Pain management in end-of-life care presents a unique set of opportunities for patients and physicians. Physicians will encounter patients at the end of life regardless of type of specialty practice. Symptom relief is the concern of all physicians. Knowledge of “total pain” concepts along with basic end-of-life pain management offers much to patients and their families. Osteopathic principles and treatment philosophy complement quality pain management in end-of-life care. Physicians providing supportive care can assist patients and their families with comfort at the end of life. Good pain management at the end of life enhances the patient-physician relationship.

Awareness of basic tenets of pain management and access to practical references allow physicians to care effectively for their patients at the end of life. Pain management for these patients is commonly viewed in terms of anatomy, pathophysiology, and pharmacology. At any time during life, an event can stimulate nociceptors to transmit information that the central nervous system will perceive as pain; this noxious mechanism of pain is well accepted. Medical treatment of patients with such pain focuses on amelioration of acute symptoms.

Even before end of life, nearly half of patients with cancer report moderate to severe pain; up to 30% report the pain as severe; and an estimated 25% will die in pain. Persons with other noncancer diagnoses also report significant pain. Dr Cicely Saunders, founder of modern hospice care, conceptualized pain associated with the dying process as “total pain.”

Total pain is the sum of four components: physical noxious stimuli, affect or emotional discomfort, interpersonal conflicts, and nonacceptance of one’s own dying. (Figure 1). These four components may individually or in combination affect patients’ perception of their total pain (Figure 2).

Lack of physicians’ understanding of the influence of each of these four components may result in less-than-optimal pain management at the end of life.

The “gold standard” of pain management is constant pain assessment. Pain is whatever the patient says it is. Simply asking patients about their pain is the best way to obtain this information. Patients describe nonphysical components of pain as “discomfort.” Byock wrote that in dying persons, pain is never purely physical. Things related to when and how they will eventually die influence their pain. These things include being abandoned; becoming undignified in terms of what they do, how they look, and how they smell; being a burden to their families—not only a physical strain, but also a financial hardship; and dying in pain alone. Any one of these concerns causes individuals to suffer and therefore must be addressed to provide good management of pain symptoms.

Physical pain is not universal with every death, but discomfort is usually present.

All physicians should be concerned with relief of symptoms, and relief is obviously the concern of all physicians, and they should focus on end-of-life care as part of comprehensive patient care. Pain therapy may become an issue for care at anytime in the dying process. Physicians must be able to address adequately the role of pain with end-of-life patient care. Knowledge of the principles of providing proper pain management at the end of life can enhance the physician-patient relationship.

Total Pain—Physical Pain

Physical pain is the most familiar component of the total pain concept for physicians. Pain assessment includes eliciting a history of presenting symptom(s) as well as conducting the appropriate physical examination of the patient. Laboratory and imaging studies may be used to further understand the patient’s pain.
Physical pain can be categorized in terms of its temporal nature (ie, acute or chronic) and delineated as to three types based on neurophysiologic mechanisms (ie, somatic, visceral, and neuropathic) (Figure 3). Regardless of mechanism, breakthrough and incident pain may occur.

**Acute Pain**
Acute pain results from nociceptor stimulation, usually is time-limited, and often responds to analgesic medications or osteopathic manipulative treatment. Pain perception is usually the result of an acute injury such as a surgical intervention and can occur at end of life.\(^3^\)-faced with complicated pain, the goal is to provide comfort and support for the patient and family. It is important to explain that pain cannot be cured, but it can be managed, and a plan to control pain should be developed at the first sign of pain.

**Chronic Pain**
Delineating and targeting treatment for each symptom allows for optimal symptom relief and better global functioning.\(^4^\)

**Somatic Pain**
Somatic pain results from stimulation of nociceptors in the skin and deep musculoskeletal tissues. It is described as being a well-localized “deep aching feeling” with tenderness to palpation. Common sources of somatic pain are arthritic joints, osteopathic lesions, fractures, and abscesses.\(^3^\)

**Visceral Pain**
Visceral pain occurs from stretching or activation of nociceptors in the linings or serosa of organs. In contrast to somatic pain, visceral pain is difficult to localize. Visceral pain is described as “deep pressure,” “cramping,” “spasms,” or “squeezing.” Nausea, diaphoresis, and emesis are frequently present. Palpation over the site may elicit an accompanying somatic pain.\(^3^\)plied analgesic-dose interval. Incident pain can occur during diagnostic or therapeutic procedures, or it may be caused by physiologic maneuvers such as valsalva when passing flatus. Physicians should anticipate each of these types of pain and have the appropriate comprehensive pain management in place.\(^3^\)

**Neuropathic Pain**
Neuropathic pain results from damage to the peripheral nervous system or the central nervous system (CNS), or both. It is described as “sharp,” “electric,” or “burning” pain, singly or in combination, and is usually found in the same distribution pattern as a sensory peripheral nerve. Pain resulting from trauma to the CNS that partially or completely separates the CNS from the peripheral nervous system is termed deafferentation pain.

