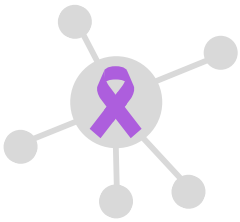
What is a cancer cluster?



The National Cancer Institute (NCI) defines cancer as a disease where abnormal cells in the body grow uncontrollably and can spread to other parts of the body. There are over 100 different kinds of cancer, and they are usually named after the organ or tissue where the cancer forms (NCI). Cancer is the second leading cause of death in the United States, and is the leading cause of death in North Carolina (CDC).

Cancer is caused by changes to genes that control the way cells function. These changes can happen for multiple reasons, like an error occurring when cells divide, something harmful in the environment causing damage to the genes, or these changes can be inherited from our parents.

A large number of cancer cases in a specific location can raise concerns of something called a cancer cluster. The Centers for Disease Control and Prevention (CDC) defines cancer clusters as a "greater than expected number of cancer cases that occur within a group of people in a geographic area over a defined period of time."

In the US, there are around 1,000 inquiries about suspected cancer clusters each year (CDC). If an inquiry fits the definition of a cancer cluster and into other important criteria, then researchers look into the feasibility of conducting an epidemiological study to see if a cluster is present.

In the United States, there are 72 confirmed cancer clusters. At the moment, there are no confirmed cancer clusters in North Carolina. However, there are two investigations of suspected cancer clusters in North Carolina: thyroid cancer in Iredell County, and ocular melanoma in Huntersville.

There are several reasons why it is hard to determine a cancer cluster. One reason is that cancer is common in the United States. Many people across many communities will have some type of cancer as the U.S. population ages and cancer survival rates improve. Therefore, even if cancer cases in your community seem alarmingly frequent, the number of cases could be consistent with the overall rate for the population (CDC).

Suspected cancer clusters are also difficult to confirm because studies often have a small number of people in them. This makes it hard to see larger trends, and harder to show that the rate of cases is "statistically significant".

Another reason is that cancers are known to have long latency periods. A "latency period" is the time between when an exposure happens and when the symptoms appear; with cancer, exposure could have happened years or decades before getting a cancer diagnosis (CDC). If people move away from a community after being exposed to something that may cause cancer, but before any symptoms appear, a cancer cluster might go undetected. Similarly, if a resident has cancer, but did not live in the area of interest during the exposure period, the cancer diagnosis may not be related to an exposure in their current community.

Given the complex nature of cancer epidemiology and showing statistical significance, most investigations rarely prove a cancer cluster, or find the cause of the increase in cancer cases in a community. For those who have been impacted by cancer, it is very natural to want to understand the cause of the disease. Therefore, it is important to recognize that investigating a cancer cluster can be very emotional and difficult for the community involved.

To learn more about cancer clusters, check out the official CDC website dedicated to information on cancer clusters. The CDC also answers frequently asked questions, which can be found here.

Sources:

Federal resources on cancer and cancer clusters:

1. NCI What Is Cancer?
2. CDC Cancer Clusters
3. CDC Guidelines: Investigating Suspected Cancer Clusters and Responding to Community Concerns

North Carolina Resources on cancer clusters:

1. NC State Center for Health Statistics (SCHS) Cancer Clusters
2. University of North Carolina (UNC) North Carolina Cancer Research Advisory Panel Recommendations

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