



PAIN MEDICINE EXAMINATION

A decorative footer graphic consisting of a dark blue curved banner at the bottom. On the left side, there are three overlapping chevron shapes pointing to the right: a red one, a white one, and a dark blue one. The text "CONTENT OUTLINE" is written in white, bold, sans-serif capital letters on the dark blue banner.

CONTENT OUTLINE

PAIN MEDICINE CONTENT OUTLINE

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1.	General	2
2.	Assessment and Psychology of Pain	3
3.	Treatment of Pain: Pharmacokinetics, pharmacodynamics, adverse effects, drug interactions, and indications/contraindications.....	5
4.	Treatment of Pain: Other Methods	6
5.	Clinical States: Taxonomy	8
6.	Tissue Pain	8
7.	Visceral Pain	11
8.	Headache and Facial Pain	12
9.	Nerve Damage	12
10.	Special Cases	13

1. General

1. Anatomy and Physiology: Mechanisms of Nociceptive Transmission
 1. Peripheral mechanisms
 2. Central mechanisms: spinal and medullary dorsal horns
 3. Central mechanisms: segmental and brain stem
 4. Central mechanisms: thalamocortical
 5. Other-General: Anatomy and physiology
2. Pharmacology of Pain Transmission and Modulation
 1. Experimental models: limitations
 2. Peripheral mechanisms of pain transmission and modulation
 3. Synaptic transmission of pain in the dorsal horn
 4. Central sensitization: mechanisms and implications for treatment of pain
 5. Neurotransmitters involved in pain modulation
 6. Other-General: Pharmacology of pain transmission and modulation
3. Development of Pain Systems
 1. Development of pain behavior in the fetus and newborn
 2. Physiologic and behavioral pain assessment measures in infants: use and limitations
 3. Long-term consequences of neonatal pain
 4. Other-General: Development of pain systems
4. Designing, Reporting, and Interpreting Clinical Research Studies about Treatments for Pain: Evidence-Based Medicine
 1. Critical analysis of literature and evidence-based medicine: basic concepts
 2. Principles of valid clinical research
 3. Effects of analysis on the clinical applicability of study results
 4. Components of clinical trials
 5. Special features of study of pain
 6. Other-General: Designing, reporting, and interpreting clinical research studies about treatment for pain
5. Animal Models of Pain and Ethics of Animal Experimentation
 1. Common animal models in the study of pain
 2. Ethics of animal experimentation
 3. Other-General: Animal models of pain and ethics of animal experimentation
6. Ethical Standards in Pain Management and Research
 1. Ethics of pain management and research
 2. Professionalism and quality assurance
 3. Ethical standards of research design, review and implementation, informed consent, use of animals
 4. Other-General: Ethical standards of pain management and research

