Connecticut Challenge Survivorship Clinic
at Yale Cancer Center

General Nutrition Guidelines for Cancer Survivors

1. **Be as lean as possible without becoming underweight.**
    - Honor smaller portion sizes as a way to achieve a healthy weight. Refer to the listed Serving Size on the Nutrition Facts label on a package as a helpful gauge.
2. **Eat mostly foods of plant origin with a variety of vegetables, fruits, whole grains and beans.**
    - Fill ¾ of your plate with plant foods.
    - Eat from a rainbow of colors – red, orange, yellow, blue, purple, white and green. Choose at least 5 servings of fruits and vegetables everyday. Take advantage of nature's powerful phytonutrients contained in each color.
    - Eat more plant sources of protein, such as beans and legumes. Examples are black, red or white types of beans, split peas, lentils, chick peas, hummus, peanut butter, and almond butter.
    - Choose high fiber grains, breads and cereals. A high fiber food has 3 or more grams per serving listed on the Nutrition Facts label.
3. **Avoid sugary drinks.**
4. **Consume fast foods sparingly, if at all.**
5. **If you eat red meats (such as beef, pork and lamb) consume less than 18 ounces a week.**
    - Avoid processed meats.
    - Use meat as a condiment.
6. **If consumed at all, limit alcoholic drinks to 2 a day for men and 1 drink a day for women.**
7. **Limit consumption of salty foods and foods processed with salt. Consume less than 2300 milligrams of sodium a day.**
8. **Don't rely on supplements to protect against cancer.**

Adapted from *Food, Nutrition, Physical Activity and the Prevention of Cancer: a Global Perspective* issued by the World Cancer Research Fund/American Institute for Cancer Research 2007
Visit http://www.dietandcancerreport.org/ to read the full report.

Refer to the American Institute for Cancer Research nutrition pamphlet in your folder for more information. Also, visit its website www.aicr.org for healthy recipes. Another website www.caring4cancer.com has excellent nutrition information and a sign up for weekly emails of new recipe ideas.

LIVE**STRONG** Care Plan

The following is a modified, personalized version of the computer-generated LIVE**STRONG** Care Plan. You can create an unmodified care plan at www.livestrongcareplan.org. The LIVESTRONG Care Plan is a service of the OncoLink (http://www.oncolink.org/) cancer information web site.

Coordinating Your Care

As a survivor, it may be useful for you to keep a journal or notebook of your care. Include your doctors' contact information, medications taken, therapies received and radiology testing you have had. While some survivors continue to see an oncologist, many return to a primary care provider or internist for care, or care is shared among various clinicians. Developing the LIVE**STRONG** Survivorship Care Plan can help you and your primary care provider in understanding what effects to look for and how to handle them. It is important that you and all your clinicians collaborate on the post-cancer care provided.

Follow-up Care

Breast Cancer

After receiving treatment for breast cancer, it is important for survivors to adhere to their physician's plan for follow up care. Guidelines developed by the National Comprehensive Cancer Network state that survivors who have had breast conserving therapy (lumpectomy) should have their first mammogram approximately 6 months after completing radiation therapy, then annually.

Survivors should be seen by their oncologist every 4 to 6 months for the first 5 years and then annually.

- Mammogram annually (first one six months after therapy for survivors who had lumpectomy and radiation therapy).
- Perform monthly self breast exams and/or examination of the chest wall and scar line. Report any changes, lumps, swelling or skin rashes to your physician.
- Seen by oncologist every 4-6 months for 5 years, then annually.

Risk of a second cancer

As a survivor, your chance of developing a second cancer is about twice that of a person of the same sex and age who has never had cancer. This may be a different type of cancer altogether, or a cancer in the same site as before, that is not related to the first cancer. While this sounds scary, it is important to be aware of this risk and be proactive in your own healthcare. It is not well understood why survivors have this risk, but having follow up care, cancer screening and a healthy lifestyle can decrease your risk. In some cases, a treatment (types of chemotherapy or radiation therapy) increases the risk of another cancer. These are called secondary cancers because they develop as a result of therapy.

