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Introduction

In 2011, the American Academy of Pain Management leadership asked us to develop a rigorous program of study to support the new Advanced Credentialed Pain Practitioner program. There are other curricula for pain specialists, notably the one developed by the International Association for the Study of Pain (IASP). Our task was to create a knowledge base for the clinician who did not practice pain care at the fellowship-trained pain specialist level, but who nevertheless spent a significant portion of clinical time caring for patients with chronic pain, as is ever more common in the primary care setting. The result was this Curriculum for the Advanced Credentialed Pain Practitioner (the Curriculum), which provides the framework of the knowledge and skills needed to deliver balanced and advanced non-interventional pain care to the majority of patients presenting with commonly encountered pain diagnoses.

The Academy also wanted an advanced examination so that clinicians could demonstrate their mastery of the material found in the Curriculum. We have written an advanced credential examination based upon this material. Earning the advanced credential will entail not only passing a 200-question examination, but also successfully demonstrating advanced interviewing and examination skills with a standardized patient (an actor who portrays a patient with a pain problem). This will be offered concurrently with the credentialing examination, and is a unique feature of this credential. We expect that a significant amount of time will be required to master this material.

How to Use the Curriculum

The Curriculum is divided into 13 major topics, which represent important subject areas pertaining to chronic pain. Each topic is further divided into subtopics in an outline form. Under the subtopics are learning objectives. We expect that you will use the curricular objectives to structure your knowledge around a given topic and subtopic. While not exhaustive, we believe these objectives to be sufficiently rigorous and complete to provide a sound framework to learn about chronic pain. We have chosen to write the Curriculum in this manner for two reasons:

1. We believe that adult learning is enhanced when the learner seeks out information (as one does when solving a clinical problem) rather than having it provided.
2. Every individual has a learning style and will determine how best to master the objective-guided material. We will, of course, provide a compendium of references from which the Curriculum was developed, but fully expect you to choose your own learning method and resources.

How to Use the References

The primary textbook for the Curriculum is Bonica’s Management of Pain (4th ed.). We believe this to be a complete, well-written compendium of pain knowledge. Although the majority of the objectives can easily be found in this text, we do not expect you to read the entire book. We have indicated which chapters support certain learning objectives. We have also provided references for each section. Our criteria for choosing these references were as follows: Many of the references should be accessible online (these are flagged in the Curriculum), be written in a review-type format, and be germane to the curricular objectives. We focused on brevity rather than having an exhaustive reference list. We hope and expect that you will explore the many other resources, guidelines, and studies available online.

The Academy offers the Curriculum at no charge if you use it to advance your knowledge about chronic pain. If you would like to use it as a teaching tool, you must obtain written permission from the Academy. We hope you find it useful, and we welcome your feedback.

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The Basics

In order to properly assess and treat chronic pain it is essential to understand basic anatomical and physiologic concepts related to pain perception and interpretation. This basic understanding is essential for grasping the pathophysiology of pain states, including our increasing understanding of the role of neuroglial cells in contributing to chronic pain states, particularly neuropathic pain.

I. GENERAL CONCEPTS

A. Discuss the magnitude of the problem of pain in the US with regard to
   1. Approximate number of patients with pain in the US
   2. Approximate medical costs and costs of lost productivity from chronic pain
   3. Prevalence of chronic pain disorders in the US
   4. Discuss the importance of the biopsychosocial/spiritual aspects of pain care

B. Relieving Pain in America: A Blueprint for Transforming Prevention, Care, Education, and Research (Institute of Medicine Report)
   1. Discuss the major recommendations noted in the summary of this report

II. DEFINITIONS

A. Define the following important pain terms
   1. Pain
   2. Acute pain
   3. Chronic Pain
   4. Addiction
   5. Allodynia
   6. Breakthrough pain
   7. Catastrophizing
   8. Central pain
   9. Central sensitization
   10. Dysesthesia
   11. Hyperalgesia
   12. Hypoalgesia
   13. Neural plasticity
   14. Neuropathic pain
   15. Nocebo
   16. Nociception
   17. Pain threshold
   18. Pain tolerance
   19. Paresthesia
   20. Physical dependence
   21. Pseudoaddiction
   22. Tolerance (to drugs)
   23. Wind-up

III. FUNCTIONAL PAIN ANATOMY

A. Peripheral nervous system
   1. Describe what constitutes the peripheral nervous system (PNS)
   2. Define dermatome
   3. Use a dermatome map to locate the innervation on the surface of the body of the following
      a. Cervical roots 1-8
      b. Thoracic roots 1-12
      c. Lumbar roots 1-5
      d. Sacral roots 1-5
   4. Use a myotomes map to locate the major muscle innervated by the following
      a. Cervical roots 1-8
      b. Thoracic roots 1-12
      c. Lumbar roots 1-5
      d. Sacral roots 1-5

B. Autonomic nervous system
1. Describe the two principal divisions of the autonomic nervous system (ANS)
2. Describe the principal anatomic locations of the two divisions of the ANS
3. Describe the principal physiologic roles of each division of the ANS
4. Describe the principal neurotransmitters involved in both divisions of the ANS

C. Central nervous system (CNS)
   1. Spinal cord
      a. Describe the basic anatomy of the spinal cord and surrounding soft tissue
   2. Brainstem
      a. Describe the principal structures of the brainstem
   3. Diencephalon
      a. Describe the principal structures of the diencephalon
   4. Cerebrum
      a. Describe the principal structure of the cortex
      b. Describe the principal structures of the basal ganglia
      c. Describe the principal structures of the limbic system

A. Physiology of pain perception
   1. The nociceptor (primary afferent pain neuron)
      a. Describe the anatomy of a nociceptor
      b. Define the following two functional properties of nociceptors
         i. Nociception
         ii. Sensitization
      c. Describe the function of the following types of nociceptors
         i. Polymodal nociceptor
         ii. Mechanoreceptor
         iii. Thermal nociceptor
         iv. Chemical nociceptor
      d. Describe the role of the G-protein receptors (TRPV1)
      e. Describe the role of the voltage-gated sodium and calcium channels
      f. Describe the following four events that are required for nociceptors to transmit information about pain
         i. Transduction
         ii. Initiation of an action potential
         iii. Propagation of an action potential and the role of the Na+ channel
         iv. Transmitter release from presynaptic membrane and the role of the Ca++ channel
      g. List several ions or molecules that can initiate nociceptor depolarization
         i. H+, bradykinin, etc.

B. Pain processing in the dorsal horn of the spinal cord
   1. The synapse of the nociceptor and the second order spinal neuron

IV. NOCICEPTION
Nociception is the physiologic process by which we sense pain. The nociceptor, located on skin, muscles, joints, and viscera is the primary neuron responsible for the detection of painful stimuli and for the transmission of this information to the spinal cord. Nociceptors not only detect and transfer painful stimuli to the CNS but they also can sensitize—become more sensitive to painful stimuli. Understanding nociception is key to understanding the diagnostic and therapeutic approach to pain.
a. List several important neurotransmitters released from the presynaptic membrane of the nociceptor
i. Glutamate
ii. Substance P
iii. Etc.
b. List several important receptors related to their respective neurotransmitters
i. NMDA receptor
ii. Etc.

2. The dorsal horn
a. Describe several neuronal events that occur in the spinal laminae
b. Describe three different ways in which a second-order spinal neuron can receive input
c. Define wide-dynamic-range neuron
d. Describe the role of the interneuron
e. List several interneuron neurotransmitters (i.e., GABA)

3. Ascending pathways
a. Describe the role of the spinothalamic tract
b. Describe the role of the spinoreticular and spinomesencephalic tracts

4. Gate control theory of Melzack and Wall
a. Describe the Gate theory
b. Describe the concept of diffuse noxious inhibitory controls (DNIC)
c. Describe C-fiber Wind-up
d. Describe central sensitization

C. Pain processing in the brainstem
1. List several important brainstem structures involved in pain inhibition
2. Describe important neurotransmitters involved in transmission from each of the above brainstem structures
3. Describe the role of the rostral ventromedial medulla (RVM) in pain facilitation

D. Cortical pain mechanisms
1. Describe the role played in pain perception of each of these structures
   a. The primary projections of the lateral thalamus
   b. The primary projections of the medial thalamus
   c. The primary and secondary somatosensory cortex
d. The limbic system

References

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Pain Assessment

Perhaps the most important tool for the clinician in evaluating a patient with chronic pain is a thoughtful, very thorough, and sensitive clinical interview followed by a focused physical examination. Based upon the information from this encounter, the clinician will be poised to determine what ancillary data is needed to generate a pain diagnosis and treatment plan.

I. COMMUNICATION SKILLS

A. Patient-clinician communication
   1. Describe the difference between a physician/clinician-centered and a patient-centered clinical interview
   2. Describe several benefits of effective patient-clinician communication
   3. List the seven core measures of effective patient-clinician communication as defined by the Kalamazoo consensus
   4. Describe the structure of a patient-centered interview as defined by Smith

B. Psychosocial history
   1. List several psychiatric diagnoses that should be assessed during a psychosocial history
   2. Describe several life events potentially affecting a patient with chronic pain that should be elicited during a psychosocial history
   3. Describe elements of the social setting of a patient with chronic pain that should be elicited during the psychosocial history

   a. i.e., occupation, education, etc.

C. Substance abuse and addiction
   1. List important features relating to substance abuse and addiction that should be elicited during the pain interview
   2. Analyze the results of an opioid misuse risk assessment tool

   a. Screener and Opioid Assessment for Patient with Pain-Revised (OAPP®)
   b. Opioid Risk Tool (ORT)
   c. Current Opioid Misuse Measure (COMM®)

D. Goals of treatment
   1. Describe the importance of goal setting during the patient interview
   2. Describe essential elements of motivational interviewing techniques

E. Additional history
   1. Describe other important clinical information that should be obtained during a pain interview

   d. Effect on the patient's functioning in all spheres of life
III. THE PHYSICAL EXAMINATION

A. General physical examination
   1. Demonstrate the ability to perform a screening physical examination

B. Demonstrate the ability to perform a detailed neurologic examination
   1. Cranial nerve examination
   2. Peripheral nervous system examination
      a. Motor function
      b. Sensory function
         i. Vibration
         ii. Light touch
         iii. Pinprick
         iv. Temperature
      c. Muscle tone
      d. Reflexes
   3. Examination of gait and balance
      a. Heel-to-toe walk
      b. Tandem gait
      c. Romberg
      d. Finger to nose test
      e. Rapid alternating movements
   4. Describe signs of
      a. Upper motor neuron dysfunction
      b. Lower motor neuron dysfunction
      c. Radiculopathy
      d. Peripheral neuropathy (sensory/motor/mixed)
      e. Cranial nerve dysfunction
      f. Increased intracranial pressure
   5. Identify the important nerves (and their roots) that are associated with
      a. Motor function (e.g., knee extension)
      b. Regional sensory function
      c. Reflexes
   6. Identify which nerve root is associated with each of the major motor reflexes

C. Demonstrate the ability to perform a detailed musculoskeletal examination
   1. Describe the major planes of motion (and normal range of motion) of the
      a. Shoulder
      b. Elbow
      c. Wrists
      d. Fingers
      e. Hip
      f. Knees
      g. Ankle
      h. Spine
         i. Cervical
         ii. Thoracic
         iii. Lumbar
   2. Demonstrate the ability to perform exam maneuvers designed to identify
      a. Cervical radiculopathy
      b. Pathology in the rotator cuff
      c. De Quervain’s syndrome
      d. Carpal tunnel syndrome
      e. Facet arthropathy
      f. Lumbosacral radiculopathy
      g. Sacroiliac joint inflammation
      h. Hip pathology
      i. Knee pathology
      j. Symptom magnification
      k. Myofascial trigger points
   3. Note which of the following eponymous tests relate to the pathology they are designed to identify and demonstrate the ability to properly perform them
      a. Apprehension test
      b. Drawer test
      c. Drop arm test
      d. Finkelstein Test
      e. Lachman’s test
      f. Lesegue test
      g. Lhermitte’s sign
      h. McMurray test
      i. Neer’s test
j. Patrick test (FABERE test)
k. Phalen’s test
l. Scratch test
m. Spurling’s maneuver
n. Tinel’s test

D. Describe the indications for ordering a functional capacity evaluation (FCE)

References

IV. PAIN ASSESSMENT TOOLS

Key to the treatment of chronic pain is the ability to assess not only pain levels over time but also function and psychological wellbeing. Given that there is no “lab test” to measure this, several scales, each with distinct advantages and disadvantages, have been developed.

