Article

Update on Research-Based Interventions for Anxiety in Patients With Cancer

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Anxiety may begin at the moment a person is diagnosed with cancer and may fluctuate throughout the cancer trajectory as physical illness improves or declines. The purpose of this article is to present current evidence for nurses to implement interventions to reduce anxiety in patients who have cancer. The PubMed and CINAHL® databases were searched to identify relevant citations addressing interventions that treat or prevent anxiety symptoms in patients with cancer. Based on available evidence, the interventions addressed herein are categorized according to the Putting Evidence Into Practice (PEP®) rating schema. Interventions include pharmacologic and nonpharmacologic approaches to care, and meet criteria for three PEP categories: likely to be effective, effectiveness not established (the largest category of results), or effectiveness unlikely.

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Oncology nurses may hear or utter the words "you have cancer" every day while working in oncology clinics. The nurse compassionately considers patients' responses to that phrase and may ponder what effective actions are available to alleviate the inevitable anxiety, fear, or panic that patients and families experience. The purpose of this article is to highlight the latest evidence for nursing interventions that prevent or lessen anxiety among patients with cancer. The current article is a supplement to a broader undertaking wherein the body of evidence to support interventions across the spectrum of symptom management was explored (Eaton & Tipton, 2009). The goal is for oncology nurses to have ready access to resources to guide patients through anxiety management.

Anxiety, a predictable response to a cancer diagnosis, occurs in varying degrees and may increase as the disease progresses or as treatment becomes more aggressive or more debilitating (Breitbart, 1995). Investigators have found that 44% of patients reported some form of anxiety and 23% reported significant anxiety (Schag & Heinrich, 1989; Stark et al., 2002). The risk of developing anxiety disorders may represent a threat to patients' social roles, relationships, and ideas about future health, plans, and goals. The risk increases during cancer treatment when the following factors exist: a history of anxiety disorder, severe pain, anxiety at the time of diagnosis, functional limitations, a lack of social support, advancing disease, or a history of trauma (National Cancer Institute, n.d.).

Nurses have a unique role in the cancer setting. Patients may be reluctant to talk with oncologists about personal fears and anxiety after a cancer diagnosis. However, patients often talk with a nurse while sitting in the infusion chair or waiting for the oncologist to arrive in the examination room. Oncology nurses are encouraged to be visible, articulate advocates for timely and effective assessment of psychosocial concerns in cancer care. Oncology nurses provide supportive care, assess psychosocial concerns, and pursue referral for significant concerns or changes in physical, emotional, and spiritual functioning (Sheldon, Harris, & Arcieri, 2012) even when they may not be formally trained in psychological or spiritual therapy. As a result, oncology nurses have a real and present responsibility to

understand relevant evidence and apply appropriate interventions to reduce patient anxiety.

Methods

The literature was reviewed for evidence of effective interventions for anxiety management among patients, survivors, and caregivers. Teams of nurse specialist volunteers, adept in oncology nursing science and research, applied a sound, scientific research lens to review and evaluate current evidence on cancer symptom management and intervention. The PubMed and CINAHL® databases provided 634 and 1,462 citations, respectively, of which 119 studies were retained for final review to develop anxiety-related Putting Evidence Into Practice (PEP®) resources.

Consistent with previous PEP program publications (Sheldon, Swanson, Dolce, Marsh, & Summers, 2008), this article continues to build the evidence; therefore, citations reflect research published from larger studies, meta-analyses, and systematic reviews. Newer evidence supports changes and modifications from previously published PEP recommendations. A detailed description of the methods used to extract literature for review and evaluation is reported separately (Johnson, 2014). The current article includes studies of anxiolytics for effectiveness on anxiety in patients with cancer.

