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If a healthy lifestyle of not smoking, and maintaining a healthy weight through exercise and good nutrition were adopted around the world, about one-third of cancer cases could be prevented, according to a 2007 report by the World Cancer Research Fund and the American Institute for Cancer Research.

anti-cancer

Rx

While it's hard to pinpoint the causes of individual cancers, scientists have found links between the disease and some substances and behaviours. Here's how to minimize your risk as much as you can.

By Mark Witten

Every year, more Canadian women are surviving cancer. About 62.5 per cent of women now survive for five years or more after developing the disease;* that number was 59.3 per cent 10 years ago. However, more women are being diagnosed with cancer, too: nearly 80,000 in 2008, compared to 61,000 diagnoses in 1998. While most of the increase is due to a growing and aging population, that isn't the whole story.

Canadians can use strategies to reduce cancer risk, and we should all demand better control over cancer-causing →

* Statistics exclude nonmelanoma skin cancer. Survival rate is compared to women who did not have the disease.



Regular exercise protects against breast, colon and other types of cancer by trimming body fat.



For more on reducing your cancer risk through exposure to environmental carcinogens, read “34 Steps to a Healthier Home” at homemakers.com, and visit the Prevention section on Specific Environmental Contaminants at cancer.ca.

substances as well. The strategies women can use to curb their cancer risk must be complemented by public health strategies and research targeted toward preventing cancer. Loraine Marrett, a senior epidemiologist with Cancer Care Ontario, believes that the number of cancers that could be prevented could be as high as 50 per cent. However, she notes, less than five per cent of cancer research funds in Canada are spent on prevention. “It’s extremely important to do more research on cancer prevention. This could substantially reduce the burden on the Canadian health-care system and greatly improve the quality of life for individuals, families, employers and society as a whole,” says Marrett.

Butting out

Smoking has long been recognized as the most important preventable cause of cancer. It’s responsible for about 30 per cent of all cancer deaths and more than 85 per cent of lung cancer cases in Canada. Butting out, or not starting, also cuts your risk of developing cancers of the bladder, cervix, colon, rectum, esophagus, kidney, larynx, mouth, throat, pancreas and stomach, as well as some types of ovarian tumours.

The fitness factor

The next most important thing we can do to protect ourselves against cancer is improve our fitness levels and what we eat. To outpace cancer, lace up your sneakers. Get out there for at least 30 minutes of vigorous exercise a day or 60 minutes of moderate activity four times a week. It’s a simple, proven prescription for reducing cancer risk in women and fundamental to any cancer prevention plan. “More than 300 studies worldwide provide strong evidence that physical activity reduces the risk of colon cancer and breast cancer. There’s also some evidence that exercise reduces the risk of endometrial cancer,” says Dr. Christine Friedenreich, a researcher with the Alberta Cancer Board in Calgary. She led a study that found the risk of postmenopausal breast cancer is reduced by 42 per cent for women who were the most physically active throughout their lives. The study also showed that women who were inactive before menopause but took up an exercise routine afterward reduced their breast cancer risk by 40 per cent. “It’s never too late to start,” says Dr. Friedenreich, “and brisk walking is an achievable goal that all women can do.”

How does exercise help? Excess body fat can cause many types of cancer. “Fat-storing cells promote inflammation, and chronic inflammation promotes cancer. This creates conditions that are optimal for cancer to establish itself,” says biochemist Dr. Richard Béliveau, chair of cancer prevention and treatment at the University of Quebec at Montreal. Avoiding weight gain also reduces the risk of recurrence in women who develop breast cancer.

Cancer’s connections to being overweight become even more clear in studies of obese patients. Hundreds of recent studies have convincingly shown that obesity and excess weight increase the risk of at least six types of cancer: colorectal, endometrial, pancreatic, kidney, esophageal and postmenopausal breast cancer. “There are more and more cancers that seem to be affected by obesity. It isn’t just being obese, but a gradual increase in risk associated with being overweight and obese,” says Marrett.

The obesity link was unknown or overlooked until recently, but the impact could soon be huge. “Within a decade, obesity could be more important as a cause of cancer than smoking,” says Dr. Friedenreich.

Excess fat, particularly abdominal fat, increases circulating estrogen, which is associated with a higher risk of endometrial and postmenopausal

Foods that fight cancer

Fruits, vegetables, and certain beverages and spices contain thousands of phytochemicals with cancer-fighting properties. These foods are rich in the compounds that can target processes associated with the development and growth of cancer.

- **Broccoli, brussels sprouts and cabbage** are cruciferous vegetables, which contain glucosinolate compounds that help to slow cancer development by preventing carcinogens from causing damage to cells.
- **Blueberries, raspberries and strawberries** offer high levels of antioxidants, which protect cells from harmful free radicals.
- **Green tea** contains large amounts of catechin compounds, which seem to block the formation of new blood vessels that fuel tumour development.
- **Garlic** has sulphur-containing compounds that may interfere with the activation of carcinogens and also flush them out of the body.
- **Flaxseeds and fatty fish** contain omega-3 fatty acids, which synthesize anti-inflammatory molecules that may slow the development of cancer.
- **Dry-roasted soybeans** have isoflavones that may interfere with the development of hormone-dependent cancers, such as breast and endometrial cancers.
- **Turmeric** contains curcumin, which may slow tumour growth by inducing cancer-cell death. Curcumin also has anti-inflammatory properties and may prevent the formation of new blood vessels that promote tumour growth.

