

Nutrition Action

JANUARY/FEBRUARY 2012 \$2.50

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



Cancer

how to lower your risk

BY BONNIE LIEBMAN

Who gets cancer? One out of two men and one out of three women. They include the rich and famous—Steve Jobs, Anne Bancroft, Paul Newman, Audrey Hepburn, and many others—as well as the other 99 percent of us.

But cancer isn't as random as it may appear. Of the 571,950 cancer deaths that occurred in 2011, the American Cancer Society estimates that 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 America has experienced an unprecedented obesity epidemic in the past 30 years. But how to stop it—and roll it back—is more controversial.

Since about 1980, rates of obesity have tripled, to roughly 18 percent for children and 34 percent for adults. That includes 33 percent of white, 39 percent of hispanic, and 44 percent of black adults.

If you combine overweight and obesity, you're talking about a third of all kids and two-thirds of all adults.

Those billions of extra pounds translates into more diabetes, more high blood pressure, more heart attacks, and more cancer...and to an estimated

\$150 billion a year in increased medical costs.

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 Center for Science in the Public Interest, publisher of *Nutrition Action Healthletter*) have called for changes in the "toxic

food environment." We've had some success. Nutrition Facts labels on packaged foods, for example, have helped millions of people. In the works are calorie labeling at chain restaurants, healthier school meals, and curbs on ads for junk foods aimed at kids.

But something else is needed: money.

To save tens of billions of dollars a year in healthcare costs down the road, we need to start by spending millions of dollars now in comprehensive anti-obesity pilot programs. The lessons we learn can then be applied nationally.



Spending money now to fight the obesity epidemic will save billions of dollars—and millions of lives—later.

Let's say we eventually decide to invest, say, 1 percent of the cost of obesity in rolling back obesity.

That's \$1.5 billion a year. Sounds like a lot? In 2010 Kraft spent \$1 billion on advertising and other promotions, McDonald's spent \$1.3 billion,

and Procter & Gamble \$4.6 billion.

What could \$1.5 billion pay for? Tax deductions to facilitate worksite-wellness programs, for a start. And major mass-media campaigns to encourage people to eat less junk food and more healthful foods. And cooking classes and healthier, tastier food in school cafeterias. And more hiking and biking trails.

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

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Nutrition Action Healthletter (ISSN 0885-7792) is published 10 times a year (monthly except bi-monthly in Jan./Feb. and Jul./Aug.).

POSTMASTER: Send changes to *Nutrition Action Healthletter*, 1220 L Street, N.W., Suite 300, Washington, DC 20005.

Application to mail at Periodical postage rates approved at post office of Washington, DC, and at additional offices.

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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 of cancer 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

Rachel Carson, Elizabeth Edwards, and Linda McCartney lost their battles with breast cancer. Melissa Etheridge, Sandra Day O'Connor, Cokie Roberts, 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 Women's Health Initiative reported in 2002 that taking hormones (estrogen plus progestin) after menopause raised the risk of breast cancer, millions of women tore up their prescriptions. That led to a 7 percent drop in new breast cancers from 2002 to 2003. Since then, rates have leveled 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 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 tumors. 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."

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

Ruth Bader Ginsburg and Ronald Reagan survived colon cancer. Tony Snow, Audrey Hepburn, and Mstislav Rostropovich 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 tumors, 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 NIH-AARP study of roughly



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

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half a million people, men and women who did moderate to vigorous exercise at least five times a week had an 18 percent 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 NCI'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

Ron Silver, Ann Richards, Harmon Kilbrew, 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 the United States, *adenocarcinoma* 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 percent 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.

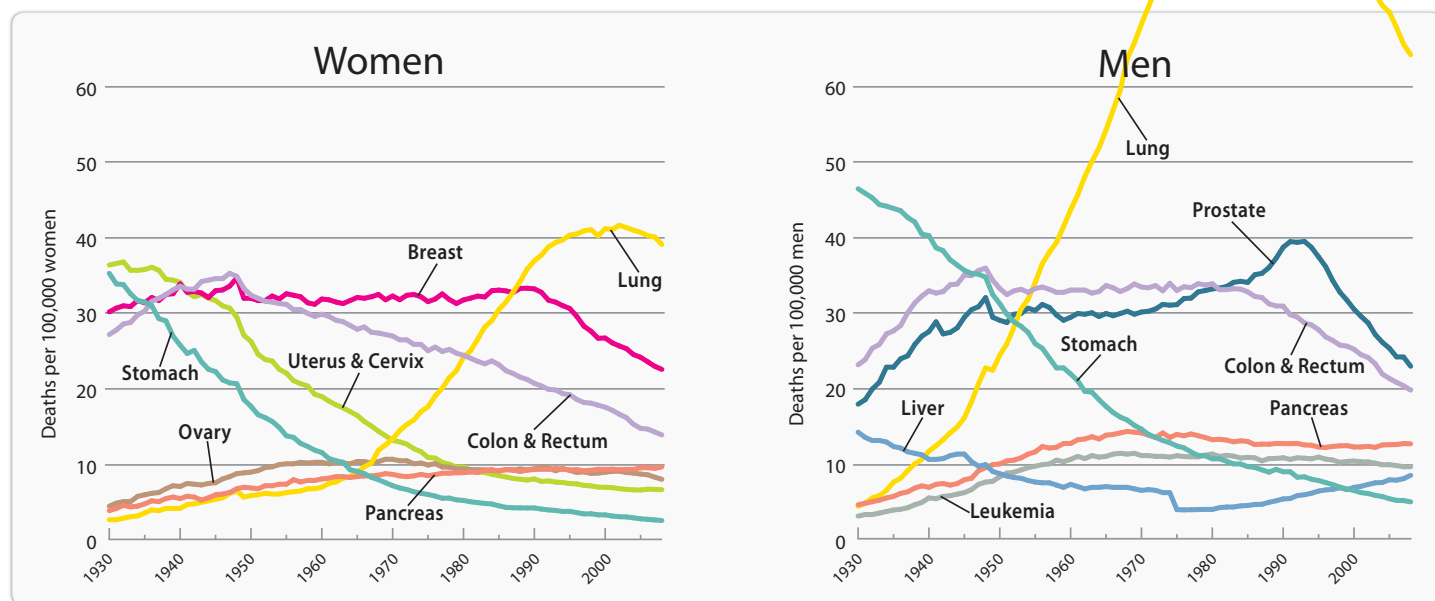
For adenocarcinoma: you have Barrett's esophagus.