Likely to Be Effective
- Coaching
- Cognitive-behavioral therapy
- Exercise
- Massage or aromatherapy massage
- Mindfulness-based stress reduction
- Music or music therapy
- Progressive muscle relaxation
- Psychoeducational interventions
- Supportive care or support interventions

Effectiveness Not Established

Pharmacologic Interventions
- Antidepressants: duloxetine, fluvoxamine, mirtazapine
- Anxiolytics: alprazolam, fluoxetine, midazolam, propofol, sertraline

Nonpharmacologic Interventions
- Communication and care coordination interventions provided by written information, media, or healthcare provider
- Complementary and alternative therapies
- Acupuncture
- Art and art therapy
- Caregiver or partner interventions
- Expressive writing
- Hypnosis or hypnotherapy
- Meditation
- Progressive muscle relaxation and guided imagery
- Reflexology
- Reiki
- Relaxation therapy, relaxation, and visual imagery interventions
- Structured rehabilitation services
- Virtual reality
- Yoga

Effectiveness Unlikely
- Orientation and information provision

FIGURE 1. Categories of Evidence and Interventions for Anxiety

Levels of Evidence

Although none of the literature reviewed strongly supported recommendations for practice, the reviews resulted in evidence categorized into (a) interventions likely to be effective for management, reduction, or elimination of anxiety; (b) interventions for which effectiveness was not established; and (c) interventions for which effectiveness is unlikely (see Figure 1).

Likely to Be Effective

Coaching: Two studies evaluated coaching using verbal and written prompts to identify needs. In the smaller study (N = 44), Shields et al. (2010) found that use of a prompt sheet by the nurse making the coaching phone call had no significant effect on anxiety. In the larger randomized, controlled trial (RCT) (N = 635), however, the prevalence of anxiety significantly decreased ($p < 0.01$) after coaching involving a needs checklist and telephone consultation (White et al., 2012).

Cognitive-behavioral therapy interventions: These approaches included activities such as relaxation training, goal setting, problem solving, education, peer communication, guided imagery, and physical activity, which showed mixed results for decreases in anxiety for individuals (Arving et al., 2007; Greer et al., 2011, 2012; Hopko et al., 2011; Kangas, Milross, Taylor, & Bryant, 2013; Pitceathly et al., 2009; Serfaty, Wilkinson, Freeman, Mannix, & King, 2012), in group settings (Ames et al., 2011; Boesen et al., 2011; Dolbeault et al., 2009; Korstjens et al., 2011), and in one group within a videoconferencing setting (Shepherd et al., 2006). Significant improvement in anxiety with cognitive-behavioral therapy interventions also were found in two meta-analyses (Naaman, Radwan, Fergusson, & Johnson, 2009; Osborn, Demoncada, & Feuerstein, 2006).

Exercise: Exercise programs involved physical activities, such as aerobic fitness, flexibility, and muscle strength, in home settings, self-managed patient programs, and individual and group sessions. Specifically studied for its effects on anxiety, exercise has shown mixed results, with some studies suggesting a significant improvement (Burnham & Wilcox, 2002; Courneya et al., 2007; Mehnert et al., 2011) and others showing no significant improvement (Kolden et al., 2002; Midtgaard et al., 2005, 2011; Thorsen et al., 2005). A meta-analysis exploring the effectiveness of exercise interventions on health-related quality of life found beneficial effects on anxiety at follow-up time intervals (Mishra et al., 2012). Exercise interventions were generally positive; however, further research is needed to explore various patient groups and phases of the cancer trajectory.

Massage or aromatherapy massage: Two systematic reviews investigating the impact of traditional massage therapy and aromatherapy massage on anxiety in patients with cancer revealed sufficient evidence to support the effectiveness of massage in decreasing anxiety (Fellowes, Barnes, & Wilkinson, 2008; Wilkinson, Barnes, & Storey, 2008); however, the evidence was insufficient to support the effectiveness of aromatherapy massage in decreasing anxiety. Several studies showed that massage

