

Nutrition Action

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HEALTH LETTER[®]
CENTRE FOR SCIENCE IN THE PUBLIC INTEREST



Cancer

how to lower your risk

BY BONNIE LIEBMAN

Who gets cancer? Roughly 45 per cent of men and 40 per cent of women. They include the rich and famous—Terry Fox, Steve Jobs, Audrey Hepburn, Paul Newman, and many others—as well as the other 99 per cent of us.

But cancer isn't as random as it may appear. Of the estimated 75,000 cancer deaths that occurred in 2011, Health Canada estimates that roughly a third would never have happened if no one smoked. And another third could have been prevented with weight loss, exercise, and healthier eating. Here's how.

Continued on page 3.

MEMO FROM MFJ

Spending to Save on Obesity



Everyone agrees that Canada has experienced an unprecedented obesity epidemic in the past 20 years. But how to stop it—and roll it back—is more controversial.

Since about 1990, obesity rates in children have tripled (to roughly 9 per cent). And they've jumped from 15 per cent to 25 per cent in adults. Another 36 per cent of adults are overweight but not yet hefty enough to be classified as obese.

Those hundreds of millions of extra pounds translates into more diabetes, more high blood pressure, more heart attacks, and more cancer... at an extra cost to the Canadian economy estimated at \$5 billion to \$30 billion a year.

The food industry says that obesity is largely a matter of personal responsibility—

no one is forced to eat fattening foods. As for kids, parents should just feed them healthy diets. Problem solved!

Unfortunately, the personal-responsibility line simply ain't working—and it won't work in a society that makes it sooo easy to over-eat and under-exercise. Blaming consumers is a convenient way to take the onus off industry, and it lets companies market whatever junk they want wherever they want.

That's why many health organizations (including the Centre for Science in the Public Interest, publisher of *Nutrition Action Healthletter*) have called for changes in the "toxic food environment."

We've had some successes. Nutrition Facts labels on packaged foods, for example, have

helped millions of people. And we're pushing for calorie labelling on chain-restaurant menus, healthier school foods, and stopping junk-food ads aimed at kids. All of that could help stave off weight gain.

But something else is needed: money.

To save billions of dollars a year in health-care costs down the road, we need to spend millions of dollars now in comprehensive anti-obesity programs.

For starters, we could devote a small percentage of the cost of obesity—\$600 million a year, say—to anti-obesity measures.

It sounds like a lot, but it's only a fraction of what companies spend advertising their doughnuts, fries, cookies, pop, and other products.

It's just 6 per cent of what governments collect from alcohol and tobacco taxes each year, and only 1 per cent of what Canadians spend eating out.

It pales in comparison with the \$121 billion (and counting)

that Canadians shell out for public healthcare every year.

Think of the \$600 million as an investment that could pay for tax deductions to facilitate worksite-wellness programs and help finance major mass-media healthy-eating campaigns, weight-loss counselling under Medicare, and cooking classes and healthier, tastier food in school cafeterias.

The question isn't whether we can afford to spend that much money to fight obesity. It's whether we can afford *not* to.

Michael F. Jacobson, PhD
Executive Director
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Investing money now to fight obesity will save dollars—and lives—later.

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Cancer

how to lower your risk

All cancers are not equal. Some (like lung and pancreatic) are more likely to kill you than others (like prostate and breast). Some (like colon and cervical) are easier to detect at early stages than others (like ovarian and esophageal). And some are more closely linked to what—and how much—you eat and how much you move than others.

Here's a snapshot of the major cancers that are linked to diet, weight, or exercise. Bear in mind that some factors (like smoking) boost your risk 20-fold, while most others barely double your odds. And having warning signs doesn't mean that you have cancer. No one can guarantee that you won't get cancer. But you *can* lower your risk.

BREAST

Elizabeth Edwards, Linda McCartney, and Pauline Johnson lost their battles with breast cancer. Wendy Mesley, Carly Simon, and Gloria Steinem have not.

No other cancer strikes anywhere near as many women, though lung cancer claims more lives.

The good news: When the U.S. Women's Health Initiative reported in 2002 that taking hormones (estrogen plus progestin) after menopause raised the risk of breast cancer, many Canadian women tore up their prescriptions. That led to a 4 per cent drop in new breast cancers from 2001 to 2004. Since then, rates have levelled off.

YOU HAVE A HIGHER RISK IF:

Age: you are a woman over 60.

Family history: a relative—especially a mother, sister, or daughter—had breast or ovarian cancer.

Genes: you have mutations in genes (like BRCA1 and BRCA2) that are found in families with high rates of breast cancer.

Menstrual periods: they started before age 12 or menopause started after age 55.

Age at childbirth: you were older than 30 when you had your first child.

Childbirth: you never gave birth.

Hormones: you took hormones (estrogen plus progestin) after menopause.

Breast density: you have dense breast tissue (seen on a mammogram).

Abnormal breast cells: you have atypical hyperplasia or carcinoma in situ.

Diet, Weight, Exercise

"The first thing to emphasize about postmenopausal breast cancer is that excess

weight increases the risk," says Regina Ziegler of the Division of Cancer Epidemiology & Genetics at the U.S. National Cancer Institute. "And it's not just being obese, but also simply being overweight."

One reason: After menopause, fat cells, not ovaries, are the main source of estrogen, which promotes the growth of most breast cancers.¹

Researchers also suspect that higher insulin levels promote tumours. In one study, among women who didn't take hormones after menopause, those with the highest insulin levels were 2½ times more likely to be diagnosed with breast cancer than those with the lowest levels.²

"As you become heavier, you're more likely to have higher insulin levels or pre-diabetes," notes Ziegler, who adds that "we don't know yet if insulin has a role independent of its association with excess weight."



Exercise may protect against getting breast and colorectal cancer and dying of prostate cancer.

What else matters? A daily serving of alcohol raises the risk of breast cancer slightly.³ In contrast, "physical activity may reduce risk," adds Ziegler.⁴

What's more, breast cancer patients who are more active and less overweight have better odds of surviving the disease.⁵

Researchers are also looking at the possibility that vitamin D or carotene-rich foods (like deep orange and dark green fruits and vegetables) protect the breast.

"However, it's too early to draw a conclusion," says Ziegler.

Warning signs: a painless lump. Less common symptoms: thickening, swelling, distortion, tenderness, skin irritation, redness, scaliness, dimpling, puckering, pitting, discharge, or nipple turned inward.

COLON & RECTUM

Ronald Reagan survived colon cancer. Charles Schultz, Audrey Hepburn, Lois Maxwell, and Conrad Furey didn't.

Screening largely explains why the incidence of colon and rectal cancers has dropped since 1985. Colonoscopies and other screening tests give doctors the chance to remove polyps before they turn into tumours, a process that can take years.

Despite the drop in rates, colon and rectal cancers still claim more lives than any cancer other than lung.

YOU HAVE A HIGHER RISK IF:

Age: you are over 50.

Family history: your parent, brother, sister, or child had colon cancer.

Polyps: you have ever had colon polyps.

Inflammatory disease: you have ulcerative colitis or Crohn's disease.

Tobacco: you smoke cigarettes.

Diet, Weight, Exercise

"Being overweight or obese is clearly associated with colorectal cancer, and a larger waist circumference also increases the risk," says Marjorie McCullough, director of nutritional epidemiology at the American Cancer Society.

And in the U.S. NIH-AARP study of roughly half a million people, men and women who did moderate to vigorous exercise at least five times a week had



an 18 per cent lower risk of colon cancer than those who did little or no exercise.⁶

It's not just *how much*, but *what* you eat that matters.⁷ "Red and processed meats are convincingly associated with an increased risk," says McCullough. Why?

"The heme iron in red meat may act as a catalyst in the gut and generate free radicals that damage DNA," she explains. There's also concern about carcinogens formed during high-heat cooking.

"Processed meats—like bacon or sausage—are also often cooked at high heat and often have direct contact with the pan or flames," notes McCullough.

What's more, processed meats may have nitrites that turn into carcinogens called nitrosamines. "So you're getting a double whammy."

On the plus side, "the evidence is pretty good that calcium and dairy are protective," says McCullough. "But people need to realize that more is not always better."

In a landmark clinical trial, calcium supplements (1,000 milligrams a day) lowered the risk of new precancerous colon polyps in people who'd already had one.⁸ But men who consumed more than 1,500 mg of calcium a day had a higher risk of prostate cancer in some (but not other) studies.⁹

"There seems to be a sweet spot between, say, 800 and 1,200 milligrams a day for calcium, which would be two to

three servings of dairy, depending on the food," says McCullough.

Staying under 1,500 mg matters more for men, she adds. "Women have no prostate and more bone disease to worry about."

Some studies suggest that vitamin D may protect against colon cancer.¹⁰ "But the evidence isn't completely consistent," cautions McCullough.

"A large international collaboration is now measuring blood vitamin D levels and looking at subsequent risk of colorectal and breast cancer," notes the U.S. National Cancer Institute's Regina Ziegler, who is working on the project. Results are expected in a few years.

Warning signs: diarrhea or constipation, feeling that your bowel doesn't empty completely, blood (bright red or very dark) in your stool, narrow stools, gas pains or cramps, feeling full or bloated, unintended weight loss, fatigue, nausea, vomiting.

ESOPHAGUS

Bill Cameron, Ron Silver, Harmon Killebrew, and Christopher Hitchens died of esophageal cancer.

Esophageal cancer is actually two diseases. Worldwide, *squamous cell carcinoma* is more common. Its victims are typically smokers, heavy drinkers, or poorly nourished.

In Canada and the United States, *adeno-*

carcinoma now accounts for half of all esophageal cancers. Patients often weigh too much, and many suffer from acid reflux. When stomach acid backs up into the esophagus, it can damage the flat cells that ordinarily line the esophagus.