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.

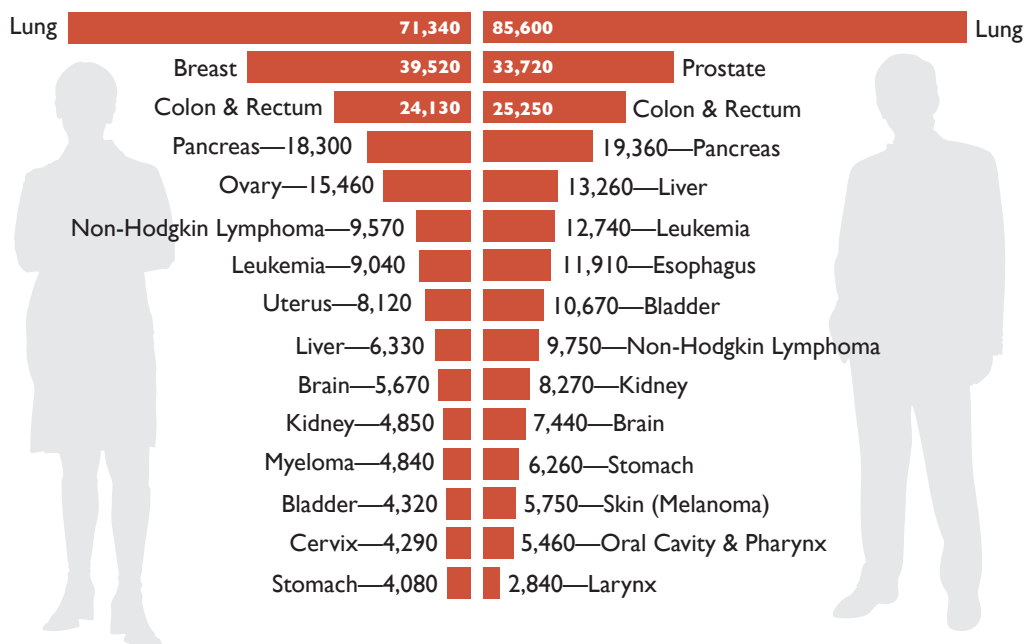
In the NIH-AARP study, which tracked roughly 500,000 men and women for



Cancer is the leading cause of death among men and women under age 85. Lung cancer death rates in women are finally dropping, but still account for about a quarter of all female cancer deaths. Uterine and cervical cancers are combined because they were not reported separately until 1975.

Source: *Cancer Facts & Figures 2011*, American Cancer Society.

Leading Cancer Killers



Estimated number of cancer deaths for 2011.

Source: *Cancer Facts & Figures 2011*, American Cancer Society.

seven years, those who were overweight had a 70 percent higher risk of esophageal 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, Betty Grable, Peter Jennings, and Paul Newman are some of the smokers who died of lung cancer. Dana Reeve (wife of Christopher Reeve) and Beverly Sills are among those who died of the disease even though they never smoked.

Lung cancer kills more Americans than breast, colon, and prostate cancers combined. While cigarettes, cigars, and pipes account for 87 percent of lung cancers, 16,000 to 24,000 Americans who never smoked die of lung cancer each year. “Nonsmokers can still get lung cancer,” says the 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 secondhand 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 percent 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, Carol Channing, and Bess Myerson survived ovarian cancer. Coretta Scott King, Laura Nyro, and Gilda Radner didn’t.

The five-year survival rate for ovarian cancer is 94 percent for women who are diagnosed before the cancer spreads. Unfortunately, nearly two out of three ovarian cancers are diagnosed after

the cancer has spread to distant sites, which slashes the five-year survival to 28 percent.

So, starting in 1991, a 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 tumors.)

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 tumors early enough.

