How to Use this Factsheet

This risk factor summary was developed to serve as a general fact sheet. It is an overview and should not be considered exhaustive. For more information on other possible risk factors and health effects being researched, please see the References section.

A risk factor is anything that increases a person's chance of developing cancer. Some risk factors can be controlled while others cannot. Risk factors can include *hereditary conditions*, *medical conditions or treatments*, *infections*, *lifestyle factors*, or *environmental exposures*. Although risk factors can influence the development of cancer, most do not directly cause cancer. An individual's risk for developing cancer may change over time due to many factors, and it is likely that multiple risk factors influence the development of most cancers. Knowing the risk factors that apply to specific concerns and discussing them with your health care provider can help to make more informed lifestyle and health care decisions.

For those cancer types with environmentally-related risk factors, an important factor in evaluating cancer risk is the route of exposure. This is particularly relevant when considering exposures to chemicals in the environment. For example, a particular chemical may have the potential to cause cancer if it is inhaled, but that same chemical may not increase the risk of cancer through skin contact. In addition, the dose and duration of time one might be exposed to an environmental agent is important in considering whether an adverse health effect could occur.

Gene-environment interactions are another important area of cancer research. An individual's risk of developing cancer may depend on a complex interaction between their genetic makeup and exposure to an environmental agent (for example, a virus or a chemical contaminant). This may explain why some individuals have a fairly low risk of developing cancer as a result of an environmental factor or exposure, while others may be more vulnerable.

Key Statistics

The thyroid gland is an organ at the base of the throat that makes hormones that help control heart rate, blood pressure, body temperature, and weight. The American Cancer Society estimates 62,450 individuals will be diagnosed with thyroid cancer in the U.S. in 2015: 47,230 in women, and 15,220 in men.[2, 3] In Massachusetts, thyroid cancer accounted for 3.7% of all diagnosed cancers between 2007 and 2011.[6] Women are three times more likely to develop thyroid cancer than men.[2] The risk of thyroid cancer is highest among individuals between the ages of 20 and 55.[4] Thyroid cancer rates have been increasing in Massachusetts since 1984, with significant increases since 1997. Between 1999 and 2007, incidence rates within Massachusetts increased by 168% for females and by 176% for males. These changes mirror national increases in thyroid cancer incidence and are attributed to better tumor detection using fine needle aspiration biopsy, ultrasound, and an increase in neck palpation as part of routine medical exams.[7]

Types of Thyroid Cancer

The term "cancer" is used to describe a variety of diseases associated with abnormal cell and tissue growth. Cancers are classified by the location in the body where the disease originated (the primary site) and the tissue or cell type of the cancer (histology).

There are several different subtypes of thyroid cancer. In Massachusetts, 86% of thyroid cancers are of the papillary carcinoma subtype. The second most common subtype is follicular carcinoma of the thyroid (10% of thyroid cancers). Other subtypes of thyroid cancer include medullary thyroid carcinoma (2%) and anaplastic carcinoma (1%). While thyroid cancer is one of the most common cancers for individuals below 40 years of age, each subtype of thyroid cancer has a different age-specific incidence pattern. Papillary carcinoma has a peak in incidence between 30 and 50 years of age, while follicular carcinoma has a peak in incidence among individuals between the ages of 40 and 60. Anaplastic carcinomas are usually diagnosed after age 65.[7]

Established Risk Factors

Each subtype of thyroid cancer may have different risk factors associated with its development.

Hereditary Conditions

Individuals with a family history of medullary thyroid cancer are more likely to develop this subtype. About 20% to 33% of medullary thyroid cancers result from inheriting an abnormal gene.[1, 7] Individuals with certain inherited medical conditions are also at higher risk of thyroid cancer. Higher rates of thyroid cancer occur among people with conditions such as Gardner syndrome, a family history of having multiple growths on the inside of the colon or rectum (familial polyposis), or a family history of having goiters (swollen thyroids) with multiple thyroid nodules.[2, 4, 7]

Environmental Exposures

Ionizing radiation is an established risk factor for thyroid cancer. Numerous epidemiological investigations have found an elevated incidence of thyroid cancer among several groups of individuals treated with radiation in the early 20th century including children with ringworm of the scalp, infants with enlarged thymus glands, and adolescents with enlarged tonsils. Exposure to nuclear fallout has been linked to increased thyroid cancer in both nuclear power plant accidents such as at Chernobyl and among atomic bomb survivors in Japan.[2, 7] Individuals receiving treatment for certain cancers may receive ionizing radiation and be at an increased risk of thyroid cancer.[2, 4, 7] Routine diagnostic x-rays, such as dental or chest x-rays, use very low doses of radiation. Guidelines suggest that medical professionals use x-rays when there is a definite medical benefit.[5] Individuals with questions about x-rays should speak with their physician.

Possible Risk Factors

Lifestyle Factors

A diet low in iodine may increase the risk of follicular carcinomas. However, this is not generally considered a cause of thyroid cancer in the United States as most table salt is fortified with iodine.[2, 4]

Other Risk Factors That Have Been Investigated

Few other risk factors for thyroid cancer are known. No consistent findings have been found among studies exploring the association of thyroid cancer with oral contraceptive use, age at menarche, parity (number of pregnancies), and diet.

Thyroid Cancer in Children

From 1975 to 2011, national incidence rates of thyroid carcinoma were practically negligible in very young children but substantially higher among 15-19 year olds, particularly for females.[9] Exposure to ionizing radiation in childhood appears to be more strongly linked with the development of thyroid cancer than exposure in adulthood.[2] Routine diagnostic x-rays, such as dental or chest x-rays, use very low doses of radiation. Guidelines issued by the American Academy of Pediatrics direct medical professionals to use x-rays on children only if there is a definite medical benefit.[1] A parent with questions about their child's x-ray test should speak with their pediatrician.

For More Information / References

Much of the information contained in this summary has been taken directly from the following sources. This material is provided for informational purposes only and should not be considered as medical advice. Persons with questions regarding a specific medical problem or condition should consult their physician.

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