Norwegian Childhood Cancer Society

Leukaemia in children and adolescents

Symptoms, treatment and follow-up

Our values

We give *hope* to each other and the world.

We have the *courage* to speak
out on behalf of our families.

We have the *strength* to support
children and families who are affected.

We create *joy* in daily life.

Leukaemia in children and adolescents

When children and adolescents have cancer, it has a major impact on the daily lives of both the child and the family. Treatment of leukaemia is demanding and lengthy.

This brochure is written to provide insight into the challenges that lie ahead when a child has cancer. Such a brochure can never accommodate all the questions and thoughts you might have, but our aim is to provide facts about both the disease and its treatment.

We have emphasised information that we know parents and networks around the child are wondering about. It is also important to remember that no two families are the same, and that every family will have its own experiences and feelings about having a child or young person with cancer.

The information in this brochure is intended always to be valid. Therefore, we have omitted some details. We would also encourage you to look at the websites of the Norwegian Childhood Cancer Society and the Childhood Cancer Portal, where information is updated at all times.

→ **Read further to find out more about leukaemia.**

What is leukaemia?

Leukaemia (blood cancer) is a disease that has its origin in the bone marrow.

Bone marrow is found in the cavities of the body's larger bones, such as the femur, humerus, pelvis, spine, ribs and testicles. The bone marrow produces specialised blood cells with a limited lifespan, and they must therefore be constantly renewed. Stem cells (precursors of blood cells) are responsible for the continuous renewal of mature blood cells. Mature blood cells have different functions. The red blood cells (erythrocytes) transport oxygen around the body by means of haemoglobin, which is present in large quantities in these cells. The platelets (thrombocytes), together with other components of the blood, ensure that the blood clots (coagulates) when it bleeds. White blood cells (leukocytes) are important cells in the immune system. They are activated by infections caused by bacteria or viruses, and by allergic reactions.

With leukaemia, there is an uncontrolled growth of white blood cells or their precursors in the bone marrow. This leads to the cells not maturing as they should. The leukaemia cells displace or inhibit the growth of the normal cells in the bone marrow.

Prevalence of leukaemia

There are 40 – 50 cases per year in Norway in the age group 0 – 18 years (figures from the Cancer Registry).

There is a slight preponderance of boys compared to girls who get leukaemia. Leukaemia accounts for about one third of all malignant diseases in children. The number of children who get leukaemia has not increased or decreased overall over the last decades, although the number will vary slightly from year to year.

There are two main types of acute leukaemia:

Acute lymphoblastic leukaemia (ALL)
The most common form, accounting for around 85 per cent of cases. Most common in young children (2 – 5 years), but it also occurs in teenagers. ALL has a favourable prognosis.

Acute myeloid leukaemia (AML)
Is relatively rare in children and accounts for around 15 per cent of cases. The disease is similar to AML as seen in adults and is more difficult to treat than ALL. However, treatment outcomes have improved significantly over the last 20 years.

Chronic leukaemia

Chronic forms of leukaemia that are common in adults are extremely rare in children, with very few cases per year in Norway (often < 1 per year). The treatment of chronic myeloid leukaemia follows the same principles as in adults.

In this brochure we will therefore emphasise and explain acute lymphoblastic leukaemia (ALL) and acute myeloid leukaemia (AML).

What causes or increases the risk of leukaemia?

No one knows what causes leukaemia, but some risk factors are known:

- The disease is not hereditary, but in identical twins the risk of the other twin developing leukaemia is slightly increased if one of them develops leukaemia.
- High doses of radioactive radiation.
- Certain hereditary diseases or syndromes predispose to leukaemia, such as Down's syndrome and Fanconi anaemia.
- Environmental factors have been debated as to whether electro-magnetic fields around power lines increase the risk of cancer in children. Studies have not shown such links.

