



Harvard Men's Health Watch

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Sexuality and seniority

Americans are living longer than ever. As the population ages, many senior citizens are burdened with chronic illnesses, but many others remain healthy and active. When scientists investigate aging, they have to distinguish between changes caused by disease and those caused by aging itself. It's important research: among other things, it has taught us that men who take care of themselves can prevent many of the illnesses that make less prudent gents old before their time.

Until recently, research on aging has focused mainly on crucial things that go wrong—on heart disease, mental decline, arthritis, prostate woes, and the like. But while big-ticket items are still getting the priority they deserve, researchers are also expanding their horizons to include less critical issues. Sexuality is an important example. Several new reports shed light on aging and sexuality, and one of them suggests that sex itself may help prevent sexual dysfunction in older men.

The male sexual response

At any age, sexual activity is an instinctive, automatic part of human behavior. But the biology behind that behavior is quite complex.

Although the sex act is a continuous process, researchers have divided it into six stages. The first necessity is sexual desire or *libido*. The normal sex drive is a prime example of the unity of mind and body. It requires both an appropriate mindset and sufficient amounts of the male hormone testosterone. Sexual desires surface in puberty, when testosterone levels rise; although ardor tends to wane with age, most men produce enough testosterone to maintain libido throughout life. At any stage of life, however, worry, stress, or depression can thwart sexual interest, even if a man's physical apparatus remains intact.



Sexual activity itself begins with a state of arousal that results from various combinations of erotic thoughts and sensory stimulation that may involve the senses of touch, sight, scent, taste, or hearing. An area of the

brain called the *hypothalamus* coordinates erotic images and sensations and transmits the impulses of desire through the spinal cord to the pelvis, where they link up with the nerves of the *autonomic nervous system*; sensory nerves from the skin of the penis and other erogenous zones connect directly to the autonomic nerves without involving the brain.

When properly stimulated, the autonomic nerves in the pelvis spring into action. They start the second stage of the male sexual response by transmitting chemical signals to the arteries of the penis, causing them to widen and admit more blood. Blood rushes into the two *corpora cavernosa*, shafts of spongy tissue that contain many vascular channels. The corpora cavernosa swell, producing an erection. The engorged corpora also put pressure on *venules*, compressing and narrowing them to prevent the extra blood from leaving, so the erection can be maintained.

For years, doctors have known that an erection is a hydraulic event that depends on a sixfold increase in the amount of blood in the penis. But new research has revealed that an erection is also a chemical event. A tiny chemical called *nitric oxide* allows nerves to communicate with each other and with the arteries of the penis. Nitric oxide acts on the arteries through an intermediary called *cyclic guanosine monophosphate* (cGMP). It's been an exciting discovery for scientists, and it led to important progress for men with erectile dysfunction (ED) since the ED pills (Cialis, Levitra, and Viagra) act by boosting cGMP levels in the penis. ▶▶

Inside

Allergic rhinitis: Your nose knows

Spring is here at last. For many, it's the season to enjoy running brooks. For others, it's time to treat running noses. 4

Statins and prostate cancer

Although the data are mixed, new research suggests a reduced risk of prostate cancer might be a "side effect" of these important medications. 6

On call

Vegetarian diets: Good for health if done right. 8

In future issues

Headaches

Protect your kidneys

What's new

Arthritis: Keeping your joints healthy



A Guide to Alzheimer's Disease

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Sexuality and seniority (continued)

The third stage of sexual activity is called the plateau, which usually lasts from 30 seconds to two minutes. The heart rate and blood pressure rise as sexual activities continue, pumping more blood to the body's tissues. The penis is not the only recipient of increased blood flow; most men also experience facial flushing, and the testicles themselves swell by about 50%. During the plateau phase, the prostate and *seminal vesicles* begin to discharge fluid in preparation for ejaculation.

Sexual excitement climaxes with the fourth stage, ejaculation. The autonomic nervous system is in charge here, too. It tells the muscles in the *epididymis*, *vas deferens*, *seminal vesicles*, and prostate to contract, propelling semen forward. At the same time, nerve impulses tighten muscles in the neck of the bladder so that semen is forced out through the *urethra* instead of flowing back into the bladder. Ejaculation is usually accompanied by the pleasurable sensation of orgasm; in nearly all men, the heart rate reaches its peak during ejaculation.

