Massachusetts Department of Public Health | Bureau of Environmental Health

Cancer in Massachusetts

Information Sheet

What is cancer?

Cancer is a group of over 100 different diseases.

Cancer occurs when abnormal cells grow out of control and crowd out normal cells. It can start anywhere in the body. Cancer types are named for the original location in the body and the type of cell or tissue. Cancer can spread ("metastasize") to other parts of the body. But, breast cancer that has spread to the bones is still called breast cancer, not bone cancer.

Different cancer types have different causes.

Different types of cancer are individual diseases with different causes, risk factors, and characteristics. The reason a breast cell turns into breast cancer is not the same reason a white blood cell turns into leukemia.

Cancer is common.

About 1 out of every 2 men and 1 out of every 3 women will develop cancer during their lifetime. Each year, over 1.5 million people are diagnosed with cancer in the United States. About 3 out of every 4 families have at least one member who had cancer. Anyone can develop cancer, but certain factors increase your risk for getting cancer.

What are risk factors?

A risk factor is something that increases your chance of getting cancer.

Some risk factors can be avoided while others can't. Risk factors can include:

- Hereditary conditions (such as genes passed down from parents)
- Lifestyle factors (such as smoking cigarettes or eating an unhealthy diet)
- Medical conditions and treatments (such as previous radiation treatment)
- Infections (such as human papilloma virus)
- Environmental exposures (such as certain air pollutants)

Environmental risk factors depend on how, how much, and how long you are exposed.

Certain chemicals, called carcinogens, can cause cancer. Carcinogens may be in the air, water, or soil— either indoors or outdoors. You are “exposed” to a carcinogen when you come into contact with it. Certain types of exposure may put you at risk for cancer, while others may not. For example, inhaling a carcinogen may increase your risk, but touching the same chemical may not. In addition, some chemicals may increase your risk only if you are exposed to high amounts over a long time.

Your risk of getting cancer goes up as you get older.

Almost 9 out of 10 cancer diagnoses happen in people ages 50 and older. Some types of cancer (such as leukemia) are more common in childhood. Other types are more common in adulthood. Breast cancer is the most common type in adult women, and prostate cancer is the most common type in adult men.

Having a risk factor does not mean you will get cancer.

Some individuals who have risk factors may not get cancer, and some individuals who get cancer may not have any known risk factors. However, controlling risk factors can help lower the chance of getting cancer.

Why are exact causes of cancer hard to identify?

Cancer takes a long time to develop.

The cause of cancer is usually related to events that happened many years ago. Most cancers are thought to take anywhere from 10 to over 50 years to appear. The length of time can depend on age, genetic factors, and intensity of an exposure.

Multiple factors can act in combination to cause cancer.

A risk factor influences the development of cancer but usually does not directly cause cancer. Instead, continued exposure to many different factors can greatly increase your risk. For example, an individual’s risk may depend on a complex interaction between their genetic makeup and exposure to a cancer-causing substance. In addition, random changes in cells can play a role in the development of cancer. These cancers may occur for no apparent reason.

Risk factors change over time and are difficult to pinpoint.

An individual's risk of getting cancer depends on many factors that change over time. These include age and lifestyle factors (e.g. smoking, diet, exercise, and drinking alcohol). Also, chemical exposures today are very different than exposures in the past.

What is a cancer cluster?

Cancer may seem to happen more often in certain places.

A cancer cluster is an unusually high amount of cancer diagnoses happening in a community. A cancer cluster may have:

- An unusual number of people diagnosed with one cancer type over a short time
- Several people diagnosed with a rare type of cancer
- Many diagnoses in a group of people not usually affected by that type of cancer (e.g. many children getting a cancer type usually only seen in adults)

Statistical tests help determine whether the cancer increases are truly unusual or fall within expectations.

Cancer clusters are often due to random patterns.

Only rarely have excess cancers in a community been linked to a harmful environmental exposure. Instead, cancer increases may be due to random chance, high cancer screening rates in the community, an aging population, or lifestyle risk factors (e.g. many people who smoke). In fact, over half of all cancers are related to lifestyle factors.

Several cases of cancer in a community are rarely a true cancer cluster.

Sometimes, a person will begin to notice several cases of cancer in their community, usually after a family member or friend is diagnosed. People may suspect that a cancer-causing substance in the environment is the cause. But, this is rarely the case because:

- A mix of unrelated cancer types is unlikely to share a single cause.
- Cancer is common and often affects several people in a neighborhood.
- Most cancers could only have occurred from exposures many years ago, and people move in and out of different communities over time.
- Some cancers are strongly tied to genetics and can affect several blood relatives.

How is cancer monitored in Massachusetts?

The Massachusetts Cancer Registry collects data on all new cancer diagnoses.

By law, hospitals and facilities are required to report data on cancer diagnoses to the Massachusetts Cancer Registry (MCR). These cancer data for towns across Massachusetts are useful for monitoring the impact of environmental hazards. For each person with cancer, the MCR has confidential information about cancer type, cancer stage at diagnosis, residence, and individual risk factors (such as age, smoking history, and some work information).

How are cancer clusters investigated?

The Massachusetts Department of Public Health investigates cancer clusters.

The Community Assessment Program (CAP) within the Bureau of Environmental Health (BEH) helps respond to concerns from residents. When needed, CAP conducts preliminary investigations using MCR data to see if a cancer cluster could be real.

The BEH investigative process has 3 phrases.

- Phase 1: Use cancer data and risk factor information to determine if the occurrence of cancer in the community is a real concern.
- Phase 2: If needed, perform a more detailed analysis, focusing on one cancer type within a smaller geographical area.
- Phase 3: If needed, conduct a more in-depth epidemiologic study to confirm any concerns found during Phase 2.

Where can I find more information?

1. BEH: www.mass.gov/dph/environmental_health
   - www.mass.gov/eohhs/gov/departments/dph/programs/environmental-health/investigations/
2. MA Environmental Public Health Tracking: www.mass.gov/dph/matracking
3. Massachusetts Cancer Registry: www.mass.gov/dph/mcr
4. American Cancer Society: www.cancer.org
   - www.cancer.org/cancer/cancer-causes/general-info/cancer-clusters.html