Because of this risk, survivors are encouraged to adapt a healthy lifestyle of exercise, avoidance of tobacco use and alcohol only in moderation (less than two drinks a day for men and one for women), maintaining a healthy weight and eating a health conscious diet, including lots of fruits and vegetables. The American Institute for Cancer Research has developed nutrition guidelines for cancer survivors to address questions related to diet. Practice safe sun habits by using sunscreen, wearing protective clothing and not using tanning booths. Survivors should follow recommended guidelines for cancer screening, with earlier screening if they are in a high risk category (i.e. radiation to an area, genetic syndrome).

The following sections will address risks related to the therapies you received.

Fatigue

Fatigue is the most common side effect of cancer treatment but the experience varies greatly among patients and survivors. It can range from a mild feeling of weakness or tiredness to an overwhelming physical, mental, and emotional exhaustion. It can be very temporary and gradually ease as healing progresses or can last for months to years after therapy ends. Soon after treatment is complete, friends, family and co-workers often expect the survivor to be back to doing the things they did before treatment, with the same vigor. Many survivors report significant fatigue years after completing therapy, which can be extremely frustrating for the survivor and those around them. There have been many studies examining fatigue and ways to combat it during treatment, but there is little to provide guidance for dealing with fatigue after therapy. It is important to remember that fatigue can be caused by many things and, particularly if fatigue is worsening or new, it should be discussed with your healthcare team to rule out treatable causes.

Research has shown that exercise can aid in relieving fatigue during treatment, so it is possible that this could help post treatment. Talking with other survivors may help in finding ways to deal with fatigue. Most importantly, you should understand it is normal and you will need to give your body time to slowly return to your former energy levels. With a lack of available interventions proven to relieve fatigue, survivors may need to learn to work around it in a sense. By learning to manage tasks, group errands, make lists, prioritize and delegate, you can, to an extent, outsmart your fatigue.

Risk of Developing Osteoporosis

Osteoporosis and osteopenia (the precursor to osteoporosis) are decreases in bone density, which increases the risk of fracture of the affected bones. Women who take aromatase inhibitors (anastrozole) are at increased risk for osteoporosis.

As for lifestyle risks, smokers, people who consume excessive alcohol and those who do not participate in weight bearing exercise have an increased risk of developing osteoporosis. Therefore, it is very important that survivors not drink alcohol or smoke. In addition, survivors should engage in weight-bearing exercise such as walking, weight lifting, riding a stationary bicycle, jogging, dancing, and any exercise where the legs are supporting the body's weight.

These efforts, combined with increasing calcium and vitamin D in your diet and taking calcium and vitamin D supplements, will greatly help to reduce your risk of developing osteoporosis. Survivors at risk should have adequate intake of calcium (1200-1500mg total per day, taken in divided doses) and vitamin D (400-800 international units per day if under age 50, and 800-1000 international units per day if over age 50). Calcium supplements are an easy way to get the recommended daily amount and come in 2 forms: calcium carbonate and calcium citrate. The body does have some trouble absorbing large amounts of calcium, so supplements should be split into 2 or more doses per day. Calcium carbonate requires stomach acid to be absorbed by the body, therefore people that take acid reducers (such as Zantac, Tagamet) and/or proton pump inhibitors (such as Prilosec, Prevacid, etc) should use calcium citrate. If you have trouble tolerating your calcium supplement, talk to your doctor or nurse; there may be another formulation you can tolerate more easily. It is important to take Vitamin D with the calcium supplements because it helps your body to absorb calcium better. Survivors should talk to their healthcare provider about screening with DEXA scan (a test used to assess bone density) and options for treatment, if necessary.

Summary:

- Avoid smoking and excessive alcohol intake
- Perform weight bearing exercise 2-3 times per week
- Calcium intake of 1200-1500mg per day plus Vitamin D 800-1000iu per day (either in dietary intake or supplements)
- Consider screening with DEXA scan

Side Effects while taking Aromatase Inhibitors

Your LIVE**STRONG** Care Plan focuses on late effects of therapy, or those that can occur months to years after completing therapy. Current hormone therapy regimens last anywhere from 5 to 10 years, so we felt it was important to include some information about the acute side effects of these agents.