All good things come to an end. The fifth stage of sexual activity is *detumescence*, when the penis returns to its flaccid state. Detumescence usually follows ejaculation, but it can occur prematurely if the sex act is interrupted by an intrusive thought or event. In either case, detumescence occurs when the penile arteries narrow and the veins widen, draining blood away from the organ.

The final stage in the sex act is the quietest. It's the *refractory period*, a span of 30 minutes (in younger men) to three hours (in older men) during which the penis cannot respond to sexual stimulation.

Slowing down

For many men, sexuality is one of the things that change over time. It's usually a gradual, almost imperceptible process that begins in middle age. Whereas most older men retain an interest in sex, it's generally a far cry from the preoccupation with sex that's so common in youth. Although interest is retained, desire tends

to wane; many older men think about sex, but don't have the drive to put theory into practice. And even when the spirit is willing, the flesh may be weak; male sexual performance typically declines more rapidly than either interest or desire.

Most men experience decreased sexual responsiveness with increasing age. Erections occur more slowly, and they become more dependent on physical stimulation than on erotic thoughts. Even when erections develop, most men in their 60s report that their penile rigidity is diminished and harder to sustain. The ejaculatory phase also changes with age; the muscular contractions of orgasm are less intense, ejaculation is slower and less urgent, and semen volume declines. Sperm counts also decline; although healthy men can father children well into their senior years, their reproductive efficiency can't match younger men's.

Sexual intercourse requires a partner. But male sexuality demonstrates age-related changes that are not dependent on interpersonal factors. Nighttime erections, which are normal events that occur during deep sleep, diminish with age; men between age 45 and 54 average 3.3 erections per night; between age 65 and 75, men average 2.3. Nocturnal erections also tend to become briefer and less rigid as men age.

Changes due to age

Sexuality is complex, and scientists don't understand all the factors that contribute to sexual function in young men, let alone what is responsible for the changes that occur with healthy aging. Still, it's clear that the hormones, nerves, and blood vessels responsible for male sexuality all change over time. In the average man, levels of testosterone fall by about 1% per year beyond age 40—but most older men still have enough testosterone to function sexually. To produce arousal, testosterone acts on part of the brain called the *locus ceruleus*, and these nerve cells become less hormone-responsive with age (see *Harvard Men's Health Watch*, January 2008). Levels of estradiol, a predomi-

nantly female hormone, tend to decline with age; levels of another female hormone, prolactin, tend to rise. As for nerve function, penile responsiveness to sensory stimulation also slows with age. In addition, penile blood flow may decrease as men grow older, even if they stay healthy.

Changes due to illness

In men who stay well, all these changes add up to a gradual, partial decline in sexual activity. But in some men, the shift is more abrupt and complete. ED is closely linked to age. Only 5% of men under 40 years of age experience ED, but the prevalence rises steadily with age. About 44% of men in their 60s have ED, and the problem may affect up to 70% of American men over 70.

Because ED is so common in older men, many assume that it's part of the normal aging process. It's not. Instead, ED reflects the impact of chronic diseases that become increasingly prevalent with age. The most important are *atherosclerosis* and *hypertension*, which affect blood vessels, and *diabetes*, which strikes both blood vessels and nerves. In addition, stress, depression, and anxiety about adequate sexual performance can reduce sexual activity and satisfaction at any age. So too can marital strife, poor communication, poor sexual technique, and boredom; many of these problems become more common with age. Still, both partners in a relationship can expect to experience intimacy and sexual activity in maturity; if these expectations are not met, both people should explore the problems that may be responsible and the remedies that may be available. Important, too, are the medications that many older men require; numerous drugs can interfere with sexual function, including many used to treat high blood pressure, heart disease, anxiety, and depression.

Sexual surveys

Although you'd never guess it from late-night talk shows, TV ads for ED pills, or

Mae West ("A hard man is good to find"), erectile dysfunction is not the only measure of successful male sexuality. Two recent surveys of sexuality in older men paint a more nuanced picture.

An American survey evaluated 1,455 men 57 to 85 years of age. Nearly 84% of men under 65 reported sexual activity with a partner during the year prior to the survey, but the figure fell to 67% in men between 65 and 74 and to 39% between 75 and 85 years of age. But among sexually active men, most reported at least two to three encounters per month throughout the three age ranges. There was little decline in sexual interest between ages 57 and 85, with over 70% of men maintaining interest. Confirming Shakespeare's insight ("Is it not strange that desire should so many years outlive performance?"), however, ED became more common over the years. In all, 14% of the men reported taking medication or supplements for sexual dysfunction.

