

Occupational Therapy and the Cancer Care Continuum: Adjusting Treatment Focuses

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ABSTRACT

Occupational therapy practitioners who work with cancer survivors must have a foundational understanding of how cancer and the associated treatments cause a changing trajectory of functional and cognitive abilities. This article begins with an overview of cancer and treatments, discusses associated precautions and side effects, and then describes how occupational therapy services must be tailored to the client needs and desires during three periods: (1) diagnosis and during active cancer treatments, (2) after cancer treatments and into extended survivorship, and (3) in the setting of advanced cancer. Recommended resources are included to assist clinicians in remaining current with their knowledge of oncology to apply to their occupational therapy practice.

LEARNING OBJECTIVES

After reading this article, you should be able to:

1. Determine an appropriate occupational therapy intervention approach based on where the client is on the cancer care continuum
2. Recognize that an individual's performance status is a key indicator used in oncology
3. Recognize physiological and psychosocial side effects associated with cancer and cancer treatments, and their effect on participation in occupations
4. Differentiate among leading oncology resources

INTRODUCTION

Cancer is a complex and chronic disease that affects millions of lives. In 2016, an estimated 15.5 million people were living in the United States with a history of cancer, and by January 1, 2026, estimates place this number at 20.3 million people (National Cancer Institute [NCI], 2018a). Unfortunately, cancer and the associated treatments have been shown to affect physical, cognitive, and emotional abilities across the cancer care continuum and lead to impaired functional performance and overall quality of life (Alfano et al., 2012; Silver et al., 2013).

Side effects such as pain, fatigue, and cognitive impairment may persist for months and years, even when disease free (Bender & Thelen, 2013; Glare et al., 2014; LaVoy et al., 2016; Silver et al., 2013).

Occupational therapy practitioners play a vital role in enhancing occupational participation by educating clients, families, and caregivers about anticipated changes in physical and cognitive functioning and how to manage these changes. This article provides a framework for understanding how occupational therapy services must be designed according to the needs of the client during three specific phases on the cancer care continuum: (1) diagnosis and during active treatments, (2) after cancer treatments into extended survivorship, and (3) in advanced cancer.

OVERVIEW

Defining Cancer

Cancer is the term used to describe a collection of diseases in which there is uncontrolled, abnormal growth of cells that have the ability to invade other tissues. As abnormal cells continue to divide uncontrollably, a neoplasm, also known as a tumor, is formed. However, not all neoplasms are cancerous. To be considered cancerous, the abnormal cells must also have the ability to invade other tissues. Neoplasms are classified as benign (non-cancerous), pre-malignant or carcinoma in situ, or malignant (cancerous).

CANCER TREATMENTS, PRECAUTIONS, AND SIDE EFFECTS

Over the past decades, there have been major advances in our understanding and medical management of cancer. The most common medical treatments for cancer are surgery, radiation therapy, and chemotherapy. Other treatments include hormone therapy, targeted therapy, and hematopoietic stem cell transplant.

Surgical Intervention

Surgical intervention, the most common intervention for solid tumors, may be indicated for various reasons: preventive, diagnostic and staging, curative, supportive, and palliative.

Precautions After Surgical Intervention

Precautions after surgical intervention depend on the location and extent of the surgery. In general, precautions include protecting the surgical wound(s), resting involved joint(s), and elevating and/or supporting involved area(s). If the digestive system is involved, there may be dietary precautions.

Potential Side Effects of Surgical Intervention

As with precautions, side effects of surgical intervention depend on the location and extent of surgery. Damage may occur to nerve and muscle tissues, potentially leading to weakness and sensory changes, or lingering complaints of pain. There may be loss of function, such as after an amputation. Physical changes in appearance may lead to negative psychological effects. There may be difficulty with scar tissue, including cording. If scarring occurs across a joint, there may be a loss of range of motion (American Cancer Society [ACS], 2017a; NCI, 2015d).

Radiation Therapy

Using high-energy radiation, the primary purpose of radiation therapy is to shrink tumors and kill cancer cells. There are three types of radiation therapy: external-beam, which is the most common; internal or brachytherapy; and systemic. External-beam radiation therapy includes 3-dimensional conformal radiation therapy, image-guided radiation therapy, and stereotactic radiosurgery. Internal radiation therapy, also known as brachytherapy, delivers radiation from sources placed inside the body. These sealed implants contain radioactive isotopes that may be low- or high-dose rate and may be temporary or permanent. Systemic radiation therapy is delivered through a radioactive substance that is swallowed or injected.