Aromatase Inhibitors (AIs) commonly cause hot flashes and other symptoms of menopause. Avoiding triggers such as warm rooms, spicy, caffeinated or alcohol containing foods or beverages can help reduce hot flashes. Drink plenty of fluids, wear breathable clothing and exercise regularly. For some women, certain antidepressant medications can provide relief of hot flashes.

Many women taking AIs experience aching in their muscles, joints or bones, also known as arthralgias. In some cases, this side effect is troubling enough for the patient to stop therapy. The cause of this pain is not clear, but it may be related to the low estrogen levels while on these medications. Arthralgias may occur in as many as 60% of women taking AIs. Some patients experience pain that comes and goes, in others it is constant and some report noting worse stiffness and pain in the morning.

Treatments commonly used are acetaminophen, nonsteroidal anti-inflammatory drugs (NSAIDS, ibuprofen, naproxen), narcotic pain relievers, glucosamine and topical pain relieving ointments. Research studies have used vitamin D therapy or acupuncture with some success. Further research is needed to determine the best therapies to manage this common side effect.

Sexuality Concerns for Female Survivors

Women of any age may have sexuality concerns after cancer treatment. Do not hesitate to talk with your oncology team about these common concerns. Chemotherapy agents and aromatase inhibitors are associated with vaginal dryness, painful intercourse, reduced sexual desire and ability to achieve orgasm. Many of these issues are caused by the sudden onset of menopause, which can occur with cancer therapy. This sudden change in hormone levels leads to physical changes such as vaginal atrophy (thinning and inflammation of the vaginal walls), loss of tissue elasticity and decreased vaginal lubrication. In addition, women may experience hot flashes, mood swings, fatigue and irritability.

Decreased lubrication leading to painful intercourse is a common concern for survivors. This can often be treated with vaginal lubricants and moisturizers and/or estrogen therapy (taken orally or used in the vagina). Women who have had a hormone dependent cancer should discuss current research on using these therapies with their healthcare team. Surgery and/or radiation therapy can result in scarring that may cause discomfort during intercourse. Open communication about position changes and alternative methods of expressing affection with your partner can help when resuming sexual activity after treatment.

Concerns about changes in your body, cancer recurrence, the stress and anxiety caused by cancer therapy or changes in your relationship with your partner can all effect how you feel about your sexuality. It is important to understand that sexual activity cannot cause cancer to recur, nor can you spread cancer to another person through sexual activity. If you find that your feelings are significantly impacting your sexuality, you should talk with your healthcare team about finding a therapist experienced in helping cancer survivors.
Of utmost importance in addressing sexuality issues is communication, both between partners and between survivors and their healthcare teams. Understand that these concerns are common and communication is the first step to finding the right solutions.

Surgery Side Effects

Lumpectomy

Surgery for breast cancer can include lumpectomy (sometimes called breast conserving surgery, where only the breast mass (lump) and a surrounding area of normal tissue is removed). The surgeries can result in cosmetic deformities. In some cases, these can be corrected with breast reconstruction performed by a plastic surgeon. There is a risk of nerve damage during breast surgeries, which can lead to pain in the chest wall and/or pain and tingling in the arm/hand on the side of the surgery. Injuries like this can be aggravated by scar tissue formation after radiation therapy to the area, which can develop years after therapy. Neuropathic (nerve) pain is often described as burning or electric and can also include numbness, tingling and decreased strength or sensation. Survivors who develop chronic pain may benefit from a consult with a pain specialist.

