

Biopsychosocial Approach to Assessing and Managing Patients with Chronic Pain



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KEYWORDS

- Chronic pain • Biopsychosocial • Cognitive Behavioral Therapy • E-Health
- Primary care

KEY POINTS

- Chronic pain is a significant health care problem affecting approximately 30% of the US population.
- Chronic pain should be considered a chronic disease.
- Primary care clinicians are responsible for caring for most patients suffering from chronic pain.
- Traditional approaches to managing chronic pain have not been totally effective.
- A biopsychosocial approach to pain has been demonstrated to be efficacious and cost-effective.

INTRODUCTION

The Institute of Medicine (IOM) report, “Living Well with Chronic Illness: A Call for Public Health Action,” noted that chronic illness represents approximately 75% of the \$2 trillion that is spent in the United States on health care.¹ Chronic illnesses were identified that should be the focus of public health efforts to reduce disability and improve functionality and quality of life. There was an emphasis on winnable battles; in other words, illnesses with cost-cutting clinical, functional, and social implications. Nine “exemplar” disease states were identified as having significant implications for the nation’s health and economy. These states included arthritis, type 2 diabetes, dementia, vision and hearing loss, posttraumatic disabling conditions, schizophrenia, cancer survivorship, depression, and, notably, chronic pain.

In spite of diagnostic and therapeutic advances in the field of medicine, the prevalence of chronic pain continues to rise. Chronic pain affects the individual suffering

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from pain but also their families and society. One-third of adults in the United States experience chronic or recurrent pain.^{2,3} The IOM report, “Relieving Pain in America: A Blueprint for Transforming Prevention, Care, Education and Research,” estimated that the annual cost of chronic pain in the United States is approximately \$560 to \$600 billion, which includes the cost of health care and lost productivity.⁴

An individual suffering from persistent pain can develop significant concomitant conditions, including secondary physical problems due to deconditioning and weight gain (for example, hypertension, obstructive sleep apnea, diabetes), sleep disorders, substance use disorders, mood and anxiety disorders, cognitive distortions, and functional disabilities. Untreated or mismanaged pain can lead to adverse effects, such as delays in healing, changes in the central nervous system (neuroplasticity), suicidal ideation and behavior, and opioid misuse, abuse, addiction, and overdose.^{5–8}

The IOM report on pain⁴ challenged health care policy makers and practitioners with the following principles:

- Effective pain management is a “moral imperative”
- Pain should be considered a disease with distinct pathology
- Pain remains undertreated and underdiagnosed, particularly in disadvantaged populations
- There is a need for interdisciplinary treatment approaches

CURRENT APPROACH TO PAIN TREATMENT

The current approach to pain treatment is linear in nature, where symptoms lead to a diagnosis and then to treatment. This may be appropriate in treating an acute process, but is not efficacious for a complex pain disorder.⁹ Specialty training in pain medicine has become very technical in nature, and the Accreditation Council for Graduate Medical Education (ACGME) requirements for competency in pain medicine involve primarily acquiring expertise in interventions (neural blockade, radiofrequency ablation, spinal cord stimulation, kyphoplasty, and pharmacotherapy). Although this has been the focus of pain medicine, outcome studies using these interventions on patients with chronic noncancer pain (CNCP) reveal a nominal long-term benefit. This includes the use of opioid therapy and nonopioid pharmacotherapy, injection therapy, implantable devices, and surgery, and there has been a call for changing the curriculum in pain fellowships to reflect a more balanced approach to pain care.^{9,10}

Chronic pain is a complex condition with multiple medical and psychiatric comorbidities, and a more expansive and holistic approach is needed to maximize the potential for positive outcomes.

CHRONIC PAIN CARE IN THE PRIMARY CARE SETTING

More than half of all patients with chronic pain receive their pain care from primary care practitioners (PCP),¹¹ as there is a large discrepancy between the number of patients with chronic pain (~100,000,000) and the number of board-certified pain physicians (4000–5000). The PCP is oftentimes faced with the responsibility of fully caring for the patient with CNCP with the goal to alleviate suffering and improve their quality of life, while not causing iatrogenic complications (eg, opioid use disorders, opioid-related overdose, suicide). This clinical situation is further complicated by the reality that most PCPs do not have the time, resources, or training in pain management or addiction management to effectively and efficiently balance these important responsibilities.¹²

