate and graduate students was established as one strategy to address the healthcare system's deficiencies in managing pain. The creation of CoEPE's addresses this national need to improve pain education. According to NIH Director Dr. Francis Collins, "Virtually all health professionals are called upon to help patients suffering from pain. These new centers will translate current research findings about pain management to fill what have been recognized as gaps in curricula so clinicians in all fields can work with their patients to make better and safer choices about pain treatment."

NIH CoEPE Link: https://painconsortium.nih.gov/NIH_Pain_Programs/CoEPES.html

University of Iowa's CoEPE Objective

To synergize the pain educational activities at the University of Iowa by bringing together faculty expertise, clinical experiences, coursework, and formal and informal educational opportunities and activities to inform, improve, and infuse education on pain assessment, measurement, and treatment into both collegiate curricula and clinical practice at Iowa.

University of Iowa CoEPE Main Activities

- To develop enduring e-learning pain modules as training and educational resources for medicine, dentistry, nursing, mental health, physical therapy, pharmacy, social work and other health professions.
- To advance the assessment, diagnosis and safe treatment of pain.
- To implement, evaluate and disseminate educational advancements

University of Iowa CoEPE Link: <https://uiowa.edu/coepe/>

Case Development

At the University of Iowa CoEPE, our case was developed by an interdisciplinary team from nursing, physical therapy, pharmacy, physician, physician assistant, nurse practitioner, psychology, social work and College of Public Health curriculum experts. The case learning objectives, competency review and activities were developed as a team.

Core Competencies for Pain Management

Domain 1.5: Explain how cultural, institutional, societal, and regulatory influences affect assessment and management of pain.

Domain 2.1: Use valid and reliable tools for measuring pain and associated symptoms to assess and reassess related outcomes as appropriate for the clinical context and population.

Domain 3.1: Demonstrate the inclusion of patient and others in education and shared decision-making process for pain care.

Domain 3.7: Develop a treatment plan that takes into account the differences between acute pain, acute on chronic pain, chronic/persistent pain and pain at the end of life.

Domain 4.3: Describe the role, scope of practice, and contribution of the different professions within a pain management care team.

Domain 4.4: Implement an individualized pain management plan that integrates the perspectives of patients, their social support systems and health care providers in the context of available resources.

Interprofessional Communication Competencies

Domain 3: Communicate with patients, families, communities and other health professional in a responsive and responsible manner that supports a team approach to the maintenance of health and the treatment of disease.

Learning Objectives

At the end of this course, the student will be able to:

Explain how cultural, institutional, societal, and regulatory influences affect assessment and management of pain.

Use valid and reliable tools for measuring pain and associated symptoms to assess and reassess related outcomes as appropriate for the clinical context and population.

Demonstrate the inclusion of patient and others in education and shared decision-making process for pain care.

Develop a treatment plan that takes into account the differences between acute pain, acute on chronic pain, chronic/persistent pain.

Describe the role, scope of practice, and contribution of the different professions within a pain management care team.

Assess the implementation of an individualized pain management plan that integrates the perspectives of patient, their social support systems, and health care providers in the context of available resources.

Discuss communication with patients, families, communities, and other health professional in a responsive and responsible manner that supports a team approach to the maintenance of health and the treatment of disease.

Intended Audience

The intended audience for this course is pre-licensure students across healthcare disciplines.

Length of Course

The length for this course is approximately 60 minutes depending on the individual use. Upon complete of the course you will get a certificate of completion.

Case Summary

This case presentation is about a 43 year old farmer who injured his right arm when his right arm was stuck in a combine and was air lifted to a tertiary care center. The case follows our patient from initial injury, through acute pain, the development of chronic pain and acute on chronic pain. The case follows the patient for approximately a year highlighting eight events in his health care journey. The case emphasizes issues regarding family, culture of a farmer, financial concerns, psychosocial issues related to pain, integrating care in a local and tertiary health care environment and overall difficulty with pain control.

Presentation Options

This interactive module is designed to be presented in multiple ways. It is able to be presented as best suits your needs for your course. Options include:

1. Independent learning – having the students work through the case independently; anticipating it will take approximately 60 minutes to complete.
2. Course presentation – it is able to be presented as an instructor led course, anticipating it can be taught in a 60 minute session, two 30 minute sessions or even be taught one event at a time, taking up to 8-10 minutes per event.
3. There are places in the instructor guide for you to write *notes* after the pre-test/post-test questions and with the activities and videos.

Pretest

Question 1:

Mr. Lane is a 43 year old male with a crush injury to his dominant right upper extremity. He is a self-employed farmer and was injured trying to repair his combine. He has been at a tertiary care center for emergency surgery. He is being discharged and transitioned to home, which is 2 hours away by car. He will follow up with his primary care provider.

Upon return to his primary care provider, what is the greatest barrier for care for Mr. Lane in a rural setting?

- Getting in and out of the car
- Lack of medical resources in his home area
- Low copay for medical expenses
- High risk for addiction with opioid medications

Answer: Lack of medical resources in his home area

Question 2:

Mr. Lane is a 43 year old male with a crush injury to his dominant right upper extremity. He is a self-employed farmer and was injured trying to repair his combine. He has been at a tertiary care center for emergency surgery. He is being discharged and transitioned to home, which is 2 hours away by car. He will follow up with his primary care provider.

What cultural influence of a farmer is the most important to include in your pain management plan for Mr. Lane?

- Farmer values
- Livestock
- Clothing
- Fencing

Answer: Farmer Values

Question 3:

Mr. Lane is a 43 year old male with a crush injury to his dominant right upper extremity. He is a self-employed farmer and was injured trying to repair his combine. He has been at a tertiary care center for emergency surgery. He is being discharged and transitioned to home, which is 2 hours away by car. He will follow up with his primary care provider.

What tool should be used with patients **prior** to prescribing opioids?

- Opioid Risk Tool
- Opioid Assessment Scale

- Opioid Predictor Scale
- Opioid Resistance Predictor

Answer: Opioid Risk Tool

Question 4:

Mr. Lane is now going to begin physical therapy for improving his function in his right arm. He reports a high pain level (7 on a 0-10 low to high scale) and demonstrates limited movement of the right arm.

What measures would you use to best monitor his pain and function?

- Pain Behaviors, Mobility of the right arm
- Pain Inventory, Grip Strength in the right hand
- Numeric Rating Scale, Quick DASH
- Visual Analog Scale, Ability to drive

Answer: Pain Behaviors, Mobility of the right arm

Question 5:

Mr. Lane is now going to begin physical therapy for improving his function in his right arm. He reports a high pain level (7 on a 0-10 low to high scale) and demonstrates limited movement of the right arm.

What measures would you use to best monitor his pain and function?

- Pain on a 1 to 10 scale
- Pain at rest and movement on a 0-10 scale
- Fatigue levels at rest and with movement
- Color and temperature of skin

Answer: Pain at rest and movement on a 0-10 scale

Question 6:

Mr. Lane is now going to begin physical therapy for improving his function in his right arm. He reports a high pain level (7 on a 0-10 low to high scale) and demonstrates limited movement of the right arm.

In evidence based practice, non-pharmacological treatments that have the strongest evidence for use in postoperative acute pain include all of the following **except**?

- Exercise
- Transcutaneous Electrical Nerve Stimulation
- Cognitive behavioral therapy
- Ice or heat

Answer: Ice or heat

Question 7:

Mr. Lane has been to a tertiary pain clinic with a new diagnosis of chronic pain in his right upper extremity. He is now going to have a cubital tunnel decompression to his right arm and will be experiencing acute on chronic pain.

The main responsibilities of a psychologist in pain management include all of these **except**?

- Help you learn to cope with behaviors and emotions related to pain
- Help you learn to discuss your physical and emotional health related to pain
- Help you learn to distract yourself from the pain
- Help you learn to ignore the pain and increase activity

Answer: Help you learn to ignore the pain and increase activity

Question 8:

Mr. Lane has been to a tertiary pain clinic with a new diagnosis of chronic pain in his right upper extremity. He is now going to have a cubital tunnel decompression to his right arm and will be experiencing acute on chronic pain.

In a team approach to pain management, what is best reason for a multidisciplinary team meeting with the patient?

- Tell the patient what the plan of care will be.
- It is only for the patient and family to ask questions.
- Develop an individualized plan of care with the patient.
- It is for patient to tell the team what he/she has decided to do.

Answer: Develop an individualized plan of care with the patient

Question 9:

Mr. Lane has been to a tertiary pain clinic with a new diagnosis of chronic pain in his right upper extremity. He is now going to have a cubital tunnel decompression to his right arm and will be experiencing acute on chronic pain.

In the biopsychosocial model for pain management, which of the following best represents the model?

- Smoker, high school graduate, grumpy
- Tired, anxious, talkative
- Hair color, early riser, married
- Injury, alcohol abuse, farmer

Answer: Hair, color, early riser, married

Question 10:

Mr. Lane has been to a tertiary pain clinic with a new diagnosis of chronic pain in his right upper extremity. He is now going to have a cubital tunnel decompression to his right arm and will be experiencing acute on chronic pain.

What reasons have prevented Mr. Lane from returning to work?

- Pain
- Decreased range of motion of his right arm
- Decreased strength of the right arm
- All of the above

Answer: All the above

Course Content

Welcome

Hello, welcome to the interdisciplinary pain management module. Our scenario will be an interactive case presentation about a 43 year old farmer who experiences acute pain and acute on chronic pain after a farm injury. Please type in your name and then click BEGIN when you are ready.

Course Overview

The goal of this course is to provide an interactive learning experience about a 43 year old farmer who experiences acute pain and acute on chronic pain after a farm injury.

The intended audience for this course is pre-licensure students across healthcare disciplines.

The length for this course is approximately 60 minutes depending on the individual user. Upon completion of the course, you will get a certificate of completion.

This case incorporates the Core Competencies for Pain Management and Interprofessional Communications Competencies as listed below.

What is Pain

Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage.

Acute pain occurs as a direct result of tissue damage or potential tissue damage and is a symptom. It serves as a warning of disease or a threat to the body.

Chronic Pain is the Pain that outlasts the normal healing time, the impairment is greater than would be expected from the physical findings or injury and/or it occurs in the absence of identifiable tissue damage'.

Understanding Event Timeline

In this module you will follow Mr. Lane from his initial injury as he experiences a right arm crush injury on October 8th 2013 with resultant right arm chronic pain and has 2 acute on chronic pain events: a skin graft on December 4th, 2013 and cubital tunnel decompression on June 1, 2014. The events are numbered 1 to 8 to help you with the timeline of events as you work through the module.

Instruments

There are four instruments that you need to familiarize yourself with in this module. Click on each of them to learn more.

NRS is a numeric rating scale for pain from zero to ten where 0 is no pain and 10 is worst pain imaginable.

Quick Dash is a shortened version of the disabilities of the arm, shoulder and hand measure. It is a questionnaire about function for the arm.

FPS or functional pain scale is a questionnaire that asks about pain during functional activities. It has a score of zero no pain to 5 is pain intolerable with all activities.

Opioid risk tool or ORT is a tool to determine the possible risk for addiction prior to prescribing an opioid in pain management.

Event #1: Initial Injury - Introduction

Mr. Lane was admitted to the hospital following a right upper extremity (RUE) crush injury in a combine.

While farming, the combine stopped working and as he tried to repair it, his right arm was trapped in the combine for 4 hours before being transported to a tertiary care center - a trip of 30 minutes via helicopter.

He underwent surgical repair of soft tissue and nerve injury in the right arm.

Patient Information Intake Form

Patient Name: Stephen Lane

I prefer to be called: Mr. Lane

Home Address: 282 Turkey Hollow Rd, Eldora, Iowa 50627

Gender: Male

Meet Mr. Lane

My name is Stephen Lane. I wanted to introduce myself to you. I am a farmer in Iowa. I live on a farm that has been in my family for generations. It is located about 45 minutes from the

nearest town. I grew up on the farm and live here with my family – my wife, my kids and my parents. I am a crop farmer – so that means I plant and harvest corn and soy beans. We have some animals on the farm but they are family pets, just cats and dogs. I love farming and all the good and bad parts that go with farming. It can be a tough life being dependent on nature, well working machinery and your willingness to work hard.

In this story, you will be hearing about my injury to my right arm, my follow-up surgeries, my pain, my family and my healthcare journey.

