



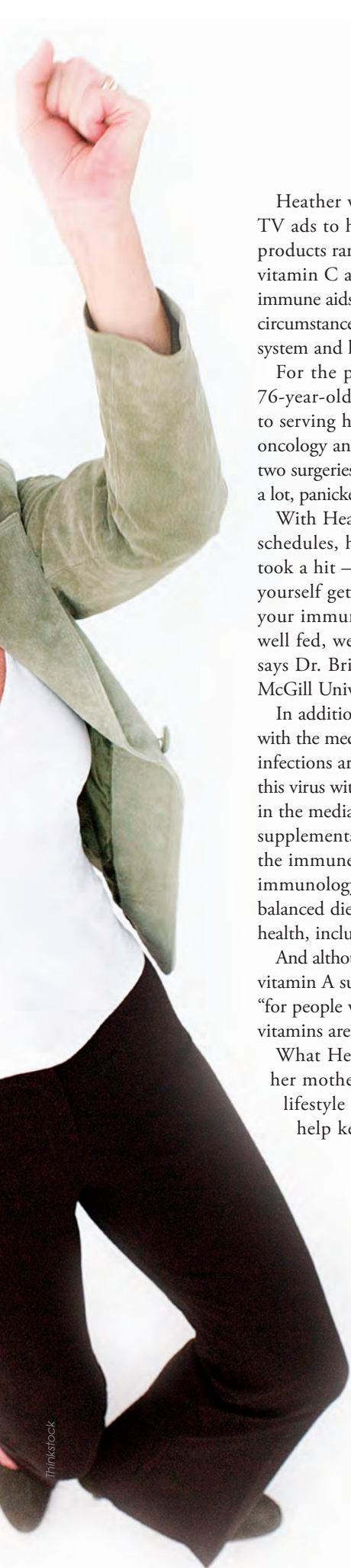
KEEP YOUR IMMUNE DEFENCES STRONG

Forget the magic bullet in a bottle:
a healthy lifestyle, regular vaccination
and good hygiene are your best allies

Peter Sinclair

TWO WINTERS AGO, after a month of serial cold sores, Heather Stewart* came down with a terrible virus, followed by a serious sinus infection that required antibiotics. “I’d had my seasonal flu shot, and I was always the last person left standing when everyone else was felled by the flu,” says Heather, 50, who runs a busy home-based interior decorating business in Toronto.

* Name has been changed.



Heather wondered if she should have been taking those TV ads to heart, the ones that offer immune-boosting products ranging from echinacea and ginseng, to oregano oil, vitamin C and zinc to boost the immune system. But no immune aids could have helped Heather's challenging personal circumstances and poor self-care that undermined her immune system and left her vulnerable to infection.

For the past year, she had been caring 24-7 for her 76-year-old mother, who had colon cancer. In addition to serving her clients, Heather ferried her mom to all her oncology and imaging appointments and nursed her through two surgeries. "I was up a lot at night with her; I was smoking a lot, panicked most of the time and too frantic to eat," she says.

With Heather's stress level and her work and caregiving schedules, her health, along with her immune system, took a hit — what your grandmother would call letting yourself get rundown. "Granny is probably right. For your immune system to run optimally, you have to be well fed, well rested and not chronically stressed out," says Dr. Brian Ward, a professor of infectious diseases at McGill University in Montreal.

In addition, Heather was spending a lot of time interfacing with the medical system, where nosocomial (hospital-acquired) infections are rampant. But could Heather have warded off this virus with any of the immune-boosting supplements touted in the media? "There is no definitive evidence that specific supplements, taken in large or unusual quantities, will help the immune system," says Dr. Tania Watts, a professor of immunology at the University of Toronto. "But a good well-balanced diet with proper nutrients is important to overall health, including a healthy immune system."

And although, adds Ward, for people in the poorest countries, vitamin A supplementation is important for immune health, "for people who have a normal healthy diet, supplementary vitamins are unnecessary for protecting the immune system."