Precautions Associated With Radiation Therapy

External-beam radiation therapy only affects the body for a brief moment, and there is no radiation source in the body. Therefore, the person receiving external-beam radiation therapy cannot contaminate or transfer radiation to others and does not have precautions after treatment. This is not the case for internal and systemic radiation therapies.

Precautions for internal radiation may last a few days after treatment, whereas precautions for systemic radiation typically last longer. The length of time to follow precautions depends on the strength of dosing. In general, the person undergoing internal or systemic radiation therapy must maintain one arm's distance from other people who spend more than 2 hours in any 24-hour period near them; sleep alone; limit contact with infants, children, women who are pregnant, and pets; flush the toilet twice after each use; use separate utensils and towels; and have no kissing or sexual contact for at least 1 week.

Potential Side Effects of Radiation Therapy

Side effects of radiation therapy may occur during or in the days after treatment or develop months to years after treatment. Those occurring during treatment or in the days after are considered early adverse effects and include changes to radio-sensitive tissues, such as mucosa, stomach, small bowel, colon, vagina, and lymph nodes. Salivary glands may have permanent damage. Other early adverse effects include fatigue, which tends to worsen a couple of weeks after starting treatments, and red-

dening of the skin across the radiation sites, which may become permanent as darker pigmentation. Late adverse effects include radiation fibrosis, which is a change of normal tissue to scarred and restrictive tissue, and changes to organ functioning when radiation is across the chest (ACS, 2017b; Jaffray & Gospodarowicz, 2015; NCI, 2017).

Chemotherapy

Chemotherapy agents are cytotoxic, meaning they are toxic to living cells, and work by targeting rapidly growing and rapidly replicating cells. Cancer cells replicate more quickly than most normal cells, which is why chemotherapy is used in many cancer treatment plans. Unfortunately, chemotherapy agents do not distinguish cancer cells from other cells that rapidly grow and replicate, such as the lining of the stomach and intestines, hair follicle cells, and blood cells in the bone marrow, which contributes to side effects. Chemotherapy may be used as a curative, supportive, maintenance, or palliative treatment. It may be given orally, by injection (subcutaneous, intra-arterial, intravenous, or intraperitoneal), or topically. Patients may be admitted to a hospital to receive high-dose chemotherapy, but it is more common to receive chemotherapy in an outpatient clinic setting, and more recently through home health nursing services. It is also common for patients to have a peripherally inserted central catheter, a central line, or a port for the duration of the chemotherapy treatments.

Precautions Associated With Chemotherapy

As part of a systemic treatment, the toxins from chemotherapy agents are throughout and affect the whole body. Therefore, all blood and body fluids, including sweat and saliva, are toxic and must be avoided. General chemotherapy precautions last from the first dose through 48 hours after receiving the last dose and include: close the lid and flush the toilet twice every time; place soiled disposable undergarments in a sealed plastic bag; use paper towels to dry hands and discard the towels immediately; use separate towels, bed sheets, and other linens; and machine-wash soiled linens twice in hot water.

Along with causing toxins in all body fluids, high-dose and high-frequency chemotherapy causes drops in platelets, neutrophils, and red and white blood cell counts, leaving the person at a high risk for bleeding, infections, and complications. Therefore, along with general chemotherapy precautions, until blood cell counts are within a normal range for controlling bleeding and clotting, and for fighting infections, the individual must avoid injuries and exposure to pathogens, which includes bacteria, viruses, and fungi. These precautions remain until blood cell counts are within normal ranges. Always consult the client's oncologist for specific parameters and precautions. Occupational therapy practitioners are encouraged to use activity and task analyses to determine whether the environment or activity places the individual at an increased risk of exposure to pathogens or injury.

Potential Side Effects of Chemotherapy

Side effects of chemotherapy may begin immediately, which is an adverse reaction and an oncologic emergency, or they may develop in the days, weeks, months, or even years after treatment. Side effects may resolve in the weeks after treatment ends, or they may persist for months or years, even when the person is disease free. Multiple factors can lead to side effects, including the toxicity of the chemotherapy; effect on normal rapidly dividing cells; and changes to functioning of normal cells, which decreases the efficiency of organ systems. Numerous side effects are associated with chemotherapy, including nausea, emesis, constipation, diarrhea, taste changes, loss of appetite, skin sensitivities, loss of hair, fatigue, pancytopenia, cardiac changes, neuropathies, myopathies and weakness, pain, cognitive changes, and mood changes (ACS, n.d.; NCI, 2015a).