2. Assessment and Psychology of Pain

1. Assessment and Psychology of Pain
 1. Pain as a subjective, multidimensional experience
 2. Introspection and measurement of subjective experience: basic concepts
 3. Measurement of pain in special populations: challenges and limitations
 4. Direct pain measurement: self-report
 5. Indirect pain measurement: observations
 6. Outcome measures in clinical studies: basic issues
 7. Outcomes measures in studies of the impact of pain: requirements
 8. Other-General: Assessment and psychology of pain
2. Placebo and Pain
 1. Placebo: definition and incidence
 2. Historic aspects of placebo
 3. Placebo response: mechanisms and interpretation
 4. Role of placebo in clinical trials
 5. Role of placebo in clinical trials: response bias
 6. Ethics of placebo in clinical trials and clinical practice
 7. Open-hidden paradigm
 8. Placebo as treatment modality
 9. Nocebo effect
 10. Other-General: Placebo and pain
3. Clinical Nerve Function Studies and Imaging
 1. Electrical nerve stimulation (EMG/NCV/evoked potentials): uses and limitations
 2. Laser-evoked potentials: uses
 3. Quantitative sensory testing: uses and limitations
 4. Skin punch biopsy: assessment of innervation density
 5. MRI, fMRI, and MR spectroscopy: uses
 6. PET scans: uses
 7. EEG, MEG: uses
 8. Other-General: Clinical nerve function studies and imaging
4. Epidemiology
 1. Use of data from epidemiologic studies of pain
 2. Measurement of burden in a population, including epidemiologic measures of occurrence (prevalence, incidence)
 3. Observational studies: uses and limitations (e.g., measurement of strength of association between risk factors and pain); know major risk factors for development of chronic pain.
 4. Cohort studies: use to determine natural history and predictors of outcome
 5. Use of risk factors to guide treatment
 6. Other-General: Epidemiology
5. Psychosocial and Cultural Aspects of Pain
 1. Pain as a biopsychological experience: definition and measurement
 2. Individual differences in affective, cognitive, and behavioral responses to pain
 3. Coping styles: definition and effect on pain experience and response to treatment
 4. Expectations, coping, cultural and environmental factors: affect on disability, treatment outcome, maintenance of treatment effects
 5. Cultural, environmental, and racial variations in experience and expression of pain
 6. Role of family in promoting illness and well behavior
 7. Common emotional problems and psychiatric disorders associated with pain
 8. Other-General: Psychosocial and cultural aspects of pain
6. Sex and Gender Issues in Pain
 1. Definition of sex and gender
 2. Sex differences: role in epidemiology of pain in relation to age and reproductive history
 3. Sex differences in nociceptive responses and pain perception in animal (acute and chronic) and human (acute) experimental models

4. Analgesic response: differences between sexes and within the same sex (e.g., child bearing)
5. Sex differences: biologic and psychosocial contributions to pain response
6. Sex differences: role in treatment seeking, delivery and effectiveness of treatment
7. Sex differences: factors influencing the outcome of pain experiments or therapy
8. Other-General: Sex and gender issues in pain

3. Treatment of Pain: Pharmacokinetics, pharmacodynamics, adverse effects, drug interactions, and indications/contraindications

1. Opioids
 1. Pharmacology of pain transmission and modulation
 2. Pharmacokinetics, pharmacodynamics, adverse effects, drug interactions, and indications/contraindications
 3. Other-Treatment of pain (Pharmacokinetics, etc.): Opioids
2. Antipyretic Analgesics: Nonsteroidals, Acetaminophen, and Phenazone Derivatives
 1. Pharmacokinetics, pharmacodynamics, adverse effects, drug interactions, indications/contraindications
 2. Other-Treatment of pain (Pharmacokinetics, etc.): Antipyretic analgesics
3. Antidepressants and Anticonvulsants
 1. Antidepressants: pharmacokinetics, pharmacodynamics, adverse effects, drug interactions, indications/contraindications
 2. Anticonvulsants: pharmacokinetics, pharmacodynamics, adverse effects, drug interactions, indications/contraindications
 3. Other-Treatment of pain (Pharmacokinetics, etc.): Antidepressants and anticonvulsants
4. Miscellaneous Agents: pharmacokinetics, pharmacodynamics, adverse effects, drug interactions, indications/contraindications
 1. Neuroleptic drugs
 2. Antihistamines
 3. Analeptic drugs
 4. Corticosteroids
 5. Muscle relaxants and antispasticity drugs
 6. NMDA antagonists
 7. Local anesthetics and membrane-stabilizing drugs
 8. Sympatholytic drugs
 9. Miscellaneous adjuvant analgesics
 10. Other-Treatment of pain (Pharmacokinetics, etc.): Miscellaneous agents