Sentinel Node Biopsy—Lymphedema

The removal of lymph nodes from the axilla (underarm), abdomen, or groin area can lead to decreased drainage in the closest limb, causing lymphedema (a swelling of the limb) to result. Survivors who have also received radiation therapy to the area are at greater risk of developing lymphedema, which can occur years after therapy. While sentinel node biopsy can decrease the risk of developing subsequent lymphedema, the risk is not completely eliminated. Lymphedema can cause pain, disfigurement, functional limitations and increase the risk of a serious infection in that limb. At the first sign of swelling a Certified Lymphedema Therapist should be consulted to achieve the best outcomes. Survivors should be aware of this potential complication, given information on self-care and instructed to notify the healthcare team with any signs of swelling or infection.

Signs of lymphedema may include the following changes in the area near surgery: full or heavy feeling, skin changes (reddened, warm, cool, dry, hard, stiff), aching/discomfort, tightness, or less movement/flexibility in nearby joints. You may also experience difficulty fitting into clothes like the sleeve of a jacket. In addition, you may notice jewelry feels tight even though you have not gained any weight. Lymphedema can occur right after surgery, weeks, months, or even years later. The possibility of developing lymphedema continues throughout a person's lifetime. Survivors should be vigilant in monitoring for early signs of swelling and practice prevention. If swelling develops, prompt, proper management and therapy allows for the best outcomes.

To help prevent and control lymphedema, survivors should try to avoid infections, burns, cuts, excessive hot/cold or injury to the limb that is at risk. Avoid insect bites by using insect repellent. Use lotion to prevent dry, chapped skin. Use sunscreen with SPF 15 or higher and try to avoid the sun during the hottest time of day. Avoid pressure or constriction of the limb. Avoid tight fitting clothes and jewelry.

Those at risk for lymphedema can and should exercise. Start with low intensity exercise and gradually increase intensity while monitoring for changes in your limb including swelling or redness. If any swelling or redness occurs, stop the exercise and consult your physician. The person at risk for lymphedema should consider wearing a compression garment with vigorous or very strenuous exercise.

Whenever possible, have blood drawn, IVs placed, and shots/vaccinations given and blood pressure taken in the unaffected arm. The American Cancer Society online booklet, Lymphedema: What Every Woman With Breast Cancer Should Know, is a useful resource. <http://www.cancer.org/Treatment/TreatmentsandSideEffects/PhysicalSideEffects/Lymphedema/WhatEveryWomanwithBreastCancerShouldKnow/index>

Surgery to remove the lymph nodes (or sentinel node/s) can result in injury to the nerves in that area. Nerve damage can cause pain, numbness, tingling, decreased sensation or strength in the area or limb. For instance, axillary (underarm) lymph node removal can result in these symptoms on the chest wall, under the arm (armpit) or in the arm and/or hand on the treated side. Injuries like this could be aggravated by scar tissue formation after radiation therapy to the area, which can develop years after therapy. This type of pain is called nerve pain and is treated with different medications than other types of pain. Survivors with this type of pain may benefit from a consult with a pain specialist.

Summary:

- Report any signs of swelling in the at risk limb to your healthcare provider, and see a certified lymphedema therapist promptly if these symptoms develop.
- Practice preventive measures to decrease the risk of developing or worsening lymphedema.

Radiation Side Effects

Long term effects of radiation therapy vary greatly depending on the areas included in the field of radiation and the radiation techniques that were used, as these continue to develop and improve. One issue that is consistent across all tissues is the possibility of developing a second cancer in or near the radiation field. Secondary cancers develop as a result of the exposure of healthy tissue to radiation. Newer radiation techniques are designed to limit this exposure, but it is not always possible to prevent all exposure and still achieve the desired outcomes.

Heart /Cardiovascular

Potential late effects of radiation fields including the heart include premature coronary artery disease and hypertension (high blood pressure), valve abnormalities, fibrosis or scarring of the cardiac tissue resulting in decreased heart function, pericarditis (inflammation of the heart sack), heart failure and myocardial infarction (heart attack). The actual risk varies greatly depending on the total dose of radiation, number of fractions (doses), amount of radiation actually delivered to the heart, time since radiation and whether or not chemotherapy agents with known cardiac toxicity were also given. Survivors at risk should have a yearly history and physical by a healthcare provider to evaluate cardiac function and blood pressure and should be counseled on lifestyle choices including exercise, tobacco avoidance and a healthy diet. High risk survivors may benefit from yearly EKG and screening echocardiogram to evaluate heart function. Survivors should also be especially aware of other factors that increase risk of heart disease and death from heart attack. These include high cholesterol, obesity, high blood pressure, diabetes, smoking, and illegal drug use (cocaine). Screening for all of these risk factors can allow for early intervention.

