

Fortify your defenses

To build a harder, healthier immune system, you've got to maximize every safeguard you have from head to toe. By Leslie Goldman



Your skin Like a full-body dry suit, your largest organ acts as a barrier against allergens and infectious organisms. In fact, researchers at Harvard University determined that the epidermis and dermis of a healthy person's skin is filled with 20 billion disease-fighting T cells—twice the number found in your bloodstream. Every time you have a skin infection, such as a foot fungus, T cells travel there to fight it off. Once they settle in, they stay long-term. "Over the years, you build up immunity, reducing the severity of recurrences or flare-ups," says researcher Rachael A. Clark, M.D., of the Harvard Skin Disease Research Center.

PROTECT IT An easy way to give your outer layer some loving? Lotion up! "Keeping your skin moisturized helps prevent cracks, which make it easy for bacteria and viruses to get into the bloodstream," Dr. Clark says. Apply lotion within two minutes of bathing for optimum protection.

Your weight Maintaining a healthy weight has many perks—bring on the skinny jeans!—including reducing your risk for illness. That's because excess flab triggers low-grade inflammation throughout the body, increasing your odds of chronic diseases, like type 2 diabetes, and even cancer. Research suggests slimming down may help decrease the response.

PROTECT IT To ditch unwanted pounds, sign up for the free Jump Start Diet at Self.com/jumpstart. And extra padding or not, be sure to fuel up with plenty of anti-inflammatory foods such as salmon, olive oil and leafy greens.

Your heart Keeping this organ healthy means less work for your defensive line. High levels of cholesterol inflame your arteries, triggering white blood cells to zoom in and gobble up the waxy substance. But the more the cells consume, the bigger they get, says Mark Taubman, M.D., dean of the School of Medicine and Dentistry at the University of Rochester Medical Center. Over time, plaque may form, blocking blood flow and causing a heart attack.

PROTECT IT One day, there may be a drug to remove cholesterol from white blood cells. For now: Exercise, quit smoking, and eat a lowfat, high-fiber diet.

Your brain A sense of optimism and feelings of general happiness are known to increase production of the mood-maximizing hormone serotonin, says Steven M. Tiovan, Ph.D., associate professor of psychiatry and behavioral sciences at the Feinberg School of Medicine at Northwestern University. Immune cells also use the neurotransmitter to coordinate the body's response to intruders. That said, people who are constantly stressed or suffer from untreated depression are more susceptible to infection; unrelenting worry and anxiety decrease serotonin levels. For those who need them, antidepressants can help improve their mood and their immune response. Talk to your doc if feelings of sadness or loss linger for more than a few weeks.

PROTECT IT Carve out time every day to do something that brings you joy—whether it's a coffee date with a pal, a Spin class after work or a creative activity like that drawing class you've always wanted to try.

Your gut "You might not think of your gastrointestinal tract as an immune superorgan, but it houses 25 percent of the immune cells in your body," says Simin Nikbin Meydani, Ph.D., director of the JM USDA Human Nutrition Research Center on Aging at Tufts University. These cells combat dangerous bacteria such as *E. coli* and salmonella, which may hitch a ride in food. They also prevent pathogens in the bloodstream from getting into your intestines.

PROTECT IT Your digestive tract is full of healthy bacteria that help keep the bad guys in check. You can stock it with more of the good guys by regularly consuming foods rich in probiotics, such as yogurt and kefir. Plus, eating fiber-rich plant foods, like whole grains and almonds, will give you a dose of prebiotics, the fuel that helps the good-for-you bacteria flourish. Be sure to load up on both if you get an Rx for an antibiotic: The meds can kill the good bugs along with the bad, leading to tummy trouble.

HOW YOUR BODY BATTLES NASTY BUGS

Every time you hit the elliptical at the gym or give your oh-so-adorable pooch a smooch, your immune system is there to keep out unwanted germs, viruses and bacteria.

IMAGINE A FORTRESS Your skin and the lining of your mouth, nose, lungs and intestines are the walls; they're the first barrier against intruders trying to get inside and cause illness and injury, says Michael Chandler, M.D., clinical assistant professor of medicine in the division of immunology at Mount Sinai Medical Center.

GUARDS MAN THE CHECKPOINTS

Stationed along the walls are soldier cells called macrophages. Their job is to capture sneaky viruses and bacteria and destroy them. But the macrophages can't catch everything, so they send a message to your body's infection-fighting white blood cells that it's time to go on high alert.

TROOPS PATROL THE FIELD As white blood cells scan your bloodstream and lymph nodes for rogue bugs, they create antibodies. These proteins bind to and neutralize whatever germ is attempting to damage healthy cells. Sometimes, though, things don't quite work out. The rank and file may be exhausted, or the invaders manage to overwhelm your defenses, and you get sick. But there's good news. "The next time that same bug tries to infiltrate your body, your immune system will recognize it and fight it off more effectively," Dr. Chandler says. —L.G.