BIOPSYCHOSOCIAL APPROACH TO PAIN

The 2011 IOM report on pain stated that, “We believe pain arises in the nervous system but represents a complex and evolving interplay of biological, behavioral, environmental, and societal factors....”⁴ According to the biopsychosocial approach to pain, physiologic stimulus (nociception, neuropathic) is filtered through the biopsychosocial context of the individual, which leads to the experience of pain. A traditional biomedical approach is ineffective in assessing psychosocial and neuro-behavioral mechanisms that can alter the manifestation and maintenance of pain (eg, kinesophobia, catastrophizing). There is evidence strongly supporting the efficacy of comprehensive pain management programs based on the biopsychosocial model of pain. These programs typically include cognitive behavioral therapy (CBT), a graded, activating exercise program, and rational pharmacotherapy with the objective to improve treatment outcomes, including return to work, pain reduction, and an increase in activity.^{13–16}

INITIAL ENCOUNTER WITH PATIENT WITH CHRONIC PAIN

Patients with chronic pain typically have seen a great number of health care providers and have undergone a plethora of diagnostic evaluations, procedures, medication trials, and physical therapy. Oftentimes they do not experience appreciable improvement and seek further care.

The initial encounter with a patient with chronic pain is crucial in developing a positive physician-patient relationship, which will influence the effectiveness of and adherence to future interventions. Several steps can be followed to facilitate a collaborative and therapeutic relationship:

- *Validate:* Patients with pain can feel vilified and perceive that they are treated as if their pain is psychological. It is critical to first validate that the pain that they are experiencing is real and has compromised their life and family.
- *Educate:* Provide a framework for a biopsychosocial approach to pain emphasizing the following:
 - Pain is a chronic disease not unlike having diabetes and the goal is to manage symptoms, avoid further complications, and improve quality of life.
 - Similar to other chronic diseases, the most effective approach is a chronic disease management model.
 - Chronic disease management involves both pharmacotherapy and adopting/changing behaviors (exercise, effective communication skills, nutritional changes, stress-management techniques, pacing, making adaptations to activities of daily living).
- *Evaluate:* Conduct a thorough physical and behavioral examination establishing treatment goals and assessing the patient’s expectations for treatment outcomes.
- *Treat:* Based on the comprehensive evaluation, develop a personalized treatment plan keeping in mind the patient’s goals.

BIOPSYCHOSOCIAL DIAGNOSTIC EVALUATION/INTERVIEW

A comprehensive biopsychosocial pain evaluation consists of a clinical interview, mental health and substance abuse screening, physical examination, and diagnostic testing if needed.

Clinical Interview

In conducting a biopsychosocial assessment of patients with chronic pain, one should include the following:

- Pain and treatment history
 - Location
 - Onset/Duration
 - Intensity
 - Pattern/variations over time
 - What exacerbates and relieves pain
 - Impact of pain on the individual's physical, emotional, and psychosocial function
 - Patient's goals and motivation for treatment¹⁷
 - Past evaluations and types and efficacy of current/prior treatments
 - Timeline of functional status before the onset of pain and since the onset of pain
- Opioid medications
 - Past use
 - Current use corroborated by Prescription Drug Monitoring Program if available, urine drug testing, contacting current and previous providers, obtaining previous medical records
 - Dosage, including regimen, duration
 - Effectiveness¹⁷
- Nonopioid medications
 - Types (antidepressants, antiepileptics, muscle relaxants, nonsteroidal anti-inflammatory drugs)
 - Effectiveness
 - Adverse effects
- Past medical history with special attention to conditions that may be relevant to the effects of opioids (history of constipation, nausea, sleep apnea) or illnesses suggestive of a substance use disorder (hepatitis, pancreatitis, gastrointestinal disorders, cirrhosis)¹⁸
- History of substance use disorders, including smoking, alcohol, prescription and nonprescription drugs
- Precipitants and consequences of pain behavior (for example, family being solicitous when patient is in pain)
- Attitudes toward health care providers, family, employer if working, insurance carrier
- Current stressors, in particular changes in lifestyle/roles due to pain
- Employment, level of education
- Perform a mental status examination, assess personality traits (passive, passive-aggressive, aggressive, narcissistic)
- Level of social support
- Review of systems to include assessing for other pain complaints

Physical Examination and Diagnostic Testing

- General (vital signs, appearance, posture, gait, pain behavior)
- Musculoskeletal examination
- Neurologic examination
- Diagnostic testing (eg, MRI, computed tomography scan, electromyography) if indicated^{18,19}

Mental Health/Substance Use Disorder Screening

Patients with chronic pain often present with concomitant psychiatric conditions, including mood and anxiety disorders, which can affect the expression of pain and quality of life. There are a variety of validated and reliable mental health screening tools, examples of which are outlined in [Table 1](#). The Beck Depression Inventory (BDI)²⁰ and the Profile of Mood States (POMS)²¹ are 2 measures that have been endorsed by an expert consensus group on measuring emotional functioning in chronic pain.²² The BDI is a 21-question self-report measure of depression severity over the past week. The POMS has a full-length version (65 items) and a short-length version (35 questions), both composed of 7 scales. Three of these scales are very pertinent to the pain population (anger/hostility, depression/dejection, and tension/anxiety). The Patient Health Questionnaire (PHQ)-4²³ is a 4-item screening tool for depression and anxiety that can be easily administered in a busy primary care practice.