Foods to avoid

- Barbecuing beef, pork, fowl and fish at very high temperatures produces polycyclic aromatic hydrocarbons (PAHs) and heterocyclic amines. Both may increase cancer risk.
- Processed red meats preserved by smoking, curing or salting, or by the addition of preservatives (such as nitrites and nitrates), increase the risk of colorectal cancer.
- Drinking alcohol increases the risk of developing cancers of the breast, colon, rectum, esophagus, larynx, liver and mouth. The Canadian Cancer Society recommends that women sip an average of less than one drink per day.

breast cancers. Obesity also increases the levels of other hormones, such as leptin, insulin and insulin-like growth factor, which can promote the growth of cancer cells. Leptin, for example, can stimulate the proliferation of many premalignant and malignant cell types. Obesity also causes low-grade chronic inflammation in the body, which can promote cancer development. "Postmenopausal women who are obese before being diagnosed with breast cancer are more likely to have adverse outcomes," says Carolyn Cook Gotay, the Canadian Cancer Society chair in cancer primary prevention at the University of British Columbia.

But avoiding cancer means more than just a good report from your scale. Exercise has a range of cancer-fighting benefits for women of all shapes and sizes. "Physical activity may reduce sex-hormone levels, which reduced the →

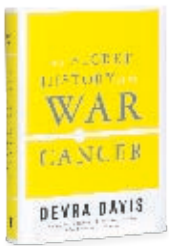
After diagnosis, a reawakening

At 50, Akky Mansikka was diagnosed with malignant melanoma, and then breast cancer a month later. She thought she had maybe a year to live. "All the women I knew who had breast cancer died within a year," she says. As a former teacher and stay-at-home mom, Akky had put her family first and her personal dreams on hold. So after diagnosis, she asked herself: What would I like to do with my year? "It was travel to the Arctic and, at least once, take off and land a plane by myself."

Akky has realized those dreams and more since getting those back-to-back diagnoses 14 years ago. Before undergoing a double mastectomy and reconstructive surgery, she got in shape for a canoe trip in the Arctic, where she and her husband, Henry, paddled for 12 days and stayed with an Inuit family. Soon after recovering from surgery, Akky earned her pilot's licence. She now flies

a Cessna 172 four-seater for pleasure and for the Ontario Ministry of the Environment, to photograph illegal dump sites. "I'm a spy in the sky," she says. She also became a founding member of Dragons Abreast, Toronto's breast cancer survivor dragon-boat team, and shaped up with a regimen of pool practice, weights and cardio training. "That was the first time I really focused on health and exercise," she says. For the past 10 years Akky has been a member of the Canadian Senior Women's Dragonboat Team, racing and winning medals in international competitions. As a volunteer for Willow Breast Cancer Support Canada, Akky learned how research has shown that regular, vigorous exercise reduces the risk of breast cancer recurrence. But she sees the preventive health benefits as byproducts. "I don't exercise to keep well. It just feels good," says Akky, now

64. "I've never felt better. I have more energy and stamina than when I was in my 20s." Last summer, she joined 37 people, including six breast cancer survivors, on a Mount Kilimanjaro climb in Tanzania. She prepared by skiing in Banff, Alta., hiking the Bruce Trail in Ontario and climbing hills with a weighted backpack. "I knew we would be walking to the top at 19,000 feet with no oxygen," says Akky. "The planes I fly don't go that high." Climbing toward the summit at dawn, Akky watched the sun emerge from behind Mawenzi, Africa's third-highest peak. "To see the sunrise on Mawenzi was magical," says Akky, who was among the hardy two-thirds of the group who made it to the top. "Some survivors are burdened by the disease," Akky says. "For me, it was a wake-up call. Now is the time to do things, and I'm doing things I like to do."



Must read:
***The Secret History of the War on Cancer* (Basic, 2007)**
 by Dr. Devra Davis

risk of breast and possibly also endometrial cancer," says Dr. Friedenreich. Regular exercise appears to also reduce the risk of breast, colon and other types of cancer by lowering insulin resistance and reducing the transit time of food in the intestine, which minimizes exposure to carcinogens.

Beyond a healthy level of physical activity, maintain a healthy weight by eating more fruits and vegetables, and reducing portion sizes. For more on how nutritious foods help to prevent cancer, see "Foods That Fight Cancer" on page 33.

