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NIH News in Health

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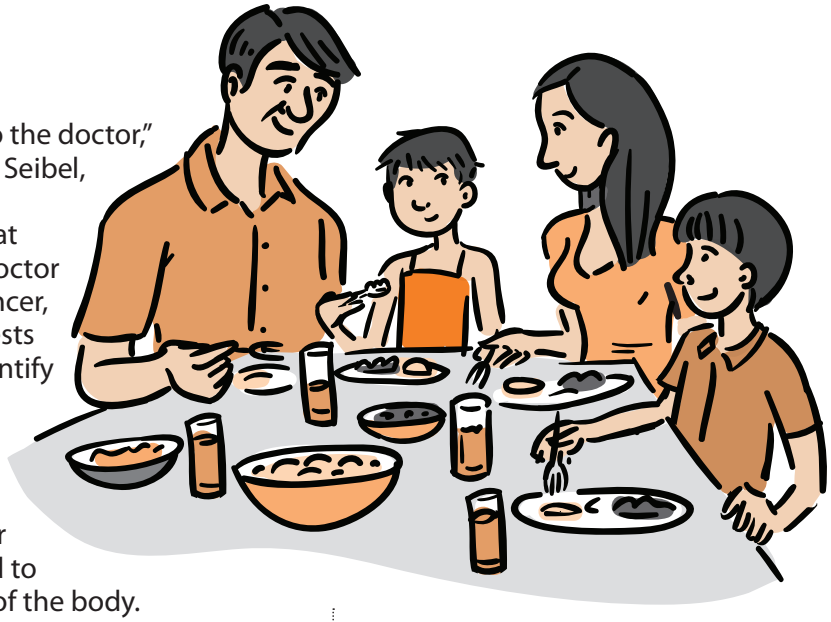
Childhood Cancer

Coping With the Diagnosis



Just the thought of a child getting cancer can be frightening and overwhelming. But while cancer can be life threatening, there's encouraging news. Over the last few decades, improved therapies have helped childhood cancer survival rise to more than 80%. Many kinds of cancer can now be cured or controlled to help give children a better quality of life into adulthood.

The most common type of childhood cancer is leukemia, a cancer of the blood. Leukemia begins in the bone marrow, the spongy substance inside our bones where blood cells are made. Other childhood cancers include lymphoma (blood cancer that begins in the lymph glands) and solid tumors (abnormal clumps of tissue). Solid tumors may occur throughout the body, such as in the brain, kidney, muscle or bone.

The causes of childhood cancer are largely unknown. Childhood cancer can occur suddenly, with no early symptoms, and might get detected during a physical exam.

"If you notice something unusual in your child—unexplained symptoms, not growing properly, belly distended, blood in urine—take your child to the doctor," says Dr. Nita Seibel, a pediatric **oncologist** at NIH. If the doctor suspects cancer, a series of tests will help identify the type of cancer, where it's located and whether it has spread to other parts of the body.

Cancers in children can be different from adult cancers. When you're researching the diagnosis, be sure you're looking at how that cancer affects children. Often, the outcomes may be better for children than for adults with the same type of cancer.

For instance, Seibel says, childhood tumors tend to respond better to treatment than do tumors in adults. Cancer cells tend to grow very swiftly in the types of tumors seen in children. So therapies can be selected to interrupt this rapid growth. Children with leukemia, non-Hodgkin's lymphoma or certain solid tumors tend to have a good outcome.

Doctors design treatment plans specific to each child. Children usually receive one or more of the following treatments: chemotherapy drugs; radiation; surgery (for solid tumors); **immunotherapy**; or a bone marrow or blood stem cell transplant. Unpleasant side effects are common and can include hair loss, nausea and diarrhea. But side effects tend to fade shortly after treatment ends.

Dr. Stephen Hunger, a pediatric cancer specialist at the University of Colorado, says that most advances in treatment have come from improvements to chemotherapy drugs. For instance, treatment for childhood leukemia 30 years ago often involved radiation to the brain. But radiation can cause health problems later in life. Now, with improvements to chemotherapy, oncologists are using radiation less, if at all, for children with leukemia and some other types of cancer. "This is a good change because of the long-term side effects to thinking and learning, and the risk of later developing brain tumors," Hunger says.

