

Cancer cluster

Frequently asked questions

- What is a cancer cluster?
- Who responds to an enquiry about a reported cancer cluster?
- What is the purpose of an assessment of a reported cancer cluster?
- What cancers are included in cluster assessment?
- How is the assessment done?
- When is a suspected cancer cluster likely to be a confirmed cancer cluster?
- Can cancer clusters occur by chance?
- Does the confirmation of a cancer cluster suggest the presence of a causal agent?
- What needs to be considered when reporting a suspected cancer cluster?
- What are some other sources of information about cancer clusters?
- What is the process for reporting a suspected cancer cluster?

What is a cancer cluster?

The term 'cancer cluster' refers to the occurrence of a specific cancer where the observed number of cases is more than the expected number of cases within a group of people in a geographic location over a period time. Suspected clusters are often reported by members of the general public who are concerned when a high number of cancer cases is diagnosed in their family, friends, neighbours or co-workers.

Cancer is a common group of about 100 diseases. In Queensland, one in every two males and one in every three females will develop cancer by the age of 80 years*. These figures show the unfortunate reality that cancer occurs more often than many people realise, and therefore can sometimes seem to be excessive in a confined location such as a community or a workplace.

Who responds to an enquiry about a reported cancer cluster?

Queensland Health's Hospital and Health Service public health units are the primary contact points for reporting a suspected cluster of non-communicable disease such as cancer. An experienced public health practitioner is responsible for conducting an assessment of reported suspected cancer clusters.

What is the purpose of an assessment of a reported cancer cluster?

The purpose of a Queensland Health assessment is to determine whether there is a higher than expected number of cancer cases present in a defined area, and whether there is an identifiable hazard that may be causing the particular type of cancer that is occurring.

*<https://cancerqld.org.au/research/queensland-cancer-statistics/>



What cancers are included in a cluster assessment?

Under the Queensland Health Non-Communicable Disease Cluster Assessment Guidelines 2019, suspected clusters of any malignant cancers trigger public health assessment. Cancers that are non-malignant such as non-melanoma skin cancers and ductal carcinoma in-situ (DCIS) of breast are not included, because of the lack of reliable population data for these conditions.

How is the assessment done?

When there is an enquiry from a concerned individual or agency, Queensland Health staff undertake an assessment of the suspected cancer cluster as defined by the Queensland Health Non-Communicable Disease Cluster Assessment Guidelines 2019.

Information is gathered about the number of cases, age, sex, address, occupation, period of work or residence, age at diagnosis of cancer, type of cancer, the population potentially at risk (for example, all employees in the workplace) and any suspected exposure to potentially cancer-causing hazards.

This information is evaluated based on the current knowledge of the cancer risk factors. The next step is to estimate the number of cancer cases that could be expected if the population within the suspected cluster had the same risk profile as the Queensland population, a process called epidemiological assessment. The expected number of cases is then compared with the reported number of cases.

If the reported number of cases is greater than the expected number of cases, the assessment will go on to evaluate whether the apparent cluster could be related to the suspected hazard or if it could have occurred by chance alone.

In most cases, assessments are resolved upon evaluation of the initial information gathered.

When is a suspected cancer cluster likely to be a confirmed cancer cluster?

What is suspected to be a cancer cluster at first impression may not be confirmed as a cluster even if an assessment shows that the reported number of cases is greater than the expected range for the population. Historically, most suspected clusters were found to have occurred by chance alone, and they rarely had an identifiable cause. The difference between the number of reported cancer cases and the expected number of cases (based on state rates) is only found to be statistically significant in 5-15% of suspected cancer clusters. This is because a variety of factors often work together to create the appearance of a cluster when in fact it is random chance that these cases appear in the same area or workplace in a defined period.

A suspected cancer cluster is more likely to be a confirmed cluster if:

- the cases are all one type of cancer, rather than different types
- it is a rare type of cancer
- it is a type of cancer that is not usually found in a certain age group
- there is a significant exposure to a known carcinogen (cancer-causing agent).