A. Describe the use of pain interference tools
1. Brief Pain Inventory (BPI)
2. Pain Outcomes Profile (POP)

B. Describe the use of pain measurement tools

V. IMAGING MODALITIES

Imaging modalities frequently utilized in the evaluation of chronic pain include plain radiography, CT, MRI, nuclear medicine studies (such as bone scans), and ultrasonography. Increasingly, radiologic techniques such as functional MRI and PET scans are increasing our understanding of the physiology of pain. Those clinicians involved with the evaluation of common chronic pain conditions should understand the indications for basic evaluation of chronic pain states and should have a basic understanding of common radiologic findings. The clinician should also understand that radiologic findings may or may not correlate with the patient’s pain complaint.

A. Radiographic anatomy
1. Identify the following structures on a plain radiograph of the spine
   a. Vertebral body

References
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b. Disc space  
ii. Knee  

ii. Facet joint  
iii. Hip  

iii. Spinous process  
h. Osteomyelitis  

iv. Neural foramen  
i. Bony metastasis

2. Identify the following structures on plain radiography of the chest  
a. Sternoclavicular joint  
b. Ribs # 1-12  
c. Accessory ribs  

c. Identify the following structures on plain radiography of the upper extremity  
a. Acromion process  
b. Acromioclavicular joint  
c. Humeral head  

c. Identify the following structures on plain radiography of the lower extremity and pelvis  
a. Sacroiliac joints  
b. Acetabulum  
c. Femoral head  
d. Greater trochanter  
e. Medial and lateral compartments of the knee  
f. Medial and lateral malleoli

B. Indications for various imaging modalities

1. Identify and explain the most appropriate initial and suggested subsequent imaging studies for the following conditions  
a. Chronic non-radicular neck pain  
b. Chronic radicular neck pain  
c. Chronic non-radicular low-back pain  
d. Chronic radicular low-back pain  
e. Vertebral body compression fracture  
f. Sacroiliac pain  
g. Chronic pain in a major joint  
i. Shoulder

2. When presented with an MRI report, correctly explain the following abnormalities  
a. Spine  
  i. Neural foraminal narrowing  
  ii. Spinal canal stenosis  
  iii. Disk bulge  
  iv. Herniated nucleus pulposus  
  v. Disk protrusion  
  vi. Disk extrusion  
  vii. Nerve root abutment vs. impingement  
  viii. Spinal cord abutment  
  ix. Inflammation, hematoma  

b. Shoulder  
  i. Labral tear  
  ii. Rotator cuff tear vs. tendinosis

C. Abnormalities on Imaging

1. When presented with a plain radiograph, correctly identify the following abnormalities  
a. Fracture of a long bone  
b. Chondrocalcinosis  
c. Osteophytes  
d. Loss of joint space  
  i. Vertebral  
  ii. Large joints  

e. Compression fracture of vertebral body  

f. Spondylosis  
g. Spondylolisthesis  
h. Facet arthritis  
  i. Schmorl's node of vertebral body  
  j. Erosions of digits of fingers  
  k. Osteoarthritis of the fingers  
  l. Sacroiliac arthritis  

2. When presented with an MRI report, correctly explain the following abnormalities  
a. Spine  
  i. Neural foraminal narrowing  
  ii. Spinal canal stenosis  
  iii. Disk bulge  
  iv. Herniated nucleus pulposus  
  v. Disk protrusion  
  vi. Disk extrusion  
  vii. Nerve root abutment vs. impingement  
  viii. Spinal cord abutment  
  ix. Inflammation, hematoma  

b. Shoulder  
  i. Labral tear  
  ii. Rotator cuff tear vs. tendinosis
i. Biceps tendinitis

ii. Labral tear

iii. Meniscal tear

iv. Chondromalacia

v. Ligamentous injury

VI. ELECTRODIAGNOSIS

Electrodiagnostic evaluation comprises electromyography and nerve conduction studies. These modalities, generally performed simultaneously, can provide important information about the overall health and function of a given muscle group or nerve. In addition to localizing the site of an injury, these tests can help provide clues to the cause of the lesion and the age (acute, chronic, and subacute).

A. Indications for electrodiagnostic testing (EMG/NCV)

1. Describe clinical situations for which EMG/NCV are helpful
   a. i.e. Radiating leg pain to verify nerve root involvement
2. Describe common clinical syndromes that can be diagnosed with EMG/NCV
   a. i.e. Peripheral neuropathy

B. Electromyography

1. 1. Anatomy
   a. Define motor unit
   b. Define motor unit potential

2. Describe the following four stages of EMG examination and expected myographic response in normal patients
   a. Insertion
   b. Rest
   c. Minimal contraction
   d. Maximal contraction

3. Describe the pathology that causes the following abnormal muscle responses
   a. Fibrillation potential
   b. Positive sharp wave
   c. Complex repetitive discharge
   d. Myotonic discharge

C. Nerve conduction studies

1. Describe the Seddon-Sunderland classification of neuronal Injury
2. Define neuropraxia
3. Define axonotmesis
4. Define neurotmesis

D. Sensory nerve conduction studies

1. List which conditions prolong the peak latency
2. List which conditions decrease the conduction velocity
3. List which conditions decrease the sensory nerve action potential amplitude

E. Motor nerve conduction studies

1. List which conditions prolong the peak latency

References


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2. List which conditions decrease the compound muscle action potential (CMAP) amplitude
3. List which conditions decrease the conduction velocities

F. Late responses (F-response & H-reflex)
   1. Describe the disorders for which the late responses help to establish a diagnosis

G. Needle electrode examination
   1. Describe neural generators of abnormal spontaneous potentials
      a. Describe the pathology that causes a fasciculation
      b. Describe the pathology that causes a myokymic discharge
      c. Describe the pathology that causes a cramp
   2. Motor unit analysis
      a. Describe the immediate and delayed response seen in neuropathies as a result of neuronal sprouting
      b. Describe the response seen in myopathies as a result of the loss of individual muscle fibers
      c. Describe the response seen in radiculopathies
      d. Describe the response seen with neuronal reinnervation

VII. URINE DRUG TESTING

The role of laboratory testing in patients with chronic pain is dependent upon the underlying clinical condition and ancillary clinical problems. One of the most important lab tests used in the care of the chronic pain patient is the urine drug test (UDT), which constitutes an important means of assessing appropriate opioid medication usage in patients with chronic pain. When combined with other clinical information, the UDT can potentially serve as a very effective tool to help improve patient safety. Although firm evidence for the reduction of drug abuse and diversion is still lacking, the routine use of UDT in patients on chronic opioid therapy (COT) is regarded as a standard of care for these patients and is strongly recommended. Like any other lab test, the clinician must understand the indications for UDT, the factors that affect the sensitivity and specificity of this test, and limitations of the UDT.

A. General principles
   1. Describe the two most important indications for UDT in the treatment of patients with chronic pain
      a. Safety
      b. Efficacy
   2. Explain the importance of the following in UDT strategies
      a. Identification of patients to be tested
      b. Informed consent
      c. Determination of frequency of testing in patients with various levels of abuse risk and non-routine testing in high-risk patients
      d. Developing a strategy to deal with unexpected/unfavorable results

References
e. Developing a strategy to terminate opioid therapy based upon unfavorable UDT results
f. The Clinical Laboratory Improvement Amendment (CLIA) waiver for point of care (POC) testing

3. Screening UDT (lab-based or point of care [POC-office based] in the office)
   a. Describe the principal laboratory techniques used in the screening UDT
      i. Enzyme-Linked Immunosorbent Assay (ELISA)
      ii. Describe several advantages and disadvantages of this type of test with regard to
         1. Cost
         2. Selection of drugs/substances to be screened
         3. Sensitivity and specificity

4. Confirmatory testing (lab-based for positive identification of a drug)
   a. Describe the principal laboratory techniques used in UDT for confirmatory testing
      i. Gas Chromatography/Mass Spectroscopy
      ii. Liquid Chromatography/Mass Spectroscopy
   b. Describe several advantages and disadvantages of this type of test with regard to
      i. Cost
      ii. Pharmacologic class (e.g., opioids and benzodiazepines)
      iii. Sensitivity and specificity

B. Interpreting urine drug test results
1. List common medications/substances that can be routinely detected in a UDT
   a. e.g., oxycodone, methamphetamine

2. List common medication/substances that are commonly not identified on routine UDT
   a. e.g., clonazepam

3. Describe how the following factors might affect the UDT
   a. Drug pharmacokinetics (absorption, metabolism, and excretion)
   b. Pharmacogenomic factors
   c. Patient-related factors
      i. Attempts to falsify UDT results
      ii. Time of last use

4. Explain the following important factors when interpreting a UDT
   a. Cut-off concentration
   b. Approximate detection time from time of last use
      i. Cocaine
      ii. Cannabinoids
      iii. Amphetamines
      iv. Barbiturates
      v. Benzodiazepines
      vi. Opioids
      vi. Methadone

5. Note the differences in sampling techniques from different body sources regarding detection times
   a. Saliva
   b. Urine
   c. Serum
   d. Hair
   e. Breathalyzer
6. Note drugs/substances that can result in a false positive result for
   a. Cocaine
   b. Cannabinoids
   c. Amphetamines
   d. Barbiturates
   e. Benzodiazepines
   f. Opioids
   g. Methadone

C. Managing expected and unexpected test results

1. Develop a strategy for your office to deal with each of the following UDT results
   a. UDT positive for prescribed drug, negative for other drugs
   b. UDT negative for prescribed drug
   c. UDT positive for non-prescribed medication (e.g., opioids, benzodiazepines)
   d. UDT positive for illicit substance
   e. UDT sample adulterated or otherwise falsified

References


*Open access article
Psychology Of Pain

The assessment of psychological factors in the treatment of chronic pain is paramount to addressing the suffering that often results. Creating a psychological evaluation of the patient begins with observing their mental state, in a Mental Status Exam. It is likewise important to assess for the presence of psychiatric disorders that may be comorbid with chronic pain, such as depression, anxiety, psychosis, etc. Screening tools exist to aid with screening and assessment. It is also important to assess the impact of pain and its treatment on functioning, behaviors, and cognitions.

