Long-Term Side Effects of Cancer Treatment

This section has been reviewed and approved by the Cancer.Net Editorial Board [1], April / 2013

Key Messages:

- Cancer treatments can cause long-lasting side effects, called late effects.
- The types of late effects a person experiences vary based on the cancer treatments he or she received.
- All cancer survivors should receive follow-up care after treatment to watch for and manage any late effects.

A late effect is a side effect that occurs months or years after treatment. Many people who have received treatment for cancer have a risk of developing late effects. The treatment of late effects is an important part of care after cancer treatment, often called survivorship care.

Types of late effects

Because late effects are caused by cancer treatments, nearly any type of treatment can cause late effects. Some of the more common late effects are described below. If you are concerned about a particular late effect, please talk with your doctor.

Problems from surgery. Several different kinds of surgical procedures may cause late effects; some examples are listed below.

- Survivors of Hodgkin lymphoma, especially those diagnosed before 1988, often had their spleens removed and have a higher risk of serious infections.
- Survivors of cancers of the bone and soft tissue may experience physical and psychological effects from losing all or part of a limb, such as phantom limb pain (feeling pain in the limb that was removed). Learn more about rehabilitation [2], which can help people cope with physical changes from surgery.
- Survivors who have had surgery to remove lymph nodes (or radiation therapy to lymph nodes) may develop lymphedema [3], an abnormal buildup of fluid (lymph fluid) that causes swelling and pain. Learn more about lymphedema after breast cancer treatment [4], lymphedema in the legs [5], and lymphedema in the head and neck [6].
- Men who had lymph nodes near the kidney, bladder, testicles, or rectum removed may have a risk of infertility (the inability to father a child).

Heart problems. These are most often caused by radiation therapy to the chest and/or chemotherapy, especially if the drugs doxorubicin (Adriamycin) and cyclophosphamide (Cytoxan, Neosar) were used. People age 65 or older and those who received higher doses of chemotherapy have a higher risk of heart problems that may include inflammation (swelling) of the heart muscle, congestive heart failure (a condition where the heart has difficulty pumping blood), or heart disease.

Talk with your doctor about being evaluated regularly for heart damage because you may not experience any signs or symptoms. Screening tests to find heart damage include physical examinations and an electrocardiogram (EKG or ECG) and echocardiography [7] (a test using sound waves to evaluate the heart). All cancer survivors, especially those who received treatment for Hodgkin lymphoma [8] as children, should tell their doctor if they have chest pain, because this may be a sign of a heart problem.

Lung problems. Chemotherapy and radiation therapy to the chest may damage the lungs. Cancer survivors who received both chemotherapy and radiation therapy (for example, a person who has received both treatments for a bone marrow/stem cell transplant [9]) may have a higher risk of lung damage. Some of the drugs that are more likely to cause lung damage include bleomycin (Blenoxane), carmustine (BiCNU), prednisone (multiple brand names), dexamethasone (multiple brand names), and methotrexate (multiple brand names). The late effects may include the following:

- A change in how well the lungs work
- Thickening of the lining of the lungs
- Inflammation of the lungs
- Difficulty breathing

People with a history of lung disease and older adults may have additional lung problems.

Endocrine (hormone) system problems. For women, chemotherapy and radiation therapy may damage a woman?s ovaries, causing hot flashes, sexual problems, osteoporosis (thinning of the bones), and early menopause [10].

Men and women who receive radiation therapy to the head and neck area may have lower levels of hormones or changes to the thyroid gland, and both women and men are at risk for infertility from cancer treatment [11].

Your doctor can measure your hormone levels with blood tests, and these should be done regularly for cancer survivors who have a risk of hormone changes from treatment. Sometimes, medications help bring hormone levels back to normal.

Bone, joint, and soft tissue problems. Cancer survivors who have received chemotherapy, steroid medications, or hormonal therapy and who are not physically active may develop osteoporosis or joint pain.

You can lower your risk of osteoporosis by not smoking, eating foods rich in calcium and vitamin D, participating in regular physical activity [12], and limiting the amount of alcohol [13] you drink. Learn more about maintaining bone health [14].

Brain, spinal cord, and nerve problems. Chemotherapy and radiation therapy can cause long-term side effects to the brain, spinal cord, and nerves. These late effects can include:

- Hearing loss from high doses of chemotherapy, especially with drugs like cisplatin (Platinol)
- Risk of stroke, for those who have had high doses of radiation treatment to the head (usually to treat a brain tumor).
- Nervous system side effects [15], such as peripheral neuropathy [16] (damage to the nerves outside of the brain and spinal cord)

Regular physical examinations, hearing tests, and x-rays should be done after cancer treatment ends to check for these late effects.

