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Why good nutrition is important

Nutrition is an important part of the health of all children. It is especially important for children getting cancer treatment.

Nutrition is a 3-part process that gives the body the nutrients it needs. (Nutrients are the chemical compounds -- like water, protein, fats, carbohydrates, vitamins, and minerals -- that make up foods):

- You eat or drink food.
- Your body breaks the food down into nutrients.
- The nutrients travel through the bloodstream to different parts of the body where they are used as fuel, building blocks, and for many other purposes. For your child's body to get proper nutrition, they have to eat and drink enough of the foods that contain key nutrients.

Calories are a way to measure the energy the body gets from food. The body needs calories to fuel all of its functions, such as breathing, blood circulation, and physical activity. When a person is sick, their body may need extra calories to fight infection, raise body temperature, rebuild damaged tissues, and other uses.

Cancer and its treatments may affect a child's appetite, tolerance to foods, and their body's ability to use nutrients. Eating the right kinds of foods before, during, and after treatment can help a child feel better and stay stronger. Children who get good nutrition while they are being treated for cancer:

- Tolerate treatment and treatment side effects better
- Are better able to stay on schedule for treatment
- Heal and recover faster
- Have less risk of infection during treatment
- Have better strength and energy
- Keep up their weight and their body's store of nutrients
- Are better able to keep up normal growth and development
- Feel better and have a better quality of life -- they are less irritable, sleep better, and work better with the health care team

Each child with cancer has their own nutrition needs. If your child has cancer, talk with your doctor about your child's diet. Talk to the health care team any time you have concerns about how much your child has been eating or drinking. Your doctor, nurse, dietitian, speech pathologist, and even your child's dentist can work with you to figure out your child's needs and come up with an eating plan.

The information here is not meant to replace the advice of a medical professional. If you have any questions or concerns about your child's nutrition needs, talk to your child's doctor, nurse, or dietitian.

A registered dietitian (RD) is one of your best sources of information about your child's diet. This health care professional has special training in food, nutrition, biochemistry, and physiology. The dietitian uses this knowledge to promote health and prevent disease through counseling and education. If you are going to meet with a dietitian, be sure to write down any questions before your meeting so you don't forget anything. Ask them to repeat or explain anything that is not clear. If you have a question about something in this guide, your dietitian can give you a more detailed explanation.



What children with cancer need

Children with cancer need protein, carbohydrates, fat, water, vitamins, and minerals. A dietitian can help you understand your child's specific needs and develop an eating plan. Your child's baseline nutritional status (Is he overweight? underweight?), diagnosis, treatment plan, age, activity levels, and the medicines he gets are all used to make a nutrition plan.

Proteins

The body uses protein to grow, repair tissues, and to maintain the skin, blood cells, the immune system, and the lining of the digestive tract. Children with cancer who do not get enough protein may recover from illness more slowly and even be more likely to get infections. After a child has surgery, chemotherapy, or radiation treatments, she may need extra protein to heal tissues and to help prevent infection.

Protein is also key to a child's growth and development. During illness, a child's need for protein goes up. Work with your child's cancer care team to figure out her specific needs at this time.

Lean meat, fish, poultry, eggs, dairy products, nuts, dried beans, peas and lentils, and soy foods are good sources of protein.

Carbohydrates

Carbohydrates give the body the fuel (calories) it needs for physical activity and for organs to function. How many calories a child needs depends on his or her age, size, and level of physical activity. Healthy infants, children, and adolescents need more calories per pound than adults to support growth and development. Children being treated for cancer may need even more calories for tissue healing and energy. In fact, a child being treated for cancer may need anywhere from 20% to 90% more calories than a child who is not getting cancer treatment.

The best sources of carbohydrates -- fruits, vegetables, and whole grains -- give the body's cells the vitamins and minerals, fiber, and phytonutrients (key nutrients from plants) they need. Other sources of carbohydrates include bread, potatoes, rice, spaghetti, pasta, cereals, dried beans, corn,

peas, and beans. These carbohydrate foods also contain B vitamins and fiber. Sweets (desserts, candy, and drinks with sugar) give your child carbohydrates, but very few other nutrients.

