Cancer in Queensland

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What is cancer?

Cancer is a group of more than 100 diseases in which the cells that make up our body's tissues and organs become abnormal and keep dividing and forming more cells without control or order. Our body is made up of hundreds of millions of living cells that normally grow, divide, and die in an orderly fashion. Cancer begins when cells in a part of the body start to grow out of control and form a tumour that might be benign or malignant. Cancer is not infectious.

Each cancer has its own pattern of growth and spread, some remain in the body for many years without showing any symptoms while others grow, invade and spread to other parts of the body and form a new tumour. This process is called metastasis and it happens when the cancer cells get into the bloodstream or lymph vessels of our body.

What causes cancer?

The exact cause of most cancers is unknown. However, scientists are aware of a number of factors that modify the risk for cancer. Each type of cancer has its own risk factors and causes, some of which can be avoided. All the known risk factors can be divided into two groups:

- internal or non-modifiable risk factors such as age, inherited mutations of genes, and immune conditions
- external or modifiable risk factors such as tobacco smoking, excessive alcohol consumption, some foods, overweight and obesity, and exposure to chemicals, radiation and infectious organisms.

About one-third of the total burden of premature death and disability due to cancer is caused by modifiable lifestyle-related risk factors such as tobacco smoking, excessive alcohol consumption, unhealthy diet, sedentary lifestyle, overweight and obesity.

Smoking is accountable for about 30% of all deaths from cancer and 87% of deaths from lung cancer. Compared with non-smokers, male smokers are 23 times more likely to develop lung cancer and female smokers are 17 times more likely.

Other risk factors include inherited genetic faults, exposure to radiation such as ultraviolet radiation from the sun, and exposure to certain chemical and industrial wastes infectious agents. Only 5–10% of all cancer cases is due to genetic defects. The other 90–95% is due to environment and lifestyle factors and so there are opportunities for prevention. The International Agency for Research on Cancer concluded that 5–12% of cancers could be attributed to low fruit and vegetable consumption and Australian data suggest that this is a factor in about 2% of cancers.
Sometimes, more than one risk factor can contribute to the development of cancer and different people have different levels of sensitivity to cancer risk factors, although the reason for this is not fully understood. Just because someone is exposed to a risk factor does not necessarily mean they will develop cancer and, similarly, avoiding a risk factor does not necessarily mean that they will escape cancer.

**Who gets cancer?**

Everyone is at risk of cancer at any age. However, the risk increases with age. The Australian Institute of Health and Welfare (2008) reported that the average age of first diagnosis in new cancers is 66 years for males and 64 years for females. However, due to increased awareness of cancer as well as the use of screening programs and improved diagnostic tests, cancers are being detected in younger people at an earlier stage of cancer development, which means there are opportunities for effective treatment and cure. Males have generally higher rates than females for many cancers. One in two men will develop cancer before the age of 85, compared to one in three women.

**What can I do to prevent cancer?**

- A healthy lifestyle that includes not smoking tobacco and avoiding excessive alcohol consumption and sun exposure will avoid the highest modifiable risk factors.
- A healthy diet, high in plant-based food, low in red meat and processed meat and low in saturated fat and refined carbohydrate, combined with a healthy body weight and a physically active lifestyle generally reduce a person's risk of many cancers.
- Detect cancer early through the population screening services that are available to target groups throughout Australia for breast, bowel and cervical cancer. Screening can detect cancer or signs of abnormality that can lead to cancer so treatment and cure are possible.

**Where can I get more information about cancer prevention and early detection?**

For information on cancer in general, risk factors and recommended cancer screening programs:

- Centers for Disease Control and Prevention (US) [http://www.cdc.gov/az/c.html](http://www.cdc.gov/az/c.html)

**Common cancers in Queensland**

Cancers are common diseases in Queensland. In 2007 there were 21,855 new cases of cancer involving 12,638 males and 9,217 females. The four most commonly-reported cancers in Queensland males, accounting for 63% of all male cancers in 2007, were melanoma and cancer of the prostate, bowel and lung. The four most commonly reported cancers in Queensland females, accounting for 59% of all female cancers in 2007, were melanoma and cancer of breast, bowel and lung. Leukaemia is a group of blood cancers which affects people of all ages.