Let's begin with my injury to my right arm. I injured my right arm in October 2013. It was about 1 in the afternoon. I was harvesting corn with the combine and it stopped working. I got out of the cab of the combine, climbed down the ladder. I reached into the corn head of the combine and got my right arm stuck almost up to my shoulder. I was stuck in the combine for about 2 hours until a neighbor found me and called 911. I was airlifted to the nearest trauma hospital about 120 miles away. I don't remember much of that but that is what we were able to piece together after the injury. I just remember being afraid I wouldn't be able to get help until supper time when my wife gets home from work. Once I got to the trauma hospital, they performed emergency surgery to restore blood flow and repair the damage in my right arm.

Initial Injury Discharge Concerns

Mr. Lane is a 43-year-old farmer and lives in a rural setting with his family which includes his wife, 2 children and parents.

Today, he is being discharged from a large, urban tertiary care hospital in Iowa. He will have his follow-up care by his primary care team in a town closest to his home.

The ride to his home will take about 2 hours and his wife and children are coming to pick him up today. His nurse has gone over his discharge instructions, which included follow-up care, pain medications and how to care for his wounds and surgical incision

Medical history

History of present illness: Surgery 10.8.13 for crush injury R forearm and hand(right arm caught corn head of combine)

Past medical history:

- Hypercholesterolemia
- Hypertension

Previous surgeries: cholecystectomy 2010

Review of Systems:

- Height: 6'0"; Weight 185 #;
- Vital signs: BP 130/86; Pulse 95; SPO2 98%; Respiratory Rate 24

- Head, Ears, Eyes, Nose and Throat(HEENT)- No deficits
- Respiratory: No deficits
- Cardiovascular: Hypertension; controlled with medication
- Gastrointestinal: No deficits
- Urinary: No deficits
- Vascular: No deficits
- Musculoskeletal: Injury RUE; Pain with knew range of motion
- Neurological: numbness and tingling right forearm and hand

Recommendations: Discharge Instructions (see interventions)

Medications

- Atorvastatin 10 mg PO daily
- Lisinopril 10 mg PO daily
- Amlodipine 5 mg PO daily
- Hydrocodone/acetaminophen 7.5/325 mg 1-2 every 6 hours PRN pain

Psychosocial

Education: Patient-High school; Certificate in diesel mechanics from local community college

Education: Spouse- High school

Living situation: Lives with wife, parents, 2 boys ages 10 and 13

Employment: Husband- self-employed farmer

Employment: Spouse- Bank Teller

Religious Affiliation: Lutheran

Stoic, Independent

Work history- self-employed as a farmer. Farms with father 1000 acres for corn and soybeans

Substance abuse

- History of alcohol abuse in early 20's; completed previous inpatient rehabilitation program, sober for 20 years.
- Chews tobacco-1-2X a week

Other

- Transportation:45 minutes by car from home to primary care physician or therapy services
- Tertiary Care Center for specialty

Work History

Work restrictions

- No use of the right arm
- No driving
- Use sling for RUE protection

Work Duties

- Financial planning for equipment, farming needs, taxes, crop sales
- Computer use for farm budgeting, ordering, weather, communication
- Preparing land for planting, caring for the crops and harvesting
- Equipment maintenance and repair
- Physical duties of lifting, climbing, crawling, sitting, standing, driving.

Interventions

Nursing:

Discharge Instructions: Follow-up Care:

See your family physician/nurse practitioner in 5 days for an appointment. Do not shower until after the doctor visit. They will change your dressing and give you more instructions.

You have an appointment with your surgeon in 10 days for suture removal.

Activity restrictions:

No driving; No use of the right arm; use sling for right arm; no working

Wound Care Instructions:

Caring for your incisions:

Wash your hands before caring for your incision.

Do not apply any creams, salves, ointments or powders unless you have been told to do so.

You may take a shower. Remove the dressing before your shower after your doctor appointment in 3 days. After your shower, pat the incision site dry with a clean towel. Put on a new dressing.

Do not take a tub bath until your doctor says it's OK.

When you are not in the shower, keep the incision site as clean and dry as possible. (For instance, if the dressing is on your hand or arm, do not wash dishes.)

Do not poke, scratch or rub your incision.

Your incision may have some drainage that is clear or slightly bloody. This is normal if the incision continues to drain less each day.

Protect the incision from sunlight.

Look at the incision for any signs of infection. If you have any of the following signs, call your doctor:

- redness
- swelling
- unusual drainage
- warmth around the incision site
- increased pain or tenderness at the incision
- incision opens up
- fever of more than 100.4 degrees Fahrenheit

Follow your surgeon's directions for sutures. If you had sutures they will be removed at your follow-up appointment with your surgeon

Local Physician/Nurse Practitioner follow-up:

Follow-up for circulation and nerve healing:

Circulatory Precautions

Peripheral pulses, edema, capillary refill, color, temperature

Hydration to prevent increased blood viscosity

Prevent infection

Comparison to uninvolved extremity

Positioning

Support affected body part

Elevation of injured limb above heart 20 degrees as appropriate

Peripheral Sensation Management:

Assess changes in sensation: too much, too little, numbness or tingling

Monitor sharp/dull, hot/cold

Pain Management

Pain level, location, description, duration,

Aggravating and relieving factors

Emotional Response to injury – monitor patient

Additional Info

Insurance: Benefits through wife at her place of employment

- Deductible: \$5000
- Co-Pay: \$75 per visit
- 20 visits for PT, OT per year

Psychiatric: No deficits, oriented x3

Primary Care Provider: Arthur Smith, MD Eldora Iowa

Other: Transportation- 45 minutes by car from home to primary care physician or therapy services; 2 hours by car from home to tertiary care center for specialty services.

Pharmacy cost: \$35, Insurance paid \$21.00, out of pocket \$14.00

Activity Event

Assume a role: You are a nurse who's treating Mr. Lane during the discharge session.

During the nursing discharge instruction session with Mr. Lane, you ask about his pain. You use 0 to 10 NRS with the anchors (beginning and end labels) of 0=No pain and 10= Worst pain imaginable to have him rate his pain. Evidence shows that people may rate their emotional response to pain differently than their sensory experience.

Think about how Mr. Lane's response might be different if you used one of the following anchors.

- 0= comfortable, 10= most uncomfortable (focuses on the emotional aspects of pain, so may be different than sensory experience of pain)
- 0= No bother, 10= Most bothersome (focuses on the emotional aspects of pain, so may be different than sensory experience of pain)
- 0= No sensation, 10= Most intense sensation imaginable (focuses on sensation and may diminish the totality of the pain experience)

Event #2: Rue Skin Graft

Mr. Lane has had an infection occur in his right arm along his incision site. He has had two full courses of antibiotics and is infection free. Due to the infection, he has had tissue death and now requires a skin graft to the right upper extremity.

When measuring the right arm pain, he indicates the score of 7 at rest and 10 with movement.

Mr. Lane was readmitted to the urban tertiary care center for the skin graft to his right forearm. The healthy tissue was taken from his thigh; he is being discharged to home.

Medical History

Chief Complaint: Open area right arm status post-surgical repair 10/8/2013

History of Present Illness: 2 courses of antibiotic. Tissue death due to infection; outpatient surgery for skin graft.

Pain in right arm 7 at rest and 10 with movement.

Musculoskeletal: Skin graft taken from the right thigh.

Physician Recommendations: Compression garment fitting by OT for home use; Begin therapy in 4 weeks; No driving

OT Recommendations: Use of compression sleeve when awake, home exercise program.

Medications

- Atorvastatin 10 mg PO daily
- Lisinopril 10 mg PO daily
- Amlodipine 5 mg PO daily
- Hydrocodone/acetaminophen 7.5/325 mg 1-2 every 6 hours PRN pain
- Docusate sodium 100 mg PO twice daily
- Medications changed from Hydrocodone/acetaminophen to Oxycodone/acetaminophen 5/325 mg 1-2 every 6 hours PRN severe pain.

Psychological

No change

Work History

Work restriction: Minimal use of right arm skin graft.

Interventions

12/5/13- OT Note

Please see medical record for past medical history. Reason for referral: order for compression garment right upper extremity.

Treatment: Patient was seen status post skin graft right upper extremity 12/4/13. Measurements were taken for fitting of compression garment for the right upper extremity. Garment was issued with 20mm Hg compression for edema control and for ulnar nerve protection. Garment is to be worn during waking hours and may be removed at night for skin care. Patient was instructed in use, wear and care of the garment in conjunction with wound dressings. Patient given a home exercise for gentle ROM of the right arm. Patient is to follow-up with physician for monitoring of garment. No Occupational Therapy services available in his home community and will refer to Physical Therapy for care.

Additional Information:

Pharmacy cost: \$360.00, Insurance paid \$216.00, Out of pocket \$144.00

Compression Garment

He has received an evaluation by an Occupational Therapist at the tertiary care center. He was fit with a compression garment to decrease swelling and to protect the graft right arm. He was instructed in a home exercise program for range of motion.

The garment will help decrease swelling, protect the graft and protect the elbow.

Activity Event

Assume a role: You are a nurse practitioner

Situation: One week after discharge from the tertiary care center, Mr. Lane goes to see his local nurse practitioner at the clinic in his hometown.

Problem: Mr. Lane did not wear his garment for two days which resulted in an increase swelling in his right arm. He is unable to put the garment on due to the increase in swelling in his arm.

What would you do to help Mr. Lane get back into his garment?

1. Send Mr. Lane to OT for a new garment(two hours away) – Additional cost; travel barrier
2. Have Mr. Lane elevate his arm to reduce swelling- Too slow for resuming wearing of the garment.
3. Use ace wrap compression to reduce swelling- This is the best answer because it will more quickly reduce swelling and allowing him to resume wearing the garment.

Event #3: PT & OT Referral

The right forearm skin graft is doing well as is the donor site from his right thigh. There is no signs of infection and it is time to start physical and occupational therapy to improve range of motion, strength and activity.

Mr. Lane lives 45 minutes from the nearest town with physical therapy services and there is no occupational therapy available locally.

Here is some information about Mr. Lane's pain at his physical therapy appointment.

- Pain is constant with intermittent numbness and tingling RUE
- Pain Aggravating Factors: activity, self-care activities, dressing, and RUE
- Pain Relieving Factors: Rest, medication.
- Pain Intensity(in the last week): Current 8, Best 4, Worst 10, Acceptable

Mr. Lane's insurance only covers 20 treatment visits for physical therapy. However, the physician ordered physical therapy for five times for two weeks, and then for three per week for six weeks.

Let's look at the calculation. 5xweek for 2 weeks, then 3 x week for 6 weeks equals 28 visits. This is equal to 28 visits.

He is unable to drive to his appointments due to his pain medications; his wife works during the hours physical therapy is available.

He is having difficulty sleeping due to high pain levels.

Medical History

Recommendations: Referral to Pain Clinic

Medications

- Atorvastatin 10 mg PO daily
- Lisinopril 10 mg PO daily
- Amlodipine 5 mg PO daily
- Oxycodone/acetaminophen 5/325 mg 1-2 every 6 hours PRN severe pain
- Docusate sodium 100 mg PO twice daily

Psychosocial

- Insurance concerns
- PT visit limit per insurance; high co-pay
- No OT availability

Work history

No change

Interventions

Physical Therapy Notes:

Shoulder AROM (R): 75% of normal motion

Strength: 4 of 5 in R shoulder; 2 of 5 R elbow

Grip: 45# R; 125# L

Pinch: 2 finger pinch 2# R; 8# L

Swelling R elbow, forearm and hand

Reflexes: Bicep 2; Triceps 2,

Brachioradialis 1

Neurotension: Positive Upper limb tension test (ULT) for ulnar nerve testing

Sensation: Diminished in area of incision and hypersensitive 4th and 5th digit of right hand

Unable to weight bear on RUE

Additional Information

- Pharmacy cost: \$370.00, Insurance paid \$222.00, Out of pocket \$148.00
- Physical Therapy is 38 visits with \$75.00 copay each visit = \$2850.00

Activity Event

Assume a role; a physical therapist.

Situation: 28 physical therapist visits ordered (5xweek for 2 weeks, 3xweekfor 6 weeks) but only 20 visits covered by insurance. Problem: Mr. Lane's therapy as ordered by the doctor does not cover all the physical therapy visits. What would be the first step you would do for the physical therapy plan of care to meet his medical needs with a consideration for his finances and insurance.