Fats

Fats and oils are a rich source of energy (calories) for the body. They provide more than 2 times the calories per gram than carbohydrates. They store energy, insulate body tissues, and carry some types of vitamins through the blood. They also make food taste better, make baked products moist, and conduct heat during cooking. You may have heard that some fats are better than others. For the most part, unsaturated fats (monounsaturated and polyunsaturated) are better choices. Here is a breakdown of the different fats found in food:

- Monounsaturated fats are found mainly in vegetable oils such as olive, canola, and peanut oils. They are liquid at room temperature.
- Polyunsaturated fats are found mainly in vegetable oils such as safflower, sunflower, corn, flaxseed, and canola oils. They are also the main fats found in seafood. They are liquid or soft at room temperature. Certain polyunsaturated fatty acids, such as linoleic acid and alpha-linolenic acid, are called essential fatty acids. They are needed to build cells and make hormones, but because the body cannot make them, we must get them from foods. Soybean, canola, and walnut oils are good sources of essential fatty acids.
- Saturated fats (or saturated fatty acids) are mainly found in animal sources, such as meat and poultry, whole or reduced-fat milk, and butter. Some vegetable oils like coconut, palm kernel oil, and palm oil are saturated. Saturated fats are usually solid at room temperature.
- Trans fatty acids are formed when vegetable oils are processed into margarine or shortening. Sources of trans fats include snack foods and baked goods made with partially hydrogenated vegetable oil or vegetable shortening. Trans fats also occur naturally in some animal products, such as dairy products.

Vitamins and minerals

Vitamins and minerals are needed for normal growth and development. They also help the body use the energy (calories) it gets from food. Children who eat a balanced diet usually get plenty of vitamins and minerals. But studies have shown that even healthy kids often don't get enough calcium and vitamin D, which are especially important for bone growth. Some of the drugs used to treat cancer can lower calcium and vitamin D levels, too, so extra amounts may be needed.

It may be hard for a child getting cancer treatment to eat a balanced diet. Common treatment side effects, like nausea and vomiting and mouth sores (mucositis) can make it hard to eat well. If your child has eating problems, ask your doctor, nurse, or dietitian for help. Sometimes your doctor will recommend a daily multivitamin while your child is being treated. But a multivitamin does not replace eating enough calories and protein. Always talk to the doctor before giving any vitamin or mineral supplements to your child, since some of them can interfere with cancer treatment drugs.

Water

All body cells need water to function. If your child does not take in enough fluids or loses fluids from vomiting or diarrhea, he or she may become dehydrated. The fluids and minerals that help keep your body working can become dangerously out of balance. You can see if your child is dehydrated by lightly pinching the skin over the breast bone. If the skin does not return to normal and stays raised, your child may be dehydrated. Other symptoms include dryness in the lining of the mouth, darker colored urine, listlessness, and dizziness. If you think your child is dehydrated, call your doctor right away. Ask your doctor, nurse, or dietitian how much fluid your child needs each day to keep from becoming dehydrated.



How your child can take in nutrients

There are many ways to help your child get the nutrients they need. The most common are:

By mouth

If at all possible, your child should get needed nutrients from eating and drinking nutrient-rich foods and fluids that are part of a healthy, well-balanced diet. Try to stick to your normal family mealtime habits as much as you can. Regular snacks can be helpful, too. If needed, your child may be able to get extra nutrients by eating high-calorie, high-protein meals supplemented with snacks, and homemade drinks and shakes. But talk to your health care team before making diet changes like these. Liquid nutrition products you can buy at the grocery store or pharmacy are also options if your child has trouble eating. There are many different types on the market and it is best to discuss them with your doctor first. Clinics often have samples your child could try before you buy any.

Taking in enough nutrients is not just about managing weight loss; it is also part of giving your child the chance for the best possible treatment outcome. If it gets too hard for your child to maintain or gain weight by eating and drinking, or if his calorie and nutrients needs have greatly increased, a feeding tube may be needed.

By feeding tube

Tube feedings are given by threading a thin, flexible tube through the nose and into the stomach. The tube can be passed further along into the small intestines if your child is having trouble with nausea or vomiting. Once the tube is in place, complete liquid nutrition formulas can be given through it. Most of the time, these feedings can give your child all of the calories, protein, vitamins, and minerals needed.

Tube feedings can be given at home, with the help of family, friends, or caregivers. Your health care team will teach you how to do this. Once tube feedings begin, your child will usually feel better because his nutritional needs are being met.

Children who have feeding tubes usually can still eat by mouth. The tubes are very small and will not keep your child from swallowing. If your child needs a feeding tube, every effort will be made to allow him to eat by mouth, too. For example, he may be tube fed at night while sleeping to allow him to eat during the day. Even though they are getting tube feedings, it is still important to keep your child's mouth clean through regular rinsing and brushing.

Most young children get used to tube feedings within a few days. But older children and teenagers may need longer. Talking with a peer who has also had a feeding tube may help the older child who is having a hard time adjusting to the tube. Parents also benefit from talking with other parents who have dealt with feeding tubes. They often have fears about using the tube, or concerns about the way it looks. Children should be involved as much as possible in the decision to use a feeding tube.

Although tube feedings are most often used to boost weight in children with poor appetites, they may also be used in youngsters who cannot eat or drink. Again, good nutrition is needed to get the best possible outcomes of cancer treatment. Talk to your health care team about your child's eating habits, signs of problems you should watch for, and things you can do to help your child get the most of what she can eat.