Hematopoietic Stem Cell Transplant (HSCT)

HSCT, also known as bone marrow transplant (BMT), is used to regenerate a new immune system. As advances continue to be made, there are more variations in the process of stem cell transplantation; however, the two overarching categories of HSCT are autologous (the person's own stem cells) and allogeneic (donor stem cells). For an autologous stem cell transplant, while the person is in remission from cancer, their stem cells are harvested from their blood or bone marrow and frozen. The person undergoes high-dose chemotherapy to eradicate their immune system and the previously harvested stem cells are then replaced. As with an autologous stem cell transplant, in an allogeneic stem cell transplant the person undergoes high-dose chemotherapy to eradicate their immune system, but then receives donor stem cells.

Precautions After HSCT

Precautions after an HSCT typically last 100 days for an autologous transplant and 1 year for an allogeneic transplant. The primary reason for precautions is that the individual has a newly forming, thus immature, immune system that is essentially less effective than a newborn child's. The primary focus of the precautions is to avoid exposure to pathogens, including bacteria, viruses, and fungi, as any exposure may quickly become life threatening. Occupational therapy practitioners are encouraged to use activity and task analysis to determine whether the environment or activity places the individual at an increased risk of exposure to pathogens or injury.

Potential Side Effects of HSCT

As the first part of undergoing an HSCT involves high-dose chemotherapy, side effects include those associated with chemotherapy. Additionally, a risk associated with allogeneic transplants is graft-versus-host disease (GVHD). This oncologic emergency occurs when the new immune system views the host (the person's organ systems and tissues) as foreign and attacks. The most common type of GVHD affects the

gastrointestinal system. Individuals who develop GVHD must be hospitalized to receive intensive medical support, which often includes immunosuppressive medications to prevent the immune system from continuing to attack the person, and glucocorticoids or corticosteroids to help decrease systemic inflammation. As expected, there is a high risk of loss of function for individuals with GVHD (Mohty & Mohty, 2011; NCI, 2015c).

Hormone Therapy

Hormone therapy was first used in the late 19th century and continues to be used today for breast and prostate cancers. Typically an adjuvant therapy, given along with or after the primary treatment, hormone therapy is usually administered in pill form or by injection. The purpose of hormone therapy is to decrease the risk of recurrence. There are no associated precautions with hormone therapies.

Potential Side Effects of Hormone Therapies

Side effects vary according to the hormone used. In general, side effects of hormone therapy for breast cancer may include hot flashes, night sweats, vaginal dryness, joint pain, bone loss, and osteoporosis. A less common but serious side effect is an increased risk of blood clots, especially for those with a history of deep vein thrombosis, pulmonary embolism, or stroke. Other less common but serious side effects include an increased risk of heart disease, dementia, or future breast cancer. In general, side effects of hormone therapy for prostate cancer include loss of libido, erectile dysfunction, hot flashes, weight gain, lower bone density, bone fractures, loss of muscle mass and physical strength, fatigue, mood swings and depression, memory problems, and gynecomastia. Some studies suggest an increased risk of heart disease, diabetes, and stroke (NCI, 2015b).

Targeted Therapies

Targeted therapies work by interfering with specific cancer cell molecules to prevent growth and spread and are considered cytostatic. This means the focus is to inhibit cell growth and division rather than kill the cells, as with the cytotoxic approach of chemotherapy. Targeted therapies may also be referred to as "precision medicine" or "molecularly targeted therapy." Most targeted therapies are either small-molecule drugs or monoclonal antibodies. Small-molecule drugs are small enough to enter the cell and block the processes that help cancer cells multiply and spread, and they are usually taken as pills. Monoclonal antibodies attach to the outside of the cancer cells and are usually injected. One of the primary difficulties with targeted therapies is that cancer cells can become resistant to them.

Precautions Associated With Targeted Therapies

As a newer treatment approach for cancer, much remains unknown. Current practice for people who are undergoing

targeted therapies is to be careful about exposing others to the drug itself or any body fluids, just as with chemotherapy and radiation.

Potential Side Effects of Targeted Therapies

Short-term physical side effects of targeted therapies most commonly include diarrhea and liver problems, but also hepatitis; high blood pressure; fatigue; skin changes, including hair depigmentation; problems with blood clotting; and difficulty with wound healing. Targeted therapies are a newer treatment approach, so long-term side effects are not known. Information on the effects of targeted therapies on cognition and mood has not yet been published (NCI, 2018b).