4. Treatment of Pain: Other Methods

1. Psychological Treatments (Cognitive-Behavioral and Behavioral Interventions)
 1. Cognitive and behavioral strategies: application to specific pain syndromes (e.g., TMJ pain, neck and back pain, fibromyalgia, arthritis pain, burn pain, postoperative pain)
 2. Integration of approaches: cognitive behavioral treatments, combined behavioral and drug treatments; economic benefits of integrating treatment
 3. Stages of behavioral change and their effect on readiness to adopt self-management strategies for chronic pain
 4. Cognitive behavioral and self-management interventions: common process factors (e.g., rapport, engendering hope and positive expectations, developing a therapeutic alliance, communication strategies, support, suggestion)
 5. Other-Treatment of pain (Methods): Psychological treatments
2. Psychiatric Treatment
 1. Psychiatric and psychologic morbidities of chronic pain (e.g., depressive disorders, anxiety disorders, substance-related and addictive disorders, somatic symptom and related disorders, bipolar and related disorders)
 2. Psychiatric and psychological factors that impact treatment adherence and the therapeutic alliance with treatment providers (e.g., psychological factors affecting other medical conditions)
 3. Pharmacotherapy for treatment of comorbid conditions: antidepressants, mood-stabilizing agents, anxiolytics, antipsychotics
 4. Psychotherapy for depressive disorders: cognitive behavioral, marital, family, interpretive, group therapy
 5. Differential diagnosis of anxiety disorders that may augment pain and suffering
 6. Anger in chronic pain patients and relation to perceived pain
 7. Opioids in chronic noncancer pain: use in persons with substance use and addictive disorders; addiction vs pharmacological tolerance; withdrawal symptoms
 8. Somatic complaints in chronic pain: conversion (functional neurological symptom) disorder, somatic symptom disorder and illness anxiety disorder
 9. Role of family: importance of interviewing and training patient and relatives; evaluating information from relatives
 10. Role of patient beliefs and expectations in pain and disability; coping strategies
 11. Sleep disorders in chronic pain; diagnosis and evaluation
 12. Work history and education in evaluation of chronic pain; frequency of personality disorders
 13. Other-Treatment of pain (Methods): Psychiatric treatments
3. Stimulation-Produced Analgesia
 1. Peripheral stimulation techniques (TENS, acupressure, acupuncture, electroacupuncture, vibration)
 2. Postulated mechanisms
 3. Clinical applications and efficacy
 4. Other-Treatment of pain (Methods): Stimulation-produced analgesia
4. Interventional Pain Management Including Nerve Blocks and Lesioning
 1. Anatomy
 2. Pharmacology and use of drugs
 3. Nerve blocks and neurolytic techniques: diagnostic and treatment purposes; clinical indications, risks, associated complications
 4. Side effects: recognition and treatment
 5. Other-Treatment of pain (Methods): Interventional pain management
5. Surgical Pain Management
 1. Importance of general health status in preoperative evaluation
 2. Surgical lesioning of brain, brain stem, spinal cord, peripheral nerves: indications, risks, associated complications
 3. Radiofrequency treatment: indications, risks, associated complications
 4. Spinal cord and peripheral nerve stimulation: indications, risks, associated complications

5. Intrathecal drug delivery: indications, risks, associated complications
6. Other-Treatment of pain (Methods): Surgical pain management
6. Physical Medicine and Rehabilitation
 1. Temperature modalities (e.g., heat, cold, ultrasound)
 2. Manipulation, mobilization, massage, traction
 3. Casting and splinting
 4. Exercise therapy
 5. Other-Treatment of pain (Methods): Physical medicine and rehabilitation
7. Work Rehabilitation
 1. Importance of early intervention and early return to work in reducing absence
 2. Psychosocial factors as the main determinants of disability and as predictors of prolonged work absence
 3. Identification of obstacles to recovery (e.g., fear of reinjury, low expectations of recovery, low mood, anxiety, withdrawal from social interaction); reliance on passive treatments; negative attitude to physical activity and self-management, p
 4. Components of successful comprehensive rehabilitation program (general exercise, cognitive therapy, vocational elements)
 5. Multidisciplinary approaches for those who do not return to work within a few weeks (active exercise, addressing distorted beliefs about pain, enhancing coping strategies, promoting self-management)
 6. Functional Capacity Evaluation: definition, usefulness, and limitations
 7. Other-Treatment of pain (Methods): Work rehabilitation
8. Complementary Therapies (CAM)
 1. Range of available CAM: alternative medical systems (e.g., traditional Chinese medicine, homeopathy, mind-body interventions); biologically based therapies (e.g., herbs, foods, vitamins); manipulative methods (e.g., osteopathy); energy therapy
 2. Prevalence and patient reasons for use
 3. Evidence base
 4. Implications, costs and side effects (including drug interactions).
 5. Other-Treatment of pain (Methods): Complementary therapies