I. DESCRIBE THE COMPONENTS OF THE MENTAL STATUS EXAM

A. Define the basic components of mental status
   1. Consciousness
   2. Attention
   3. Memory
   4. Expressive language
   5. Receptive language comprehension
   6. Executive function/logic
   7. Insight
   8. Thought content
   9. Thought process

B. Describe changes in mental state
   1. Normal variation occurs constantly
   2. Changes in mental state due to intoxication
      a. Opioid intoxication
      b. Benzodiazepine intoxication
      c. Alcohol intoxication
      d. Cannabis intoxication
   3. Changes in mental state due to withdrawal
      a. Opioid withdrawal
      b. Alcohol/benzodiazepine/carisoprodol withdrawal

II. ASSESSMENT TOOLS

A. Demonstrate the ability to use the following tools used to assess physical and psychosocial disability/quality of life
   1. Activity diary
   2. Sickness impact profile

B. Demonstrate the ability to use the following screening tools to assess general psychopathology symptoms*
   1. Patient-Reported Outcomes Measurement Information System (PROMIS) 29 Profile
   2. Diagnostic and Statistical Manual (DSM-V) Cross Cutting Symptom Measure
   3. Minnesota Multiphasic Personality Inventory-2 (MMPI)

C. Demonstrate the ability to use the following tools to screen for depression
   1. Center for Epidemiologic Studies Depression scale (CES-D)
   2. Patient Health Questionnaire-2 (PHQ-2)

D. Demonstrate the use of the following tool used to assess/diagnose depression
   1. Patient Health Questionnaire-9 (PHQ-9)

E. Demonstrate the use of the following tool used to screen for anxiety
   1. Patient Health Questionnaire-4 (PHQ-4)
F. Demonstrate the ability to use the following tool to assess/diagnose generalized anxiety disorder
   1. Generalized Anxiety Disorder-7 (GAD-7)

G. Demonstrate the ability to use the following tool to assess/diagnose post-traumatic stress disorder
   1. National Stressful Events Survey PTSD Short Scale (NSESSS)

H. Demonstrate the ability to use the following tools to assess cognitive functioning/impairment and describe the strengths and weaknesses of each
   1. Mini Mental State Exam (MMSE)
   2. Montreal Cognitive Assessment (MoCA)

*Please note that some tools are proprietary in nature and not intended for open access.

III. COPING MECHANISMS IN CHRONIC PAIN

A. Discriminate between the following coping styles and give examples of each
   1. passive
   2. active

IV. CLINICAL STATES

A. Describe the clinical criteria for major depressive disorder (MDD)
   1. Describe the DSM-V criteria for MDD
   2. Explain the reciprocal relationship between MDD and chronic pain with regard to prognosis for treatment of either

B. Describe the clinical criteria for the following anxiety disorders
   1. Generalized anxiety disorder
   2. Panic disorder
   3. Post-traumatic stress disorder
   4. Explain the reciprocal relationship between anxiety and chronic pain with regard to prognosis for treatment of either

C. Describe somatic symptom and related disorders (previously somatoform disorders)
   1. Somatic symptom disorder
   2. Illness anxiety disorder
   3. Conversion disorder
   4. Malingering

V. TREATMENT MODALITIES

A. Pharmacologic treatments
   1. Identify medications that can be used to treat both depression and chronic pain
   2. Identify medications that can be used to treat depression but NOT chronic pain
   3. Identify medications that can be used to treat anxiety disorders

B. Non-pharmacological treatments
   1. Describe the indications for and clinical application of behavioral activation
   2. Describe the indications for and clinical application of contingency management
   3. Describe the indications for and clinical application of cognitive behavioral therapy
   4. Describe the indications for and clinical application of biofeedback
   5. Describe the indications for and clinical application of hypnosis
6. Describe the indications for and clinical application of **progressive relaxation/guided imagery**

7. Describe the indications for and clinical application of **motivational interviewing**

References


*Open access article*
Pain States

Headache (HA) disorders are among the most common of medical conditions. Of these, migraine and tension headaches are the most prevalent of HAs. A thorough evaluation of the patient with HA is imperative, not only to guide accurate diagnosis and therapy but to rule out more serious intracranial pathology. While cranial neuralgias and other causes of pain in the head can simulate common headache disorders, it is important to identify separate head and facial pain syndromes in order to properly evaluate and treat them.

I. PRIMARY HEADACHE DISORDERS

A. Overview
   1. Describe the societal and economic impact of migraine and other headache disorders in the United States
   2. Describe the difference between primary and secondary headache, and facial pain disorders
   3. Describe the International Classification for Headache Disorders (ICHD) Criteria for Headache Diagnosis
   4. Describe mechanisms that may transform episodic headaches to chronic headaches

B. Migraine headache
   1. Describe the pertinent epidemiology of migraine headache
   2. Define the following subsets of migraine
      a. Migraine with aura/migraine without aura
      b. Complicated migraine
      c. Menstrual migraine
      d. Status migrainosis
   3. Describe the trigeminovascular theory of migraine headaches
   4. Describe the pertinent patient history and clinical examination features of migraine headache
   5. Treatment for migraine headache
      a. Describe the concept of “phase specific treatment” of migraine headache
      b. Describe which drugs that are used in migraine prophylaxis and treatment are FDA approved and which are not
      c. Differentiate between migraine-specific drugs and those that are not specific to migraine treatment
      d. Describe the pharmacologic actions, side effects, and contraindications of drugs used for migraine treatment
      e. Describe the role of botulinum toxin (Botox™) in the treatment of migraine
      f. List which natural drugs are effective for migraine

C. Tension headache
   1. Describe the epidemiology of tension headaches
   2. Describe the pathophysiology of tension headaches
   3. Describe the pertinent patient history and clinical examination features of tension headache
   4. Describe the pharmacological and non-pharmacological treatment options for tension headaches

D. Cluster headache
   1. Describe the epidemiology of cluster headache
II. SECONDARY HEADACHE DISORDERS

A. Describe the clinical evaluation and treatment for each type of secondary headache

1. Headaches due to head and/or neck injury
   a. Whiplash injury

2. Headaches due to cranial or cervical vascular disorders
   a. Arteritis

3. Headaches due to nonvascular intracranial disorders
   a. Idiopathic intracranial hypertension
   b. Post-dural puncture headache

4. Headaches due to substance use or withdrawal
   a. Medication overuse headache

5. Headaches attributed to infection
   a. Meningitis
   b. Encephalitis

6. Headaches due to mechanisms of homeostasis
   a. Hypoxia

7. Headaches due to neck pathology
   a. Cervicogenic headache

8. Headaches arising from other facial structures
   a. Eyes, sinuses, etc.

9. Headache due to psychiatric disorder
   a. Somatization disorder

10. Headaches due to myofascial pain

11. Medication overuse headaches
    a. Note which medications are most associated with this disorder

B. Cranial neuralgias and other central causes of facial pain

1. Trigeminal neuralgia (TN)
   a. Define classical TN and symptomatic TN according to the International Classification of Headache Disorders
   b. Describe the epidemiologic and clinical features of TN
   c. Describe the most common cause of classical TN
   d. Describe common causes of symptomatic TN
   e. Describe the medical management of TN
   f. Describe effective interventional and surgical treatments of TN

2. Occipital neuralgia (ON)
   a. Describe the innervation of the greater occipital nerve
   b. Describe clinical features of ON
   c. Describe pharmacologic and interventional treatments for ON

3. Glossopharyngeal neuralgia (GN)
   a. Describe the clinical features of GN
   b. Describe causes of GN
   c. Describe the treatment of GN

C. Temporomandibular disorders (TMDs)

Temporomandibular joint (TMJ) disorders are those involving the muscles of mastication, the temporomandibular joint, and the associated muscles
and ligaments of the upper neck (e.g., sternocleidomastoid muscle, stylohyoid ligament). While a common cause of headache, TMJ pain can be associated with other conditions such as fibromyalgia. While dentists are often expert in dealing with this condition it is important for clinicians seeing pain patients to be familiar with it.

1. Overview
   a. Describe common symptoms associated with TMDs
   b. Describe the muscles of mastication
   c. Describe muscles involved with facial and head pain
   d. Describe associated symptoms and trigger points for these muscles when they are a cause of myofascial pain

2. The temporomandibular joint (TMJ)
   a. Describe the anatomy of the TMJ
   b. Describe symptoms often associated with TMJ
   c. Describe common disorders that can affect the TMJ
   d. Discuss the treatment of TMJ
   e. Describe the role of central sensitization in TMJ

D. Headache urgencies and emergencies
   1. Identify headaches that require urgent or immediate medical evaluation
      a. e.g., suspected subarachnoid hemorrhage


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III. PAIN IN THE SKELETON/SPINE

Neck and back pain are very common reasons for patients to consult clinicians. Back pain is a major cause of disability. Spine surgery, particularly back surgery, is one of the most frequently performed operations in the US. For these reasons, it is essential that clinicians caring for patients with spine pain have a thorough understanding of the evaluation and treatment of this condition.

A. Cervical spine/neck pain
   1. When presented with an anatomic diagram, identify the following
      a. Vertebral body
      b. Disc
      c. Uncovertbral joints
      d. Pedicle
      e. Lamina

References
f. Articular facet joints
g. Anterior longitudinal ligament
h. Posterior longitudinal ligament
i. Scalene muscles
j. Sternocleidomastoid muscles
k. Carotid (extracranial/intracranial)
l. Sensory innervation of the head, neck, and upper extremity
m. Motor innervation of the neck and upper extremity

2. Epidemiology of neck pain
   a. Describe common causes of chronic neck pain
   b. Describe risk factors for chronic neck pain

3. Evaluation of the patient with neck pain
   a. Describe important features of the history of the patient with neck pain
   b. Describe important features of the physical exam of the patient with neck pain
   c. Describe neurologic features of the following radiculopathies
      i. C5
      ii. C6
      iii. C7
      iv. C8
      v. T1
   d. Identify clinical features suggestive of serious neck pathology (“red flags”) requiring urgent or emergent evaluation

4. Describe the clinical features, evaluation, and treatment of the following
   a. Cervical spondylosis with and without myelopathy
   b. Cervical degenerative disc disease
   c. Cervicogenic headache
   d. Myofascial neck pain syndromes

B. Low back pain

1. Describe the following epidemiologic features of low back pain
   a. Prevalence
   b. Individual risk factors
   c. Natural history

2. Identify the following structures on an anatomic diagram
   a. Vertebral body
   b. Disc
   c. Pedicle
   d. Lamina
   e. Articular facet joints
   f. Pars intra-articularis
   g. Transverse process
   h. Spinous process
   i. Anterior longitudinal ligament
   j. Posterior longitudinal ligament
   k. Spinal muscles
      i. Superficial layer
      ii. Deep layer
   l. Deep (true) back muscles
   m. Erector spinae muscles
   n. Transversospinalis muscles
   o. Longissimus thoracis
   p. Iliocostalis thoracis and lumborum
   q. Quadratus lumborum
   r. Gluteus medius
   s. Dura
   t. Subarachnoid space
   u. Dorsal root ganglia
   v. Ventral root ganglia
   w. Segmental nerve
   x. Medial branch nerves
      i. Caudae equinae

3. Define the following
   a. Arachnoiditis
   b. Diskitis
c. Neurogenic claudication

d. Radicular pain/radiculopathy/
 radiculitis

e. Spinal stenosis
   i. Central canal
   ii. Foraminal

f. Spondyloarthropathy

g. Spondylolisthesis

h. Spondylolysis

i. Spondylitis

j. Spondylosis

4. Evaluation of the patient with back pain

   a. Describe important features of the history of the patient with pain

   b. Describe important features of the physical exam of the patient with back pain

   c. Describe neurologic features of the following radiculopathies
      i. L2
      ii. L3
      iii. L4
      iv. L5
      v. S1

   d. Identify features suggestive of serious pathology (“red flags”) and their urgent or emergent evaluation