SPECIAL CONSIDERATIONS

The following special considerations apply across all cancer types and may be experienced by cancer survivors from diagnosis, throughout treatments, in advanced disease, and even when disease-free. Although not all cancer survivors will experience these side effects, occupational therapy practitioners should maintain awareness of their client's risks of these side effects and the potential effects on performing daily activities and roles, regardless of the point on the cancer care continuum.

Cardiotoxicity

Cardiotoxicity refers to damage of the heart muscle or electrophysiology from harmful chemicals used in cancer treatments. This damage may lead to cardiomyopathy, ranging from subclinical myocardial dysfunction to irreversible heart failure. Certain chemotherapies, including anthracyclines (used to treat many kinds of cancers), targeted therapy drugs, and radiation therapy across the chest region are known to cause cardiotoxicity. Cardiotoxicity may develop during the treatment, in the weeks after treatment, or months or years later, even if cancer-free or in remission. Signs and symptoms of cardiomyopathies include chest pain, increased fluid retention, shortness of breath, or fatigue that is disproportionate to recent activity (Fanous & Dillon, 2016).

Occupational therapy practitioners should immediately report the following changes to the oncologist or primary physician: increased fluid retention; swollen legs, feet, and/or ankles; complaints of feeling bloated; complaints of "coughing spells" or a chronic cough; trouble lying flat or complaints of shortness of breath; or new complaints of feeling overly tired or fatigued that is not consistent with recent activity. As cardiac myopathy occurring from cardiotoxicity is not reversible, medical treatments focus on managing the symptoms and reducing the likelihood of further cardiac decompensation. Note that deconditioning, common after inactivity such as during a hospitalization, may also present as a heart rate that is high in relationship to the activity being performed. Have an understanding of your client's recent cancer treatments and levels of activity, as well as the client's heart rates at rest and with standing activity.

Likewise, complaints of fatigue are common for cancer survivors, especially during cancer treatments. However, once cancer treatments are completed, it is reasonable to expect feelings of fatigue to resolve. It is not expected that an individual will have a relatively new complaint of fatigue at this point on the cancer care continuum. When in doubt, always consult with the oncologist.

Metastatic Bone Disease

Metastatic bone disease occurs when cancer that originates elsewhere in the body metastasizes, or spreads, to bone, causing notable levels of pain and pathological fractures. Other indications of metastatic bone disease include hypercalcemia and urinary or bowel incontinence. Although nearly all cancers have the ability to metastasize to bone, certain cancers are more likely, including lung, breast, prostate, kidney, and thyroid cancers. Metastatic bone lesions may occur in any bone but are more common in the spine (70% thoracic, 20% lumbar-sacral, 10% cervical), pelvis, and femur, followed by the humerus and ribs (Al-Qurainy & Collis, 2016; Lee et al., 2007; Sodji et al., 2017). Lesions that compromise vertebral bodies place the individual at high risk for metastatic spinal cord compression, which is an oncologic emergency, as spinal cord compression requires surgical intervention to be quickly alleviated and decrease the risk of permanent loss of function. Medical management of metastatic bone lesions may include radiation therapy directed to the lesion as a means of killing those cancerous cells and alleviating pain. Other treatments may include surgical intervention to stabilize bone, such as inserting an intramedullary rod or replacing a joint. Kyphoplasty involves filling a collapsed vertebra with a cement-like substance to restore height, alleviate pain, and improve stability.

Occupational therapy practitioners working with individuals who have a history of cancer, especially those cancers likely to metastasize to bone, must maintain awareness of new complaints of pain, especially when weight bearing, and report concerns immediately to the oncologist(s).

Psychosocial Disruption

Psychosocial disruption occurs when a disturbance or situation negatively affects the interrelationship of the individual and their social environment. If not addressed, this can progress to psychosocial impairment, which has been shown to have negative effects on health. For cancer survivors, the risk of psychosocial disruption begins at diagnosis as feelings of fear; anxiety; despair; sadness; and changes in personal beliefs, emotions, and moods may affect interactions with family and social supports (Aldaz et al., 2017; Institute of Medicine, 2008). Psychosocial well-being may be influenced by individual factors, including personal beliefs, emotions, and mood; or social factors, such as family structure, social supports, and work environment (Carmack et al., 2011).

Occupational therapy practitioners should recognize when changes in mood or interpersonal relationships are affecting the client's ability to engage in activities. Interventions may include modifying tasks and activities to achieve a balance in roles that facilitates engaging in daily activities.

