



## **Complementary Therapies in Cancer Care**

Background and Applications for

*Little Red Door Cancer Agency*



**Amy Phillips, C.H.E.S., MPH Candidate**  
Indiana University Purdue University Indianapolis  
Fairbanks School of Public Health  
December 2, 2016



RICHARD M. FAIRBANKS  
SCHOOL OF PUBLIC HEALTH  
INDIANA UNIVERSITY  
IUPUI

## Executive Summary

**Introduction.** Cancer continues to pose an immense threat to global health as the second leading cause of death worldwide (Dissiz, 2016), and an expected 19.3 million new cancer cases per year by the year 2025 (Block, 2015). Conventional or Western cancer treatment options can vary in modality, extent, and severity of side effects, often leaving cancer patients with an overall diminished quality of life, even into survivorship (National Cancer Institute, 2016; NCCIH, 2016). Non-mainstream health approaches that are used alongside conventional cancer treatments are referred to as complementary therapies, and are used in cancer care around the world, providing relief and comfort in the cancer experience for many patients (NCCIH, 2016; SAVI, 2016). This review will provide an overview of (1) existing complementary therapies used in cancer care, (2) current evidence of the effectiveness of these therapies, (3) ways to maximize the effectiveness through sharing evidence-based information, and (4) areas in which additional research is needed in order to enhance the delivery of these therapies.

**Background.** The National Center for Complimentary and Integrative Health (NCCIH) reigns today as the Federal Government's leading source for research on complementary therapies, and recognizes two main domains within complementary medicine: natural products and mind-body therapies (MBT) (National Cancer Institute, 2016). Today, research indicates that up to 50% of individuals undergoing cancer treatment in the U.S. utilize some form of complementary therapies (Payne, 2012).

**Management of Cancer Symptoms.** The evidence presented in over 80 accredited sources included in this review, referenced the following cancer symptoms most often: stress/anxiety, pain, fatigue, depression, and quality of life/health-related quality of life (QoL); and included evidence of effectiveness of the following CIM modalities most often: acupuncture, massage, yoga, spirituality, and exercise.

**Utilization of Health Promotion & Disease Prevention.** Many forms of integrative medicine utilize healthy lifestyle therapies in order to improve health and treat medical conditions (Block, 2015), and emerging evidence indicates that some complementary approaches may be effective in improving overall well-being by improving self-care and preventative health behaviors (National Cancer Institute, 2016).

**Barriers in Disseminating Evidence-Based Information.** In order to ensure safe and effective applications of complementary therapies, the continuation of research on such therapies, as well as effective communication regarding the results of these studies is required by the medical and public health community. However, several barriers currently present themselves as to how and when this information is currently communicated toward the priority population, including (1) non-disclosure of CIM usage, (2) confusion of communication roles, and (3) low health literacy being unrecognized within the oncology setting (Ben-Ayre, 2012; Campo, 2016; Deng, 2013; Dissiz, 2016; National Cancer Institute, 2016).

**Objectives in Research Enhancement.** Many modalities and uses of CIM are in need of more rigorous and evidence-based research to further explore their benefits, effectiveness, and truly confirm their safety (National Cancer Institute, 2016), particularly within racially and economically diverse populations.

**Conclusion.** Complementary therapies should be included in integrative oncology treatment, as they can improve QoL, maximize effectiveness of conventional treatments, and promote active patient decision-making. Based on client demographics and local cancer statistics, there may be several opportunities for the enhanced application of the complementary therapies offered through Little Red Door Cancer Agency.

## Introduction

Cancer continues to pose an immense threat to global health as the second leading cause of death worldwide (Dissiz, 2016), and an expected 19.3 million new cancer cases per year by the year 2025 (Block, 2015). It is projected that 75 million people across the globe will be suffering from cancer in 2030 (Dissiz, 2016), some with very few options for effective or manageable treatment. Conventional or Western cancer treatment options can vary in modality, extent, and severity of side effects, often leaving cancer patients with an overall diminished quality of life, even into survivorship (National Cancer Institute, 2016; National Center for Complementary and Integrative Health, 2016). Non-mainstream health approaches that are used alongside conventional cancer treatments are referred to as complementary therapies, and are used in cancer care around the world, providing relief and comfort in the cancer experience for many patients (National Center for Complementary and Integrative Health, 2016; SAVI, 2016). There is a wide variety of complementary therapy modalities used in cancer care, and although there is not extensive research on every form, there is a substantial body of evidence proving the effectiveness of some of the most prevalent forms used in the United States (National Cancer Institute, 2016; National Center for Complementary and Integrative Health, 2016). This review will provide an overview of (1) existing complementary therapies used in cancer care, (2) current evidence of the effectiveness of these therapies, (3) ways to maximize the effectiveness through sharing evidence-based information, and (4) areas in which additional research is needed in order to enhance the delivery of these therapies. This overview will also address the implications of the existing research on the potential delivery of complementary therapies through Little Red Door Cancer Agency, an independent cancer agency located in Indianapolis, Indiana.

### *Definitions in Complementary & Integrative Therapies*

The world of cancer and complementary therapies has changed considerably since the development of the first U.S. agency to dedicate itself to this area of study in 1998, the Office of Cancer Complementary and Alternative Medicine (OCCAM) within the National Cancer Institute (Ben-Ayre, 2012). Until recently, the acronym “CAM” encompassed the study of both complementary therapies, and another category of non-mainstream therapies called “alternative therapies” (Cancer Research UK, 2014). While complementary therapies are designed to be delivered alongside conventional medical treatments, alternative treatments were meant to serve as an alternative option to conventional treatment (National Center for Complementary and Integrative Health, 2016). Treatment categories and specific treatment modalities varied across cultures and medical systems, but the most generally accepted list of CAM therapies included the following (NCCIH, 2016):

<b>Mind-Body Medicine</b>	<b>Manipulative and Body-Based Practices</b>
Meditation	Massage
Biofeedback	Chiropractic Care
Hypnosis	Reflexology
Yoga	<b>Energy Medicines</b>
Imagery	Tai Chi
Creative Outlets (e.g. art, music)	Reiki
<b>Biologically-Based Practices</b>	Therapeutic Touch
Vitamins	<b>Whole Medical Systems</b>
Herbs	Ayurvedic Medicine
Foods/Special Diets	Acupuncture
	Homeopathy
	Naturopathic Medicine

As research continued to develop regarding CAM, the medical and public health community began to recognize that including complementary and alternative treatments within the same context was inappropriate (Deng, 2013; Deng, 2014). Unlike complementary therapies, which are evidence-based and proven to be clinically safe and effective, alternative therapies often lack biological plausibility and efficacy in symptom treatment and management (Deng, 2013; Deng, 2014). Some research goes as far as to claim that alternative medicines are fraudulent, and provide a disservice to the patient community (Deng, 2014). However, although the divide between these two classifications is recognized today by most systems of Western medicine, the “CAM” acronym is still used in journal articles published as recently as 2016 (Dissiz, 2016). The use of this acronym, as well as varied categories and modalities of CAM treatments, has reportedly been the cause of much confusion, and delay in delivery of accurate research within this field of study (Deng, 2013; Deng, 2014).

The National Center for Complimentary and Integrative Health (NCCIH) reigns today as the Federal Government’s leading source for research on complementary therapies, and recognizes two main domains within complementary medicine (National Cancer Institute, 2016). The category of “Biologically-Based Products” was changed to “Natural Products”. In addition, the categories of “Manipulative and Body-Based Practices”, “Energy Medicines”, and “Whole Body Systems” were condensed under the “Mind and Body Practices” category:

<b>Natural Products</b>	Massage Therapy
Herbs (also called botanicals)	Meditation
Probiotics	Naprapathy
Vitamins and Minerals	Pilates
<b>Mind and Body Practices</b>	Progressive Relaxation
Acupuncture	Qigong
Art Therapy	Reflexology
Breathing Exercises	Reiki
Craniosacral Practices	Spinal Manipulation
Guided Imagery	Tai Chi
Healing Touch	Trager Psychophysical Integration
Hypnosis	Yoga

Although some complementary therapies exist that do not fit neatly into either category, these constitute a large majority of therapies utilized in today’s cancer care (National Cancer Institute, 2016). In addition to the reorganization and reclassification of these treatments, some new acronyms surfaced in what are commonly used in today’s research and practice. “Integrative therapies” is a term that refers to the practice of using complementary and conventional medicine as a united treatment plan (Ben-Ayre, 2012). “Integrative health” and “integrative medicine”, sometimes abbreviated to “CIH” or “CIM”, refer to treatment plans that emphasize a holistic approach to patient care by including complementary and conventional medicines (National Cancer Institute, 2016). In terms of cancer care, “integrative oncology” refers to the practice of combining mainstream oncology care with complementary therapies to impact the psychological and spiritual, as well as the physical needs, of the patient (Deng, 2014). Today, the number of institutions offering integrative medical treatments continues to grow throughout the U.S. (Cancer Research UK, 2014; National Cancer Institute, 2016).