5. Describe the clinical features, evaluation, and treatment of the following

   a. Lumbar facet arthropathy

   b. Lumbar degenerative disc disease

   c. Sacroiliac joint pain

   d. Myofascial back pain syndromes

   e. Vertebral compression fracture

   f. Other: ankylosing spondylitis

   g. Spinal stenosis

   i. Central canal

   ii. Foraminal

6. Describe the role of the following treatment modalities for back pain and describe the strength of evidence supporting their efficacy (poor/good/excellent)

   a. Medications

   b. Physical therapy

   c. Occupational therapy

   d. Massage

   e. Manipulative
      i. Chiropractic
      ii. Osteopathic

   f. Acupuncture

   g. Myofascial trigger point release
      i. Trigger point injection (TPI)
      ii. Myofascial release (MR)
      iii. Spray and stretch (S&S)

   h. Electrical therapy
      i. Transcutaneous Electrical Nerve Stimulation (TENS)

   i. Interferential stimulation

   j. Epidural steroids injections (ESI)

   k. Facet joint injections (FJI)

   l. Intradiscal electrotherapy (IDET)

   m. Psychological interventions

   n. Interdisciplinary therapy

   o. Back school

References


*Open access article

B. Lower extremity pain syndromes

1. Identify the following structures when presented with an anatomic diagram
   a. Ischium
   b. Ilium
   c. Sacrum
   d. Sacroiliac joint
   e. Coccyx
   f. Gluteal muscle
   g. Iliopsoas muscle
   h. Piriformis muscle
   i. Obturator muscles
   j. Quadratus femoris muscle
   k. Sciatic nerve
   l. Peroneal nerve
   m. Tibial nerve
   n. Acetabulum
   o. Femoral head
   p. Greater trochanter
   q. Femur
   r. Medial/lateral condyles
   s. Patella
   t. Tibial tuberosity
   u. Fibula head
   v. Gerdy’s tubercle

2. Describe the clinical features, evaluation, and treatment of the following conditions
   a. Thoracic outlet syndrome
   b. Radiculopathy
   c. Rotator cuff tear and tendonitis
   d. Osteoarthritis of the shoulder and hand
   e. Bicipital tendonitis and tear
   f. Labral tear
   g. Lateral and medial epicondylitis
   h. Cubital tunnel syndrome
   i. Carpal tunnel syndrome
   j. De Quervain’s syndrome
   k. Trigger finger

**IV. PAIN IN THE EXTREMITIES**

A. **Upper extremity pain syndromes**

1. Identify the following structures when presented with an anatomic diagram
   a. Acromion process
   b. Acromioclavicular joint and ligament
   c. Glenohumeral joint
   d. Long head of biceps
e. Subacromial bursa
f. Muscles
   i. Rotator cuff muscles: supraspinatus, infraspinatus, teres minor, and subscapularis muscles
   ii. Biceps
   iii. Deltoid
iv. Triceps
v. Flexor and extensors of the forearm and fingers
vi. Intrinsic muscles of the hand: interossei
w. Calcaneus
x. Medial/Lateral Malleoli
y. Joint line
z. Medial and lateral compartments of the knee joint
aa. Quadriceps muscle
bb. Vastus medialis and lateralis muscle group
c. Tensor fascia lata and ileotibial band
dd. Hamstring group/biceps femoris muscle group
e. Peroneal group
ff. Tibialis anterior muscle
gg. Gastrocnemius muscle
hh. Soleus muscle
ii. Greater trochanteric bursa
jj. Prepatellar bursa
kk. Supratellar bursa
ll. Infra-patellar bursa
mm. Pes anserine bursa
nn. Plantar fascia

2. Describe the clinical features, evaluation, and treatment of the following conditions
a. Sacroiliac joint arthritis
b. Piriformis syndrome
c. Ischial bursitis
d. Myofascial pain involving musculature of the pelvis, hip, and leg
e. Trochanteric bursitis
f. Pes anserine bursitis, supra/pre/infrapatellar bursitis
g. Osteoarthritis of the hip and knee
h. Lateral femoral cutaneous neuropathy (meralgia paresthetica)
i. Tarsal tunnel syndrome
j. Plantar fasciitis

k. Morton’s neuroma
l. IT band syndrome
m. Metatarsalgia

References

*Open access article

V. PAIN ASSOCIATED WITH COMMON RHEUMATOLOGIC CONDITIONS

Rheumatologic conditions, those conditions that affect the joints and supporting structures, are very important causes of both acute and chronic pain. While many of these processes are indolent, some present acutely and can result in significant morbidity (and mortality) if not diagnosed promptly (e.g., rheumatoid arthritis, temporal arteritis, etc.). It is important that the clinician to be familiar with the major rheumatologic conditions.

A. Overview
1. Describe the features of inflammatory rheumatologic conditions (e.g., joint swelling, etc.)
2. Define the following:
   a. Arthralgia
   b. Arthritis
   c. Bursitis
   d. Periarthritis
e. Monoarthritis
f. Oligoarthritis
g. Polyarthritis
3. List several important causes of acute and chronic monoarthritis
4. List several important causes of oligo/polyarthritis

B. Osteoarthritis (OA)
1. Describe the epidemiologic features of OA
2. Describe the principal anatomic locations of primary OA
3. Describe secondary OA and list several causes (e.g., injury to the joint)
4. Describe the pathologic process involved in OA
5. Describe the clinical and diagnostic features of OA
6. Describe the pharmacologic (oral, topical, and intra-articular) treatment of OA
7. Describe non-pharmacologic treatment of OA
8. Describe the role of integrative medicine in the treatment of OA

C. Gout
1. Describe the epidemiologic features of gout
2. Describe the principal anatomic locations of primary gout
3. Describe the pathologic process involved in gout
4. Describe the clinical and diagnostic features of gout
5. Describe the pharmacologic treatment of gout
6. Describe non-pharmacologic interventions for the treatment of gout
7. Describe the role of integrative medicine in the treatment of gout

D. Rheumatoid arthritis (RA)
1. Describe the epidemiology of and risk factors for RA
2. Describe the immunologic mechanisms of RA
3. Describe which inflammatory mediators are involved in RA
4. Describe the pathologic lesion(s) of RA
5. Describe the clinical presentation of RA
6. Describe means by which RA is diagnosed
7. Describe the radiologic features of RA
8. Describe the treatment of RA
9. Describe the role of opioids and non-opioids in short- and long-term treatment of RA

E. Seronegative arthritides (SNAs)
1. Describe the epidemiology of and risk factors for SNAs
2. Describe the immunologic mechanisms of SNAs
3. Describe which inflammatory mediators are involved in SNAs
4. Describe the pathologic lesion(s) of SNAs
5. Describe the clinical presentation of SNAs
6. Describe means by which SNAs are diagnosed
7. Describe the radiologic features of SNAs
8. Describe the treatment of SNAs
9. Describe the role of opioids and non-opioids in short- and long-term treatment of SNAs
F. Vasculitis
1. Describe the epidemiology of and risk factors for vasculitis (e.g., temporal arteritis)
2. Describe the immunologic mechanisms of vasculitis
3. Describe which inflammatory mediators are involved in vasculitis
4. Describe the pathologic lesion(s) of vasculitis
5. Describe the clinical presentation of vasculitis
6. Describe means by which vasculitis is diagnosed
7. Describe the treatment of vasculitis
8. Describe the role of opioids and non-opioids in short- and long-term treatment of vasculitis

References

*Open access article

VI. NEUROPATHIC PAIN
Neuropathic pain is a consequence of damage in the somatosensory nervous system. This can occur peripherally, as in diabetic neuropathy, or more centrally, as occurs with lesions of multiple sclerosis. Pain states occurring after this type of injury can be very challenging for the clinician.

A. Describe the role of the following purported mechanisms in causing neuropathic pain
1. Ectopically generated action potentials
2. Trophic factors (nerve growth factor) and neutrally generated chemokines
3. Microglial activation and inflammation
4. Microglia-related chemokine/cytokine secretion

B. Describe the role of the following neurotransmitter systems in neuropathic pain
1. Glutamate
2. Substance P
3. GABA
4. Natural cannabinoids

C. Describe the role of
1. Descending inhibitory systems in neuropathic pain
2. Descending facilitatory systems in neuropathic pain

D. Define the following
1. Peripheral sensitization
2. Central sensitization
3. Hyperalgesia
4. Allodynia
5. Peripheral neuropathy
   a. Diabetic
   b. HIV-related
6. Post herpetic neuralgia
7. Complex Regional Pain Syndrome (CRPS) I
8. CRPS II
9. Compressive neuropathies
   a. Carpal tunnel syndrome
   b. Cubital tunnel syndrome
10. Phantom limb pain
11. Central pain syndromes
a. Post stroke pain
b. Multiple sclerosis

References

*Open access article*

VII. MUSCLE AND OTHER SOFT TISSUE PAIN SYNDROMES
Myofascial pain is somewhat of a misnomer in that current thinking is that myofascial pain is all about the muscle and very little about fascia. Originally described by Janet Travell, the personal physician of John F. Kennedy, myofascial pain is extraordinarily common and frequently accompanies (or is the primary cause of) many pain syndromes.

A. Myofascial pain syndrome
1. Overview
   a. Define myofascial pain syndrome (MPS)
   b. Describe the essential diagnostic features of the active myofascial trigger point (TrP)
   c. Describe additional diagnostic features of the TrP
   d. Describe the likely etiological mechanisms
   e. Describe the prevalence of MPS
   f. Describe several perpetuating factors

2. Pathophysiology of MPS
   a. Describe the findings regarding biochemical features of the active TrP
   b. Describe the electrical features of the TrP
   c. Describe the identification of taut band with ultrasound

3. Diagnosing TrPs responsible for the patient’s pain
   a. Describe the referred pain pattern and autonomic phenomena associated with sternocleidomastoid muscle TrPs
   b. When presented with a diagram showing myofascial pain referral patterns, correctly identify the characteristic referred pain of the following muscles
      i. Splenii
      ii. Trapezius
      iii. Semispinalis
      iv. Levator scapulae
      v. Rhomboids
      vi. Infraspinatus
      vii. Deltoid
      viii. Longissimus thoracis
      ix. Latissimus dorsi
      x. Quadratus lumborum
      xi. Iliocostalis
      xii. Gluteals
      xiii. Piriformis
      xiv. Quadriceps
      xv. Hamstrings

B. Inflammatory myopathies
1. Overview
   a. Describe the clinical features of the inflammatory myopathies
b. Describe the role of the following in the diagnosis of the inflammatory myopathies
   i. Laboratory tests
   ii. EMG/NCV
   iii. Muscle biopsy
2. Describe the treatment of the following myopathies
   a. Statin-induced myopathy
   b. Polymyositis
   c. Myasthenia gravis
   d. Lambert-Eaton syndrome

References
*Open access article

VIII. FIBROMYALGIA (FM)
Fibromyalgia is an important pain condition associated with widespread pain and is one of the many pain conditions that are thought to occur via central sensitization. Fibromyalgia is frequently encountered and a common cause of chronic pain.

A. Overview
1. Define fibromyalgia according to the proposed ACR 2010 criteria
2. List epidemiologic factors of fibromyalgia
   a. Prevalence
   b. Occurrence in female vs. male patients
3. Describe disorders that coexist with FM

B. Clinical features
1. Describe the symptoms associated with fibromyalgia
   a. Characteristics of pain
   b. Associated non-pain symptoms
   c. Effect on mood, cognition, and attention
2. Describe the physical findings associated with FM

C. Pathophysiology of FM
1. Describe the role of altered pain processing in FM
   a. Decreased pain inhibition
   b. Abnormal pain sensitivity
   c. Neuroendocrine system
      i. hypothalamic-pituitary-adrenal axis
   d. Autonomic nervous system
2. Describe the genetic factors associated with FM
   a. First-degree relatives
3. Describe the role of environmental factors in FM
   a. Physical
   b. Psychosocial
   c. Illness related
      i. viral infections, etc.
4. Describe the role of laboratory testing in FM
5. Describe important findings on functional imaging of patients with FM
D. **Treatment of FM**
   1. Describe the goals of treatment of FM
   2. Describe which major drug categories are associated with good evidence for utility in FM
   3. Describe which non-pharmacologic modalities have good evidence for utility in FM

**References**
*Open access article

**IX. MALE GENITOUREINARY PAIN**
Chronic male GU pain syndrome occurs when there is persistent (> 6 months) pain in the pelvic soft tissues, bladder, bowel, or sexual organs in the absence of conditions associated with nociceptive pathology (cancer, infection, etc). These conditions are closely associated with visceral pain syndromes and most likely share the same mechanism of central sensitization. A careful evaluation by an appropriate specialist is crucial in order to rule out serious underlying pathology, though this is uncommonly present.