Sexuality and Intimacy

Cancer survivors may experience changes that affect relationships and intimacy. Research has shown that upward of 59% of women and 79% of men reported cessation or decreased frequency of sex and intimacy after cancer and treatments (Hawkins et al., 2009). Underlying reasons include changes in the cancer survivor's own body image because of physical changes, such as scarring, undergoing a mastectomy, and skin changes after radiation. Hormonal changes may decrease libido or cause vaginal dryness or erectile dysfunction. There may be changes in their partner's image of their body. If the partner also provides physical caregiving, it may be difficult for the cancer survivor and partner to toggle between being caregiver and care receiver to being an intimate couple (Gilbert et al., 2013; Ussher et al., 2015).

Occupational therapy practitioners should address sexuality and intimacy with their clients. Education should include physical considerations, such as precautions after cancer treatments; positioning to avoid increasing symptom burdens of pain, fatigue, and shortness of breath; and protection of surgical areas and known areas of metastatic bone lesions.

PERFORMANCE STATUS

A person's performance status is one of the key factors used by oncologists to determine appropriate cancer treatment options, as an indicator of how well cancer treatments are tolerated, to decide whether to continue cancer treatments, and as an understanding of overall prognosis (National Comprehensive Cancer Network [NCCN], 2017). Performance status refers to how much time during waking hours the individual is up (out of bed, not laying on the couch or sedentary in a chair) and whether they are able to complete self-care and basic home management activities. Two widely used performance scales are the Eastern Cooperative Oncology Group, more commonly referred to as ECOG (Oken et al., 1982) and the Karnofsky Performance Scale (Clancey, 1995). Individuals who are inactive, disengaged from daily activity, or immobile are at increased risk of loss of function, as immobility leads to rapid physiological deterioration and drastically reduces the overall prognosis (Brandt, 2003; Olsen et al., 1967). Four interrelated areas that may lead to immobility and disengagement from daily activity are disease related, treatment related, lifestyle related, and individual factors. For example, primary or metastatic tumors or side effects of the cancer treatments may affect physical and cognitive abilities. Individuals who tend toward a sedentary lifestyle may have more difficulty engaging in daily activity, especially if they are experiencing cancer-related fatigue or other effects of

cancer and treatments. Individuals who have ineffective coping skills may have difficulty with changes related to cancer and treatments, and loss of function or roles, and they may become increasingly sedentary.

Regardless of the potential underlying reasons contributing to inactivity, the very state of being inactive becomes detrimental. Using intervention approaches to maintain, rehabilitate, and/or compensate, along with mitigating side effects, occupational therapy practitioners are able to facilitate daily engagement in physical activities to maintain optimized performance status and facilitate improved outcomes.

THERAPY FOCUS ALONG THE CANCER CARE CONTINUUM

The phrase *cancer care continuum* is used to describe a span from risk assessment and primary prevention through screening, detection, treatment, survivorship, and end-of-life care. This continuum is not a linear path over time, and the areas often overlap and may become cyclical, especially during treatment and survivorship. For example, an individual may have periods of remission or no evidence of disease, and then have recurrence and begin again with treatments; or many years after cancer treatments ended, they may have a secondary cancer caused by the original cancer treatments. The trajectory of recovery after cancer and treatments becomes more complex when the cancer care continuum loops with screening, detection, treatment, and survivorship.

Occupational Therapy Alongside Active Cancer Treatments

When working with individuals who are actively undergoing cancer treatments, the primary focus is to maintain optimal functional abilities, within physiological limits and with consideration for precautions. Although it is not unusual for individuals to have independent abilities at the time of diagnosis and even during initial cancer treatments, medical stability should not be assumed at this time, and there is a very real risk of losing independence related to the cancer itself, the cancer treatments, the client's lifestyle, and other individual factors. Occupational therapy sessions should include education on the importance of engaging in daily physical activities, at a temporarily modified level if needed because of side effects. Education should be incorporated to help the client understand precautions and anticipate potential side effects that are associated with the cancer treatments.

Case Study: Shanki

Shanki, a 52-year old woman, recently underwent surgical resection for stage III colon cancer and was scheduled for radiation therapy. While undergoing cancer treatments, Shanki was at risk of declining functional and cognitive abilities related to several factors, including the cancer itself, the side effects of cancer treatments, and how active she was each day. The overall focus of therapy while Shanki was undergoing cancer treatments was to maintain optimal functioning, which included educating

Shanki on how to remain active each day within her physiological tolerance, along with how and when to incorporate principles of energy conservation. Occupational therapy sessions also included education on anticipated changes in function, and precautions associated with cancer treatments. Therapists were able to help monitor and keep the oncology team informed of overall activity engagement and physiological response.