Central pain may be the result of a cerebral vascular accident and is characterized as “vicelike” or “throbbing,” or both; headaches are described as “dull” and “never-relenting.”\(^3^\)

**Breakthrough Pain and Incident Pain**
Breakthrough pain is characterized as a temporary increase in pain from the basal, acute, or chronic pain level. It is frequently described as worsening pain at the latter part of the regularly scheduled analgesic-dose interval. Incident pain can occur during diagnostic or therapeutic procedures, or it may be caused by physiologic maneuvers such as valsalva when passing flatus. Physicians should anticipate each of these types of pain and have the appropriate comprehensive pain management in place.\(^3^\)

**Pain Scales**
Pain scales are universally used for patients to convey the intensity of their pain throughout treatment. Physicians should ask patients to describe the nature of the pain as well the severity. Patients and healthcare professionals concur in their perceptions when pain is of moderate intensity. Pain of moderate to severe intensity is often accurately reported by patients and undervalued by healthcare professionals. Using a particular pain scale is not as important in the care of patients as the consistent use of the same pain scale. Patients’ perception of an acceptable pain level should be the endpoint of the therapy. The endpoint of therapy should be the patient’s perception of an acceptable pain level.\(^6^\)

**Total Pain—Anxiety**

The Diagnosis and Statistical Manual of Mental Disorders, Fourth Edition Text Revision (DSM IV-TR) defines anxiety as the apprehensive anticipation of future danger or misfortune accompanied by a feeling of dysphoria or somatic symptoms of tension.\(^7^\) The focus of anticipated danger may be internal or external.

Anxiety may be due to many organic causes (Figure 4) and may occur in the course of pain management if patients are not receiving the prescribed pain medication(s), or are given an inadequate amount or reduced frequency. Anxiety may also be caused by altered metabolic states such as coronary occlusion, hypocalcemia, hypoglycemia, hypoxia, delirium, occult bleeding, tumors (especially pheochromocytoma, thyroid, parathyroid, insulin- or ACTH-producing tumors), and sepsis. Relief of the organic-based symptoms caused by these conditions often ameliorates the patients’ anxiety. Acute alcohol withdrawal, rapid tapering of corticosteroids, and side effects of bronchodilators can cause symptoms of anxiety. Metoclopramide use is frequently associated with negative emergent akathisia resulting in a patient’s feeling anxious. Anxiety may also be preexisting and should be managed as any other comorbid medical condition.\(^8^\)

Even when patients are adequately treated, the thought that pain relief will not be available at the end of life causes some to have great anxiety. Abandonment by their physicians, families, or friends, as well as fear of dying alone, is another source of symptomatic anxiety at the end of life.

Anxiety at the end of life is the reason to conduct research to evaluate novel treatment modalities. The US Food and Drug Administration is currently permitting a Phase II dose-response pilot study of “3,4-methylenedioxymethamphetamine (street drug Ecstasy). The study goal is to evaluate this medication’s effectiveness in reducing anxiety and bringing about a sense of calm in

Leleszi and Lewandowski • Pain Management in End-of-Life Care

JAOA • Supplement 1 • Vol 105 • No 3 • March 2005 • 57

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**Total Pain—Interpersonal Interactions**

An interpersonal conflict influences the development of pain as much as any other aspect of total pain (Figure 4). Families and individuals who coped well before end of life may require little additional support, but patients in families with marital discord or other conflicted relationships may experience total pain. Mounting financial stress along with family discord may cause additional disharmony. The loss of status within the workplace or in the family can intensify pain symptoms. Whereas analgesic medication and anxiolytics cannot quell the pain of interpersonal conflict, counseling often can be of assistance. Patients at end of life can achieve comfort and a sense of completion in personal relationships by physicians’ addressing Byock’s five key points5:

- “I forgive you.”
- “Forgive me.”
- “Thank you.”
- “I love you.”
- “Goodbye.”

