Patients with cancer commonly experience pain, which typically is controlled pharmacologically. Despite advances in pain management, pain continues to be undertreated. Nonpharmacologic measures may effectively manage pain but often are overlooked or underused. Nurses who are familiar with simple, noninvasive, nonpharmacologic measures, such as patient positioning, thermal measures, massage therapy, aromatherapy, and mind-body therapies, can identify and educate patients who may benefit from nonpharmacologic interventions.

The goal of pain management is to provide pain relief. Although many guidelines are available to clinicians and patients, cancer-related pain continues to be undertreated (Lorenz et al., 2006). The American Pain Society asserted that the greatest barrier to pain management is inadequate pain assessment (Clark, 2005). Other factors include lack of knowledge about effective treatment strategies, nonadherence to treatment guidelines, and inadequate coverage and reimbursement for certain pain treatments. In addition, patients sometimes receive suboptimal pain management because they are reluctant to report pain, experience adverse analgesic side effects, or fear addiction or drug tolerance. Patients who believe that pain is an expected part of the cancer experience may minimize their pain or deny its existence (Davis & Walsh, 2004; O’Malley, 2005). Furthermore, pain is a multidimensional experience that is intertwined with and influenced by other symptoms, such as depression and fatigue. Consequently, the cancer-related pain experience varies among patients and is not well understood (McGuire, 2004).

Cancer-related pain results from at least one of three basic causes: direct tumor involvement of organs, tissues, or bone; cancer treatment effects (e.g., surgery, radiation therapy, chemotherapy); and mechanisms unrelated to cancer or its treatment (Kocoglu, Pirbudak, Pence, & Balat, 2002).

Four general approaches are used to manage cancer-related pain: modifying the source of the pain, altering the perception of pain, modulating the transmission of pain to the central nervous system (CNS), and blocking the transmission of pain to the CNS (Levy & Samuel, 2005). Systemic pharmacologic management, which relies on analgesics and adjuvant agents, such as antidepressants, neuroleptics, and corticosteroids, incorporates the first three approaches to control cancer-related pain (Lussier, Huskey, & Portenoy, 2004).

Pain also may be managed with nonpharmacologic interventions. The goal of nonpharmacologic pain management is to decrease patients’ perceptions of pain by reducing pain intensity and increasing pain tolerance, increasing adaptive pain behavior, and decreasing maladaptive pain behavior (e.g., excessive use of medications, attention seeking, social isolation). In addition, healthcare providers try to increase their perceptions and understanding of patients’ pain and improve their responses to that pain (Titler & Rakel, 2001).

Often, a combination of approaches is needed for patients to obtain optimal pain relief. Nurses play an important role in educating patients about nonpharmacologic approaches and may be involved in providing or facilitating use of nonpharmacologic interventions. Pain relief and pain management must be nursing priorities. Patients experience improved quality of life when pain is controlled and are more likely to manage other aspects of their daily lives successfully.

Nurses recognize the importance of administering pain medications but may overlook other potentially helpful approaches. Likewise, some patients rely solely on pain medications or...
injections to relieve pain and lack knowledge about, or are reluctant to use, nonpharmacologic measures. Nurses who are knowledgeable about nonpharmacologic measures can identify and educate patients who may benefit from their use and, when applicable, provide measures or refer patients to other health-care providers to obtain them.

Although many nonpharmacologic measures have been purported to help ease pain, few have been studied scientifically. When data are lacking, nurses must assess nonpharmacologic measures using a risk-benefit model. Assessment must be individualized because potential risks and benefits vary from patient to patient. Furthermore, measures may promote a patient's comfort at one point in time and cease to be effective later because pain is a subjective experience that changes over time and is influenced by many cofactors. The process of assessing a patient’s pain and response to the measures should be ongoing.

Menefee and Monti (2005) categorized adjuvant comfort measures for managing cancer-related pain as nonpharmacologic or complementary approaches (see Table 1). Despite popular use of complementary and alternative medicine (CAM) to relieve cancer-related pain, very few randomized, controlled clinical trials with adequate power, duration, and sham control have been conducted. Bardia, Barton, Prokop, Bauer, and Moynihan (2006) reviewed 18 randomized clinical trials of CAM therapies for cancer-related pain that included acupuncture, support groups, hypnosis, relaxation and imagery, and herbal supplements and concluded that “none can be recommended because of a paucity of rigorous trials” (p. 5457).