In some people, those cells get replaced by gland cells that look like the acid-resistant cells that line the stomach and the small intestine. This condition—called Barrett's esophagus—is linked to an 11-fold higher risk of adenocarcinoma, though 90 per cent of those with Barrett's never get the cancer.

YOU HAVE A HIGHER RISK IF:

Age: you are over 60.

Gender: you are male.

Tobacco: you smoke cigarettes.

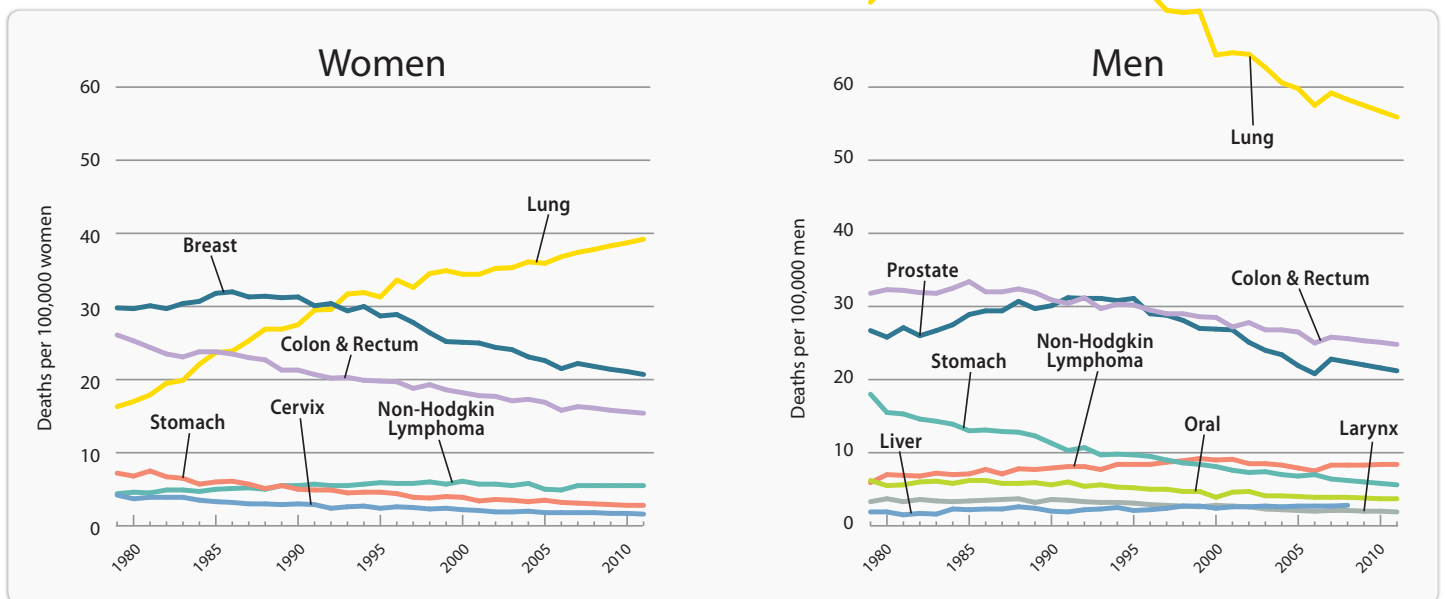
For adenocarcinoma: you have Barrett's esophagus.

For squamous cell carcinoma: you drink heavily.

Diet, Weight, Exercise

"In today's world, obesity is dominating everything," says Susan Mayne, head of the Division of Chronic Disease Epidemiology at the Yale School of Public Health in New Haven, Connecticut.

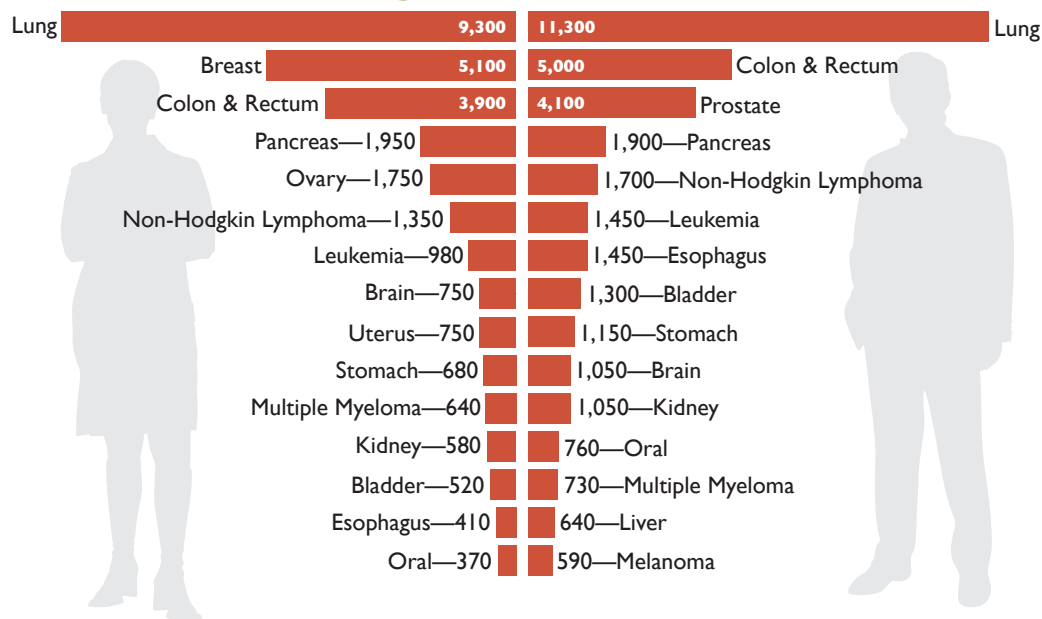
In the U.S. NIH-AARP study, which tracked roughly 500,000 men and women for seven years, those who were overweight had a 70 per cent higher risk of esophageal



Cancer is the leading cause of death among men and women under age 85. Lung cancer rates are still rising in women because their tobacco use didn't decline until decades later than men's (men started smoking less in the mid-1960s). Numbers for 2008 through 2011 are estimates.

Source: *Canadian Cancer Statistics 2011*, Canadian Cancer Society (www.cancer.ca/statistics).

Leading Cancer Killers



Estimated number of cancer deaths for 2011.

Source: *Canadian Cancer Statistics 2011*, Canadian Cancer Society.

adenocarcinoma than those who were normal weight.¹¹ The obese had more than double the risk. Why? Pressure from a bigger belly may raise the odds of reflux.

Does red meat endanger the esophagus, as some studies suggest? “We see weak effects,” says Mayne. “But what if a red-meat-based diet is contributing to obesity? We need to look at that separately.”

Warning signs: food gets stuck in the esophagus or comes back up, painful swallowing, chest or back pain, unintended weight loss, heartburn, a hoarse voice or cough that doesn’t go away in two weeks.

LUNG

Desi Arnaz, Yul Brynner, Walt Disney, Duke Ellington, Peter Jennings, and Paul Newman are some of the smokers who died of lung cancer. Terry Fox and Beverly Sills are among those who died of the disease even though they never smoked.

Lung cancer kills more Canadians than breast, colon, and prostate cancers combined. Cigarettes, cigars, and pipes account for more than 85 per cent of lung cancers.

But many Canadians who never smoked die of the disease each year. “Non-smokers can still get lung cancer,” says the U.S. NCI’s Regina Ziegler.

YOU HAVE A HIGHER RISK IF:

Tobacco: you smoke tobacco.

Age: you’re older than 65.

Chemicals: you’ve been exposed to radon, asbestos, diesel exhaust, air pollution, or second-hand smoke.

Genes: a parent or sibling had lung cancer.

Diet, Weight, Exercise

It came as a total surprise. In 2010, researchers tracking 500,000 healthy Europeans found that those with higher blood levels of vitamin B-6 had a 55 per cent

lower risk of lung cancer.¹²

“B-6 was associated with a similar decrease in risk among never smokers, former smokers, and current smokers,” says Ziegler. So smoking doesn’t explain the results.

“The findings were so striking that a large international consortium is measuring B vitamins in many prospective studies and pooling the results for lung cancer,” she adds.

Seafood, poultry, beans, cottage cheese, nuts, whole grains, and fortified breakfast cereals are rich in vitamin B-6. But don’t rush out to the drugstore for B-6 pills. “Something else about the people who eat foods rich in vitamin B-6 could account for the link,” cautions Ziegler.

Nevertheless, researchers can’t afford to ignore any new clues. As the European scientists note, “Lung cancer remains the most common cause of cancer death in the world today and is likely to remain so for the near future.”

Warning signs: persistent cough, shortness of breath, constant chest pain, coughing up blood, a hoarse voice, frequent lung infections like pneumonia, fatigue, unintended weight loss.

OVARY

Kathy Bates, Heather Menzies, and Carol Channing survived ovarian cancer. Gilda Radner, Marjorie Gross, Dianne Heatherington, and Cayle Chernin didn’t.

The five-year survival rate for ovarian cancer is 84 to 92 per cent for women who

are diagnosed before the cancer spreads. Once ovarian cancer spreads to distant sites, the odds of surviving five years drop to 5 to 18 per cent.

So, starting in 1991, a U.S. National Cancer Institute trial randomly assigned more than 78,000 women either to get a yearly blood test for CA-125 for six years and an annual ultrasound for four years or to get their usual care. (CA-125

is a protein that is elevated in the presence of inflammation and certain tumours.)

By June 2011, the results were in. The screened women were no less likely to die of ovarian cancer.¹³ One reason: ultrasound doesn’t detect tumours early enough.