Detailed information about each of these cancers is included in the following sections.
Prostate cancer

Prostate cancer is the most common cancer among men in Queensland with 3,680 new cases reported in 2007. These accounted for 29% of all male cancers and 17% of all cancers diagnosed in 2007. One in five Queensland men will be diagnosed with prostate cancer before the age of 85. The risk of developing prostate cancer increases with age and most cases occur in men older than 65 years. The incidence rate for prostate cancer has risen over the past decade due to increased detection through prostate-specific antigen (PSA) testing combined with ageing of the population.

There were 569 deaths due to prostate cancer in 2007, which was 8% of all cancer deaths and about 14% of all male cancer deaths. Prostate cancer has relatively good five-year survival rates. In 2001–2006, about 85 out of 100 men survived five years after they were diagnosed with prostate cancer.

Risk factors
The exact cause of prostate cancer is not known. Other than older age, which is a known risk factor for many cancers, a diet high in fat, especially animal fat, and refined carbohydrate and low in fruits and vegetables, has been implicated as a risk factor for prostate cancer. Consumption of tomatoes and cruciferous vegetables such as broccoli, cabbage, cauliflower and brussels sprouts has been implicated to be protective against prostate cancer.

Early detection
The PSA test and digital rectal examination (DRE) are the two diagnostic methods to detect prostate cancer signs and symptoms. Elevated PSA levels in the blood may show signs of prostate cancer, but this does not necessarily mean cancer is present. The test also fails to detect some cancers. As there is no proven reduction in prostate cancer death rates, population based screening for prostate cancer is not recommended in Australia.

Information sources
- Andrology Australia [http://www.andrologyaustralia.org](http://www.andrologyaustralia.org)

Although many men develop prostate cancer it is a very slow growing cancer, and relatively few men die from it.
Breast cancer

Breast cancer is the most common cancer in Queensland women. In 2007 there were 2,469 new cases, accounting for about 27% of all female cancers and about 11% of all cancers that year in Queensland. There were 488 deaths due to female breast cancer in 2007 which was 17% of female cancer deaths and 7% of all cancer deaths. One in eight Queensland women will be diagnosed with breast cancer before the age of 85. Breast cancer has relatively better survival potential than other common cancers. In 2001–2006, 89 out of 100 women diagnosed with breast cancer survived for five years or more since diagnosis. The survival rate varies depending on the tumour size and when it was diagnosed.

Risk factors
The exact cause of breast cancer is unknown. Nine out of 10 women who develop breast cancer have no other risk factors other than their gender. While men can be diagnosed with breast cancer, it is around 100 times more common in women than in men.

The risk for developing breast cancer increases with age. In Queensland, around three-quarters of women diagnosed are older than 50 years. The risk increases for women who have a family history of breast cancer. Women who have already had breast cancer have an increased risk of developing a second breast cancer. Excessive alcohol consumption and taking hormone replacement therapy also increase the risk of breast cancer.

Early detection
Mammography screening (breast X-ray) is currently the best method available for early detection of breast cancer. BreastScreen Queensland recommends that all women aged 50–69 years have a mammogram every two years, although women as young as 40 years also have free access to BreastScreen Queensland services including mammography screening. Women aged over 70 years should discuss with their doctor the role of mammography in their ongoing health monitoring. They may choose to continue having free mammography screening through BreastScreen Queensland.

Information sources
- Cancer Council Helpline (toll free) 13 11 20
Lung cancer

Lung cancer is one of the most frequently reported cancers in Queensland. In 2007 there were 1,901 new cases and 64% of those were males. One in 11 men and one in 24 women in Queensland will be diagnosed with lung cancer before the age of 85 years.

Lung cancer is a major cause of cancer deaths in Queensland men and women. Of the 1,370 people who died of lung cancer in Queensland in 2007, 65% were men. Lung cancer has a poor survival rate. Only 13 of every 100 people diagnosed with lung cancer survive for five years after diagnosis.

Risk factors
- Tobacco use in any form is the single biggest risk factor for lung cancer. Passive smoking or second-hand tobacco smoke also causes lung cancer. In 2007, 80% of the burden of disease for lung cancer in Queensland was due to smoking. Each year, about 3000 Queenslanders die from cancers that are related to tobacco use;
- Exposure to toxic substances like asbestos and radon are also risk factors for lung cancer.

Prevention
Quitting smoking and avoiding passive smoking are the major preventive measures that will result in a large and rapid fall in the risk of many cancers, stroke and vascular diseases. Ten years after quitting, the lung cancer death rate is about half that of a current smoker.