Occupational Therapy Post-Cancer Treatments and in Extended Survivorship

In the months after cancer treatments end, the expectation is for symptoms to begin resolving as hematologic and metabolic systems normalize, and there is a greater expectation of medical stability. It is reasonable to expect lowering levels of fatigue and pain, improved cognitive functioning, and improved physiological tolerance of activities. The occupational therapy focus should be rehabilitative, with goals of maximizing physical and cognitive abilities and returning to pre-cancer levels of function, activities, and roles, including return to work. As cancer is a chronic condition, education should be included to encourage self-management.

Case Study: Katherine

Katherine was a 48 year-old woman with a history of leukemia. After induction and consolidation chemotherapy cycles, she achieved remission and underwent an HSCT, also known as a BMT, with successful results, as recent testing showed no evidence of disease. During a routine BMT clinic appointment, Katherine reported that she was able to independently complete her daily routine but still had fatigue and felt forgetful. She told the team, "I miss being able to do things like before cancer, but at least I'm alive! I beat cancer!" The team's recommendations included a referral for outpatient occupational therapy services, as Katherine was not able to complete activities at her pre-morbid abilities. The overall focus of therapy interventions at this point on the cancer care continuum (post-cancer treatments and extended survivorship) was rehabilitating to maximum physical and cognitive abilities, mitigating lingering side effects, and educating on self-management, as cancer is considered a chronic disease, even years after treatment and/or when there is no evidence of disease. The occupational therapy evaluation included gathering an understanding of Katherine's roles and activities before being diagnosed with cancer, along with her current roles and activities, to help Katherine determine whether changes in her activities and roles since having cancer and undergoing treatments were changes she wished to keep, or whether she wanted to return to her prior activities and roles.

Occupational Therapy and Advanced Cancer

Advanced cancer refers to cancer that cannot be cured or controlled with treatment, although it may also be used to refer to metastatic or Stage IV cancer. In advanced cancer that is not

likely to be cured, the individual may still undergo treatments with a goal of reducing the cancer burden, such as a surgical resection for tumor debulking. Cancer treatments may also be used as a palliative approach to reduce symptom burden and improve quality of life, such as radiation therapy for metastatic bone lesions to alleviate pain. The focus of occupational therapy for individuals with advanced cancer is compensatory to facilitate engagement in meaningful activities and mitigate symptoms such as fatigue, breathlessness, and pain. Interventions should include education on how to efficiently complete activities in modified environments, using principles of energy conservation and task simplification. Training should be included for family members and caregivers on how to safely provide physical assist as needed.

Case Study: William

William was a 63-year old man with advanced stage lung cancer. Recent imaging showed metastatic bone lesions at multiple vertebral levels, his right humerus, and his left proximal femur. William had been admitted to the hospital's palliative care unit because of intractable pain. His current medical treatment plan included radiation therapy treatment with a goal of decreasing pain. As the cancer continued to progress through treatments, William and his oncology team decided to focus on managing symptoms. The overall focus of therapy in the setting of advanced disease is to maximize the cancer survivor's ability to engage in meaningful activities through compensatory strategies, grading of tasks and activities, and training family or caregivers in how to assist. Occupational therapy practitioners should also provide education on how to balance being active within physiological tolerance, and facilitate understanding that physiological tolerance may change from day to day. William benefited from learning how to complete activities without increasing pain, modifying how he moved, and how he placed weight through his right arm and left leg and positioned his back. He also learned the importance of notifying his oncology team of any new or increased areas of pain, as this could indicate additional metastatic disease.

Oncology Resources

As we continue to gain a greater understanding of cancer and make advances in treatment, the anticipated side effects and the trajectory of recovery will likely change. Occupational therapy practitioners must remain current with their knowledge of cancer and the treatments to effectively modify therapy treatment approaches. The following are recognized as leading resources in cancer care.

NCI

The NCI, established in 1937, is a part of the National Institutes of Health. NCI serves as the federal government's principal agency for cancer research and training. In coordination with the National Cancer Program, NCI conducts and supports

research, training, health information dissemination, and other programs related to cause, diagnosis, prevention, treatment, rehabilitation, and continuing care of cancer patients and their families. For more information, visit www.cancer.gov.