5. Clinical States: Taxonomy

1. Taxonomy of Pain Systems
 1. IASP classification of chronic pain syndromes: basis and application
 2. Application and definition of pain terms
 3. Other-Clinical states (Taxonomy): Taxonomy of pain systems

6. Tissue Pain

1. Acute Pain
 1. Epidemiology of inadequate control of acute pain
 2. Physiologic and psychologic effects: identification and control
 3. Pharmacologic properties of major classes of drugs used for acute pain management
 4. Comprehensive plan for optimal perioperative pain management: formulation based on type and cause of pain, patient preference, physical and mental status, and available expertise and technology
 5. Nonpharmacologic treatment
 6. Clinical outcomes to be evaluated in an organized approach to acute pain management
 7. Tools for assessment and measurement
 8. Role of patient and family education in improving acute and postoperative pain management
 9. Treatment of nonsurgical pain (e.g., burns, sickle cell disease)
 10. Other-Clinical states (Tissue pain): Acute pain
2. Cancer Pain
 1. Palliative care: definition and scope; frequency of pain and multiple sites of pain, barriers to treatment, importance of development of evidence-based practice in the management of cancer pain
 2. Comprehensive evaluation of patients with cancer pain: needs and approach
 3. Principles of treatment, including treatment of underlying disease, analgesic Pharmacotherapy; integration of Other-modalities (e.g., physical, psychological, and anesthetic)
 4. Analgesic ladder approach; indications, pharmacologic properties, therapeutic guidelines, adverse effects of opioids and Other-analgesics, including drugs for neuropathic pain (Any overlap with neuropathic pain section?)
 5. Anesthetic approaches: indications, risks, practical implications
 6. Surgical and interventional radiologic approaches: indications, risks, practical implications
 7. Neurostimulatory approach: indications, risks, practical implications
 8. Physical therapy: usefulness
 9. Psychological approaches: usefulness
 10. Needs of special populations: children, patients with learning disabilities; adults
 11. Benefit to burden ratio: variation according to stage; ethical issues of physician assisted suicide and euthanasia; doctrine of double effect and importance of intent
 12. Other-Clinical states (Tissue pain): Cancer pain
3. Cervical Radicular Pain
 1. Anatomy
 2. Causes and differentiation from neck pain and somatic nerve pain
 3. History taking and neurologic examination: role and limitations
 4. Medical imaging: reliability and validity
 5. Electrodiagnostic studies: reliability and validity
 6. Natural history and relevance to management
 7. Commonly used interventions: evidence base
 8. Injection therapy: indications and use
 9. Surgical treatment: indications and use
 10. Other-Clinical states (Tissue pain): Cervical radicular pain