What’s more, “CA-125 is produced by ovarian cancer cells, but it’s also produced by many other malignant and benign conditions, so it’s not a specific marker,” noted Edward Partridge, director of the University of Alabama at Birmingham Comprehensive Cancer Center, when reporting on a 2009 study on screening.

YOU HAVE A HIGHER RISK IF:

Other cancers: you or your mother, daughter, or sister had cancer of the ovary or breast.

Genes: you have mutations in genes (like BRCA1 and BRCA2) that are found in families with high rates of ovarian cancer.

Age: you are over 50.

Childbirth: you never gave birth.

Estrogen: you took estrogen (without progesterin) for at least 10 years.

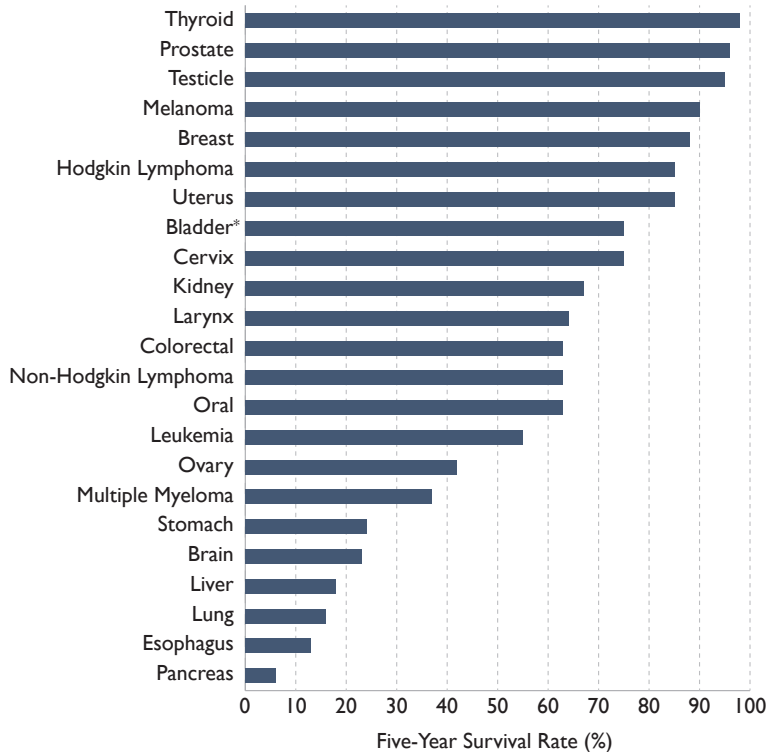
Diet, Weight, Exercise

Does obesity raise the risk of ovarian cancer? “The results are inconsistent,” says the American Cancer Society’s Marjorie McCullough.

Does exercise curb the risk? “That’s inconclusive also,” she adds. Might vitamin D help? “The Vitamin D Pooling Project didn’t see an association.” Could the lactose in milk harm the ovary? “It’s a very weak association.”



Five-Year Survival Rates



This year, an estimated 6 per cent more Canadians will be alive five years after their cancer diagnosis than in 1994. Because these percentages are averages of all cancer stages, they obscure the higher survival rates for cancers that are diagnosed early. All data excludes Quebec.

* Excludes Ontario, which doesn't report certain types of bladder cancer.
Source: *Canadian Cancer Statistics 2011*, Canadian Cancer Society.

In other words, there isn't much that women can do to lower their risk of ovarian cancer. "It's unfortunate because it's a hard cancer to screen for," says McCullough.

Screening isn't just ineffective. It can be harmful. In the U.S. NCI trial, roughly 5 per cent of the screened women were told that they had cancer but didn't. In women given a false diagnosis, one out of three had surgery (often to remove an ovary), which caused an infection or other serious complication in one out of 20.¹³

"Out of 100 women who test positive, only 1.6 actually have ovarian cancer," said Partridge in explaining his 2009 study results.¹⁴

Your best bet: "Follow guidelines for lowering your risk of other cancers," says McCullough. "Maintain a healthy body weight, stay physically active, and eat a mostly plant-based diet."

Warning signs: pressure or pain in the abdomen, pelvis, back, or legs; swollen or bloated abdomen; nausea; indigestion; gas; constipation; diarrhea; fatigue. Less common symptoms: shortness of breath, the need to urinate often, heavy vaginal bleeding, bleeding after menopause.

PANCREAS

Steve Jobs lived longer than most people with pancreatic cancer. Michael Landon, Patrick Swayze, Luciano Pavarotti, and Count Basie also died of the disease.

Less than 20 per cent of patients are candidates for surgery because the cancer has already spread by the time it's diagnosed. The five-year survival rate is 6 per cent, lower than that of any other cancer.

YOU HAVE A HIGHER RISK IF:

Family history: a parent or sibling had pancreatic cancer.

Blood sugar: you have type 2 diabetes.

Tobacco: you smoke cigarettes.

Inflammation: you get chronic pancreatitis.

Diet, Weight, Exercise

"Ten or 15 years ago, all we knew was that smoking, getting older, and diabetes were risk factors for pancreatic cancer," says Rachael Stolzenberg-Solomon of the Division of Cancer Epidemiology & Genetics at the U.S. National Cancer Institute.

"Now the evidence is pretty consistent for obesity and overweight." In a U.S. study that pooled data on nearly a million men and women, non-smokers who were overweight had a 15 per cent higher risk—and those who were obese had a 28 per cent higher risk—than normal-weight non-smokers.¹⁵

"The magnitude of the increased risk is modest," says Stolzenberg-Solomon. "But so many people are overweight or obese that it's an important public health concern."

It's not clear how extra pounds might put the pancreas at risk. One possibility: "The higher insulin levels that are associated with a greater amount of body fat may promote pancreatic cancer," she explains. "That's a leading contender for many cancers."

Most other leads are less certain. When U.S. researchers pooled data from eight studies, for example, they found double the risk of pancreatic cancer in people with high blood levels of vitamin D (at least 100 nmol/L).¹⁶

"There was only an association with the highest levels of vitamin D, and there weren't many cancers in that group," notes Stolzenberg-Solomon. "So we need more studies to confirm this finding."

But one thing was clear: "Higher vitamin D levels were not associated with a reduced risk."

Warning signs: pain in the upper abdomen or middle back that doesn't go away when you shift position, dark urine, pale or floating stools, yellow skin and eyes, nausea, vomiting, weakness, loss of appetite, unintended weight loss.

PROSTATE

Pierre Elliott Trudeau and Jack Layton died of prostate cancer. James Brown and Charlton Heston died with it. W. Brett Michaels, Robert

DeNiro, and Nelson Mandela are living with the disease.

The number of prostate cancers jumped between the mid-1980s and mid-1990s, largely because PSA (prostate specific antigen) tests were detecting cancers sooner.

Last October, the U.S. Preventive Services Task Force recommended that men aged 50 and older no longer get routine PSA tests. The treatment that often follows an elevated PSA doesn't save lives, said the task force, and often leads to impotence, incontinence, and other complications.

In 1994, the Canadian Task Force on Preventive Health Care concluded that the evidence was insufficient to recommend PSA screening. But Prostate Cancer Canada recommends a baseline PSA at age 40 and annual or semiannual tests beginning at age 50, in part because "watchful waiting," rather than surgery or radiation, is more common in Canada than in the United States.

YOU HAVE A HIGHER RISK IF:

Age: you are over 65.

Family history: your father, brother, or son had prostate cancer.

Cell changes: a biopsy has found high-grade prostatic intraepithelial neoplasia.

Diet, Weight, Exercise

It's not *whether* you get prostate cancer, but *which kind* you get, that matters.

"Most older men have prostate cancer," says Meir Stampfer, professor of epidemiology and nutrition at the Harvard School of Public Health in Boston, Massachusetts.

And it's not going to kill them.

"The indolent type of cancers are the risk of having a Y chromosome," notes Stampfer. "What we really care about is finding risk factors for advanced or lethal disease."

The most promising so far: physical activity. "It's related to a lower risk of advanced disease," says Stampfer.

For example, older men who regularly engaged in vigorous activities like jogging, biking, swimming, or tennis had a 70 per cent lower risk of advanced or lethal cancer in a 2005 U.S. study.¹⁷

What's more, among men who were diagnosed with local prostate cancer, those who walked briskly for at least three hours a week were about 40 per cent less likely to have their cancers progress (to need further treatment, to metastasize, or to cause death).¹⁸

"Some activity is better than none, but this is one case where vigorous activity really makes a difference," says Stampfer. "Brisk walking is enough, but it's got to be brisk. Vigorous activity is even better."

Staying lean doesn't cut the risk of being diagnosed with prostate cancer, but it may keep the cancer from killing you.¹⁹

"It hasn't been shown that if people lose excess weight after diagnosis, they have a better prognosis—nobody's done that experiment," says Stampfer. "But a healthy body weight at or before diagnosis is a strong predictor for survival."

So far, other leads haven't panned out. The U.S. SELECT trial on 35,000 men recently reported that taking vitamin E or selenium didn't lower prostate cancer risk.²⁰

Results with lycopene, the carotenoid found mostly in tomatoes (though it's better absorbed from tomato sauce), are inconsistent. Lycopene was linked to a lower risk of aggressive prostate cancer in some studies, but not in others.^{21, 22}

More worrisome, higher blood levels of vitamin D were linked to a lower risk of aggressive prostate cancer in some studies and a *higher* risk in others.^{23, 24}

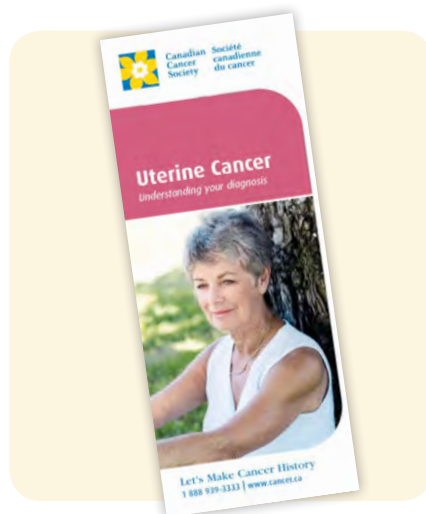
"The bottom line is that you'd have to do a trial to know how vitamin D affects prostate cancer," says Stampfer.