High in nutrients, low in density

What we eat and how we prepare our food can protect us against cancer, but some ingredients can promote the disease. Research shows that smart anti-cancer meals feature mostly plant-based foods, including nonstarchy

Why do we get cancer?
Cancer occurs when something triggers our cells to grow abnormally. Common triggers include genetics, radiation (including that from the sun) and viruses.



vegetables, fruits, whole grains and legumes. These foods are low in calories, making it much easier to maintain a healthy weight. Plant-based foods are also full of nutrients and dietary fibre. They contain essential vitamins and minerals, and thousands of phytochemicals with cancer-fighting properties. “When you eat a lot of plant products, you are treating yourself to a diversified regimen of nature-derived cancer-fighting agents,” says Dr. Béliveau, a coauthor of *Foods That Fight Cancer: Preventing Cancer Through Diet* (McClelland and Stewart, 2006).

By avoiding processed foods, sugary drinks and fast foods (which are often high in fat or sugar and low in nutrients), limiting red meat and avoiding processed meat, you’ll be lowering your cancer risk. Diets high in animal fat and preservatives, such as nitrites, cause some cancers and promote weight gain. And while dietary supplements could be beneficial for some (vitamin D may prove to be essential), they don’t contain many of the cancer-fighting compounds, such as phytochemicals, found in foods.

Avoid environmental exposures

Cancer researchers have made far less progress in investigating and assessing the role of environmental carcinogens, such as industrial chemicals and pesticides, in causing cancer in women. The World Health Organization’s International Agency for Research in Cancer (IARC) has identified more than 400 agents known to be carcinogenic or possibly carcinogenic to humans (<http://monographs.iarc.fr>). But most of the links to cancer have been established through occupational exposures and animal studies, so scientists don’t know for sure the safety of long-term exposure to supposedly “low” levels of toxic chemicals in a variety of products, including some cosmetic products, building materials, carpets and furniture.

Radiation is another clear cause of cancer. The risks of skin cancer from overexposure to the sun’s UV rays and of lung cancer from high levels of radon gas in homes are well-known, and we know we should cover up and wear sunscreen, and install radon detectors in our homes. But women should also be aware of the potential risks associated with overuse of medical diagnostic tests, such as X-rays and computed tomography (CT) scans. A CT scan exposes a patient to a radiation dose equivalent to more than a dozen conventional X-rays. If you are concerned about your lifetime radiation exposure, ask your doctor about the risks associated →

Should you eat organic food?

About 60 per cent of Canadians are concerned about pesticide residues on fruits and vegetables, according to a 2008 survey by the Canadian Cancer Society. Another 80 per cent carefully wash all fruits and vegetables before eating them to reduce their exposure. Some studies suggest that farmers and other agricultural workers who have a high exposure to pesticides are more likely to develop certain cancers, such as lymphomas. Unfortunately, not enough research has been done to determine whether organically grown food is safer than conventionally grown food in terms of cancer risk.

If you are concerned, and want to substantially reduce your pesticide exposure, consider buying organic for the most contaminated types of produce. According to the Environmental Working Group, a U.S.-based research and advocacy organization, the top fruits and vegetables to buy organic include peaches, apples, sweet peppers, celery, nectarines, strawberries, cherries, pears, imported grapes and potatoes.



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with a large number of CT scans and whether any given diagnostic test is medically necessary.

The IARC has also organized a large international study, called Interphone, to investigate cancer rates for four cancers found in the head and neck area in cellphone users from 13 countries, including Canada. The findings have been delayed for over two years because the more than 50 researchers involved disagree on how to interpret the data. If you would rather not wait until the results are in to cut potential risk, limit talk time on your cellphone or use a headset or the speakerphone feature. You can also simply hold your phone away from your ear, since the electromagnetic radiation cellphones emit is only detectable very close to the phone itself.

“Sunshine” supplements

Popping a daily vitamin D pill offers another promising strategy for preventing breast, colon and other types of cancer in women. An influential 2007 study in the *American Journal of Clinical Nutrition*, for example, found that postmenopausal women who took 1,100 international units (IU) of vitamin D daily, as well as calcium, had a 60 per cent lower risk of developing cancer than women taking placebos. Vitamin D may protect against cancer by helping control the rate at which cells multiply, so cells don't divide and grow too quickly. “When normal cells multiply rapidly, the risk of cancer increases,” explains Dr. Jacques Brisson, a cancer researcher at Laval University in Quebec City.

Vitamin D may reduce cancer risk by helping immature, undifferentiated cells develop normally into mature, specialized cells. Certain breast cells, for example, evolve in a healthy way to become breast duct cells. If the body isn't making enough vitamin D, says Dr. Brisson, some of these cells may remain undifferentiated, which makes them more prone to changes that may lead to cancer.

Dr. Brisson and other researchers caution that a large-scale clinical trial is needed to provide definitive proof of the cancer-fighting benefits of vitamin D supplements and determine the optimal daily dose for women. The Canadian Cancer Society recommends that adults consult their doctor about taking a daily 1,000 IU vitamin D supplement during fall and winter, or throughout the year if they aren't getting much time in the sun. **hm**