TABLE 1. Single Studies for Which Effectiveness Is Not Established

Study	Intervention	Sample	Findings
Gehring et al., 2012	Methylphenidate: a psychostimulant agent indicated for attention deficit hyperactivity disorder and narcolepsy	24 patients with primary brain tumors received immediate-release methylphenidate, sustained-release methylphenidate, or modafinil	Significant improvement in anxiety with use of either stimulant over time; did not achieve sample size recommended by power analysis. Further research is needed to examine effect of psychostimulants on anxiety.
Grob et al., 2011	Psilocybin: a psychedelic compound that metabolizes to psilocin and acts as a human hallucinogenic agent; studied in the treatment of anxiety and compared with placebo	12 patients with advanced stages of cancer	Significant improvement was noted in anxiety during three months. Large-scale studies are needed in patients with advanced cancer who experience anxiety and depression.
Lavigne et al., 2012	Gabapentin: anticonvulsant and analgesic adjunct; indicated for the treatment of seizures and chronic pain; studied for anxiety symptoms	12 breast cancer survivors receiving gabapentin 300 mg or 900 mg daily versus placebo	Gabapentin 300 mg daily was effective in reducing symptoms of anxiety. Large-scale studies are needed in patients with cancer to examine the effect on anxiety.
Liu et al., 2008	Body-mind-spirit therapy: a group therapy	Small sample size (N = 28) and attrition issues occurred in the intervention and control groups.	A significant reduction in anxiety was found in the intervention group.
Mañas et al., 2011	Pregabalin: anticonvulsant used to relieve neuropathic pain and used with other medications to treat some types of seizures	273 patients with breast, lung, or genitourinary cancer and cancer-related neuropathic pain who received pregabalin versus those who did not	A significant decrease in depression and anxiety was found in both groups. Limitations include between-group differences such as medication use and frequency.
Pilkington et al., 2006	Homeopathy: examining homeopathy for anxiety and anxiety disorders	195 patients analyzed in a systematic review	Limited evidence on the positive effects of homeopathy in anxiety
Post-White et al., 2003	Therapeutic touch: compared healing touch, massage therapy, or presence alone for management of physical symptoms and fatigue	164 patients with advanced-stage cancer undergoing active treatment	Massage therapy compared to presence alone significantly reduced anxiety.
Weller et al., 2008	Amadeus energy healing: a type of healing process using the hands and sacred symbols	14 women with stage III ovarian cancer undergoing treatment	A reduction in state and trait anxiety was found; however, no statistical values or methods were reported.

therapy significantly decreases anxiety immediately following the therapy session (Campeau et al., 2007; Hernandez-Reif et al., 2005; Jane et al., 2011; Kutner et al., 2008; Post-White et al., 2003; Sturgeon, Wetta-Hall, Hart, Good, & Dakhil, 2009). Only one study showed significant improvement in anxiety with the administration of aromatherapy massage (Wilkinson et al., 2007).

Mindfulness-based stress reduction: These interventions provide opportunities for self-expression, facilitate coping strategies, and encourage self-regulation. Several studies reported reduced anxiety or improved mood status (p range = 0.05–0.001) (Garland, Tamagawa, Todd, Speca, & Carlson, 2013; Hoffman et al., 2012; Monti et al., 2012; Würtzen et al., 2013), and Lengacher et al. (2012) reported an improved psychological symptom cluster involving distress, sadness, pain, and memory. However, the vast majority of studies evaluated female patients with breast cancer. Fewer than 16% of participants in one study were male and included patients with hematologic cancers and colon cancer (Garland et al., 2013). A systematic review and meta-analysis, with most studies involving women with breast cancer, reported a low to moderate significant effect in decreasing anxiety (Piet, Würtzen, & Zachariae, 2012). Study limitations included minimal participants with clinically significant anxiety at baseline and heterogeneity among the studies.