- Decrease frequency of visits to keep visits to 20 with increases home program- Try again!
- Physical therapist calls the doctor to alert him of the situation and modify the visits based on the physician recommendations- This is the best answer
- Review insurance coverage with insurance company and ask about the process for visits beyond the 20 visit limit. Try again!

Event #4: Pain Clinic Referral

Mr. Lane has been going to physical therapy for 2 weeks with minimal change in pain; he is improving in movement and mobility. However, sleeping and pain continue to be a problem for him. He is frustrated, unable to work, worried about cost of physical therapy, cost of surgeries, and his ability to pay for ongoing insurance.

He has been referred to a multidisciplinary pain clinic, which is two hours away from home.

Following is the interdisciplinary team video script.

[Nurse Practitioner]:

Good morning everyone. Thanks so much to Mr. and Mrs. Lane for coming to the pain clinic today.

We've each had some time with Mr. Lane and wanted to go over our findings and recommendations. Let's start with physical therapy, then psychology and I will wrap up the team report.

[Physical Therapist]:

I completed an examination of your strength and range of motion of your neck and both arms. In your right arm, you have decreased strength, decreased range of motion at your neck, shoulder, elbow, wrist, and hand.

Your reflexes are decreased at your elbow as well. You have tightness in your muscles at your neck, shoulder, and arm. You are having high pain levels at rest and with activity. You are having trouble sleeping, both getting to sleep and staying asleep; but also finding a comfortable position.

You are having some trouble with dropping things like coffee cups, having some trouble handwriting and just using your right arm. I would recommend additional testing regarding the changes in reflexes in the right arm if Stephanie would agree.

To help protect the elbow, I would recommend we fit you with a brace for protection of the elbow to be worn during the day. You will have a cotton sleeve to wear under the brace for skin protection.

[Psychologist]:

I met with Mr. Lane this morning and talked with him about his situation and had him complete some questionnaires. He and I have gone over the results before the meeting, but I will summarize for the group.

He is having trouble with sleep, pain, and difficulty with his emotions. Based on his questionnaires, he has depression and possible post-traumatic stress disorder and chronic pain. I would recommend counseling for you and your wife to address these issues.

[Nurse Practitioner]:

I completed my assessment and reviewed your pain medications. Based on the physical therapy exam, I am concerned you may have some compression of the cubital tunnel in your right arm—the area in your elbow that the nerves run through—your “funny bone”.

This could be from scar tissue or from your initial injury. I would recommend we do additional testing to check on the nerve conduction from your neck and from your elbow.

After talking with the team, we could also give you a new diagnosis of chronic pain in your right arm. Your pain has lasted a long time – past the point of normal healing and has not responded well to the usual medications for pain.

So to summarize, we would recommend outpatient counseling to address concerns about anxiety and depression and pain management, additional testing for nerve conduction and a brace for your right elbow. Once we know the results of the tests, we can decide how to proceed from there.

[Mr. Lane]:

Thank you all for taking the time with me this morning. Will the test be painful – will I have to come back here for the test and will my insurance cover the test?

About the chronic pain diagnosis – does that mean it won't ever get better? Will I be able to get back to work? Do you have questions, honey?

[Mrs. Lane]:

Where do we do counseling? Does our insurance cover it? How do we get set up with that? I am worried about getting you to another appointment. Also what else can we do for the pain? Sleep?

Those are all great questions. We would like you to go to counseling as close to home as possible – our social worker will check with your insurance about coverage for the test as well as the counseling; she can also help you get scheduled with the counselor.

In addition we will schedule the testing for the nerve conduction as close to home as possible.

About the test - Yes, this will feel like an electric shock, but it will tell us which nerves are affected if the nerves are being compressed.

You will be instructed to communicate with the neurologist as you go through this test and let them know if you want to stop or take a break.

The test lasts about 20 minutes. You'll be provided pain medication following the test if needed. We would like to see you back in 3-4 weeks.

At your next visit we will discuss the results of your testing and the possibility of returning to work.

Pain Clinic Team Meeting

At the regional pain clinic, Mr. Lane is evaluated by an interdisciplinary team which consists of a nurse practitioner, psychologist, and physical therapist.

Results of the evaluation are shared in a team meeting with Mr. Lane and his wife. (See Interventions).

Let's watch the interdisciplinary team video by clicking watch video button below.

Medical History

Chief Complaint:

- Sharp, dull and achy pain in RUE
- Radiates from elbow to hand
- Cramping in R forearm
- Fatigue – tired all the time

History of Present Illness:

- Pain level high since surgery x 2
- Unable to work, sleep, concerned about finances; lack of sleep and constipation

Review of Symptoms:

Height/Weight: Height 6'0"; Weight 215 (30# increase)

Vital Signs: Skin-scar tissue right elbow, forearm, wrist and hand

Cardiovascular: No deficits, no chest pain.

Urinary: No deficits

Vascular: No deficits

Psychiatric: Concerns from primary care regarding depression and anxiety, further evaluation needed.

Sleep-difficulty getting to sleep and staying asleep; averages 4-5 hours per night; unable to lay on the right side

Recommendations: NCS/EMG Study right neck and upper extremity; Pain Education Class, Medication Modifications; Referral to Outpatient Counseling; UE splint in extension

Medications

- Atorvastatin 10 mg PO daily
- Lisinopril 10 mg PO daily
- Amlodipine 5 mg PO daily
- Oxycodone/acetaminophen 5/325 mg 1-2 every 6 hours PRN severe pain
- Senna-S 2 tablets twice daily
- Doxepin 25 mg HS PRN sleep
- Medication added Gabapentin 300 mg PO three times a day

Psychosocial

- Concerns from primary care regarding depression and anxiety, further evaluation needed.
- Sleep-difficulty getting to sleep and staying asleep; averages 4-5 hours per night; unable to lay on the right side

New Diagnoses:

- Situational depression
- Increased anxiety
- told in the hospital he might have to have arm amputated; nightmares from the length of time in combine

Work History

- Minimal use of right arm
- No driving
- Additional bracing in elbow extension

Interventions

Physician/Physician Assistant/Nurse Practitioner: Completed review of medical record, completed physical exam, consultation with pharmacist regarding medications. Primary Concern –

medications with minimal pain reduction or relief; increasing symptoms of chronic pain with decreased sleep, weight gain, increased concerns from Psychologist and Social work regarding psychosocial issues. Recommend further diagnostic testing with EMG/NCV for possible ulnar nerve entrapment due to decreased reflex and numbness and tingling in right upper extremity along C8 distal dermatomal distribution.

Pharmacist: Medications were reviewed with physician and modifications recommended. Patient and patient family education regarding dosing, side effects and questions.

Physical Therapist: Mr. Lane is being seen in outpatient physical therapy and has made some functional improvement but continued pain, fatigue and difficulty with self care and functional activities with right arm. Patient very concerned about limited visits, cost of copay per visit and difficulty with home program.

Social Work/Psychologist: Mr. Lane was accompanied by his wife to the initial visit. He demonstrates moderate anxiety, meets the criteria for moderate to severe depression, sleep problems, good social support, no suicidal ideation, hopelessness, and reduced quality of life. Recommendations for outpatient counselling for pain management and emotional issues; family counseling, guided imagery, monitor for substance abuse/misuse.

Patient and Patient's Family: Concerns about anxiety, depression, nightmares, lack of sleep, money, transportation and transportation costs, pain, fatigue and return to work.

Additional Information

NCV/EMG Results:

1. Negative for compression of the ulnar nerve at the cervical spine.
2. Positive for compression of the right ulnar nerve at the elbow
3. Right ulnar motor n. distal onset latency; decreased amplitude
4. Right ulnar nerve velocity decreased

Final Result: Moderate entrapment right cubital tunnel

Pharmacy cost: \$955.00, Insurance paid \$573.00, Out of pocket \$382.00

Pain Clinic Team Meeting - Recommendations

The following is the list of recommendations from the pain clinic meeting as seen in the previous video:

- Referral to Outpatient Counseling
- Modifications to Medications
- Nerve Conduction Velocity Testing (NCV)/Electromyography (EMG) right upper extremity and cervical region
- Bracing of elbow
- New Diagnoses of

- Major Depressive Disorder
- Possible Post Traumatic Stress Disorder(PTSD)
- Possible nerve impingement in right arm
- Chronic pain right upper extremity

Activity event Barriers

What are some predictor's Mr. Lane has experienced that are predictors of chronic pain?

Predictors for Mr. Lane: Depression, high pain levels, limited finance, unable to farm, stoic, anxiety, PTSD, decreased mobility.

Non- predictors for Mr. Lane: children, male, age, married, height, and weight.

Event 5# Pain Management Topics

Concerns from the Pain Clinic Team:

- High Pain levels; new diagnosis of chronic pain right upper extremity
- Strain on family with limited financial resources;
- Identified depression, anxiety at pain clinic
- Continued numbness and tingling in the right arm

Mr. Lane's perceptive video script is as follows.

[Psychologist]:

Good Morning, Mr. Lane. Thank you for coming in today. Have you ever been to counseling before?

[Mr. Lane]:

Yeah – 20 years ago when I drank too much - but this is a whole different situation. I am not sure how talking about my problems going to help? It won't change the damage to my right arm or change my pain.

[Psychologist]:

Counseling is designed to help you develop strategies to help you. I'd like you to start by having you tell me about how things are going for you and any concerns you have about your situation?

[Mr. Lane]:

I am just in pain all the time, tired, frustrated and worried about what is going to happen to me and my family. I haven't been able to do the things I need to do and the things I like to do with my family. My arm just hurts.

[Psychologist]:

Tell me about you and who is important to you?

[Mr. Lane]:

I am a farmer. I am married and have two boys. The people important to me are my wife, my kids and my parents, I guess.

[Psychologist]:

When do you notice your pain in your right arm the most?

[Mr. Lane]:

The pain in my arm is always there. My right arm hurts more when I use it. My arm hurts when I don't use it. My arm pain wakes me up at night, makes it difficult to go to sleep and stay asleep. I know I am constantly waking up my wife with my thrashing about in bed.

[Psychologist]:

When you are having pain, what activities or positions do you use to decrease your pain?

[Mr. Lane]:

I try pain medication, some ice, changing positions and moving around.

[Psychologist]:

What gets in the way of decreasing your pain?

[Mr. Lane]:

I don't know. Sometimes I just can't think what to do, what not to do. I just feel stuck in this cycle of pain, worry, fatigue and no end in sight.

[Psychologist]:

I know this situation is difficult for you – so I have some homework for you to do to help me further understand your pain and how it affects you and your family. What I am going to have you do is fill out this diagram.

The diagram has four squares on it – on the right top, list those things that move you forward to where you want to be in your life.

On the right bottom, list those people who are important to you.

On the bottom left, list what gets in the way- for example – pain, fatigue, worry and those types of things.

On the top left, list what you do to move away from what gets in the way.

Is that something you can do between now and next week?

[Mr. Lane]:

I guess. Not sure how it will help but I will give it a try.

[Psychologist]:

Great. We are done for today. Any questions? If you have any questions, please give me a call.

[Mr. Lane]:

Okay, see you next week.

Medical History

No change.

Medications

- Atorvastatin 10 mg PO daily
- Lisinopril 10 mg PO daily
- Amlodipine 5 mg PO daily
- Oxycodone/acetaminophen 5/325 mg 1-2 every 6 hours
- Gabapentin 300 mg PO three times a day
- Duloxetine 60 mg PO daily
- Senna-S 2 tablets twice daily
- Doxepin 25 mg HS PRN sleep

Psychosocial

See interventions tab

Work History

No change

Interventions

Social Work Note

Met with wife regarding emotional issues of anxiety, depression and financial issues. Wife stated her husband is having sleep issues and pain controls life and feels limited in ability to engage in social and physical activities. It was determined that outpatient counseling would occur.

Met with patient who is reporting feeling depressed, anxious, etc. Discussed with patient how the injury is impacting his physical activity, work, relationships with wife and family. Patient reported he is having a feeling of helplessness. Developed a plan with patient to address anxiety, depression, social engagement, and biofeedback and guided imagery for stress management and relaxation. Patient stated his main goal was to return to work and life as before his injury.

Additional Information

- \$150 per hour; 10 visits covered at 70%; then 100% out of pocket
- Pharmacy cost: \$1275.00, Insurance paid \$765.00, Out of pocket \$510.00
- Social Work frequency and duration is 1 time a week for 12 weeks.