Likewise, many patients with chronic pain are on medications that can lead to misuse and abuse, including opioids, stimulants, and benzodiazepines. Screening for opioid misuse and substance abuse also should be part of a comprehensive biopsychosocial assessment of patients with CNCP. Examples of opioid screening tools and general substance abuse screening assessments are outlined in [Table 2](#).

BIOPSYCHOSOCIAL TREATMENT PROGRAM

A comprehensive biopsychosocial treatment program includes the following:

- CBT/acceptance commitment therapy
- Rational pharmacotherapy regimen
- Graded exercise program
- Nutritional counseling/weight loss if needed
- Social support

Pharmacotherapy

A review of pharmacotherapy strategies in managing chronic pain is covered in detail by Beal and Wallace²⁴, but in general a practitioner must design a pharmacologic approach that targets pain, sleep, and mood and weighs benefit with risk/adverse effects.

Tool	No. of Items	Time to Complete
Beck Depression Inventory II ²⁰	21	5–10 min
Beck Depression Inventory–Fast Screen for Medical Patients ²⁵	7	<5 min
Profile of Mood States II: Full	65	10–15 min
Short ²¹	35	5–10 min
Zung Self-Rating Depression Scale ²⁶	20	10 min
Center for Epidemiologic Studies Depression Scale: Full	20	5–10 min
Short ²⁷	10	5 min
Patient Health Questionnaire ²⁸	9	5 min
PHQ-4 ²³	4	<5 min

Patients Considered for Long-Term Opioid Therapy	Items	Administered
<i>ORT</i> : Opioid Risk Tool ²⁹	5	By patient
<i>SOAPP</i> : Screener and Opioid Assessment for Patients with Pain ³⁰	24, 14, & 5	By patient
<i>DIRE</i> : Diagnosis, Intractability, Risk, and Efficacy Score ³¹	7	By clinician
Characterize misuse once opioid treatments begins:		
<i>PMQ</i> : Pain Medication Questionnaire ³²	26	By patient
<i>COMM</i> : Current Opioid Misuse Measure ³³	17	By patient
<i>PDUQ</i> : Prescription Drug Use Questionnaire ³⁴	40	By clinician
Not specific to pain populations:		
<i>CAGE-AID</i> : Cut Down, Annoyed, Guilty, Eye-Opener Tool, Adjusted to Include Drugs ³⁵	4	By clinician
<i>RAFFT</i> : Relax, Alone, Friends, Family, Trouble ³⁶	5	By patient
<i>DAST</i> : Drug Abuse Screening Test ³⁷	28	By patient
<i>AUDIT-C</i> : Alcohol Use Disorders Identification Test Consumption ³⁸	3	By patient

Physical Therapy

Patients with chronic pain typically have had a number of previous trials of physical therapy. Oftentimes these experiences have been less than satisfactory for the patient, as they are based on a sports medicine/acute rehabilitation model of rapidly progressive and expansive exercise. This typically leads to significant pain flares in many patients with pain due to their level of deconditioning. Alternatively, physical therapy can be very passive in orientation, which would not be expected to lead to functional improvement and can reinforce the patient not being actively involved in their own recovery.

Physical therapy program goals for patients with CNCP pain should involve the following:

- *Acquiring first aid techniques for pain relief at home.* Providing the patient first aid techniques to self-manage pain flares (for example, use of transcutaneous electrical nerve stimulation, heat/cold, positioning) can help the patient avoid seeking urgent care when not necessary. This also has the benefit of engendering a sense of empowerment over their pain.
- *Establish a well-balanced, independent exercise program.* This should be done in a very graded fashion, keeping in mind that many patients with chronic pain have not been successful in traditional physical therapy due to either the level of their depression affecting their motivation, or the extent of their somatization and pain catastrophizing. Patients should be educated on the nature of chronic pain and the role of exercise in improving pain and function. Weekly goals can be established that are achievable and will not lead to an increase in pain.

Cognitive Behavioral Therapy

Patients with chronic pain can develop maladaptive thought patterns, particularly catastrophizing, and maladaptive behaviors such as kinesophobia, which will contribute to their pain and decline in function and quality of life. The objective of CBT is to guide

patients in reconceptualizing their view of pain and their responsibility in promoting healing. Becoming proactive and competent rather than reactive and incompetent should be emphasized.