Learning, memory, and attention difficulties. Chemotherapy and high doses of radiation therapy to the head may cause these problems for both adults and children.

Cancer survivors who experience any of these problems should talk with their doctor. Learn more about cognitive (thought process) problems and chemo brain [17].

Dental and vision problems. Cancer survivors should have regular check-ups with a dentist [18] and an ophthalmologist (doctor who specializes in treating conditions of the eye). Cancer survivors may have the following dental and vision problems depending on the treatments they received:

- Chemotherapy may affect tooth enamel and increase the risk of long-term dental problems.
- High-dose radiation therapy given to the head and neck area can change tooth development, cause gum disease, and lower saliva production, causing a dry mouth.
- Steroid medications may increase the risk of eye problems, such as cataracts (clouding of the eye that affects vision).

- Chemotherapy, radiation therapy, and surgery can affect how well a person digests their food. Surgery and/or radiation therapy to the abdominal area can lead to tissue scarring, chronic (long-term) pain, and intestinal problems that affect digestion. Finally, some survivors may have chronic diarrhea that reduces their body?s ability to absorb nutrients.
- A nutritionist or dietitian may help people who are not getting enough nutrients or are underweight because of poor digestion.

Emotional difficulties. Cancer survivors often experience a variety of positive and negative emotions, including relief, a sense of gratitude to be alive, fear of recurrence [19], anger [20], guilt [21], depression and anxiety [22], and isolation.

Cancer survivors and caregivers, family and friends may also experience post-traumatic stress disorder [23]. Each person?s post-treatment experience is different. For example, some survivors struggle with the emotional effects of the cancer, and others say that they have a renewed outlook on life because of the cancer.

Secondary Cancers. A secondary cancer is a different type of cancer that appears after the original cancer diagnosis. According to the National Cancer Institute (NCI), cancer survivors have a 14% higher risk of developing a new cancer. The development of a secondary cancer is thought to be from previous cancer treatments, such as chemotherapy and radiation therapy. Chemotherapy and radiation therapy can also damage bone marrow stem cells and increase the chance of either myelodyplasia [24] (a blood cancer where the normal parts of the blood are either not made or are abnormal) or acute leukemia [25]. Talk with your doctor about how to lower the risk of a secondary cancer and how to watch for any signs or symptoms.

Fatigue. Fatigue is the most common side effect of cancer treatment, and it often continues after treatment. Fatigue may be caused by the effects of treatment or may have no known cause. Learn more about coping with cancer-related fatigue [26].

Questions to ask the doctor

If possible, find out as much as you can about the potential long-term effects of your cancer treatment while you are still visiting with your oncologist. You may want to make a special appointment to go over your treatment summary (here?s a form [27] to help).

- Could you or someone in your office write down what treatment(s) I received?
- Am I at risk of specific late effects?
- Are there other doctors/specialists I need to see, such as a cardiologist or endocrinologist?
- Are there any signs or symptoms I need to watch for?

More Information

Survivorship [28]

Emotional and Physical Matters [29]

Managing Side Effects [30]

Additional Resource

Livestrong: After Effects of Cancer Treatment [31]

Links:
[1] http://www.cancer.net/about-us
[2] http://www.cancer.net/node/25397
[3] http://www.cancer.net/node/25250
[4] http://www.cancer.net/node/24372
[5] http://www.cancer.net/node/24575
[6] http://www.cancer.net/node/24552
[7] http://www.cancer.net/node/24509
[8] http://www.cancer.net/node/19163
[9] http://www.cancer.net/node/24717
[10] http://www.cancer.net/node/25069
[11] http://www.cancer.net/node/25268
[12] http://www.cancer.net/node/24967
[13] http://www.cancer.net/node/24981
[14] http://www.cancer.net/node/24407
[15] http://www.cancer.net/node/25258
[16] http://www.cancer.net/node/24588
[17] http://www.cancer.net/node/25044
[18] http://www.cancer.net/node/24499
[19] http://www.cancer.net/node/25241
[20] http://www.cancer.net/node/24489
[21] http://www.cancer.net/node/24491
[22] http://www.cancer.net/node/25479
[23] http://www.cancer.net/node/24650
[24] http://www.cancer.net/node/19381
[25] http://www.cancer.net/node/19065
[26] http://www.cancer.net/node/25048
[27] http://www.cancer.net/node/25394
[28] http://www.cancer.net/node/22
[29] http://www.cancer.net/node/25109
[30] http://www.cancer.net/node/25238
[31] http://www.livestrong.org/Get-Help/Learn-About-Cancer/Cancer-Support-Topics/Physical-Effects-of-Cancer/Aftereffects-of-Cancer-Treatment