What Heather needed most was more help caring for her mother and more time to cultivate a healthier lifestyle for herself. Here are some all-purpose tips to help keep your immune system strong.

Eat well

Follow a nutritious, well-balanced diet rich in fluids, proteins, vitamins, minerals and fatty acids. Like other cells, your immune cells need nourishment.

Get enough sleep

Your bodily cells repair and restore themselves during slumber, so give them time to recharge.

Manage stress

Learn healthy ways to cope with stress. Excess stress hormones can tax the immune system. Try not to respond to life's pressures with poor nutrition, smoking or excess alcohol consumption.

Don't smoke

Smoking puts stress on the immune system by flooding the body with toxic chemicals. Smokers who get a cold or the flu are more vulnerable to respiratory complications such as pneumonia.

Use antibiotics only as needed

When antibiotics kill off weaker bacteria, they leave an open field in which hard-to-treat superbugs can multiply. Faced with these drug-resistant strains, the immune system must fight off a more serious challenge. Antibiotics are needed only for stubborn bacterial infections such as bacterial pneumonia, so don't ask your doctor for an antibiotic for a virus, against which it is powerless.

Be physically active

Don't over-exercise, as this can stress your immune system and may leave you temporarily vulnerable.





Your amazing immune system

Most people probably just think of white blood cells when they think of the immune system. But your immune defences involve a complex system of organs, tissues and cells.

BARRIERS

The skin is one of the first lines of defence in keeping out invaders. The hairs in your nose and even the wax in your ears stand guard as well, says Dr. Tania Watts, a professor of immunology at the University of Toronto.

MUCOSAL SURFACES

Lining the respiratory and digestive systems, mucosal cells fight infectious

agents, too, as does degrading acid in the stomach.

LYMPH NODES

These tiny masses of lymphatic tissue collect bacteria and toxins and serve as the staging ground where the different immune cells marshal their forces to combat invading infections.

BENIGN BACTERIA

In the gut, huge numbers of benign bugs called commensal bacteria work to crowd out dangerous pathogens such as pathogenic *E. coli* and *C. difficile*. These symbiotic organisms play a critical role in human health, including influencing the absorption of nutrients and the way our immune system develops in the gut.

Stay vaccinated

Vaccinations protect you against the specific diseases they are targeting and, in doing so, can protect your immune system from being overwhelmed by other infections. "Having an illness like the flu, which weakens the lungs, can allow other illnesses such as bacterial infections to get a foothold more easily," says Ward. "So there are general, and non-specific benefits to immunization." Check with your doctor or public health authority for the recommended schedules for adults and children.

Wash those paws!

Lather up several times a day to protect your immune system from having to battle more germs than necessary. If you can't get to a sink, use pocket or public hand sanitizers.

Don't be too clean

We now know that a little bit of dirt is probably a good thing. "The human immune system evolved over tens of thousands of dirty, grimy years of very close contact with the environment," says Ward. According to the Hygiene Hypothesis, if you over-sanitize your environment and ban pets, you are probably overprotecting your family from everyday germs. You thereby prevent the immune system from being gently stimulated, educated and programmed by not-too-threatening microbes, as in vaccination.

CAN A PILL PREVENT A COLD?

With winter under way, imagine a magic pill that protects against the colds and flu that strike so many Canadians each year. Sounds too good to be true, right?

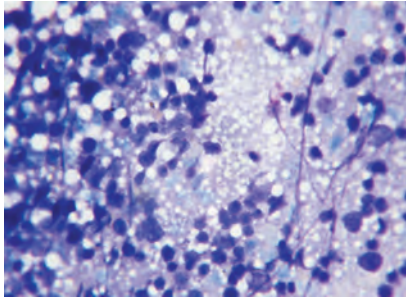
MAYBE NOT, according to the team at Cold-Fx, which says there is clinical proof that the product works. By boosting the immune system, this "highly purified extract derived from the roots of North American ginseng" helps to "reduce the frequency, severity and duration of cold and flu symptoms."