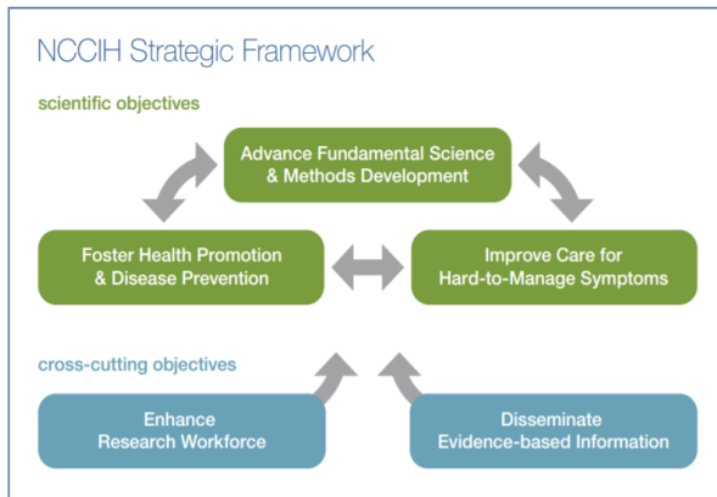
### ***Current Utilization of Complementary Therapies***

The usage of complementary therapies has been increasing globally for a number of decades (Cancer Research UK, 2014; National Center for Complementary and Integrative Health, 2016). CAM usage was reported to jump from 25% in the 1980's, to 49% in the 2000's (Dissiz, 2016). In a study examining 14 different countries, CAM usage among cancer patients was reported to be between 15% and 73%, and between 40%-50% of cancer survivors in countries that predominantly use modern medicine (Dissiz, 2016). Today, research indicates that up to 50% of individuals undergoing cancer treatment in the U.S. utilize some form of complementary therapies (Payne, 2012), including 31% to 84% of children [23,38]. There are around 14.5 million cancer survivors in the U.S. today, of which 50% or more continue to experience physical and mental side effects from conventional cancer care long after treatment has ceased (Campo, 2016). As such, complementary therapy usage is more prevalent in cancer survivors than in non-cancer populations, with the most common modalities including prayer and spiritual practice (61%), relaxation techniques (44%), and nutritional supplements and vitamins (40%) (Gansler, 2008). Complementary therapies are more commonly utilized within certain types of cancer diagnoses, such as breast cancer (up to 86% of patients), and may vary in effectiveness according to multiple patient characteristics (Chadwani, 2014). However, data on the utilization of complementary therapies varies in quality, and continues to change every year as popularity and accessibility of treatments increase.

### ***National Framework for Continued Development of Complementary Therapies***

Within the NCCIH's 2016 Strategic Plan: Exploring the Science of Complementary and Integrative Health, a framework is offered to guide the objectives and priorities in which the U.S. will focus their efforts towards continuing to enhance and develop the growing body of research on the effectiveness of complementary therapies. This framework is included in the graphic below:

*1. NCCIH's 2016 Strategic Plan: Exploring the Science of Complementary and Integrative Health (p. 2)*



This strategic framework includes a network of objectives for professionals in complementary medicine, all leading to the pinnacle objective of “advancing fundamental science & methods development” (National Cancer Institute, 2016, p.2). Although these objectives illustrate a complex “roadmap” involving multiple entities and systems, for the purpose of the remainder of this review on complementary therapies, the remaining “scientific objectives” and the “cross-cutting objectives” will be taken out of context, and serve as a guide in which the included information will be organized.

Although not all the information included in this review may pertain to the original intentions behind this framework, all included research is beneficial to understanding how each objective may be executed in real-world applications.

## Complementary Therapies in Cancer

“The experiences of those with cancer have been a fertile ground for analysis and reflection of contemporary healthcare norms, values and practices, as have analysis of those people with cancer who choose to use complementary...medicine” (MacArtney, 2016, p. 330). It has been proposed that the shift of modern medicine towards a more bio-psycho-social medical model is responsible for an increased emphasis on quality of life in cancer patients, as opposed to recommending treatments solely based on survival (Han, 2016), further fueling interest in complementary approaches. In addition, higher utilization of complementary therapies and complementary practitioners may promote benefits outside of those directed at the patient, such as greater balance of resources between healthcare institutions, community organizations, and self-care at home (Roter, 2016). Integrative therapies offer a wide array of treatment modalities and systems that can be highly dependent on cancer type and stage, individual patient characteristics, and conjunctive conventional treatment. The following section will detail the more specific roles and definitions that complementary therapies offer within today’s cancer setting.

### *Motivations and Expectations Behind Complementary Therapies*

According to Ben-Ayre, et al. (2012, p. 423), “Integrative oncology practice is mainly targeted at improving patients and caregivers quality of life, fostering doctor-patient communications regarding patients physical, emotional, and spiritual concerns, and alleviating cancer symptoms as well as chemotherapy and radiation side effects (e.g. fatigue, pain, chemotherapy-induced neuropathy, nausea, anxiety, insomnia).” This comprehensive definition describes the main motivations of healthcare practitioners when adopting an integrative treatment plan with a patient. Conventional treatments for cancer often include (1) introducing toxic agents into the body, such as through chemotherapy or radiotherapy; (2) can be highly invasive, such as surgical therapies; and (3) can have other drastic, life changing effects on a patient’s day-to-day functioning (Cancer Research UK, 2014). Due to this, complementary therapies may even be necessary for some patients in order for them to continue adhering to conventional treatment routines. Conventional treatment plans are often categorized as either “supportive care” (meant to manage symptoms during any stage of illness), and “palliative care” (meant to manage symptoms and offer relief during end-of-life stages) (Han, 2016). Integrative treatment plans can be applied within both contexts, as well as within survivorship.

Claims that complementary therapies help patients to feel better and improve quality of life have been well supported and maintained over the years (National Cancer Institute, 2016). However, some researchers note that the changes in the relevance of complimentary therapies in cancer care have brought along changes in patients expectations and motivations for using integrative therapies (Ben-Ayre, 2012). Some reasons that cancer patients have sought complementary therapies include: “to try everything that can benefit” (46.4%), “a belief that the [alternative] therapy is good for their health” (19.5%), and “the influence of their relatives” (18.3%) (Dissiz, 2016, p. 36). These differ from patients’ anticipated outcomes of complementary therapies, which can include: “to cure cancer” (43.6%), “to improve the immune system” (29.8%), “to reduce the CT-related side effects” (12.8%), or “to prevent relapse” (7.5%) (Dissiz, 2016, p. 36). Cancer patients may also use complementary therapies in order to increase their sense of control and decision-making power over their cancer treatment, as these are often not achieved within the conventional clinical setting (Cancer Research UK, 2014). Claims that patients choose complementary therapies in order to take a more active role in their treatment is also supported by studies

examining timing of treatment initiation; One study indicated that 57.6% of patients initiated complementary therapy usage after diagnosis, indicating their change in health status as a call to action (Payne, 2012). This is supported by an additional study reporting 64% of cancer patients initiated complementary therapies within 2 months of being diagnosed (Campo, 2016). Other studies have claimed that patients choose to initiate CIM usage due to ineffectiveness of conventional therapies, or lack of faith in conventional medicine (Barnes, 2009).

Cancer patients who choose CIM in the U.S. are often younger females with high education levels and “more affluent than others” (Deng, 2013, p. 233), which may be due to their ability to access treatments that are not covered by insurance. Breast cancer patients are the highest utilizers of complementary therapies (Greenlee, 2014), with usage reported to be between 50%-85% (Chadwani, 2014). A review of 21 national studies found herbal remedies, or natural products, to be the most highly used form of CIM, followed by mind-body practices (Dissiz, 2016). Other studies have found similar results, in which the top CIM modalities among U.S. cancer patients to be nutritional support, prayer or spirituality, and relaxation techniques (Gansler, 2008). Although usage patterns varied for some modalities by cancer type, sex, and age, this was not the case for mind-body modalities (Payne, 2012). However, the usage or prevalence of a certain modality does not necessarily indicate that it is the most researched or effective therapy. In addition, research on complementary therapies is somewhat skewed due to the homogeneous demographic profile of most samples used in clinical trials. Most studies examining CIM are conducted largely on Caucasian females (Payne, 2012), which limits evidence of efficacy and suggested applications of these therapies in diverse populations. Other factors, such as cost, may also play a role in usage patterns. For example, although many systematic reviews have produced weak or mixed results regarding the efficacy of herbal remedies in safely treating cancer-related symptoms (National Cancer Institute, 2016), it is proposed that these may be the most preferred mode of CIM due to its cost effectiveness, and great accessibility (Dissiz, 2016). Studies on public trust have also proposed that less effective therapy modalities, such as herbal supplements or special diets, may be more popular due to their increased presence in the media, high utilization among non-cancer populations, and general acceptance within the medical community (Perlman, 2012).

### ***Categories and Modalities of Complementary Therapies***

Complementary therapies represent a wide array of health approaches and techniques, with various levels of research and evidence supporting their effectiveness and safety. Some modalities may not be formally recognized by various institutions, or may not fit within various categories or parameters (National Cancer Institute, 2016). However, just as the lives of each patient vary greatly across culture, race, religion, and other variables, therapies aimed at improving overall quality of life must adapt to meet these needs. This section will provide brief definitions and background information on some of the most prevalent and researched modalities within CIM.

*“Natural Products:* A group of complementary health approaches that includes a variety of products such as herbs (also known as botanicals), vitamins and minerals, and probiotics. These products are widely marketed, readily available to consumers, and often sold as dietary supplements (NCCIH, 2016).” Some examples include, ginger, ginseng, stinging nettle (Dissiz, 2016), and mistletoe (Ben-Ayre, 2012). In 2008, Gansler, et al. found that nutritional supplements and vitamins were used by 40.1% of U.S. cancer survivors (p.1050). Dietary supplements are a popular treatment for clients who wish to boost the immune

system, reduce the spreading or recurrence of cancer, and effectively manage symptoms (Deng, 2013), and are more popular in the U.S. among Latinos and “other racial groups” (such as Asians) than Caucasians (Gansler, 2008). It is suggested that the popularity of herbal remedies may be due to their affordability and accessibility (Dissiz, 2016), as well as the common belief that “natural” substances are harmless (Dissiz, 2016; Booker, 2015). However, many of these products are very complex, and have the potential to act as a potent drug within the body (National Cancer Institute, 2016). Common symptoms for which a patient may seek natural product therapies include oral mucositis (Wingood, 2013), xerostomia (National Cancer Institute, 2015), fatigue, and weight loss (Ndao, 2013).