What’s more, “CA-125 is produced by ovarian cancer cells, but it’s also produced by many other malignant and non-malignant 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, breast, colon, rectum, or uterus.

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 55.

Childbirth: you never gave birth.

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

Diet, Weight, Exercise

Does obesity raise the risk of ovarian cancer? “The results are inconsistent,” says

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Five-Year Survival Rates

Site	All Stages %	Local %	Regional %	Distant %	Site	All Stages %	Local %	Regional %	Distant %
Breast (female)	89	98	84	23	Ovary	46	94	73	28
Colon & Rectum	65	90	70	12	Pancreas	6	23	9	2
Esophagus	17	37	19	3	Prostate	99	100	100	30
Kidney	69	90	63	11	Stomach	26	63	27	3
Larynx	61	78	42	33	Testicle	95	99	96	72
Liver	14	26	9	3	Thyroid	97	100	97	58
Lung	16	53	24	4	Bladder	79	73	36	6
Skin (Melanoma)	91	98	62	16	Cervix	70	91	58	17
Oral	61	83	55	32	Uterus	83	96	68	17

The odds of surviving for at least five years depend on the type of cancer and whether the tumor is local or has spread to regional lymph nodes or to distant sites in the body. Individual odds vary. These percentages are based on patients who were diagnosed at least five years ago, so they don't reflect recent advances in treatment.

Source: *Cancer Facts & Figures 2011*, American Cancer Society (www.cancer.org/acs/groups/content/@epidemiologysurveillance/documents/document/acspc-029771.pdf).

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."

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 NCI trial, roughly 5 percent 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. Patrick Swayze, Luciano Pavarotti, Dizzy Gillespie, Count Basie, and Emily Couric (sister of Katie) also died of the disease. In 2005, Ruth Bader Ginsburg had surgery for a tumor that was discovered at an early stage.

Less than 20 percent of patients are candidates for surgery because the cancer has already spread by the time it's diagnosed. Even when doctors catch the cancer before it spreads, the five-year survival rate is only 23 percent.

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 National Cancer Institute.

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

Jerry Orbach, Frank Zappa, Timothy Leary, and Linus Pauling died of prostate cancer. James Brown and Charlton Heston died with it. Robert DeNiro, Rudy Giuliani, Nelson Mandela, Arnold Palmer, and Colin Powell are living with the disease.

The number of prostate cancer cases 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.

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.

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 percent lower risk of advanced or lethal cancer in a 2005 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 percent 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 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}

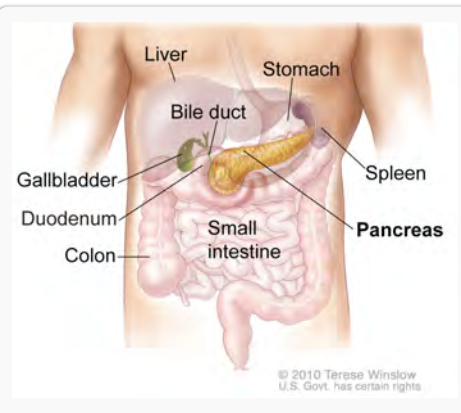
"The bottom line is that you'd have to

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."



The National Cancer Institute explains "What You Need to Know About" most cancers either online (www.cancer.gov/cancertopics/wyntk) or in print with illustrations like this one.

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 (actress and author of *Cancer Schmancer*) survived.

Nearly 70 percent 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 drops from 96 percent to 68 percent if the

cancer has spread regionally, and to 17 percent if it has spread to distant sites.

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 55.

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 or spotting, 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 behavior and may in-

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

Researchers fed 12 ounces 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.

Researchers randomly assigned 107 overweight premenopausal women to cut 25 percent 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.

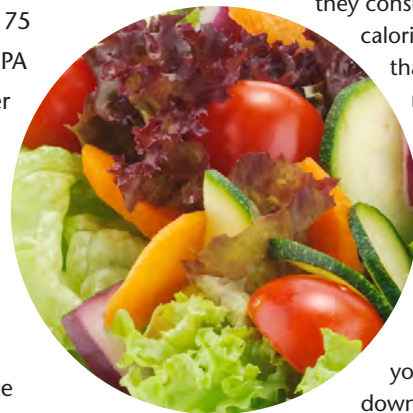
Slimming on Salad

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

On five occasions, researchers offered 46 women a large (10 oz.) 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 percent 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, 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 the United States (and throughout the world). Yet a growing body of evidence suggests that some of us 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 defense: 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 defenses 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. “It is one of the most common inherited genetic defects among

people of Northern European descent, affecting about one in 200 to 250 people in the United States.”

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 percent 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 their mother and one from their father,



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

are at risk for hemochromatosis, which is full-blown iron overload.

(Another 20 percent 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 percent of the population had elevated iron stores in 1990.¹

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, which typically costs \$50 to \$100 if ordered separately.)

In the 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

“But we don’t know for certain which is the cart and which is the horse, since ferritin also rises with inflammation,”

> > > >

Short Iron

While some researchers are concerned that Americans may be getting too much iron, too little can also be a serious problem.

