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Second Cancers

This information focuses on second cancers in adults. For information about second cancers after treatment of childhood cancers, see [Children Diagnosed With Cancer: Late Effects of Cancer Treatment](#)

- [What Are Second Cancers?](#)
- [Second Cancers Related to Treatment](#)
- [Second Cancer Risks Related to Lifestyle and Environment](#)
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What Are Second Cancers?

- [Who is at risk for second cancers?](#)

Advances in cancer early detection and treatment mean that more and more people are surviving cancer. Some survivors may live cancer free for the remainder of their life after treatment, but others may be affected by a number of non-cancer related problems and treatment side effects.

Often, a cancer survivor's greatest concern is facing cancer again . It's important for all cancer survivors to know it's possible to get another (new) cancer, even after surviving the first. This is called a **second cancer**.

A second cancer is a new cancer that's unrelated to any previous cancer diagnosis. It's

a completely different type of cancer.

- Sometimes the new cancer is in the same organ or area of the body as the first cancer. For example, someone who was treated for a certain type of [colorectal cancer](#)¹ can get another type of colorectal cancer as a second cancer.
- Or, a second cancer might develop in another organ or tissue. A second cancer is different from a [cancer recurrence](#)² which is when the same type of cancer that a person had before comes back.

Because it can take many years for cancers to develop, second cancers have been studied in types of cancers for which successful treatments have been around the longest. That's why we know more about certain second cancers than others.

Who is at risk for second cancers?

It isn't always clear what causes a second cancer or who is most at risk. Some second cancers

Hyperlinks

1. www.cancer.org/cancer/types/colon-rectal-cancer.html
2. www.cancer.org/cancer/survivorship/long-term-health-concerns/recurrence.html
3. www.cancer.org/cancer/risk-prevention/genetics/family-cancer-syndromes.html
4. www.cancer.org/cancer/screening.html

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American Cancer Society (ACS). *Cancer Facts & Figures 2020*. Atlanta, GA: American Cancer Society; 2020.

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National Comprehensive Cancer Network (NCCN). *Clinical practice guidelines: Survivorship*. Version 2.2019. Accessed at www.nccn.org on January 6, 2020.

Rowland, JH, Mollica, M, Kent EE. Survivorship. In Niederhuber JE, Armitage JO, Kastan MB, Doroshow JH, Tepper JE, eds. *Abeloff's Clinical Oncology*. 6th ed. Philadelphia, PA: Elsevier; 2020:732-740.

following years.

Solid tumors

There is also a risk for other cancers, which are mostly solid tumors, after having radiation therapy. Most of these cancers develop 10 years or more after radiation therapy. The effect of radiation on the risk of developing a solid tumor cancer depends on factors such as:

- The **age of the patient** when they were treated with radiation. For example, the risk of developing breast cancer after radiation is higher in those who were treated when they were young compared with those given radiation as adults. The chance of developing breast cancer after radiation seems to be highest in those exposed as children. Risk decreases as the age at the time of radiation increases; women who had radiation after the age of 40 have a lower risk of breast cancer. Your age when you get radiation treatment has a similar effect on the development of other solid tumors, including lung cancer, thyroid cancer, bone sarcoma, and gastrointestinal or related cancers (stomach, liver, colorectal, and pancreatic).
- The **dose of radiation**. In general, the risk of developing a solid tumor after radiation treatment goes up as the dose of radiation increases. Some cancers require larger doses of radiation than others, and certain treatment techniques use more radiation.
- The **area treated**. The area treated is also important, since these cancers tend to develop in or near the area that was treated with radiation. Certain organs, such as the breast and thyroid, seem to have a higher risk for developing cancers after exposed to radiation than other organs.

Risk of developing second cancers after chemotherapy and targeted therapy

Chemotherapy

Some types of [chemotherapy \(chemo\) drugs](#)⁵ have been linked with different kinds of second cancers. The cancers most often linked to chemo are myelodysplastic syndrome (MDS) and acute myelogenous leukemia (AML). Sometimes, MDS occurs first, then turns into AML. Acute lymphocytic leukemia (ALL) has also been linked to chemo. Chemo is known to be a greater risk factor than radiation therapy in causing leukemia.

The risk gets higher with

Figures, 2019-2020. Atlanta, GA: American Cancer Society; 2019.

American Cancer Society (ACS). *Cancer Treatment and Survivorship Facts & Figures 2019-2021.* Atlanta, GA: American Cancer Society; 2019.

Division of Cancer Epidemiology and Genetics (NIH). *Second primary cancers.* Accessed at <https://dceg.cancer.gov/research/what-we-study/second-cancers> on September 19, 2019.

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Second Cancer Risks Related to Lifestyle and Environment

Although it's not possible to predict who might get a second cancer, certain lifestyle behaviors or habits can put a person at higher risk for some second cancers. Studies continue to look at the links between [genetics](#)¹, lifestyle habits, and [known cancer-causing agents](#)².

For some cancers, it's not clear if lifestyle may play a role in their development. For others, the cancer can be linked to things considered to be modifiable risk factors, or things that can potentially be changed to help lower cancer risk. In fact, more than 40% of cancer cases and about 45% of cancer deaths in the US are attributed to potentially modifiable risk factors. These risk factors include:

- [Smoking](#)³
- [Excess body weight](#)⁴

American Cancer Society (ACS). *Cancer Facts & Figures 2020*. Atlanta, GA: American Cancer Society; 2020.

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Second Cancer Risks Related to Family History and Genetics

cancers. Another example is [hereditary non-polyposis colorectal cancer syndrome \(HNPCC\)](#)³, also known as **Lynch syndrome**, which is linked to a high risk for colorectal, endometrial, ovarian, bladder, stomach, pancreatic, and some other cancers.

[Genetic counseling and testing](#)⁴ with trained genetic professionals may be useful and recommended for people who have a family cancer syndrome or a higher risk for more than one kind of cancer because of family history.

A certain kind of genetic testing is called **pharmacogenetics**. Pharmacogenetics might be used for certain types of gene variations. The test looks at how a person's variations in genes might affect how they react to cancer treatment.

Talk to your cancer care team about whether genetic testing is right for your situation, as well as its cost, pros, and cons.

Hyperlinks

1. www.cancer.org/cancer/understanding-cancer/genes-and-cancer.html
2. www.cancer.org/cancer/risk-prevention/genetics/family-cancer-syndromes.html
3. www.cancer.org/cancer/types/colon-rectal-cancer/causes-risks-prevention/genetic-tests-screening-prevention.html
4. www.cancer.org/cancer/risk-prevention/genetics/genetic-testing-for-cancer-risk/understanding-genetic-testing-for-cancer.html

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Lowering the Risk of Getting a Second Cancer

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