*“Mind-Body Practices [MBT]:* A group of complementary health approaches that include a large and diverse group of procedures or techniques taught by a trained practitioner or teacher such as yoga, chiropractic and osteopathic manipulation, meditation, acupuncture, and massage therapy” (National Cancer Institute, 2016). These modalities are based in the belief that one can improve physical function by focusing on the interactions between the mind, body, and behavior (Dissiz, 2016). These modalities are designed to reduce anxiety, sleep disturbance, and improve quality of life and well-being (Deng, 2014, p.235). A study done in 2008 found that 74.4% of cancer patients use at least one form of MBTs, a domain in which “prayer and spirituality” have recently been included (Gansler, 2008). Women are almost 4 times more likely to initiate MBT than men, and patients in the oldest age group are the least likely to initiate (Payne, 2012). However, over half (52%) of all cancer survivors continue to use MBTs up to 24 months after diagnosis (Campo, 2016). Common symptoms for which most patients seek MBT include pain, depression, stress, fatigue, and anxiety (Campo, 2016, p.3783).

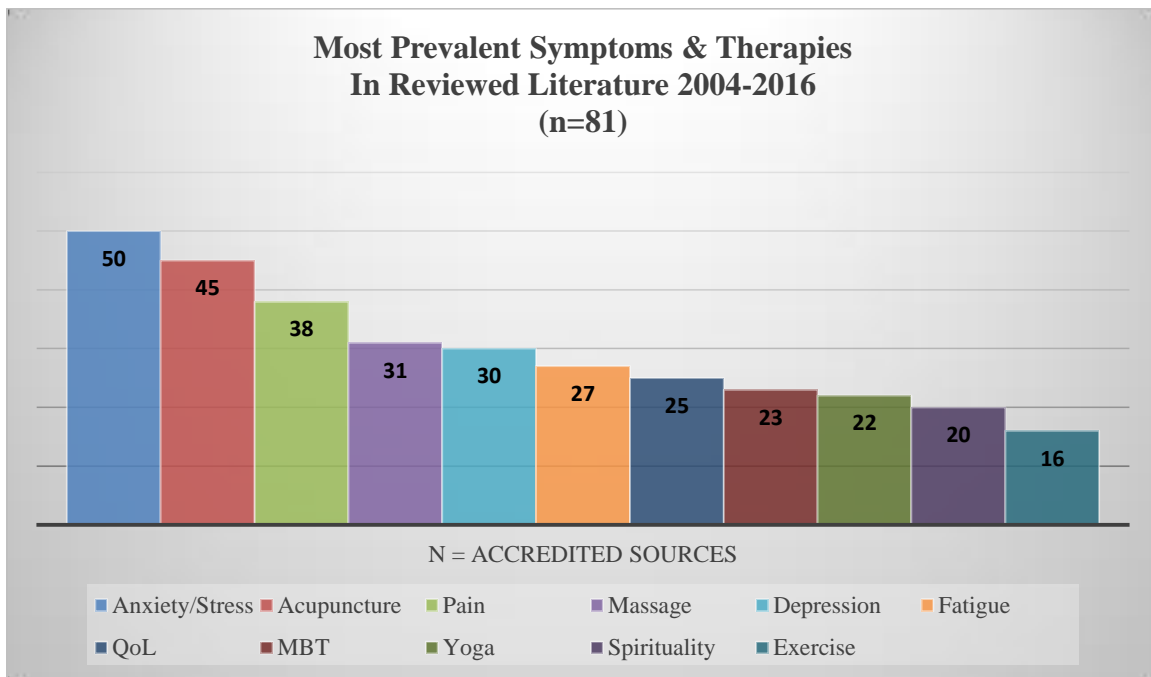
*Additional Modalities:* Patients and providers have somewhat conflicting views on whether spirituality or prayer should be considered an MBT, with patients being much less likely to associate the two ideas than providers (National Cancer Institute, 2016). However, when “prayer for health reasons” was listed as a possible MBT on the National Health Interview Survey in 2002, 26% of respondents indicated that they solely utilized prayer for MBT (Gansler, 2008, p. 1049). Within five years, Gansler, et al. (2008) estimated that 64.4% of all MBTs contained spiritual or religious techniques (p.1050). These types of therapies are highly culturally determined, as a higher percentage of African Americans and Latinos report to utilizing these techniques (National Cancer Institute, 2016). An example of a specific spiritual MBT would be “spiritual healing”, which Rao, Hickman, Phillips, & Sibrit (2016) define “as the systematic, purposeful intervention by one or more persons aimed to help another person by focused intention to improve the condition (p.35)”. Evidence suggests that religious and spiritual MBT utilization is high, and should continue to rise, particularly in African American populations (National Cancer Institute, 2016).

## **Symptom Management Through Complementary Therapies**

Although some evidence suggests that long-term cancer survivors may use complementary therapies for general health and wellness (Gansler, 2008), the most researched use for complementary therapies in cancer is to manage symptoms related to conventional cancer therapies, such as chemotherapy and radiotherapy (National Cancer Institute, 2016). Data on symptom management through CIM modalities have been reported in a variety of ways, including modality, symptom, and cancer type.



The evidence presented in over 80 accredited sources included in this review, referenced the following cancer symptoms most often: stress/anxiety, pain, fatigue, depression, and quality of life/health-related quality of life (QoL); and included evidence of effectiveness of the following CIM modalities most often: acupuncture, massage, yoga, spirituality, and exercise. The most highly reported cancer symptoms that patients may treat with CIM, and which modalities are proven to be highly effective in management of these symptoms, are reviewed in the sections below. Findings from this from this review are included in the chart below:



### *Stress & Anxiety Management*

NCCIH-funded research suggests that use of integrative therapies reduces stress and anxiety in patients with cancer (National Cancer Institute, 2016). These therapies may relieve anxiety by calming emotions and promoting an overall sense of wellbeing (Cancer Research UK, 2014). Campo, et al. (2016) reported that “reducing stress” and “relaxation” was the most frequently reported reason for using MBTs, which did not vary across survivorship stages (p.3787). Ben-Ayre, et al. (2012) includes a list of potential CIM modalities which may be used to treat anxiety and distress in cancer patients, which includes: yoga, relaxation, guided imagery, Qigong, massage, healing touch, reflexology, Reiki, art therapy, music therapy, and acupuncture. Although MBTs are particularly effective in reducing stress and anxiety (Deng, 2014), some modalities are more effective than others. Some studies have found that yoga, Tai chi, and Qigong are effective in reducing anxiety and distress in cancer patients (Coughlin, 2015; Deng, 2014; Harder, 2012). Results of a review on massage therapy were inconclusive to its effectiveness in treating cancer patients, but did report that multiple researchers found improvements in anxiety and stress (Ugurlu, 2011). A more recent review included five different studies reporting massage therapy as effective in reducing anxiety and anxious depressive symptoms (Lee, 2016). A study examining the effects of inhalation aromatherapy among 313 cancer patients, as well as another study using

aromatherapy massage with 103 cancer patients, both found significant decreases in anxiety, among other measures (National Cancer Institute, 2016). Clinical guidelines regarding integrative therapies for breast cancer patients in active treatment report several therapies to effectively reduce stress and anxiety (Greenlee, 2014). Yoga, meditation, and music therapy which were found to be most effective (Greenlee, 2014). In clinical guidelines regarding integrative therapies for lung cancer patients, reflexology, massage, meditation, cognitive behavioral therapy, and relaxation were proven to be effective stress reduction techniques (Deng, 2013; Roter, 2016). Spirituality and a sense of spiritual well-being has also been associated with lower levels of anxiety and stress in cancer patients (National Cancer Institute, 2016).

### ***Pain Management***

NCCIH-funded research indicates that a number of mind and body therapies are effective in treating cancer-related pain (National Cancer Institute, 2016). Ben-Ayre, et al. (2012) released a list of potential CIM modalities that may be effective at treating pain, including: acupuncture, Taiwanese traditional herbal diet, mistletoe (*Viscum album*), massage, reflexology, relaxation, hypnosis, and Qigong (p.427). Acupuncture was found to be effective in patients suffering from pain as a component of a multimodal treatment plan (Deng, 2014; Lee, 2016). “Results have been summarized in two systematic reviews of 14 RCTs [randomly controlled trials] and 12 RCTs...conclude that data do support massage therapy as an effective adjunct in cancer supportive care to reduce pain (p.235).” An extensive review of the effectiveness of exercise therapies only found one study which produced evidence of pain management in cancer patients (Campo, 2016). Other therapies, such as healing touch, music therapy, and physical training programs are therapies that can be considered for treating pain, but their effectiveness is dependent on several factors (Greenlee, 2014). “Hypnosis has been studied extensively and has been consistently found to be effective for a wide range of symptoms in cancer care, including pain” (Dissiz, 2016, p. 425).