Music or music therapy: Several studies involving pediatric and adult patients suggest that listening to music prior to procedures, surgery, or chemotherapy can reduce anxiety (Bulfone, Quattrin, Zanotti, Regattin, & Brusaferro, 2009; Ferrer, 2007; Karagozoglu, Tekyasar, & Yilmaz, 2013; Li, Zhou, Yan, Wang, & Zhang, 2012; Lin, Hsieh, Hsu, Fetzer, & Hsu, 2011; Nguyen, Nilsson, Hellstrom, & Bengtson, 2010). Two systematic reviews and meta-analyses examined anxiety levels in experimental and control groups using music and found that anxiety decreased over time in both groups (Bradt, Dileo, Grocke, & Magill, 2011; Nightingale, Rodriguez, & Carnaby, 2013). One small RCT showed no significant difference in pre- and post-procedure anxiety or pain among patients undergoing cancer-related painful procedures (including tissue biopsy, hematoma evacuation, or insertion or removal of an access port) (Kwekkeboom, 2003), whereas another indicated anxiety reduction in patients with high anxiety prior to chemotherapy (Lin et al., 2011). Limitations of music-related studies include small effect and sample sizes, few that examined specific symptoms or outcomes, and varying interventions across studies.

Progressive muscle relaxation: Two RCTs examined effectiveness of progressive muscle relaxation on multiple variables, including anxiety (Chan, Richardson, & Richardson, 2011; Cheung, Molassiotis, & Chang, 2003). Progressive muscle relaxation

training and practice in relaxing each muscle group were found to decrease anxiety as patients monitored tension in specific body muscle groups, deliberately inducing and relaxing tension in each (Cheung et al., 2003).

Psychoeducational interventions: Educational information and support pertaining to topics such as symptom management, coping, communication, and stress management or relaxation training, known as psychoeducational interventions, were used to examine effects on physical and psychological variables, including anxiety (Chien, Liu, Chien, & Liu, 2014; Hirai et al., 2012; Naaman et al., 2009; Osborn et al., 2006). Results are mixed because significant reductions in anxiety were reported in several studies (Chan et al., 2011; Galway et al., 2012; Katz, Irish, & Devins, 2004; Kim et al., 2013; Liu et al., 2008; Targ & Levine, 2002; Williams & Schreier, 2004) and others reported no significant effects (Goerling, Foerg, Sander, Schramm, & Schlag, 2011; Jones et al., 2006; Krischer, Xu, Meade, & Jacobsen, 2007; Oh & Kim, 2010; Rawl et al., 2002; Schofield et al., 2008). However, four systematic reviews revealed small but significant reductions in anxiety after psychoeducational interventions (Chien et al., 2014; Hirai et al., 2012; Naaman et al., 2009; Osborn et al., 2006). Support for a single type of psychoeducational intervention and duration of effect is not established.

Supportive care or support interventions: Support interventions include provision of emotional support to patients individually, via telephone conferences, and via support groups facilitated by healthcare professionals or trained volunteers. Studies suggest support group interventions may significantly reduce anxiety in women with breast cancer (Cameron, Booth, Schlatter, Ziginskas, & Harman, 2007; Chujo et al., 2005). Examples of topics addressed in the studies are cancer education, social support, and role transitions (Badger, Segrin, Dorros, Meek, & Lopez, 2007); awareness of anxiety symptoms, stress management, coping, and problem solving (Chujo et al., 2005); spiritual needs, feelings, and emotions (Miller, Chibnall, Videen, & Duckro, 2005); and emotional support (Liao, Chen, Chen, & Chen, 2010). Results indicated a significant decrease in anxiety for patients throughout the cancer trajectory (Ando, Morita, Okamoto, & Ninosaka, 2008; Badger et al., 2007; Cameron et al., 2007; Chujo et al., 2005; Liao et al., 2010; Liu et al., 2008; Miller et al., 2005; White et al., 2012).

Effectiveness Not Established

Pharmacologic and nonpharmacologic interventions, including complementary and alternative therapies, have resulted in mixed findings. Limitations include sample size and study design. Interventions for which only a single study was found for review are shown in Table 1. Effectiveness is not established for the pharmacologic and nonpharmacologic interventions discussed in the following sections.