There is evidence for a two-stage mutation model in the white blood cells where the first may be congenital, while the second appears at a later stage. Scientific studies have shown that leukaemia-specific mutations may be present in blood samples taken from newborns who later develop leukaemia, but also in some who never develop leukaemia. It is therefore believed that a second mutation is required for leukaemia to develop. There are many theories about possible triggers for this second mutation, but researchers have been unable to prove anything for certain.

TIPS

To get more information about this you should talk to the treating physician.

Symptoms of acute leukaemia

When the bone marrow does not produce enough normal blood cells, symptoms will gradually appear.

A deficiency of red blood cells leads to lethargy and the child becomes tired more quickly. The child becomes paler than normal. A deficiency of red blood cells can also cause shortness of breath, palpitations and headaches, but this is not often seen in children because this development as a rule occurs slowly.

The deficiency of white blood cells can lead to infections where treatment with antibiotics often does not work as expected, or the infection returns quickly after the end of antibiotic treatment.

In the case of a deficiency of well-functioning platelets, bleeding can be difficult to stop and you may find that you bleed for quite a long time from even small wounds or scratches.

Bruising and petechiae (small red or purple spots) can occur without any specific cause.

Some may experience skeletal pain such as pain in the legs, arms, back or jaw, due to a large production of immature blood cells in the bone marrow. For the youngest children, this may manifest itself as not wanting to put any weight on their legs, even though they cannot express that they are in pain.

Swelling of the lymph nodes, and enlarged liver or spleen, may also occur. In leukaemia, the lymph nodes do not usually get smaller again, as they do when they become swollen in an otherwise healthy child who has an infection.

Recurrent infections over a period of time can also be common in leukaemia.

INFO

If your child needs an anaesthetic, one of the parents may stay with the child, and the whole process usually takes about 20 – 30 minutes.

How to diagnose acute leukaemia

Blood tests
If leukaemia is suspected, the first thing to do is to take blood tests. There will usually, but not always, be some abnormality in the blood samples, such as low red blood cell count (anaemia), low platelet count (thrombocytopenia), low or high white blood cell count.

Clinical examination
The doctor will sometimes find other signs of something serious during a clinical examination, such as an enlarged liver or spleen, and abnormally large or numerous swollen lymph nodes.

Bone marrow examination
A bone marrow examination is always necessary to make a diagnosis of leukaemia. This is done by a small number of cells being sucked out of the bone marrow by a needle (aspiration) and a tissue sample (biopsy) taken. Both of these samples are taken from the iliac crest in children, but in the very young babies, samples may sometimes have to be taken from the leg bone. The cells are carefully examined, and the tests will determine whether the disease is leukaemia and which subgroup it may be. Bone marrow samples are also taken during treatment to see if the treatment is working properly.

Chromosome and immunological studies
It is routine to examine the chromosomes that contain the cells' genetic material (DNA). The alterations in the genetic material of the cancer cells characterise the different forms of leukaemia that are being investigated. In other words, it's not the genetic material of the healthy cells in the body that is being studied. A number of special tests are also carried out on the bone marrow, such as immunophenotyping. This technique detects antigens on the surface of cells. With these methods the doctor can determine what type of leukaemia the patient has, say something about the prognosis and decide how to treat the disease.

Spinal tap
A spinal tap is always done to check for cancer cells in the spinal fluid. It is done under anaesthetic in children, or with sedation in older children, by inserting a special needle into the spinal canal in the lower back. A small amount of spinal fluid is extracted and analysed. Children with leukaemia also receive chemotherapy directly into the spinal canal as an important part of the treatment. Spinal samples are also taken regularly throughout the treatment period.

Treatment of leukaemia

The treatment of leukaemia depends on the type of leukaemia. In acute leukaemia, treatment starts as soon as possible. Chronic leukaemia develops more slowly and does not necessarily need to be treated immediately.

Acute Lymphoblastic Leukaemia (ALL)

This is the most common form and accounts for about 85 per cent of cases.