NCCN

The NCCN is a not-for-profit alliance composed of 27 leading cancer centers. The mission of NCCN is “to improve the quality, effectiveness, and efficiency of cancer care so that patients can live better lives.” The NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) are widely accepted and used as the standard of care in oncology. The intent is to assist all individuals involved with cancer care in the decision-making process. There are many different sets of guidelines specific to various cancers. These guidelines are the most detailed and most frequently updated clinical practice guidelines in any area of medicine and include algorithms for the medical management of cancer, including initial and ongoing testing, imaging, treatment timings, and dosages. Although this information is not directly applicable to occupational therapy practitioners, it provides insight and understanding of the medical treatments clients may undergo. The *NCCN Guidelines for Survivorship* (Version 3; 2017) are applicable to occupational therapy practice. These guidelines provide the most current, evidence-based information to address general survivorship principles and late and long-term psychosocial and physical problems. Topics include cognitive function, fatigue, lymphedema, pain, sexual function, and sleep disorders. These guidelines are free to use, and occupational therapy practitioners with clients who have been diagnosed with cancer should use these guidelines as another resource to remain current with evidence-based practice in oncology. For more information, visit www.nccn.org.

World Health Organization

The World Health Organization (WHO) Cancer division sets norms and standards for cancer control, including developing evidence-based prevention, early diagnosis, screening, treatment, and palliative care programs. WHO Cancer promotes monitoring and evaluation through registries and research specific to the regional disease burden and available resources. For more information, visit www.who.int/cancer/en/.

Additionally within the WHO is the International Agency for Research on Cancer. This specialized cancer agency promotes international collaboration in cancer research and provides expertise in conducting international research across countries and organizations. For more information, visit www.iarc.fr.

CONCLUSION

Cancer is a complex and chronic disease that affects millions of lives. Cancer and the associated treatments affect physical, cognitive, and emotional abilities, leading to impaired functional

performance and decreased overall quality of life. Many survivors experience side effects such as pain, fatigue, and cognitive impairment that may persist for months and years, even when they are disease free. Occupational therapy practitioners play a vital role by optimizing physical and cognitive functioning and educating clients, family, and caregivers on anticipated changes and how to manage them. The key is to consider at what point the client is on the cancer care continuum. Primarily, are they actively receiving cancer treatments or have they just completed treatments? Are they in extended survivorship? Do they have advanced disease? Knowing this information provides a framework for understanding how to shift the theoretical framework of the occupational therapy interventions (rehabilitate, compensate, or mitigate side effects and maintain function) to optimize the client's ability to engage in meaningful activities and roles each day. 📄

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- A. To get pricing information and to register to take the exam online for the article **Occupational Therapy and the Cancer Care Continuum: Adjusting Treatment Focuses**, go to <http://store.aota.org>, or call toll-free 800-729-2682.
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Final Exam

Article Code CEA0918

Occupational Therapy and the Cancer Care Continuum: Adjusting Treatment Focuses

September 2018

To receive CE credit, exam must be completed by September 30, 2020

Learning Level: Introductory

Target Audience: Occupational Therapists and Occupational Therapy Assistants

Content Focus: Client Factors, Activity Demands; Occupational Therapy Interventions

1. Katrina has been practicing in oncology for the past 4 years. Is it important for Katrina to refer to oncology resources such as the National Cancer Institute and the National Comprehensive Cancer Network (NCCN)?
 - A. Yes, these resources are for health care practitioners who are novice or early career.
 - B. Yes, she does not yet have 5 years of experience as an oncology therapist.
 - C. Yes, advances continue to be made in cancer care.
 - D. No, she has enough experience in oncology.