Event #5 Referral to Outpatient Counseling

At the meeting with the counselor, the following counseling issues were addressed with Mr. Lane and his wife: Anxiety, depression, finances, sleep, and work. There is a strong evidence that referral to outpatient counseling is an effective strategy for pain management.

A conversation between Mrs. Lane and Psychologist is as follows.

[Psychologist]:

Good Morning, Mrs. Lane. Thank you for coming in today. I would like to start by having you tell me about how things are going for you and your husband and any concerns you have about your situation?

[Mrs. Lane]:

I am just so worried and anxious all the time. It is hard to concentrate at work. My husband doesn't sleep – he is restless and up during the night; so I wake up when he is restless and then I have trouble getting back to sleep. I know he is in pain but he doesn't want to talk about it and gets mad if I ask too many questions. He is irritable with me, with the kids and with his parents. He doesn't want to talk about money, his pain, his fatigue and how anxious he is and his feelings in general.

The pain medications scare me since he had trouble with alcohol 20 years ago – is he going to become addicted to the medication? The pain medication only helps a little. I worry what will happen if he isn't able to go back to work because of the pain?

We went to the pain clinic and he has restarted physical therapy. We're having trouble making sure he can get to his appointments – it seems like we are always on the road to an appointment. Just having money for gas is getting hard. I know he is worried about money and getting back to work but I don't know how to help him or our family.

[Psychologist]:

I appreciate you sharing that with me. What would you like to see happen in your situation?

[Mrs. Lane]:

I would like my husband to have less pain, be able to do more at home and be able to go back to work. Get back to our family and friends and just worry less, I guess.

[Psychologist]:

Those all sounds like reasonable goals for your situation. I would like to revisit them at our next session and together develop a plan for you.

Event #6: Return to work, part time

As a self-employed farmer, Mr. Lane has been unable to return to work since his injury in October of 2013. He has farms with his father 1000 acres for corn and soybeans. His work duties include:

- Financial planning for equipment, farming needs, taxes, and crop sales
- Computer use for farm budgeting, ordering, weather, and communication
- Preparing land for planting, caring for the crops and harvesting
- Equipment maintenance and repair
- Physical duties of lifting, climbing, crawling, sitting, standing, driving.

Medical history

No change

Medications

- Atorvastatin 10 mg PO daily
- Lisinopril 10 mg PO daily
- Amlodipine 5 mg PO daily
- Oxycodone/acetaminophen 5/325 mg 1-2 every 6 hours
- Gabapentin 300 mg PO three times a day
- Duloxetine 60 mg PO daily
- Senna-S 2 tablets twice daily
- Doxepin 25 mg HS PRN sleep

Psychosocial

No change

Work History

No change

Interventions

No change

Additional Information

- Pharmacy cost: \$1275.00, Insurance paid \$765.00, Out of pocket \$510.00
- Social Work is \$45.00 x 10 weeks= \$450.00

Seasons

Seasons play an important role for farmers. Contrary to the common belief, farmers usually work all year long. Click on each picture to learn more about job duties of farmers for each season.

Spring:

In the spring, farmers' activities include chisel plow fields, order seeds, monitor weather, disc and plow fields, plant seeds, and climbing on/off equipment.

Summer:

In the summer, farmers' activities include fertilizer, weeding, monitor crop conditions; negotiate corn prices, equipment repair and maintenance, irrigation, and crawling under equipment.

Fall:

In the fall, farmers' activities include harvesting, drying corn, storing in grain bin, disc and plowing.

Winter:

In the winter, farmers' activities include equipment maintenance, weather monitoring, snow plowing, shoveling, planning finances and production to maintain farm progress against budget parameters, negotiate prices, and financial record review.

Return to Work and Limitations

It is April first of 2014. Mr. Lane was allowed to return to work with some limitation.

Some of the work restrictions include no lifting with right arm, no overhead lifting, pushing, pulling, and no forceful gripping.

Mr. Lane's concerns about returning to work because he is still unable to climb into combine and onto tractor, unable to hold engine repair equipment, and unable to assemble machinery for farming – chisel plow, and tractor disc.

Event #7: Right Cubital Tunnel Decompression

It is June first of 2014 and Mr. Lane has continued to have numbness and pain in the right arm. He had a nerve conduction velocity test to determine the source of his numbness and tingling nerves in neck or arm. Nerve conduction study (NCS) and Electromyography (EMG) testing results revealed cubital tunnel compression and surgery was recommended to decompress the cubital tunnel.

Mr. Lane returned to the tertiary care center for outpatient surgery for right cubital tunnel decompression.

Medical History

Recommendations: Discharge instructions; Begin therapy in 3 weeks; UE splint

Medications

- Atorvastatin 10 mg PO daily
- Lisinopril 10 mg PO daily
- Amlodipine 5 mg PO daily
- Oxycodone extended-release 40 mg PO twice daily
- Gabapentin 300 mg PO three times a day
- Senna-S 2 tablets twice daily
- Doxepin 25 mg HS PRN sleep

Medications added

- Naproxen 500 mg PO twice daily
- Duloxetine 60 mg PO daily

Psychosocial

No change

Work history

No change

Interventions

Nursing: Discharge Instructions - Follow-up Care:

- See your family physician/nurse practitioner in 5 days for an appointment. Do not shower until after the doctor visit. They will change your dressing and give you more instructions.
- You have an appointment with your surgeon in 10 days for suture removal.

Activity Restrictions:

- No driving; No use of the right arm; use sling for right arm; no working
- Wound Care Instructions
- Caring for your incisions:
 - ✓ Wash your hands before caring for your incision.
 - ✓ Do not apply any creams, salves, ointments or powders unless you have been told to do so.

- ✓ You may take a shower. Remove the dressing before your shower after your doctor appointment in 3 days. After your shower, pat the incision site dry with a clean towel. Put on a new dressing (more)

Additional Information

- Pharmacy cost: \$1285.00, Insurance paid \$771.00, Out of pocket \$514.00
- Social Work cost: \$150.00 x 2 visits= \$300.00
- Physical Therapy cost: 12 visits with \$75.00 copay

General Cubital Tunnel Recovery Timeline

On this table you will see some general milestones after cubital tunnel decompression.

Recovery Milestones	Time After Surgery Decompression
Heavy pain	2-3 days
Require strong painkillers	3-10 days
Return to work; no use of arm	5-7 days
Arm immobilized in bandage/splint	2-3 weeks
Light use of arm	2-4 weeks
Require non-opioid analgesics(i.e. Advil)	1-2 months
Normal use of arm	3-4 months
Complete recovery (no symptoms*)	4-6 months

Activity Event

Let's assume that you have a role as a nurse practitioner or a pharmacist in this situation. In this situation, Mr. Lane has chronic pain in his right arm and now has an acute on chronic pain situation with the decompression surgery.

As his nurse practitioner and pharmacist, what would be the barriers for monitoring his opioid use in each of the following options (check medication tabs for changes and opioid risk tool score)?

Options:

1. Short term opioid prescription- Barriers to consider for short term opioid prescription include limited pain control and increased risk for addiction
2. Clinical visit required for additional prescriptions- Barriers to consider for clinic visits are increased transportation difficulties, increased insurance cost for billing and possible delays in receiving medication.
3. Urine sample monitoring- Barriers which may impact the use of urine sample monitoring include transportation difficulties to the clinic for testing and cost for testing.

4. Lock box for medications- Barriers which may impact the use of lock box for medications include entrusting a person to monitor the box and coercion or manipulation by the patient to the person who monitors the box.

Event #8 Resume PT

It is July 7 of 2014. Mr. Lane returns to physical therapy one month after decompression for his right cubital tunnel. He has had some improvement in numbness and tingling since surgery. He has moderate improvement in swelling right elbow. There is an improvement in the right shoulder range of motion; right elbow range of motion; and an improved grip and pinch of the right hand.

Medical History

No change

Medications

- Atorvastatin 10 mg PO daily
- Lisinopril 10 mg PO daily
- Amlodipine 5 mg PO daily
- Oxycodone 10 mg PO twice daily
- Gabapentin 300 mg PO 1 time a day
- Duloxetine 60 mg PO daily
- Senna-S 1 tablet twice daily
- Doxepin 25 mg HS PRN sleep

Medication **discontinued**

- Naproxen 500 mg PO twice daily
- Decreased Gabapentin gradually
- Decrease frequency of oxycodone

Psychosocial

No change

Work History

No change

Interventions

No change

Additional Information

Mr. Lane has used 38 visits; new orders are for then 3 x week for 6 weeks = 18 visits

Co-Pay is \$75.00 per visit= \$1350.00

Also, physical therapy will need to get insurance approval after which may cause delay in services.

For this event:

- Pharmacy cost: \$595.00, Insurance paid \$357.00, Out of pocket \$238.00
- Physical Therapy cost: \$900.00

Total all events: \$6970.00

Out of pocket Cost: \$2460.00

Social Work Counseling: \$750.00

Physical Therapy: \$3750.00

Activity Event

Let's assume that you have a role as a social worker in this situation. In this situation, Mr. Lane has been seen in outpatient counseling for his depression and anxiety. His greatest concern now is for his financial obligations for all his medical care. He has been out of work for an extended period and has out of pocket expenses between \$5000 and \$10,000.

As his social worker, what would be the best option to assist him with his financial concerns?

All the following are possible consequences-

- Assist him in creating a budget for repayment of medical costs
- Contact the bank for Mr. Lane about a medical repayment loan
- Identify resources for Mr. Lane about a medical repayment loan
- Identify resources for Mr. Lane to contact for an additional source of income

How is Mr. Lane Now?

He will return to farming in late September 2014.

He has some residual numbness in right hand.

He has pain in the right upper extremity but is managing his pain with exercise, transcutaneous electrical nerve stimulation or TENS for short, and medication.

He has completed his outpatient counseling.

Mr. Lane's Perspective Video script is as follows.

I wanted to let you know how we are doing.

Well, it seems like we have been through a lot in a short amount of time. I have had a couple of surgeries, a couple of stints in physical therapy, gone to the pain clinic and gone to counseling.

My family has been there through it all – the good, the bad and all the stuff in between.

As to the bad— this has been a long journey since my initial arm injury up to now – it seems long in terms of my stress, money, work, activity, my family, pain and all the things it impacts. We have struggled with all the traveling to appointments, with dealing with a chronic pain problem and trying to keep the farm going.

As to the good – my pain in my right arm is improving with counseling, exercise, TENS and medication changes. I am getting ready to go back to work and complete harvest. I have had to work with my pain and with my limitations.

My wife and I both went to counseling and that was helpful for everyone. I learned so much about pain and how it can affect you and your family.

I can't thank all the people who helped us all along the way – with meals, getting the kids and me where we needed to be, helping with the farm, the traveling and just supporting our family in so many ways.

[Mrs. Lane]:

We can't say enough about how great our friends, neighbors, church and family have been so good to us. We appreciate all the healthcare people who helped us. We couldn't have made it to this point without them.

[Mr. Lane]:

I know I will always have some challenges with my right arm and have had to change some things to make it back to work and doing stuff with the kids and my wife.

We think we are in a good place now and looking forward to the future.

Summary of Evidence

Let's discuss the summary of the evidence in this module.

- Compression garment – there is no conclusive evidence that it is the best strategy for pain management.
- Physical therapy – there is moderate evidence that physical therapy will help for pain management.
- Pain clinic – there is limited evidence that it will help for pain management
- Biopsychosocial model – there is strong evidence that the biopsychosocial model that includes biology, social, and psychology will help with pain management.
- Counseling – there is strong evidence that counseling will help with pain management.
- TENS – there is limited evidence that TENS will help with pain management.
- Cubital Tunnel Decompression – there is limited evidence that cubital tunnel decompression will help with pain management.

Take Home Messages

These are the important notes about best practice and may not have been completed in our case.

1. Opioid Risk Tool: Best practice is to complete the tool prior to prescribing opioid medication.
2. Psychosocial Issues: These impact both acute and chronic pain and best practice would be to assess and treat these issues as soon as possible in the plan of care.
3. Interdisciplinary Communication: Best practice is to share information in all three realms of the biopsychosocial model in order to meet the needs of the patient and family.
4. Medical resources: Best practice is to be aware of what resources are available and accessible in the community of the patient and family.
5. Evidence based practice: Best practice is to have knowledge of the evidence regarding your clinical decisions.

Congratulations

Congratulations! You have completed Interdisciplinary Pain Management for Acute Injury Farm Accident with Chronic Pain. Please take the posttest.