Studies have also suggested that too

much calcium or alpha-linolenic acid—a polyunsaturated fat found in canola, soy, and flaxseed oils—might raise the risk of advanced or high-grade prostate cancer, but the results are inconsistent.^{9, 25}

"Neither is clear," says Stampfer. "They're something to keep an eye on." In the meantime, he adds, "I don't recommend that men take calcium supplements unless there's a specific reason. I don't take any."

But when it comes to exercise and losing excess weight, there's no reason to hold back. "Most men diagnosed with prostate cancer don't die of it," says Stampfer. "They die of heart disease like most of us. So those things are good for you anyway."



Looking for more info? The Canadian Cancer Society offers an online Canadian Cancer Encyclopedia (info.cancer.ca/cce-ecc), plus free booklets for all major cancers.

Warning signs: weak or interrupted urine flow, difficulty starting or stopping urine flow, the need to urinate often, blood in the urine or semen, pain or burning with urination, difficulty having an erection, frequent pain in the lower back, hips, or upper thighs.

UTERUS

Anne Bancroft and Stanley Ann Dunham (Barack Obama's mother) died of endometrial cancer. Fran Drescher survived.

Nearly 70 per cent of endometrial cancers are diagnosed at an early stage because they cause bleeding. (The endometrium is the lining of the uterus.) However, the five-year survival rate, which ranges from 92 per cent to 99 per cent for cancers that

haven't spread, drops to 30 per cent for cancers that have spread beyond the pelvis.

YOU HAVE A HIGHER RISK IF:

Family history: your mother, sister, or daughter had endometrial cancer.

Childbirth: you never gave birth.

Menstrual periods: they started before age 12 or menopause started after age 52.

Hormones: you have taken estrogen without progestin.

Diet, Weight, Exercise

"We've known for a long time that excess weight is a risk factor for endometrial cancer," says Yale's Susan Mayne.

But researchers are taking a closer look at *when* the excess weight matters. In Mayne's recent study, the risk was higher if women put on pounds in their 20s or 30s instead of their 40s or 50s.²⁶

"The longer the heavy weight has existed, the younger the average age of diagnosis," she says. "So if you could prevent or delay weight gain, even if people eventually gain weight, you may be able to delay the diagnosis of endometrial cancer."

That doesn't bode well for today's children. "The long, sustained weight gain—which is what we're worried about in pediatric populations—would predict a much earlier onset of endometrial cancer," notes Mayne. "And that's really scary."

Warning signs: abnormal vaginal bleeding, spotting, or discharge; pain during sex, pain in the pelvic area; pain or difficulty emptying the bladder. 🍌

¹ *J. Natl. Cancer Inst.* 90: 1292, 1998.

² *J. Natl. Cancer Inst.* 101: 48, 2009.

³ *JAMA* 306: 1884, 2011.

⁴ *BMC Cancer* 9: 349, 2009.

⁵ *J. Clin. Oncol.* 26: 3958, 2008.

⁶ *Cancer Causes Contr.* 19: 939, 2008.

⁷ *J. Natl. Cancer Inst.* 97: 906, 2005.

⁸ *J. Natl. Cancer Inst.* 99: 129, 2007.

⁹ *Cancer Epidemiol. Biomarkers Prev.* 15: 203, 2006.

¹⁰ *BMJ* 340: b5500, 2010.

¹¹ *Eur. J. Cancer* 44: 465, 2008.

¹² *JAMA* 303: 2377, 2010.

¹³ *JAMA* 305: 2295, 2011.

¹⁴ *Obstet. Gynecol.* 113: 775, 2009.

¹⁵ *Arch. Intern. Med.* 170: 791, 2010.

¹⁶ *Am. J. Epidemiol.* 172: 81, 2010.

¹⁷ *Arch. Intern. Med.* 165: 1005, 2005.

¹⁸ *Cancer Res.* 71: 3889, 2011.

¹⁹ *Cancer Prev. Res.* 4: 486, 2011.

²⁰ *JAMA* 306: 1549, 2011.

²¹ *Am. J. Clin. Nutr.* 86: 672, 2007.

²² *Cancer Epidemiol. Biomarkers Prev.* 20: 638, 2011.

²³ *PLoS ONE* 6: e18625, 2011.

²⁴ *Cancer Epidemiol. Biomarkers Prev.* 20: 1850, 2011.

²⁵ *Am. J. Epidemiol.* 172: 566, 2010.

²⁶ *Int. J. Cancer* 129: 1237, 2011.



Can the BPA

If you want to avoid bisphenol A (BPA), cut down on cans.

BPA is a building block of plastic that's in the epoxy resin used to line most cans. It's also in some plastic bottles that have a #7 or #3 recycling code.

Some—but not all—animal studies suggest that exposure to BPA early in life may alter behaviour and may in-

crease the risk of cancer, diabetes, and heart disease. Studies in people are still preliminary.

U.S. researchers fed 340 grams of fresh or canned (Progresso) vegetarian soup to 75 people at lunch every day for five days. The results: several hours after lunch, BPA levels in the participants' urine were 12 times higher after the canned than after the fresh soup.

What to do: If you want to avoid BPA, look for soups (or tomatoes, beans, tuna, etc.) in cartons or pouches or in the freezer case instead of in cans. Or look for foods from companies like Eden Organic, which use BPA-free cans for most of their products. (Acidic foods, like tomatoes, can't be packaged in BPA-free cans. Try a brand like Pomì tomatoes in shelf-stable cartons.)

Scientists don't yet know if BPA is harmful. Nor do they know whether a spike in urinary BPA levels matters or if BPA levels found in people who ate this one brand of soup are typical. In the meantime, to play it safe, women who are pregnant or breastfeeding, infants, young children, and adolescents should try to avoid BPA.

J. Am. Med. Assoc. 306: 2218, 2011.

Cut Calories...Your Own Way

It doesn't seem to matter if you cut calories drastically two days a week or modestly every day, says the longest study in humans to compare the diet plans so far.

British researchers randomly assigned 107 overweight premenopausal women to cut 25 per cent of their calories in one of two ways: the "continuous" group ate roughly 1,500 calories a day (instead of 2,000), while the "intermittent" group ate about 500 calories a day for two days a week and their typical diets the rest of the week.

Each 500-calorie day consisted of four cups of low-fat milk, four half-cup servings of vegetables, one serving of fruit, a salty low-calorie drink, and a multivitamin-and-mineral supplement. It supplied 50 grams of protein.

After six months, each group had lost about 13 pounds. And levels of LDL ("bad") cholesterol, triglycerides, and inflammatory markers were similar, as was blood pressure. The only difference: insulin levels fell slightly more in the intermittent group. That's a plus.

Interestingly, the women who cut calories only two days a week didn't overeat on the other five days.

What to do: If a two-day-a-week, very-low-calorie diet appeals to you, give it a try. If you don't want to drink four cups of milk on those days, try plain yogurt, cottage cheese, chicken breast, fish, tofu, or other low-calorie foods that supply roughly 50 grams of protein and no more than 400 calories.

Int. J. Obes. 35: 714, 2011.

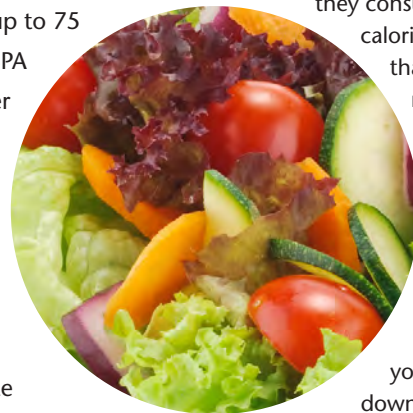
Slimming on Salad

Eating a large low-calorie salad may knock 10 per cent of the calories off your meal.

On five occasions, U.S. researchers offered 46 women a large (280-gram) 100-calorie salad of lettuce, carrots, celery, cucumber, tomatoes, shredded light cheese, and fat-free Italian dressing with a main dish of cheese tortellini and tomato sauce.

When the women were told that they had to eat the entire salad, they consumed 11 per cent fewer calories at the meal than when they were offered no salad.

However, when the women were allowed to eat as much of the salad as they wanted, they ate only about two-thirds of it, and



they consumed no fewer calories at the meal than when they ate no salad.

What to do:

If you're trying to cut calories, eat a large salad with your meal.

Just make sure you don't weigh it down with croutons

or crispy noodles, you keep

the dressing to just a tablespoon (or two for a big salad), and you go easy on the cheese, nuts, dried fruit, and other calorie-dense add-ons.

Appetite 58: 242, 2012.

Mining Salt Data

Too much—or too little—salt raises the risk of dying, U.S. researchers reported in November.

Too little? An editorial printed in the same journal gave the likely explanation. "Pre-existing disease is an important potential confounding factor that must be considered in the uptick in risk observed at the bottom end of a J-shaped curve."

Translation: It's likely that the people who consumed very little salt did so because they were already ill and may have been eating less food. And their illnesses, not a low-salt intake, was what may have raised their risk of dying.

What to do: Cut back on salt. 🧂

J. Am. Med. Assoc. 306: 2229, 2011.

Heavy Metal

Are we getting too much iron?

BY DAVID SCHARDT

Too little iron is the most common nutrient deficiency in Canada (and throughout the world). Yet a growing body of evidence suggests that some people may be getting *too much* iron.