2. **You work in oncology, but not at an NCCN member institution. Should you refer to the NCCN Clinical Practice Guidelines?**
 - A. Yes, these are the recognized standard of clinical practice in cancer care.
 - B. Yes, you may work for an NCCN member institution in the future.
 - C. No, these guidelines are intended for physicians in oncology.
 - D. No, because you do not work at one of the NCCN member institutions.
3. **In general, what are potential side effects of surgery?**
 - A. Decreased scar tissue, damage to nearby nerve or muscle tissue, and transient pain
 - B. Lingering pain, increased nerve or muscle tissue, and difficulty with scar tissue
 - C. Difficulty with scar tissue, transient pain, and damage to nearby nerve or muscle tissue
 - D. Damage to nearby nerve or muscle tissue, lingering pain, and difficulty with scar tissue
4. **In general, what are potential early adverse effects after external-beam radiation therapy?**
 - A. Lingering complaints of pain, difficulty with scar tissue, and loss of function
 - B. Reddened skin, changes to radiosensitive tissues, and fatigue
 - C. Difficulty with scar tissue, lightened skin, and changes to muscle tissue
 - D. Changes to radiosensitive tissues, fatigue, and changes to muscle tissue
5. **What are chemotherapy precautions and the length of time to follow precautions?**
 - A. Protect from all body fluids, including sweat, saliva, urine, and vomit for 30 days after the first chemotherapy dose.
 - B. Protect from all body fluids, including sweat, saliva, urine, and vomit for 48 hours after the last chemotherapy dose.
 - C. Use universal precautions, with emphasis on washing hands before and after therapy sessions until blood cell counts have returned to within normal ranges.
 - D. Use universal precautions, with emphasis on washing hands before and after therapy sessions for 48 hours after the last chemotherapy dose.
6. **Seragi, a 62-year-old man, has been disease free since an autologous stem cell transplant 142 days ago. During today's session Seragi states, "Wow, that's different. Now I just get real tired real fast and I need to sit down." What might Seragi be experiencing?**
 - A. Cancer-related fatigue
 - B. Fatigue
 - C. Symptoms of malignant pericardial effusion
 - D. Symptoms related to the effects of cardiotoxicity
7. **Amma is a 55-year-old woman with metastatic breast cancer who's undergone a mastectomy and had radiation therapy. Today she informed you that she's really had a lot of pain in her right hip and cannot seem to get comfortable. She's even had trouble lying down to rest or sleep. What might Amma be experiencing?**
 - A. She may have psychosocial disruption that is decreasing her ability to sleep.
 - B. She may have done too much activity.
 - C. She may have metastatic bone disease.
 - D. She may be experiencing late adverse effects of radiation therapy.
8. **Catherine, a 41-year-old mother of two, was diagnosed with breast cancer and underwent several months of treatments. Even though she has no evidence of disease, she is very fatigued and does not know whether she can return to work. She is thankful for her husband's continuing support. When does the risk of psychosocial disruption begin for Catherine?**
 - A. It begins if she is unable to return to work.
 - B. The risk began when she was diagnosed with cancer.
 - C. She is not at risk because her husband has been supportive.
 - D. It begins if imaging shows recurrence of disease.
9. **Saurabh, a 53 year-old man, was previously treated for Stage IIIB non-small cell lung cancer. Today Saurabh learned from his oncologist that imaging showed new lesions. What is a key factor the oncologist will use in determining whether or not Saurabh should undergo more cancer treatments?**
 - A. Is Saurabh able to extend his medical leave of absence from work?
 - B. Does Saurabh have a good social support system?
 - C. Has Saurabh paid the previous medical bills or is he following a payment plan?
 - D. What is Saurabh's performance status?

10. Katrina recently began cancer treatments for ovarian cancer. Her oncologist reviewed with her the plans for upcoming treatments, including radiation therapy, and also referred her to oncology rehabilitation. Recognizing Katrina is actively undergoing cancer treatments, what is the overall focus of occupational therapy services?
- A. To maximize her physical strength and tolerance for activity
 - B. To facilitate her ability to maintain optimal functioning within her physiological tolerance and with considerations for precautions
 - C. To evaluate her current abilities and then hold therapy until after cancer treatments have been completed
 - D. To educate her on resting and reducing activities during cancer treatments
11. Vincent, a 47-year-old man with a history of Stage III lung cancer, completed the final session of radiation therapy last month. Recognizing that he has completed cancer treatments and has no evidence of disease, what is the overall focus of occupational therapy services?
- A. To maximize his physical and cognitive abilities with a goal of functioning in roles and routines at his pre-cancer level
 - B. To evaluate his current abilities as a new baseline of function because he is post-cancer treatments
 - C. To compensate for changes in his function related to cancer and cancer treatments
 - D. To facilitate his ability to maintain his current functional abilities
12. LaTisha, a 58-year-old woman with breast cancer, now has multiple metastatic lesions to bone and lung. What is the overall focus of occupational therapy?
- A. Help occupy her time so that her caregiver has a reprieve
 - B. Maximize her physical and cognitive abilities
 - C. Compensate for loss of function and mitigate symptom burden during activities
 - D. Evaluate her current functional abilities for performance status

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