Improvements to treatment are often based on clinical studies of people who have cancer. Children might be eligible to participate in cer-

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Definitions

Oncologist
A doctor who treats people who have cancer.

Immunotherapy
Drugs that direct the body's immune cells to attack disease-causing agents, such as cancer cells.

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tain clinical studies of cancer shortly after their diagnosis.

"NIH supports clinical trials for most types of childhood cancer," says Dr. Malcolm Smith, a pediatric oncologist at NIH. For types of cancer that already have good treatments, he says, trials aim to maintain survival while reducing side effects. Other studies evaluate the safety and effectiveness of experimental therapies for cancers that lack good treatment options. When standard therapy fails, some children may be able to participate in clinical trials that test promising new agents.

One NIH-supported cancer research network links thousands of pediatric cancer experts. Together, they conduct clinical research trials for common types of childhood cancers. Another NIH-sponsored research group is testing potential new drugs for pediatric brain tumors at hospitals nationwide. To learn more about cancer trials, go to www.cancer.gov/clinicaltrials/learningabout.

Genomics is giving scientists a detailed picture of cancer cells: how they grow, survive and spread. Studying cancer at this molecular level can lead to more targeted therapies. "Instead of treating a type of brain cancer one way, for example, there may be subtypes defined at the molecular level that should be treated differently," says Smith.

These molecular studies can also lead to new clinical approaches. For instance, in one NIH-funded study, an experimental immunotherapy significantly improved survival rates in children with a type of cancer called neuroblastoma. This cancer is responsible for 12% of all cancer deaths in kids under age 15. The new therapy is based on a specially designed antibody—a type of immune system molecule—that latches onto the surface of neuroblastoma cells. The antibody flags the cancer cells for destruction by the body's own immune system.

Wise Choices
Helping Children Cope With Cancer

- Assure children that the cancer and its treatment are not punishments.
- Tell them it's OK to feel sad and cry.
- Discuss the cancer and treatment with the child to help ease anxiety.
- Encourage relaxing activities such as drawing or playing.
- Maintain rules and discipline to provide a familiar structure.
- To cope with loss of appetite, serve appealing foods and let the child eat whenever he or she feels hungry.

Definitions

Genomics
The large-scale study of all our genes and their interactions.

Web Links

For more about childhood cancer, click the "Links" tab at:
http://newsinhealth.nih.gov/issue/Jun2013/Feature1

When a child is being treated for cancer, family members may find it hard to move forward with everyday life. After chemotherapy or radiation therapy, children may be tired and need more rest. Even so, kids with cancer have the same needs as other young people.

Encourage your child to stay in touch with friends. Keeping contact is easier if your child can keep going to school. Contact your child's teachers and school nurse to discuss the disease, treatment, absences and any needed changes in activity.

Children often worry about how their classmates will act toward them, especially if a child has missed a lot of school or has noticeable changes such as hair loss. Let your child know that many people, including kids, are uneasy about serious illness. These people may act differently or say hurtful things. Many kids will be accepting of a child with cancer, but they may have a lot of questions. Talk to your child about ways to answer.

Be open with your child about the diagnosis and upcoming treatments. Age-appropriate discussions might help ease stress, fear and uncertainty. Emphasize that cancer isn't contagious and isn't anybody's fault.

If your child is diagnosed with cancer, you may need support as well. You and your family can get help from many sources. For some ideas, visit www.cancer.gov/cancertopics/coping.

NIH works to improve existing cancer therapies and develop new approaches. "The focus is on curing cancer—not just prolonging life—to restore the natural order of things," says Hunger, "so these children will outlive their doctors and their parents." ■

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National Institutes of Health
Office of Communications
& Public Liaison
Building 31, Room 5B64
Bethesda, MD 20892-2094
nihnewsinhealth@od.nih.gov
Tel: 301-435-7489 Fax: 301-496-0019

Managing Editor Harrison Wein, Ph.D.
Editor Vicki Contie

Contributors Vicki Contie, Alan Defibaugh (illustrations) and Dana Steinberg

newsinhealth.nih.gov

How To Whip Whooping Cough

Preventing Pertussis

Many people think of whooping cough as a childhood disease. But it can strike people of any age. Whooping cough—also known as pertussis—causes uncontrollable coughing that makes it hard to catch your breath. The disease can be deadly, especially in newborns.