“Iron deficiency is the most common nutritional deficiency and the leading cause of anemia in the United States,” according to the Centers for Disease Control and Prevention (CDC).

One in six pregnant women, one in six children aged one to two, and one in 10 non-pregnant women of childbearing age are iron deficient, according to the agency.

But older women aren't immune. According to data from a 1999-2000 national survey, 6 to 9 percent of women aged 50 and older were iron deficient. That led to a more serious condition—iron deficiency anemia—in 1 to 3 percent of the women surveyed. Only 2 or 3 percent of adult males were iron deficient.¹

How much iron do you need? Eight milligrams a day for men or postmenopausal women and 18 mg a day for premeno-

pausal 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, according to the Institute of Medicine (14 mg a day for men and postmenopausal women and 32 mg a day for premenopausal women).

The IOM also estimates that people who do regular intense exercise, like long-distance running, need 30 percent 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 healthcare professional, since internal bleeding from an ulcer or tumor can also cause an iron deficiency.

¹ *MMWR* 51: 897, 2002.



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 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 tumor growth,” says Amanda Cross of the 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 tumors 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 strongest 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 the United States, Sweden, the Netherlands, and Canada for seven to 16 years. Those who consumed the most heme iron had an 18 percent greater risk of being diagnosed with colon cancer than those who consumed the least.⁹

However, when Harvard researchers recently pooled two large U.S. studies,

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 when people with high-normal iron stores donated blood regularly, their insulin sensitivity improved.⁵ (People who are insulin *insensitive*—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 eas-

ily 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 Nurses' Health Study, for example, women who consumed the most heme iron had a 28 percent greater risk of being diagnosed with diabetes than women who consumed the least.⁶ And participants in the Health Professionals Follow-Up Study, which tracked more than 38,000 men for 12 years, had a 63 percent greater risk if they consumed the most heme iron.⁷ In both studies, non-heme iron in the diet wasn't linked to a higher risk of diabetes.

“Clearly, consuming large amounts of



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

FOOD (3 oz. 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.

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 NIH-AARP Study, those who consumed the most heme iron had a 9 percent increased risk of prostate cancer and a 28 percent 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 one 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,”

the 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 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 lead-

ing 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 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 postmenopausal women should look for one with no more than 8 to 10 mg. If you take a multi with iron, you don’t need the extra iron in Total or other highly fortified cereals or energy bars.
- If you can, donate blood regularly.

Juice Gone Wild

CONFUSION IN AISLE 10

BY JAYNE HURLEY & BONNIE LIEBMAN

Juice beats soda. 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 Americans drink no more than one cup (8 oz.) of fruit juice a day.

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 energy 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 Paige Einstein.



Lighten Up

"50% less sugar & calories," boasts the Trop50 Orange label.

If you like the taste—which is somewhat sweeter than OJ—Trop50 Orange is a smart move. It's about 40 percent juice and 60 percent water plus Reb A (Pure Via), a safe sweetener extracted from the stevia plant. An 8 oz. glass has just 50 calories.

Just keep in mind that some Trop50 flavors play the usual juice tricks. The Pomegranate Blueberry, for example, has more apple than pomegranate and more grape than blueberry. And the lemonades are just 10 percent juice plus Reb A and ordinary sugar.

If you want a light juice, find one that uses a safe sweetener like Reb A or sucralose.

Trop50 isn't the only light juice that uses safe low-calorie sweeteners. Ocean Spray Cran-Energy and V8 V-Fusion Light use sucralose (Splenda). And Sunsweet Light PlumSmart and Prune Juice Light use sucralose and sorbitol, a safe sugar alcohol (though it may cause gas). Lakewood and R.W. Knudsen also add Reb A to their Lights. But Knudsen still has 60 to 80 calories per cup and Sunsweet Prune Juice Light has 100 calories.

Even so, they all beat Ocean Spray Diet (and some Light flavors), Old Orchard Healthy Balance, V8 Diet Splash, and Welch's Light. All say "sweetened with Splenda" on the label, but also contain the poorly tested sweetener acesulfame potassium. Minute Maid Light adds a second questionable sweetener—aspartame.

"Natural" Energy?

"Made with the goodness of real cranberries and green tea extract for your natural caffeine boost," says the Cran-Energy Raspberry Energy Juice Drink bottle. "Plus, it's loaded with Vitamins B & C."

Cran-Energy has just 35 calories and no unsafe sweeteners (that's good). But its caffeine (55 milligrams per 8 oz. cup) is no more natural than coffee's (240 mg in a 12 oz. "tall" Starbucks). And what's so natural about a drink that's mostly water, juice (more grape than cranberry or raspberry), added vitamins, and Red 40 dye?

Minute Maid Natural Energy Pomegranate Berry Enhanced Juice Drink is more misleading. It's basically water, pear juice, and sugar, dressed up to look like pomegranate and berry juices (which are less than 1 percent of the drink). Its caffeine (around 40 mg in a 120-calorie, 12 oz. bottle) comes not just from the "yerba mate extract" featured in big print on the label, but from the "caffeine from coffee beans" in small print. (Yerba mate leaves, which are used to make tea, contain caffeine.)