Numerous nonpharmacologic and CAM approaches to relieve cancer-related pain exist; this article focuses on simple, noninvasive, commonly used nonpharmacologic pain management measures, including positioning, thermal measures, massage therapy, aromatherapy, and mind-body therapies (MBTs). Most patients benefit from those low-risk measures.

| Table 1. Nonpharmacologic and Complementary Approaches to Cancer Pain Management |
|-------------------------------|-----------------------------------------------|
| **APPROACH**                  | **EXAMPLES**                                  |
| Physical modalities           | Rehabilitative treatment                      |
|                               | Therapeutic exercise                          |
|                               | Application of heat or cold                   |
|                               | Transcutaneous electrical stimulation         |
| Psychological interventions   | Cognitive-behavioral therapy                  |
|                               | Relaxation                                    |
|                               | Meditation                                    |
|                               | Hypnosis                                      |
|                               | Music therapy                                 |
|                               | Biofeedback                                   |
|                               | Systematic desensitization                    |
| Complementary modalities      | Traditional Chinese medicine                  |
|                               | Acupuncture                                   |
|                               | Qigong                                        |
|                               | Hypnosis                                      |
|                               | Therapeutic massage                           |

*Note: Based on information from Menefee & Monti, 2005.*

Positioning

Patients experiencing weakness, fatigue, or impaired nervous or musculoskeletal system functioning often require assistance to attain and maintain proper body alignment. Correct patient positioning and repositioning help maintain body alignment, prevent or alleviate pain, reduce the risk of injury, and prevent pressure ulcers (see Table 2). Repositioning also provides sensory, motor, and cognitive stimulation (Potter & Perry, 2004).

Although nurses are taught techniques to position, move, and transfer patients, emphasis is placed more often on nurses’ body mechanics and potential for back injuries than on the importance of correct therapeutic positioning of patients (Griffiths & Gallimore, 2005). Nurses should assess patients’ body alignment and comfort level when they first approach patients to acquire baseline information that can be used to improve positioning and comfort. Nurses also need to assess for risk factors that contribute to complications associated with immobility, such as sensory deficits or paralysis, circulation impairment, or very young or older age. Equipment use (e.g., infusion pumps) and the presence of incisions and drainage or infusion tubes should be noted. Nurses should assess patients’ level of consciousness and cognition to determine patients’ ability to help with movement and repositioning (Potter & Perry, 2004). Nurses may want to review proper patient positioning and share the knowledge with colleagues and nursing assistants. Inpatient, outpatient, and home care nurses also can teach proper patient positioning to patients, family members, and other caregivers.

Bed-confined patients need to be assessed frequently and turned every two hours to promote comfort and help prevent pressure ulcers. Patients at high risk for developing pressure ulcers are likely to benefit from higher specification mattresses, such as egg crate, memory foam, or gel mattresses, which have low air loss compared to standard hospital foam mattress. Constant low- or alternating-pressure mattresses, which have bladders or cells that maintain low pressure or alternate pressure, are not significantly better at preventing pressure ulcers than standard hospital mattresses and frequent body repositioning (Cullum, McInnes, Bell-Syer, & Legood, 2004).

Patient positioning is not exclusive to hospitals and homes; patients in outpatient facilities also should be positioned properly, especially during long-duration treatments. Simply reclining a treatment chair a few more degrees or placing an additional pillow under a patient’s head, lumbar spine area, or arm (for peripherally administered treatments) can promote comfort. Other comfort strategies include encouraging patients to use their own pillows when hospitalized, straightening or changing bed linens, moving patients up in bed when they slide down to the foot of the bed, ensuring proper body alignment and extremity positioning, and using positioning aids, such as pillows or commercially available positioning pads and wedges (see Table 3).

Thermal Measures

Thermal measures may help to reduce pain by alleviating joint and muscle aches and providing comfort. Heat therapy increases blood flow to the skin, dilates blood vessels, increases oxygen and nutrient delivery to local tissues, and decreases joint stiffness by
increasing muscle elasticity. Many patients with chronic pain in a particular area of the body, such as the hip, use some form of heat application at home and experience varying degrees of success (Chandler, Preece, & Lister, 2002). Heat has been studied most extensively in the treatment of lower back pain; moderate evidence exists in a small number of trials that superficial heat application provides short-term pain reduction in patients with back pain (French, Cameron, Walker, Reggars, & Esterman, 2006). In a pilot study of 49 older adults experiencing mild pain, the application of a warmed blanket for one hour significantly decreased patients’ level of discomfort (Robinson & Benton, 2002).