A more long-term type of tube can be put through the skin of the belly (abdomen) right into the stomach (a gastrostomy or g-tube) or the intestines (a jejunostomy or j-tube). This surgery can usually be done in an outpatient setting.

Tube feeding does not come without problems. Talk to your health care team to fully understand the likely benefits and possible issues for your child.

By parenteral nutrition

Sometimes tube feedings are not able to give all the fluids and nutrients a child needs. In these cases, nutrient solutions can be given right into a vein. This is called *intravenous nutrition* or *parenteral nutrition (PN)*.

PN is most often used when the stomach and intestines are not working properly. For example, in children who have:

- Had surgery involving the digestive system
- Complete blockage of the intestines
- Uncontrolled nausea, vomiting, or diarrhea
- An infection that requires the digestive system to rest so that it can heal
- Problems from cancer or treatment that keep them from eating or using a feeding tube

PN solutions can usually meet 100% of a child's nutritional needs. Like tube feedings, PN can be given at home. Short-term use of PN for patients with conditions like those listed is a safe way to support your child until the problem is better. Once these issues go away every effort should be made to switch to tube or mouth feedings because PN can be hard on the liver.



When your child is taking steroids

Children with cancer often take steroids, such as prednisone or dexamethasone, as part of their treatment. Children taking steroids usually feel hungry all the time and may gain weight. Steroids also tend to make people retain fluid.

You can help your child make some diet changes to help prevent fluid retention and limit the weight gain. Your doctor, nurses, or dietitian can help you know what to do. They may suggest foods low in salt (sodium). Alternatives to salty foods include foods highly seasoned using other spices. High-sodium foods, such as most snack chips and pretzels, processed foods, or frozen meals should be avoided. (Those labeled "reduced sodium" are OK.) Also be aware of extra calories your child may not need at this time, like those in sodas and juices.

Your health care team can also give you tips on planning meals and snacks that are satisfying, but not high in calories, to keep your child at a healthy weight. Offer your child fresh, nutritious, filling foods, such as fruits and vegetables, homemade soups, non-processed meats, dairy products, breads, and pastas. Your child does not have to feel deprived of their favorite foods, but some changes in the recipe might be wise. Consider thin crust pizza with low sodium cheese for the pizza lover, and baked chicken tenderloin strips and baked potato fries for the chicken nugget and french fry lover. No food is especially bad, but how it is prepared or the portion size can be unhealthy.

The appetite changes and fluid retention caused by steroids are short-term and will go away when treatment ends. Still, preventing excess weight gain during steroid treatment is important to prevent stretch marks around the belly (abdomen) and upper legs, and also prevent high blood pressure.

When steroid treatment ends many children will lose their appetite for a short time. The weight loss that may come with this is expected and will be closely watched. But other children, especially teens, may have a hard time losing the weight gained during treatment.



Cancer treatment side effects and what you can do about them

Changes in taste and smell

Cancer and its treatment may cause changes in your child's senses of taste and smell. These changes can affect your child's appetite. Here are some tips that may help you get your child to eat:

- Serve foods cold or at room temperature. This can decrease the foods' tastes and smells, making them easier to tolerate.
- Try using plastic flatware and glass cups and plates if your child has a metallic taste in his mouth while eating.
- Try foods or drinks that are different from ones your child usually eats. Children seem to like salty foods, such as chips, pretzels, and crackers. (Remember, if your child is getting steroids this may be a problem.)
- Freeze fruits such as cantaloupe, grapes, oranges, and watermelon, or buy frozen blueberries and strawberries and eat them as frozen treats.
- Offer fresh vegetables. They may be more appealing than canned or frozen ones.
- Try marinating meats to make them more tender.
- If red meats taste strange, try other protein-rich foods such as chicken, fish, eggs, or cheese.
- Blend fresh fruits into shakes, smoothies, ice cream, or yogurt.
- Keep your child's mouth clean by regular rinsing and brushing, which can help foods taste better.

To lessen smells:

- Cover drinks and have your child drink through a straw.
- Choose foods that do not need to be cooked.
- Do not cook food with strong odors when your child is around.
- Do not eat in rooms that are stuffy or warm.



Poor appetite

Cancer and its treatments often cause changes in a child's eating habits and desire to eat. Not eating can lead to weight loss, and this can cause weakness and fatigue. Helping your child eat as well as they can is an important part of helping them through treatment. If your child has been having trouble eating or has had a poor appetite, talk to your health care team. Some general guidelines for when to do this:

- An infant with a poor appetite for more than 3 days
- A toddler or preschooler with a poor appetite for more than 5 days
- A school age child or teen with a poor appetite for more than 7 days

If your child doesn't want to eat, try giving them small, frequent meals and snacks. Keep nutritious snacks handy to eat when they feel hungry. Try hard-cooked eggs, peanut butter, cheese, ice cream, granola bars, liquid nutritional supplements, puddings, nuts, canned tuna or chicken, or trail mix. Also try these tips;

- Try to make mealtime fun and praise a healthy appetite or good eating habits. Setting the table with pretty dishes, playing your child's favorite music, watching television, or visiting with friends while eating can also help.
- Offer small meals and snacks throughout the day.
- Keep your child's mouth clean with regular rinsing and brushing. And keep the mouth moist -- don't let it get dry.
- Let your child eat their favorite foods any time of the day; for example if they really like breakfast foods, let them eat them for dinner.
- Let your child help you shop and prepare the foods.
- Avoid arguing, nagging, or punishing a child who is unwilling to eat. Talk to the doctor if you are worried that your child isn't eating enough.