V8 V-Fusion + Energy touts its "natural energy from green tea." It's also an "excellent source of B vitamins," which perpetuates the myth that B vitamins make you feel energetic. At least it's half juice (though there isn't much of the mango, peach, blueberry, or pomegranate that are pictured on the bottles).

Bottom line: Energy juice drinks can supply caffeine, but it's no better than the caffeine you get from coffee or tea. And don't get snookered by vitamins and bait-and-switch juices.



Cran-Energy's added B vitamins won't give you energy, but its caffeine will.



Izze Isn't...

"All natural & true to the fruit." That's how IZZE describes its Sparkling Juices. Yet IZZE's Sparkling Blackberry, Blueberry, Clementine, Grapefruit, Lime, Peach, and Pomegranate are largely made of only two juices—apple and white grape.

Sparkling juices have no fewer calories than ordinary juice...or cola.

And IZZE isn't alone. The Switch, Knudsen Spritzers, Nestlé Juicy Juice Sparkling, Ocean Spray Sparkling, and Trader Joe's Sparkling (except Blueberry) may name or show every fruit from berries to black cherries on their labels. But inside the bottles, they're mostly the least nutritious (and least expensive) white grape and apple juices.

What's more, most sparkling juices have around 100 calories per (8 oz.) cup. That's about the same as cola.

Exceptions: Welch's Fruit Fizz has 70 calories per 8.4 oz. can because it's only 50 percent juice. The IZZE Esque line has 50 calories per 12 oz. bottle because it's 25 percent juice. And Ocean Spray Diet Sparkling manages to hit 10 calories in an 8.4 oz. can by dropping the juice to just 10 percent (and sweetening with poorly tested acesulfame potassium).

If you want a sparkling juice, add seltzer to nutrient-rich orange juice. Voilà! Half the calories, not too sweet, and probably cheaper than gussied up grape and apple juice.

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Coconut What?

Perhaps you're wondering what coconut water is doing in a juice article (well, coconut *is* a fruit) and, more importantly, what the heck it is.

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, zero fat, and zero protein. Its claim to fame: hydration.

"Vita Coco has more than 15 times the electrolytes found in sports drinks," claims the leading brand, which is imported from Brazil. "It's okay if you're not a marathon runner, a football player or Tour de France winner," adds the label. "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, potassium, or chloride—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.



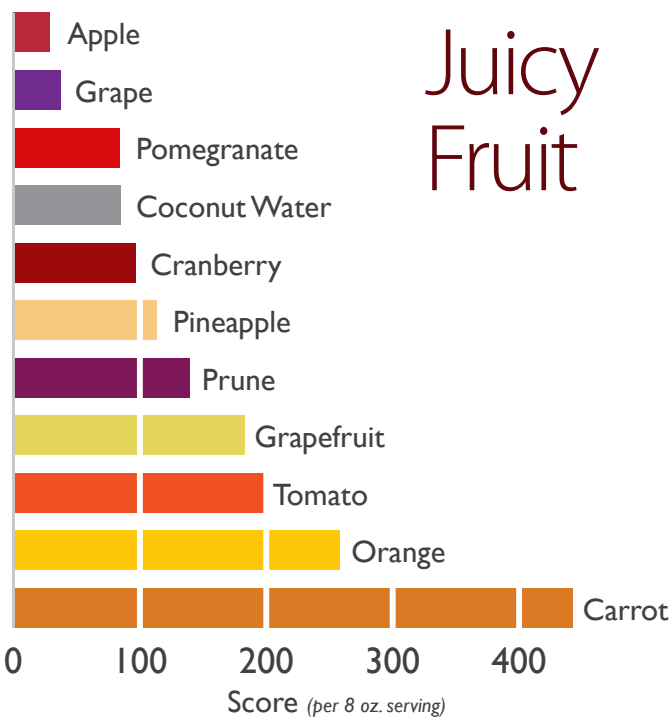
Minute Maid's sterols are better for your heart than Tropicana's DHA + EPA.

Playing Hearts

"Healthy Heart with Omega-3," says the Tropicana orange juice bottle. "Proven to help reduce cholesterol," says the Minute Maid Heart Wise carton. Which is best?

Minute Maid wins. Each 8 oz. cup has 1 gram of plant sterols. Two grams a day can lower LDL ("bad") cholesterol by roughly 10 percent.

In contrast, Tropicana has no plant sterols. Each cup contains 50 milligrams of EPA plus DHA from fish oil. That's a fraction of the 1,000 to 3,500 mg you'd get in a 6 oz. serving of salmon. And although there's decent evidence that fish oil prevents heart attacks, it's not a slam dunk.



Not all juices are equal. We calculated scores based on the levels of 12 vitamins, minerals, and carotenoids, plus fiber. (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. An 8 oz. 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, pomegranate, tart cherry, or other juices (or fruits) can improve health.

>>>>

Claims to Ignore

When will bogus claims disappear? When the FDA stops napping and juice makers decide to stop raking in the easy dough. In other words, not anytime soon. Here are a few examples:



Antioxidants. “Essential antioxidants,” says V8’s label. “Nutrients that help support the immune system. Each 6.5 oz. can is an excellent source of vitamin A, C, & E.”