However, cautions Dr. Tania Watts, a University of Toronto immunologist, "None of the placebo group or the Cold-Fx-treated group came down with a confirmed influenza virus infection, making it difficult to judge the effect of Cold-Fx on influenza virus infection."

While gold medal-winning Olympians such as Clara Hughes, Alexandre Bilodeau and many other athlete ambassadors endorse Cold-Fx, Dr. Allison McGeer, a microbiologist and infectious disease consultant at Mount Sinai Hospital in Toronto, says it's difficult to determine what makes a person an ideal candidate for this type of medication. "There's no easy way of measuring how good your immune system is," she says, adding that while there's no reason to believe Cold-Fx has any negative side effects, it has to be taken regularly, twice daily, to have an impact on health. And, at \$27.99 for 60 200-milligram capsules, this magic pill doesn't come cheap.

So should Canadians be racing to their local pharmacy to stock up on Cold-Fx? "There are less expensive and more effective ways to reduce your risk of colds and flu," says McGeer. Getting an annual flu shot and washing your hands regularly are powerful ways to avoid illness.





BONE MARROW AND THYMUS GLAND

The bone marrow is a factory for a broad array of white blood cells, including the all-important B lymphocytes. It also produces early forms of T lymphocytes, which are matured in the thymus.

INNATE IMMUNITY

This is the simple, ready-made immune system we're born with and serves as our second line of defence against infections. Sentinel proteins called toll-like receptors on the surface of immune cells recognize alien patterns and alert other cells to

kill intruders. "These cells are not very specialized, but they do slow down invading infections so they don't get too out of control," says Watts. "They recognize common characteristics on the surfaces of intruders and induce key inflammatory molecules and virus-fighting interferons to give the immune system a fighting chance to defend our bodies."

ADAPTIVE OR ACQUIRED IMMUNITY

This is the elite third-tier immunity that protects against future infection once you've been exposed to specific micro-organisms through infection or vaccination.

This protection is provided by the body's main defence forces: the white blood cells, known as leukocytes. The two major types are the T lymphocytes and the B lymphocytes. "These provide a more specific attack on infections," says Watts. "The lymphocytes also remember the type of

infection that they have attacked and will knock down the infection more quickly the next time."

That is the operating principle of vaccinations: we are given weakened or dead invader cells that can cause us no harm but alert our immune cells to defend us much better if and when we encounter the live invader. (For a description of the various types of white blood cells, go to www.canadian-health.ca. Click on Past Issues, Fall 2006 and then Tune Your Immune System.)

MATERNAL IMMUNITY

Some protection is passed from mother to unborn child via the placenta and to the newborn via the colostrum in breast milk.

WHAT'S NEW IN IMMUNE RESEARCH?

An explosion of research into the molecules that make up the immune system is leading to new therapies, including immune-triggering protective vaccines. Among these is the Gardasil vaccine, which protects against certain strains of the human papilloma virus, which plays a role in the development of cervical cancer.

"Gardasil generated a new era of vaccines in which, by preventing an initial infection, you can decrease the chance of a cancer caused later in life by the long-term effects of the virus," says Toronto immunologist Tania Watts.

"But there is also research into conditions where the immune system has gone out of control, such as inflammatory bowel diseases, type 1 diabetes, arthritis and asthma."

Scientists are learning what different molecules do to tip the balance from attacking infections to attacking our own cells and how to

control that response. We are learning how to manipulate the immune system to provide balance between fighting infections, intruders and cancer cells and too much response, in which we have tissue damage, says Watts, adding that there is a genetic component to out-of-balance immune systems.

Millions of people are now treated with agents to block the action of tumour necrosis factor. "This inflammatory molecule is important in fighting certain bacterial infections but also contributes to immune system damage in inflammatory diseases such as Crohn's disease and rheumatoid arthritis," says Watts.

Temporary inflammation is a good response to infection, but chronic inflammation can be harmful. "New findings show that lifestyle-related conditions such as obesity may exacerbate chronic inflammation and lead to immune-mediated damage," says Watts.