Stealth snack: The soluble fiber in apples may help you recover faster from infection.

8 super immunity boosters!

Take our quiz to see how small tweaks to daily habits can have big health payoffs. —L.G.

1. My A.M. drink of choice is...

- A A smoothie.
- B A large coffee.
- C Green tea.

BEST ANSWER C Wake up to a steaming mug of tea to ramp up the body's defenses against infection: A study from Harvard University reveals that the immune cells of tea drinkers responded to germs five times faster than those of coffee drinkers. And green tea, specifically, contains an antioxidant compound called EGCG which works with your immune system to ease inflammation. Add a squirt of lemon to up the ante. The juice contains quercetin, which also has anti-inflammatory powers.

2. My cardio philosophy is...

- A Slow and steady wins the race.
- B Go hard or go home.
- C I rarely work out.

BEST ANSWER A Moderate exercise, like a daily 4-mile jog, stimulates virus-fighting cells, explains Mary Miles, Ph.D., associate professor of exercise sciences at Montana State University in Bozeman. "But too much exercise wears your body down, suppressing immunity," Miles says. What's too much? It depends on the individual. "Some people can exercise six days a week and be healthy. For others, that might make them more prone to illness. The key is to listen to your body," Miles says.

3. For an energy fix, I rely on...

- A A soda.
- B Nuts, fruit or another small snack.
- C A vitamin-enhanced water.

BEST ANSWER B To power through a slump, you need a healthy snack—not a sugar overdose: One 20-ounce bottle of VitaminWater contains more sugar than a Snickers bar. Too much of the sweet stuff suppresses white blood cells, reducing their ability to capture and destroy bacteria, says Christine Gerbstadt, M.D., a spokeswoman for the Academy of Nutrition and Dietetics. That said, **don't sweat the natural sugar in fruit, whole grains and vegetables.** These foods contain fiber, which helps stabilize blood sugar levels.

4. I hang out with friends...

- A Every chance I get.
- B A few times a month.
- C Rarely. Too busy to meet up.

BEST ANSWERS A & B Even if she occasionally drives you crazy with her never-ending boyfriend drama, a BFF helps you stay healthy. A study published in the *British Medical Journal* finds that every close,

cheery friend you have increases your own happiness odds by 9 percent. **"Friends offer protection against illness by serving as a buffer against stress, which slows your immune system,"** says Steven M. Tavian, Ph.D., associate professor of psychiatry and behavioral sciences at the Feinberg School of Medicine at Northwestern University. An uptick in your mood correlates with an uptick in serotonin, which may lead to a happier and healthier you!

5. Which of these vegetables do you toss in your salad?

- A Mushrooms
- B Cucumbers
- C Tomatoes

BEST ANSWER A Eating any fruit or vegetable regularly is a good thing. But when it comes to germ defense, the fungus has an edge. Research suggests that mushrooms may have antiviral and antibacterial properties. And **'shrooms are the only fresh produce that naturally contain vitamin D.** If your D levels are low, your white blood cells won't be able to react to or ward off infections effectively, Dr. Gerbstadt says. No need to shell out big bucks on fancy gourmet varieties: The button mushroom is a potent source of D. If mushrooms aren't your thing, a multivitamin can help you get the suggested 600 international units daily.

6. How much sleep do you get per night?

- A Less than six hours
- B Seven hours or more
- C Sleep? What's sleep?

BEST ANSWER B People who nab fewer than seven hours of shut-eye each night are three times more likely to catch a cold than those who snooze for eight hours, according to a study in the *Archives of Internal Medicine*. "Not getting enough sleep disrupts your natural circadian rhythm, which in turn disrupts the production of key hormones involved in immunity, including cortisol," says Dr. Chandler of Mount

Sinai. Healthy levels of cortisol bolster the body's ability to handle the stress of battling germs. **Aim for seven to eight hours of zzz's per night and you'll reap bennies beyond increased immunity.** Sleep curbs your appetite, fends off cravings and helps keep your weight steady.

7. I like to regularly treat myself to...

- A New tunes on my iPod.
- B A tanning session.
- C A night on the sofa, laughing aloud to *Happy Endings*.

BEST ANSWERS A & C Call her Dr. Gaga: Grooving to your favorite songs may actually keep you healthy. Patients under local anesthesia who listened to music in the operating room experienced a drop in stress hormones and an increase in immune response, according to research. And any music you like will work, say the study's authors. Laughter can be healing, too: In a study from Loma Linda University, **chuckling along to a humorous video increased the production of natural killer cells**—a type of cell that helps protect against viruses and cancer cells—by 14 percent. What won't help: tanning. Dangerous UVB rays damage cells and may dampen your defenses against illness and skin cancer.