Just about *any* food could have the same A, C, and E, since they’re added by the manufacturer. And any food that contains any vitamin or mineral can claim to “support the immune system.”

Claims with words like “support,” “enhance,” and “maintain” need no hard evidence, according to the FDA. Yet we *do* have hard evidence that high doses of vitamins A, C, or E don’t lower the risk of cancer or heart disease.

It’s not just V8. Knudsen Simply Nutritious Mega Antioxidant, Minute Maid Antioxidants Enhanced Lemonade, and Tropicana Antioxidant Advantage play the same game. Then there’s Old Orchard Very Cherre Tart Cherry Blueberry, which claims to be “antioxidant rich” because it has “3,700 ORAC units.”

ORAC (oxygen radical absorbance capacity) measures how well a food can keep a certain molecule from decomposing when mixed with a free-radical-generating chemical in a test tube. Does a high ORAC score mean that the food neutralizes free radicals in the body? Do fewer free radicals translate into a lower risk of disease? No one knows.

Fiber. “Not sure people know but we press the whole Concord grape—skins and seeds included,” says the label of Welch’s 100% Grape Juice with Fiber.

Maybe, but just about all of the fiber in the juice comes from added “resistant” maltodextrin, a starch-like carbohydrate that’s resistant to digestion, which is why it’s technically fiber. However, there’s no good evidence that maltodextrin aids with regularity or confers any other of fiber’s benefits.

Ditto for the dextrin that’s added to V8 High Fiber and Sunsweet PlumSmart and Prune Juice Light. Only regular prune juice has the real thing.



DHA. Minute Maid Help Nourish Your Brain 100% Fruit Juice Blend probably does more to help nourish Coca-Cola, which owns Minute Maid. Coke adds a smidgen (50 milligrams) of DHA from algae to each cup of mostly apple and grape juice—which it fobs off as pomegranate and blueberry. (DHA is one of the two main omega-3 fats in fish oil.)

Then it tosses in a handful of misleading, need-no-evidence claims (like “DHA is a key building block in the brain” and “Vitamin C is highly concentrated in brain nerve endings”).

The result: millions of adults worried about their memories and millions of children whose parents are worried about brain development are drinking juice they’d be better off without.



Serving Size Scams

“2 servings of fruit...in every 8 ounce glass,” says the bottle of Fruit2day. Apple & Eve Fruitables and Ocean Spray Fruit & Veggie make similar claims.

How do juice makers squeeze two servings of fruit (and/or vegetables) into one 8 oz. glass? Simple. They use the U.S. Department of Agriculture’s serving size for juice or fruit, which is 4 oz.

So an 8 oz. glass of *any* 100 percent juice is two servings. Clever, huh? Blame it on the Food and Drug Administration, which requires Nutrition Facts labels to use an 8 oz. serving but lets the bottles say that 8 oz. is two servings of fruit or vegetables.

What about Fruit2day’s “real fruit bits”? They might help people eat less food later in the day than a glass of ordinary juice would. But fiber-rich fresh fruit and vegetables are better at curbing appetite than any juice, period.

Another serving-size trick: Naked Pomegranate Blueberry 100% Juice has just 150 calories, according to the Nutrition Facts panel. But that’s for just 8 oz. The entire 15.2 oz. bottle has 300 calories. Most companies—like Odwalla, Welch’s, Tropicana Twister, Arizona, and POM Wonderful—use the same ruse. Only a few brands—Nantucket Nectar and Ocean Spray, for example—give Nutrition Facts for the entire bottle.



Eight ounces of juice counts as two servings of fruit, says the USDA.

Why Water

“The Fruit₂O and Veryfine acquisitions have been a gold mine for us,” Billy Cyr, CEO of Sunny Delight Beverages Co., recently told *Smart Business* magazine.

Fruit₂O is water, fruit flavoring, and the safe sweetener sucralose (Splenda). And like Sunny Delight, many of Veryfine’s juices are a mix of juice and sugar water. No wonder they make a bundle for SunnyD.

Nevertheless, if you’re trying to cut back on juice, artificially sweetened fruit-flavored waters (like Fruit₂O and Aquafina Flavor-Splash) or an unsweetened flavored seltzer or water (like Deer Park Sparkling or Poland Spring Sparkling) may help you switch.

Experts recommend two to six (8 oz.) 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 nearly half of all bottled waters anyway.

You’ll help stop the flood of nearly 95 million plastic water bottles a day, only about 20 percent of which ever get recycled. And the oil that goes into making, shipping, and refrigerating bottles of water doesn’t do the planet any favors. 🍷



Fruit-flavored waters may help you cut back on juice, but tap water is better.

Juice for Grins

We awarded no Best Bites because fruit is healthier than juice. Worst Bites (✗) 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 percent juice. (Juices with sodium are ranked from least to most sodium first.)