Constipation

Certain medicines, changes in eating habits, and being less active can cause your child's bowels to move less often and stools to become harder to pass (constipation). If your child is constipated, your doctor, nurses, or dietitian may suggest adding high-fiber foods to your child's diet. Examples of high-fiber foods include whole-grain breads and cereals, raw fruits and vegetables, dried fruits, beans, and nuts. Drinking plenty of fluids throughout the day, eating at regular times, and increasing physical activity can also help relieve constipation.

Laxatives should only be used if OK'd by your doctor first. Talk to your doctor or nurse about how long your child can go without a bowel movement before you need to do something.



Diarrhea

Cancer treatments and medicines can cause your child's bowels to move much more often and become very loose (diarrhea). Uncontrolled diarrhea can lead to weight loss, fluid loss (dehydration), poor appetite, and weakness. If your child has diarrhea, try these tips:

- Avoid high-fiber foods, like nuts, seeds, whole grains, beans, peas, dried fruits, and raw fruits and vegetables.
- Avoid high-fat foods, like fried and greasy foods.
- Avoid gassy foods, fizzy drinks, and chewing gum.
- Limit milk or milk products to 2 cups a day. Yogurt and buttermilk are OK.
- Limit apple juice and drinks that contain caffeine.
- Be sure to have your child sip fluids throughout the day to prevent dehydration.
- If OK with the doctor, have your child drink and eat high-sodium foods, such as broths, soups, sports drinks, crackers, and pretzels.
- If OK with the doctor, have your child drink and eat high-potassium foods, such as fruit juices and nectars, sports drinks, potatoes with the skin, and bananas.
- Increase soluble fiber foods such as applesauce, bananas, canned peaches and pears, oatmeal, and white rice.

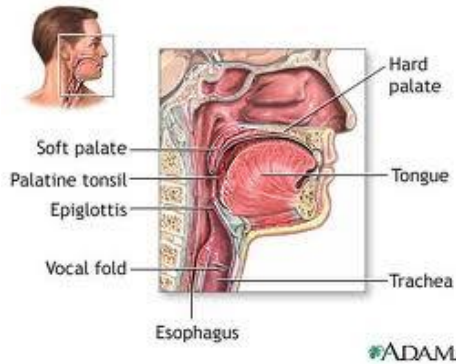
Call the doctor if diarrhea continues or increases, or if your child's stools have an unusual odor or color. Once the diarrhea has stopped, talk to your health care team about how to slowly add foods with fiber to your child's diet.



Sore or irritated throat and sores in mouth

Some cancer treatments can cause a sensitive mouth, mouth sores, or a sore throat. If your child has these problems, soft, bland foods and lukewarm or cool foods can be soothing. If he is old enough, help your child rinse his mouth regularly by swishing and spitting a salt solution (1 teaspoon of baking soda and 1 teaspoon salt mixed in 1 quart water -- do not let the child swallow this liquid) or other mouth rinse your doctor suggests. This helps prevent infections and improves healing a sore mouth and throat. Also try these tips:

- Try serving milk, ice cream, homemade shakes or smoothies, or canned liquid food supplements or shakes that are high in calories and protein when your child can't eat enough regular foods.
- Have your child try soft, creamy foods such as cream soups, cheeses, mashed potatoes, macaroni and cheese, yogurt, eggs, custards, puddings, cooked cereals, or casseroles.
- Blend and moisten foods that are dry or solid. Use in soups or with sauces, gravies, and casseroles.
- If your child is in a lot of pain, your doctor may have you give him pain medicine about 30 minutes before meals. (For more information on pain control, please see our booklet, [Pain Control](#).)
- Have your child use a straw to bypass mouth sores.
- Avoid tart or acidic foods and drinks like citrus fruit juices (grapefruit, orange, lemon, and lime), pickled and vinegary foods, tomato-based foods, and some canned broths.
- Avoid rough-textured or hard foods, such as dry toast, chips, crackers, nuts, granola, and raw fruits and vegetables.
- Puree or liquefy foods in a blender to make them easier to swallow.



