Childhood Cancer– At A Glance

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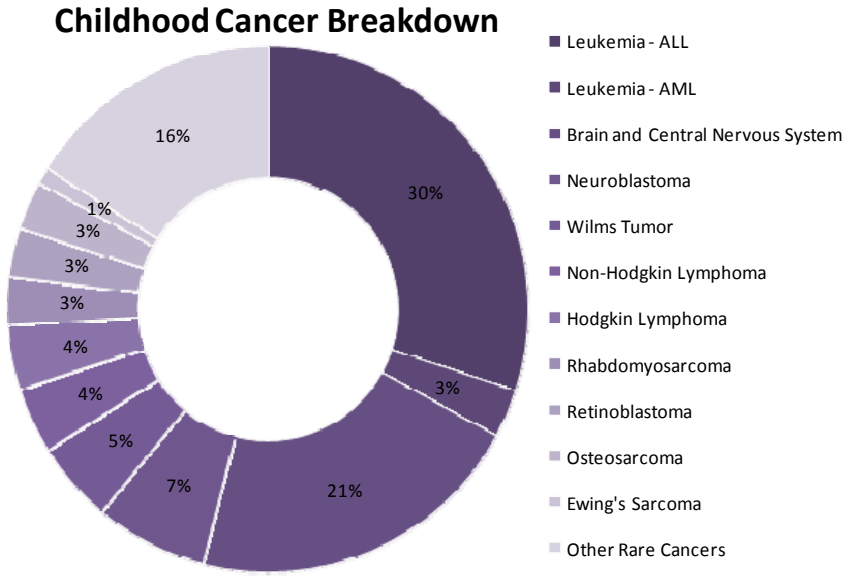
Cancer is relatively rare in children. About one out of every six adults will develop cancer during his or her lifetime, while about one out of every 330 children under age 20 will develop cancer.

Although rare, cancer is actually the leading cause of death by disease in children and adolescents. An estimated 12,000 children are diagnosed each year and approximately 20% of those children will lose their lives—although survival rates from cancer to cancer can vary dramatically. At any given time there are over 40,000 children fighting this battle.

All kinds of cancer, including childhood cancer, have a common disease process — cells grow out of control, develop abnormal sizes and shapes, ignore their typical boundaries inside the body, destroy their neighbor cells, and can ultimately spread to other organs and tissues. As cancer cells grow, they demand more and more of the body's nutrition. Cancer takes a child's strength, destroys organs and bones, and weakens the body's defenses against other illnesses.

Below are summarized descriptions of some of the most common types of childhood cancers. Please visit the suggested websites for further information.



LEUKEMIA

www.leukemia.org

Leukemia is a cancer of the bone marrow, the spongy center of the bones that makes blood cells. In leukemia, abnormal white blood cells divide out of control and crowd out the normal cells in the bloodstream. The abnormal white blood cells are not mature, and therefore cannot carry out their infection-fighting function in the blood. These cells crowd out healthy white blood cells, as well as the red blood cells which carry oxygen to the body and the platelets which cause the blood to clot. The most common type of leukemia in children is acute lymphocytic (or lymphoblastic) leukemia or ALL, which is further characterized as pre-B, B, or T-cell ALL. Childhood acute myeloid leukemia or AML is less common. "Acute" means that the diseases progress rapidly. Combination chemotherapy is typically the treatment of choice with the addition of a bone marrow transplant in many cases of AML.

NEUROBLASTOMA

www.mskcc.org; www.nbhope.org

Neuroblastoma is a rare cancer of the sympathetic nervous system—a nerve network that carries messages from the brain throughout the body. It is usually found in young children, and it accounts for half of all cancers in infants. These solid tumors—which take the form of a lump or mass—may begin in nerve tissues in the neck, chest, abdomen, pelvis, or, most commonly, in the adrenal gland. They may also spread to other areas of the body, including bone and bone marrow. The cause of neuroblastoma is unknown, but most physicians believe that it is an accidental growth that occurs during normal development of the sympathetic nervous system. Neuroblastomas exhibit a variety of different behaviors. Some will go away without any treatment, and others can be cured by surgery alone. But approximately half of all neuroblastomas have already spread to the bone and bone marrow by the time they are found, and these tumors require more complex treatment including radiation and possible bone marrow transplants.

BRAIN AND CENTRAL NERVOUS SYSTEM

www.mayoclinic.org; www.stjude.org

Brain tumors are diagnosed most often between the ages of three and eight, but can occur at any age. A brain tumor results from an abnormal growth of tissue in the brain and is classified by the way brain tumor cells appear under a microscope. Tumors can be more or less malignant. Malignant brain tumors tend to grow rapidly and can spread to the spinal cord. For the most malignant tumors, there is still no standard treatment, but innovative treatments are being used at the Children's Hospitals. For the least malignant tumors, surgery alone may be sufficient treatment. Symptoms of brain tumors can include: headache, vomiting, seizures, blurred vision and impaired speech, mood changes, poor coordination; difficulty with balance, weakness or tingling in the arms and legs, increased head circumference and bulging fontanel ("soft spot") in infants.

WILMS TUMOR

Wilms tumor is a type of childhood kidney cancer. This tumor can develop as a result of immature cells formed in the kidneys when a baby is born. Usually, these cells mature by the time a child is three or four years old, but some may start to grow out of control and form a mass of immature cells – a Wilms tumor. Wilms tumor is the most common type of kidney cancer in children and is very different from adult kidney cancer. Although Wilms tumor can develop in both kidneys (called bilateral), usually just one is affected (unilateral). In very rare cases, a Wilms tumor develops in one kidney first and then the other. Wilms tumor is often found only after it has grown to a size of about eight ounces. (For comparison, in a three-year-old child, a normal kidney weighs about two ounces.) About one out of four children with Wilms tumor have evidence that the tumor has spread either to the lung or liver at the time of diagnosis. Treatment for Wilms tumor includes surgery, chemotherapy, and possibly radiation, depending on how far the cancer has spread.