100% JUICE BLENDS—MULTI SERVE (per 8 oz. serving)

	% Juice	Calories
Dole 100% Juice ^{1R}	100	120
Florida's Natural or Simply Orange ^{1R}	100	120
Lakewood 100% Juice or Pure, Organic or regular ¹	100	120
Minute Maid Help Nourish Your Brain Enhanced Juice ^R	100	120
R.W. Knudsen Just or Organic Just ¹	100	120
R.W. Knudsen Simply Nutritious, except Lemon Ginger Echinacea ¹	100	120
Tropicana Pure Premium or Tropics ^{1R}	100	120
Apple and Eve 100% Juice, Organics or regular ¹	100	130
Bom Dia Açai ^{1R}	100	130
Old Orchard 100% Juice or Very Cherre ¹	100	130
R.W. Knudsen Organic or Natural, except Coconut Nectar or Hibiscus Cooler ¹	100	130
Trader Joe's Sparkling, except Clementine ¹	100	130
Ocean Spray 100% Juice ¹	100	140
Welch's Healthy Start ^R or 100% Juice ¹	100	160

JUICE WITH ADDED WATER—MULTI SERVE (per 8 oz. serving)

R.W. Knudsen Natural Hibiscus Cooler	85	100
Trader Joe's Sparkling Clementine	84	130
R.W. Knudsen Natural Coconut Nectar*	60	140

JUICE WITH LOW-CALORIE SWEETENER—MULTI SERVE (per 8 oz. serving)

✗ V8 Diet Splash ¹	8	10
✗ Tropicana Light Fruit Punch ^R	6	10
✗ Ocean Spray Diet ¹	5	10
Tropicana Light, except Fruit Punch ^{1R}	4	10
✗ Minute Maid Light ^{1R}	8	20
✗ Old Orchard Healthy Balance ¹	25	30
Ocean Spray Cran-Energy ¹	20	40
✗ Ocean Spray Light Cranberry	50	50
Ocean Spray Light, except Cranberry ¹	50	50
✗ Minute Maid Pure Squeezed Light ^R	42	50
Tropicana Trop50, except Lemonade ^{1R}	42	50
Lakewood Organic Light ¹	41	50
✗ Welch's Light ¹	28	50
✗ Tropicana Trop50 Lemonade ^{1R}	10	50
Sunsweet Light PlumSmart	30	60
✗ SunnyD ¹	5	60
R.W. Knudsen Light ¹	65	70
✗ Old Orchard Cranberry Naturals ¹	30	70
✗ V8 Splash ¹	10	70
✗ Old Orchard Nectars ¹	20	80
Sunsweet Prune Juice Light	49	100

JUICE WITH ADDED SUGAR—MULTI SERVE (per 8 oz. serving)

✗ Lorina Sparkling ¹	1	100
✗ Whole Foods Market Italian Soda	9	110
✗ R.W. Knudsen Simply Nutritious Lemon Ginger Echinacea	60	120
✗ Brazil Gourmet Premium Nectar ¹	30	120
✗ Ocean Spray Juice Cocktails ¹	25	120
✗ Welch's Essentials or Sparkling Juice Cocktail ¹	50	160

100% JUICE BLENDS—SINGLE SERVE

	% Juice	Calories
Fruit2day (6.75 oz.) ^{1R}	100	120
The Switch (8.3 oz.) ¹	100	120
Nantucket Nectars 100% Juice (17.5 oz.) ¹	100	270
Naked 100% Juice (15.2 oz.) ^{1R}	100	280
POM Wonderful (16 oz.) ^{1R}	100	290

JUICE WITH ADDED WATER—SINGLE SERVE

Izze Esque (12 oz.) ¹	25	50
Izze Fortified or Ocean Spray Sparkling (8.4 oz.) ¹	70	90
Nestlé Juicy Juice Sparkling (8.4 oz.) ¹	70	90
R.W. Knudsen Spritzer (10.5 oz.) ¹	63	120
Izze Sparkling (12 oz.) ¹	70	130
Lite POM (16 oz.) ^{1R}	53	160

JUICE WITH LOW-CALORIE SWEETENER—SINGLE SERVE

✗ Ocean Spray Diet Sparkling (8.4 oz.) ¹	10	10
✗ Minute Maid Fruit Falls or Just 10 (6.8 oz.) ¹	4	10
Sparkling Ice (17 oz.) ¹	3	10
Welch's Fruit Fizz (8.4 oz.) ¹	50	70
Aura Botanical Water (15.2 oz.) ^{1R}	40	90
✗ Minute Maid Natural Energy Enhanced Juice Drinks, bottle (12 oz.) ¹	27	120

JUICE WITH ADDED SUGAR—SINGLE SERVE

✗ Bossa Nova Organic Açai or Superfruit (10 oz.) ^{1R}	80	130
✗ San Pellegrino, can (11.15 oz.) ¹	17	150
✗ Odwalla Lemonade or Limeade (12 oz.) ^{1R}	18	180
✗ Nantucket Nectars Cocktails (17.5 oz.) ¹	22	260
✗ Tropicana Juice Beverage (15.2 oz.) ¹	30	270
✗ Arizona Juice drinks, can (23 oz.) ¹	9	320