**A. Anatomy and physiology**
1. When shown an anatomic diagram of the bones and soft tissues of the male pelvis, correctly identify the following structures
   a. Muscles:
      i. Piriformis
      ii. Obturator internus
      iii. Levator ani
      iv. Coccygeus
      v. Psoas
   b. Nerves
      i. Ilioinguinal
      ii. Iliohypogastric
      iii. Genitofemoral
      iv. Pudendal
      v. Posterior femoral cutaneous
   c. Identify structures innervated by the above nerves

2. Describe the autonomic functions of
   a. Micturition
   b. Defecation
   c. Penile erection

**B. Pain syndromes**
1. Describe the following conditions
   a. Post vasectomy pain
   b. Penile pain syndrome
   c. Scrotal/testicular/epididymal pain syndrome
   d. Prostatitis pain syndrome
   e. Interstitial cystitis
   f. Proctalgia

**C. Describe the following treatment modalities for male pelvic pain**
1. Pharmacologic therapy
2. Neuromodulation
3. Psychotherapy
4. Myofascial therapy
5. Physical therapy
References
*Open access article

X. FEMALE PELVIC PAIN
Chronic female GU pain syndromes occur when there is persistent (> 6 months) pain in the pelvic soft tissues, bladder, bowel, or sexual organs in the absence of conditions associated with nociceptive pathology (cancer, infection, etc.). These conditions are closely associated with visceral pain syndromes and most likely share the same mechanism of central sensitization. As with male pelvic pain syndromes, it is very important that appropriate specialty consultation be obtained when indicated to rule out serious pathology.

A. Anatomy and physiology
1. Identify the following structures on an anatomic diagram of the female pelvis
   a. Muscles
      i. Piriformis
      ii. Obturator internus
      iii. Levator ani
      iv. Coccygeus
      v. Psoas
   b. Nerves
      i. Iliinguinal
      ii. Liihynogastric
      iii. Genitofemoral
      iv. Pudendal
      v. Posterior femoral cutaneous

B. Epidemiology of pain in women
1. Describe sex differences with regard to chronic pain
2. Describe the role of the following processes with regard to chronic pain in women
   a. Hormonal factors
   b. Psychosocial factors such as sexual abuse
   c. Cultural and environmental factors
   d. Genetic factors
   e. Gender issues
   f. Cortical processing (central sensitization)
3. Describe the epidemiology, clinical evaluation, and management of the following conditions
   a. Vulvodynia
   b. Dysmenorrhea
   c. Chronic pelvic pain
   d. Endometriosis

References
*Open access article

XI. VISCERAL HYPERALGESIA/HYPERSENSITIVITY SYNDROMES

A. Define visceral hypersensitivity/hyperalgesia
   1. Describe proposed mechanism of this condition

B. Distinguish viscero-visceral hyperalgesia, from viscero-somatic hyperalgesia

C. Describe several common conditions that are associated with this phenomenon (e.g., IBS)

D. Describe possible treatments for these conditions

References
*Open access article

XII. OPIOID-INDUCED HYPERALGESIA (OIH)

A. Define
   1. Opioid-induced hyperalgesia
   2. Opioid tolerance
   3. Pseudoaddiction

B. Discuss the relationship of the following factors with regard to OIH
   1. Type of opioid

   2. Length of administration (acute vs. chronic)
   3. The relative dosage of opioid
   4. State of evidence

C. Describe the clinical features of OIH with regard to the following
   1. Nature of the pain
   2. Hyperalgesia
   3. Allodynia

D. Describe the proposed pathophysiologic mechanism of OIH with regard to
   1. Central glutaminergic systems
   2. Spinal dynorphins
   3. Descending pain inhibitory systems
   4. Descending pain facilitatory systems

E. Describe the role of the following in treatment of OIH
   1. Opioid rotation
   2. Opioid reduction and withdrawal
   3. Glutamate antagonists

Reference
*Open access article

XIII. SLEEP APNEA

A. Define the following
   1. Obstructive sleep apnea
   2. Central sleep apnea
   3. Parasomnias (i.e., restless legs syndrome)

B. Diagnosis and treatment of sleep apnea
   1. Discuss symptoms associated with sleep apnea
2. Describe the use of the Epworth Sleepiness Scale
3. Define CPAP
4. Define BiPap
5. Note which pain medications can exacerbate sleep apnea

References
*Open access article
Pharmacotherapy

The management of chronic pain with pharmacologic agents is one of the most important tasks of the clinician treating a patient with chronic pain. While medications for chronic pain have the potential to be extremely useful, there exists the potential for great harm with these medications. It is incumbent upon clinicians who use medications for pain to thoroughly understand their mechanism of action, indications, contraindications, potential side effects, and potential drug-drug interactions in order to minimize harm.

I. NON-OPIOID MEDICATIONS FOR CHRONIC PAIN

A. General principles
   1. Define 
      a. Analgesic medication 
      b. Adjuvant pain medication 
      c. Antispasticity medication 
      d. Antispasmodic medication 
      e. Topical medication 
      f. Transdermal medication 

B. For each medication listed below (grouped by class), describe the mechanism of action, the type of pain and disease states best treated with this agent, the appropriate dosage range, important cautions, major adverse reactions, appropriate monitoring, contraindications to use, and potential drug-drug interactions.
   1. Analgesics 
      a. Aspirin 
      b. Salicylates 
      c. NSAIDs 
      d. Acetaminophen 
      e. Diclofenac-Misoprostol 
      f. Corticosteroids 
   2. Antidepressants: non-selective serotonin reuptake inhibitors 
      a. Venlafaxine 
      b. Duloxetine 
      c. Milnacipran 
   3. Antidepressants: tricyclic antidepressants 
      a. Amitriptyline 
      b. Nortriptyline 
   4. Anti-epileptics 
      a. Gabapentin 
      b. Pregabalin 
      c. Valproic Acid 
      d. Topiramate 
      e. Carbamazepine 
      f. Oxcarbamazepine 
   5. Anesthetics 
      a. Lidocaine (topically) 
   6. Antispasticity drugs 
      a. Baclofen 
      b. Diazepam 
      c. Tizanidine 
      d. Botox 
   7. Antispasmodic drugs 
      a. Cyclobenzaprine 
      b. Carisoprodol 
      c. Chlorzoxazone 
      d. Metaxalone 
      e. Orphenadrine 
   8. Topical agents (FDA approved) 
      a. Lidocaine 
      b. NSAIDs 
      c. Capsaicin 
      d. Compound topicalcs (not FDA approved) 
   9. Mu receptor agonists with other primary pharmacologic activity 
      a. Tramadol 
      b. Tapentadol 
   10. Miscellaneous
a. Ketamine
b. Naltrexone (in fibromyalgia)
c. Nitroglycerine
d. Clonidine

11. Serotonin Syndrome
a. Describe the clinical features of serotonin syndrome
b. Note which drugs or combinations of drugs may be associated with this syndrome

12. Mu receptor antagonists
a. Describe the mechanism of action of the two principle Mu receptor antagonists
b. Describe the indications and usage of these drugs
c. Describe the route by which these drugs can be administered
d. Describe the use of these drugs by lay persons to prevent accidental overdosage

II. OPIOID ANALGESICS

A. General information
   1. Describe the endogenous opioid system
   2. Name three principal endogenous opioid peptides
   3. Name the three opioid receptors and their properties
   4. Describe the location of opioid receptors in the CNS
   5. Describe several important physiologic events that occur at the opioid receptor
   6. Describe the role of the opioid receptor in pain modulation and non-pain effects

B. Classification of opioids: agonist vs. antagonist
   1. Describe the properties of an opioid agonist
   2. Name several opioids which are pure agonists
   3. Describe the properties of an opioid antagonist
   4. Name several opioid antagonists
   5. Describe the properties of a partial agonist/antagonist
   6. Name several opioids which are mixed/partial agonists/antagonists

C. Identify examples of opioid medications in each class
   1. Naturally occurring opioids
   2. Synthetic opioids

D. Pharmacology of the opioids
   1. Describe the major pharmacologic effects of opioids

References
2. Identify opioid effects to which tolerance develops
3. Identify opioid effects to which tolerance does not develop
4. Identify adverse effects of opioids and their potential consequences
   a. Analgesia
   b. Respiratory depression
   c. Constipation
5. For each of the following opioids describe the principal dosage forms, principal metabolic pathway, potentially toxic metabolites, drug-drug interactions, unique dosage forms, unique toxicities, and controlled substance scheduling
   a. Morphine
   b. Hydrocodone
   c. Oxycodone
   d. Codeine
   e. Hydromorphone
   f. Fentanyl
   g. Methadone
   h. Buprenorphine
   i. Buprenorphine/Naloxone (combination)
   j. Meperidine
6. Describe important expected side effects and serious adverse events associated with opioids
7. Describe drugs/substances and medical conditions that can increase the risk of serious adverse effects of opioids
8. Describe genetic differences in response to opioids
9. Note polymorphisms of the mu receptor that result in variable responses to different opioids

E. Opioid treatment guidelines
1. Describe the quality of data supporting
   a. The short term use of opioids for specific conditions
   b. The long term (> 3 months) use of opioids for specific conditions
   c. The use of long acting vs. short acting opioids in the treatment of pain
   d. The inter-opioid variability in opioid effectiveness (e.g., oxycodone vs. hydrocodone)
2. Identify the role of the following factors that contribute to opioid-related overdose and death
   a. Comorbid medical conditions
   b. Non-authorized usage
   c. Combination with other substances
3. Describe the change in opioid prescription patterns over the last several decades
4. Define
   a. Tolerance
   b. Pseudotolerance
   c. Physical dependence
   d. Addiction
   e. Pseudoaddiction
   f. Ceiling effect
   g. Relative potency
   h. Opioid-induced hyperalgesia

F. Metabolism of opioids
1. Describe basic opioid metabolic pathways and enzymatic systems
2. Describe major metabolites
3. Describe the role of opioid metabolites in producing undesirable clinical effects
4. Describe the role of pharmacogenomic factors in opioid metabolism
5. Describe important drug-drug interactions

G. Indications for and usage of opioid medications
1. Describe the major indications for opioid therapy
2. Describe the concept of “trial of therapy” when initiating opioid treatment
3. Describe a step-wise approach when initiating opioid therapy
   a. Identify patient risk factors predicting potential misuse or harm
4. Describe the use of opioid misuse screening tools
   a. Opioid Risk Tool (ORT)
   b. Drug Addiction Screening Test (DAST®)
   c. Screener and Opioid Assessment for Patients with Pain (SOAPP®)
   d. Screener and Opioid Assessment for Patients with Pain-Revised (SOAPP®-R)
   e. Diagnosis, Intractability, Risk, Efficacy (DIRE)
5. Discuss the importance of a thorough history and examination and ancillary data in establishing a diagnosis for which opioids are indicated
6. List appropriate pain diagnoses for opioid therapy
7. Describe important factors in weighing risk vs. benefit of opioid therapy
8. Describe reasonable drug choices and doses for initiation of opioid therapy
9. Discuss the need for goal setting and informed consent
10. Discuss measures that are utilized to monitor efficacy of opioid therapy
11. Discuss measures that can be utilized to identify opioid misuse
   a. Current Opioid Misuse Measure (COMM®)

H. Equianalgesic dosing, rotation, and substitution of opioids
1. Define opioid rotation and the rationale for this
2. Define equianalgesic dosing
3. Discuss the shortcomings of equianalgesic dosing protocols
4. Discuss the potential dangers that can occur in opioid rotation or substitution
5. Discuss a three-step process to safely substitute one opioid for another
6. Demonstrate the ability to design a safe regimen for converting one opioid regimen to another
7. Discuss special considerations with regard to methadone and equianalgesic dosing
8. Develop a practice policy for determining when to refer patients to specialty care if large doses of opioids are being used

References
II. DIETARY SUPPLEMENTS
The use of nutritional (dietary) supplements is an important means of controlling and treating pain. A growing body of evidence is helping us understand the role that these supplements play in the treatment of chronic pain. Nutritional supplements are the most commonly used type of integrative therapy in the US, with approximately one-half of the US population spending about $30 billion per year on these products.