In acute lymphoblastic leukaemia, the malignant cancer cells are precursors of lymphocytes (known as lymphoblasts). When a child is diagnosed with ALL, the doctors will determine which treatment protocol the child should follow. The vast majority of children will receive a single Nordic or European protocol, where the treatment consists of different combinations of chemotherapy drugs in different phases of treatment. On a general basis, the intensity of the treatment is highest during the initial period, and then decreases as the treatment progresses.

In 2019/2020, a new treatment protocol called "ALLTogether" was launched in much of Europe, and most children and young people in Norway will be treated according to this protocol in the coming years.

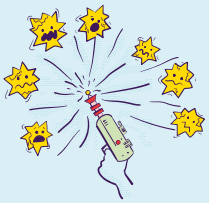
The intensity of treatment will be determined by the risk group to which the child belongs. The risk group is defined based on a set of disease criteria that are both present at the point of diagnosis and show up as a response to the initial treatment administered.

Regardless of the protocol, it involves a tough chemotherapy treatment that lasts a little over 2 years, unless the patient needs a stem cell transplant.

The aim of the treatment is to quickly make the patient cancer-free. Previous studies have shown that if treatment is stopped as soon as no more cancer cells can be detected in the bone marrow, the disease will almost always return. Therefore, the treatment must be continued for a long time to reduce the risk of the disease recurring.

In a small portion of patients, stem cell transplants, also called bone marrow transplants, will be performed. This may be the case for those patients who have a poor response to treatment in the first four weeks, or who do not become cancer-free during 2–3 months of treatment.

A new treatment for children with leukaemia was approved in Norway in autumn 2019. This treatment is called CAR-T (short for *Chimeric Antigen Receptor T-cells*) and is a form of immunotherapy. It is not a treatment that is routinely offered to all children with leukaemia. It is indicated in cases of poor response to treatment, or in cases of relapse. Which patients are offered this treatment is still changing, and you must therefore talk to your child's doctor if this is a treatment that is appropriate for your child. As of 2020, the actual CAR-T treatment is only performed at Oslo University Hospital but is available for children from all over the country.



The treatment of leukaemia is identical throughout Norway

The diagnosis and responsibility for treatment of children with leukaemia is carried out in Norway by one of four regional hospitals:

- Oslo University Hospital (Rikshospitalet Oslo)
- Haukeland University Hospital, Bergen (Haukeland Universitets sykehus)
- St. Olav's Hospital, Trondheim
- University Hospital of Northern Norway, Tromsø (Universitetssykehuset i Nord Norge)

The actual treatment is carried out in collaboration with the local hospitals, and some of the treatment can often be carried out closer to home for children living far from the regional hospitals.

The treatment of childhood leukaemia is identical throughout Norway and is supported by the Norwegian Childhood Leukaemia Group. There is also extensive collaboration in the Nordic region through the Nordic Society of Paediatric Haematology and Oncology (NOPHO).

Acute Myeloid Leukaemia (AML)

Acute myeloid leukaemia is relatively rare in children, accounting for about 15 per cent of cases.

The malignant cells in AML are called myeloblasts and are precursors to a slightly different type of white blood cell than in ALL. For AML, there is also a specific treatment protocol that is identical for everyone who gets the disease in Norway.

The treatment for AML consists of several types of chemotherapy drugs. These are combined in a different way than the chemotherapy given in ALL.

The AML treatment is intensive and demanding, and the goal is to remove all cancer cells early in the treatment. The treatment requires a lot of time in the hospital, and it is common to get fevers and infections between treatments because of the reduced immune response and the strong courses of chemotherapy.

The treatment lasts for about six months and is therefore significantly shorter than ALL treatment.

The effect of the treatment is assessed during the treatment period, and in case of poor effect, or very specific abnormalities in the genetic material of the cancer cells, the patient will be assessed for a stem cell transplant.

Chemotherapy drugs

Many different types of chemotherapy drugs are used to treat leukaemia. They can be given intravenously (directly into the blood), intrathecally (directly into the spinal fluid) or orally (as tablets or a mixture). Intravenous and intrathecal chemotherapy is always administered in hospital.

