

Flu, Viruses and Your Health



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Two types of very small organisms receive significant attention: viruses and bacteria.

Viruses are very tiny organisms that can live anywhere but only multiply inside someone. Antibiotics cannot kill them.

Bacteria are tiny one-celled organisms present throughout the environment. They can live anywhere, can multiply anywhere, and can be killed by medicines and chemicals called antibiotics.

Viral and bacterial infections threaten American health every day.

- ▶ People who are **immunocompromised** (those who have weak immune systems) are at a greater risk for catching these infections, becoming very sick, and possibly dying.
- ▶ People who can be at high risk include the elderly, small children, and

anyone with a chronic condition, such as diabetes, heart disease or lung diseases.

- ▶ People using medications for diseases like cancer, arthritis or HIV can be at high risk, too, because the medication they take can sometimes keep their bodies from naturally fighting the infection.

Exposure to a Virus or Bacteria Does Not Mean It Will Kill You

We all come in contact with (are exposed to) thousands, possibly millions of bacteria and viruses every day. Seven *Corona* viral strains have been identified since the 1960s. Other viruses that continue to threaten American health include rotavirus, dengue fever, West Nile, swine flu, hepatitis, and many others. The Centers for Disease Control estimated the flu vaccine in 2019 was effective against 47

percent of flu viruses and offers immunity against four strains. Getting a flu shot may help prevent the flu or reduce length of illness if you are at high risk.

Most people know that washing hands and staying clean can reduce their risk of getting the flu, other viruses or a bacterial infection.

What many people do *not* realize is that good nutrition, exercise, and adequate sleep build up the immune system and reduce the risk of infection from every bacteria or virus. When your immune system is strong, your body can fight viruses and bacteria, including the flu and Corona19! If your immune system is strong, your body can fight off viruses and bacteria.

What makes an immune system strong? Good nutrition, drinking enough water, rest and exercise can improve everyone's immune system.