4. Neck Pain
 1. Anatomy
 2. Differentiation of neck pain and somatic referred pain from radicular pain and radiculopathy; differences in evaluation and treatment
 3. Mechanisms of referred pain perceived as headache
 4. History taking: use and limitations
 5. Conventional medical imaging: use and limitations
 6. Risk factors: etiologic and prognostic
 7. Natural history after whiplash injury
 8. Invasive tests (e.g., diagnostic joint blocks, diskography)
 9. Nonsurgical intervention: evidence for efficacy of reassurance, maintaining activity, and exercises
 10. Surgical treatment
 11. Medial branch neurotomy
 12. Other-Clinical states (Tissue pain): Neck pain
5. Lumbar Radicular Pain
 1. Anatomy
 2. Causes and differentiation from low back pain and somatic referred pain
 3. History and neurologic examination: reliability, validity, and limitations
 4. Medical imaging and electrodiagnostic testing: indications and validity
 5. Natural history and relevance to management
 6. Commonly used interventions: evidence base
 7. Surgical treatment: indications and efficacy
 8. Other-Clinical states (Tissue pain): Lumbar radicular pain
6. Low Back Pain
 1. Anatomy
 2. Differentiation of low back pain and referred somatic pain from radicular pain, radiculopathy, and sciatica; relevance to investigation and treatment
 3. History taking: significance and use
 4. Physical examination and conventional medical imaging: limitations
 5. Invasive tests (e.g., diagnostic joint blocks, diskography): use
 6. Natural history
 7. Etiologic and prognostic risk factors: differences, clinical significance, and use
 8. Psychosocial and occupational factors related to low back pain and chronicity
 9. Interventions commonly used for acute and chronic low back pain: evidence for efficacy
 10. Surgical treatment
 11. Medial branch neurotomy and intradiscal therapy
 12. Multidisciplinary therapy: use and limitations
 13. Other-Clinical states (Tissue pain): Low back pain
7. Musculoskeletal Pain
 1. Epidemiology
 2. Anatomy and physiology
 3. Mediators of inflammation, tissue destruction, and repair
 4. Molecular and cellular basis of immunity and autoimmunity
 5. Anatomy and biomechanics of joints and muscles
 6. Neurophysiology
 7. Psychosocial aspects
 8. Classification and clinical characteristics of musculoskeletal diseases
 9. Assessment of activity and severity of rheumatic disease
 10. Treatment and rehabilitation of musculoskeletal pain/disability
 11. Other-Clinical states (Tissue pain): Musculoskeletal pain
8. Muscle and Myofascial Pain
 1. Diagnostic labels for muscle pain: myalgia, nonskeletal musculoskeletal pain, chronic regional pain, regional soft-tissue pain, myofascial pain
 2. Anatomy (muscle nociceptors and ergoreceptors)
 3. Multifactorial pathophysiology

4. Common clinical characteristics
5. Assessment (including fibromyalgia, spasticity, and myopathies)
6. Treatment: evidence base
7. Other-Clinical states (Tissue pain): Muscle and myofascial pain

7. Visceral Pain

1. Visceral Pain
 1. Distinct clinical features
 2. Anatomy: organization of peripheral and central visceral innervation, properties of visceral nociceptors, and mechanisms of visceral nociceptor sensitization
 3. Peripheral and central mechanisms of visceral pain modulation
 4. Other-Clinical states (Visceral pain): Visceral pain
2. Chronic Urogenital Pain
 1. Anatomy
 2. Epidemiology
 3. Clinical differentiation of gastrointestinal, urologic, gynecologic, and musculoskeletal pain
 4. Psychological principles in clinical assessment, explanation, and treatment
 5. Common causes, diagnostic evaluation, and treatment in men
 6. Common causes, diagnostic evaluation, and treatment in women
 7. Other-Clinical states (Visceral pain): Chronic urogenital pain
3. Pain in Pregnancy and Labor
 1. Factors influencing the perception of pain in pregnancy compared with the nonpregnant state
 2. Causes of pain in pregnancy
 3. Principles of pain management in pregnancy
 4. Mechanisms and characteristic of labor pain
 5. Benefits and potential adverse consequences of labor pain
 6. Management of labor pain
 7. Other-Clinical states (Visceral pain): Pain in pregnancy and labor

8. Headache and Facial Pain

1. Headache
 1. Anatomy and physiology
 2. Major hypotheses about mechanisms
 3. Systematic case history, use of headache diary, selection of appropriate examination based on history
 4. Internationally accepted diagnostic criteria for classification of headache disorders
 5. Headache: indications for further investigation of headache
 6. Physical, psychological, and social factors contributing to headache; role of counseling and Other - nonpharmacologic treatment
 7. Role of medication overuse
 8. Pharmacologic treatment and alternatives
 9. Other-Clinical states (Headache and facial pain): Headache
2. Orofacial pain
 1. Anatomic, physiologic, psychosocial aspects
 2. History taking, physical examination, and diagnostic studies
 3. Evidence-based treatment options
 4. Other-Clinical states (Headache and facial pain): Orofacial pain

