

Treating Cancer in Children: Chemotherapy



Chemotherapy (chemo) uses cancer-fighting medicines to destroy cancer cells. Chemo can be used alone or with surgery, radiation therapy, or other cancer medicines (such as targeted therapy) to shrink a tumor or prevent its spread. Chemo medicines are strong. They often cause side effects such as nausea and hair loss. There are fewer chemo medicines approved for children than for adults. Often, children receive chemo on a clinical trial.

Goals of chemotherapy

Chemo is used to:

- Destroy cancer cells or stop cancer cells from growing and dividing
- Shrink the tumor before surgery (neoadjuvant therapy) or kill any cancer cells left after surgery (adjuvant therapy)
- Cause remission (no evidence of the disease on medical testing)
- Cure cancer (no evidence of the disease years after treatment)
- Slow progression of cancer and ease symptoms

How chemotherapy works

Chemo uses medicine to kill cancer cells. But it also damages healthy cells, especially those that grow fast. This includes cells in the mouth, blood, skin, and hair. This is why side effects, such as hair loss, occur. Chemo is given in cycles (a period of time in days or weeks). After a treatment cycle ends, time is set aside so that normal cells can recover before the next cycle begins.

How chemotherapy medicines are given

- **IV (intravenous) line.** A small tube called an IV is placed into a vein in the arm or another part of the body to give chemo medicines. Sometimes a long-term IV is surgically placed in the body (often the chest). This is called a central venous line or central line. It lets medicines and other treatments be given without having to place a new IV each time. IVs are the most common way chemo medicines are given.
- **Pills or liquid.** The medicines are taken by mouth and swallowed.
- **Shot (injection).** The medicines are injected into a muscle in the arm or leg, or in the skin over a fatty part of the belly (abdomen).
- **Intrathecal.** The medicines are injected into the lower part of the spine. This is called a lumbar puncture (spinal tap). The medicine goes directly into the spinal fluid. This way of giving chemo is important because certain cancers grow in the spinal fluid.

Your child may be given chemo in the hospital, at a clinic, or at home. They may be given more than 1 medicine at a time. This is called combination chemotherapy. It may be more effective at killing cancer cells.



Side effects of chemotherapy

Side effects occur when normal cells are damaged by chemo. Most side effects are short-term and go away soon after treatment ends. But others may be long-term and permanent. In more severe cases, side effects may occur months or even years after treatment. Each chemo medicine can have its own side effects. If your child gets combination therapy with more than 1 medicine, there may be more side effects. And they may be more severe. Ask your child's healthcare provider what side effects your child may have. It's not likely that your child will have every side effect. But they may have some of the following:

Short-term side effects

These effects can occur during the treatment period:

- Increased risk of infection
- Bleeding
- Anemia (a condition that occurs when the blood doesn't have enough red blood cells to carry oxygen throughout the body)
- Hair loss
- Mood changes
- Dizziness
- Trouble focusing
- Tiredness (fatigue)
- Clumsiness
- Achy muscles
- Sores in the mouth or gut
- Stomach pain
- Nausea and vomiting
- Diarrhea
- Constipation

- Allergic reaction, such as hives or itching
- Pain, numbness, or tingling in hands and feet
- Skin rash

Long-term side effects

These are more serious side effects that may appear months or years after treatment:

- Infertility
- Damage to certain organs, such as the heart, kidneys, liver, or lungs
- Nerve damage that lasts
- Another cancer that occurs at a later time

Treatment and testing

Your child will have follow-up visits to check for side effects of chemo.

Your child will likely be given medicine to treat the short-term side effects of chemo. This may include medicines to ease nausea, vomiting, diarrhea, constipation, and pain. The healthcare team will also teach you how you can help manage your child's side effects. Also, your child may have tests done to check for possible long-term side effects, such as organ damage. Talk with your child's provider about this testing.

When to call your child's healthcare provider

Be sure to know the number to call your child's healthcare provider when your child has side effects. Is there another number to call in the evenings or on weekends and holidays? Call your child's healthcare provider right away if your child has any of the following:

- Temperature of 100.4°F (38°C) or higher, or as advised by the provider
- Chills
- Headaches or changes in vision
- Dizziness or lightheadedness
- Confusion
- Trouble focusing
- Ongoing fatigue
- Weakness in the hands or feet
- Clumsiness
- Pain that doesn't go away, especially if it's always in the same place
- A new or abnormal lump, bump, or swelling
- Uncontrolled nausea and vomiting
- Diarrhea that doesn't get better over time
- Constipation

- Weight loss
- Dehydration
- Abnormal rashes, bruises, or bleeding
- Skin breakdown or major pain due to skin irritation

Call 911

Call **911** right away if your child has any of these:

- Chest pain
- Trouble breathing

To learn more

To learn more and find support, check out these resources:

- **American Cancer Society** at www.cancer.org or 800-227-2345
- **National Cancer Institute** at www.cancer.gov or 800-422-6237
- **CancerNet** at www.cancer.net
- **Children's Oncology Group** at www.childrensoncologygroup.org

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