Pharmacologic Interventions

Antidepressants: Used as an adjunctive treatment for cancer-related pain, nausea, and vomiting, antidepressants are a class of medications intended to treat depression (Cankurtaran et

Patient Education: Anxiety Interventions

Anxiety is predictable and expected when you are told of a cancer diagnosis. Anxiety may begin at the moment the cancer diagnosis is given to you. The feelings of anxiety may get better or worse throughout the cancer journey as physical illness improves or declines. The goal is to be ready with actions that help you through anxiety management.

Recommended for Practice

The current research suggests several interventions that are likely to be effective for management, reduction, or alleviation of anxiety.

- Coaching
- Cognitive-behavorial therapy
- Exercise
- Massage or aromatherapy massage
- Mindfulness-based stress reduction
- Music or music therapy
- Progressive muscle relaxation
- Psychoeducational interventions
- Supportive care or support interventions

The research also suggests several interventions for which effectiveness is not clearly established.

- Antidepressants
- Anxiolytics
- Communication and care coordination
- Acupuncture
- Art and art therapy
- Supportive caregiver and partner intervention
- Expressive writing
- Hypnosis or hypnotherapy

The remaining approaches for managing anxiety in patients with cancer lack strong evidence to support use or to expect reliable results.

Note. Full Oncology Nursing Society Putting Evidence Into Practice information for this topic and description of the categories of evidence are located at www.ons.org/practice-resources /pep/anxiety. Users should refer to this resource for full dosages, references, and other essential information about the evidence.

al., 2008). Researchers evaluated antidepressants for effect on depression, anxiety, and sleep (Cankurtaran et al., 2008; Suzuki et al., 2011; Torta, Leombruni, Borio, & Castelli, 2011), revealing significant improvement in anxiety with mirtazapine, fluvoxamine, or duloxetine. The studies were limited by nonrandomized design and small samples. Results indicate antidepressants may be effective in the management of cancer-related anxiety, but larger RCTs are warranted.

Anxiolytics: Studies in this category contained design limitations or small sample size (i.e., less than 50 in multiple studies). Studies of alprazolam versus placebo or progressive muscle relaxation (Holland et al., 1991; Wald, Kathol, Noyes, Carroll, & Clamon, 1993) and fluoxetine versus placebo (Rasavi et al., 1996) resulted in no difference between groups on anxiety. An RCT of midazolam, propofol, or control reported decreased anxiety (Mentes, Unsal, Baran, Argun, & Ertunc, 2005), but the use of the measurement tool for anxiety was unclear. In addition, a small-sample study (N = 35) of sertraline resulted in a significant reduction ($p < 0.05$) in anxiety and anxious preoccupation (Torta, Siri, & Caldera, 2008).

Nonpharmacologic Interventions

Communication and care coordination interventions: Facilitating communication and coordinating care were explored as interventions to facilitate supportive cancer care and decrease anxiety, depression, and unmet needs (Girgis, Breen, Stacey, & Lecathelinais, 2009). Researchers examined a computer-assisted telephone interview among patients with breast and colorectal cancers. Patient feedback was provided by a caseworker or a physician at the next appointment. Results indicated that participants who worked with the caseworker (n = 120) were more likely to have referrals for unmet psychological needs ($p < 0.01$), including daily living, health service and information, and physical needs ($p < 0.01$). Participants who spoke with a physician (n = 119) reported fewer documented follow-up actions ($p < 0.0001$) compared to the caseworker group. No significant effect was found on anxiety with either model. Similarly, an RCT exploring the effect of patients' full access to the medical record on anxiety, quality of life, and satisfaction revealed no significant reduction in anxiety compared to those who requested access (Gravis et al., 2011).

In contrast, D'Souza, Blouin, Zeitouni, Muller, and Allison (2013) reported positive results after investigating the effect of tailored information to patients with advanced head and neck cancer. Tailored information included a patient booklet; interactive computer software that stored patient input; computer animation describing cancer spread, staging, and surgical procedures; and a take-home DVD for the purpose of educating patients about diagnostic and adjuvant procedures, nutrition, and speech and swallowing practice. Findings suggest a significant reduction in anxiety ($p = 0.001$) in the intervention group assessed at three and six months.