Information sources:
- Cancer Council Helpline (toll free) phone 13 11 20
- Cancer Council Queensland fact sheets
**Bowel cancer**

Bowel cancer, also known as colorectal cancer, occurs in the colon or rectum and is the third most commonly diagnosed cancer in Queensland. In 2007, there were 2,785 new cases of colorectal cancer or about 13% of all cancers in Queenslanders. One in 10 Queensland men and one in 13 women will be diagnosed with colorectal cancer by the age of 85 years.

Bowel cancer caused 971 deaths which was 13% of all cancer deaths in 2007. Five-year survival rates for bowel cancer are poor. For every 100 people diagnosed with bowel cancer in 2001–2006, 66 survived for five years after their diagnosis.

**Risk factors**
- Increasing age
- Diet high in red meat or processed meats, refined carbohydrates and saturated fat, and low in plant-based food
- Heavy alcohol consumption
- Tobacco smoking
- Obesity, especially abdominal obesity
- A close relative with a history of bowel cancer or polyps
- A previous history of polyps in the bowel or bowel cancer
- Chronic inflammatory bowel disease such as Crohn’s disease
- Increased insulin levels or type 2 diabetes

**Prevention**
Changes in lifestyle and eating habits can substantially reduce the risk of bowel cancer. Increasing consumption of plant-based foods including cereals and legumes, reducing consumption of red meat and processed meat, limiting alcohol consumption, increasing physical activity and maintaining a healthy body weight are some of the measures that could protect against bowel cancer.

**Early detection**
The population based bowel cancer screening program is available under the National Bowel Cancer Screening Program. The program uses a faecal occult blood test (FOBT) which is a simple test to identify hidden traces of blood in a bowel motion and this can help detect bowel cancer in its early stages. If the FOBT detects blood, further diagnostic tests are needed. The FOBT can be done at home by taking samples from two or three bowel motions using a test kit. People aged 50 years and older should do the FOBT every two years.

**Information sources**
Melanoma and other skin cancers

Queensland has one of the highest rates of skin cancer in the world. There are three main types of skin cancer — basal cell carcinoma (BCC), squamous cell carcinoma (SCC) and melanoma. Melanoma is the most dangerous type and is the third most commonly diagnosed cancer in Queensland males and females. There were 2,668 new cases of melanoma in 2007, representing 12% of all new cancer cases in Queensland. One in 11 Queensland men and one in 19 Queensland women will be diagnosed with melanoma before the age of 85 years.

However, the risk of dying was much lower. In 2007 it was estimated that one in 173 males and one in 392 females would die of melanoma before 85 years of age. There were 285 deaths due to melanoma in 2007, representing 4% of all cancer deaths. Melanoma has good survival records with 94 out of every 100 persons with melanoma surviving for five years after diagnosis.

The non-melanoma skin cancers (NMSCs) are very common but less life threatening than melanoma. In 2008, an estimated 87,000 Queenslanders were diagnosed with one or more NMSCs. They account for only 1% of all cancer deaths, but they are of major public health concern because of their impact on the health system.

Risk factors and prevention
Damage to the skin caused by exposure to ultraviolet (UV) radiation is the main cause of melanoma. Sun exposure causes around 99% of NMSCs and 95% of melanoma in Australia. People whose skin burns easily, such as those with fair skin or red hair, and blue eyes are most at risk. People who have moles that are abnormal in size or colour may have an increased risk of developing melanoma.

Prevention
Observing recommended sun safety behaviours would help to reduce the risk of skin cancer. The Cancer Council Queensland’s recommendations are:
- minimising exposure to the sun
- seeking shade provided by trees, buildings or shade structures wherever possible
- wearing suitable clothing that provides good sun protection
- wearing a hat with a broad brim or a legionnaire or bucket style which provides the best coverage to protect the face, neck and ears
- wearing sunglasses to minimise the risk of eye damage from sun
- applying SPF30+ broad-spectrum water resistant sunscreen 20 minutes before going out in the sun.

Early detection
Cancer Council Queensland also recommends that Queenslanders regularly examine their skin for signs of skin cancer, especially if they are in the older age group and/or have sun-damaged skin or multiple moles and freckle.