However, much of the treatment can be given in the paediatric units of local hospitals. The regional and local hospitals work closely together on each individual child.

The aim of the initial treatment is to reverse the disease so that cancer cells are no longer found in the body. In this phase, most of the chemotherapy drugs are administered intravenously, i.e., directly into the blood. All children and adolescents who have leukaemia get a central venous catheter, either in the form of a vein port (chamber under the skin) or a Hickman catheter, where the tubes are left outside the body as long as the catheter is in place, which they keep throughout the treatment period. All intravenous drugs are administered through the venous catheter. Intravenous nutrition can also be administered, if necessary, in addition to taking blood samples from it.

To prevent leukaemia in the central nervous system (brain, spinal cord and brain and spinal cord membrane), chemotherapy drugs are administered directly into the spinal canal. This is done regularly during the treatment and depends on the type of diagnosis (ALL or AML) and the risk group.

The reason for administering chemotherapy drugs directly into the spinal canal (intrathecally) is that chemotherapy drugs administered intravenously or by mouth (orally) do not adequately pass through the brain and spinal cords and into the central nervous system.

Children are given an anaesthetic when this is done, and adolescents are given sedation and local anaesthetic, and the process usually takes 20–30 minutes. One of the parents may stay with the child until he or she is asleep.

Glucocorticoids

Glucocorticoids is a generic term for several drugs in a group called (cortico) steroids, including dexamethasone, prednisolone and prednisone.

In the treatment of leukaemia, especially ALL, steroids are a very important part of the treatment, especially in the initial phase. Glucocorticoids act in a way that makes the lymphoblasts (cancer cells) stop growing and die.

Stem cell transplants

Stem cell transplants or bone marrow transplants are a form of treatment in which the patient's stem cells are replaced with stem cells from another person, either a relative or an unrelated donor.

The intention is that the fresh stem cells from the donor will produce new blood cells in the bone marrow of the patient and make him or her healthy. The treatment is very powerful and requires prolonged (1–2 months) hospitalisation, partly in isolation.

Stem cell transplants are a demanding treatment for both the child and the parents. In Norway, all stem cell transplants for children under 15 are carried out at the Rikshospital in Oslo. There is then close contact between the regional hospital responsible for treatment and the Rikshospital in the period leading up to, and after, the transplant.

In a possible stem cell transplant in leukaemia patients, stem cells from a family donor are used, most often a sibling, but occasionally a parent, or possibly an unrelated donor from the bone marrow registry. The doctors at the Rikshospital will find the donor that is the best match in each case.

INFO

It is very important that more people donate bone marrow. To become a bone marrow donor, you must be a registered blood donor.

The Nordic co-operation (Det nordiske samarbeidet)

There is close co-operation between the Nordic countries in childhood cancer treatment, and all children and adolescents up to the age of 18 are treated according to the same treatment protocols in the Nordic countries.

A treatment protocol is the “recipe” for how the treatment should be given to the child. The protocol starts on day 1 of the treatment, and states what the treatment should do every day and week throughout the treatment. The protocol tells which chemotherapy drugs to give when.

The doctors responsible for the treatment will go through this list with the family at regular intervals.

Treatment side effects

Chemotherapy treatment is demanding in many ways and unfortunately has some side effects. The chemotherapy affects the fresh blood cells so that the child will have generally low blood counts.

Anaemia

Low red blood cell counts cause symptoms such as flaccidity, pallor and shortness of breath. Red blood cells can be replenished through a blood transfusion, which is quite common to have to receive several times during the treatment period.

Increased tendency to bleed

Low platelet (thrombocyte) counts increase the risk of bleeding. The child will bruise easily, and even small wounds or scratches may bleed for a long time before the bleeding stops. For example, you should not take the child's temperature rectally, as the mucous membrane can easily bleed here. Blood platelets can be replenished by a transfusion.

Hair loss

The child will lose hair as a result of the treatment, but it will grow back when the chemotherapy is finished, and many will experience hair growth again during the last 1–1.5 years of treatment (for ALL). For the youngest children this need not be a major problem, but older children and adolescents may find this difficult. However, all children are entitled to wigs and special headwear during the treatment period, and the hospital will help to arrange this.