A. Define dietary supplements (DS)

B. Describe the implications of Dietary Supplement Health and Education (DSHEA) act of 1994

C. Describe the typical patient profile of the DS user with regard to
   1. Education level
   2. Sex
   3. Race and ethnicity
   4. Life view

D. Identify the most reliable sources of information about DS
   1. National Center for Complementary and Integrative Health (NCCHI), formerly National Center for Complementary and Alternative Medicine (NCCAM)
   2. Natural Medicine Comprehensive Database
   3. Natural Standard
   4. Consumer Reports

E. For each DS listed below (grouped by class), describe the mechanism of action, the type of pain and disease states best treated with this agent, the appropriate dosage range, important cautions, major adverse reactions, appropriate monitoring, contraindications to use, and potential DS-drug interactions.
   1. Botanicals
      a. *Boswellia serrata* (Indian frankincense)
      b. Bromelain and proteolytic enzymes
      c. Butterbur
      d. Capsaicin
      e. Cat’s claw (*Uncaria tomentosa* and *Uncaria guianensis*)
      f. Devil’s claw (*Harpagophytum procumbens*)
      g. Feverfew
      h. Ginger (*Zingiber officinale*)
      i. Lutein
      j. Turmeric (*Curcuma longa*)
      k. Willow bark (Salix species)

   2. Nutraceuticals
      a. Chondroitin
      b. Glucosamine
      c. Methylsulfonylmethane (MSM)
      d. SAMe (S-adenosyl methionine)
e. Sierrasil, a natural mineral product

3. Biologicals
   a. Amino acids
   b. Coenzyme Q10
   c. Melatonin
   d. Omega 3 fatty acids
   e. Probiotics
   f. Alpha lipoic acid

4. Marijuana/Cannabinoids
   a. Describe the legal status of marijuana for use in your state
   b. Pharmacology of marijuana
      i. Define cannabinoids and discuss this in relationship to their content and variety in marijuana
      ii. Describe the role of cannabinoid receptors in the central nervous system
      iii. Describe the role of endogenous cannabinoids in modulating pain
      iv. Note which cannabinoids have been purified for medical usage
      v. Describe the role of the various cannabinoids in the treatment of chronic pain and other conditions
Interventional Techniques

The use of interventional techniques, as opposed to pharmacologic techniques, entails the application of some physical modality to the patient with the goal of alleviating or reducing pain. Interventions range from those that do not involve introducing instruments into the body (non-invasive therapies such as massage) to those that do involve introduction of needles or instruments into the body (invasive therapies: dry needling of trigger points or epidural steroid injections). While not necessarily more effective, some invasive therapies are reserved for those with highly specialized skills such as interventional pain specialists.

I. MYOFASCIAL PAIN SYNDROME (MPS)

A. Describe the limited role of oral medications in the treatment of MPS
B. Describe the indications and contraindications for TrP injection
C. Describe the appropriate and inappropriate medications for use in TrP injection
D. Describe possible complications of TrP injection
E. Describe the importance of teaching muscle elongation in conjunction with TrP injection
F. Describe dry needling
G. Describe indications and contraindications for application of manual release therapies
H. Describe the fluoromethane spray and stretch technique

II. ARTHROCENTESIS AND JOINT INJECTION

A. Indications
   1. Describe the indications for arthrocentesis
   2. Identify which indication(s) is/are considered to be urgent/emergent

B. Synovial fluid
   1. Describe the synovial fluid characteristics that suggest inflammation
   2. Describe the synovial fluid characteristics that suggest acute infection
   3. Describe pathogens that commonly cause acute septic joint
   4. Describe pathogens that can cause chronic septic joint
   5. Describe which types of crystals are commonly seen in crystal-induced arthropathies
   6. Describe the laboratory studies that should be ordered when performing an arthrocentesis on an acutely inflamed joint
   7. Discuss the role of ultrasound in arthrocentesis

C. Treatment
   1. Discuss the treatment approach to a septic joint
   2. Discuss the treatment approach to crystal-induced acute arthritis
   3. Discuss the role of intraarticular corticosteroids in chronic arthritis
   4. Discuss the role of hyaluronans in the treatment of chronic arthritis
References

III. ELECTRICAL AND MAGNETIC NEUROMODULATION

A. General
1. Interferential current therapy (IFC)
   a. Describe interferential current therapy
   b. Discuss the purported physiologic mechanism of action of IFC
   c. Identify the indications, side effects, and contraindications of IFC
2. Alpha-Stim
   a. Describe Alpha-Stim therapy
   b. Discuss the physiological mechanism of action of Alpha-Stim therapy
   c. Identify the indications, side effects, and contraindications for Alpha-Stim therapy
3. Describe the difference between transcutaneous nerve stimulation (TENS), IFC, and Alpha-Stim
4. Describe the difference and significance in currents between microstim, TENS, and IFC

B. Non-invasive Electrical Neuromodulation
1. Peripheral
   a. TENS
      i. Describe TENS therapy
   ii. Discuss the physiological mechanism of action of TENS therapy
   iii. Identify the indications, side effects, and contraindications of TENS
b. Transcutaneous peripheral nerve stimulation (i.e., occipital nerve)
2. Central
   a. Transcranial magnetic stimulation (TMS)
      i. Describe TMS
      ii. Describe which pain states might benefit from TMS
   b. Transcranial direct current stimulation
      i. Identify three physiological effects of cranial electrical stim (CES)
      ii. Describe the outcome of CES and microstim
      iii. Describe two types of placement of CES electrodes

C. Invasive
1. Peripheral Electrical Neuromodulation
   a. Peripheral nerve stimulation
   b. Vagal nerve stimulation
2. Central
   a. Deep brain stimulation (DBS)
      i. Describe DBS
      ii. Describe the mechanism of action of DBS
      iii. Describe which anatomic brain structures are targets for DBS
      iv. Describe which pain states might benefit from DBS
   b. Motor cortex stimulation (MCS)
      i. Describe MCS
ii. Describe the possible mechanism of action of MCS
iii. Explain which pain states might benefit from MCS

C. Spinal cord stimulation (SCS)
i. Describe SCS
ii. Describe the possible mechanism of action of SCS
iii. Explain which pain states might benefit from SCS

D. Describe the relative strength of evidence in support of the various types of electrical therapy

References
*Open access article

V. ADVANCED INTERVENTIONS

A. For each of the interventions listed below (grouped by class), describe its indications, general technique or approach, expected results, and supporting evidence
1. Injection-based modalities
   a. Joint injections
      i. Glenohumeral joint
      ii. Knee joint
      iii. Hip joint (by specialist)
   b. Spinal injections
      i. Epidural steroid injections
      ii. Selective nerve root blocks
      iii. Facet joint injections
         a. Intra-articular injections
         b. Medial branch blocks

IV. LOW-LEVEL LASER THERAPY (LLLT)
Low-level laser therapy is one of many physical techniques developed for the treatment of chronic pain.

References
*Open access article
iv. Sacroiliac joint injections
v. Intervertebral discography

2. Somatic nerve blocks
   a. Occipital nerve block
   b. Trigeminal nerve block
   c. Intercostal nerve block

3. Sympathetic nerve blocks
   a. Stellate ganglion nerve blocks
   b. Celiac plexus block
   c. Lumbar sympathetic block
   d. Superior hypogastric block

2. Neuroablative modalities
   a. Chemodenervative techniques
   b. Cryoablation techniques
   c. Radio frequency ablation (RFA) techniques

3. Neuromodulation techniques
   a. Spinal cord stimulation
   b. Peripheral nerve stimulation
   c. Intrathecal drug delivery systems

4. Percutaneous vertebral augmentation/stabilization
   a. Vertebroplasty
   b. Kyphoplasty

5. Minimally invasive lumbar decompression (MILD)

VI. PHYSICAL MEDICINE AND REHABILITATION (PHYSIATRY, PM&R)

A physiatrist is a medical doctor who specializes in physical medicine and rehabilitation. Physiatrists diagnose and treat both acute and chronic pain. They specialize in a variety of nonsurgical treatments for neurologic and musculoskeletal disorders, with special emphasis on enhancing the functional outcome of those patients having various impairments and disabilities.

A. Describe the modalities used for management in PM&R:

1. Therapeutic manipulation, massage, and traction
2. Biofeedback
3. Injection procedures
   a. Spinal
   b. Joint
   c. Trigger points
4. Therapeutic exercises
5. Electrotherapy
6. Complementary and alternative medicine
7. Aquatic therapy
8. Lower limb orthosis
9. Spinal orthosis
10. Prescriptions for wheelchairs and seating systems

VII. PHYSICAL THERAPY AND OCCUPATIONAL THERAPY (PT/OT)

The physical and occupational therapists are key members of the pain team. Indeed, PT/OT is indicated for the majority of chronic pain patients and these individuals play a key role in education and treatment of pain patients.

A. General

1. List at least three general goals of PT/OT treatment

References


*Open access article
2. Describe several general types of impairments common in pain patients that are targeted by PT/OT

B. Treatment modalities used by PT/OT
1. Describe the use of the following modalities in the care of the chronic pain patient
   a. Heat
   b. Cryotherapy
   c. Vapocoolant
   d. Electrical stimulation (TENS)
   e. Muscle strengthening, balance
   f. Myofascial release/massage
   g. Ultrasound
   h. Iontophoresis
   i. Graded motor imagery
   j. Work-hardening

References

*Open access article
Integrative Treatment Modalities

I. INTEGRATIVE MEDICINE
Integrative medicine is a broad approach to healing, combining a wide variety of traditional, complementary, alternative, and conventional modalities, with emphasis on natural methods and self-care. Many patients with chronic pain seek out integrative medicine. In this section, several common integrative modalities are emphasized, due to the frequency of their use in the US and their utility in treating chronic pain. Unfortunately, this list is not complete, and some modalities are presented separate from their traditional context (e.g., meditation from Buddhism; yoga from Ayurveda, Tai Chi from traditional Chinese medicine). Please consult the references and local practitioners for more information about other modalities.