Mini Modules

Interdisciplinary Team Roles

As the learner for this course, you are a member of an interdisciplinary team and your part may be any one of the following.

This mini module will discuss how each team member of the interdisciplinary team will play his/her role. We will be discussing the role in the context of pain management for acute pain. Click start to proceed.

Physician

Physicians' main role for pain management will include conducting a comprehensive assessment of patient and review of prior records and previous treatments. A physician may include a primary care physician, a specialist, a surgeon, or a tertiary care provider.

Physician Assistant (PA)

Physician assistant's role includes deliver medical and surgical care in teams with physicians, who provide medical supervision and delegate tasks to the Physician Assistant.

Nurse Practitioner

Nurse practitioner will help patients managing acute and chronic illnesses. They conduct physical exams and perform diagnostic tests and procedures.

Pharmacist

Pharmacists make recommendations in many areas, including dosing and administration, current guidelines for treatment, approved and off-label indications, adverse drug reactions, drug interactions, intravenous drug compatibility, drug monitoring, and duplications, education and coordination of pharmacy needs.

Nurse

In general, a nurse's role would include coordination of care, education, and medical therapy of a patient.

Physical Therapist

Physical therapists provide services that help restore function, improve mobility, relieve pain, and prevent or limit physical disabilities in patients with injury or disease. They restore, maintain, and promote overall fitness and health.

Occupational Therapist

Occupational therapists provide services that help restore function, improve mobility, relieve pain, and prevent or limit physical disabilities in patients with injury or disease. In addition, they help patients improve or maintain skills for day-to-day activities and well-being.

Social Worker

Social workers will help individuals, families, and groups of people to cope with problems they are facing to improve their patients' lives. This may include teaching skills and developing mechanisms for patients to rely on to better their lives and experiences. Direct counseling of patients and families, serve as liaisons between different institutions to assist patients and collaborate with other health professionals to ensure patient wellness. They will become familiar with, and refer clients to, and community resources.

Psychologist

Psychologists will help patients learn to recognize the importance of their thoughts, their emotions, and their behaviors in response to pain. – And gives you the skills to do something about each of these reactions.

Patient

Patients will provide necessary information for assessment and planning of care. They will bring their needs and perspectives on illness, treatment, and what their views are as the major goals of care. The goals for care must be endorsed by the client/patient in order to achieve successful adherence to a therapeutic plan.

Patient's Family

Patient's family will provides a wealth of information regarding the client/patient – pre-illness functioning, hobbies, interest, and concerns. Offers direct input about ability and willingness to assist in care.

Biopsychosocial Model of Health

Biopsychosocial Model of Health

This model views the interaction among biological, psychological and sociocultural variables. This is not a complete listing of all the factors that may be considered in this model but some factors that may play a role in our case. These factors are not static – they are dynamic and can change over time. It is the interaction and consideration of these factors that is important in treating pain.

Biology - The following are questions about biological factors to consider that are involved in the pain experience.

What is the gender of the individual – male or female?

What other physical illnesses does the individual have or are in their family history?

What mental or physical abilities or disabilities does an individual have?

What genetic component may impact the individual?

What stress response might the individual experience that might be perceived as a harmful event, threat or attack?

How does medication affect the physiological or emotional aspect of an individual?

Psychology - The following are questions about that influence individual's pain report.

How does the attitudes or beliefs of an Individual favor or disfavor toward a person, place, thing or event? These attitudes or beliefs may be positive or negative or both.

What personal characteristics as seen in behavior patterns, cognition and emotion may impact the individual?

What behavior does an individual demonstrate or not demonstrate as a response to stimuli in their environment?

What emotion or feeling that can result in physical and psychological changes and may influence behavior?

How does an individual cope using strategies to solve personal and interpersonal problems and may vary dependent on the stress, conflict or circumstance?

How does the individual acquire learn or commit to memory new knowledge, behaviors, skills, values or preferences?

Social - The following are questions about social factors that affect how an individual experiences pain.

What social support does an individual have available that may include caring and assistance from others; this may be emotional, financial, informational, companionship, cultural support?

What is the family background of the individual, which is a synthesis of family characteristics, behaviors, attitudes and beliefs for each individual?

What is the cultural background of the individual, including general customs and beliefs of a group of people?

What is the social status of the individual defined by position or rank of a person or group within the society?

What is the economic status of an individual including economic or social status based on income, education, occupation or family's income, education or income?

What is the education level of an individual?

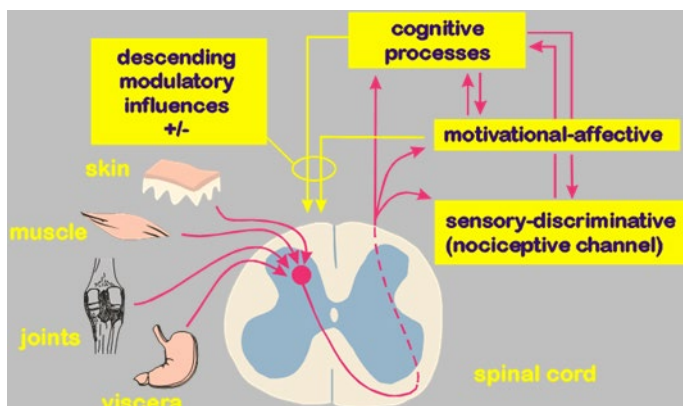
Pain Management Topics

As a healthcare provider, it would be useful for you to get familiarize with pain management topics and what can you do to help your patients.

To become a pain management expert, learn as much as you can about pain. Can you tell a difference between chronic and acute pain?

What is Chronic Pain?

Chronic pain is a disease. It comes from an imbalance in the pain system of the body. Let's look at this diagram: You will see input from the skin, muscle, joints and viscera. The information goes through the dorsal horn of the spinal cord to the brain. In the brain, the information may affect 3 domains of pain: cognitive process, motivational-affective and sensory-discriminative. These 3 domains can influence descending modulation of pain.



What is Acute Pain?

Acute pain is usually easier to see because it occurs as a direct result of tissue damage or potential tissue damage and is a symptom. It serves as a warning of disease or a threat to the body.

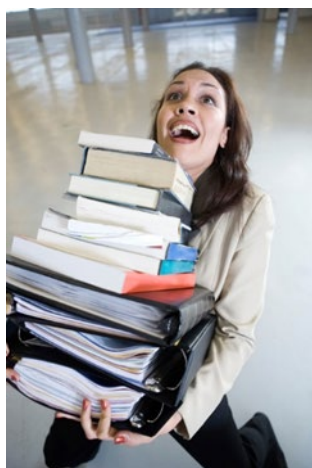


As a pain management expert, you have to assume responsibility for what you can control. In the next slides, we will discuss effective strategies for coping with chronic pain. Use the forward navigation button below to proceed or click on each topic on the menu on the left side to learn more.

Manage Activities

Learn how to pace your activities by breaking them down into smaller manageable tasks.

Carrying books like this may actually cause extra effort or stress your neck, arms or back and increase your pain.



Pacing will help you learn about your limitations. Set a baseline so that you can stop before the pains kick in.

Balancing your activities includes resting and pacing the activities. Always keep track of exercises, leisure, and physical activities.

Learn to Relax

Relaxation of any type is effective for pain management. Relaxation exercises can take some of your pain away, and make the pain a little easier to tolerate.

Some of the relaxation activities include deep breathing, relaxation to control pain, guided, imagery, cognitive distraction, and humor.

Manage Sleep

Research shows that more sleep may also improve your ability to manage pain. The National Sleep Foundation recommends adults get seven to nine hours of sleep each night.

Maintaining a regular schedule for waking and going to sleep will help with getting quality sleep.

Some factors that will disturb sleep include medications, eating and drinking habits, smoking, stress, and physical problems.

Strategies to improve sleep vary between people, but can include managing the temperature and lighting in your room, decreasing TV or electronic screen viewing time before bed, decreasing fluid intake (including caffeine), exercising later in the day or music therapy.

Relationship and Pain

Living with chronic pain can affect your relationship with your loved ones. How can you maintain strong ties with them? The following strategies can help you maintain the relationship. Learn to communicate effectively, share with family and friends, develop a support network, treat others, as you would like to be treated, and balance your needs with others.

Change Behaviors

Experts believe that pain management heavily depends on the individual's ability to accept the pain and take steps to manage the pain.

One thing you can do is to set up a goal. Setting goals for chronic pain have to be precise, measureable, attainable, practical, and trackable. Incorporate your goals in the activities. Do in combination with others as needed and modify goals regularly.

Remember to stay active in managing your goals and communicate them with others.

Change Thoughts

Changing your negative thoughts can change your awareness of pain and develop better coping skills.

Some of the strategies to help you change the negative thoughts and feelings are:

- Identify positive and negative stressors.
- Master your stress

- Work with grief and depression
- Self-talk
- “Thought stopping” which means interrupt or removing problematic recurring thought patterns.
- Develop problem solving strategies
- Develop a support network for managing your emotions and pain.
- Develop relaxation strategies that work for you in helping with your pain.

Gain Self-Confidence

You can gain your self-confidence by using the following strategies:

- Learn to control the things you can control
- Learn to ask for help
- Learn to stand up for yourself
- Develop problem solving skills and
- Learn from your experience and from others

Put It All Together

Now, it’s time to put all of these strategies together to better manage the chronic pain.

A wellness lifestyle helps focus your ability to manage your pain. A wellness lifestyle may include optimism, humor, a sense of purpose, sense of control and social support. A positive self-image is as important as a wellness lifestyle. A third component to incorporate are uplifting activities. These can improve your mood, bring enjoyment to you and your family and your ability to enjoy your life.

Maintain & Flare Ups

What do you do if your pain gets worse and sets you back?

Try creating an individualized plan for pain, for sleep, stress, social roles, and put these in your toolbox!

What do you do if you are doing really well? That’s great, pain and stress affect thinking!

Post test

The pre-test and post-test contain 10 questions with multiple choice answers. We have included the questions, answers and a short discussion for each question.

Scenario A: Questions 1, 2 and 3

Mr. Lane is a 43 year old male with a crush injury to his dominant right upper extremity. He is a self-employed farmer and was injured trying to repair his combine. He has been at a tertiary care

center for emergency surgery. He is being discharged and transitioned to home, which is 2 hours away by car. He will follow up with his primary care provider.

Test Question 1

Upon return to his primary care provider, what is the *greatest barrier* for care for Mr. Lane in a rural setting?

- Getting in and out of the car
- Lack of medical resources in his home area
- Low copay for medical expenses
- High risk for behavior changes with opioid medications

Answer question 1: Lack of medical resources in his home area

Question 1 Discussion: The answer to the question is lack of medical resources for Mr. Lane. He and his family live in a rural area and it is a 45 minute drive to his primary care provider, 45 minutes to drive to physical therapy, 2 hours to driver to his tertiary care center. Occupational therapy is not available in his local area, only physical therapy. Mr. Lane is unable to drive due to his opioid medication and must rely on others for transportation to his appointments. Mrs. Lane (his wife) works during the day and is 45 minutes from home. If she had to come home to get him for an appointment, the travel time increases significantly. He is able to get in and out of the car. His co-pay for visits is \$75 and low would be in the \$10 to \$20 range. Based on his opioid risk test he is at *moderate risk* for behavior changes with the opioid medication.

Test Question 2

What cultural influence of a farmer is the *most important* to include in your pain management plan for Mr. Lane? University of Iowa CoEPE Acute on Chronic Pain, Farm Injury Instructor Guide

- Farmer values
- Livestock
- Clothing
- Fencing

Answer question 2: Farmer Values

Question 2 Discussion: The answer is the most important cultural influence in a pain management plan for Mr. Lane is farmer values. Mr. Lane is a farmer who was raised on the family farm and is a second generation farmer. As a farmer he displays common characteristics of a farmer: stoicism, positive work ethic, independent worker and self-reliant. Each of these characteristics is important to consider as you work with Mr. Lane on a pain management plan. A person who is stoic and self-reliant may not have many pain behaviors (i.e. grimacing, groaning or limping) that some healthcare professionals may look for in those with a high pain rating. For some healthcare professionals a lack of pain behavior may be interpreted as not supporting reporting of higher levels of pain. This is an incorrect assumption as not all people exhibit pain

behaviors. It is important to consider the psychosocial aspects for Mr. Lane and how they influence his interactions with others.

Test Question 3

What tool should be used with patients **prior** to prescribing opioids?