“We can’t smell iron, we can’t taste it, we can’t feel it, and we can’t look in the mirror and see we’ve had too much,” says Leo Zacharski, a hematologist at the Dartmouth Medical School in Hanover, New Hampshire.

Here’s what researchers have learned.

Playing with Fire

Iron is essential to life on earth. Its ability to transfer the energy contained in electrons was utilized by the earliest life forms and has been conserved in our mitochondria, the power plants in our cells. And iron’s ability to latch onto oxygen made it possible for the hemoglobin in red blood cells and the myoglobin in muscle to distribute oxygen to the body’s tissues.

“But if iron is not chaperoned correctly, it can become a potent oxidant,” says Donald McClain of the University of Utah School of Medicine. Loose in cells, iron can create rogue molecules called free radicals, which can damage cell membranes, important proteins, and DNA.

“That’s why we’ve invested a lot of evolutionary energy in controlling the iron that’s within us,” McClain explains.

The body’s first line of defence: limit the amount of iron that’s absorbed from the intestinal tract. Then, when iron levels start to rise within cells, which happens as we age, our bodies quickly produce a storage protein called ferritin to sweep it up.

“Our cells spend a lot of energy maintaining this hair-trigger response with ferritin to protect the cells from excess iron,” says McClain.

What goes wrong if these defences are overwhelmed? For clues, researchers look at people with hemochromatosis, or iron overload disease.

Hemochromatosis

“Hemochromatosis is an inherited disorder in which people absorb much more iron than their bodies need,” explains Bruce Bacon of the St. Louis University School of Medicine in Missouri. According to the Canadian Hemochromatosis

Society, it is “the most common genetic disorder in the western world, affecting an estimated 1 in 300 Canadians of Northern European descent.”

The gene most responsible for hemochromatosis, HFE, makes a protein that helps control how much iron the intestinal tract absorbs from food and supplements.

Roughly 10 to 12 per cent of the population inherits one mutation of the HFE gene called C282Y, which can lead to extra iron absorption. But only those who inherit two C282Y mutations, one from



Donating blood reduces your iron stores and may lower your risk of diabetes.

their mother and one from their father, are at risk for hemochromatosis, which is full-blown iron overload.

(Another 20 per cent of the population inherits a different HFE mutation called H63D, which usually doesn’t lead to extra iron absorption.)

The problem with too much iron is that

it’s not easy to dispose of unless you’re menstruating, bleeding, or donating blood. In people with hemochromatosis, the excess iron is deposited in the organs, especially the liver, pancreas, and heart, where it eventually can cause cirrhosis, liver cancer, diabetes, or cardiac arrhythmias.

Luckily, “only about half the people who inherit two C282Y mutations develop any degree of iron loading,” says Bacon, who served on a panel that recently issued new guidelines for diagnosing and treating hemochromatosis.

What happens to people with hemochromatosis is helping researchers understand what may be in store for those who don’t have the disease but who have elevated (but not high) levels of iron in their bodies.

How many people might that be? In the middle-class town of Framingham, Massachusetts, which has been the site of ongoing studies for the past 60 years, 13 per cent of the population had elevated iron stores in 1990.¹ There’s no reason to think that the percentage is much different in Canada.

Diabetes

“In patients with hemochromatosis, we can clearly show that excessive iron kills the beta cells that make insulin in the pancreas,” says McClain.

The same could be happening in people who have large stores of iron in their bodies but who don’t have hemochromatosis.

“Very large studies across several different populations and ethnicities have shown that people with high levels of ferritin have a two to seven times greater risk of developing type 2 diabetes than those with low ferritin levels,” says McClain. Ferritin levels reflect the amount of iron stored in the body. (Routine blood screening doesn’t include a ferritin test, but your doctor may request one.)

In the U.S. Nurses’ Health Study, which tracked more than 32,000 women for 10 years, those with the highest ferritin levels were nearly three times more likely to be diagnosed with diabetes than those with the lowest levels.² And in England, men and women with the highest ferritin levels were seven times more likely to have diabetes.³

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Short Iron

While some researchers are concerned that North Americans may be getting too much iron, too little can also be a serious problem. “Poor dietary iron intake and iron deficiency exist in Canada, particularly in women of reproductive age,” says Health Canada.

No national surveys have been done since the 1970s, but smaller provincial surveys since then have found that 12 to 15 per cent of women under the age of 50 consume inadequate amounts of iron, notes the agency, which adds that too little iron isn’t a problem for Canadian men.¹

And an estimated 13 to 16 per cent of premenopausal women (and less than 5 per cent of older women) have low iron stores, according to Canadian and U.S. scientists convened by the U.S. Institute of Medicine (IOM).²

How much iron do you need? Eight milligrams a day for men or post-menopausal women and 18 mg a day for premenopausal women. The iron in plant

foods isn’t as well absorbed as the iron in red meat, so vegetarians need almost twice as much iron as meat eaters (14 mg a day for men and post-menopausal women and 32 mg a day for premenopausal women), according to the Institute of Medicine.²

The IOM also estimates that people who do regular intense exercise, like long-distance running, need 30 per cent more iron. (Strenuous running may destroy red blood cells in the feet and may also lead to increased gastrointestinal blood loss. Both increase the need for iron.)

Signs of iron deficiency include feeling tired and weak, difficulty keeping warm, and an increased susceptibility to infection. But don’t take iron to treat those symptoms without checking with a health care professional first, since internal bleeding from an ulcer or tumour can also cause an iron deficiency.

¹ Can. J. Diet. Pract. Res. 67: 130, 2006.

² nap.edu/openbook.php?record_id=10026&page=290.



wasn’t linked to a higher risk of diabetes.

“Clearly, consuming large amounts of heme iron is a risk factor for type 2 diabetes,” concludes Harvard University’s Frank Hu. Even so, he adds, “weight control remains the most important way to lower that risk.”

As for donating blood to remove iron, “we’re not at the point yet where we can recommend that people do that to avoid developing diabetes,” says McClain.

“But I wouldn’t feel bad about suggesting that it’s a nice thing to donate a unit of blood occasionally.”

Cancer

It is “well established” that hemochromatosis can cause liver cancer, the U.S. Institute of Medicine declared in 2000. But the evidence that excess iron leads to any kind of cancer in people without the disease “is inconclusive,” the IOM noted.

Here’s what researchers have discovered so far.

■ **Colon.** “In experimental animals, iron supplementation increases the proliferation of crypt cells in the large intestine and enhances the rate of tumour growth,” says Amanda Cross of the U.S. National Cancer Institute in Rockville, Maryland. (Crypt cells line the walls of the intestines.)

And people who are fed more heme iron form more *N*-nitroso compounds, which can cause colon tumours in animals.⁸

“Iron could be one of the reasons that red meat has been consistently associated with an increased risk of colorectal cancer, while white meat like poultry, chicken, and seafood has not,” Cross explains.

Yet the evidence from studies that track the eating habits and diseases of thousands of people for years is only “suggestive and not very strong,” Cross points out.

The best evidence so far: Last year, a meta-analysis pooled the results of five studies that followed a total of more than 500,000 men and women in Canada, the United States, Sweden, and the Netherlands for seven to 16 years. Those who consumed the most heme iron had an 18 per cent greater risk of being diagnosed with colon cancer than those who consumed the least.⁹

“But we don’t know for certain which is the cart and which is the horse, since ferritin also rises with inflammation,” cautions McClain. “And diabetes usually involves inflammation of some tissues.”

Still, there are good reasons to think that excessive iron is a cause, rather than a consequence, of diabetes.

“If you take rats and mice that have been bred to be prone to diabetes, you can lower their risk dramatically by decreasing the amount of iron in their bodies,” McClain notes.⁴

What’s more, several studies in Europe found that insulin sensitivity improved when people with high-normal iron stores donated blood regularly. Giving blood lowered their stores to low-normal.⁵ (People who are insulin *ins*sensitive—or resistant—cannot easily transfer sugar from the bloodstream into cells. Insulin resistance often leads to diabetes.)

McClain is leading a similar study in Utah, sending volunteers with high levels of ferritin (but not hemochromatosis) to the Red Cross to donate blood three to five times over the course of several months to lower their ferritin. Results aren’t in yet.

If too much iron can cause diabetes, the easiest solution, says McClain, is to cut back on beef and lamb, which are the major sources of heme iron in the diet. Poultry, pork, and fish also contain heme iron, but much less than beef.

Heme is the form of iron in the hemoglobin of red blood cells and in the myoglobin of muscle cells. It’s much more easily absorbed than the non-heme iron that’s in plant foods, supplements, and fortified foods. And it’s heme iron in the diet that’s linked to a higher risk of diabetes.

In the U.S. Nurses’ Health Study, for example, women who consumed the most heme iron had a 28 per cent greater risk of being diagnosed with diabetes than women who consumed the least.⁶ And participants in the U.S. Health Professionals Follow-Up Study, which tracked more than 38,000 men for 12 years, had a 63 per cent greater risk if they consumed the most heme iron.⁷ In both studies, non-heme iron in the diet



Beef is high in heme iron, which is linked to a higher risk of diabetes.

FOOD (85 grams cooked)	IRON (mg)
Chicken liver	10
Beef liver	5
Beef	2-3
Turkey	1-2
Chicken	1
Pork	1
Fish	0-1

To cut back on heme iron, eat less beef and more fish, chicken, or plant protein. Source: USDA.

However, when Harvard researchers recently pooled two large U.S. studies, men and women who consumed the most heme iron had no higher risk of being diagnosed with colon or rectal cancer.¹⁰

■ **Breast.** “Researchers suspected that North American women might have a higher risk of developing breast cancer than women in other parts of the world because of high meat intakes and iron supplementation here,” says Geoffrey Kabat, senior epidemiologist at the Albert Einstein College of Medicine in New York.