### ***Fatigue Management***

Several complementary therapies have been identified as having the potential to treat fatigue in cancer patients, including: Mistletoe (*Viscum album*), art therapy, acupuncture, Ginseng, massage, healing touch, reflexology, aromatherapy, Reiki, meditation, and yoga (Ben-Ayre, 2012). “Primary intervention strategies for fatigue may have included those which help preserve body weight through interventions such as exercise, activity pacing, relaxation, and support services” (Ndao, 2013, p. 5). Exercise interventions have been effective in reducing fatigue for breast and lung cancer patients during active treatment, up to 12 weeks after the beginning of treatment (Mishra, 2015). Cancer survivors also report using MBT to treat fatigue, which showed more effectiveness for cancers other than breast (Campo, 2016). Patients achieved greater success in fatigue reduction when prescribed a moderate or vigorous exercise therapy (Mishra, 2015). Acupuncture was considered as an option that can be provided for fatigue, specifically for breast and lung cancer (Deng, 2013; Greenlee, 2014; National Cancer Institute, 2015). Clinical guidelines for complementary therapy use in breast cancer patients found energy conservation techniques to be the most effective way to treat fatigue (Greenlee, 2014). Hypnosis and meditation was also found to have a significant effect on fatigue in lung cancer patients (Deng, 2013). Although not a direct therapy, cancer patients with high spiritual wellbeing reported continuing to “enjoy life” despite high levels of fatigue (National Cancer Institute, 2016).

**Depression Management**

Cancer survivors report depression as one of the main symptoms for which they seek MBT (Campo, 2016). Exercise interventions were proven to have a significant effect on depression, except in studies done on breast cancer patients (Mishra, 2015). Clinical guidelines for integrative therapies in breast cancer patients indicate that meditation, relaxation, yoga, massage, and music therapy are recommended for treating depression (Greenlee, 2014). Mindfulness-based stress reduction is particularly effective for breast cancer patients actively undergoing radiotherapy and in remission (Greenlee, 2014). Cognitive behavioral therapy and other behavioral approaches were also proven to be effective (Deng, 2013). Spiritual and religious techniques were also associated with lower reports of depression (National Cancer Institute, 2016).

**Improving Quality of Life**

Popper-Giveon, et al. (2012) explains that the core function of complementary medicine is to alleviate the “symptoms of the disease and the side effects of chemotherapy and radiation, thus improving the patient’s QoL from a physical, emotional and spiritual point of view” (p.381). Although several other measurable outcomes of complementary therapies are sometimes included within the “umbrella” of QoL, much research is reported on QoL individually. MBT techniques have been proven through systematic reviews and meta-analyses to improve quality of life (Deng, 2014). Mindfulness-based stress reduction techniques have proven to improve QoL in cancer patients (Cancer Research UK, 2014). There is also evidence that QoL can be improved during active treatment through exercise therapies, including patients diagnosed with breast, prostate, head and neck, and colorectal cancers (Mishra, 2015, p. 9). Improved QoL was particularly effective up to 12 weeks after initiation of the intervention, and was more effective in interventions which used moderate to vigorous forms of exercise (Mishra, 2015). Clinical guidelines for breast cancer treatment recommend several complementary therapies for improvements in QoL, including: gentle yoga, stress management techniques, relaxation and guided imagery, Qigong, and reflexology (Greenlee, 2014, p. 351). Clinical guidelines for lung cancer treatment with complementary therapies indicate that acupuncture may improve QoL for those with stage III or IV lung cancer (Lee, 2016, p. 98). Chinese herbal remedies are also associated with improved QoL for patients with cancer across several sites (Payne, 2012). Spiritual support was also associated with improved QoL in several studies, one including 95 cancer patients in which spirituality was effective regardless of life threat (National Cancer Institute, 2016).

The chart on the right outlines which treatment modalities are supported in the literature as being effective in treating the cancer-related symptoms discussed in this review:

	Anxiety/Stress	CINV	Depression	Fatigue	HF	Pain	QoL
Acupuncture		✓		✓	✓	✓	
Exercise	✓		✓	✓			✓
GI	✓		✓				✓
Massage	✓		✓			✓	
RT	✓		✓				✓
SRT	✓		✓			✓	✓
Writing			✓	✓			
Yoga	✓	✓	✓	✓			✓

CINV = Chemotherapy-Induced Nausea and Vomiting, HF = Hof Flashes, GI = Guided Imagery, RT = Relaxation Techniques, SRT = Spiritual or Religious Techniques, QoL = Quality of Life

## Health Promotion & Disease Prevention Through Complimentary Therapies

Many forms of integrative medicine utilize health lifestyle therapies in order to improve health and treat medical conditions (Block, 2015), and emerging evidence indicates that some complementary approaches may be effective in improving overall well-being by improving self-care and preventative health behaviors (National Cancer Institute, 2016). According to MacArtney (2016) complementary and integrative medicine use “can also be understood as part of a wider ‘self-health’ trend that sees users bringing a range of healthcare modalities together as part of a bicoloreur approach to healthcare” (p.330). In addition, currently CIM utilization among the general population suggests that these health approaches will only continue to grow in popularity. For example, according to the NCCIH (2016), national survey results indicate that Americans spent \$30.2 billion (out-of-pocket) on complementary health approaches, and \$14.7 billion (out-of-pocket) on complementary health practitioner visits within the last 21 months, which is nearly 30% of out-of-pocket expenditures for conventional medical practitioners. Some of the most popular complementary therapies were natural products (17.7%), Yoga, Tai chi, and Qigong (10.1%), chiropractic or osteopathic manipulation (8.4%), meditation (8.0%), massage (6.9%), and special diets (3.0%) (National Cancer Institute, 2016). The demand for these services is evident, and utilization may increase if more complementary health services were covered by insurance.

Some behavioral risk factors that have been proven to increase cancer risk include diet, exercise, and tobacco usage (National Cancer Institute, 2016). Numerous studies have proven the relationship between increased fruit and vegetable intake and reductions in cancer risk, as well as cancer recurrence in cancer survivors (Block, 2015; Lechner, 2014; National Cancer Institute, 2016). “Nutrition has long been the primary focus of research on integrative interventions...The World Cancer Research Fund and the American Institute for Cancer Research find that diets high in fruits and vegetables substantially reduce risk of several cancers” (Block, 2015, p. 293). Mind-body approaches have also focused on immune system function through stress reduction (Block, 2015). The stress reduction qualities of mind-body therapies such as yoga and meditation have been extensively proven in cancer patients, as well as the general population (Harder, 2012; National Cancer Institute, 2016). In addition, researchers have found that stress and emotions directly affect the disease-fighting capacity of our immune systems (Ashman, 2016), which is why “feeling good” and reducing stress are linked to significantly boosting the immune system (Cancer Research UK, 2014). In addition to reducing stress and increasing immune function, some therapies, such as yoga, have reported to motivate individuals to engage in healthier eating and increased exercise (National Cancer Institute, 2016). Preliminary research also suggests that meditation-based and mindfulness-based therapies, such as yoga and mindfulness-based stress reduction (MBSR), may be able to improve effectiveness of tobacco cessation and weight loss interventions (National Cancer Institute, 2016).

## Disseminating Evidence-Based Information on Complimentary Therapies

In order to ensure safe and effective applications of complementary therapies, the continuation of research on such therapies, as well as effective communication regarding the results of these studies is required by the medical and public health community. However, several barriers currently present themselves as to how and when this information is currently communicated toward the priority population, including (1)

non-disclosure of CIM usage to health care practitioners, (2) confusion of communication roles between patient, health care practitioners, and CIM practitioners, and (3) low levels of health literacy being unrecognized within the oncology setting (Ben-Ayre, 2012; Campo, 2016; Deng, 2014; Dissiz, 2016; National Cancer Institute, 2016; Perlman, 2012; Rao, 2016).

Evidence suggests that up to 77% of patients are not being informed about complementary therapies by their health care providers (Popper-Giveon, et al., 2012; National Cancer Institute, 2016). This can be detrimental, as “decisions that patients make concerning their health affect the efficiency, effectiveness and quality of the health care or service being provided (Dissiz, 2016, p. 34). In addition, some complementary therapies can be dangerous if not provided with the recommendation or oversight of a physician (Rao, 2016). Disclosure of complementary therapy usage to a physician does occur in some circumstances, largely with Caucasian female patients (Rao, 2016). However, there is evidence that most patients expect their oncologist to initiate conversation and provide counseling about CIM (Ben-Ayre, 2012). Unfortunately, research also indicates that many physicians do not initiate conversation regarding CIM due to lack of knowledge about these techniques, unfamiliarity with making appropriate therapy recommendations, and sometimes limited faith in the effectiveness of CIM (Cancer Research UK, 2014). Researchers are realizing that the original integrative oncology model in which the patient is the lead communicator between their oncologist and complementary therapist may need to evolve to a model which can enhance collaboration within the oncology services team, and promote inclusion of all practitioners in the development of a comprehensive treatment plan around patient-specific needs (Ben-Ayre, 2012).

There are many reasons why a patient may not initiate discussion of CIM, one of which may be low health literacy (Dissiz, 2016). According to Dissiz & Yilmaz (2016), “health literacy is the capacity to obtain, process, and understand basic health information (p.34). Health literacy is proven to be directly related to income level, education level, and gender (U.S. Dept. Health & Human Services, CDC, & National Cancer Institute, 2016). Studies on low-income and low SES cancer patients show that over half of patients were not aware of complementary therapy techniques at time of diagnosis (Dissiz, 2014; Perlman, 2012). Evidence suggests that promoting CIM conversations earlier may be beneficial for patients on many levels. Oncology visits that include CIM discussions are longer in length, are less verbally dominated by physicians, include more decision-making by the patient, and improve overall patient satisfaction (Chadwani, 2014; Perlman, 2012; Rao, 2016). A study by “By recommending nonpharmacological modalities that reduce symptom burden and improve quality of life, physicians also enable patients to play a role in their care...this also improves the physician-patient relationship, the quality of cancer care, and the well-being of patients and their families” (Deng, 2014, p. 233). In addition, clinical guidelines for complementary therapies in breast and lung cancer patients specify that patients should be consulted by their oncologists regarding different forms of complementary therapy, and which may be most beneficial to them (Deng, 2013; Greenlee, 2014). Research on “stages” of cancer survivorship also suggest that the first 2 months following diagnosis is the ideal timeframe to initiate these conversations, as patients will be the most motivated to adopt these therapeutic techniques (Campo, 2016).