- Avoidance of tobacco and illegal drug use
- Yearly history and physical exam with monitoring of cholesterol levels, blood pressure, and blood sugar by primary care physician to reduce risk of heart disease/ attack
- Yearly EKG and/ or echocardiogram for high-risk patients

Lung

Radiation fields involving the lung can lead to scarring (fibrosis), inflammation (pneumonitis), and restrictive or obstructive lung disease. Risk for these problems is increased with higher doses of radiation. Survivors who have had radiation to the lung are strongly encouraged not to smoke, as this can greatly increase the risk of problems. Annual history and physical by a healthcare provider should include a pulmonary exam and review of possible symptoms (cough, shortness of breath, wheezing). Survivors should receive annual flu vaccines and the pneumococcal vaccine. Physicians may consider chest x-rays or pulmonary function tests for those at highest risk or a change in pulmonary status.

Scarring within the lungs can result from radiation, and uncommonly this scarring may affect blood vessels. Any survivor coughing up blood should be evaluated immediately by a physician, either in the office or the emergency room.

- Annual influenza vaccine
- Pneumococcal vaccine every 5 years
- Tobacco avoidance/ smoking cessation
- Chest X-ray for new cough or shortness of breath

- Immediate evaluation of hemoptysis (coughing up blood)

Bone

Damage to the bone from radiation can cause small cracks (fractures) in that bone. The ribs are more susceptible to fracture after radiation, although these fractures will almost always heal normally. If radiation is given in the area of a joint, permanent stiffness, pain and arthritis can develop in that joint.

- Rapid evaluation for fractures after trauma (for example, after a motor vehicle accident)
- Physical/ Occupational therapy for arthritis
- Non-steroidal inflammatory medicines for arthritis

Skin

Radiation can lead to permanent changes in the skin. This can include changes in the color or texture of the skin, scars, and changes in the color, texture of hair or permanent loss of the hair in the treated area. The soft tissue and muscles under the skin can develop scarring and/or shrinkage, which can lead to a loss of flexibility and movement or chronic swelling. Some patients develop chronic or recurring ulcers of the skin in the area treated. Blood vessels of this skin may become dilated and more noticeable, although this is not harmful. If the skin feels tight or sore, regular use of vitamin E applied to the skin can be helpful.

After radiation the skin is more sensitive to sunlight, and survivors should be especially cautious to use sunscreens when outdoors.

- Diligent use of sunscreen
- Evaluation by a wound care specialist or surgeon for non-healing ulcers

Radiation for breast cancer (after lumpectomy)

Any patient who has had breast cancer is at risk for developing a second breast cancer in either the treated or the opposite breast. It is recommended that women undergo annual mammograms after treatment for breast cancer, as well as yearly breast exams by a breast cancer specialist (medical oncologist, radiation oncologist, or breast surgeon).

Other long term effects of breast irradiation include changes in the size or shape of the breast and damage to the nerves, leading to pain or loss of strength or feeling in the arm on the side that was irradiated. Damage to the drainage (lymphatic) system in the area can lead to chronic swelling, called lymphedema. Risk of lymphedema is highest for women who also had surgical lymph node dissections and, to a lesser extent, sentinel node biopsy. A survivor with lymphedema who develops pain or redness in the arm, especially with fever, should be evaluated as these signs may indicate infection.

Survivors of breast cancers, particularly left-sided breast cancers, may be at increased risk of cardiac complications. Please see the description of heart/ cardiovascular late effects for more information.

- Yearly mammograms and examination by breast cancer specialist.
- Consideration of physical/ occupational therapy for arm pain, weakness, or swelling.
- Rapid evaluation for new arm swelling, redness, or pain, especially with fever.