But two very large studies found no link, notes Kabat, who was the lead author on both.^{11,12} “The evidence is pretty consistent, at least in older women, that iron does not seem to be where the action is for breast cancer.”

■ **Prostate.** Among the more than 175,000 men followed for nine years in the U.S. NIH-AARP Study, those who consumed the most heme iron had a 9 per cent increased risk of prostate cancer and a 28 per cent increased risk of advanced prostate cancer compared with those who consumed the least.¹³

“It’s just one study,” cautions Cross. “It needs replicating before we make too much of the findings.”

■ **Lung.** “We found an association between higher levels of heme iron and a greater risk in the NIH-AARP Study, but not among the nearly 100,000 men and women in the Prostate, Lung, Colorectal, and Ovarian Cancer Screening Study,” says Cross.^{14,15} “So it’s hard to draw any firm conclusions.”

Overall, “the evidence is not strong for iron and any of the cancers,” concludes Cross.

That may explain why donating blood doesn’t seem to protect against cancer. Among more than a million blood donors in Sweden and Denmark from 1968 to 2002, those who later were diagnosed with cancer had donated the same amount of

blood and lowered their iron stores just as much as those who remained cancer free.¹⁶

Heart Disease

In the 1970s, a Florida pathologist proposed that premenopausal women have a lower rate of heart disease than men because menstruation keeps their iron stores lower.

But the studies conducted since then “do not provide convincing support for an association between high body iron stores and increased risk for coronary heart disease,” Canadian and U.S. scientists convened by the U.S. Institute of Medicine concluded in 2000.

In a 1999 meta-analysis, for example, five studies that looked at blood ferritin levels and three studies that looked at how much *total* iron people consumed found no link to heart disease.¹⁷

In contrast, some studies have found a higher risk of heart disease in people who consume more *heme* iron.^{18,19} But that may be because those people eat more red meat.

“Red meat and processed meats are stronger risk factors for coronary heart disease” than heme iron, points out Harvard University’s JoAnn Manson. “So it could be the saturated fat and other compounds in those foods that are raising the risk in these studies, and not the iron.”

The Brain

“We definitely see elevated levels of iron in the brains of people with Alzheimer’s disease, Lou Gehrig’s disease, and Parkinson’s disease,” says James Connor, professor of neurosurgery at the Penn State Hershey Medical Center in Pennsylvania.

In most cases, though, it’s not clear whether the iron *causes* the problem or is a *result* of it.

“In Alzheimer’s, we’ve shown that iron is a key component of the plaques,” explains Connor. (Plaques are hard, insoluble protein fragments that accumulate between nerve cells.)

“In Parkinson’s disease, we find more iron in the brain specifically in the area that’s undergoing neurodegeneration,” he adds. “And here, we think

iron is not an innocent bystander. It’s either leading the charge or fanning the flames for the disease.”

Iron may also play a role in Lou Gehrig’s disease (which is also known as amyotrophic lateral sclerosis, or ALS). “If you’ve inherited an HFE gene mutation that causes excessive iron absorption, your risk for ALS increases fourfold,” says Connor.

However, it’s not clear that the more iron you consume, the greater your risk of Alzheimer’s, Parkinson’s, or ALS. It may not be how much iron you take in, but how much gets from your bloodstream into your brain, that matters.

“Why is too much iron getting into the brains of people with these diseases?” asks Connor. “We’re still struggling to understand how the uptake of iron into the brain is regulated.”

Take-home message: It’s too early to know if iron is a cause of Alzheimer’s, Parkinson’s, or ALS. 🍌

¹ *Am. J. Clin. Nutr.* 73: 638, 2001.

² *JAMA* 291: 711, 2004.

³ *Diabetologia* 50: 949, 2007.

⁴ *Am. J. Physiol. Endocrinol. Metab.* 298: E1236, 2010.

⁵ *Diabetes* 51: 1000, 2002.

⁶ *Diabetes Care* 29: 1370, 2006.

⁷ *Am. J. Clin. Nutr.* 79: 70, 2004.

⁸ *Regul. Toxicol. Pharmacol.* 19: 130, 1994.

⁹ *Cancer Prev. Res.* 4: 177, 2011.

¹⁰ *Cancer Causes Control* 22: 1627, 2011.

¹¹ *Am. J. Clin. Nutr.* 92: 1478, 2010.

¹² *Cancer Epidemiol. Biomarkers Prev.* 16: 1306, 2007.

¹³ *Am. J. Epidemiol.* 170: 1165, 2009.

¹⁴ *Am. J. Clin. Nutr.* 89: 1884, 2009.

¹⁵ *Int. J. Cancer* 128: 402, 2011.

¹⁶ *J. Natl. Cancer Inst.* 100: 572, 2008.

¹⁷ *Circulation* 99: 852, 1999.

¹⁸ *Circulation* 89: 969, 1994.

¹⁹ *Eur. Heart J.* 26: 257, 2005.

The Bottom Line

- Having large reserves of iron in your blood or consuming large amounts of heme iron is linked to a higher risk of diabetes. Heme iron may also be linked to colorectal and prostate cancers and to heart disease, though the evidence is less clear.
- To reduce your intake of heme iron, switch from red meat to poultry, seafood, and plant proteins like lentils, beans, tofu, and grains.
- Since there’s no easy way to know if you’ve inherited the gene mutations that cause hemochromatosis, premenopausal women who take a multivitamin should look for one with no more than 18 milligrams of iron, and men and post-menopausal women should look for one with no more than 8 to 10 mg.
- If you can, donate blood regularly.

Juice Gone Wild

CONFUSION IN AISLE 10

BY JAYNE HURLEY & BONNIE LIEBMAN

Juice beats pop. That's no surprise. But the sky's no longer the limit even for nutrient-packed juices like orange. In 2006, a panel of experts recommended that most people drink no more than one cup (250 mL) of fruit juice a day (see June 2006, cover story).

Why? Because we don't compensate for the calories we get from liquids by eating less food later. So juices aren't good for the waistline. And they may raise the risk of diabetes (see Sept. 2008, cover story).

Maybe the bad press is one reason the juice aisle has gone wild. Labels are pushing everything from antioxidants and fibre to hydration and heart health. And companies are making juice lighter, more sparkling, more fortified...and more confusing.

Here's what's new.

Information compiled by Natalie Walsh and Namita Davis in Toronto.



Lighten Up

"50% less sugar" and "45% less calories," boasts the PC Blue Menu Mango Orange Juice Beverage carton. That's because it's only 43 per cent mango purée and orange juice. The rest is water plus the safe sweetener sucralose. So one cup (250 mL) has just 70 calories.

Allen's Lifestyle Apple Cocktail slims down to 50 calories by adding water and sucralose. Tropicana Trop50 gets there with water and Reb A (Pure Via), a safe sweetener extracted from the stevia plant.

And some PC Blue Menu Cocktails (like Ruby Red Grapefruit and Cranberry) slash the calories to 30 or 40 per cup with sucralose. (The Pomegranate

Look for a light juice that uses a safe sweetener like sucralose or Reb A.

Blueberry, Orange Tropical, Cranberry Raspberry, and Blackcurrant Pomegranate only get down to 50 to 70 calories, in part because they also add about a teaspoon of fructose per cup.)

Want no sweeteners? SunRype Light & Refreshing and V8 V-Fusion Light add only water to reach 90 calories per cup.

They all beat Fuze Shape and Ocean Spray Diet, which contain the poorly tested sweetener acesulfame-potassium, and Dole Sparklers Real Fruit Beverages, which also use the questionable sweetener aspartame.

How much juice is in your bottle? If the word "juice" is in the name, it could be anywhere from 25 to 100 per cent. If "juice" isn't in the name, it could be anywhere from 0 to 24 per cent. That's not too useful. Memo to Health Canada: Why not require all labels to list per cent juice?

Naturally Sly

How many calories are in Tropicana Trop50 Farmstand Apple, which has "50% LESS SUGAR AND CALORIES than the leading 100% Apple Juice," according to the front label? No problem. Just look for the Nutrition Facts panel on the back label.

Oops! It's missing.

The calories (50 per cup) are there, sandwiched between the "Medicinal Facts" and the "Non-Medicinal Ingredients." Medicinal Facts for apple juice? Yup. "Recommended Dose" as well ("Drink 1 cup 1 to 2 times daily").

You see, according to Health Canada, Trop50 Farmstand Apple isn't a regular food. It's a "natural health product in food format." So are Oasis NutriSource Wild Blueberry and Fuze Vitalize, Refresh, and Shape, among others. (You can tell because somewhere on the front label are the words "Natural Health Product" and/or a "NPN" or "EN" number.)

Why did those companies apply for a licence to sell their juices as natural health products? Our bet: so they could add vitamins and minerals (like A, E, some B's, and chromium) that Canadians don't need more of, and get a leg up on the competition by crowing about it on their labels. Juices can't do that.

And natural health products don't have to carry Nutrition Facts panels...or list calories...or tell you what per cent of a day's worth of vitamins have been added. Don't fall for them.



Juices that are "natural health products" are no better than other juices.



Puttin' on the Spritz

Drinking sparkling juice to cut some calories? Check the Nutrition Facts panel first.

President's Choice 100% Sparkling Fruit Juices have around 130 calories per cup. That's no less than you'd get from pop.

They're made from mostly apple and/or grape juice. Ditto for R.W. Knudsen Spritzers, which drop to around 100 calories per cup. (Kudos to Knudsen for listing the percentage of each juice in its ingredients list and to both Knudsen and PC for disclosing the apple and grape on their front labels.)