Trouble swallowing

Cancer and its treatment can sometimes cause trouble with swallowing. If your child has this problem, give her soft, liquid, easy-to-swallow foods. Sometimes children may be better able to swallow thicker fluids than thin liquids. Serving high-calorie, high-protein drinks can help boost your child's nutrient intake during times when she is unable to eat enough regular foods. Your doctor may refer you to a speech therapist. This expert health professional can teach your child how to swallow easier and how to decrease coughing and choking while eating and drinking. Talk to your health care team if you are worried that your child is not eating enough. They can help you figure out if and when nutrition support (such as tube feeding) is needed. Here are some other things that may help:

- Try to get your child to drink the recommended amount of fluid each day and thicken the fluid to the consistency that is easiest for them to swallow. Talk to your health care team about how much fluid your child should try to take in each day.
- Call your doctor right away if your child coughs or chokes while eating, especially if she has a fever.
- Offer small, frequent meals..
- Chop or puree your child's food in a blender or food processor.
- Use canned liquid nutritional supplements if your child is unable to eat enough food to meet their needs.

Thickening products

Talk to your health care team about using thickening products to help your child swallow. Here are some of the things you can use to make liquids thicker and easier to swallow.

- Gelatin: Use this mixture to soak cakes, cookies, crackers, sandwiches, pureed fruits, and other cold food. Mix 1 tablespoon unflavored gelatin in 2 cups hot liquid until dissolved; pour over food. Allow food to sit until saturated.
- Tapioca, flour, and cornstarch: Use to thicken liquids. Note that these must be cooked before using.
- Commercial thickeners: Follow label instructions and use to adjust a liquid's thickness.
- Pureed vegetables and instant potatoes: Use in soups. Note that these change the food's flavor.
- Baby rice cereal or instant pudding. Use to make a very thick product.



Nausea and vomiting

Be sure to tell the doctor or nurse if your child feels nauseated or is vomiting. There are medicines that can control this very well. These medicines should be taken on a regular schedule -- around the clock -- as prescribed by your doctor. And if a certain medicine does not work, the doctor or nurse should be able to give you another one that might.

If your child has nausea and vomiting, here are some things you can do:

- Be sure to encourage him to drink plenty of fluids to prevent dehydration. Have him sip water, juices, sports drinks, fruit drinks, and other clear calorie-containing liquids throughout the day. Clear cool liquids are usually better than very hot or icy liquids. Gelatin and popsicles are also good ways to get fluids in your child.
- When vomiting has stopped, encourage your child to eat easy-to-digest foods, such as clear liquids, crackers, bread sticks, gelatin, dry cereal, and plain toast.
- Do not give them foods that have a strong odor.
- Offer cool foods instead of hot, spicy foods.
- Don't give them foods that are overly sweet, greasy, fried, or spicy, such as rich desserts and french fries.
- If your child needs to rest, have him sit up or recline with his head raised for at least an hour after eating.
- Try bland, soft, easy-to-digest foods on treatment days. Foods such as Cream of Wheat® and chicken noodle soup with saltine crackers may be easier to keep down than heavy meals.
- Avoid eating in a room that is warm, or that has cooking odors or other smells. Cook outside on the grill or use boiling bags to reduce cooking odors.
- Help your child use a mouth rinse before and after meals.
- Older children can try sucking on hard candy such as peppermints or lemon drops if there is a bad taste in their mouth



Dry mouth or thick saliva

Surgery and radiation therapy to the head and neck area, some kinds of chemotherapy, and certain other medicines can cause your child to have a dry mouth. Some children may also have thick and sticky saliva. Dryness can be mild or severe, and a dry mouth can increase the risk of cavities or mouth infection.

If your child has either of these side effects, have them drink plenty of fluids throughout the day and eat moist foods as much as possible. Also get them to brush their teeth and tongue and rinse the mouth often.

Here are some more things you can try to help your child's mouth feel better:

- Have them use a straw to drink liquids.
- Have them take small bites and chew their food well.
- Give them soft, moist foods that are cool or at room temperature. Try blenderized fruits and vegetables, soft-cooked chicken and fish, well-thinned cereals, popsicles, smoothies, and slushies. Avoid foods that stick to the roof of the mouth.
- Moisten foods with broth, soup, sauces, gravy, yogurt, or creams.
- Give your child sugarless candy or sugarless gum to stimulate saliva. Lemon drops often work well.
- Avoid commercial mouthwashes and acidic drinks.
- Limit drinks with caffeine, such as coffee, tea, colas, and chocolate.
- Use a cool mist humidifier to moisten room air, especially at night. (Be sure to keep the humidifier clean to avoid spreading bacteria or mold in the air.)
- Use saliva substitutes if your child's salivary glands have been removed by surgery or damaged by radiation therapy. These products add moisture to the mouth.
- Talk to the doctor about how well your child has been eating. Nutritional supplements, such as liquid meal replacements, may be helpful during this time.



