

How is childhood cancer treated?

What are the types of treatment?

The three main types of treatment are surgery, chemotherapy, and radiation. They are either used alone or more often in combination. The aim of treatment is to destroy cancer cells. Treatment plans are determined by the type of cancer and its progression at the time of diagnosis.

Depending on the type of cancer treatment regime, children and young people may be well enough to attend school between treatment sessions. When the cancer is under control, or in remission, these students usually feel well and rarely show any signs of the disease. The child or young person is usually considered to be cured of the cancer only after five years in remission.

Surgery

Wherever possible, the surgeon tries to remove the entire tumour. Sometimes these tumours can only be partially removed, but this helps to relieve the symptoms and reduces the amount of tumour to be treated by radiation or chemotherapy. In other instances, the tumour cannot be removed at all, so a biopsy is performed to determine the type of cells it contains and then the treatment is determined.

Chemotherapy

Chemotherapy is the use of different types of drugs to kill cancer cells. The doctor may use a single drug or a combination that can be given by mouth but more usually by injection into the bloodstream (intravenous). Chemotherapy is given in cycles, a treatment period followed by a recovery period, then another treatment period, and so on. The frequency and intensity is dependent on the type of cancer and on each individual's treatment plan. Usually children do not need to stay in the hospital for all treatment and can go home and sometimes to school between cycles.

In addition to intravenous chemotherapy, children may receive fluids containing nutrients, antibiotics, or blood transfusions over the course of treatment. Sometimes it is difficult to get needles into children's veins. Many children have a mechanical device inserted to simplify access:

Port

A cath/portacath or port is a totally implanted device located just under the skin in the chest area. The catheter is tunnelled under the skin towards the neck where it enters a large vein. It is visible as a small raised area on the chest beneath the skin. The port is accessed during treatment by inserting a special needle through the skin into the reservoir. The needle is removed when treatment is completed.

A port requires no home maintenance and does not interfere with a child's day-to-day activities.

Central Line

A central line, Hickman line or Brovac line is a partially implanted venous access device located in the centre of the chest. Part of the catheter is tunnelled under the skin and travels towards the neck where it enters a main vein. The remaining part of the tubing extends down the body and requires a dressing.

The dressing must remain dry and in place. This may reduce the child's ability to participate in water sports, contact sports, or any activity that could dislodge or infect the line.

Radiation (also called Radiotherapy)

This treatment may be used alone, after surgery, or combined with surgery and/or chemotherapy. Treatment involves high-powered rays which kill quickly-dividing cancer cells and stop growth. It can prevent the spread of cancer cells and destroy tumour tissue left behind after surgery. Additionally, it can be used to relieve symptoms when surgery is not possible. Radiation is delivered very precisely to a very specific area for a few minutes daily over a period of weeks. This is done most often on an outpatient basis.

Stem Cell or Bone Marrow Transplant (BMT)

Very high doses of chemotherapy, sometimes with radiation, are usually given over a few days. The high-dose treatment destroys the bone marrow and stem cells. A transplant requires a child to have much higher doses of chemotherapy than usual.

After the high-dose treatment the child is given a drip (infusion) of either their own stem cells (autologous treatment) or stem cells from a donor* (allogeneic transplant). High-dose treatment with stem cell support and allogeneic transplants are different treatments, with different risks and possible side effects.

With these procedures, the child will be strictly monitored in hospital for a few weeks, until the immune system recovers. As part of this, the number of visitors may be restricted as great care must be taken not to introduce infections.

This type of treatment may help to prolong a remission or improve the chances of curing some types of cancer, such as leukemia or lymphoma.

**Donor Types: These include identical twins, immunologically compatible siblings, matched unrelated donors, partially matched family members, related umbilical cord blood, and unrelated umbilical cord blood. Stem cells may be obtained by bone marrow harvest, collection of peripheral blood, or collection of placental cord blood at birth.*

Alternative Therapy

Alternative therapy is non-conventional treatment that may not be medically proven. Parents are encouraged to discuss the use of alternative therapies with their health care team. Some alternative therapies may have dangerous or even life-threatening side effects. Alternative therapy can also impact on the child being able to have conventional therapy.

Complementary Therapy

Holistic therapies are sometimes used in addition to conventional therapy. Some complementary therapies may help relieve certain symptoms of cancer (pain), relieve side effects of conventional cancer therapy (nausea, vomiting), or improve a patient's sense of well-being (reduce feelings of anxiety and depression).

These therapies include: relaxation, visualization (mental imagery), hypnotherapy, art therapy (express pent up feelings), healing (laying on of hands), Reiki (involves placing of hands non-intrusively in a sequence of positions which cover the whole body), meditation, cranial sacral therapy, and therapeutic touch massage.

What are the treatment phases and duration?

After diagnosis, a treatment plan is determined in which the child undergoes a series of extended treatment phases. These phases are referred to as: Induction/Start of Treatment; Maintenance/Remission; and Completion of Therapy.

Initial therapy is often intensive; the goal is to destroy all the cancer cells. When there is no further evidence of any cancer cells, the child is considered in remission and is often treated with less invasive treatment which will maintain remission without significant side effects. Once therapy has been completed, the child is seen on a regular basis to monitor their health (surveillance). If remission continues for a number of years, the child may be considered cured.

An understanding of where the child is in the treatment cycle can help teachers plan for any special needs that might arise.

Where do children in Canada go for treatments?

In many instances, the child with cancer is required to leave their home and families for treatment. This further disruption to their lives impacts them, their parents, and their siblings. Children in Canada are treated at one of the 17 children's hospitals and pediatric oncology treatment centres.

Pediatric Oncology Centres in Canada

Alberta Children's Hospital, Calgary, AB www.calgaryhealthregion.ca

Allan Blair Cancer Centre, Regina, SK www.saskcancer.ca

British Columbia Children's Hospital, Vancouver, BC www.bcchildrens.ca

CancerCare Manitoba, Winnipeg, MB www.cancercare.mb.ca

Children's Hospital of Eastern Ontario, Ottawa, ON www.cheo.on.ca

Children's Hospital of Western Ontario, London, ON www.chwo.org

Centre Hospitalier Universitaire de Québec, Québec, QC www.chuq.qc.ca

Centre Hospitalier Universitaire de Sherbrooke, Sherbrooke, QC www.chus.qc.ca

Hôpital Sainte-Justine, Montréal, QC www.chu-sainte-justine.org

IWK Health Centre, Halifax, NS www.iwk.nshealth.ca

Janeway Children's Health and Rehabilitation Centre, St. John's, NFLD www.easternhealth.ca

Kingston General Hospital, Kingston, ON www.kgh.on.ca

McMaster Children's Hospital, Hamilton, ON www.mcmasterchildrenshospital.ca

The Hospital for Sick Children, Toronto, ON www.sickkids.ca

The Montreal Children's Hospital, Montreal, QC www.thechildren.com

Saskatoon Cancer Centre, Saskatoon, SK www.saskatoonhealthregion.ca

Stollery Children's Hospital, Edmonton, AB www.stollerykids.com

Several years ago, the directors of the 17 pediatric cancer centres formally established the C17 Council with support from the Childhood Cancer Foundation-Candlelighters Canada. The research arm of the Council — the C17 Research Network — has enabled two to four pan-Canadian studies a year to be funded.