A. General
1. Define integrative medicine
2. Describe differences between an integrative medicine approach and customary complementary and alternative medicine (CAM) services
3. Define integrative pain management

B. Traditional Chinese medicine
1. Define
   a. Acupuncture
   b. Auricular therapy
   c. Eight principles
   d. Electro-stimulation
   e. Five elements
   f. Meridians and acupuncture points
   g. Pressure stimulation
   h. Qi (Chi)
   i. Yin-yang theory
2. Describe top evidence-based indications for these modalities and their efficacy
   a. Acupuncture
      i. Low back pain
      ii. Shoulder pain
      iii. Neck pain
      iv. Headache (chronic idiopathic)
      v. Headache (migraine)
      vi. Knee osteoarthritis
      vii. Fibromyalgia
      viii. Temporomandibular joint pain
      ix. Postoperative pain
   b. Dietary
      i. i.e., anti-inflammatory diet
   c. Herbal and Chinese medicinals
      i. Suxiao jiuxin wan for angina pain
   d. Tui na
   e. Tai Chi/Qi gong
      i. Arthritis/Fibromyalgia
   f. Moxibustion
      i. Labor pain
   g. Cupping
   h. Acupressure
      i. Low back pain
3. Describe the following
   a. The safety profile of acupuncture
   b. What a patient can expect during treatment
   c. Ways to identify a qualified practitioner
   d. Insurance coverage issues

C. Massage
1. Define massage
2. Describe different types of therapeutic massage and myofascial release techniques
3. Describe the clinical indications for therapeutic massage
   a. Low back pain

D. Chiropractic medicine
   1. General
      a. Define chiropractic medicine
      b. Describe scope of education and training of a doctor of chiropractic
      c. Describe the role of a chiropractic clinician within primary care as a neuromusculoskeletal specialist
   2. Indications and effectiveness
      a. Describe the role of chiropractic manipulation in the treatment of the following
         i. Strain/sprain injuries
         ii. Cervical facet syndromes
         iii. Lumbar facet syndromes
         iv. Degenerative joint and disc disease
         v. Cervical and lumbar radiculopathy
         vi. Headache
         vii. Rib cage, chest, and middle back pain
         viii. Gait and coordination difficulties
      b. Describe the evidence base for the effectiveness of chiropractic care in the treatment of the conditions listed above
   3. Contraindications
      a. Describe contraindications to high velocity manipulation
      b. Describe contraindications to low force chiropractic adjustments and mobilization procedures

   c. Discuss research regarding chiropractic care and vertebrobasilar stroke

E. Osteopathic medicine and osteopathic manual treatments (OMT)
   1. General background and history of osteopathic medicine
      a. Briefly describe the history of osteopathic medicine in the United States
      b. Discuss the similarities and differences of education between MDs and DOs
   2. Principles of osteopathic medicine
      a. Note the three basic tenets of the philosophy of osteopathic medicine
         i. The body is a unit
         ii. The body is self-healing
         iii. Structure and function are interrelated
   3. Osteopathic diagnosis
      a. Describe the important role of palpation in OMT
      b. Identify the role of the osteopathic structural exam in diagnosing dysfunction
      c. Define “TART” (Tenderness, Asymmetry, Restriction of Motion, Tissue-Texture Changes)
      d. Define
         i. Somatic dysfunction
         ii. Viscerosomatic dysfunction
         iii. Somatovisceral dysfunction
   4. Osteopathic treatment: evidence-based clinical indications
      a. Define
         i. “OMT” osteopathic manual treatment
         ii. “Direct” osteopathic treatment
iii. “Indirect” osteopathic treatment

b. Identify evidence-based, common, clinical indications when to use OMT
i. Back pain
ii. Neck pain
iii. Headache
iv. Fibromyalgia
c. Identify contraindications for some OMT techniques
i. Metastasis
ii. Osteoporosis
iii. Cervical Artery Stenosis
iv. Acute Fracture
d. Recognize the limitations to research for osteopathic manual treatment

F. Mind-body medicine (MBM) for chronic pain
1. For each of the types of MBM listed below, describe its approach and its clinical indications
   a. Cognitive behavioral therapy (CBT)
   b. Mindfulness-based stress reduction (MBSR)
   c. Acceptance and commitment therapy (ACT)
   d. Guided imagery (GI)
   e. Hypnosis

G. Movement therapies for chronic pain
1. For each of the types of movement therapies listed below, describe its approach and its clinical indications
   a. Yoga
   b. Pool exercise, aerobic conditioning
   c. Pilates
   d. Alexander technique
   e. Feldenkrais

H. Nutritional therapies for chronic pain
1. Dietary supplements
2. Define the anti-inflammatory diet
   a. List examples of anti-inflammatory and pro-inflammatory foods
   b. List conditions for which this diet may be useful
3. For each nutritional deficiency or intolerance listed below, describe the clinical presentation, diagnostic approach, and treatments
   a. Low vitamin D
   b. Gluten intolerance

I. Other integrative therapies
1. Describe the clinical applications for each
   a. Reflexology
   b. Pastoral/spiritual therapy
   c. Music therapy
   d. Art therapy
   e. Healing touch
   f. Touch for health

References


*Open access article
Unique Populations

The Institute of Medicine in its landmark report Relieving Pain in America drew importance to the prevalence and care of unique populations with chronic pain, noting not only increased risk for pain but also that of increased risk of undertreatment. An understanding of high-risk groups is essential for the proper treatment of members of these groups.

I. CULTURAL CONSIDERATIONS IN CHRONIC PAIN

A. Self-awareness and attitudes
   1. Define culture and its potential influence on an individual’s perception of pain
   2. Describe how the provider’s own unique cultural perspectives impacts the care provided to individuals with pain

B. Culturally appropriate pain assessment
   1. Describe strategies for eliciting cultural beliefs about pain
   2. Describe open-ended questions that can be used to conduct a culturally appropriate pain assessment

C. Culturally appropriate pain management
   1. Describe strategies for engaging in culturally appropriate communication related to pain management
   2. Describe methods to engage in culturally appropriate patient education related to pain medications and management of opioid-related toxicities

References

*Open access articles

II. PEOPLE WITH COMORBID SUBSTANCE USE DISORDERS (SUDS)

A. Aberrant behaviors in the clinical setting
   1. Define aberrant behaviors
   2. Identify aberrant behaviors associated with risk of misusing opioid analgesics
   3. Identify accepted methods for responding to aberrant behaviors

B. Opioid risk tools and misuse tools (see opioid pharmacology section)

C. Risk factors associated with misuse of opioids
   1. List important psychosocial and familial risk factors for opioid misuse

D. Evaluation and treatment of substance use disorders
   1. Note the difference between the role of screening tools versus diagnostic assessment
   2. Note the diagnostic criteria for SUDs
3. Identify comorbid substance use that increases likelihood of respiratory depression and death when combined with opioids
4. Identify illicit substance use most predictive of misuse of opioid analgesics
5. Describe the role of drug toxicology testing (see urine drug screening in the Pain Assessment section)
6. Describe the treatment of substance use disorders
7. Note that a SUD does not preclude the need for treating chronic pain
8. Describe importance of close monitoring for a patient with a SUD who is treated with opioids
9. Describe the importance of seeking consultation when treating chronic pain in a patient with a comorbid SUD
10. Identify SUDs that can be treated with medications
11. Identify non-pharmacological treatments for SUDs (e.g., 12-step mutual help groups)
12. Note the two forms of opioid replacement therapy (ORT)
13. Describe the differences between federal rules and regulations regarding ORT for opioid dependence with regard to methadone and buprenorphine
14. Identify the differences between the different forms of buprenorphine used to treat opioid dependence (e.g., Subutex® and Suboxone®)
15. Identify resources in your community for both inpatient and outpatient treatment of drug and alcohol abuse disorders

References
*Open access article
III. THE PEDIATRIC AND ADOLESCENT PATIENT WITH CHRONIC PAIN

Chronic pain is a common problem in childhood and adolescence. Eighty-three percent of children experience a significant painful event in any three-month period, and 30% of those children report the pain is still present six months later. Chronic pain has a devastating impact on adolescents and their families, negatively impacting their appetite, physical fitness, and sleep patterns, which often leads to school absenteeism, social isolation, reduced independence, and strained family relationships.

A. Overview
1. Note the physiology and pathophysiology of pain in children and adolescents (see The Basics section)
2. List the several common medical conditions leading to pain in children and adolescents
3. Describe the risks for pain in children and adolescents as related to the following
   a. Sex: female vs. male
   b. Age
   c. Anatomic location of the pain

B. Evaluation and assessment of chronic pain in children and adolescents
1. Describe key elements of the biopsychosocial (family, school, function, etc.) history of pain in the child or adolescent
   a. Bio (e.g., previous exposure to painful interventions, etc.)
   b. Psycho
   c. Social: family/school/etc.
2. Describe key elements of the complete physical examination of the child with chronic pain
3. Describe the QUESTT approach to the evaluation of pain in children and adolescents
4. Describe the indications for and use of the following pain assessment devices
   a. the FLACC scale
   b. Wong-Baker FACES
   c. The Oucher photographic scale
   d. Numerical Rating Scale

C. Describe the diagnostic criteria for the following pain conditions
1. Juvenile fibromyalgia
2. Chronic abdominal pain
3. Chronic headaches
4. Benign joint hypermobility syndrome
5. Complex regional pain syndrome (CRPS)
6. Pain Associated Disability Syndrome (PADS)
   a. Describe why some but not all adolescents with chronic pain develop PADS
   b. Note how families and health care providers unknowingly perpetuate PADS

D. Treatment of pain in children and adolescents
1. Describe the following pharmacokinetic differences in pediatric patients
   a. Clearance of analgesics in neonate and infants vs. older children and adolescents
   b. Renal clearance of analgesics in young children (toddlers and preschoolers vs. neonate/infants and adults)
2. Describe the role of opioids in chronic pain in children and adolescents with regard to
   a. Indications
   b. Development of tolerance (vs. adults)
   c. Endocrine concerns
   d. Reason for contraindication of codeine in children
3. Describe the role of the following non-opioids in the treatment of pain in children and adolescents
   a. NSAIDs
   b. Antidepressants (e.g., tricyclic antidepressants, SSRIs, etc.)
   c. Anticonvulsants (e.g., gabapentin)
4. Describe psychological and other non-pharmacologic approaches to chronic pain in children and adolescents
5. Describe the rehabilitative treatment model for chronic pain
   a. Discuss how the goals of the rehabilitative model differ from those of the acute care model
   b. Discuss the proper role of medical management in this model
   c. Discuss the main obstacles to effective treatment of chronic pain using the rehabilitative model
6. Describe the importance of family counseling and education in the successful treatment of the child and adolescent with chronic pain
7. Define the 504 plan and its role in integrating the adolescent back into school
8. Devise a plan to transition your adolescent patients to an adult clinician when appropriate

References

*Open access article

IV. THE GERIATRIC PATIENT WITH CHRONIC PAIN
Pain in elderly patients is quite prevalent with perhaps as many as 50% of the community-dwelling elderly and 80% of institutionalized-elderly affected by chronic pain. This is, unfortunately, often under recognized and undertreated.

A. Overview
1. Note that pain physiology and pathophysiology is the same as in young patients with the following differences
   a. Describe differences in pain thresholds and tolerance in elderly patients (vs. younger patients)
b. Describe potential pathophysiologic mechanisms for alterations in pain thresholds in elderly patients
2. Describe the differences in elderly vs. young patients with regard to the development of persistent pain post injury or surgery

B. **Assessment of pain in the geriatric patient**
1. Describe barriers to pain assessment in the elderly
2. List impediments that many geriatric patients have that make interpretation of pain scales more challenging
3. List several pain scales that have good reliability and validity for use in the cognitively intact elderly patient
4. Describe common behaviors demonstrated by cognitively impaired elderly patients that are reliable indicators of pain
5. Describe which pain assessment tool(s) can be used in the cognitively impaired elderly patient

C. **Treatment of pain in the geriatric patient**
1. Describe several physiologic changes in the elderly patient that affect drug pharmacokinetics and pharmacology
2. Describe several pharmacodynamics effects that are accentuated by certain drugs in the elderly (e.g., respiratory depression, etc.)
3. Describe factors that increase the safe and effective prescribing of NSAIDs in the elderly
4. Describe factors that increase the safe and effective use of opioids in the elderly patient
5. Describe which opioids are preferred opioids in the elderly and which are discouraged
6. Describe the dangers of polypharmacy in the elderly
7. Describe the potential problems associated with elder abuse
8. Describe the role of the following non-pharmacologic treatments for chronic pain in the elderly
   a. Manual medicine
   b. Physical therapy
   c. Integrative medicine techniques
   d. Psychosocial modalities
9. List common diagnoses in the following disease categories that result in painful states in older persons
   a. Arthritis
   b. Cardiac or pulmonary disease
   c. Low back pain
   d. Myofascial and musculoskeletal pain syndromes
   e. Diabetes
   f. Stroke
   g. Peripheral vascular disease
   h. Cancer
   i. Infections
   j. End-of-life pain
   k. Post herpetic neuralgia (the role of vaccination as a prevention?)
References


*Open access articles

V. OTHER UNIQUE POPULATIONS WITH CHRONIC PAIN

A. For each of the following populations, describe the particular issues in treating chronic pain

1. Prisoners
2. Institutionalized
3. Intellectually disabled

References:


Surgical Approaches To Chronic Pain

Clinicians who treat patients need to be aware of the indications for and contraindications against many kinds of surgical approaches. Orthopaedic surgery for the large joints and peripheral nerves is common. Spinal surgery was developed initially to treat tuberculosis of the spine, but with careful patient selection, the surgical treatment of chronic low back pain can be very effective.