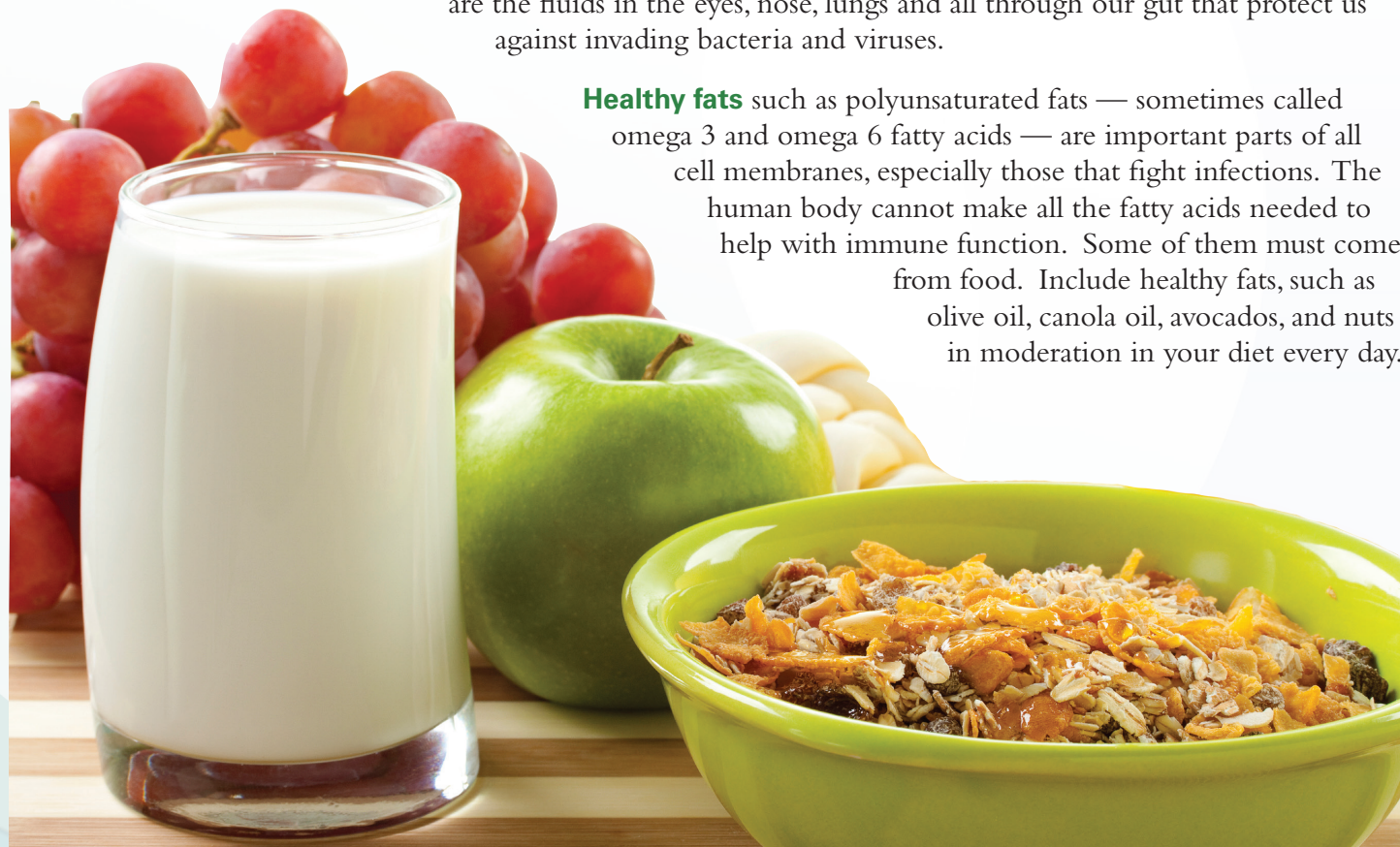
Good Nutrition = Stronger Immune System

Research is proving that nutrients in the food we eat play an important part in maintaining a healthy immune system.

Calories: Eating enough calories gives your body the energy you need to fight infection. Starvation diets can hurt the immune system. Too many calories can also hurt the immune system. Reduce foods and drinks high in added sugars. Reduce fried foods. Reduce snack foods low in vitamins and minerals, like potato chips. Use fruits, vegetables, or a few nuts to reduce hunger between meals.

Protein: Protein is found in meat, low fat dairy, beans, legumes, and nuts. Protein is very important for strong cell membranes, especially in white blood cells, which fight infections. Eating adequate protein strengthens **mucosal barriers**. Mucosal barriers are the fluids in the eyes, nose, lungs and all through our gut that protect us against invading bacteria and viruses.

Healthy fats such as polyunsaturated fats — sometimes called omega 3 and omega 6 fatty acids — are important parts of all cell membranes, especially those that fight infections. The human body cannot make all the fatty acids needed to help with immune function. Some of them must come from food. Include healthy fats, such as olive oil, canola oil, avocados, and nuts in moderation in your diet every day.



Vitamin A is important to keep cell membranes strong, especially for natural killer cells, which respond when attacked by bacteria or viruses. Green and deep orange or yellow vegetables and fruits are good sources of vitamin A.

Vitamin D works at the core of white blood cells so they can attack specific viruses and bacteria. Vitamin D helps the protein provide a defense to infections. Vitamin D is found in milk, eggs, tuna and salmon.

Vitamin C is an antioxidant, which means it protects the body's cells against oxygen-containing parts of chemicals that can damage the immune system. It is water-soluble, which means it comes in foods high in water. Excess vitamin C leaves the body via the urine daily. Citrus fruit, broccoli, potatoes and cranberries are good sources of vitamin C, but they must be eaten every day.

Vitamin E is also an antioxidant that dissolves in fat and fatty acids in the cells to prevent damage from infections and side effects of medications. Vitamin E is in vegetable oils, nuts and seeds.

Vitamin B6 helps the body make and use little proteins, including those the body needs to make its own antibodies (proteins that attach to foreign substances in the blood) to fight infection.