Nurses should consider the benefits of heat application for select patients. For instance, local application of heat to the lower back or a joint may be helpful for patients feeling pain in those areas. A warmed blanket might enhance comfort for patients who are cold or experiencing chills. Heat and elevation are indicated as pain management when nonvesicant fluids infiltrate areas. A warmed blanket might enhance comfort for patients who are cold or experiencing chills. Heat and elevation are indicated as pain management when nonvesicant fluids infiltrate areas that have damaged tissue because of radiation, decreased circulation, or increased sensitivity to cold.

### Table 2. Patient Body Positions

<table>
<thead>
<tr>
<th>POSITION</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fowler’s</td>
<td>Elevate the patient’s bed from 45°–60° so that the patient’s knees are raised slightly. The position flexes and aligns the patient’s hips.</td>
</tr>
<tr>
<td>Supine or dorsal recumbent</td>
<td>Instruct the patient to lie flat, and flex the patient’s elbows slightly to control shoulder rotation.</td>
</tr>
<tr>
<td>Lateral</td>
<td>Instruct the patient to lie flat and then turn to the side. Flex the knee not on the mattress slightly and use a pillow or positioning pad to support it. Flex the arms slightly.</td>
</tr>
</tbody>
</table>

Note. Based on information from Marklew, 2006; Potter & Perry, 2004.

### Table 3. Patient Positioning Aids

<table>
<thead>
<tr>
<th>POSITIONING AID</th>
<th>USE AND TECHNIQUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Footboard</td>
<td>Allows the plantar surfaces of the feet to dorsiflex and helps prevent foot drop. Place perpendicular to the mattress.</td>
</tr>
<tr>
<td>Foot boots</td>
<td>Keep the feet in a dorsiflexed position to prevent foot drop. Remove two to three times daily to assess skin integrity and joint mobility.</td>
</tr>
<tr>
<td>Trochanter roll</td>
<td>Prevents external rotation of the hips when the patient is lying in a supine position. Fold a cotton bath blanket lengthwise to a width that extends from the greater trochanter of the femur to the knee until the patient’s thigh is in a neutral position or in an inward rotation so that the patella of the knee faces upward.</td>
</tr>
<tr>
<td>Hand roll</td>
<td>Maintains the hand in a functional position. Place a rolled washcloth or other comfortable material so that the thumb is in slight adduction and in opposition to the fingers.</td>
</tr>
</tbody>
</table>

Note. Based on information from Marklew, 2006; Potter & Perry, 2004.

Cryotherapy may be indicated as an adjuvant measure for patients with cancer who have headaches or soft tissue injuries. Cryotherapy should not be used in areas that have damaged tissue because of radiation, decreased circulation, or increased sensitivity to cold.

### Massage Therapy

Massage therapy involves systematic, manual manipulations, such as rubbing, kneading, or rolling soft tissue (i.e., muscles, tendons, ligaments, and fascia). It improves patients’ range of motion, decreases the pain threshold, relaxes muscles, and improves circulation and lymphatic drainage. Massage also has biochemical effects; it increases dopamine levels and lymphocyte and natural killer cell production (Calenda, 2006; Corbin, 2005).

In a large outcome study of 1,290 patients, massage therapy decreased symptom scores (including pain) by half, even for patients who had high baseline scores (Cassileth & Vickers, 2004). In addition, two small studies, one conducted at a hospital and the other at a hospice, reported significantly decreased mean scores for pain intensity after patients with cancer-related pain received massage. Patients also reported improved sleep quality (Smith, Kemp, Hemphill, & Vojir, 2002; Wilkie et al., 2000).

Results of small studies (Grealish, Lomasney, & Whiteman, 2000; Stephenson, Dalton, & Carlson, 2003; Stephenson, Weinrich, & Tavakoli, 2000) found that foot reflexology significantly decreased pain and anxiety in patients with cancer. Most patients, however, experienced only an immediate positive effect rather than a continued effect. Foot reflexology is an adjunctive human touch therapy that is noninvasive, does not require special equipment, and does not interfere with patients’ privacy.

In a study of 60 nursing home residents, comfort levels improved for 35 residents who received hand massage and no change in comfort level was observed among the comparison...
group (no hand massage) (Kolcaba, Schirm, & Steiner, 2006). Researchers concluded that hand massage is a comfort intervention that conveys caring through touch, individual attention, and presence (Kolcaba et al.). Staff members or volunteers in some outpatient clinics offer hand massages using unscented lotions to patients while they wait for or undergo treatment.