COCONUT WATER—SINGLE SERVE

Naked Pure 100% or O.N.E. (11.2 oz.)	100	60
Zico, except Chocolate, bottle (14 oz.) ¹	100	60
✗ O.N.E. with a Splash (8.5 oz.) ^{1R}	NA	70
Naked (11.2 oz.) ¹	NA	80
Vita Coco 100% Pure (17 oz.)	100	90
Bom Dia Coconut Splash (15.2 oz.) ^R	82	110
✗ Zico Chocolate (14 oz.)*	NA	110
Vita Coco, except 100% Pure (17 oz.) ¹	NA	120

WATER (for comparison) (per 8 oz. serving)

Aquafina FlavorSplash or Fruit ₂ O ¹	0	0
✗ Aquafina Sparkling, Dasani Flavored, or Skinny Water ¹	0	0
Unsweetened flavored, any brand	0	0

VEGETABLE OR FRUIT & VEGETABLE BLENDS (per 8 oz. serving)

	% Juice	Calories	Sodium (mg)
Apple and Eve Fruitables ¹	66	70	15
R.W. Knudsen Very Veggie Low Sodium ¹	100	60	35
Lakewood Organic Fruit Garden ¹	100	110	55
Ocean Spray 100% Juice Fruit & Veggie ¹	100	130	60
V8 V-Fusion + Energy ¹	50	50	65
V8 V-Fusion Light ¹	50	50	70
Bolthouse Farms 50/50 ^{1R}	100	140	70
V8 V-Fusion ¹	100	110	90
V8 Low Sodium ¹	100	50	140
V8 ¹	100	60	470
R.W. Knudsen Very Veggie, except Low Sodium ¹	100	60	600

✗ Worst Bite. ¹ Average of the entire line. ^R Refrigerated. * Contains at least 2 grams of saturated fat. NA Number not available.

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

Source: manufacturers and USDA. The use of information from this article for commercial purposes is strictly prohibited without written permission from CSPI.

The Center for Science in the Public Interest (CSPI), founded in 1971, is an independent nonprofit consumer health group. CSPI advocates honest food labeling and advertising and safer and more nutritious foods. CSPI's work is supported by *Nutrition Action Healthletter* subscribers and foundation grants. CSPI accepts no government or industry funding. *Nutrition Action Healthletter*, first published in 1974, accepts no advertising.

Nutrition Action Healthletter

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RIGHT STUFF

EASY FREEZY



On the go? The planet would be better off if you grabbed a piece of fruit that was wrapped in its own peel. But for some

people, having to cut up that pineapple or wash and repackage those berries means that a mid-morning or afternoon snack ends up being a granola bar or muffin (or doughnut or bagel or bag of chips).

Enter frozen **Dole Blueberries**, **Sliced Strawberries**, and **Tropical Gold Pineapple**. Each fruit comes in a single-serve cup that has just 35 to 50 calories and no added sweeteners. You can let them defrost (for 30 to 45 minutes) on your desk or pop them in the microwave for a minute. Either way, you've got the perfect snack and a taste that's awfully close to fresh.

Want something more substantial? Try mixing a Dole cup with plain fat-free Greek yogurt or cottage cheese. Or toss one into a salad of greens and toasted almonds. Or stir it into a bowl of whole-grain cereal.

If you want to save plastic (and freezer space), don't overlook **bags of frozen fruit**. Dole and other companies sell not just blueberries, strawberries, and pineapple, but **blackberries**, **cherries**, **sliced peaches**, **mango**, and **raspberries**—all with no added sugars.

There's nothing like a smoothie made with low-fat milk or plain yogurt, a banana, and frozen fruit. It's a fast freeze. Who needs juice, fruit snacks, fruit pops, or sweetened fruit cups when the real thing is (better than) a piece of cake?

Dole: (800) 356-3111

FOOD PORN

SALTY STYLE SOUP



"Everything good takes time," says the label on **Campbell's Tomato & Sweet Basil Bisque Slow Kettle Style Soup**. "Like slow-cooked soups with high quality ingredients and delicious flavor combinations that deliver an experience you will want to slow down and savor."

Well, if you read the Tomato & Sweet Basil Bisque's Nutrition Facts panel and end up thinking that the soup has 260 calories and 8 grams of saturated fat seasoned with 750 milligrams of sodium, you haven't slowed down enough.

Under "Serv. Size 1 cup," the label says "Servings about 2." That's your only clue that the entire container—which looks like a single serving—has 520 calories, 16 grams of saturated fat, and 1,500 mg of sodium.

So slow w-a-a-a-y down when you savor the Tomato & Sweet Basil Bisque, because by the time you're done, you'll have polished off a quarter of a day's calories, three-quarters of a day's sat fat (thanks largely to the soup's cream), and an entire day's sodium.

The Portobello Mushroom & Madeira Bisque isn't much better. The container packs 460 calories, 12 grams of sat fat, and 1,540 mg of sodium. It's essentially a Quarter Pounder with Cheese in a bowl.

A whole container of the other Slow Kettle Style Soups—not Campbell's bogus 1 cup serving—is lower in calories (300 to 400) and sat fat (1 to 3 grams), but each still hits a day's sodium.

That's Honest Style labeling if we ever saw it.

Campbell: (800) 257-8443

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.