Can cancer clusters occur by chance?

Yes.

Cancer incidents do occur randomly. Even if there are more people with one type of cancer in a community than might be expected, it cannot be assumed that each person's cancer was caused by exposure to a common cancer-causing agent in the environment. The cluster may have occurred simply by chance as a pattern of random distribution, meaning it is normal to find some areas with lower cancer case numbers than expected and some areas with higher case numbers. Often people will see patterns in events that may actually be random, and assume there is a connection to a common exposure. This is particularly the case when someone has more than one of their relatives, neighbours or workmates with cancer of the same or even a different type.

Does the confirmation of a cancer cluster suggest the presence of a causal agent?

No.

Confirmation of a cancer cluster does not necessarily mean that a carcinogen is present at the area under assessment. The epidemiological and environmental assessments often result in inconclusive findings, based on current knowledge, of the presence of any known chemicals or other hazards in sufficient quantities to cause cancer. The assessment of a cancer cluster is extremely complex due to uncertainty around identification and measurement of risk factors and sufficient, prolonged exposure to those risk factors which can occur over decades. The assessment of environmental factors in the workplace or community in recent suspected cancer clusters has so far told us little about their relationship to the cancer cases. Additionally, not all risk factors may be known.

A confirmed cancer cluster could therefore be the result of any of the following:

- chance due to random variation
- differences in the case definition between reported cases and expected cases
- known causes of cancer, such as smoking
- unknown causes of cancer.

What needs to be considered when reporting a suspected cancer cluster?

Understanding cancer is important to understand cancer clusters. When considering the possible existence of a cancer cluster in a particular area, it is important to also consider these facts:

- Cancer is a common disease, affecting one in two men and one in three women up to age 80 years in Queensland. Because of this, cancer rates vary substantially in small populations and rarely match the overall rate for a larger area, such as the state of Queensland. For any given period of time, some populations have cancer rates above the overall state rate and others have cancer rates below the overall rate. Even when there is an excess, this may be only due to random variability.
- Cancer is not a single disease, it is a group of more than 100 different diseases, each with different risk factors and causes.

- Everyone is at risk of cancer at any age but the risk increases with age. Cancer rates vary by age, race, sex, risk factors and type.
- Environmental factors account for a small percentage of all cancers.
- Cancer is not infectious.
- Cancer does not develop immediately after contact with a carcinogen. It can be 10 to 30 years or even more between exposure to a carcinogen, and diagnosis of cancer. This makes it very difficult to establish what caused the cancer as there are many things a person will be exposed to in that length of time.
- School and office environments generally do not contain significant carcinogenic hazards. Asbestos can be a concern in older buildings. Exposure to asbestos is known to cause lung cancer and mesothelioma, but it is not known to cause breast cancer, colorectal cancer or brain cancer which are the types of cancer more likely to be reported by people in these environments.

What is the process for reporting a suspected cancer cluster?

If you suspect a cancer cluster, you should contact the Hospital and Health Service public health unit in your region: <https://www.health.qld.gov.au/system-governance/contact-us/contact/public-health-units>

What are some other sources of information about cancer clusters?

More information on cancer clusters can be found on the websites listed below.

1. Queensland Health. *Queensland Health Non-Communicable Disease Cluster Assessment Guidelines 2019*. Queensland Health. Brisbane; 2019:
https://www.health.qld.gov.au/data/assets/pdf_file/0018/442602/cluster_assessment.pdf
2. Cancer Council Australia know cancer in the workplace forum: www.cancer.org.au
3. National Cancer Institute (US) www.cancer.gov/cancertopics
4. National Institute for Occupational Safety and Health (NIOSH -US)
<http://www.cdc.gov/niosh>
5. Centers for Disease Control and Prevention (US) www.cdc.gov/nceh
6. World Health Organization www.who.int/cancer