Impaired immune system

Low white blood cell counts make you more vulnerable to infections. It is therefore very common for the child to undergo regular intravenous antibiotic treatment during the treatment period. The white blood cells cannot be replenished by a transfusion. When the white blood cell count is low, you have to wait for the bone marrow to start producing white blood cells again. In some cases, the production of white blood cells can be accelerated by administering growth factors. This is determined by the treating physician.

Anti-infection measures

Because the child is more exposed to infections throughout the treatment period, all hospitals have some advice and guidelines for the patient and family to try and reduce the risk of infections. In general, the family is advised to be extra careful with regard to infection, i.e., to prevent the child coming into direct contact with people who have infectious conditions such as colds, stomach flus, coughs, or the like. Each family will need to speak to their doctor to find out what their practice is, as this varies from hospital to hospital.

Sore mucous membrane

Some chemotherapy drugs can cause mucosal damage, which can be very painful. Such side effects are a very individual problem, and fortunately many people avoid them relatively easily. In case of sore mucous membrane, effective pain relief and proper oral hygiene are important to avoid infections. More frequent dental check-ups are recommended for everyone throughout the treatment period.

Nausea

Nausea is a side effect that children may experience during chemotherapy. How much nausea a person experiences is highly individual, and there are many effective anti-nausea medications that can be given. It is important to take your child's nausea seriously and try different medicines if you do not get satisfactory relief at first. It is important to administer good anti-nausea treatment before the first course of chemotherapy to avoid the challenges of "anticipatory nausea" later on. Particularly teenagers and older children are vulnerable to this type of nausea and to nausea associated with chemotherapy in general. It may therefore also be important to consult a psychologist to try to deal with the nausea.

Reduced appetite

Many patients may experience a loss of appetite as a result of the chemotherapy which can pose a major challenge. Children need proper nutrition to ensure growth and development. You should be prepared in advance to think about nutritional drinks, tube feeding and possibly the insertion of a "button" (percutaneous gastrostomy PEG) on the stomach where the child can receive food. It is easier to stop an adverse development early than to make up for a large loss of weight during treatment. The clinical nutritionist at the hospital may be able to help with this.

Parents easily become very concerned that their child is not eating enough and offer food all the time with the best of intentions. For some children and adolescents, this is perceived as nagging and can lead to some frustration for both parties. It is also common for the sense of taste to change when undergoing chemotherapy. Changes in the sense of taste may also affect the appetite, and food that the child or adolescent previously enjoyed may suddenly not taste good, and the opposite.

→ **See our nutrition brochure for more good advice.**

Pain

Some types of chemotherapy drugs (particularly in the vinca alkaloids group, such as vincristine, vindesine and vinblastine) can cause pronounced nerve pain, most commonly in the leg, stomach or jaw. It is important to recognise this so that the child can be given adequate pain relief. The same drugs can also damage the nerves and cause walking difficulties or walking with a stiffer gait. In most cases this is temporary, but not always.

Sometimes the doctors have to change the treatment because of pronounced side effects of this type of drug.

Other side effects

Glucocorticoids are very important in leukaemia treatment, but unfortunately, they also have some side effects.

As with all drugs, the experience of side effects is highly individual, and no one can predict who will experience a lot of or little side effects. Common side effects of glucocorticoids are:

- reduced immune response
- increased appetite (sometimes dramatically increased)
- altered appearance (moon face)
- sleep disturbances
- mood swings
- bed-wetting
- emotional changes such as mood, anxiety and depression

Some children will also suffer from effects on bone structure and strength and may be prone to fractures and pain in the skeleton. Most people who take glucocorticoids over time will also experience the muscles wasting and becoming weaker.

These side effects can seem severe and can be very debilitating for both the child and the people around them, but the side effects usually go away when the child stops taking the drug.