LYMPHOMAS

www.lymphoma.org

Lymphoma is a tumor of the lymph tissues, which are part of the immune system. It is a close cousin to leukemia. Types of lymphoma include: Hodgkin disease or Hodgkin's lymphoma which affects lymph nodes nearer to the body's surface, such as in the neck, armpit and groin area. Non-Hodgkin Lymphoma affects lymph nodes found deep within the body. There are many types of lymphoma including Burkitt's, non-Burkitt's, and lymphoblastic lymphoma. Some symptoms of lymphomas include swollen lymph nodes, poor appetite/weight loss, itching, fever, sense of "ill-feeling" and fatigue. Treatment of these cancers depends on the tumor's staging, the biology and the extent or volume of the cancer. Lymphomas are usually treated by a combination of chemotherapy, radiation, surgery, and/or bone marrow transplants.

RETINOBLASTOMA

www.mskcc.org

Retinoblastoma is a rare cancer that begins in the part of the eye called the retina. The retina is a thin layer of nerve tissue that coats the back of the eye and enables the eye to see. In about 40% of cases, retinoblastoma is hereditary. Most cases are unilateral (involving only one eye), but some may be bilateral (involving both eyes). If retinoblastoma spreads, it can spread to the lymph nodes, bones, or the bone marrow (the soft, spongy-like material found within the cavities of large bones). Rarely, it involves the central nervous system (CNS; brain and spinal cord). Children may be born with retinoblastoma, but the disease is rarely diagnosed at birth. Most children who begin treatment before the retinoblastoma has spread beyond the eye are cured. An important goal of treatment in children with retinoblastoma is preserving vision. Treatments can include surgery, radiation, cryotherapy, laser therapy and chemotherapy.

EWING'S SARCOMA

Ewing's sarcoma is the second most common tumor of the bone. It most often affects bones of the pelvis, the tibia, fibula, and femur, and can also begin in the soft tissues. The symptoms of Ewing's sarcoma depend on the bone in which the cancer develops. Symptoms include pain at the site of the mass, with soft tissue swelling around the mass, and in cases of metastatic disease (where the cancer has spread), patients may have general symptoms such as anorexia, fever, depression, fatigue and weight loss. Treatments can include surgery, chemotherapy, radiation and possibly bone marrow transplant.

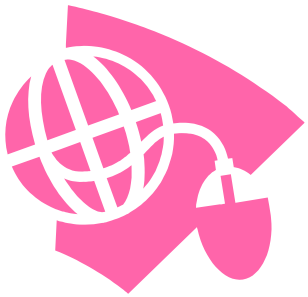
RHABDOMYOSARCOMA

Rhabdomyosarcoma (RMS or 'rhabdo') is a tumor made up of cancerous muscle cells called rhabdomyoblasts. RMS is a type of cancer that begins in a type of muscle called striated muscle. Striated muscles are the skeletal voluntary muscles, which are those muscles that people can control. RMS may arise in any muscle in the body, but the most common sites for this tumor are: adjacent to the base of the skull (parameningeal), around the eye (orbital), other sites in the head and neck, such as the nose and throat (nasopharngeal), arms and legs (extremities), urinary system and reproductive sexual organs (GU, or genitourinary: includes bladder, vagina, prostate and paratesticular sites). Most often rhabdomyosarcoma presents as a mass, however the signs and symptoms depend on the location of the primary tumor. Treatments vary depending on the "favorability" of the tumor and could include surgery, chemotherapy and radiation.

OSTEOSARCOMA

www.sarcomahelp.org

Osteosarcoma is a cancer of the bone that destroys tissue and weakens the bone. It starts in immature bone cells that normally form new bone tissue. It occurs rarely as a tumor in the soft tissues of the body, outside the bone. Osteosarcoma most often starts in the bones around the knee joint: at the lower end of the femur (thigh bone) or the upper end of the tibia (shin bone). The second most common place is in the humerus (upper arm bone) close to the shoulder. However, osteosarcoma can develop in any bone in the body. Osteosarcoma is described by whether it is a medullary (central) or peripheral (surface) tumor. Each has a number of subtypes. Looking at the cells through a microscope can identify the type and subtype of osteosarcoma. The most common subtype is conventional central osteosarcoma. The other subtypes are much less common, each accounting for less than 5% of all osteosarcoma cases. Symptoms may include pain in the bone or joint that gets worse over time, a painless swelling or a noticeable mass in the arm or leg, a broken bone that occurs without or with minimal injury or trauma. Treatment can include surgery, chemotherapy and rarely radiation.



There is a lot of great information and resources available on the internet for families affected by childhood cancer. Here are some great starting points (in order of ease of use):

- ✳ www.cancer.net—Oncologist-approved information on more than 120 types of cancer and cancer-related syndromes including overviews, symptoms, diagnosis, treatment, side effects, etc.
- ✳ www.acor.org/ped-onc—Resources and information for parents of children with cancer . . . by parents of children with cancer. Great information on most cancers as well as helpful links and support groups.
- ✳ www.cancer.gov—The National Cancer Institute site where you can find information on each cancer type (search "Cancer Topics") as well as clinical trial data, research, statistics, etc.
- ✳ www.curesearch.org—The Children's Oncology Group comes together with the National Childhood Cancer Foundation to provide valuable resources for patients and families. Browse "Our Research" area.