To cut the calories, try a PC Blue Menu Sparkling Fruit Juice Beverage. As usual, they have more apple and/or grape juice than the juices featured in the name (Peach Mango, Pomegranate Cranberry, Kiwi Berry). But added water trims a 250 mL can to just 60 calories. Dole Sparklers Real Fruit Beverages (mostly pear juice) have 70 calories per 355 mL can, but the company uses the poorly tested artificial sweeteners aspartame and acesulfame-potassium.

Of course, you could always add seltzer to nutrient-rich orange juice. Voilà! Half the calories, not too sweet, and better for you than gussied up grape, apple, and pear juices.

Many sparkling juices have no fewer calories than regular juice...or pop.



Playing Hearts

"Plant sterols help lower cholesterol," says the Minute Maid Heart Wise carton.

It's not lying. A cup of Heart Wise has one gram of plant sterols. Two grams a day can lower LDL ("bad") cholesterol by roughly 10 per cent.

Every cup of Oasis Health Break CholestPrevent juice also has one gram of plant sterols. Just don't kid yourself into thinking that you'll be getting much orange or cranberry in the "Orange, Mango and Cranberry" juice. While mango purée is the first ingredient after water, the carton contains more apple and/or grape juice than orange or cranberry.

Minute Maid's plant sterols can help lower your cholesterol.

While mango purée is the first ingredient after water, the carton contains more apple and/or grape juice than orange or cranberry.

Coconut What?

Coconut *milk* (which is loaded with saturated fat and calories) comes from squeezing grated coconut meat. Coconut *water* is the liquid that pours out when you crack open a young green coconut. It has roughly 40 calories per cup and zero fat. Its claim to fame: hydration.

"More electrolytes than leading sports drinks with 15 times the potassium," claims the label of Vita Coco, which is imported from Brazil. "It's okay if you're not a marathon runner, a football player or a Tour de France winner," adds the Web site. "Life is hectic enough, and you should be hydrated while you live it."

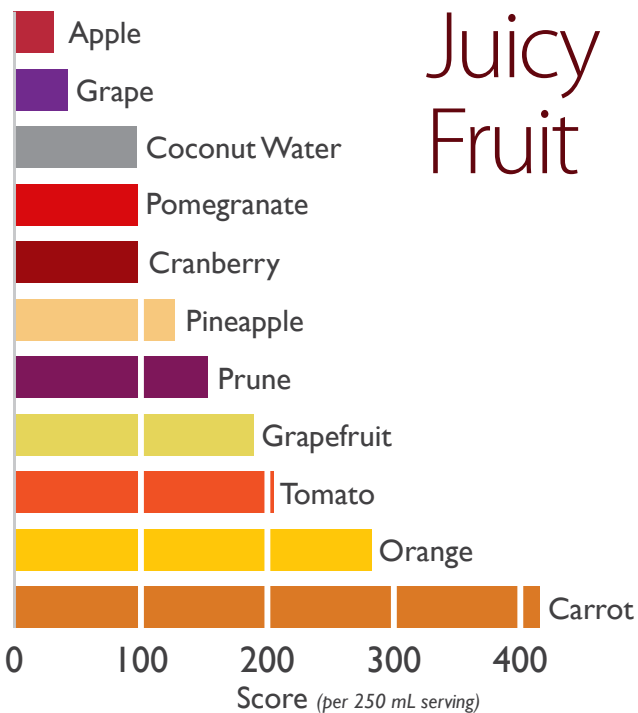
Hello? Any beverage hydrates you. The only time you might need electrolytes—like sodium or potassium—is after hours of vigorous exercise. Marathon runners who drink too much plain water can dilute their sodium levels enough to cause cardiac arrest. A hectic life won't do that.

That said, coconut water's potassium (300 to 500 milligrams per cup) is a real asset. Most people don't get anywhere near the daily target (4,700 mg) that can help lower blood pressure. But unless you've been sweating for hours, hydrate with water.



Most people can hydrate perfectly well with water.

Juicy Fruit



Not all juices are equal. We calculated scores based on the levels of 12 vitamins, minerals, and carotenoids, plus fibre. (We left out juices like blueberry and açai because numbers for some of their nutrients aren't available.) Carrot juice leads the pack because it's so rich in vitamin A (and it packs a nice potassium punch as well).

A few caveats: Tomato juice is high in salt unless the label says "low sodium." And our score reflects nutrient levels in pure cranberry juice, even though it's rarely sold without other juices or sweetened water mixed in.

And keep in mind that calories vary. A 250 mL glass of apple, blueberry, carrot, cranberry, grapefruit, orange, or pineapple juice has 100 to 130 calories, while a glass of grape, pomegranate, or prune juice has 150 to 180.

These days, much of what you hear about juices goes beyond vitamins and minerals. A future article will look at whether blueberry, grape, pomegranate, tart cherry, or other juices (or fruit) can improve health.

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Claims to Ignore

When will bogus claims stop? When the Canadian Food Inspection Agency starts cracking down and when juice makers decide to stop raking in the easy dough. In other words, probably not anytime soon. Here are a few examples:

Checkmate. Ocean Spray Cranberry Pomegranate Cherry 100% Juice Blend must be better for you than other juices. Why else would the bottle carry a “Health Check” symbol from the Heart & Stroke Foundation? Ditto for Oasis Classic Berry Fusion 100% Pure Juice, whose label sports a “Health Signature” checkmark.

It turns out that both are just run-of-the-mill juices. In fact, the Ocean Spray has more grape and apple juice, and the Oasis has more apple, grape, and pear, than the more expensive juices in the names and pictures on the labels.

Any 100 per cent fruit juice with no added sugar and some nutrients (50 per cent of a day’s vitamin C, or 25 per cent of a day’s vitamin A or folate, or 2 grams of fibre per serving) would qualify for a Heart & Stroke Foundation Health Check...provided the manufacturer paid the foundation’s fee.

The criteria for Oasis’s Health Signature checkmark are no tougher. That’s probably also true for juices that are packaged as PC Blue Menu (instead of President’s Choice) or Compliments Balance (instead of Compliments), though neither company would give us its specific criteria. Assume it’s all just marketing.

Fibre. “High Source of Fibre,” says the V8 V-Plus High Fibre and Low Sodium label.

Maybe, but roughly half of the 4 grams of fibre in a one-cup (250 mL) serving comes from inulin, a powder typically extracted from chicory root. Inulin is considered a fibre because humans lack the enzymes that break it down. In the few decent studies that looked at inulin alone, it had no consistent effect on regularity. And there’s no good evidence that it has any of fibre’s other benefits.

That also applies to the inulin in Oasis Health Break Fibre, Oasis NutriSource Fibre, and other foods that add inulin to justify their fibre claims. Only prune juice hits 4 grams of fibre without outside help.

DHA. Oasis adds enough DHA and EPA from anchovies and sardines to its Health Break Omega-3 and NutriSource Omega-3 (mostly apple, grape, or pear) juices to provide a smidgen (0.1 gram) to each cup. That’s a fraction of the 1,000 to 3,500 mg you’d get in 6 oz. of salmon. (DHA and EPA are the two main omega-3 fats in fish oil.)

Then it tosses in a misleading, needs-no-evidence claim (DHA “supports the normal development of the brain, eyes and nerves”). PC Blue Menu Oh Mega J does much the same.

What’s the harm? Adults worried about their memories and children whose parents are worried about brain development are drinking juice they’d be better off without.



Serving Size Scams

“2 servings of fruits & veggies per 250 mL,” says the bottle of SunRype Fruit Plus Veggies. V8 V-Fusion, Oasis Fruits Etc., and Wholesome Goodness 100% Juice Blend make similar claims.

How do juice makers squeeze two servings of fruit (and/or vegetables) into one 250 mL glass? Simple. They use *Canada’s Food Guide’s* serving size for juice, fruit, or vegetables, which is 125 mL (½ cup).

So a 250 mL glass of any 100 per cent juice is two servings.

Blame it on the Canadian Food

Inspection Agency, which recommends that companies give calories and other Nutrition Facts for a 250 mL serving but doesn’t stop them when they claim that 250 mL is two servings of fruit or vegetables.

Another serving-size trick: POM Wonderful has just 150 calories, according to the Nutrition Facts panel. But that’s for a 236 mL serving, which is half the bottle. Drink the whole thing—it’s not very big—and you’ll end up with 300 calories.

Minute Maid Cocktails and SoBe Energize use the same ruse. Other brands—like Dole Sparklers and R.W. Knudsen Spritzers—give Nutrition Facts for the entire bottle or can. And Fuze lists calories for the whole bottle.



A cup of juice is two servings of fruit or vegetables, says the government.

Why Water

If you’re trying to cut back on juice’s calories, sucralose-sweetened Aquafina FlavourSplash or an unsweetened flavoured seltzer or water (like Nestlé Pure Life Sparkling, PC Blue Menu Seltzer, or Perrier) may help you switch.

Just watch out for flavoured waters (Nestlé Pure Life Splash, President’s Choice Free & Clear, and President’s Choice Mist, for example) that add sucralose plus the poorly tested artificial sweetener acesulfame-potassium.

Experts recommend two to six (250 mL) cups of water a day (along with up to five cups of unsweetened coffee or tea and up to two cups of low-fat milk or soy milk). Our advice: make it tap water. That’s what’s in many bottled waters anyway.

Help cut down on the millions of plastic water bottles that clog landfills. More than 85 per cent of all empty water bottles aren’t recycled, according to the David Suzuki Foundation. And the oil that goes into making, shipping, and refrigerating bottles of water doesn’t do the planet any favours. 🍷



Fruit-flavoured water may help you cut back on juice, but tap water is better for the planet.

Juice for Grins

We awarded no Best Bites because fruit is healthier than juice. Worst Bites (X) contain added sugar and/or the poorly tested artificial sweeteners acesulfame-potassium or aspartame. Within each section, juices are ranked from least to most calories, then most to least per cent juice. (Juices with sodium are ranked from least to most sodium first.)