Unwanted weight gain

Some children do not lose weight during treatment. They may even gain weight. This is often true for those taking certain medicines or some types of chemotherapy. You may find that your child craves unusual foods and may be hungry at unusual times, or even all the time.

If you notice your child is gaining weight, tell your doctor so you can find out what may be causing it. Sometimes, he may gain weight because certain cancer-fighting drugs cause his body to hold extra fluid. If this is the case, the doctor may ask you to talk with a registered dietitian for help limiting the amount of salt he eats. This is important because salt causes the body to hold extra water. The doctor may also want to give your child a diuretic or "water pill." This is a medicine that causes the body to get rid of excess fluid and it will make them have to go to the bathroom a lot.

Increased appetite and food intake and decreased physical activity can also cause weight gain. If this is the case and you want to help your child stop gaining too much weight, here are some tips that can help:

- Try to walk every day your child is able to, if it is OK with your child's doctor.
- Limit the size of food portions.
- Include plant-based foods like vegetables, whole grains, fruits, beans, and peas in your child's diet.
- Choose lean meats (lean beef or pork trimmed of fat, chicken without skin) and low-fat dairy products (skim or 1% milk, light yogurt).
- Cut back on added butter, mayonnaise, sweets, and other extras.
- Choose low-fat and low-calorie cooking methods (like broiling and steaming).
- Limit high-calorie snacks between meals.
- Talk with a registered dietitian for other suggestions.



Fatigue

Fatigue is feeling very tired all of the time. It doesn't get better with rest. It can be a problem for some children during cancer treatment. If your child feels tired all the time, talk to the doctor or nurse. Fatigue can have many causes, including the cancer treatment, not eating enough, lack of sleep, depression, low blood counts, and some medicines. There are many things you can do to help your child cope.

- Tell the doctor or nurse about your child's fatigue. If the fatigue has a medical cause, there might be treatment for it. Your doctor or nurse can help you figure out if there are other things you can do to help combat the fatigue.
- Have your child take short walks or get regular exercise, if possible. More and more research tells us that being moderately active can help decrease cancer-related fatigue.
- Be sure your child drinks plenty of fluids. Dehydration can make fatigue worse. Talk to your health care team about how much fluid your child should get each day. If your child is losing weight, be sure to include some caloric fluids, such as juices or milk.
- Make sure your child gets enough rest. Have them take some short naps or rest breaks during the day instead of a long rest. Plan the day to include rest breaks. Make rest time special with a good book in a comfortable chair or a favorite video with a friend.
- Ask for a referral to a dietitian who can work with you to choose the best diet for your child.
- Try to avoid sugary foods. These foods may give your child a quick energy boost but when it wears off, he will be even more tired.
- Get your child to eat some protein, fat, and/or fiber with each meal and snack. Protein, fat, and fiber can help keep blood sugar more stable. This will give him a more sustained feeling of energy from the food he eats. For example instead of eating 2 pieces of fruit, try giving him 1 piece plus a small handful of walnuts, almonds, peanuts, or other nuts. Or try fruit with cottage cheese.
- Be sure your child gets enough protein. The body needs protein to repair and build new tissue.
- Be sure your child gets the calories they need.
- Be sure they get enough vitamins and minerals. A multivitamin supplement that contains no more than 100% of the RDA of each nutrient may help meet this goal. Always check with the doctor or nurse to make sure it is OK for your child to take a multivitamin. Some

dietary supplements can interfere with your child's cancer treatment and large doses of some can have harmful effects.



Guidelines for keeping your home clean

Personal hygiene

- Wash your hands with soap and warm, running water for 20 seconds before and after every step in food preparation.
- Have your child wash their hands before eating and after using the restroom, handling garbage, or touching pets. Dry hands with a paper towel or cloth hand towel that is changed daily. If a hand towel is used, be sure it is only used to dry freshly washed hands.

Work surfaces and kitchen equipment

Cutting boards

- Use plastic or glass surfaces for cutting raw meat and poultry. Wooden boards are safe if they are used ONLY for raw meat and poultry. Use a different cutting board for other food such as produce, cheese, and bread.
- Wash cutting boards after each use in hot, soapy water or in the dishwasher.
- Sanitize both wooden and plastic cutting boards with a solution of 1 part bleach to 10 parts water. This should be done every time the board is used for raw meat, fish, or poultry. Sanitize boards used for other purposes every week. Allow the bleach solution to stand for at least 2 minutes, then rinse and air-dry or pat dry with fresh paper towels.
- Replace cutting boards with cracks or grooves.

Small appliances and kitchen surfaces

- Keep appliances free of food particles. Check the microwave oven, toaster, can openers, and blender and mixer blades. Remove blender blades and bottom when washing the jar. Use a bleach solution of 1 part bleach to 10 parts water to sanitize these items.
- Keep counter and kitchen surfaces free of food particles. Clean regularly with a solution of 1 part bleach to 10 parts water.