**Total Pain—Nonacceptance**

Acceptance at the end of life is the self-acknowledgment of the imminence of death. Buckman’s Three-Stage Model of the Process of Dying offers a guide for physicians to anticipate how patients accept their finality in terms of personal spirituality (pp144-146) (Figure 4). In the ini-
In the initial stage, the patient has awareness of the definitive reality that the disease process will possibly result in death. Reactions to such awareness are characteristic of the individual’s basic personality and may include fear, shock, anger, guilt, and vacillation between hope and despair.

In the middle stage, most patients resolve their anger and denial. Depression is common in this stage as individuals are aware they will indeed die, but they do not view death as immediate. Supportive family and friends are helpful if the dying persons do not have negative interpersonal conflicts. Others in this intermediate stage have an intensified positive emotional resolve.

The third stage is defined by dying individuals’ acceptance of the imminence of their death. Nonacceptance is evidenced by intense distress with the proximity of death and is a source for increased total pain. This model is helpful for physicians who may anticipate the need for support of patients at the end of life.

Spirituality is a function of personal values, not specific religious tenets. Hay provides a spiritual model that is compatible with medical constructs for good end-of-life care. There are four versions of individual spirituality according to Hay:
figure 6. suggested references.

- spiritual suffering is the presence of interpersonal or intrapsychic pain.
- inner resource deficiency is defined as having diminished spiritual capacity.
- belief system problem is a lack of conscious awareness within a personal-meaning system.
- specific religious requests that are made by some individuals at the end of life assist them in obtaining a sense of spiritual well-being.

pain management in end-of-life care

Effective pain management at the end of life applies the concept of total pain. Before physicians prescribe analgesics, an assessment is required to determine the nature of the pain. They must treat patients for reversible physical causes and address interpersonal and spiritual pain. Analgesics will be most effective if physicians explore all components of total pain.

Opioids are often the medication of choice for end-of-life pain. They are safe and effective for the treatment of patients with moderate to severe pain, and they have side effects that can be managed effectively. 3(p17)

Myths continue to limit the use of opioids. Physicians often avoid using opioids fearing the addiction of their patients. Addiction is known psychiatrically as substance abuse, a condition defined by the DSM IV-TR as a maladaptive pattern of substance use manifested by recurrent and significant adverse consequences related to the repeated use of the substance. 7(p198)

Patients’ pre-opioid state—not merely exposure to opioids—determines their potential for opioid abuse. Active substance abusers requiring end-of-life pain management challenge the most tolerant of medical care systems. Analgesic therapy must be given until death. Physical dependence must also be medically managed during dying. 8(pp32-37)

Patients and their families may delay the use of opioids fearing their use foretells imminent death, and patients may fear that opioid use early in their care will diminish the effectiveness of such medication. It is the responsibility of physicians to counsel patients that this result will not be allowed to occur. Dose adjustment, appropriate monitoring, and management of adverse reactions must continue for all patients. 3(pp25-33)

Nausea, sedation, and pruritus, are common temporary side effects of opioids 10(pp81-86) and usually resolve in 3 to 5 days. 1 Antihistamines such as diphenhydramine and hydroxyzine are effective for treating patients for nausea and pruritus. 11(pp81-86) The elderly may experience confusion, hallucinations, and cognitive impairment with opioid use. A different opioid at a lower dose may help; however, advancing disease may be the cause of confusion in the elderly. 3(p32)

Constipation is the most frequent side effect with sustained opioid therapy and should be anticipated and prevented. Constipation may cause bowel obstruction. The liberal use of laxatives, hydration, and exercise facilitate bowel function with ongoing opioid therapy. 3(pp35-39) Herrmann 12 suggests that osteopathic manipulative treatment has a definite role in the prevention and treatment of postoperative adynamic ileus. Intermittent pressure applied to the lower thoracic and lumbar spine with the patient in the supine position for approximately 2 minutes every 2 hours is effective.

Opioid overdose is rare. Signs of opioid toxicity include myoclonus and respiratory depression. Physicians should consider opioid toxicity when patients’ level of consciousness declines and respirations are fewer than 6 per minute. These conditions may also represent disease progression or active dying. Other physical signs of opioid toxicity are myoclonic twitching, constricted pupils, and skeletal muscle flaccidity with cold or clammy skin. 3(pp25-27,40)
Osteopathic physicians should incorporate osteopathic principles into their management of total pain in patients at the end of life.

Comment
Good pain management at the end of life need not be daunting for patients and physicians. Physicians will encounter patients at end of life regardless of their type of specialty practice. Knowledge of total pain concepts incorporated into end-of-life pain management offers much to patients and their physicians. Osteopathic principles and osteopathic manipulative treatment should be integrated into quality pain management for all patients at the end of life.

Figure 6 provides some helpful resources for end-of-life care.

References