- Opioid Risk Tool
- Opioid Assessment Scale
- Opioid Predictor Scale
- Opioid Resistance Predictor

Answer question 3: Opioid Risk Tool

Question 3 Discussion: The correct answer is Opioid Risk Tool (ORT) [3]. All of the other answers are fabricated. For the Opioid Risk Tool and more information, see Appendix A. The answers for the ORT in relation to Mr. Lane: (1) he does not have a family history of substance abuse=0; (2) he has a personal history of alcohol abuse =3; (3) his age is 43 years old =1; (4) he does not have a history of preadolescent sexual abuse; and (5) has depression=1 for a total of score of 5 indicating moderate risk for aberrant behavior with prescription of opioid medication.

The Opioid Risk Tool should be completed before the prescription of opioids and in our scenario was not completed until after the prescription at the time of his referral to the pain clinic. The timing of the score from the opioid risk tool will impact decision making regarding the use and administration of opioid medication.

Scenario B: Question 4

Mr. Lane is now going to begin physical therapy for improving his function in his right arm. He reports a high pain level (7 on a 0-10 low to high scale) and demonstrates limited movement of the right arm.

Test Question 4

What measures would you use to best monitor his pain and function?

- Pain Behaviors, Mobility of the right arm
- Pain Inventory, Grip Strength in the right hand
- Numeric Rating Scale, Quick DASH
- Visual Analog Scale, Ability to drive

Answer question 4: Numeric Rating Scale, Quick DASH

Question 4 Discussion: The best monitoring tools for pain and function in this scenario are the Numeric Rating Scale (see Appendix B) and the Quick DASH (Quick Disability of the Arm, Shoulder and Hand, see Appendix C). The Numeric Rating Scale (NRS) is a 0-10 scale for pain with anchors of 0=no pain and 10=worst pain possible. The NRS is shown to patients and they give a verbal

report of pain. The Quick DASH is a subjective outcome measure specific to the upper extremity. It is scored on a 0-100 scale with higher scores indicating higher levels of disability. In the other answers above, the Visual Analog Scale and Grip strength are measures that may also be used. The other measures listed are more subjective and do not have validated outcomes scoring.

Scenario C: Questions 5 and 6

In Mr. Lane's pain assessment, he tells you the location and description of the pain, what aggravates and relieves the pain and pain through the day and night.

Test Question 5

What other aspects of the pain would you ask about to further understand his pain?

- Pain on a 1 to 10 scale
- Pain at rest and movement on a 0-10 scale
- Fatigue levels at rest and with movement
- Color and temperature of skin

Answer question 5: Pain at rest and movement on a 0-10 scale

Question 5 Discussion: The answer for other aspects to consider are pain at rest and movement on a 0-10 scale. Pain at rest and with movement can be very different. Pain with movement help to determine if activity is pain provoking or relieving, for example, pain may be reduced with activity and thus may become an important part of the pain management plan. Increased pain with movement may provide information about positioning or movements to decrease pain. Pain on a 1-10 scale is an incorrect scale. Fatigue levels at rest and with movement will not give direct information regarding pain. Color and temperature are an important part of the physical exam but will give more information regarding inflammation or circulation rather than pain.

Test Question 6

In evidence based practice, non-pharmacological treatments that have the strongest evidence for use in postoperative acute pain include all of the following **except**?

- Exercise
- Transcutaneous Electrical Nerve Stimulation (TENS)
- Cognitive behavioral therapy
- Ice or heat

Answer question 6: Ice or heat

Question 6 Discussion: The answer for question 6 is ice or heat. In non-pharmacological treatments for pain, the treatments with the strongest evidence supporting them for use are exercise [4], transcutaneous electrical nerve stimulation [5] and cognitive behavioral therapy [6]. Ice and heat are frequently used in pain management with acute and chronic pain however there is limited evidence to support their use for pain management.

Scenario D: Questions 7, 8, 9 and 10

Mr. Lane has been to a tertiary pain clinic with a new diagnosis of chronic pain in his right upper extremity. He is now going to have a cubital tunnel decompression to his right arm and will be experiencing acute on chronic pain.

Test Question 7

The main responsibilities of a psychologist in pain management include all of these **except**?

- Help you learn to cope with behaviors and emotions related to pain
- Help you learn to discuss your physical and emotional health related to pain
- Help you learn to distract yourself from the pain
- Help you learn to ignore the pain and increase activity

Answer question 7: Help you learn to ignore the pain and increase activity

Question 7 Discussion: Ignoring your pain and increasing your activity is not a recommended approach for pain management. The role of the psychologist is an important part of the interdisciplinary team management. A psychologist may utilize many techniques for pain management and may include acceptance and commitment approach, cognitive behavioral approach, relaxation, guided imagery, hypnosis, meditation or biofeedback [7].

Test Question 8

In a team approach to pain management, what is best reason for a multidisciplinary team meeting with the patient?

- Tell the patient what the plan of care will be.
- It is only for the patient and family to ask questions.
- Develop an individualized plan of care with the patient
- It is for patient to tell the team what he/she has decided to do.

Answer question 8: Develop an individualized plan of care with the patient

Question 8 Discussion: In a team approach to pain management, the best reason for a multidisciplinary team meeting with the pain is to develop an individualized plan of care with the patient [8]. It is important to consider the patient and family as both the center of the team and a member of the team. The team meeting is characterized by sharing of information, discussion of treatment options and a mutual decision making process with the patient and the family.

Test Question 9

In the biopsychosocial model for pain management, which of the following best represents the components of the biological, psychological and social components of the model?

- Smoker, high school graduate, grumpy
- Tired, anxious, talkative

- Hair color, early riser, married
- Injury, alcohol abuse, farmer

Answer question 9: Injury, alcohol abuse, farmer

Question 9 Discussion: The best representation of the biopsychosocial model is injury (biological), alcohol abuse (psychological) and farmer (social). The others may also represent those components however these are the most representative of the biopsychosocial model (See Appendix E).

Test Question 10

What reasons have prevented Mr. Lane from returning to work?

- Pain
- Decreased range of motion of his right arm
- Decreased strength of the right arm
- All of the above

Answer question 10: All of the above

Question 10 Discussion: The reasons that have prevented Mr. Lane from returning to work include all of the above: pain, decreased range of motion of his right arm and decreased strength of the right arm. No one reason is more important in preventing him from returning to work. High pain levels are preventing him from sleeping, increasing activity, increasing his right arm movement and increasing his right arm strength. In addition, the inability to move and exercise is decreasing his ability to use activity to decrease pain.

Supplemental Materials and Resources

Pain Information

There are several internet websites where you can learn more about pain:

International Association for the Study of Pain: <http://www.iasp-pain.org/>

American Pain Society: <http://americanpainsociety.org/>

American Academy of Pain Management: <http://www.aapainmanage.org/>

American Academy of Pain Medicine: <http://www.painmed.org/>

American Chronic Pain Association: <https://theacpa.org/>

National Fibromyalgia & Chronic Pain Association: <http://www.fmcpaware.org/>

Institute of Medicine

In 2011, the Institute of Medicine (IOM) released a report regarding pain as a public health problem in the United States. The IOM recommended relieving pain become a national priority [9]. IOM Link: <https://www.ncbi.nlm.nih.gov/pubmed/22553896>

National Pain Strategy

The U.S. Department of Health and Human Services, in 2016, outlined the nation's first coordinated plan for reducing chronic pain The National Pain Strategy (NPS). It was developed by a diverse team of experts from around the nation, the National Pain Strategy is a roadmap toward achieving a system of care in which all people receive appropriate, high quality and evidence-based care for pain [10]. NPS Link:

https://iprcc.nih.gov/sites/default/files/HHSNational_Pain_Strategy_508C.pdf

CDC Guideline for Prescribing Opioids

In 2016, the Center for Disease Control released the guideline for prescribing opioids for chronic pain [11]. Article Link: <http://jama.jamanetwork.com/article.aspx?articleid=2503508>

Farming and Farm Injuries

Crush injuries occur when are trapped in or under machinery or when one or more body parts are pinched or jammed. The pressure of being crushed by heavy farm machinery can rupture skin, rip muscles, sever nerves and/or splinter bone, resulting in trauma or death.

Most crush accidents occur during cropping or while performing machinery maintenance. Many are caused by tractor rollovers, but crushing can also result from using all-terrain vehicles, being stepped on or trampled by livestock, having a load drop on you, adding attachments to machinery and/or having fingers pulled into moving machinery.

- On average, tractor rollovers crush 110 farmers annually in the U.S.
- Crushing is the fifth-leading type of fatal injury on the farm.

Farm use: corn pickers and combines to harvest corn. A corn picker strips the stalks close to the ground using a pronged header. It then feeds them into a combine, which husks them with huge, sharp, rotating rollers. A conveyor belt carries the husked ears further into the machine, where they are dropped into a large, moving container.

According to the National Agricultural Safety Database, "Virtually every farmer knows of a family member, friend or neighbor who has been injured in a corn picker."

Common Corn Picker / Combine Injuries

- Corn pickers' rollers are responsible for many farm worker injuries because the corn stalks tend to plug them if the machine is moving, either too quickly or slowly. Workers

attempting to free the stalk can lose their hands and arms as the rollers continue to rotate, because the rollers rotate at about 12 feet per second. That means *a farm worker holding a stalk, even at a distance of three feet away from a roller, has less than half a second to let go.*

- Many deaths occur when operate combines that use hydraulic cylinders to hold the combine up. If the cylinders fail, the combine falls, crushing them beneath it.
- Some modern corn pickers/combines are larger than a typical vehicle lane of a highway. Consequently, driving them on public roads creates the potential for accidents.

Farm injury Link: <http://www.farmerhealth.org.au/page/health-centre/crush-injuries>

Cubital Tunnel

The cubital tunnel syndrome may cause pain, numbness, and tingling or muscle weakness in the arm or hand. The cubital tunnel is the area of the “funny bone” where the ulnar nerve runs through this tunnel [12, 13].

Links: <http://www.webmd.com/pain-management/cubital-radial-tunnel-syndrome>

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2599973/>

Assessment Tools

Many assessment tools are available for use in individuals with acute pain, chronic pain or acute on chronic pain. We have used four tools in our module and here is a brief summary with further information in Appendix A, B, C and D.

- *Numeric Rating Scale (NRS)* [14]. The numeric rating scale is an 11 point scale. 0 is equal to zero for no pain and 10 is equal to worst pain imaginable The scale is asked and a verbal response is given with a number between 0 and 10. For more information see Appendix B.
- *Quick Disabilities of the shoulder arm or hand (QDASH)* [15-17]. The Quick DASH is an 11 question survey with a focus on upper extremity pain and function. The total possible score is 0 to 100 with higher scores demonstrating higher disability. For more information see Appendix c.
- *Functional Pain Scale (FPS)* [18]. The functional pain scale is a questionnaire to gather information regarding pain during functional tasks. Total score range is 0 to 5 with higher scores demonstrating higher pain with functional activities. For more information see Appendix D.
- *Opioid Risk Tool (ORT)* [3]. The opioid risk tool is a five question survey to suggest risk for opioid addiction. The total score range is from 0 to 26 with higher scores indicating higher risk.

Acknowledgments:

Primary Investigator (PI) Keela Herr, PhD, RN, AGSF, FAAN

Co-Primary Investigators (Co-PI's):

- Kathleen Sluka, PT, PhD
- Tanya Uden-Holman, PhD

Project Coordinator: Eiko Oka, MPH

Case Developers Team:

- Dana Dailey, PT, PhD (Lead)
- Joseph Chen, MD
- Carol Gorney, MPAS, PA-C
- Linda Hand, PhD
- Jen Lee, PhD
- Barbara St. Marie, PhD, ANP, GNP
- Sara Sanders, PhD, MSW
- John Swegle, PharmD

Instructional Design Team:

- Nor Hashidah Abd Hamid, PhD (Instructional Designer)
- Laurie Walkner, MA, BSN (Instructional Design Coordinator)
- John Choate, AD (Media Specialist)

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Appendix A: Opioid Risk Tool¹

Instructions

The Opioid Risk Tool includes five categories:

1. Family history of substance abuse
2. Personal history of substance abuse
3. Age
4. History of preadolescent sexual abuse
5. Psychological disease

The overall score from all five categories score indicates the patient's opioid risk.