## Enhancing Research in Complementary Therapies

Many modalities and uses of CIM are in need of more rigorous and evidence-based research to further explore their benefits, effectiveness, and truly confirm their safety (National Cancer Institute, 2016). Providing this evidence is important for several reasons, including (Cancer Research UK, 2014):

- *“To find out if they interact with conventional medicine*
- *To assess whether specific therapies work and do what they claim to do*
- *To test them against other already accepted treatments to see if they work as well or better*
- *To understand how they work*
- *To check whether they are safe*
- *To find out if they are cost effective”(p. 1).*

The same researchers indicated the following areas as some of the most prominent barriers faced by complementary therapies research (Cancer Research UK, 2014):

- *“Difficult designing appropriate clinical trials for certain therapies*
- *Difficulties in getting funding for research*
- *Limited time for medical doctors and complementary therapists to work closely together on research*
- *Lack of complementary therapists with research experience and knowledge*
- *Challenges in getting the most appropriate people to develop research into CAMs*
- *Considering whether the belief that the treatment works (placebo effect) and contact with the complementary health practitioner affect how well the therapy works*
- *Difficulties in findings a control group”(p. 1).*

However, probably the largest gap in the current body of research in complementary therapies is the lack of evidence of its effectiveness within diverse populations. In a majority of the current studies available on CIM, study participants were identified as Caucasian, well-educated, and female (Chandwani, 2014; Mishra, 2015; Rao, 2016). According to Perlman, et al. (2012), there is no typical CIM user, as usage depends on cancer site and CIM modality. However, CIM usage seems to be highly dependent on factors such as education, family income, and race, which could be due to several factors (Booker, 2015; Gansler, 2008). The most prominent limitation in more inclusive research on complementary therapies is suggested to be related to income-level, as most complementary therapies are not covered by insurance (Dissiz, 2016). In addition, patients with lower socioeconomic status are reported to have more issues communicating with and understanding their providers (Amini, 2016), and are usually diagnosed at a later stage in their disease in which motivations for trying complementary therapies may be diminished (Campo, 2016). Other factors may be related to race, particularly related to African Americans. There is evidence that African Americans are less trusting of conventional medicine, have low levels of trust in providers that do not acknowledge spirituality in their care (particularly in cancer), and are likely to be noncompliant across a range of cancer treatment options if they feel as if their spiritual beliefs are not supported (Amini, 2016; Booker, 2016; Coughlin, 2015; Schee, 2010).

According to the NCCIH (2016), future research into complementary therapies in the U.S. is investigating the following priority topics:

- Examining the interactions between natural products and conventional medicine
- Examining the effects of meditation and acupuncture on the central mechanisms of pain perception and control
- Exploring the effects of other MBTs on the central nervous system
- Finding additional therapies for pain, anxiety, and depression, as these are most difficult to treat

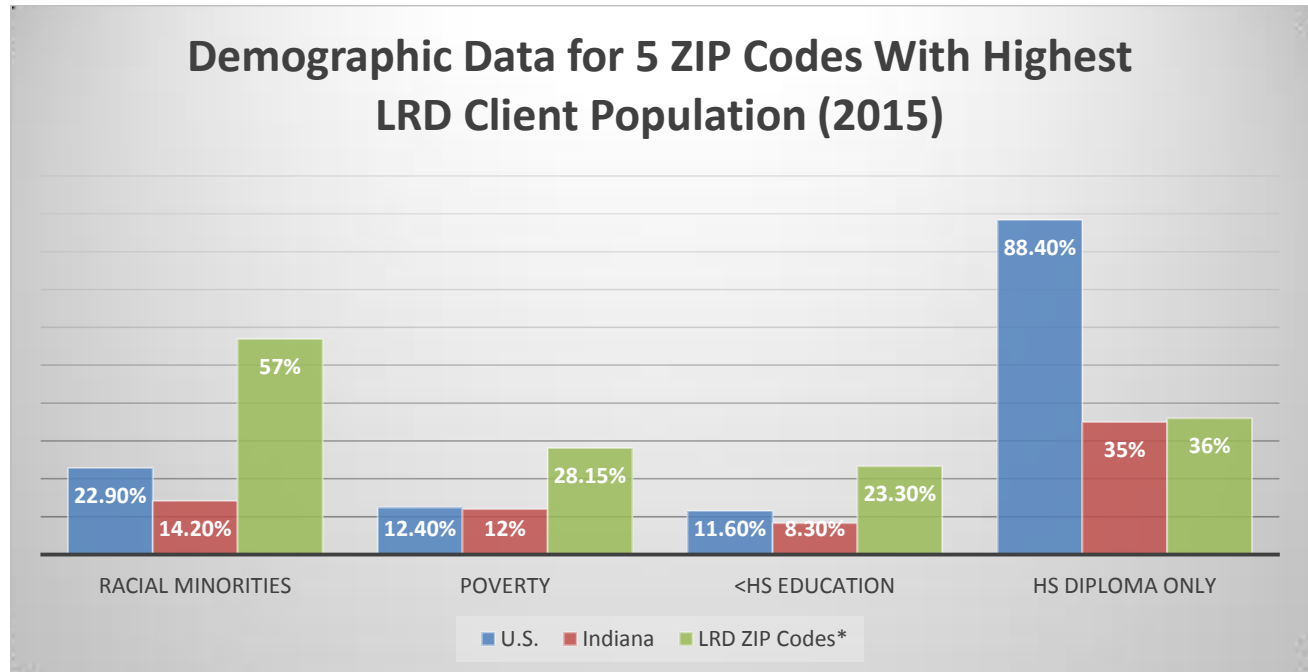
## **Applications for Little Red Door Cancer Agency:**

### **Recommendations and Guidance for Program Expansion**

#### ***Background***

According to the Indiana Cancer Consortium (2015), about 2 in 5 people now living in Indiana will develop cancer (p.10). Similar to national statistics, cancer is the second leading cause of death in Hoosiers, with the most common cancers being breast cancer in females, prostate cancer in males, and lung cancer across both sexes (Little Red Door Cancer Agency, 2015). According to U.S. Cancer statistics (U.S. Dept. Health & Human Services, 2005), Indiana's incidence rates for several cancers are higher than the national average, including lung and bronchus (14.6%), larynx (13.6%), and esophagus (12.5%). The client service area for Little Red Door Cancer Agency encompasses eight Indiana counties, all of which report breast or lung cancer to have the highest incidence rates from 2008-2012 (Little Red Door Cancer Agency, 2015). Little Red Door currently offers free complementary therapies to cancer patients, survivors, and caretakers through their *Door to Wellness* program, through which thousands of Hoosiers are served every year (Little Red Door Cancer Agency, 2015). *Door to Wellness* offerings currently include yoga, massage therapy, cooking education, gardening, and light exercise activity (Walking Club) (Little Red Door Cancer Agency, 2016). In 2015, *Door to Wellness* served approximately 1,774 clients with complementary therapies (Little Red Door Cancer Agency, 2016). However, these 1,774 individuals only represent 5.7% of the total 30,941 Hoosiers that were reached by LRD programs and services during 2015 (Little Red Door Cancer Agency, 2016). Limited surveillance and analysis of these interventions present limited data on the overall effectiveness and long-term outcomes that this program has produced within this population since its implementation. However, based on client demographics and local cancer statistics, there may be several opportunities for the enhanced application of the complementary therapies offered through this organization.

To better understand and consider the implications of designing programs for LRD clientele, the following chart offers aggregated demographic information on their geographic target population. This was determined using population data from the 5 zip codes with the largest LRD client population (435, or 25%, of total 1763 clients served in 2015).



\*Values are averages of data from 5 counties: 46226, 46218, 46222, 46201, 46219.

“Racial Minorities” data represents the percentage of total population.

“Poverty” data represents adults age 18-64 living below the federal poverty line.

“<HS Education” data represents adults over age 25 with less than a high school diploma.

“HS Diploma Only” data represents adults over age 25 with a high school diploma, but no college education.

All U.S. and Indiana data was retrieved from the 2015 U.S. Census Bureau.

As mentioned previously, little is known about the effectiveness of complementary therapies within low-income and racially diverse populations, as most research has been conducted among educated, Caucasian females living above the poverty line (Chandwani, 2014; Mishra, 2015; Rao, 2016). As such, results of these studies may not reflect real life applications within Little Red Door’s client base, as less than half (45.4%) of clients seen in the last year were Caucasian, and services are mainly directed at low-income or underinsured communities. Of the population residing in LRD’s largest service area (illustrated above), average income levels and educational attainment indicate that health literacy levels may also be a concern. A large percentage of the clients served by this organization are African American (32.1%) and female (80%), which may provide increased opportunities for offering complementary therapies which involve spiritual techniques. In addition, breast cancer is reported to be the most common cancer site for LRD clients (35%), which requires additional consideration when choosing complementary therapy offerings due to varying effectiveness of some therapies within breast cancer populations compared to other cancer sites. Due to these factors, several opportunities to maximize the effectiveness of existing and future complementary therapy offerings present themselves for LRD.