Risks associated with massage are low (Lafferty, Downey, McCarty, Standish, & Patrick, 2006). Therapeutic massage should be performed by a licensed massage therapist or certified reflexologist who is familiar with the clinical history of the patient. Patients who have undergone lymph node dissection, have metastatic disease in the lymph nodes, or have thromboses or emboli in the legs should not receive massage therapy in those areas (C. Lee, personal communication, August 23, 2006).

Increasingly, patients seek massage therapy on their own and healthcare providers recommend it. In addition, several hospitals provide therapeutic massage as a complementary therapy. Practice guidelines for use of massage in patients with cancer experiencing pain should be developed. Clinicians need to use their judgment to identify patients who may benefit from massage therapy.

Aromatherapy

Aromatherapy, which often is performed in conjunction with massage therapy, is the use of aromatic essences or scents (usually pleasant-smelling botanical oils) to improve mood or physical symptoms. A Cochrane review noted that aromatherapy massage confers short-term benefits on the psychological well-being of patients with cancer, with limited evidence of anxiety reduction (Fellowes, Barnes, & Wilkinson, 2004). Mixed evidence exists regarding whether aromatherapy enhances the effects of massage; larger trials are needed to further evaluate the combined therapy (Fellowes et al.). In a pilot study of 29 patients with cancer (Wilcock et al., 2004), no statistical difference was observed in mood, quality of life, and symptom scores of patients who received aromatherapy massage compared with patients in the control group; however, all of the patients who received aromatherapy massage wished to continue receiving the therapy (Wilcock et al.).

Occasionally, aromatherapy is used alone. Although aromatherapy long has been used as a traditional medicine, it has not been studied extensively. Six small studies of aromatherapy suggested that it has a mild, transient relaxation effect (Cooke & Ernst, 2000). Emerging evidence suggests that inhaled essential oils enter the bloodstream and, in animal models, exert a pharmacologic effect by stimulating the production of endorphins and norepinephrine (Perry & Perry, 2006).

Because aromatherapy targets the olfactory sense, it may not be a suitable therapy for patients experiencing nausea or other conditions in which smells may be noxious. Aromatherapy applied directly to the skin, such as an essential oil used as a lubricant during a massage, may cause skin irritation for some patients. The National Association for Holistic Aromatherapy (2006) has developed educational standards, identified qualified schools, and delineated a scope of practice for aromatherapy.

Mind-Body Therapies

MBTs refer to an array of treatment modalities that are based on interaction between the brain and body systems. Some MBTs include relaxation, aromatherapy, meditation, hypnosis, and imagery. Although emerging evidence suggests that MBTs influence physiologic function and clinical outcomes, MBTs have not been incorporated into routine practice. MBTs are overlooked in many clinical encounters, underemphasized in medical and nursing education, and infrequently reimbursed by third-party payers (Astin, Shapiro, Eisenberg, & Forys, 2003). In 2002, more than 30% of the adult U.S. population used meditation, stress management, relaxation response, autogenic training, hypnosis, imagery, biofeedback, or another relaxation technique such as prayer (Wolsko, Eisenberg, Davis, & Phillips, 2004). Further research is needed, however, to examine the role of MBTs in pain management, elucidate the risks and benefits of these therapies, and determine their cost-effectiveness.

Relaxation

Relaxation therapy teaches patients how to focus on soothing images, tense and release muscles, and breathe deeply. A variety of techniques have been developed to induce a relaxation response; generally, relaxation is self-induced or guided by another person or an audio recording. One of the most common techniques is progressive muscle relaxation, whereby patients alternately contract and relax major muscle groups (Astin et al., 2003).

A review of nine randomized trials found that relaxation was effective in treating chronic pain in only three studies and that relaxation was more effective in treating acute pain (e.g., pain associated with diagnostic and treatment procedures) than chronic pain (Redd, Montgomery, & DuHamel, 2001). No known risks are associated with relaxation, which is easily learned and performed. Relaxation often is combined with other interventions, such as music therapy or meditation (Menefee & Monti, 2005).