A Swedish survey evaluated 225 70-year-old men. Among the men who were living with a partner, 66% reported sexual intercourse within the previous year; of these, 31% reported intercourse one or more times per week. More than half of all the 70-year-old men reported that sexuality contributed to happy relationships.

Troubleshooting

In the age of Viagra, many men, young and old, respond to sexual dysfunction by downing a little blue pill or one of Viagra's newer rivals. Indeed, the ED pills have been a tremendous boon to male sexuality, psychological health, and relationships. But men with sexual dysfunction should always work with their doctors to identify underlying causes of the problem—and when the issue is ED, it's particularly important to identify and treat or correct cardiovascular risk factors, including abnormal cholesterol levels, high blood pressure, diabetes, tobacco abuse, obesity, and lack of exercise.

In fact, ED is a powerful predictor of future heart disease, even in men who have no cardiac symptoms (see *HMHW*, February 2008).

In the average man, levels of testosterone fall by about 1% per year beyond age 40—but most older men still have enough testosterone to function sexually.

Keeping it up

Although treatment can help remedy sexual dysfunction, prevention is surely the best medicine. A 2003 Harvard study of 31,742 men between 53 and 90 emphasizes the preventive power of avoiding tobacco, getting regular exercise, staying lean, and avoiding excessive alcohol. And without contradicting these key instructions, a new study suggests that sexual activity itself may help preserve erectile function in older men.

Sex "therapy"?

To find out if sexual intercourse protects against developing ED, scientists in Finland evaluated 989 men between 55 and 75. None of the men had ED when they volunteered for the study, and over 80% were married or living with a partner. Over the next five years, men who reported having intercourse less than once a week at the start of the study were more than twice as likely to develop ED as men who had intercourse weekly; they were also over four times more likely to develop ED than the men who reported having intercourse three times a week at the start of the study.

The study shows that men who are sexually active are less likely to develop ED than men who are less sexually active. But which is the horse and which the cart? Did increased sexual activity actually protect men from ED, or were

men with good erectile function simply more active because they had better sexual function to begin with? The Finnish researchers tried to answer the question by evaluating the volunteers for problems that are linked to ED, including smoking, obesity, heart disease, high blood pressure, diabetes, depression, and cerebrovascular disease. Because they found little difference in ED risk factors among the groups, they argue that the crucial difference that protected against ED was sexual activity itself. Unfortunately, the study did not evaluate the possible impact of exercise, which lowers the risk of ED, or alcohol abuse, which raises risk.

The scientists offered a biological explanation for the apparent protective effect of sexual activity: erections bring oxygen-rich blood to the penis,

perhaps preserving the health of tissues. It's the theory behind the still unproven practice of using ED pills for "penile rehabilitation" in men with ED following prostate surgery. It's an interesting theory, but more research is needed to see if it's right. Since healthy men have two to three erections each night, it's not clear that one to three acts of sexual intercourse per week would provide important extra benefit. The Finnish study did not evaluate nighttime erections, but it did report that the sexually active and less sexually active men had similar numbers of early morning erections.

Sex and age

Sexuality is an important aspect of life, but its role changes over time. Sex is necessary for procreation, which pre-

serves the life of the species. And a healthy lifestyle is the best way to preserve sexuality in seniority. Most men remain interested in sex as they age, but many experience a diminished urge for sex and altered sexual function. Despite these changes, healthy men should expect to retain the capacity for sexual activity and satisfaction throughout life. The new Finnish study suggests that regular sexual activity may help preserve erectile function as men age. Many men will welcome that finding, but more research is needed. At present, the best way to preserve sexuality is to preserve health; a good diet, regular exercise, and good health habits are the most effective ways to reduce the risk of developing the chronic diseases and requiring the medications that so often impair sexuality. ♥

Allergic rhinitis: Your nose knows

It's easy to dismiss hay fever as a minor nuisance. But call it by its proper name, *allergic rhinitis*, and you'll be on the way to recognizing it as a legitimate medical problem. Add the fact that it affects about one of every five Americans and drains the economy of about \$2 billion a year, and you'll see that it's an important problem indeed. Fortunately, it's also a problem that responds very well to treatment.