100% JUICE BLENDS—MULTI SERVE (per 250 mL serving)

	% Juice	Calories
Oasis Classic Exotic Mango 100% Pure Juice	100	100
Oasis Classic Berry Fusion 100% Pure Juice	100	110
Ceres 100% Fruit Juice ¹	100	120
Oasis Health Break ^{1R}	100	120
Oasis NutriSource 100% Juice ¹	100	120
Compliments Balance Pure Fruit Juices ^{1R}	100	130
President's Choice 100% Juice & Purée ^{1R}	100	130
R.W. Knudsen Organic—Açai, Blueberry Pomegranate, or Cranberry Pomegranate ¹	100	130
SunRype 100% Juice ¹	100	130
Tropicana 100% Juice ^{1R}	100	130
Tropicana Tropics ^{1R}	100	130
Bom Dia Açai, Original or with Pomegranate ^{1R}	100	140
Compliments Balance Juice ¹	100	140
PC Organics Sparkling Juice Beverage ¹	100	140
President's Choice 100% Juice ¹	100	140
R.W. Knudsen Just Juice, Black Cherry or Blueberry ¹	100	140
Bolthouse Farms Passion Orange Guava ^R	100	150
Compliments 100% Juice, Cranberry or Cranberry & Concord Grape ¹	100	150
Just Juice—Field Berries, Sweet Cherry, or Wild Blueberry ¹	100	150
Ocean Spray 100% Juice ¹	100	150
Bolthouse Farms C-Boost ^R	100	160
Bolthouse Farms Blue Goodness ^R	100	170

JUICE WITH ADDED WATER—MULTI SERVE (per 250 mL serving)

SunRype Light & Refreshing ¹	75	90
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JUICE WITH LOW-CALORIE SWEETENER—MULTI SERVE (per 250 mL serving)

X Ocean Spray Diet ¹	5	10
PC Blue Menu Cocktail, Cranberry or Ruby Red Grapefruit ¹	28*	40
X Ocean Spray Low Calorie Cranberry Cocktail	27	40
X Compliments Light Cranberry Cocktail	25*	40
X Ocean Spray Low Calorie Cocktail, Cran-Pomegranate or Cran-Raspberry ¹	15	40
Ocean Spray Low Calorie Cran-Grape Cocktail	15	40
Tropicana Trop50 ^{1R}	42	50
Allen's Lifestyle Apple Cocktail	NA	50
X PC Blue Menu Cocktail—Blackcurrant Pomegranate, Cranberry Raspberry, Orange Tropical, or Pomegranate Blueberry ¹	28*	60
X SunnyD ¹	5	60
PC Blue Menu Mango Orange Juice Beverage ^R	43*	70

JUICE WITH ADDED SUGAR—MULTI SERVE (per 250 mL serving)

X Orangina	12	110
X Allen's Cocktail—Apple Juice, Apple-Peach, or Peach ¹	NA	110
X Allen's Fruit Punch	NA	110
X Fruitopia ^{1R}	NA	110
X Five Alive ^{1R}	40*	120
X Compliments Citrus Five ^R	25*	120
X Odwalla Pomalicious Pomegranate Limeade ^R	20	120
X Ocean Spray Cocktail ¹	16	120

X Bolthouse Farms Mango Lemonade ^R	15	130
X Compliments Fruit Fusion ^{1R}	8*	130
X Compliments Cranberry Juice Cocktail ^R	25	140
X PC Organics Cocktail ¹	25*	140
X Rubicon Exotic Juice Drink ¹	25*	140
X President's Choice Cocktail ¹	28*	150
X Compliments Cocktail ¹	25*	150
X Tropicana Cranberry Cocktail ^{1R}	NA	150

100% JUICE BLENDS—SINGLE SERVE

President's Choice 100% Sparkling Fruit Juice (250 mL) ¹	100	130
POM Wonderful (473 mL) ^{1R}	100	300

JUICE WITH ADDED WATER—SINGLE SERVE

PC Blue Menu Sparkling Fruit Juice Beverage (250 mL) ¹	50	60
R.W. Knudsen Spritzer (311 mL) ¹	60	120

JUICE WITH LOW-CALORIE SWEETENER—SINGLE SERVE

X Fuze Shape (547 mL) ¹	5	20
X Dole Sparklers Real Fruit Beverage (355 mL) ¹	NA	70
X Fuze Refresh (547 mL) ¹	5	210

JUICE WITH ADDED SUGAR—SINGLE SERVE

X Minute Maid Cocktail (450 mL) ¹	NA	220
X Fuze Vitalize Orange Mango (547 mL)	5	230
X SoBe Energize Mango Melon (591 mL)	NA	280

COCONUT WATER—SINGLE SERVE UNLESS NOTED

Vita Coco, 100% Pure, multi serve (250 mL)	100	50
Zico, except Chocolate (414 mL) ¹	100	60
X Zico Chocolate (414 mL)	NA	110
Vita Coco, except 100% Pure (500 mL) ¹	100*	120

WATER (500 mL unless noted)

X Nestlé Pure Life Splash, President's Choice Free & Clear, or President's Choice Mist ¹	0	0
Unsweetened flavoured, any brand	0	0
Aquafina FlavourSplash (591 mL) ¹	0	10

VEGETABLE OR FRUIT & VEGETABLE BLEND

(per 250 mL serving)	% Juice	Calories	Sodium (mg)
Oasis Fruits Etc. ¹	100	110	20
Bolthouse Farms Green Goodness ^R	100	150	30
Wholesome Goodness 100% Juice—Peach Mango, Pomegranate Blueberry, or Strawberry Banana ¹	100	120	40
V8 V-Fusion, Peach Mango or Strawberry Banana ¹	100	120	50
Compliments Balance 100% Fruit & Vegetable Juice ¹	100	120	60
V8 V-Fusion Light, Peach Mango or Strawberry Banana ¹	75	90	70
SunRype Fruit Plus Veggies ¹	100	120	70
V8 Low Sodium	100	50	140
X Mott's Low Sodium Garden Cocktail	NA	50	140
V8 V-Plus High Fibre and Low Sodium	100	60	140
X Compliments Balance Garden Vegetable Cocktail	NA	60	350
V8 Smooth & Seasoned	99	60	450
V8 Original	100	50	480
President's Choice 8 Vegetable Cocktail	100	60	480
X Compliments Garden Vegetable Cocktail	NA	50	600
X Mott's Original Garden Cocktail	NA	60	650

X Worst Bite. ¹ Average of the entire line. ^R Refrigerated.

* Estimate. NA Number not available.

Daily Value (daily limit for a 2,000-calorie diet): **Sodium:** 1,500 milligrams.

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MUESLI MARVEL



"Originally developed in the late 1800's by a Swiss nutritionist, Muesli is a delightful cereal made from a blend of whole grains, dried fruit, nuts and seeds," explains the label of Bob's Red Mill Old Country Style Muesli.

Delightful is right, whether you microwave or boil it for 3 to 5 minutes with milk or water to make a hearty hot cereal, or you just stir it into your milk or yogurt cold.

Either way, you've got a bowl of "whole grain wheat, date crumbles, sunflower

seeds, raisins, rye, barley, oats, triticale, flaxseed, almonds and walnuts." That's the entire ingredients list.

Just keep in mind that you're almost certain to get more than the 110 calories that are listed on the package's Nutrition Facts panel. That's for a quarter-cup serving of dry cereal that won't even cover the bottom of some bowls.

So let's say you use half a cup and get 220 calories' worth of cereal. Don't worry. You're also getting 8 grams of fibre, 8 grams of protein, and no sodium. And the Muesli's whole grains are intact, which means they'll help keep you regular (and help keep a lid on your blood sugar levels) better than whole grains that have been ground into flour.

Bonus: there's no sugar in the cereal beyond what comes naturally from the raisins and dates.

When Bob says "Old Country Style," he means it.

Bob's Red Mill: (800) 349-2173

DON'T GO WITH THE FLOW

"Heat gently to make the chocolatey lava centre flow," instructs the label of President's Choice The Decadent Molten Chocolate Chip Cookie ("an exquisitely pleasing all-butter cookie made with PC The Decadent Chocolate Chips").

No one would expect a food named "The Decadent" to conjure up leafy greens. But it's funny how decadence has grown (along with Canadian waistlines).

The company's The Decadent Chocolate Chip Cookie, which hit the shelves in 1988, has 160 calories in a two-cookie serving. Each The Decadent Molten Chocolate Chip Cookie has 470 calories (a quarter of a day's worth) along with 10 teaspoons of sugar (at least a day's supply) and 11 grams of saturated fat (half a day's max), thanks not just to its butter, but to the palm and palm kernel oils in its "chocolatey filling." (Only the chips are real chocolate.)

It's like having a Quarter Pounder with Cheese, except the burger would deliver more protein, vitamins, and minerals than a pile of white flour, sugar, and fat. Even a President's Choice The Decadent Molten Chocolate Cake has fewer calories (390). Apparently, that's not decadent enough.

Now PC wants to expand on the cake's success ("4,000,000 SOLD...AND COUNTING!" gushes the company's Web site).

What else will the Molten Cookies expand? That's not the Prez's problem.

President's Choice: (888) 495-5111



dish
OF THE MONTH

Couscous Salad

Prepare 1 cup of whole wheat couscous according to the package directions.

Toss with 2 grated carrots, 4 cups of chopped arugula, 2 Tbs. each of extra-virgin olive oil, freshly squeezed lemon juice, and orange juice, and ½ tsp. of kosher salt.

Photos: Namita Davis (left), Natalie Walsh (right).

About CSPI, publisher of Nutrition Action Healthletter



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