

WHEN IT COMES TO what will really prevent colds and the flu, there are lots of mixed — and hysterical — messages out there. On the one hand, the Centers for Disease Control and Prevention urges everyone to get vaccinated against the flu. But a lot of alternative-medicine bloggers and the like claim the shot is simply a money-making scam pushed down our throats by Big Pharma that could cause serious harm. Their new anthem is a bizarre YouTube rap called “Vaccine Zombie” that warns the shot will make your “nut sac shrivel up.” Then there are all the claims by supplement manufacturers that echinacea, Airborne, Emergen-C, and a host of other so-called immune boosters are the best — and most “natural” — ways to stay well or get better fast. It’s enough to confuse even the healthiest guys, and it’s why we now spend nearly \$2 billion on such supplements each year.

Considering that this year more than 90 million Americans will catch a cold and up to 61 million will get the flu, it makes sense that we’d be susceptible to those trying to make a quick buck peddling supplements. And there’s no question you’re exposed to a lot of potentially sickening microbes. Every day you inhale and swallow tens of thousands of germs and play host to thousands more on your skin. In fact, you’re home to more than 10 times the number of germs as you have cells in your body. But what’s remarkable is that most of us still won’t get sick. Some of that is due to the fact that 98 percent of those germs are essentially friendly. But that other two percent, which includes the humble flu virus, would easily kill you were it not for your immune system.

Better organized and more responsive than a SEAL team, your immune system constantly patrols every corner of your body. Its first line of defense is your skin, which forms an almost impenetrable barrier, though pathogens can still enter through openings such as your nose. Even in your ▶

# Winterize Your Immune System

CLEARING UP THE CONFUSION ABOUT WHAT WILL STAVE OFF SICKNESS THIS COLD AND FLU SEASON *by* NANCY KALISH

► nostrils, however, “friendly” germs help stop invaders, while your mucous membranes trap and sweep them away. Any dangerous germs that do make it inside quickly trigger perimeter alarm systems — each pathogen has a specific protein marker on its cell membrane that identifies it as an enemy. In response, your immune system immediately notifies white blood cells called lymphocytes, which produce antibodies that hunt down the intruders. When they find the alien invaders, the white blood cells bind to the protein markers, preventing the germs from attaching to your own cells and reproducing.

That's not all. Your immune system sends reinforcements into your bloodstream to finish off the foreign bodies. These include helper T cells, which release chemicals that break down the invaders' cell walls, and their partners, phagocytes (literally “cell eaters”), which gobble them up. In addition, natural killer (NK) cells are always prowling your bloodstream to destroy any of your cells that do become infected. (NK cells also identify and kill microscopic cancers before they can spread.) And once your immune system has dealt with an enemy, it forever remembers the specific protein markers, speeding up immune response should you ever be attacked by the same germ again. Vaccines work by using a weakened, inactive form of a germ to prime your immune system to respond if ever needed.

When you do get sick, it's because you've come into overly close contact with germs that are either too strong or too numerous for your body to fight off — even if you're extremely healthy. That's exactly what happened when the Duke University football team ate turkey sandwiches that had been prepared by a food handler probably suffering from a Norwalk-like virus, a.k.a. the stomach flu, which 23 million Americans get each year. During a game with Florida State the next day, 43 of the Duke players became ill. But despite vomiting copiously on the sidelines, they continued to play, and the germs on their hands, uniforms, and mouthguards spread ferociously. By the end of the game, 11 Duke staff and 11 Florida State players had also become infected.

In fact, while some germs come from contaminated food or insect bites, 80 percent of all infectious diseases are spread by direct or indirect contact (from a sneeze ►



## How to BOOST Your Immunity

Aside from sleeping well and sticking to a whole-food diet, here are a few other steps you can take to avoid sickness this winter.

**HAVE MORE SEX** Wilkes University found that making love just once or twice a week significantly increases your levels of flu-fighting antibodies, possibly because it may expose you to more germs, revving up your defenses.

**EXERCISE MORE** Research published in the *British Journal of Sports Medicine* suggests exercise causes immune-system cells to attack viruses. Scientists found that those who work out five days a week suffer about 50 percent fewer colds than those who do so only once or twice a week.

**BUY PLANTS** Heating dries out indoor air and, consequently, nasal passages, making it easier for germs to infiltrate your defenses. “But plants can act as natural humidifiers and, unlike the electrical kind, don't have to be cleaned,” says B.C. Wolverton, an environ-

mental scientist, formerly with NASA. He recommends those that need a lot of water (and therefore give off lots), like rubber plants.

**AVOID SUGAR** Just 100 grams of sugar (about the amount in three cans of soda) can greatly reduce the ability of your white blood cells to fight infection for up to five hours.

**SOAK UP THE SUN** Exposing yourself to the sun for 30 minutes will give you up to 15,000 international units of vitamin D, an essential nutrient for immunity. With shortened winter days, that's often easier said than done. But supplements are also effective, and people who take vitamin D daily come down with far fewer colds and flus. Getting enough D is also associated with a lowered risk of cancer, heart disease, diabetes, and other serious illnesses. Maintain your levels by taking 2,000 IU daily.