Folate is another B vitamin that is very important in moving other nutrients where they need to go to help build the immune system and fight infection. Green vegetables, black-eyed peas, kidney beans, liver and eggs are good sources.

Vitamin B12 is one of the only vitamins that can help make some very small proteins needed to boost the immune system. It is also an important

carrier of other minerals to help our red blood cells work like they should. Vitamin B12 is in meat.

Zinc is a mineral that makes reactions happen, provides strength to cell membranes and controls how much of other nutrients go where they are needed to boost immunity. Meat, shellfish, garbanzo beans (all beans) and lentils contain healthy amounts of zinc.

Selenium is another mineral that attaches to infection-fighting proteins in the body. The protein and selenium together make the reactions needed to fight infection and restore health. They can be especially important in the fight against viruses. Meat, fish, and Brazil nuts are good food sources.

Iron is part of thousands of large, complex proteins and reactions in the body, especially those that move oxygen and nutrients to where infection is occurring. Iron is in red meat, fish, beans, legumes, and spinach. Animal sources are often easily absorbed, so small portions are enough to give the body what it needs.

Copper has some chemical properties that protect against infections and may also help reduce unhealthy swelling that occurs while the body is fighting infections. Only very small amounts of copper are essential, so including liver, oysters, nuts, seeds, and mushrooms in the diet will ensure adequate amounts.

Probiotics are actually live small organisms that live in food and in the human body. These small organisms can help the body digest and use many nutrients, including vitamins and minerals like the B vitamins, zinc, iron, selenium and copper. Fruits and vegetables (after washing when available and in season) and cultured products like yogurt, kefir and buttermilk are good sources of probiotics.

Nutrients in the food we eat play an important part in maintaining a healthy immune system.

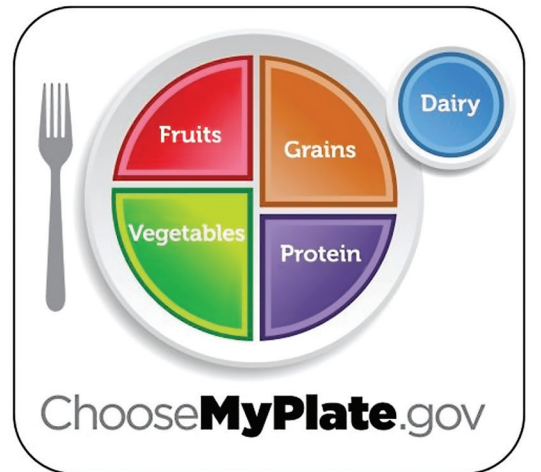
How do healthy Americans consume these nutrients? How much should everybody eat?

Too much of any of these nutrients can reduce your immunity as quickly as not eating enough.

Taking expensive supplements is not the answer.

These nutrients are absorbed better and work together when coming from real food.

The fastest, easiest way to get the nutrients you need to fight viruses and bacteria in just the right amounts is to eat a “healthy diet.”



- ▶ A healthy diet includes protein, fruits (canned in juice or rinsed, or frozen, or fresh 1-2 cups/day), vegetables (canned and rinsed or frozen or fresh) every day at least 3 servings a day.
- ▶ Include 1-3 cups of whole grains/starchy vegetables each day.
- ▶ Use MyPlate as a guide to balance your meals to make sure you get the nutrients you need 2-3 times a day to fight off infections.
- ▶ Include sliced tomatoes or peppers as a way to have vegetables with breakfast.

- ▶ Include fruit with whole grain cereal.
- ▶ Add nuts and seeds to yogurt for a quick snack
- ▶ Use low-salt vegetable juice with a sandwich at lunch with ½cup canned fruit
- ▶ Add extra vegetables to soups
- ▶ Add a salad to your hamburger and fries

For more tips and suggestions for immune-powering, budget friendly meal plans and snacks, Contact your local Lincoln University Cooperative Extension Nutritionist or Sarah J. Eber MPH RD LD CDE

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