Family History of Substance Abuse

- Alcohol
 - Item score if female: 1
 - Item score if male: 3
- Illegal Drugs
 - Item score if female: 2
 - Item score if male: 3
- Prescription Drugs
 - Item score if female: 4
 - Item score if male: 4

Personal History of Substance Abuse

- Alcohol
 - Item score if female: 3
 - Item score if male: 3
- Illegal Drugs
 - Item score if female: 4

¹ Reference: Webster LR. Predicting aberrant behaviors in opioid-treated patients: Preliminary validation of the opioid risk tool. *Pain Medicine*. 2005;6(6):432-442. Used with permission.

- Item score if male: 4
- Prescription Drugs
 - Item score if female: 5
 - Item score if male: 5

Age

- Age 16-45
 - Item score if female: 1
 - Item score if male: 1

History of Preadolescent Sexual Abuse

- Abuse experienced
 - Item score if female: 3
 - Item score if male: 0

Psychological Disease

- Attention Deficit Disorder, Obsessive Compulsive Disorder, Bipolar, Schizophrenia
 - Item score if female: 2
 - Item score if male: 2
- Depression
 - Item score if female: 1
 - Item score if male: 1

Total Score Risk Category

- Low Risk: 0 – 3
- Moderate Risk: 4 – 7
- High Risk: ≥ 8

Appendix B: Numeric Pain Rating Scale (NPRS)

Purpose

The Numeric Pain Rating Scale (NPRS) measures the subjective intensity of pain.

Description

- The NPRS is an eleven-point scale from 0 to 10.
 - “0” = no pain
 - “10” = the most intense pain imaginable
- Patients verbally select a value that’s most in line with the intensity of pain that they’ve experienced in the last twenty-four hours.
- A written form is also frequently used with the numeric values of 0 to 10, written out.
- The NPRS has good sensitivity while producing data that can be statistically analyzed (Williamson & Hoggar, 2005)

Area of Assessment

Pain

Body Part

Not applicable

Domain

Sensory

Assessment Type

Patient reported outcome

Length of Test

Five minutes or less

Time to Administer

Less than three minutes

Number of Items

One

Equipment Necessary

None necessary

Training Required

None necessary

Type of Training Required

No training

Cost

Free

Actual Cost

None

Age Range

Adult: 18-64 years; Elderly adult: 65+

Administration Mode

Paper/pencil

Diagnosis

Pain

Populations Tested

- Chronic pain
- Acute pain
- Older adults (Geriatric)
- Postsurgical pain (e.g., superficial incisions to complex intra-abdominal and musculoskeletal operations)
- Oncology
- Pain of the neck, back, upper extremity or lower extremity
- Complex regional pain syndrome (CPRS)
- Rheumatoid arthritis

Standard Error of Measurement (SEM)

Lower Back Pain: (Childs et al, 2005; $n = 131$; mean age = 33.9 (11) years; patients receiving physical therapy; 87% with symptoms for under six weeks)

- SEM = 1.02

Minimal Detectable Change (MDC)

Neck/Upper Extremity/Lower Extremity: (Stratford & Spadoni, 2001; $n = 124$, subgroups by pain location; neck ($n = 25$), back ($n = 27$), upper extremity ($n = 42$), lower extremity ($n = 29$); patients assessed on two occasions within seven days)

- Raw changes of three points or 27% (percent of raw in total = 3 points/11 points) is required for meaningful change

Lower Back Pain: (Childs et al, 2005)

- 2 points based on a 95% confidence interval

Minimally Clinically Important Difference (MCID)

Chronic Musculoskeletal Pain: (Salaffi et al, 2004; $n = 825$ patients with chronic musculoskeletal pain)

1 point or 15.0% change

Lower Back Pain: (Childs et al., 2005)

- At 1 week of physical therapy treatment = 1.5 points
- At 4 weeks of physical therapy treatment = 2.2 points

Post-operative Patients: (Sloman et al, 2006; $n = 150$; mean age = 47.2 years, 56% post-abdominal surgery, 28.6% post-orthopedic surgery, 15.4% other types of surgery)

- Percent change in NPRS rather than raw scored change may provide more meaningful information regarding a patient's response to pain treatment. For example, a change from 3/10 to 0/10 pain may be more meaningful than a change from 8/10 to 5/10 pain.
- Therefore, MCIDs were determined in percent change:

- 35% reduction on the NPRS had a rating of “minimal relief”
- 67% reduction had a rating of “moderate relief”
- 70% reductions had a rating of “much relief”
- 94% reduction had a rating of “complete relief”

Shoulder Pain: (Michener et al, 2001; $n = 136$; surgical and non-surgical conditions; mean age 51.7(16.4) years; 76.5% no surgery, 23.5% status post-surgery; assessment of average NPRS scores for at rest, normal activity, and strenuous activity)

- 2.17 points for surgical and non-surgical subjects after three to four weeks of rehabilitation

Chronic Pain: (Farrar et al, 2001; $n = 2,724$ subjects with varying diagnoses including fibromyalgia, diabetic neuropathy, post-herpetic neuralgia, chronic low back pain and osteoarthritis)

- 1.7 points or a reduction of 27.9% (raw change/baseline x 100)

Hospital/Emergency Room Population: (Bijur et al, 2003; $n = 108$; mean age = 44 years; participants presented with acute pain in the emergency room department)

- 1.3 points

Chronic SCI: (Hanley et al, 2006a; $n = 82$; mean age = 41.44(10.14) years; 54% cervical SCI, 38% thoracic SCI, 7% lumbar/sacral SCI; average pre-treatment pain intensity = 5.27 (1.79) on NPRS)

- 1.80 points or 36%

Cut-Off Scores

Traumatic Spinal Cord Injury (SCI): (Forchhemier MB et al, 2011; $n = 6096$; mean age = 32.5 (14) years; mean time since injury = 9.8 (9.3) years; all subjects had SCI and pain; injury level: 24.3% AIS D, 5.8% paraplegia AIS C, 5.0% paraplegia B, 29.8% paraplegia A, 7.0% tetraplegia AIS C, 8.0% tetraplegia AIS B, 20.1% tetraplegia AIS A)

- Pain severity can be categorized into 3 distinct groups as relates to pain interference: 1-3, 4-6, and 7-10

Chronic SCI: (Hanley et al, 2006b; for questions about general pain: $n = 307$, mean age = 43.1 (13.0) years; for questions about worst pain: $n = 174$, mean age = 41.6 (13.6) years; inclusion criteria of SCI >6 months)

- For rating overall pain: mild = 1-3, moderate = 4-7, severe = 8-10
- For rating worst pain problem: mild = 1-3, moderate = 4-6, severe = 7-10
- For cut-off determination, pain severity on NPRS was compared to pain interference

Normative Data

Not established.

Test-retest Reliability

Chronic Pain: (Jensen & McFarland, 1993; $n = 200$; mean age = 43.83 (13.2) years; mean time since pain onset = 6.13 (8.24) years)

- Adequate test-retest reliability for a single pair of assessments (one assessment during week 1, one assessment during week 2) ($r = 0.63$)
- Excellent test-retest reliability for ratings on 2 or more days during week 1 compared to 2 or more days during week 2 ($r = 0.79 - 0.92$)
- Test-retest reliability increases with increasing numbers of ratings with the highest reliability for 4 ratings/day taken on 7 days ($r=0.95$)

Interrater/Intrarater Reliability

Healthy Populations: (Herr et al, 2004; $n = 175$ total, 86 subjects aged 25-55 years (mean age = 39.1 (8.8) years), 89 subjects aged 65-94 years (mean age = 76.0 (7.4) years))

- **Excellent** interrater reliability with 100% agreement between two raters scoring the 0-10 point NPRS

Internal Consistency

Chronic Pain: (Jensen & McFarland, 1993)

- Excellent internal consistency for a single pair of ratings (one during week 1 and one during week2) (Coefficient alpha = 0.84)
- Excellent internal consistency for ratings on 2 or more days during week 1 compared to 2 or more days during week 2 (Coefficient alpha = 0.89 –0.98)

Healthy Populations: (Herr et al, 2004)

- Excellent internal consistency for NPRS in participants aged 65-94 (Cronbach's alpha = 0.87)
- Excellent internal consistency for NPRS in participants aged 25-55 (Cronbach's alpha = 0.88)

Criterion Validity (Predictive/Concurrent)

Concurrent Validity:

Healthy Populations: (Herr et al, 2004)

- **Excellent** correlation between NPRS and Visual Analogue Scale ($r = 0.86$)
- **Excellent** correlation between NPRS and Verbal Descriptor Scale ($r = 0.88$)
- **Excellent** correlation between NPRS and 21-point Numeric Rating Scale ($r = 0.87$)
- **Excellent** correlation between NRPS (on 0-20 scale) and Faces Pain Scale ($r = 0.80$)

Construct Validity (Convergent/Discriminant)

Convergent Validity:

Hospital/Emergency Room Population: (Bijur et al, 2003)

- **Excellent** correlation between NRPS and VAS ($r = 0.94$, 95% CI = 0.93-0.95)

Traumatic SCI: (Dijkers, 2010; $n = 168$; mean 38(18) years; level of injury: 10% paraplegia incomplete, 26% paraplegia complete, 45% tetraplegia incomplete, 19% tetraplegia complete)

- **Adequate** correlation between NPRS and Verbal Rating Scale (Spearman's $r = 0.38$)

Content Validity

SCI: (Bryce et al, 2007; n = 50 health care providers attending the 2006 combined American Spinal Injury Association (ASIA)/International Spinal Cord Society (ISCoS) scientific meeting)

- In a vote on the validity and usefulness of the NPRS in people with pain related to a SCI, attendees voted as follows:
 - 64% NPRS is a valid measure and should be part of a minimum dataset for clinical trials
 - 14% NPRS is a valid measure but should be part of an expanded dataset only
 - 20% NPRS needs further study to establish reliability and validity before being recommended
 - 2% NPRS is not valid or relevant for use
 - 79% NPRS as first choice for a minimum data set over a VRS (16%) and VAS (5%) (n= 57)

Face Validity

Healthy Population: (Herr et al, 2004)

- Subjects were shown 5 scales rating pain intensity and asked which scale best described the severity of pain experienced during the study.
 - 35.3% preferred the 21-point Numeric Rating Scale (written format)
 - 25.3% preferred the Verbal Descriptor Scale
 - 15.9% preferred the NPRS (11-point verbal scale)
 - 12.9% preferred the Faces Pain Scale o 10.6% preferred the Visual Analogue Scale

Floor/Ceiling Effects

Not established

Responsiveness

Lower Back Pain: (Childs et al, 2005)

- Large effect size at 1 week and 4 weeks ($ES = 0.95-1.2$) in patients receiving physical therapy for low back pain

Healthy Population: (Herr et al, 2004)

- NPRS detected significant differences across temperatures of thermal stimuli tested ($F_{6,1037} = 67.09$, $p < 0.0001$) indicating sensitivity to changes in pain stimulus

Shoulder Pain: (Michener et al., 2011)

- Large effect size for surgical ($ES = 1.51$) and non-surgical subjects ($ES = 1.94$)

Professional Association Recommendations

Recommendations for use of the instrument from the Neurology Section of the American Physical Therapy Association's Multiple Sclerosis Taskforce (MSEdge), Parkinson's Taskforce (PDEdge), Spinal Cord Injury Taskforce (PD Edge), Stroke Taskforce (StroKEDGE), Traumatic Brain Injury Taskforce (TBI Edge), and Vestibular Taskforce (VEDGE) are listed below. These recommendations were developed by a panel of research and clinical experts using a modified Delphi process.

