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Risk Factors and Causes of Childhood Cancer

A risk factor is anything that increases the chances of getting a disease such as cancer. Different cancers have different risk factors.

Lifestyle and environmental risk factors

In adults, lifestyle-related risk factors, such as smoking, being overweight, not getting enough exercise, eating an unhealthy diet, and drinking alcohol play a major role in many types of cancer. But **lifestyle factors usually take many years to influence cancer risk, and they are not thought to play much of a role in childhood cancers.**

A few environmental factors, such as [radiation exposure](#)¹, have been linked with some types of childhood cancers. Some studies have also suggested that some parental exposures (such as smoking) might increase a child's risk of certain cancers, but more studies are needed to explore these possible links. So far, most childhood cancers have not been shown to have environmental causes.

Changes in genes

In recent years, scientists have begun to understand how certain changes in the DNA inside our cells can cause them to become cancer cells. DNA is the chemical that makes up our genes, which control nearly everything our cells do. We usually look like our parents because they are the source of our DNA. But DNA affects more than just how we look. It also influences our risks for developing certain diseases, including some kinds of cancer.

Some genes control when our cells grow, divide into new cells, and die.

- Genes that help cells grow, divide, or stay alive are called *oncogenes*.
- Genes that slow down cell division, repair mistakes in a cell's DNA, or cause cells to die at the right time are called *tumor suppressor genes*.

Cancers can be caused by DNA changes that keep oncogenes turned on, or that turn off tumor suppressor genes.

Inherited versus acquired gene mutations

Some children inherit DNA changes (mutations) from a parent that increase their risk of certain types of cancer. These changes are present in every cell of the child's body, and they can often be tested for in the DNA of blood cells or other body cells. Some of these DNA changes are linked only with an increased risk of cancer, while others can cause syndromes that also include other health or developmental problems.

But most childhood cancers are not caused by inherited DNA changes. They are the result of DNA changes that happen early in the child's life, sometimes even before birth. Every time a cell divides into 2 new cells, it must copy its DNA. This process isn't perfect, and errors sometimes occur, especially when the cells are growing quickly. This kind of gene mutation can happen at any time in life and is called an *acquired* mutation.

Acquired mutations are only in the person's cancer cells and will not be passed on to his or her children.

Sometimes the causes of gene changes in certain adult cancers are known (such as cancer-causing chemicals in cigarette smoke). But **the causes of DNA changes in most childhood cancers are not known.** Some may have outside causes like radiation exposure, and others may have causes that have not yet been found. But many are likely to be the result of random events that sometimes happen inside a cell, without having an outside cause.

Hyperlinks

1. www.cancer.org/cancer/cancer-causes/radiation-exposure/x-rays-gamma-rays.html

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