8. My drink of choice with dinner is...

- A A beer.
- B A glass of wine.
- C Water.

BEST ANSWER C Sure, a drink can help you unwind, but it also makes it more likely you'll catch that virus working its way around the office. Alcohol of any kind, even heart-healthy vino, reduces your white blood cell count, Dr. Gerbstadt says. "Alcohol acts as a toxin, slowing down your body's normal repair processes and preventing absorption of immune-boosting nutrients," she explains. Although the effects are temporary (up to 24 hours at most), it takes only one drink to make an impact, she says. **So if your kid is home sick or you're feeling sniffly, stick to a nonalcoholic beverage** until you, and those around you, are healthy again.



Germs love gyms. Exercise your right to stay healthy: Use hand sanitizer after you lift to get rid of bad bugs.

Stay under cover!
Being chilly slows
blood flow, making it
harder for infection-
fighting white blood
cells to circulate.

Your sick day survival guide

When you wake up feeling crappy, don't freak out. Instead, follow this (almost) hour-by-hour plan to sleep, eat and treat your way back to health. That's better already, right? **By Andrea Bartz**

Morning ▶

7 A.M.

CALL IT Consider cashing in a sick day if you feel achy or chilled, if you're hacking up a storm or if you have a fever above 101 degrees; these symptoms mean you're probably contagious, says SELF's on-call medical expert, Henry S. Lodge, M.D. Your body needs rest to keep its immune system in peak form, so leave the message, then turn off your alarm.

9:30 A.M.

EAT UP Forget the "starve a cold" adage. Battling a cold or flu, your body needs energy. Have a probiotic-rich meal to fill your gut with healthy bacteria, important for keeping your immune system ticking, says Milton Stokes, R.D., of Stamford, Connecticut. Top yogurt with honey, which may ease coughs, and berries; the antioxidants in them are immune ammunition.

10:30 A.M.

HYDRATE You can't flush out a virus, but staying hydrated is critical, says Jackie Eghrari-Sabet, M.D., an American College of Allergy, Asthma and Immunology fellow. Refill your water bottle often, or pick a warm drink such as tea to soothe a scratchy throat. Downing two quarts of total fluids (8 ounces times 8) is a good goal, Dr. Lodge says.

12 P.M.

SLURP SOUP Believe those cheesy commercials: Chicken soup really can help you feel better, research suggests. The warm broth eases sore throats, carrots are high in immune-enhancing beta-carotene, and onions and garlic have antibacterial properties. No appetite? Sip broth or a sport drink for hydration and calories.

Afternoon ▶

2 P.M.

TRY YOUR FAVE FIX Studies on the benefits of OJ-and-Sprite spritzers may be lacking, but if they were your mom's secret weapon when you were a kid, go for it! When people popped echinacea or a placebo, those who believed the remedy would ease their colds got over the bug two and half days sooner than did those who took nothing, research shows.

5 P.M.

WORK IT OUT If your symptoms are above the neck, a gentle workout, such as an easy session on the elliptical, may help, says Jeffrey Woods, Ph.D., a kinesiologist at the University of Illinois in Urbana-Champaign. But gentle is the operative word: Go too hard and your cold-clearing prowess diminishes. Have chest congestion, fever or aches? Skip the gym.

7 P.M.

SPICE UP DINNER Foods with a kick make you feel less congested, says Bruce Barrett, M.D., an associate professor of family medicine at the University of Wisconsin in Madison. Try a stir-fry: Lightly sauté diced garlic (burning it squelches antimicrobial properties, Stokes says); toss in veggies and your protein of choice. Add as much Sriracha sauce as you like!

10 P.M.

HIT THE SACK Forget Conan: You need at least seven to eight hours of sleep right now. If you wake up again with a fever or raging sore throat, see your doc to rule out an illness that needs an Rx. Then avoid stressing about another missed workday with a chick-flick fest. Our pick: Crazy, Stupid, Love. Quality time with Ryan Gosling might be the best medicine.

FAST-TRACK RELIEF

Medicine-cabinet confusion, begone!

IF YOU'RE COUGHING

Look for meds containing dextromethorphan and guaifenesin, to help reduce coughing and thin mucus.

IF YOU'RE STUFFY

Take a decongestant with pseudoephedrine (e.g., Sudafed). The drug may make it hard to sleep; before bed, switch to an antihistamine with diphenhydramine (e.g., Benadryl), which will help you breathe and slumber.

IF YOU'RE IN PAIN

For head or body aches, try acetaminophen (Tylenol) or an anti-inflammatory, like naproxen (Aleve), ibuprofen (Advil) or aspirin. Effectiveness varies from person to person, so see what works for you.

IF YOUR THROAT KILLS

Head to the kitchen. Mix half a teaspoon of salt in a cup of warm water; gargle. The brine draws moisture from swollen tissue.