Daily life with cancer treatment

Having a child with cancer affects the whole family. Leukaemia treatment is lengthy, and many parents find the early stages both chaotic and frightening.

Treatment starts quickly, there is a lot of information to deal with and many new people to get to know. For the child, the start of treatment can be both dramatic and frightening, with many unfamiliar people having to do things to them all the time.

Sense of security and familiar boundaries

In order for your child to feel secure, it is important to try to create secure and familiar boundaries. Maintain familiar routines in your daily life as far as possible, even if you are now at the hospital. This can apply to mealtimes, going to bed and otherwise in your daily life. Children feel secure when situations and reactions are familiar. Even if much is new and unfamiliar, there will be familiar elements in everything new that happens.

Siblings

When a child in the family has cancer, it will also greatly affect the siblings' daily lives over a long period of time. It's therefore important that the siblings' need for information and inclusion be taken seriously. Regardless of the age it is important for them to be informed about the illness, what kind of treatment the sick child will receive and how it will affect the one who is sick. We always recommend that siblings be allowed to visit the hospital early so that they can see and get to know the hospital and staff there.

School and kindergarten

Leukaemia treatment is both lengthy and demanding.

No one knows how sick your child will be and how many side effects your child will have, but all children will be exhausted and periodically in poor condition. There are big individual differences. Regardless of whether your child attends kindergarten or school, their daily life will be strongly impacted by the treatment. The vast majority of children will feel sad about losing daily contact with friends at school and in kindergarten. It is therefore important to provide for good contact with the kindergarten and school even if your child or adolescent is not physically present. It is important for your child to feel included even if he or she has been away for a long or short period.

Follow-up after completion of treatment

There is close and careful follow-up by the hospital throughout the treatment period. A regional hospital has the main responsibility for the treatment, while much of the treatment can be done at the local hospital.

After completion of treatment, the child will be followed up according to a set plan. The follow-up consists of blood tests and a clinical examination by the doctor.

Year 1: monthly check-up (possibly every 4–6 weeks)
Year 2: check-up every 2 months
Years 3–5: check-up every 3–6 months

After this, check-ups are once a year until the child has reached puberty. The follow-up described here is shared between the local paediatric departments and the University Hospitals (Oslo University Hospital, Haukeland, St. Olavs and UNN) and applies to both ALL and AML patients.

INFO

Follow-up check-ups are important for detecting relapses of the disease and for identifying any side effects of the treatment.

Late effects

The aim of cancer treatment is for the child to recover from cancer. Unfortunately, treatment has to be so strong that there is a risk of side effects from the treatment. This also applies to leukaemia treatment.

It is impossible to say at the start of treatment what side effects your child will have. Many patients experience no late effects, some have few late effects, while a very few may have more late effects.

In the development of today's leukaemia protocols, lessons learned from previous trials have been taken into account, including those concerning late effects, and attempts are therefore made to avoid or reduce the use of the chemotherapy drugs known to cause late effects. Nevertheless, some of today's chemotherapy drugs are so important for the success of the treatment that they must be used, despite the side effects.

One type of drug that most (but not all) people receive is the chemotherapy group anthracyclines, which can affect the heart muscle both during treatment and up to 30 years later. The anthracyclines can make the patient more vulnerable to developing heart failure. This is monitored closely throughout the treatment period and must also be

Having a child with cancer is a challenge both for you as parents, the child itself, the siblings and others around you.

monitored at follow-up check-ups. The follow-up of this will depend on how high the doses of anthracyclines your child has received during treatment.

Fertility can be affected by chemotherapy, and where possible, the possibility of freezing sperm for boys will be assessed. The possibility of sperm banking depends on the age and sexual maturity of the boy. For girls, freezing of ovarian tissue is an option for some cancer diagnoses, but for leukaemia this is not recommended, since current methods cannot ensure that the ovarian tissue will be free of leukaemia cells, which could then make the patient sick again when the tissue is replaced. However, experience shows that sterility among girls who have undergone leukaemia treatment is a rare problem. The vast majority, both girls and boys, retain their fertility if they have not undergone a stem cell transplant.