## A Doctor's Guide to Better HAND WASHING

We've all heard the old adage that the most important thing you can do to protect against colds and the flu is to regularly wash your hands — and it's true. To improve your chances of not contracting a cold, switch to a liquid soap, as germs can thrive on bars of soap. Hand sanitizers are also potent weapons against germs, but not all are created equal. Look for one with at least 60 percent alcohol, like Purell, which will kill the flu virus, advises Charles Gerba, Ph.D., an environmental microbiologist at the University of Arizona and coauthor of *The Germ Freak's Guide to Outwitting Colds and Flu*. Hand sanitizers are also good for cold germs, but be sure to rub your hands until they're dry. If you can get to a sink, washing your hands is even more effective, says Philip Tierno, Ph.D., director of Clinical Microbiology & Immunology at NYU Langone Medical Center. He says to wash up as soon as you enter your home or office — and a quick rinse won't cut it. Scrub your hands (including beneath the nails) under water of any temperature for a full 30 seconds. Soap doesn't kill germs, but it gets them off your hands. Lastly, don't bother with antibacterial soaps: They're nothing more than slick marketing and are no more effective than regular soap.

24,000

The average number of Americans who die annually from a flu infection

► or germs left on a phone, for example). Although you're most likely to get a cold or the flu from inhaling germs that a sick person nearby has exhaled, cold and flu germs can live on surfaces for up to three days. You're especially vulnerable if you're already sick or have been under long-term stress, failing to eat right, or not getting enough sleep — all of which, especially in combination, can reduce immune function in less than 24 hours.

Emotional stress releases the hormone cortisol, which much research shows depresses your body's elaborate defense systems. If the stress is temporary, things soon return to normal. But according to a review of 293 studies published by the American Psychological Association, chronic stress puts a stranglehold on your immune system, weakening your responses.

Lack of sleep also affects your body's ability to defend itself: According to the *Journal of the American Medical Association*, when healthy young men were sleep-deprived the night before getting a flu shot, they developed only half the normal number of antibodies. Eating poorly (i.e., processed foods) and drinking too much alcohol also put a strain on your immune system because your body has to deal with chemicals and inflammatory agents. That's why avoiding things that can bust your immune system is just as important as doing things that will boost it. ■

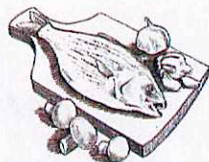
## The Vitamin C MYTH

What's better at boosting your body's defenses: a daily walk or a dose of Airborne, an immensely popular "immune support supplement"? Hint: It's not the one that Americans spend over \$100 million on each year. So why do we keep buying Airborne and similar products? Blame a psychological phenomenon called the illusory correlation: a strong belief in a connection between two things even when there is none. Here's the way it works: We start to sniffle and drop some vitamin C or echinacea. Then a few days later, when we start to feel better, we give all the credit to the supplement — even though it was really our immune system taking its natural course and knocking out the invaders. Our beliefs are reinforced by outrageous, yet mostly unchallenged, ads. In fact, a review of more than 30 studies suggests that vitamin C does not prevent colds, and the evidence for echinacea is iffy at best. And not one study shows that Airborne boosts anything more than its manufacturer's profits. In 2006, the Center for Science in the Public Interest got so angry at "false advertising" by the company that it joined a class-action suit that forced Airborne to pay out \$23.3 million.



## Do I REALLY Need a Flu Shot?

**T**HERE ARE MANY CONSPIRACY THEORIES SURROUNDING THE flu shot — it doesn't work, or it's a Big Pharma scam to bilk billions from the unsuspecting public. The only problem with the latter is, "vaccines make marginal profits for manufacturers," says William Schaffner, M.D., chair of Vanderbilt's Department of Preventive Medicine and president of the National Foundation for Infectious Diseases. And while it is true that the flu shot doesn't grant you 100 percent immunity (although it's close), it will result in much milder symptoms if you do get sick. The bottom line: Everyone should get the shot, and even though it's December, it's not too late — the flu usually peaks in February. If you're under 50 and needle-shy, consider FluMist, a nasal-spray form of the vaccine that's just as effective (and has always been free of mercury). Visit [Flucliniclocator.org](http://Flucliniclocator.org), sponsored by the American Lung Association, to find nearby clinics offering the shot.



## Immunity-Strengthening FOODS

**YOGURT** Probiotics, the healthy bacteria in yogurt, help crowd out bad bacteria in your system. In one study, people who consumed a yogurt drink containing *Lactobacillus reuteri* over an 80-day period took 33 percent fewer sick days.

**FISH** Omega-3 fatty acids, found in fatty fish like salmon and in fish-oil supplements like those from Nordic Naturals, benefit the immune system at the most basic level, making cell membranes more fluid so they take in nutrients and remove toxins.

**GARLIC** According to a large British study, people who take a daily garlic capsule are nearly two-thirds less likely to catch a cold.

**MUSHROOMS** Every variety contains B vitamins, potassium, selenium, and carbohydrates called polysaccharides, which all strengthen immunity. Mushrooms must be cooked to unleash their power.

**TEA** According to a Harvard study, black or green tea can rev up your immune system's T cells, priming them to kill bacteria.