Studies exploring the role of the nurse in providing information and supportive care showed mixed results in effectiveness of reducing distress and improving coping (Ferrante, Chen, & Kim, 2008; Fukui, Ogawa, Ohtsuka, & Fukui, 2008; Skrutkowski et al., 2008). Ferrante et al. (2008) found that the use of a patient navigator improved timeliness of diagnosis, reduced anxiety, and increased satisfaction in a sample of urban minority women following a suspicious mammogram. Skrutkowski et al. (2008) found no significant reduction in distress symptoms in a group of patients with lung and breast cancers when a nurse coordinator provided information, support, and coping skills. Similarly, no significant reduction in anxiety was found in patients who participated in interviews with nurses who had completed a communication skills training program (Fukui et al., 2008).

Implications for Practice

- Explain to patients and family members that anxiety reactions are expected responses to a cancer diagnosis.
- Educate patients, friends, and family members about the importance of practicing interventions shown to be effective in reducing anxiety in patients with cancer.
- Encourage patients who practice interventions for which effectiveness is not established to report personal experiences in written format to share with healthcare professionals for future research purposes.

Complementary and Alternative Therapies

The following studies of complementary and alternative therapies related to anxiety have shown mixed results and incorporated small sample sizes that limit robust findings. Further randomized, large-scale studies are needed to confirm or clarify results.

Acupuncture: No significant effect on symptoms of fatigue, anxiety, or depression was found when acupuncture was performed following completion of chemotherapy (Deng et al., 2013; Molassiotis et al., 2013). Garcia et al. (2013) conducted a systematic review to evaluate the effectiveness of acupuncture for symptom control. Results indicated possible effectiveness for management of chemotherapy-induced nausea and vomiting but did not show acupuncture to be effective in the treatment of pain, fatigue, hot flashes, anxiety, depression, or insomnia.

Art and art therapy: Several studies examined the effect of art therapy sessions on anxiety in patients receiving oncologic therapy (Bar-Sela, Atid, Danos, Gabay, & Epelbaum, 2007; Lawson et al., 2012; Nainis et al., 2005; Thyme et al., 2009). Findings suggest that art therapy may help manage anxiety; however, the studies each had sample sizes ranging from 20–60 participants.

Caregiver and partner interventions: Studies exploring supportive care interventions provided to caregivers or partners of women with breast cancer suggest positive effect on anxiety (Cochrane, Lewis, & Griffith, 2011; Manne et al., 2005).

Expressive writing: Studies of expressive-writing interventions for effect on anxiety, fatigue, and depression (Jensen-Johansen et al., 2012; Mosher et al., 2012) suggested no significant reduction in anxiety.

Hypnosis or hypnotherapy: Hypnosis was examined for effects on anxiety, pain, or distress prior to surgery or bone marrow procedures (Schnur et al., 2008; Snow et al., 2012). One study (Schnur et al., 2008) conducted a hypnosis session 15 minutes before excisional breast biopsy; the other study (Snow et al., 2012) initiated the hypnosis session 15 minutes before the procedure and continued through completion of the procedure.

- Assess for increased risk for anxiety, such as history of anxiety disorder, severe pain, anxiety at the time of diagnosis, functional limitations, lack of social support, advancing disease, and history of trauma.
- Evaluate for signs and symptoms suggestive of anxiety, including insomnia, difficulty completing activities of daily living, poor concentration, and fatigue.
- Use validated assessment instruments, such as the National Comprehensive Cancer Network's Distress Thermometer, to evaluate the level of anxiety.
- Promote activities that are likely to be effective in managing anxiety, such as exercise or mindfulness-based stress reduction.
- Assist patients in identifying things that may induce anxiety, and provide support to effectively work through issues.
- Help patients establish specific strategies to address personal anxiety.
- Create a psychosocial referral list for clinical practice.
- Refer to evidence-based resources for specific interventions for anxiety at www.ons.org/practice-resources/pep/anxiety.

