



# Immunotherapy

A Cancer Treatment Option



**CURESEARCH**

FOR CHILDREN'S CANCER

# Introduction

**CureSearch for Children's Cancer** has partnered with Dr. Jennifer Dean to share about immunotherapy, a revolutionary treatment that uses a patient's immune system to help treat cancer. Learn more about how this less-toxic treatment can supercharge the immune system to slow or stop cancer cells.

**JENNIFER  
DEAN, MD**  
PEDIATRIC HEMATOLOGIST  
ONCOLOGIST



“Immunotherapy is a promising addition to therapy and cure in pediatric oncology patients.”





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## Resources for Families

More than one million families have connected to [curesearch.org](https://curesearch.org) for instantly available resources, tools and information about children's cancer.

To support families during their child's diagnosis and treatment, CureSearch has developed the confidential CancerCare mobile app, which tracks medications, appointments, side effects, reports and provides tools to communicate with caregivers and doctors.

Learn about and download this mobile app at [curesearch.org/app](https://curesearch.org/app)

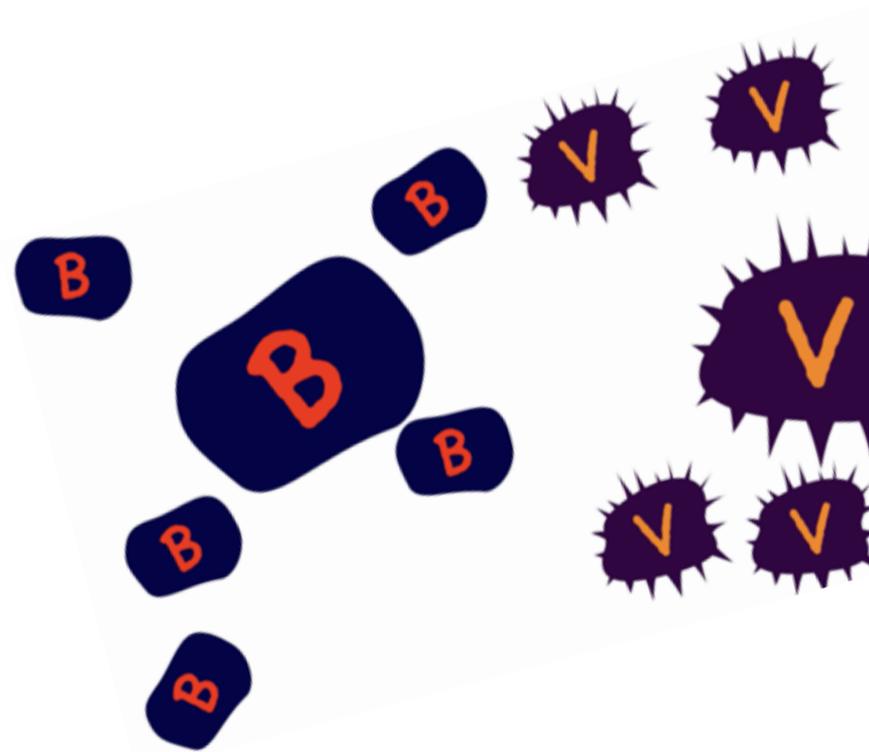
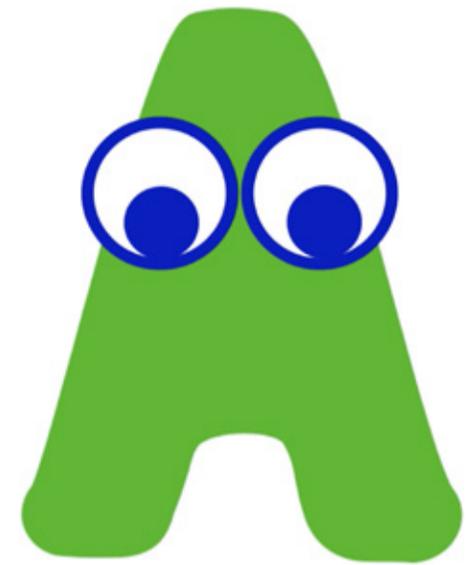
# What is the immune system?

The **immune** system is a network of cells, organs and substances that work together to fight off “foreign invaders” that can cause infections and other diseases.

## Why does the immune system allow cancer to grow?

Cancer is not a foreign invader so the immune system cannot defend against it. Cancer begins in the body from one’s own cells that change, or mutate to grow out of control. Cancer cells rebel against your own body and hide from the immune system.

When cancer cells grow, they change and the body’s immune system can no longer see them to stop their growth and spread. Sometimes, cancer cells send out signals to turn off the immune system. Sometimes cancer cells hide from the immune system.



# What is cancer immunotherapy?

Treatments used to “boost” or activate the immune system to help the body attack and kill the cancer.

## What are different types of cancer immunotherapy?

The main types of immunotherapy now being used to treat cancer include:

- **Monoclonal antibodies:** These are man-made versions of immune system proteins. Antibodies can be very useful in treating cancer because they can be designed to attack a very specific part of a cancer cell.
- **Immune checkpoint inhibitors:** These drugs basically take the ‘brakes’ off the immune system, which helps it recognize and attack cancer cells.
- **Cancer vaccines:** Vaccines are substances put into the body to start an immune response against certain diseases. We usually think of them as being given to healthy people to help prevent infections. But some vaccines can help prevent or treat cancer.
- **Cell-based immunotherapies:** These treatments boost the immune system by enabling one’s own immune cells to attack cancer cells.