Nosing around

If a man thinks about his nose at all, he's likely to think of it as a simple organ of smell. It's true, of course, that the nose is responsible for the sense of smell, but smell means much more than the ability to enjoy pleasing scents. Because smell contributes importantly to taste, it plays a central role in maintaining good nutrition. Smell can also warn us of dangers ranging from toxic fumes and smoky fires to spoiled food.

Allergic rhinitis can blunt the sense of smell, and it can also interfere with

the other important functions of the nose. When your nasal passages are functioning normally, about five to eight quarts of air pass through them each minute. Your nose has the job of conditioning that air before it reaches the sensitive tissue of your lungs. Your nose adds moisture, but to do that, it must produce large amounts of mucus. It also warms the air, with help from a large network of blood vessels. Finally, the nose traps small particles, keeping them out of the lungs.

If you have allergies and your nose traps pollen or other particles to which you are sensitive, an inflammatory process starts right in your nose. Immune system *mast cells* in the nasal tissue release chemicals such as *histamine* and *leukotrienes*. Blood vessels swell, causing nasal congestion, and mucus production soars, creating a runny nose. Just like that, you've developed some of the symptoms of allergic rhinitis—and some of your nose's normal functions have been compromised.

Types of rhinitis

Allergic rhinitis is the most common. *Seasonal allergic rhinitis* comes and goes as various plants come into bloom. If your symptoms occur in the spring, you are probably allergic to tree pollen; in the summer, grass and weed pollens are the likely culprits; in the late summer and fall, ragweed is the most likely cause. But if your symptoms occur year-round (*perennial allergic rhinitis*), you are probably allergic to indoor allergens such as dust mites, mold, or animal dander.

Rhinitis can also occur without allergies. Examples include viral rhinitis (the common cold); drug-induced rhinitis (possible culprits include Viagra and the other ED pills, the alpha blockers used for benign prostatic hyperplasia, the ACE inhibitors and beta blockers used for hypertension, and aspirin and nonsteroidal anti-inflammatory drugs); and hormonal rhinitis (including the "pregnant nose" experienced by some women). In some people, exercise,

eating, and exposure to cold or dry air, air pollutants, or strong smells can trigger rhinitis. Inflammation is absent in nonallergic rhinitis, and the symptoms are limited to a runny, stuffy nose.

A final category of rhinitis can be particularly tricky. It's *rhinitis medicamentosa*, irritation of the nasal membranes caused by overuse of decongestant nasal sprays such as *phenylephrine* and *oxymetazoline* that some people use for quick relief of allergic rhinitis.

Symptoms

Nearly everyone with allergic rhinitis complains of a stuffy, runny nose. Sneezing is nearly as common, and a postnasal drip can trigger coughing. Typical symptoms extend beyond the nose to include an itchy or sore throat and itchy, burning, watery eyes that may look red due to *allergic conjunctivitis*.

Associated ailments

Between 20% and 40% of patients with allergic rhinitis also have asthma (see *Harvard Men's Health Watch*, July 2008). Other allergy-related disorders such as eczema may also be present. Some patients have nasal polyps, a deviated nasal septum, or sinusitis.

Diagnosis

Most people with allergic rhinitis can diagnose the problem themselves simply by recognizing typical symptoms. In complicated cases, an ENT (ear, nose, and throat) specialist can check for polyps and other nasal abnormalities. If it is important to identify specific allergic triggers, allergists can perform skin tests; the so-called RAST blood test can also help pin down the culprits.

Treatment

Three strategies are available: avoiding triggers, using medications to reduce symptoms, and getting immunotherapy ("allergy shots").

Avoiding triggers. Here are the steps to take for seasonal rhinitis:

- Limit your outdoor activities when pollen counts are high. Ragweed counts usually peak in early mid-day, grass pollen in late afternoon and early evening. If you have to do yard work during pollen season, wear an N95 mask. Shower, wash your hair, and change your clothes afterwards.
- Keep your windows and doors closed as much as possible during pollen season.
- Use air conditioners instead of fans, which bring in outside air. Drive with your windows and vents closed and your air conditioner on.

For year-round allergic rhinitis:

- If you have a dog or cat that triggers symptoms, have it bathed weekly and do your best to keep it off furniture and out of the bedroom.
- Put pillows, box springs, and mattresses in sealed plastic covers (allergen encasements) to keep out dust mites. Wash bedding in hot water (above 120° F) to kill dust mites.
- Remove carpets from your bedroom.
- Use a dehumidifier to keep relative humidity below 40%.