The following recommendations are aimed to assist in taking advantage of these opportunities within Little Red Door Cancer Agency:

- *Conduct formal assessments to determine health literacy, CIM knowledge and background, and other information that may affect clients’ treatment preferences (e.g. spirituality).*



- *Develop a comprehensive program model in which specific goals and objectives are outlined and shared with stakeholders in order to encourage participation and to measure quality and efficacy of the program.*
- *Tailor complementary therapy interventions to accommodate a racially diverse client population.*
- *Prioritize enhancement and inclusion of complementary therapy modalities proven to be highly effective within breast cancer populations in order to accommodate the majority of the Little Red Door client base.*
- *Emphasize and support the proven effectiveness of complementary therapies as health promotion and cancer prevention tools for cancer patients, survivors, and the general community, particularly through exercise interventions and tobacco cessation interventions.*
- *Implement integrative communication platform between complementary therapy practitioner, patient, and oncologist, to provide support and guidance for a safe, comprehensive, and patient-centered approach to cancer with LRD clients.*

### ***Formal Assessment Tools in Complementary Therapies***

Conducting baseline assessments are an important component to the introduction of any program model. In order to generate appropriate goals and objectives, it is important to understand what the capabilities, needs, and desires are of program participants. Collecting this information will allow LRD to anticipate which program components will be most effective and highly utilized by their clients. In addition, performing routine assessments for active program participants will provide a platform for which to ensure the efficacy of the treatments offered, and adjust or improve certain components when necessary. Included in the Appendix A (p.27) is a list of measurement and assessment tools used in complementary therapies practice and research. These may be administered in their current state, or may be reviewed in order to better understand the inclusion criteria for the development of a new development tool for *Door to Wellness* Clients.

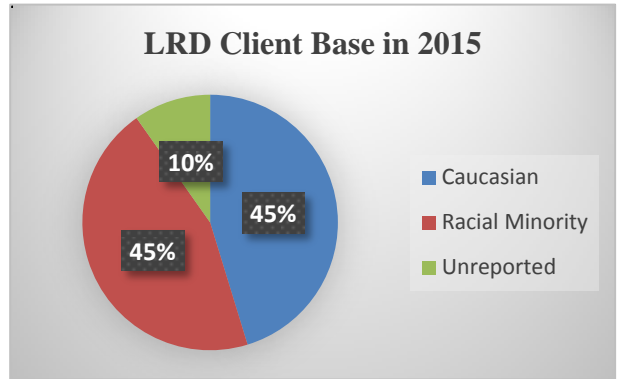
### ***Developing Goals and Objectives***

One tool that is often used to outline goals and objectives during program development is a Logic Model. A logic model allows the “life” of the program to be illustrated in an organized format that is easy to share and communicate to others. The simplified logic model in Appendix B (p.28) includes recommended programs objectives for initiating an “observation period” in which data from LRD clients can be collected and analyzed in order to make informed decisions regarding further development of the *Door to Wellness* program. These objectives are based on best-practice standards for general program development, and evidence that adopting an integrative care approach may be effective in reducing patient barriers for those seeking CIM. This program model places heavy emphasis on (1) encouraging individuals to participate in complementary therapies for general wellness and disease prevention, (2) expanding *Door to Wellness* program offerings based on formal needs assessments in order to meet the specific needs of the participants (e.g. placing higher priority on therapies recommended for breast cancer), and (3) actively engaging with client’s oncology team for the purpose of communicating their interest and usage of CIM. Not only has this interaction been proven to maximize the effectiveness of

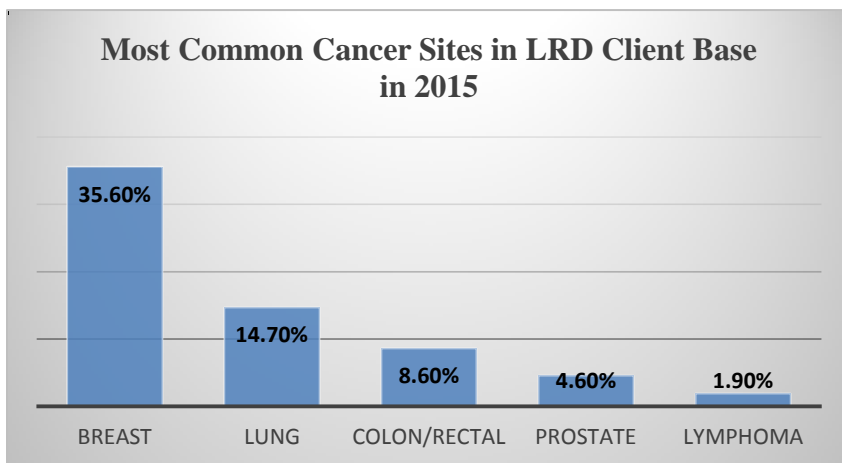
both conventional and complementary therapies, but it may also lead to increase satisfaction in care for patients.

***Accommodating a Racially Diverse Population***

Based on self-reported data from LRD clients during 2015, the percentage of Caucasian clients (45%) is equal to the percentage of clients belonging to a racial minority group (e.g. African American, Latino, Asian, or “Other”) (Little Red Door Cancer Agency, 2016). As such, evidence that certain complementary therapies may be more or less effective or appealing within racial minority groups is pertinent when designing programs for this particular client base. For example, a large body of research has been dedicated to African American cancer patients, particularly around the role of spirituality within their journey through progressive illness (Booker, 2015; Coughlin, 2015; Schee, 2010; Wilkinson, 2008). Many studies found that religion, and a proposed sense of fatalism, may have particularly significant effects on African Americans’ healthcare decisions and treatment adherence (Booker, 2015; Coughlin, 2015; Schee, 2010; Wilkinson, 2008). In addition, a recent study on older African Americans found that this group has a tendency to underreport pain, as it can often allow for a deeper connection with God (Booker, 2015). In addition, depression was also underreported and underdiagnosed in African American patients, due to a deep negative stigma, and reluctance to want to provide this information with doctors or loved ones (Booker, 2015). As pain and depression are two of the most common symptoms in which cancer patients may seek, or be recommended to, complementary therapies, this could contribute to lower utilization of these techniques if not addressed directly.



***Accommodating a Large Breast Cancer Client Base***



The most commonly reported cancer site among LRD clients in 2015 was breast cancer (Little Red Door Cancer Agency, 2016). This is not entirely surprising, as 80% of LRD clients are female (Little Red Door Cancer Agency, 2016). The large group of breast cancer patients that are served through Little Red Door does require extra attention when

reviewing the research for the most effective therapies for this population. Many large studies on complementary therapies in cancer found that breast cancer patients can respond differently to certain therapies than most other cancer types (Mishra, 2015). However, Greenlee, et al. (2014) released clinical guidelines regarding the effectiveness of complementary therapies for breast cancer patients, which recommend several therapies for anxiety/stress, depression, fatigue, QoL, and chemotherapy-induced

nausea and vomiting. These guidelines include an extensive grading system in which each modality is rated by effectiveness, with a large majority received a “C” grade (Greenlee, 2014). This means that recommendation of these modalities is highly dependent on each individual patient, and requires consultation with a physician (Greenlee, 2014). It is also important to remember that these guidelines are based on studies conducted on mostly Caucasian, non-poverty populations, and additional variables may affect client willingness to participate in specific therapies.

### ***Utilizing Health Promotion & Cancer Prevention Tools***

The proven health promotion and disease prevention functions of complementary therapies can serve as a great opportunity within Little Red Door. Research on mind-body therapies has proven that participation in these practices motivates patients to engage in other healthy lifestyle behaviors, which may help to prevent cancer (National Cancer Institute, 2016). This could be particularly helpful when addressing issues such as tobacco cessation. According to the Indiana Cancer Consortium, Indiana had the 12<sup>th</sup> highest smoking rate in the U.S. in the year 2013 (Little Red Door Cancer Agency, 2015). NCCIH claims that mindfulness-based stress reduction techniques may be an effective technique in assisting tobacco cessation interventions (National Cancer Institute, 2016) could be used within the LRD client base, in which lung cancer is the second most reported cancer site within the past year (14.7%).

### ***Integrative Oncology Communication Platform***

Although complementary therapies are offered as a comforting and healing benefit to those with cancer, it is important to understand that these treatments can have profound health effects when they are used with a conventional treatment without the consultation of an oncologist. Interactions between these two types of treatment can potentially weaken or diminish the effectiveness of one or both treatments, which can put the patient at great risk. In addition, conversations with oncologists about CIM usage can often have positive effects on the doctor-patient relationship, and greater levels of satisfaction from both parties. Fostering a trusting and positive relationship between patients and their oncologists is an effective way for public health and CIM entities to support optimal and highly effective oncology practice. A study in 2010 found that a majority of oncologists and CIM practitioners feel that communication between the two entities should be initiated through a letter, and that this letter should be initiated by the CIM practitioner (Schiff, et al., 2010). The following components were found to be rated as the highest priority for inclusion in the letter by both oncologists and CIM therapists:

- (1) CIM diagnosis and explanation,
- (2) Possible CIM-Conventional treatment interactions
- (3) Description of treatment plan & goals,
- (4) Quality of treatments/supplements when prescribed (Schiff, et al., 2010)

Adopting a version of this communication that LRD clients can share with their oncologists would not only increase the safety and efficacy of their current treatment/s, but could also present the opportunity for clients to build a relationship with their oncologist that they may not have been able to do otherwise.

## Conclusion

Complementary therapies can offer a variety of effective treatment options to cancer patients seeking relief from cancer-related symptoms. Although some areas of complementary medicine are in need of continued research, there is a substantial body of evidence supporting the efficacy of many mind-body therapies used in oncology care today. The integrative oncology model, which combines conventional care with complementary therapies, aims to maximize the benefits of treatment, while improving and maintaining a patients' QoL during their experience with cancer. Expanding upon the complementary therapies currently offered through Little Red Door's *Door to Wellness* program can potentially make treatment options available to low-income and underinsured populations that may not be able to have access to them otherwise. However, additional assessment and evaluation is needed in order to execute a program design that is fully inclusive and effective for a culturally diverse population being treated outside of a clinical setting. The recommended program objectives for this program expansion are to (1) encourage cancer prevention and wellness through complementary therapies, (2) conduct formal needs assessment to guide therapy additions according to the specific needs and interests of the priority population, and (3) engage with clients' oncology teams to establish an integrative oncology platform for which clients can use to build better relationships with their providers and maximize the benefits of their treatments. Providing access to complementary therapies for clients at Little Red Door Cancer Agency not only presents an opportunity to improve the cancer journey for thousands of Hoosiers in a time of need, but supports the advancement of cancer care through collaboration and integration between clinical and community entities.