→ **See our late effects brochure for more information.**

Speak with a peer contact (Likeperson)

All of our peer contacts have had a child with cancer, or had cancer themselves as a child, and they know what can be difficult. Using their experience, they can provide support, listen and help others in a similar situation. Contact your county association if you want to talk to a peer contact.

TIPS

Make use of your network. People close to you, like family, friends and neighbours, want to help, but many find it difficult to know what they can do. Most will be happy to contribute something to help you during this time.

About the Norwegian Childhood Cancer Society

The Norwegian Childhood Cancer Society is a voluntary and nationwide organisation.

Our office is in Oslo, and we have county associations run by families who have or have had children with cancer. The associations work for the families on a voluntary basis. Our goal is that no child should die of cancer.

The Norwegian Childhood Cancer Society exists to help children and adolescents with cancer and their families. We are there for the whole family, meaning that the sick child, siblings and parents are all included. Some of the sick children have recovered, some are living with symptoms, some are under treatment, while others we have unfortunately lost.

At the hospitals, our peer contacts organise parents' meetings with the opportunity for new families to talk to someone. When your child is diagnosed with something as serious as cancer, it can be good to have someone to talk to who has experienced what you have. We also provide positive experiences for children who have to stay in the hospital for long periods.

The Norwegian Childhood Cancer Society wants to be the largest driving force in Norway to focus on childhood cancer in the media and society.

We also contribute to research and education to combat childhood cancer.

Become a member

→ Register on barnekreftforeningen.no

What does membership of the Norwegian Childhood Cancer Society mean?

As a member you have a unique ability to have an impact on conditions for children and adolescents with cancer and their families.

Membership in the Norwegian Childhood Cancer Society means access to a community of families who are, or have been, in the same situation. The association provides information, advice and support at all stages of a child who has, or has had, cancer.

TIPS

Contact your county association or the staff of the Childhood Cancer Society and tell us what is important to you.

Contact

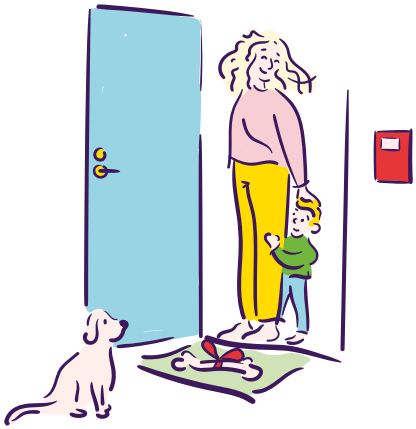
If you have any questions about membership or the Norwegian Childhood Cancer Society, please contact us.

Email
kontakt@barnekreftforeningen.no

Phone
+47 919 02 099

Visitors' address
Tollbugata 35
0157 Oslo

Postal address
Postboks 78 Sentrum
0101 Oslo



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Our county associations

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agder@barnekreftforeningen.no

Buskerud
buskerud@barnekreftforeningen.no

Innlandet
innlandet@barnekreftforeningen.no

Møre and Romsdal
more.romsdal@barnekreftforeningen.no

Nordland
nordland@barnekreftforeningen.no

Oslo and Akershus
oslo.akershus@barnekreftforeningen.no

Rogaland
rogaland@barnekreftforeningen.no

Telemark
telemark@barnekreftforeningen.no

Troms and Finnmark
troms.finnmark@barnekreftforeningen.no

Trøndelag
trondelag@barnekreftforeningen.no

Vestfold
vestfold@barnekreftforeningen.no

Vestland
vestland@barnekreftforeningen.no

Østfold
ostfold@barnekreftforeningen.no

The project is funded by Foundation Dam (2022/HE2-417894).

Org. nr. 985 550 999
Text Maria Winther Gunnes and Norwegian Childhood Cancer Society
Layout Neuschnee AS/Maren Tanke
Photo André Clemetsen
Printing Konsis Grafisk AS

June 2023

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