FIGURE 2. Nursing Interventions for Use in Identifying and Managing Anxiety

Findings suggest that a brief hypnosis intervention, minimally 15 minutes, significantly reduced anxiety and distress ($p < 0.001$ and $p = 0.026$, respectively).

Meditation: Studies examining meditation included small samples and show mixed results for effects on anxiety, depression, and stress reduction (Ando et al., 2009; Hidderley & Holt, 2004; Ramachandra, Booth, Pieters, Vrotsou, & Huppert, 2009).

Progressive muscle relaxation and guided imagery: Progressive muscle relaxation was shown as likely to be effective in reducing anxiety (Chan et al., 2011; Cheung et al., 2003). However, research exploring the benefits of adding guided imagery to progressive muscle relaxation therapy did not confirm improvement (Naaman et al., 2009; Nunes et al., 2007; Sloman, 2002).

Reflexology: The technique of applying pressure to areas of the feet and hands has been studied for effects on pain, anxiety, and depression and has shown positive effects on anxiety (Quattrin et al., 2006; Stephenson, Swanson, Dalton, Keefe, & Engelke, 2007). Other studies showed no effect of reflexology on anxiety (Sharp et al., 2010; Wyatt, Sikorskii, Rahbar, Victorson, & You, 2012).

Reiki: Two small studies examining the effects of Reiki revealed no change in anxiety (Birocco et al., 2012; Potter, 2007). However, Tsang, Carlson, and Olson (2007) conducted a pilot study administering Reiki to women with various types and stages of cancer and reported a significant reduction in anxiety.

Relaxation therapy and relaxation and visual imagery interventions: Deep-breathing interventions to achieve a sense of relaxation were examined for effect on fatigue, anxiety, and depression (Hayama & Inoue, 2012; Kim & Kim, 2005). Results were mixed. Adding visual imagery to relaxation therapy was shown to significantly decrease anxiety in one nonrandomized study with a small sample size (N = 66) (Serra et al., 2012).

Structured rehabilitation services: Provided by multidisciplinary teams, structured rehabilitation services were studied for their effect on ameliorating physical impairments (Hanssens et al., 2011; Khan, Amatya, Pallant, Rajapaksa, & Brand, 2012; Rottman et al., 2012). The studies revealed mixed results for anxiety: significant improvement (Hanssens et al., 2011; Rottman et al., 2012) or no change (Khan et al., 2012).

Virtual reality: Schneider and Hood (2007) examined virtual reality interventions, a process intended to create a physical presence in an imaginary environment. The intervention, used during chemotherapy, revealed no significant difference in distress or anxiety. Virtual reality gaming provided to a group of pediatric patients who were hospitalized and undergoing active treatment revealed a significant decline in anxiety and depressive symptoms (Li, Chung, & Ho, 2011).

Yoga: Several studies explored the effect of yoga interventions on stress, anxiety, depression, and sleep disturbances (Banerjee et al., 2007; Cohen, Warneke, Foulacli, Rodriguez, & Chaoul-Reich, 2004; Dhruva et al., 2012; Rao et al., 2009; Ulger & Yagli, 2010; Vadiraja et al., 2009). Mixed results and study design limitations preclude conclusions regarding yoga's effectiveness for decreasing anxiety.

Effectiveness Unlikely

Orientation and information provision: The process of sharing information about a facility or services to patients using print or electronic media was studied during orientation programs for its effect on anxiety and distress (Deshler et al., 2006; Hoff & Haaga, 2005; Schofield et al., 2008; Wysocki, Mitus, Komorowski, & Karolewski, 2012). In addition, two systematic reviews on information sharing provided nonsignificant effects on anxiety (Chan, Webster, & Marquart, 2012; Osborn et al., 2006).