### References

- Alimi, D. R.-L. (2003). Analgesic Effect of Auricular Acupuncture for Cancer Pain: A Randomized, Blinded, Controlled Trial. *Journal of Clinical Oncology*, 21(22), 4120-4126.
- Amini, A. e. (2016). Disparities in Disease Presentation in the Four Screenable Cancers According to Health Insurance Status. *Journal of Public Health*, 1-7.
- Ashman, J. (2016). Growing Healing One Garden At a Time. *Journal of Christian Nursing*, 33(1), 35-37.
- Barnes, P. B. (2009). Complementary and Alternative Medicine Use Among Adults and Children: United States, 2007. *National Health Statistics Report*(12), 1-23.
- Banerjee, B. V. (2007). Effects of an integrated yoga program on modulating psychological stress and radiation-induced genotoxic stress in breast cancer patients undergoing radiotherapy. *Integrative Cancer Therapy*, 242-250.
- Ben-Arye, E. S. (2012). Modeling an Integrative Oncology Program Within a Community-Centered Oncology Service in Israel. *Patient Education and Counseling*, 89, 423-429.
- Billhult, A. S.-V. (2007). The experience of massage during chemotherapy treatment in breast cancer patients. *Clinical Nursing Res*, 85-99.
- Block, K. G. (2015). Designing a Broad-Spectrum Integrative Approach for Cancer Prevention and Treatment. *Seminars in Cancer Biology*, 35, S276-304.
- Booker, S. (2015). Older African Americans' Beliefs About Pain, Biomedicine, and Spiritual Medicine. *Journal of Christian Nursing*, 32(3), 149-155.
- Campo, R. L.-S. (2016). Weathering the Seasons of Cancer Survivorship: Mind-Body Therapy Use and Reported Reasons and Outcomes by Stages of Cancer Survivorship. *Supportive Cancer Care*, 24, 3783-3791.
- Cancer Research UK. (2014). *The Difference Between Complementary and Alternative Therapies*. Retrieved from <http://www.cancerresearchuk.org/about-cancer/cancer-in-general/treatment/complementary-alternative/about>
- Cao, H. P. (2009). Acupuncture for Treatment of Insomnia: A Systematic Review of Randomized Trials. *Journal of Alternative and Complementary Medicine*, 15, 1171-1186.
- Chandwani, H. H. (2014). Hot Flashes Severity, Complementary and Alternative Medicine Use, and Self-Rated Health in Women with Breast Cancer. *Explore (NY)*, 10(4), 241-247.
- Coughlin, S. e. (2015). Advancing Breast Cancer Survivorship Among African-American Women. *Breast Cancer Research and Treatment*, 153, 253-261.

- Courneya, K. V. (2016). Effects of a structured exercise program on physical activity and fitness in colon cancer survivors: one year feasibility results from the CHALLENGE Trial. *Cancer Epidemiology Biomarkers and Prevention*, 969-977.
- Deng, G. &. (2014). Integrative Oncology: An Overview. *American Society of Clinical Oncology, ASCO Educational Book*, 233-242.
- Deng, G. R. (2013). Complementary Therapies and Integrative Medicine in Lung Cancer, Diagnosis and Management of Lung Cancer, 3rd ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. *CHEST*, 143(5), 420-436.
- Dibble, S. L. (2007). Acupressure for chemotherapy-induced nausea and vomiting: a randomized clinical trials. *Oncology Nursing Forum*, 34(4), 5584-5590.
- Dissiz, G. &. (2016). Complementary and Alternative Therapies and Health Literacy in Cancer Patients. *Complementary Therapies in Clinical Practice*, 23, 34-39.
- Eremin, O. W. (2009). Immuno-modulatory effects of relaxation training and guided imagery in women with locally advanced breast cancer undergoing multimodality therapy: a randomise controlled trial. *Breast*, 17-25.
- Ernst, E. (2009). Massage Therapy for Cancer Palliation and Supportive Care: A Systematic Review of Randomised Clinical Trials. *Supportive Cancer Care*, 17, 333-337.
- Ezzo, J. R. (2006). Acupuncture Point Stimulation for Chemotherapy-Induced Nausea or Vomiting (Cochrane Review). *Cochrane Database of Systematic Reviews*, 2.
- Gansler, T. K. (2008). A Population-based Study of Prevalence of Complementary Methods Use by Cancer Survivors, A Report From the American Cancer Society's Studies of Cancer Survivors. *Cancer*, 2008(113), 1048-1057.
- Garcia, M. M. (2013). Systematic Review of Acupuncture in Cancer Care: A Synthesis of the Evidence. *Journal of Clinical Oncology*, 31, 952-960.
- Greenlee, H. B. (2014). Clinical Practice Guidelines on the Use of Integrative Therapies as Supportive Care in Patients Treated for Breast Cancer. *Journal of Cancer Institute Monographs*, 50, 346-358.
- Griffith, K. W. (2009). Impact of a walking intervention on cardiorespiratory fitness, self-reported physical function, and pain in patients undergoing treatment for solid tumors. *Cancer*, 4874-4884.
- Han, Y. W. (2016). Chinese Herbal Medicine As Maintenance Therapy for Improving the Quality of Life for Advanced Non-Small Cell Lung Cancer Patients. *Complementary Therapies in Medicine*, 24, 81-89.
- Harder, H. (2012). Randomized Controlled Trials of Yoga Interventions for Women With Breast Cancer: A Systematic Literature Review. *Supportive Cancer Care*, 20, 3055-3064.

- Henry, N. J. (2010). A prospective study of aromatase inhibitor-associated musculoskeletal symptoms and abnormalities on serial high-resolution wrist ultrasonography. *Cancer*, 4360-4367.
- Hernandez-Reif, .. F. (2005). Natural killer cells and lymphocytes increase in women with breast cancer following massage therapy. *International Journal of Neuroscience*, 115(4), 495-510.
- Hervik, J. M. (2009). Acupuncture for the Treatment of Hot Flashes in Breast Cancer Patients, A Randomized, Controlled Trial. *Breast Cancer Research and Treatment*, 116(2), 311-316.
- Indiana Cancer Consortium. (2015). *Indiana Cancer Facts and Figures, 2015*.
- Janiszewska, J. B.-G. (2008). The religiousness as a way of coping with anxiety in women with breast cancer at different disease stages. *Supportive Cancer Care*, 1361-1366.
- Jensen-Johansen, M. C. (2013). Effects of an expressive writing intervention on cancer-related distress in Danish breast cancer survivors - results from a nationwide randomized clinical trial. *Psychooncology*, 1492-1500.
- Kelly, K. (2004). Complementary and Alternative Medical Therapies for Children With Cancer. *European Journal of Cancer*, 40(14), 2041-2046.
- Kruijssen-Jaarsma, M. R. (2013). Effects of exercise on immune function in patients with cancer: a systematic review. *Exercise Immunology Review*, 120-143.
- Krupski, T. T. (2009). Altered male physiologic function after surgery for prostate cancer: couple perspective. *International Brazilian Journal of Urology*, 673-682.
- Lechner, S. e. (2014). Does a Community-Based Stress Management Intervention Affect Psychosocial Adaptation Among Underserved Black Breast Cancer Survivors? *Journal of National Cancer Institute Monog*, 315-322.
- Lee, P. T. (2016). Acupoint Stimulation, Massage Therapy, and Expressive Writing for Breast Cancer: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. *Complementary Therapies in Medicine*, 27, 87-101.
- Levine, E. (2007). Ethnicity and Spirituality in Breast Cancer Survivors. *Journal of Cancer Survivorship*, 212-225.
- Listing, M. R. (2009). Massage therapy reduces physical discomfort and improves mood disturbances in women with breast cancer. *Psychooncology*, 1290-1299.
- Little Red Door Cancer Agency. (2015). *About*. Retrieved from Little Red Door Cancer Agency: <http://www.littlreddoor.org/about>
- Little Red Door Cancer Agency. (2016). *Little Red Door Cancer Agency 2015 Annual Report*. Retrieved from Little Red Door Cancer Agency: [http://www.littlreddoor.org/wp-content/uploads/lrd\\_annual-report\\_2015\\_FINAL.compressed.pdf](http://www.littlreddoor.org/wp-content/uploads/lrd_annual-report_2015_FINAL.compressed.pdf)