Sink area

- Keep soap nearby for hand washing and use paper towels to dry your hands.
- Use fresh, clean dishcloths and dish towels every day.
- If you use sponges, replace them at least once a week. Some experts suggest avoiding sponges entirely because they can hold germs and spread them around.
- Soak dishcloths and sponges every day for 5 minutes in a solution of 1 part bleach to 10 parts water (this sanitizes them). Or you may heat wet sponges in the microwave on high for 2 minutes (they will get very hot), or run them through the dishwasher.
- Store food supplies away from the kitchen sink. Do not store chemicals and cleaning products near food supplies.
- Use liquid dish soap and very warm water when hand-washing dishes, pans, and utensils. You may air-dry dishes instead of using a towel.

Refrigerator/freezer

- Keep the refrigerator clean: wipe spills up right away, check for food scraps, and clean shelves and doors regularly.
- Wipe the refrigerator once a week with a solution of 1 part bleach to 10 parts water.
- Keep the refrigerator temperature between 34° F and 40° F. Keep freezer temperature below 5° F. Buy refrigerator and freezer thermometers to be sure your food is kept at safe temperatures.
- Store all food in covered containers after cooling. First, cool hot foods, uncovered, in the refrigerator. Then, cover storage containers tightly after cooling. Freeze what you do not plan to use within the next 2 to 3 days. Throw out all prepared foods after 72 hours (3 days) in the refrigerator.
- Throw out eggs with cracked shells. Throw out foods older than their expiration dates.
- Throw out entire food packages or containers that show any mold, including yogurt, cheese, cottage cheese, fruit, vegetables, jelly, and bread and pastry products.
- Throw out freezer-burned foods.

Cupboards/pantry

- Keep food storage areas clean and check for signs of insects or rodents.
- Throw out any can with signs of spoilage: bulges, leaks, cracks, or deep dents in the seam area.
- Rotate food stock so older items are used first. Do not use foods older than their expiration dates.
- Use home-canned foods within a year of canning, as chemical changes may take place. Before eating home-canned foods, review how they were processed to be sure the pH of food, size of bottle, and elevation above sea level was right. Look for mold and leaks. Check seals. If you think

a home-canned food might not have been processed properly, if the lid bulges, or if the food has a bad odor or looks unusual after opening, throw it out.



Ways to help your child take in more protein and calories

These tips may help your child eat better. Although eating as well as possible is important for children with cancer, don't make food a battleground. And always talk to the health care team if you are worried that your child isn't eating or drinking enough. They can help you with this before it becomes a serious problem.

- Serve your child small meals and snacks rather than large ones. Good snacks are peanut butter and crackers, cheese sticks, puddings, fruit roll-ups, and cereal and milk.
- Let your child eat whenever they feel hungry and be sure to include high-calorie, high-protein foods. Don't worry about the amount of fat. High-fat items such as hamburgers, fries, pizzas, and ice cream give calories, protein, and other key nutrients.
- Have your child eat their biggest meal when they feel hungriest. For example, if they are hungriest in the morning, make breakfast the biggest meal.
- Use the Choose My Plate Food Guidance System as a guide for good nutrition. You can learn more about this at www.choosemyplate.gov.
- Try to get your child to drink most of their fluids between meals instead of with meals. Drinking fluid with meals can make them feel too full.
- Use colorful cups, mugs, and straws to encourage your child to drink fluids throughout the day.
- Use cookie cutters to cut shapes from sandwiches, gelatin, meats, and cheeses.
- Make faces out of fruits and vegetables. (Many children's cookbooks have examples.)
- Serve food in unusual containers or on cartoon character plates.
- Have picnics. (You can even use the backyard, the living room, or even the attic.)
- Let your child help prepare the food.
- Invite your child's friends to share meals.
- Plan ahead for meals missed because of things like doctors' appointments and treatment appointments. Take along juice packs, snacks, and non-perishable foods, such as fruit cups, puddings, and cheese and crackers.

- Talk to your child's teachers about letting them eat or drink in the classroom.
- Encourage your child to be physically active. Activity may make them want to eat.
- Encourage your child to eat more when they feel well.

Call the doctor or nurse if your child has treatment-related problems, such as constipation, diarrhea, or vomiting.

How to add protein to meals and snacks*

Milk products: Eat cheese on toast or with crackers. Add grated cheese to baked potatoes, vegetables, soups, noodles, meat, and fruit. Use milk instead of water when cooking hot cereal and cream soups. Include cream sauces on vegetables and pasta. Add powdered or undiluted evaporated milk to cream soups, mashed potatoes, puddings, and casseroles. Add yogurt or cottage cheese to favorite fruits or blended smoothies.

Eggs: Keep hard-cooked eggs in the refrigerator. Chop and add to salads, casseroles, soups, and vegetables. Make a quick egg salad. All eggs should be well cooked to avoid the risk of harmful bacteria.