Implications for Practice

The PEP anxiety team conducted a comprehensive review of the literature to identify interventions that can be applied to evaluating and treating anxiety in patients with cancer (see Figure 2). Moderate- and high-risk factors for patients were identified and can help guide nurses in determining which patients may benefit from closer evaluation or recommended interventions. Oncology nurses are encouraged to use assessment skills to evaluate patients for signs and symptoms of anxiety, with the understanding that patients generally have some level of anxiety at the time of diagnosis or early in treatment, which may decline over time without intervention. Effective communication is extremely important and should include patient education resources (see Figure 3). Oncology nurse responsibilities include reviewing and reinforcing educational materials.

Reported signs and symptoms suggestive of anxiety or depression may include insomnia, difficulty completing activities of daily living, poor concentration, or fatigue. Once signs and symptoms of anxiety are identified, validated assessment instruments are available. Effective instruments for comprehensive anxiety evaluation include the National Comprehensive Cancer Network's Distress Thermometer screening tool, the General Anxiety Disorder–7 scale, the Hospital Anxiety and Depression Scale, and the State-Trait Anxiety Inventory.

Several studies identified practice interventions likely to be effective in reducing anxiety in patients with a cancer diagnosis. Nurses may recommend complementary methods, such as exercise, massage, aromatherapy, music therapy, progressive muscle relaxation, or mindfulness-based stress reduction, in an

effort to reduce anxiety. Cognitive-behavioral therapy is likely to be effective for individuals or in group settings. Individual coaching or referral to support groups may provide benefit for some to reduce anxiety. Referral for psychological care may be warranted for patients with persistent anxiety.

Studies revealed mixed results for interventions historically applied in the treatment of anxiety, including pharmacotherapies and alternative therapies. A common characteristic among studies for which effectiveness was not established was poor design: nonrandomized studies, those conducted in small groups or with small sample sizes, or that otherwise did not meet criteria for likely effectiveness recommendation. Similarly, study participants may not have experienced clinically relevant anxiety levels at baseline or anxiety may have naturally improved over time. Additional research is needed in the area of pharmacotherapy to identify proper medications and dosages for patients with cancer and to develop recommendations for levels of anxiety requiring treatment. Large randomized, controlled studies are needed to explore complementary and alternative therapies, communication, and care coordination interventions that did not show effectiveness or that have shown mixed results in the literature.

American Psychosocial Oncology Society
www.apos-society.org/survivors/helpline/helpline.aspx
This member-based organization offers referrals for cancer survivors and families as well as fee-based information about cancer-related organizations, books, webinars, and videos.

American Psychosocial Oncology Society's Clinical Reference Guide to Psychiatric and Psychological Dimensions of Cancer Symptom Management
www.apos-society.org/professionals/tools-resources/handbook/handbook.aspx

Cancer*Care*®
www.cancercare.org
This organization offers support services to professionals, survivors, and caregivers at no charge. Counseling, support groups, workshops, publications, and financial assistance are offered.

National Cancer Institute
www.cancer.gov
This website offers a variety of resources for patient education, including a cancer library, cancer-related information, and electronic books for e-readers, smartphones, and tablets.

National Comprehensive Cancer Network Clinical Practice Guidelines
www.nccn.org/professionals/physician_gls/f_guidelines.asp
These guidelines can help healthcare professionals address treatment, risk reduction, age-related actions, and supportive care (e.g., distress management, survivorship).

National Comprehensive Cancer Network Guidelines for Patients
www.nccn.org/patients/guidelines/default.aspx
The site provides treatment information for 11 cancer types in language that is easy for patients and families to understand. It provides suggestions for caregivers and may help patients and families talk with health professionals with greater understanding.

National Institute of Mental Health
www.nimh.nih.gov/health/topics/index.shtml
Information is available on depression among patients with cancer. The site offers information on anxiety, other mental disorders, and prevention of mental conditions. Search for cancer anxiety to access details about depression and its link to cancer.

National Institute of Mental Health Brochure on Depression and Cancer
www.nimh.nih.gov/health/publications/depression-and-cancer/index.shtml
Available for download in English or Spanish; free print copies also are available.

FIGURE 3. Patient Education Resources

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