Information sources
- Cancer Council Helpline (toll free) phone 13 11 20
- Cancer Council Queensland web pages on melanoma and skin cancer
- Queensland health factsheets
Cervical cancer

There were 143 new cases of cervical cancer in 2007 which represented 1.6% of all cancers in Queensland women. One in 132 Queensland women will be diagnosed with cervical cancer before the age of 85 years. The age-specific incidence rates for cervical cancer were higher in women aged 55 years and older in 2007 and the highest rate (15.1 per 100,000) involved women aged 75–79 years. There were 36 deaths from cervical cancer in 2007, accounting for 1.3% of all female cancer deaths.

Cervical cancer has relatively low risk of diagnosis, a very low risk of death, and relatively good five-year survival rates. In 2001–2006, of the women diagnosed with cervical cancer, about three-quarters (76%) survived five years after their cancer was diagnosed.

Risk factors
All women who have a cervix and who have had intercourse at some time in their life are at risk of cervical cancer. The Human Papillomavirus (HPV) infection is responsible for nearly all cervical cancer cases. HPV is a group of wart viruses that infect the surface of any part of the body including the skin, vagina and cervix and is a common viral infection affecting about 95% of sexually active people at some stage in their life. In most cases, the infection heals by itself without any intervention. Only a few types of HPV result in cervical cancer and most women who are infected never get cervical cancer. Other risk factors for cervical cancer include:

- early commencement of sexual activity, which leads to a greater chance of contracting HPV
- Sexually transmitted diseases or infections
- previous abnormal Pap smears
- smoking tobacco
- exposure to diethylstilboestrol (DES) which is a drug prescribed to reduce miscarriage in the 1950s.

HPV vaccination
A vaccination program for HPV, funded by the Australian Government, commenced in 2006. It is listed on the National Immunisation Program schedule and funded under the Immunise Australia Program. Immunisation against HPV is achieved using single-disease vaccines. A course of three doses of vaccine is given, usually over a six-month period. There is an ongoing school based program.

Early detection
The Pap smear test is a screening tool to detect early warning signs of cell changes in the cervix that could lead to cervical cancer and may be able to detect the presence of HPV, so creating an opportunity for treatment. The National Health and Medical Research Council recommends Pap smear screening every two years for all Australian women aged 20–69 years as this can help prevent up to 90% of the most common type of cervical cancer. The screening is free and available through general practitioners.

Information sources
- Cancer Council Helpline (toll free) phone 13 11 20
- Queensland Health
Leukaemia

Leukaemia is a cancer that affects the blood and bone marrow. It starts in the bone marrow where developing blood cells, usually white cells, undergo a malignant change. They multiply in an uncontrolled way and crowd the marrow, affecting its ability to make normal blood cells. Increasing numbers of abnormal cells, called blast cells or leukaemic blasts, eventually spill out of the bone marrow and travel around the body in the bloodstream. There are four broad categories of leukaemia based on how quickly the disease develops and the type of blood cell involved:

- acute myeloid leukaemia (AML)
- acute lymphoblastic leukaemia (ALL)
- chronic myeloid leukaemia (CML)
- chronic lymphocytic leukaemia (CLL).

All four categories are referred to here as leukaemia. People of all ages can develop leukaemia. However, some types of leukaemia are most prevalent in children aged 0–14 years. There were 550 new cases of leukaemia in 2007 accounting for 2.5% of all cancers in Queensland and children aged 0–4 years comprised 5% of that number. One in 62 males and one in 120 females will develop leukaemia by the age of 85 years.

There were 196 deaths due to any leukaemia in 2007 accounting for 2.6% of all cancer deaths in Queensland. Survival rates vary by age at diagnosis of leukaemia. In 2003–2007, for every 100 males of all ages, 58 survived for five years, and for every 100 females of all ages, 61 survived for five years after diagnosis.

Risk factors

- Exposure to high levels of chemicals such as benzene or formaldehyde, which are both widely used in the chemical industry
- Exposure to certain therapies used in cancer treatment, although leukaemia may develop many years after the original cancer treatment
- Exposure to electro-magnetic fields (EMF), a type of low-energy radiation from power lines and electrical appliances, although the evidence to date is insufficient to prove any causal link
- Very high levels of ionising radiation such as those from nuclear explosions and nuclear power plant accidents (Chernobyl 1986), and medical treatment using ionising radiation but not diagnostic X-rays which involve very low levels of radiation.

Information sources

- Cancer Council Helpline (toll free) phone 13 11 20