Meats, poultry, and fish: Add leftover cooked meats to soups, casseroles, salads, and omelets. Mix diced and flaked meat with sour cream and spices to make dip.

Beans, legumes, nuts, and seeds: Sprinkle seeds on desserts such as fruit, ice cream, pudding, and custard. Also serve on vegetables, salads, and pasta. Spread peanut butter on toast and fruit or blend in a milkshake.

High-calorie foods*

Butter and margarine: Melt over potatoes, rice, pasta, and cooked vegetables. Stir melted butter or margarine into soups and casseroles and spread on bread before adding other ingredients to your sandwich.

Milk products: Add whipping cream to desserts, pancakes, waffles, fruit, and hot chocolate; fold it into soups and casseroles. Add sour cream to baked potatoes and vegetables.

Salad dressings: Use regular (not low-fat or diet) mayonnaise and salad dressing on sandwiches and dips with vegetables and fruit.

Sweets: Add jelly and honey to bread and crackers. Add jam to fruit, and use ice cream as a topping on cake.



Recipes to try

If, for some reason, your child's doctor suggests lowering the fat in your child's diet, you may use low-fat products for milk, ice cream, sour cream, peanut butter, yogurt, cookies, etc.

Fortified milk

Drink or use in place of milk in any recipe to add protein

1 quart whole or low-fat milk

1 cup powdered non-fat dry milk

Blend and chill at least 6 hours (can also be made with buttermilk or dry buttermilk).

Approximate nutrients per 1 cup serving: 211 calories and 14 grams of protein

Banana berry shake

4 scoops vanilla frozen yogurt

10 fresh strawberries

½ banana

Rinse strawberries. Put all ingredients in a blender and blend until smooth. Makes 2 servings.

Approximate nutrients per serving: 198 calories, 7 grams protein, 2 grams fat

Chocolate cocoa drink

1¼ cup vanilla ice cream

½ cup whole milk

1 package of hot chocolate mix

2 teaspoons sugar

Place all ingredients in a blender container. Cover and blend on high speed until well mixed.

Chill drinks before serving. Makes 2 servings.

Approximate nutrients per serving: 600 calories and 24 grams of protein per serving

Taco dip

1 16-ounce container sour cream

1 envelope taco seasoning

1 head lettuce, shredded

2 tomatoes, chopped

1 cup shredded cheddar cheese

1 package tortilla chips

Combine sour cream and taco seasoning in a small bowl and chill for 1 hour.

Take a large shallow dish and layer the ingredients, one by one, in the dish in the following order: sour cream mix, lettuce, tomatoes, and cheese.

Serve with tortilla chips for dipping. Makes 8 servings.

Approximate nutrients per serving: 483 calories, 10 grams protein, 31 grams fat

Peanut butter, banana, and raisin sandwich

2 tablespoons peanut butter

1 small banana, sliced

4 slices raisin bread

Spread peanut butter on 2 slices of bread. Arrange banana slices on top and cover with remaining bread.

Cut into quarters and serve. Makes 2 servings.

Approximate nutrients per serving: 278 calories, 9 grams protein, 11 grams fat

Peanut butter and jelly rounds

4 teaspoons creamy peanut butter

2 teaspoons grape jelly

8 Ritz® crackers

In a small bowl mix some peanut butter and jelly together until smooth.

Spread onto a Ritz cracker and top with another cracker to make sandwiches. Makes 2 servings.

Approximate nutrients per serving: 140 calories, 4 grams protein, 9 grams fat

Worms in the dirt

2 small (4 oz.) packages chocolate pudding mix

3½ cups milk

1 tub frozen whipped topping

10 Oreo® cookies, crushed

bag of gummy worms (about 21 pieces)

8 small clear plastic cups

Prepare pudding mix according to directions, using the milk. Fold in whipped topping.

Fill each cup about a quarter of the way with pudding mixture.

Add some crushed cookies and gummy worms, more pudding, and end with crushed cookies to look like dirt.

Refrigerate for at least 1 hour before serving. Makes 8 servings.

Approximate nutrients per serving: 396 calories, 5 grams protein, 12 grams fat

No-bake granola balls

½ cup creamy peanut butter

½ cup honey

½ cup granola

½ cup crispy rice cereal

½ cup raisins

½ cup crushed graham crackers

Heat peanut butter and honey in a pan over low heat until creamy. Remove from heat and pour into a bowl to cool.

Add granola, cereal, raisins and graham cracker crumbs to the peanut butter mix, and stir it all together.

Roll into balls and set on wax paper.

Refrigerate at least 1 hour before eating. Makes 12 servings.

Approximate nutrients per serving: 152 calories 3 grams protein, 6 grams fat

All the above information was obtained from:

<http://www.cancer.org/index>