The process of cognitive therapy typically involves the following:

- Acquisition of specific skills, such as relaxation techniques, cognitive restructuring, effective communication, behavioral sleep hygiene, and stimulus-control techniques
- Skill consolidation and rehearsal emphasizing a generalization of the skills beyond the clinical setting
- Maintenance of new behaviors
- Relapse prevention³⁹

CBT has been demonstrated as efficacious for a number of chronic pain disorders, including the following:

- Arthritis⁴⁰
- Sickle cell disease⁴¹
- Chronic low back pain⁴²
- Temporomandibular joint (TMJ)⁴³
- Lupus⁴⁴
- Fibromyalgia⁴⁵

Acceptance Commitment Therapy

Acceptance commitment therapy (ACT) is a variation of CBT that is experiential in nature, based on rational frame theory. The goal of ACT is to experience life mindfully and to encourage psychological flexibility.

Core processes of ACT include the following:

- Contact with the present moment
- Self-as-context
- Diffusion
- Acceptance
- Values
- Committed action

ACT has been tested in patients with CNCP and found efficacious in improving mood and function.⁴⁶

Barriers to Receiving Cognitive Behavioral Therapy/Acceptance Commitment Therapy

In an article by Ehde and colleagues,⁴⁷ the barriers to receiving psychological services for chronic pain were reviewed. They noted that pain is inadequately treated in primary, secondary, and tertiary care settings, and psychosocial interventions, in particular, are underutilized. Factors accounting for underutilization of psychological treatment for pain include the following:

- Financial (lack of insurance coverage for mental health care)
- Environmental (lack of transportation or lack of providers in the geographic region)
- Patient attitude-related (stigma associated with receiving psychological care)
- Health care systems barriers (no existing referral system to psychologists)

The investigators discussed the potential to use nonpsychologists to deliver CBT to patients with pain, such as dental hygienists for TMJ pain, physical therapists, and

so forth. Another area that has garnered attention as an alternative to face-to-face psychological/specialist pain care is e-health.

E-Health

There has been a movement to develop alternative methods to deliver psychological services to underserved populations. This involves application of e-health technology, which refers to the use of electronic communication-based technologies to support or provide health care.

Types of e-health applications for delivering CBT and other specialty care include the following:

- *Internet-delivered interventions*: Internet-delivered CBT uses the same basic principles of face-to-face CBT but is delivered by computer and the Internet and follow a structured course. It can be either clinician guided or self-guided. This technology has been successfully applied to very refractory conditions, such as addiction⁴⁸ and chronic pain.⁴⁹
- *Telemedicine*: Telemedicine provides face-to-face clinical care through a direct, real-time video link to a patient or group of patients or a PCP consulting with a specialist. Telemedicine has been used to deliver care to rural and other populations that have limited access to health care services. It has been effective in treating a variety of medical and mental health conditions, including chronic pain.^{50,51}
- *Smartphone apps*: A significant number of smartphone applications for self-management of pain have been developed that provide a variety of tools, including self-monitoring, pain education, and goal setting. Although this is a promising endeavor, a recent analysis of available apps designed for pain management revealed that of the 279 apps that met inclusion criteria, none were comprehensive. Only 8.2% of the apps included a health care provider in their development and only one app was subjected to a scientific evaluation.⁵²
- *Telecare Collaborative Pain Management*: The telecare collaborative care model is based on integrating care between the patient, the PCP, and the specialist with support from a nurse case manager using Web-based teleconferencing and telephone-based interventions. This model has been used with a stepped care approach for monitoring and managing opioid therapy in pain patients.^{53,54}

FUTURE CONSIDERATIONS/SUMMARY

Chronic pain is a significant health care problem affecting more than 30% of the US population, with this number increasing yearly.

There are several models for pain care that include unimodality approaches, such as interventional pain medicine, multimodal (pain management and pharmacotherapy), multidisciplinary (care provided by several disciplines but typically not coordinated nor having shared treatment goals), and interdisciplinary (a collaborative team of health care providers that possess unique skills that are complementary). Outcome studies have revealed that biopsychosocial-based, interdisciplinary care emphasizing rational pharmacotherapy, rehabilitation, and CBT is one of the most clinically efficacious and cost-effective models in managing these complicated cases. These programs have been demonstrated to significantly improve functional status, psychological well being, reduce pain severity and opioid use and decrease health care use. Unfortunately, there are a scant few of these programs available in the United States. Most pain care is provided by PCPs who often have minimal to no training in pain medicine, and few resources or the time to effectively and efficiently manage these cases.

The 2011 IOM report on pain describes pain as “a national challenge” requiring a “cultural transformation to better prevent, assess, treat and understand pain of all types.” Recently passed health care reform legislation, coupled with the development of health information technology, provides an opportunity to help meet this challenge. However, pain must be considered as complex and requiring an interdisciplinary team and systems approach. There needs to be significant changes in reimbursement policies to support this type of care model.

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