Meditation

Meditation, also referred to as mindfulness-based stress reduction (MBSR), facilitates moment-to-moment conscious awareness. MBSR uses a cognitive method of focused breathing or repetition of words, phrases, or prayers. Patients learn to respond to their increased awareness and focus on nonjudgmental, accepting thoughts (Menefee & Monti, 2005). MBSR often leads to a state of relaxation and observant detachment that is similar to a decreased sympathetic nervous system (i.e., reduction in oxygen consumption and decreased heart rate, galvanic skin resistance, and blood flow). Upon completion of an eight-week MBSR program, patients with breast or prostate cancer experienced improved immune system markers (Carlson, Speca, Patel, & Goodey, 2003). MBSR may be used in conjunction with other practices, such as yoga or music therapy. Although most research has focused on the effect of MBSR on stress and anxiety, it may be a helpful adjuvant measure for managing cancer-related pain.

Hypnosis

Hypnosis uses attentive receptive concentration to modify patients’ senses and induce a state of psychological alteration, decreased peripheral awareness, and minimal motor function (Monti & Yang, 2005). Neurobiologic studies have documented that hypnosis induces changes in brain activity and suggested
that hypnosis is an altered state of consciousness (Rainville & Price, 2003). However, the ability to achieve a hypnotic state varies among patients and is influenced by patients’ underlying skills, attitudes, hypnotic suggestibility, and expectations (Benham, Woody, Wilson, & Nash, 2006). Barrett (2006) asserted that hypnosis often is discarded as a potential therapy by patients because of the negative portrayal of hypnosis in film and television. Valente (2006) noted that most nurses lack knowledge about the clinical effectiveness of hypnosis but are in a key position to learn and use hypnosis with patients.

When hypnosis is used to relieve pain, it is called hypnoanalgesia or hypnotically induced analgesia. Hypnotherapists give patients simple suggestions to experience their pain in a different way. The goal of therapy is to alter patients’ perceptions and reduce pain and anxiety.

A meta-analysis of 18 studies of variable quality revealed a moderate to large hypnoanalgesic effect; however, various types of pain were studied, such as arthritis, dental, and procedure-related pain (Montgomery, DuHamel, & Redd, 2000). A review of 27 journal articles (one randomized, controlled trial; an observational study; and 24 case studies) on hypnotherapy for treating symptoms in patients with cancer (including pain) noted that study quality was poor and heterogeneity of the patients prohibited evaluation of the information presented; the authors concluded that scientifically sound hypnosis research is needed (Rajasekaran, Edmonds, & Higginson, 2005).

Imagery

Imagery is the process of using visualization and imagination to help elicit relaxation and self-awareness. The word “imagery” can be misleading; in this context, it refers to not only visual images but also auditory, olfactory, taste, and other sensations as well. The rationale behind the technique is to have the body respond to nonverbal suggestions. For instance, by creating images of lying on a warm beach, patients can be encouraged to hear the sound of the ocean and feel the warmth of the sun, even though they are not physically at a beach.

Most of the literature pertaining to guided imagery describes the technique and offers suggestions for imagery scripts. A review of six randomized trials of guided imagery as an adjuvant cancer therapy found that poor reporting, heterogeneous populations, interventions, and outcome measures of the trials precluded aggregating the data for analysis. Three of the studies reported a significant improvement in patients’ comfort; however, further research is needed (Roffe, Schmidt, & Ernst, 2005).

Risks

Inappropriate use of MBTs can be harmful for some patients. For instance, therapies may worsen already unstable psychiatric conditions for patients. In addition, patients who use MBTs and have unfavorable clinical outcomes may believe that the therapies negatively affected them. Lastly, patients who delay or forgo effective cancer pain treatment in favor of MBTs may experience ineffective pain management. As Wolsko et al. (2004) noted, “the high prevalence of mind-body therapy use leaves room for substantial amounts of indirect harm and/or guilt to arise” (p. 48).

Summary

Given the current level of evidence and risk-benefit considerations, some nonpharmacologic interventions used to manage cancer-related pain may be appropriate for patient use. Patient positioning, thermal therapy, massage therapy, aromatherapy, and MBTs may be effective adjuvant cancer-related pain management measures. Use of nonpharmacologic measures should be determined by patients’ pain characteristics (e.g., intensity, location, duration, etc.), clinical condition and considerations (e.g., concurrent treatments or presence of functional impairments), and receptiveness to using nonpharmacologic pain management measures. Nurses play an important role in assessing patients’ pain, exploring patients’ use of or interest in nonpharmacologic pain management measures, educating patients, and advising patients to use evidence-based measures rather than unproven pain management interventions.

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