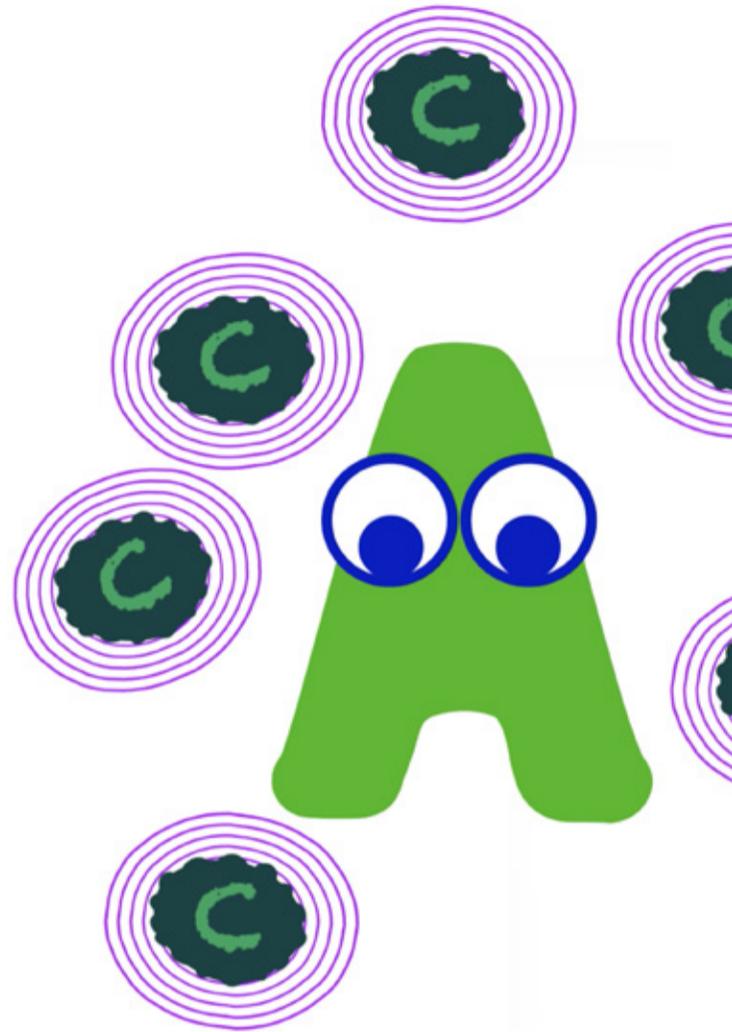
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# How does immunotherapy work?

Immunotherapy, also called biologic therapy, is a type of cancer treatment that boosts the body's natural defenses to fight the cancer cells. It uses substances made by the body or in a laboratory to improve or restore immune system function. Immunotherapy can work by:

- Stopping or slowing the growth of cancer cells
- Stopping cancer from spreading to other parts of the body
- Helping the immune system work better at destroying cancer cells



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# What are the benefits of immunotherapy for kids?

- Standard treatments like chemotherapy and radiation can have long-term, severe side effects due to their toxicity.
- Immunotherapy is less-toxic alternative to standard treatments like chemotherapy and radiation, which is typically how pediatric cancer is treated.
- Immunotherapy treatment can have a widespread application to treat many types of pediatric cancer.
- Immunotherapy can have dramatic responses for relapsed cancers or those that no longer respond to standard treatments.
- When combined with standard treatments, immunotherapy can have a 30% increase in effectiveness at reducing cancer growth.
- In some cases, pediatric patients can show complete remission.



# Are there side effects of immunotherapy?

Immunotherapy may not work in all patients. Some patients may not respond due to the genes present, or not present, in a particular type of cancer.

Immunotherapy can cause side effects depending on how healthy you are before treatment, your type of cancer, how advanced it is, the type of therapy you are getting, and the dose. Doctors and nurses cannot know for certain how you will feel during treatment. The most common side effects are skin reactions at the needle site. These side effects include: pain, swelling, soreness, redness, itchiness and rash. A lot like when you get a flu shot or an immunization. You may have flu-like symptoms. Other more serious side effects could include: swelling and weight gain from retaining fluid, heart palpitations, sinus congestion, diarrhea or risk of infection. In rare cases, Immunotherapies may also cause severe or even fatal allergic reactions.



# What can you expect when you receive immunotherapy treatment?

Immunotherapy is given to you by a doctor or nurse, who will determine the timing and dosage. Different forms of immunotherapy may be given in different ways which can include:

- Intravenous (IV) – The immunotherapy goes directly into a vein.
- Oral – The immunotherapy comes in pills or capsules that you swallow.
- Topical – The immunotherapy comes in a cream that you rub onto your skin. This type of immunotherapy can be used for very early skin cancer.
- Intravesical – The immunotherapy goes directly into the bladder.



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## CONTACT US

For more information about how you can help find cures for children's cancer, contact us at:

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## OUR MISSION

Our mission is to end children's cancer by driving targeted and innovative research with measurable results in an accelerated time frame.



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