9. Nerve Damage

1. Neuropathic Pain
 1. Definition
 2. Epidemiology
 3. Neuropathic pain syndromes: epidemiology
 4. Clinical characteristics
 5. Pathologic mechanisms in nervous system
 6. Pathophysiologic mechanisms in peripheral nerve fibers
 7. Diagnostic studies: use and limitations
 8. Common neuropathic pain syndromes: clinical, laboratory, and radiographic findings; differential diagnosis, natural course, proposed pathology
 9. Therapeutic interventions
 10. Other-Clinical states (Nerve damage): Neuropathic pain
2. Complex Regional Pain Syndromes
 1. Definition
 2. Common clinical characteristics
 3. Pathophysiologic mechanisms
 4. Diagnostic procedures
 5. Therapeutic interventions
 6. Other-Clinical states (Nerve damage): Complex regional pain syndromes

10. Special Cases

1. Pain in Infants, Children, and Adolescents
 1. Developmental, behavioral, pharmacokinetic/pharmacodynamic differences among infants, children, adolescents
 2. Factors affecting pain perception in children (e.g., development level, family beliefs, past pain experience)
 3. Treatment of pain in children: pharmacologic
 4. Treatment of pain in children: nonpharmacologic (e.g., counseling, guided imagery, hypnosis, biofeedback)
 5. Pain assessment tools in children: use and limitations
 6. Acute and chronic pain in children: special considerations in management/palliative care
 7. Ethics of study and treatment of pain in children
 8. Other-Clinical states (Special cases): Pain in infants, children, and adolescents
2. Pain in older adults
 1. Epidemiology
 2. Issues related to age differences
 3. Pain assessment: limitations
 4. Age-related changes relevant to pain management
 5. Heterogeneity in physiologic, psychological, and functional capacity of persons of the same chronologic age
 6. Other-Clinical states (Special cases): Pain in older adults
3. Pain Issues in Individuals with Limited Ability to Communicate Due to Neurocognitive Impairments
 1. Conditions leading to limitations in ability to communicate
 2. Difficulties in assessment and treatment of pain
 3. Role of caregivers and social context in assessment and treatment of pain
 4. Other-Clinical states (Special cases): Pain issues in individuals with limited ability to communicate due to Neurocognitive impairments
4. Pain Relief in Persons with Substance Use and Addictive Disorders
 1. Biopharmacologic and neurophysiologic basis of addiction
 2. Interactions between addiction and pain
 3. Screening for substance use disorder or addiction in patients with pain
 4. Principles of comprehensive approach to pain management in patients with addiction, either active or in recovery
 5. Pharmacologic treatment of patients with addiction
 6. Acute pain management of patients with active addiction or in recovery
 7. Analgesic response to opioids in patients with addiction
 8. Risks and benefits of opioid use in treatment of chronic/cancer pain in patients with substance use disorder or addiction
 9. Needs of special populations or treatment groups of patients with addiction
 10. Legal, regulatory, reimbursement issues limiting access to care for patients with pain and addiction
 11. Other-Clinical states (Special cases): Pain relief in persons with substance use disorder
5. Pain Relief in Areas of Deprivation and Conflict
 1. Variability of availability and access to adequate pain treatment worldwide
 2. Causes of pain worldwide (e.g., HIV/AIDS, torture-related pain and suffering, war-related injuries)
 3. Spectrum of providers caring for patients with pain worldwide
 4. Limitations of education, training, and knowledge of pain and its treatment; variability of beliefs and communication about pain
 5. Research: importance in extending pain care worldwide; ethical and political issues
 6. Inadequacy of access to drugs and palliative care in many countries
 7. Other-Clinical states (Special cases): Pain relief in areas of deprivation and conflict