Vaccines have helped keep pertussis in check. Beginning in the 1940s, widespread vaccination led to a nationwide drop in the number of pertussis cases—from about 200,000 a year to a record low of about 1,000 in 1976. Recently, though, pertussis has been making a comeback. Last year, the number of U.S. cases topped more than 41,000—the highest number in 50 years.

Whooping cough is a highly contagious bacterial infection that affects the lungs and airways. The bacteria spread through the air, from one person to another, when an infected person coughs or sneezes.

Wise Choices
Pertussis Symptoms

Pertussis often starts with:

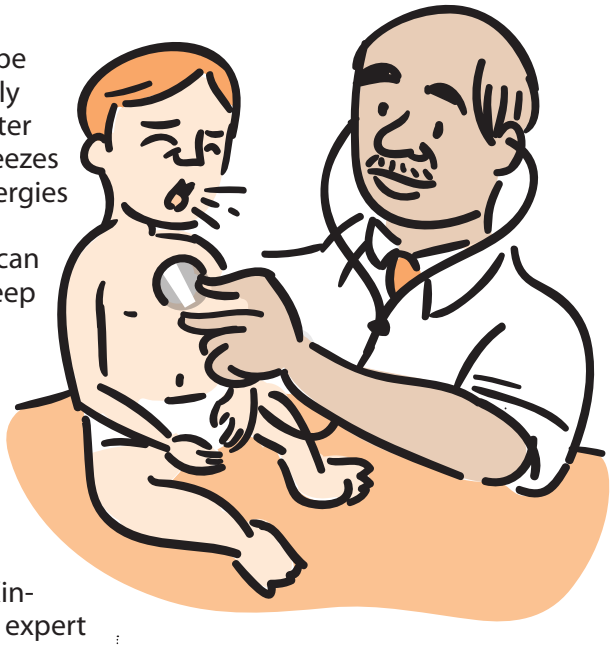
- A runny or stuffy nose
- Sneezing
- A mild cough
- A pause in breathing (apnea) in infants

After 1 to 2 weeks:

- Coughing fits make it hard to breathe, eat, drink or sleep.
- Coughing may lead to vomiting or exhaustion.
- Rapid coughs may be followed by a high-pitched "whooping" sound.
- Babies and youngsters may turn blue from lack of oxygen.

Adapted from the U.S. Centers for Disease Control and Prevention

Early signs of pertussis can be hard to spot. Symptoms usually begin quietly about a week after infection, with sniffles and sneezes that you might mistake for allergies or a mild cold. Treatment with antibiotics in this early phase can help reduce symptoms and keep the disease from spreading to others.



The next phase of pertussis begins about 10 days after infection. "The major symptom is persistent, violent coughing. You might cough so hard that you throw up or struggle to breathe," says Dr. Xin-Xing Gu, an infectious disease expert at NIH. "With babies, you might hear a sharp inward breath and a whooping sound that's very unique." But not everyone who's infected makes the whooping sound that gives the disease its name.

The coughing phase can last for 10 weeks or more. The disease is most contagious during the early cold-like symptoms and for at least 2 weeks after the coughing phase begins.

Whooping cough is most harmful to young children. "Infants are at greatest risk, especially when they're under 3 months of age—too young to be protected by the vaccine," says Dr. Kathryn Edwards, a pediatrician and vaccine researcher at Vanderbilt University School of Medicine. "Coughing spells can interrupt breathing, and little babies may turn blue. They can die from not getting their next breath."

Vaccines are the best way to prevent pertussis. The original vaccine was made of whole, inactivated pertussis bacteria. These whole-cell vaccines greatly reduced deaths and infections but had many side effects.