- MacArtney, J. (2016). Balancing Exercises: Subjectivised Narratives of Balance in Cancer Self-Health. *Health, 20*(4), 329-345.
- Mao, J. P. (2011). Complementary and Alternative Medicine Use Among Cancer Survivors: A Population-Based Study. *Journal of Cancer Survivorship, 5*, 8-17.
- Mao, J. F. (2014). Electroacupuncture for fatigue, sleep and psychological distress in breast cancer patients with aromatase inhibitor-related arthralgia: a randomized trial. *Cancer, 120*(23), 3744-3751.
- Maodel, e. a. (2013). 2013 SYR Accepted Poster Abstracts. *International Journal of Yoga Therapy, 32-53*.
- McCoubrie, R. &. (2006). Is there a correlation between spirituality and anxiety and depression in patients with advanced cancer? *Supportive Cancer Care, 379-385*.
- McNeely, M. C. (2006). Effects of exercise on breast cancer patients an survivors: a systematic review and meta-analysis. *CMAJ, 34-41*.
- Mehling, W. J. (2007). Symptom Management With Massage and Acupuncture in Postoperative Cancer Patients: A Randomized Controlled Trial. *Journal of Pain Symptom Management, 258-266*.
- Mishra, S. S. (2015). Exercise Interventions on Health-Related Quality of Life for People With Cancer During Active Treatment (Cochrane Review). *Cochrane Database of Systematic Reviews, 8*, 1-37.
- Molassiotis, A. B.-J. (2012). Acupuncture for cancer-related fatigue in patients with breast cancer: a prgamatic randomized controlled trial. *Journal of Clinical Oncology, 30*(36), 4470-4476.
- Monti, D. P. (2006). A randomized, controlled trial of mindfulness-based art therapy (MBAT) for women with cancer. *Psychooncology, 363-373*.
- Mullan, F. (1985). Seasons of Survival: Reflections of a Physician With Cancer. *New England Journal of Medicine, 313*(4), 270-273.
- National Cancer Institute. (2015). PDQ Integrative, Alternative, and Complementary Therapies Editorial Board, PDQ Acupuncture. Retrieved from <http://www.cancer.gov/about-cancer/treatment/cam/patient/acupuncture-pdq>
- National Cancer Institute. (2016). PDQ Integrative, Alternative, and Complementary Therapies Editorial Board, PDQ Aromatherapy and Essential Oils. Retrieved from <http://www.cancer.gov/about-cancer/treatment/cam/hp/aromatherapy-pdq>
- National Cancer Institute. (2016). PDQ Supportive and Palliative Care Editorial Board, PDQ Spirituality in Cancer Care. Retrieved from <http://www.cancer.gov/about-cancer/coping/day-to-day/faith-and-spirituality/spirituality-hp-pdq>
- National Cancer Institute. (2016). Topics in Integrative, Alternative, and Complementary Therapies (PDQ) Health Professional Version. Retrieved from <http://www.cancer.gov/about-cancer/treatment/cam/hp/cam-topics-pdq>



- National Center for Complementary and Integrative Health. (2016). 2016 Strategic Plan, Exploring the Science of Complementary and Integrative Health. Retrieved from [https://nccih.nih.gov/sites/nccam.nih.gov/files/NCCIH\\_2016\\_Strategic\\_Plan.pdf](https://nccih.nih.gov/sites/nccam.nih.gov/files/NCCIH_2016_Strategic_Plan.pdf)
- National Center for Complimentary and Integrative Health. (2016). Complementary, Alternative, or Integrative Health: What's In a Name? Retrieved from <https://nccih.nih.gov/health/integrative-health>
- Ndao, D. L. (2013). Use of Complementary and Alternative Medicine Among Children, Adolescent, and Young Adult Cancer Survivors: A Survey Study. *Pediatric Heramtolog Oncology*, 35(4), 281-288.
- Payne, C. W. (2012). Interventions for Fatigue and Weight Loss in Adults with Advanced Progressive Illness (Cochrane Review). *Cochrane Database of Systematic Reviews*, 1, 1-14.
- Perlman, A. L. (2012). Prevalance and Correlates of Postdiagnosis Initiation of Complementary and Alternative Medicine Among Patients at a Comprehensive Cancer Center. *Journal of Oncology Practice*, 9(1), 34-31.
- Popper-Giveon, A. S.-A. (2012). I Will Always Be With You: Traditional and Complementary Therapists' Perspectives on Patient-Therapist-Doctor Communication Regarding Treatment of Arab Patients With Cancer in Israel. *Patient Education and Counseling*, 89, 381-386.
- Rao, A. H. (2016). Prevalence and Characteristics of Australian Women Who Uses Prayer or Spiritual Healing: A Nationally Representative Cross-Sectional Study. *Complementary Therapies in Medicine*, 27, 35-42.
- Roter, D. Y. (2016). Communication Predictors and Consequences of Complementary and Alternative Medicine (CAM) Discussions in Oncology Visits. *Patient Education and Counseling*, 99, 1519-1525.
- Rueda, J. P. (2011). Non-invasive Interventions for Improving Well-Being and Quality of Life in Patients With Lung Cancer (Cochrane Review). *Cochrane Database of Systematic Reviews*, 9, 1-21.
- Schee, E. &. (2010). Determinants of Public Trust in Complementary and Alternative Medicine. *Public Health*, 10, 128-140.
- Schiff, E. F. (2011). Bridging the physician and CAM practitioner communication gap: Suggested framework for communication between physicians and CAM practitioners based on a cross professional survey from Israel. *Patient Education and Counseling*, 188-193.
- Sharp, D. W. (2010). A randomised, controlled trial of the psychological effects of reflexology in early breast cancer. *European Journal of Cancer*, 46(2), 312-322.
- Soden, K. V. (2004). A randomized controlled trial of aromatherapy masage in a hospice setting. *Palliative Medicine*, 87-92.
- Stevinson, C. L. (2004). Exercise interventions for cancer patients: systematic review of controlled trials. *Cancer Causes Control*, 1035-1056.

- Tarakeshwar, N. V. (2006). Religious coping is associated with the quality of life of patients with advanced cancer. *Journal of Palliative Medicine*, 646-657.
- Tate, J. (2011). The Role of Spirituality in the Breast Cancer Experiences of African American Women. *Journal of Holistic Nursing*, 29, 149-155.
- The SAVI Community Information System. (2016). *My Project: Marion County SES Factors for Breast Cancer*. The Polis Center. Retrieved from <http://www.savi.org>
- U.S. Census Bureau. (2016). *Education: 2014 and 2015*. U.S. Department of Commerce.
- U.S. Census Bureau. (2016). *Poverty: 2014 and 2015*. U.S. Department of Commerce.
- U.S. Department of Health and Human Services. (2005). *Thinking About Complementary & Alternative Medicine: A Guide for People With Cancer*.
- U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, & National Cancer Institute. (2013). *United States Cancer Statistics: 1999-2010 Incidence, WONDER Online Database*. Retrieved from <http://wonder.cdc.gov/cancer-v2010.html>
- Ugurlu, Z. (2011). Evaluation of Health Literacy and Appropriateness of the Educational Materials to the Health Literacy of the Patients Who Applied to the Healthcare Centers (Dissertation). *University of Baskent, Ankara*.
- Vidaraja, H. R. (2009). Effects of a yoga program on cortisol rhythm and mood states in early breast cancer patients undergoing adjuvant radiotherapy: A randomized controlled trial. *Integrative Cancer Therapy*, 37-46.
- Wilkinson, S. B. (2008). Massage for Symptom Relief in Patients With Cancer: Systematic Review. *Journal of Advanced Nursing*, 63(5), 430-439.
- Wingood, G. e. (2013). Comparative Effectiveness of a Faith-Based HIV Intervention for African American Women: Importance of Enhancing Religious Social Capital. *American Journal of Public Health*, 103(2), 2226-2233.
- Wong, R. L. (2006). Analgesic effects of electroacupuncture in postthoracotomy pain: a prospective randomized trial. *Annals Thoracic Surgery*, 2031-2036.
- Yanez, B. E. (2009). Facets of spirituality as predictors of adjustment to cancer: relative contributions of having faith and finding meaning. *Journal of Consult Clinical Psychology*, 730-741.
- Yayla, E. I. (2016). Sage Tea-Thyme-Perppermint Hydrosol Oral Rinse Reduces Chemotherapy-Induced Oral Mucositis: A Randomized Controlled Pilot Study. *Complementary Therapies in Medicine*, 27, 58-64.

## **Appendix A:** ***Measurement Tools***

### **Anxiety**

- VAS: Visual Analog Scale
- HADS-A: Hospital Anxiety and Depression Scale – Anxiety Subscale
- STAI: State-Trait Anxiety Inventory
- SCL-90R: Symptom Checklist -90-Revised

### **Depression**

- DMI: Distressed Mood Index
- HADS-D: Hospital Anxiety and Depression Scale – Depression Subscale
- POMS-D: Profile of Mood States
- SCL-90-R
- CES-D: Center for Epidemiology Studies Depression Scale
- BSF: Berlin Mood Scale
- BDI-SF: Beck Depression Inventory – Short Form

### **Fatigue**

- GBB: Giessen Complains Inventory
- BFI: Brief Fatigue Inventory
- POMS: Profile of Mood States
- FACIT-F: Functional Assessment of Chronic Illness Therapies
- MFI: Multidimensional Fatigue Inventory

### **Pain**

- VAS: Visual Analog Scale
- SF-MPQ: McGill Pain Questionnaire
- SF-8: Medical Outcomes Survey Short Form-8 Questionnaire
- BPI: Brief Pain Inventory

### **QoL**

- QLQ-C30: European (EORTC) Quality of Life Questionnaire
- FACT-B: Functional Assessment of Cancer Therapy - Breast
- SF-12: The 12 Item Short Form Health Survey

### **Spirituality**

- FACIT-Sp: Functional Assessment of Chronic Illness Therapy – Spirituality (Cancer-specific)
- DRI: Duke Religious Index (Cancer-specific)
- SBI-15R: Systems of Belief Inventory
- RCOPE: Brief Measure of Religious Coping
- STS: Spiritual Transformation Scale (Cancer-specific)
- The SPIRIT History
- FICA: Faith, Importance/Influence, Community, and Address

### **Stress**

- PSS: Perceived Stress Scale
- DMI: Distress Mood Index

**Appendix B:**  
**Logic Model: First Steps**