I. SPINE SURGERY

A. For each of the surgeries listed below, describe the indications, contraindications, expected outcomes, and risks
   1. Laminectomy with discectomy
      a. Single level
      b. Multilevel
   2. Anterior fusion/posterior fusion
      a. With instrumentation
      b. Without instrumentation
   3. Foraminotomy
   4. Vertebroplasty
   5. Kyphoplasty

B. Device implantation (spinal cord stimulator)
   1. Describe the indications for implantation of a spinal cord stimulator

C. Efficacy of spine surgery
   1. Describe, in qualitative terms, the efficacy of surgery for
      a. Spine pain without neurologic deficits
      b. Spine pain with neurologic symptoms (i.e., radiculopathy, spinal stenosis)
      c. Spondylolisthesis (with and without neurologic symptoms)

D. Device implantation
   1. Intrathecal pumps

E. Minimally invasive surgery

II. OTHER NEUROSURGERY

A. Describe the following cranial nerve surgeries
   1. Microvascular decompression for trigeminal neuralgia
   2. Microvascular decompression for glossopharyngeal neuralgia

III. LARGE JOINT SURGERY

A. For each of the surgeries listed below, describe the indications, contraindications, expected outcomes, and risks
   1. Shoulder
      a. Subacromial decompression
      b. Arthroscopic rotator cuff repair
      c. Total shoulder arthroplasty
   2. Hips
      a. Labral tear repair
      b. Total hip arthroplasty
   3. Knees
      a. Meniscal repair decompression
      b. Arthroscopic chondroplasty
      c. Total knee arthroplasty

IV. PERIPHERAL NERVE SURGERY

A. For each of the surgeries listed below, describe the indications, contraindications, expected outcomes, and risks
   1. Carpal tunnel release
2. Cubital tunnel release
3. Ulnar nerve transposition

References

*Open access article
Self-Care

Self-care is essential for patients and clinicians, especially when addressing a potentially lifelong chronic condition such as chronic pain. Emerging literature supports self-care approaches for selected patient groups, as well as primary care clinicians.

I. FOR PATIENTS

A. Define self-care for patients (World Health Organization)
B. Describe how to incorporate self-care in a treatment plan
C. Describe two models of self-care
   1. Model of 5 As
   2. Ultra-Brief Personal Action Planning
D. Identify appropriate assessment tools

II. FOR CLINICIANS

A. Describe burnout
   1. Definition
   2. Prevalence
B. Describe approaches to self-care, wellness, and burnout prevention from the literature
C. Describe the use of the Stanford Chronic Pain Self-Management program
D. Describe the benefits of clinician self-care/wellness

References

*Open access article
Regulatory Issues

The care of people with chronic pain is significantly affected by local, state, and federal regulations, which affect clinical training, patient care, documentation, and prescribing medications. The chronic pain clinician needs to be up-to-date on regulatory issues in order to provide the safest and most ethical care possible.

I. DEFINE THE TYPES OF REGULATORY POLICY

A. Statutes
B. Rules and regulations
C. Policy statements
D. Guidelines

II. CONTROLLED SUBSTANCES ACT OF 1970

A. Describe the purpose of the Controlled Substances Act
B. Define “controlled substance”
C. Describe the five categories of controlled substances with regard to the following
   1. Unique prescribing rules for controlled substances
   2. Rating according to medical usefulness and abuse potential
D. Describe the role of the Drug Enforcement Agency (DEA) in the enforcement of rules regarding the prescription of controlled substances
   1. Production quotas
   2. Closed system of distribution

III. FDA AND RISK EVALUATION AND MITIGATION STRATEGIES (REMS)

A. Regulatory role played by FDA
   1. Approval of new drugs
   2. Approval of indications for clinical use
   3. Off-label use
   4. Monitoring and maintenance of safety of approved medications
   5. Lack of oversight over nutritional supplements
B. Define the purpose of REMS
C. Describe which categories of drugs require REMS

IV. STATE REGULATIONS

A. Describe the role of the professional licensing boards in regulating medical practice
B. Describe the Federation of State Medical Boards Model Policy for the Use of Controlled Substances for the Treatment of Pain
C. Describe your state’s rules and regulations regarding pain treatment and the use of controlled substances

V. DESCRIBE THE RATIONALE OF THESE ELEMENTS OF DOCUMENTATION
A. Controlled Substance Agreement

B. State Prescription Monitoring Program (PMP)

C. Your state's requirements for documentation related to treating patients with chronic pain

D. History, including detailed psychosocial history

E. Physical examination

F. Results of previous records review

G. Diagnostic studies conducted

H. Use of consultants

I. Substance abuse risk assessment

J. Diagnosis

K. Treatment plan

L. Informed consent

M. Patient-provider agreement

N. Urine drug screening plan and results

VI. MEDICO-LEGAL ISSUES AND PAIN CONTROL

A. Describe how the following factors might increase or reduce one's risk of incurring legal problems
   1. Timely and effective management of pain
   2. Adherence to evidence-based and consensus guidelines and policies
   3. Excessively conservative approaches to the evaluation and treatment of patients with pain
   4. Excessively liberal approaches to the evaluation and treatment of patients with pain
   5. Maintenance of knowledge and skills
   6. Timely, accurate, and thorough documentation
   7. Adherence to HIPAA

VII. CREDENTIALING

A. Describe the requirements and meaning of board certification

B. Describe the requirements and meaning of the American Academy of Pain Management credential

References


*Open access article
Ethics Of Pain Treatment

The effective management of pain is considered by many to be not only a moral imperative and professional responsibility, but also a duty of those directly involved with patient care. Clinicians have a responsibility to possess adequate skills, knowledge, and attitudes commensurate with the task of caring for patients with chronic pain and especially the consequences of poorly or under-treated chronic pain. They also must have an understanding of the ethical duties and obligations that govern the care of patients, especially those with chronic pain who often pose unique challenges.

I. BASIC PRINCIPLES

A. Define the following
   1. Ethics
   2. Professional ethics
   3. Bioethics
   4. Clinical/health care ethics

B. Distinguish ethics from morals and define
   1. Law
   2. Religious beliefs
   3. Morality/norms or mores
   4. Professional codes of ethics

C. Describe the following essential characteristics of professionalism
   1. Specialized knowledge
   2. Competence
   3. Compassion
   4. Altruism

II. CONCEPTUAL FRAMEWORK FOR ETHICS

A. Describe the following major theories and describe problems associated with each
   1. "Principlism" (rules-based)
   2. Relativism (greatest good for the greatest number)
   3. Utilitarianism (outcomes-based)
   4. Virtue (qualities of role models)

B. Define major ethical principles (rules)
   1. Autonomy
   2. Beneficence (non-maleficence)
   3. Justice

C. Define the following
   1. Respect
   2. Fidelity
   3. Integrity/truth-telling
   4. Competence
   5. Compassion

III. DEFINE AND DESCRIBE THE RELATIONSHIP BETWEEN PATIENTS’ RIGHTS AND DUTIES AND OBLIGATIONS OF HEALTH CARE PROFESSIONALS

A. Read the various statements of patients’ rights
   1. American Hospital Association
   2. Joint Commission (regarding pain standards)
   3. Declaration of Montreal
   4. American Chronic Pain Association

B. Define elements of decisional capacity and the “presumption of capacity”

C. Define informed consent and describe minimal elements of consent

D. Describe professional obligations regarding confidentiality in the context of pain care

E. Discuss duty not to abandon patients
IV. ETHICAL DILEMMAS IN PAIN CARE

A. Describe specific examples of dilemmas in pain management:
   1. Duty to alleviate pain and not cause harm
   2. Duty to keep confidentiality and pressure from family members, law enforcement, or others
   3. Abandonment and non-compliance
   4. Concern for self and staff and obligation to treat patients who are threatening
   5. Obligation to provide quality care to patients who demand certain medications

B. Describe standard steps in shared/ethical decision making process
   1. Interdisciplinary models of care
   2. “Good ethics start with good facts”
   3. Determine stakeholders, e.g., who has interests and what are their interests
   4. Discuss professional duties and obligations to those involved
   5. Consider options (biopsychosocial options)
   6. Discuss with patient possible benefits and burdens
   7. Agree on goals of care and treatment plan
   8. Document consent
   9. Evaluate
   10. Adjust goals if necessary
   11. Consider obligation to refer when patient’s needs exceed capacity

V. DESCRIBE THE FOLLOWING ETHICS RESOURCES

A. The interdisciplinary team

B. Pain committees or palliative care teams

C. Institutional policies (where they exist)

D. Position statements from professional associations

E. Clinical ethicists and/or ethics committees

F. Clinical/professional guidelines

G. Outside resources, such as not-for-profit pain groups

H. Literature

References


*Open access article
The Interdisciplinary Chronic Pain Management (ICPM) Team

Effective pain management is often complex, requiring collaborative approaches that exceed the expertise of any one profession. An interdisciplinary or transdisciplinary pain management team is better able to provide safe, appropriate, comprehensive, and effective care. For health care professionals to collaborate in meeting patients’ needs, they must understand each other’s roles and expertise. This understanding is the foundation for valuing and respecting others’ contributions to the management of pain. Research supports positive health outcomes for patients and health systems from collaborative interdisciplinary teams. Given the increasingly important role of self-care in pain management, the patient and his or her social support system are an integral part of any interdisciplinary pain management team.

I. OVERVIEW

A. Define the following terms
   1. Multidisciplinary
   2. Interdisciplinary
   3. Transdisciplinary

B. Describe the similarities and differences among these approaches to interprofessional practice

C. Describe the need for interdisciplinary collaboration in the assessment of pain and its management

II. THE PAIN MANAGEMENT INTERDISCIPLINARY CARE TEAM—ROLE AND SCOPE OF PRACTICE

A. Identify the potential members of an interdisciplinary pain management team

B. Describe the scope of practice for each discipline or profession

C. Describe the role of each member of the interdisciplinary pain management team in providing safe, appropriate, effective care
   1. The patient and his or her social support system
   2. Acupuncturists (includes DOMs)
   3. Chiropractors
   4. Dentists
   5. Dietitians/nutritionists
   6. Massage therapists
   7. Nurses
   8. Occupational therapists
   9. Clinical Pharmacists
   10. Physical therapists
   11. Physicians (including primary care and specialties such as anesthesiology and physiatry)
   12. Psychologists
   13. Social workers
   14. Allopathic and osteopathic physicians
   15. Nutritionists
   16. Myofascial therapists

III. CREATING THE INTERDISCIPLINARY TEAM

A. Describe the benefits of an interdisciplinary, collaborative approach to pain management
B. **Describe the challenges inherent in working with practitioners from other disciplines**

C. **Identify interdisciplinary expertise needed to effectively assess and manage pain in unique populations, including**
   1. Pediatric
   2. Geriatric
   3. Cognitively impaired
   4. Those living in low-resource settings

D. **Identify the values, skills, and competencies needed to work effectively as part of a team**

E. **Identify resources for continuing education about interdisciplinary pain management**

F. **Identify resources directed at vocational rehabilitation for chronic pain patients unable to perform their previous occupations**

**IV. TELEMEDICINE AND INTERDISCIPLINARY PAIN MANAGEMENT**

A. **Describe the ECHO Model™ of Telemedicine**

B. **Describe other models of telemedicine**

**References**


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