More than 3 decades ago, NIH-funded researchers, including Edwards, tested "acellular" pertussis vaccines in early clinical trials. These new vaccines are made from only parts of the bacteria, and they have fewer side effects than the original vaccine. Since 1997, all pertussis vaccines in the U.S. have been acellular.

Children in the U.S. typically get a series of 5 pertussis shots between 2 months and 6 years of age as part of their routine care. The acellular pertussis vaccine, combined with the diphtheria and tetanus vaccine, is called DTaP. A single booster shot, called Tdap, is given to pre-teens (ages 11 or 12) to increase protection.

To prevent disease in newborns before they can be vaccinated, the CDC now recommends that expectant mothers get the Tdap vaccine during the second half of each pregnancy. "Any adults who will be around infants—parents, grandparents and childcare providers—should also get the booster," says Edwards.

Talk to your doctor to make sure your vaccinations are up to date. Protect yourself and those around you from pertussis. ■

Web Links

For more about whooping cough, click the "Links" tab at:
http://newsinhealth.nih.gov/issue/Jun2013/Feature2

Health Capsules

For links to more information, see these stories online:
http://newsinhealth.nih.gov/issue/Jun2013/Capsule1

Gene Tests May Improve Therapy for Endometrial Cancer

By analyzing genes in hundreds of endometrial tumors, scientists identified details that might lead to more targeted therapies for some patients.

Endometrial cancer affects the lining of the uterus. It's the 4th most common cancer among women in the United States. Experts predict that nearly 50,000 women will be diagnosed with the disease in 2013. Over 8,000 deaths will likely result.

There are 2 main types of endometrial cancer. People with type I (endometroid) tumors usually have a good chance for recovery. People with type II (serous) tumors tend to have a less favorable outcome.

Disease experts known as pathologists determine tumor types by looking at tissues under a microscope. But categorizing these tissues can be difficult, and specialists often disagree on the diagnosis.

In a new study, NIH-funded researchers found that about 1 in 4 tumors classified by pathologists as high-grade endometrioid have genetic changes much like that of serous tumors. This suggests that patients with these tumors may benefit from similar treatments.

The scientists also found genetic similarities between endometrial cancers and other types of tumors. Type II endometrial tumors share features with subtypes of breast and ovarian cancers. These parallels might now be explored for therapies.

The scientists say their findings may lead to more personalized approaches for diagnosing and treating endometrial cancer. "Developing therapies for each subtype independent of the other may improve outcomes," says study co-leader Dr. Elaine Mardis of the Washington University School of Medicine in St. Louis. ■

Family Studies of Type 1 Diabetes

If someone in your family has type 1 diabetes, you and other family members may be at risk. Want to help scientists learn more? Complete a free screening to see if you can take part in an NIH-funded study that's searching for ways to delay or prevent type 1 diabetes. You can get screened even if you live far from a study site.

The study, called Type 1 Diabetes TrialNet, aims to screen more than 20,000 relatives of people with type 1 diabetes each year.

In the past, relatives who wanted to participate in the study had to visit a study site or attend a screening event. But now, potential volunteers can answer a few online questions at www.diabetestrialnet.org. If you're eligible for the next step, you'll receive a kit in the mail. The kit will direct you to a local lab for a free blood test to look for factors related to diabetes.

Out of every 100 people tested, about 3 or 4 will show an increased risk for type 1 diabetes. They'll be invited to have further blood tests at a TrialNet center, and they might be invited to join a study of ways to prevent or delay the disease. Children under age 18 can be retested annually to see if their risk has changed.

"We hope to find more people who are at risk and want to help find ways to delay or prevent type 1 diabetes," says NIH's Dr. Ellen Leschek, who directs the TrialNet program. ■

Featured Website

Pregnancy: Every Week Counts

www.nichd.nih.gov/ncmhep/isitworthit/

Learn why it's important to let the baby set the delivery date. As long as mother and child are both doing fine, it's best for the baby's health and yours to wait until at least 39 weeks of pregnancy for delivery. Babies born sooner are at risk for several health problems.

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