For detailed information about how recommendations were made, please visit:

<http://www.neuropt.org/go/healthcare-professionals/neurology-section-outcome-measures-recommendations>

Abbreviations

- HR: Highly Recommend
- R: Recommend
- LS / UR: Reasonable to use, but limited study in target group / Unable to Recommend
- NR: Not Recommended

Recommendations for use based on acuity level of the patient

Acute (CVA < 2 months post) (SCI < 1 month post) (Vestibular < 6 weeks post)

- SCI EDGE: R

Subacute (CVA 2 to 6 months) (SCI 3 to 6 months)

- SCI EDGE: R

Chronic (> 6 months)

- SCI EDGE: HR

Recommendations based on SCI AIS Classification

AIS A/B

- SCI EDGE: R

AIS C/D

- SCI EDGE: R

Recommendations for entry-level physical therapy education and use in research:

Students should learn to administer this tool? (Yes/No)

- SCI EDGE: Yes

Students should be exposed to tool? (Yes/No)

- SCI EDGE: Yes

Appropriate for use in intervention research studies? (Yes/No)

- SCI EDGE: Yes

Is additional research warranted for this tool (Yes/No)

- SCI EDGE: Not reported

Considerations

Older Adults: (Herr et al, 2004)

Herr et al recommend use of a Verbal Descriptor Scale over the NPRS based on evidence related to failures, internal consistency reliability, construct validity, scale sensitivity, and patient

preference. Do you see an error or have a suggestion for this instrument summary? Please [e-mail us!](#)

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Year Published

1995

Instrument in PDF Format

Yes

Approval Status

Approved

Appendix C: The QuickDASH Outcome Measure²

A faster way to measure upper-extremity disability and symptoms

About the QuickDASH

The DASH Outcome Measure has been increasing in popularity since its release in 1996. Today the tool is being used around the world in both clinical and research settings and has proven to be a useful self-report outcome measure for people with musculoskeletal upper-limb disorders.

The QuickDASH is a shortened version of the DASH Outcome Measure. Instead of 30 items, the QuickDASH uses 11 items to measure physical function and symptoms in persons with any or multiple musculoskeletal disorders of the upper limb. Like the DASH, the QuickDASH also has two four-item optional modules that are scored separately.

This shortened version of the tool provides clinicians with an option that enables faster measurement of disability and symptoms; however, there are some advantages to using the full DASH outcome measure. (See Psychometric Properties)

The QuickDASH Outcome Measure is available free of charge (for noncommercial purposes) and may be downloaded from the DASH web site at www.dash.iwh.on.ca. Information on scoring is also available on-line.

Development of the QuickDASH

Statistical analysis of the 30-item DASH indicated that it could be reduced to 11 items while still maintaining an acceptable rating of internal consistency for individual patient evaluation (i.e. Cronbach's alpha ~ 0.90). Shortening the DASH was felt to be an attractive and sensible option provided that psychometric properties could be maintained.

Three techniques were used for item reduction using field-testing data for the full DASH. Three different scales (i.e. QuickDASH versions) were produced.

Conceptual Method

The first scale was created by selecting items that represented each of the key domains identified in the theoretical framework of the full DASH. The 16 original domains were reduced to 11 based on similarity across domains. Items in the full DASH were sorted according to the domain they represented and were then ranked according to two criteria: first, the importance and difficulty according to patients, and second, correlation with total DASH score. The highest

² Institute for Work and Health 2006. All rights reserved.

ranking items in each of the 11 specified domains were chosen to comprise the concept-based version of the QuickDASH.

Equidiscriminative Item-Total Correlation (EITC)

The second scale was created by selecting items that had the highest correlation with overall scores across subgroups (those with high, moderate and low levels of disability). The four items with the highest correlation in each grouping were selected to compose the EITC-based version of the QuickDASH (the item with the smallest correlation of the twelve was eliminated).

Item Response Theory (*Rasch Analysis*)

The third scale was created using Rasch analysis. DASH items were calibrated based on their relative difficulty; misfitting items were eliminated, and an 11-item scale was produced with items theoretically equally spaced and calibrated along the scale length.

Evaluation and Comparison

Three distinct QuickDASH versions were produced using the item-reduction techniques described. These scales were evaluated and compared using data from the original 30 item DASH prospective cohort (i.e., 200 individuals with various upper-limb disorders). The final decision of the accepted version of the QuickDASH was made based on the following criteria:

1. number of items with > 40% in one response category
2. Cronbach's alpha > 0.90
3. highest correlation with the 30- item DASH and with other markers of physical function and severity of problem.

The three versions were similar, though differing in content. The concept version ranked slightly better than the others and was chosen and unanimously supported by the Upper Extremity Collaborative Group (the DASH development group) and named the QuickDASH Outcome Measure.

Psychometric Properties

Establishing the psychometric properties of any instrument is an ongoing process and is context specific. In other words, with each new population, clinical setting or treatment type, pilot testing of performance in that particular context is recommended.

Initial testing has shown the QuickDASH to work well in groups of patients (research studies, program evaluation); however, clinicians should be aware that there are advantages to using the full DASH in individual patient monitoring. The precision of measurement is slightly better with

the DASH, resulting in greater confidence of the accuracy of scores. Until further data is available on the QuickDASH, clinicians should consider this advantage when choosing which measure to use.

QuickDASH versus DASH³

- Reliability
 - Internal Consistency
 - QuickDASH: Cronbach's alpha = 0.94
 - DASH: Cronbach's alpha = 0.97
 - Test-Retest
 - QuickDASH: ICC = 0.94
 - DASH = 0.96
- Validity
 - Convergent Construct
 - VAS of overall problem
 - QuickDASH: $r = 0.70$
 - DASH: $r = 0.70$
 - VAS of overall pain
 - QuickDASH: $r = 0.73$
 - DASH: $r = 0.72$
 - VAS of ability to function
 - QuickDASH: $r = 0.80$
 - DASH: $r = 0.79$
 - VAS of ability to work
 - QuickDASH: $r = 0.76$

³ ICC – intra-class correlation coefficient (2,1)

M – average score; r – Pearson product moment correlation

SRM - standardized response mean; VAS - visual analogue scale

All Pearson product moment correlations and known-group differences statistically significant at $p < 0.05$.

- DASH: $r = 0.77$
- Known-Groups
 - Able to do all need to versus limited
 - QuickDASH: $M = 25.4$ vs. 48.6
 - DASH: $M = 23.6$ vs 47.1
 - Able to work versus unable to work due to upper-limb problem
 - QuickDASH: $M = 27.5$ vs 52.6
 - DASH: $M = 26.8$ vs 47.1
- Responsiveness
 - Change in group of patients undergoing treatment: expected to improve
 - QuickDASH: $SRM = 0.79$
 - DASH: $SRM = 0.78$
 - Change in those rating their problem as better
 - QuickDASH: $SRM = 1.03$
 - DASH: $SRM = 1.05$

Scoring the QuickDASH

The QuickDASH is scored in two components: the disability/symptom section (11 items, scored 1-5) and the optional high-performance sport/music or work modules (4 items, scored 1-5).

Disability/Symptom Score

At least 10 of the 11 items must be completed for a score to be calculated. The assigned values for all completed responses are simply summed and averaged, producing a score out of five. This value is then transformed to a score out of 100 by subtracting one and multiplying by 25. This transformation is done to make the score easier to compare to other measures scaled on a 0-100 scale. A higher score indicates greater disability.

$$([\text{sum of } n \text{ responses}/n] - 1) \times 25^4$$

Optional Modules (Sport/Music or Work)

There are two optional modules, each consisting of four items. The optional modules are intended for athletes, performing artists and other groups of workers whose jobs require high

⁴ Where n is equal to the number of completed responses

levels of physical performance. These individuals may be having difficulties only at these high-performance levels, which are beyond the scope of the 11-item QuickDASH. The same procedure described for the disability/symptom score is followed to calculate the optional four item module score. All four questions must be answered in order to calculate the score. For each module, simply add up the assigned values for each response and divide by four (number of items); subtract one and multiply by 25 to obtain a score out of 100.

Missing Items

If more than 10 percent of the items (that is, more than one item) are left blank by the respondent, you will not be able to calculate a QuickDASH disability/symptom score. By this same rule (that is no more than 10 per cent of the items can be left blank), no missing values can be tolerated in the optional modules because each module consists of only four items.

The Quick DASH Outcome Measure

Instructions

This questionnaire asks about your symptoms as well as your ability to perform certain activities. Please answer every question, based on your condition in the last week, by choosing the appropriate number. If you did not have the opportunity to perform an activity in the past week, please make your best estimate of which response would be the most accurate. It doesn't matter which hand or arm you use to perform the activity; please answer based on your ability regardless of how you perform the task.

QuickDASH

Please rate your ability to do the following activities in the last week either 1, for no difficulty, 2 for mild difficulty, 3 for moderate difficulty, 4 for severe difficulty, or 5 for unable.

1. Open a tight or new jar
2. Do heavy household chores (e.g., wash walls, floors)
3. Carry a shopping bag or briefcase
4. Wash your back
5. Use a knife to cut food
6. Recreational activities in which you take some force or impact through your arm, shoulder, or hand (e.g., golf, hammering, tennis, etc.).

Choose the appropriate number to reflect the following, with 1 for not at all, 2 for slightly, 3 for moderately, 4 for quite a bit, or 5 for extremely.

7. During the past week, to what extent has your arm, shoulder, or hand problem interfered with your normal social activities with family, friends, neighbors or groups?

Choose the appropriate number to reflect the following, with 1 for not at all, 2 for slightly, 3 for moderately, 4 for quite a bit, or 5 for unable.

8. During the past week, were you limited in your work or other regular activities as a result of your arm, shoulder or hand problem?

Please rate the severity of the following symptoms in the last week by choosing the appropriate number. Choose 1 for none, 2 for mild, 3 for moderate, 4 for severe, and 5 for extreme.

9. Arm, shoulder, or hand pain.
10. Tingling (pins and needles) in your arm, shoulder, or hand.

Choose the appropriate number to reflect your experience for the following, with 1 for no difficulty, 2 for mild difficulty, 3 for moderate difficulty, 4 for severe difficulty, or 5 for so much difficulty that I can't sleep.

11. During the past week, how much difficulty have you had sleeping because of the pain in your arm, shoulder, or hand?

QuickDASH Disability/Symptom Score = $([\text{sum of } n \text{ responses}/n] - 1) \times 25$, where n is equal to the number of completed responses.

A QuickDASH score may not be calculated if there is greater than one missing item.

QuickDASH Work Module (Optional)

The following questions ask about the impact of your arm, shoulder, or hand problems on your ability to work (including homemaking if that is your main work role).

Please note what your job/work is. If you do not work, you may skip this section.

Please note the number that best describes your physical ability in the past week. 1 denotes no difficulty, 2 mild difficulty, 3 moderate difficulty, 4 severe difficulty, and 5 unable.

Did you have any difficulty:

1. Using your usual technique for your work?
2. Doing your usual work because of arm, shoulder, or hand pain?
3. Doing your work as well as you would like?
4. Spending your usual amount of time doing your work?

QuickDASH Sports/Performing Arts Module (Optional)

The following questions relate to the impact of your arm, shoulder, or hand problem on playing your musical instrument or sport or both. If you play more than one sport or instrument (or play both), please answer with respect to that activity which is most important to you.

Please note the sport or instrument which is most important to you. If you do not play a sport or instrument, you may skip this section.

Please note the number that best describes your physical ability in the past week. 1 denotes no difficulty, 2 mild difficulty, 3 moderate difficulty, 4 severe difficulty, and 5 unable.

Did you have any difficulty:

1. Using your usual technique for playing your instrument or sport?
2. Playing your musical instrument or sport because of arm, shoulder, or hand pain?
3. Playing your musical instrument or sport as well as you would like?
4. Spending your usual amount of time practicing your instrument or sport?

Scoring the Optional Modules: Add up assigned values for each response; divide by 4 (number of items); subtract 1; multiply by 25.

An optional module may not be calculated if there are any missing items.

Appendix D: Functional Pain Scale (FPS)

Instructions

Ask the patient if pain is present. If the patient has pain, ask him or her to rate the pain subjectively as either “tolerable” or “intolerable.”

Finally, find out if the pain interferes with function. If the patient rates the pain as “tolerable,” establish whether the pain interferes with any activity. If the pain is “intolerable,” determine whether the pain is so intense as to prevent passive activities. See the list below for guidelines.

0. No pain
1. Tolerable (and does not prevent activities)
2. Tolerable (but does prevent some activities)
3. Intolerable (but can use telephone, watch TV, or read)
4. Intolerable (but cannot use telephone, watch TV or read)
5. Intolerable (and unable to verbally communicate because of pain)

Scoring

The patient’s subjective rating of pain and the objective determination of the pain’s interference with activities will produce a corresponding score on a scale of 0-5.

A lower score equates to less severe pain and less interference with functional abilities. Ideally, all patients should reach a 0 to 2 level, preferably 0 to 1.

It should be made clear to the respondent that limitations in function only apply if limitations are due to the pain being evaluated.

Source

Gloth FM III, Scheve AA, Stober CV, Chow S, Prosser J. The Functional Pain Scale: reliability, validity, and responsiveness in an elderly population. J Am Med Dir Assoc. 2001;2(3):110-114.

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