Medication. Many treatments are available. Here's a quick summary of the major types.

Antihistamine tablets will help most patients. For the majority of people, one of the newer, less sedating preparations will be best. Some are available over the counter, such as *loratadine* (Alavert, Claritin, generic) and *cetirizine* (Zyrtec), while others such as *fexofenadine* (Allegra, generic) and *desloratadine* (Clarinex) require a prescription. High doses can produce sleepiness and dry mouth; men with benign prostatic hyperplasia (BPH) may have difficulty urinating.



Nasal steroid sprays are very effective but usually take several days to kick in. Like the oral antihistamines, these prescription drugs can relieve eye symptoms as well as nose symptoms. Examples include *beclomethasone* (Beconase AQ) and *triamcinolone* (Nasacort AQ). Side effects may include nasal irritation and headaches; long-term use may slow growth in children.

Antihistamine nasal sprays are as effective as oral antihistamines. *Azelastine* (Astelin) and *olopatadine* (Patanase) are available by prescription; some patients experience a bitter taste or drowsiness.

Leukotriene blockers, such as the oral prescription drug *montelukast* (Singulair), relieve most symptoms of allergic rhinitis. Side effects may include headache and, perhaps, personality changes.

Decongestants are available without prescription as tablets (*pseudoephedrine*, *phenylephrine*) or nasal sprays (*phenylephrine*, *oxymetazoline*) and can relieve nasal congestion but have little effect on other allergic rhinitis symptoms. Side effects may include nervousness, racing heart, elevated blood pressure, and insomnia. Men with BPH may have difficulty urinating. Decongestants should not be relied on for primary treatment but can be combined with a first-line drug for temporary use. You should not use a decongestant nasal spray for more than a few days.

Other medications include an *anticholinergic* nasal spray called *ipratropium* (Atrovent), which is effective only for runny noses; an intranasal *mast cell stabilizer* (Cromolyn) and various anti-allergic eye drops can be used to treat eye symptoms. In rare cases, patients with severe rhinitis may need a short course of oral steroids.

Immunotherapy, or "allergy shots," can help achieve long-term control of allergic rhinitis. The regimen usually

involves skin testing to identify the responsible allergens followed by weekly injections of gradually increasing doses of the allergen, and then maintenance injections every two to six weeks for several years. Most doctors reserve immunotherapy for patients who do not respond well to medication.

Nothing to sneeze at

For many men, allergic rhinitis is a temporary seasonal woe, but for others,

it's a year-round hassle. And for some, it can be linked to asthma, sinusitis, or other more serious problems. Because allergic rhinitis is so very common, it also adds up to an expensive proposition for American society.

If you are one of the unlucky many with allergies, you'll have to learn to deal with the problem. Avoid exposure to things that trigger symptoms. Experiment with medications to control symptoms; non-sedating antihista-

mines, antihistamine nasal sprays, and steroid nasal sprays are among the first-line treatments. Some men may prefer one of the many other drugs that are available, and others need combination therapy. Immunotherapy is available for particularly difficult cases.

The many options for treating allergic rhinitis can be confusing at first, but if you take the time to nose around, you'll find a way to keep your nose working smoothly—without running! ♥

Statins and prostate cancer

As a group, the six statin drugs are the best-selling prescription medications in the United States. It's no surprise, since heart disease remains America's leading cause of death. Statin therapy reduces the risk of heart attacks and other clinical manifestations of coronary artery disease by up to 37%, with most of the benefit going to men at high risk.

All the statins lower LDL ("bad") cholesterol by inhibiting *HMG-CoA reductase*, the enzyme that liver cells use to manufacture cholesterol. The drugs also trick the liver into removing cholesterol from the bloodstream, adding to the cholesterol-lowering benefit. In addition, the statins produce a modest elevation in HDL ("good") cholesterol, and the two newest and most potent statins, *atorvastatin* (Lipitor) and *rosuvastatin* (Crestor), also lower blood triglyceride levels.

While the statins' effects on blood lipid levels get (and deserve) most of the attention, these powerful medications have many other actions. Indeed, some of these activities play an important role in protecting the heart. The statins stabilize cholesterol-rich arterial plaques, reducing the likelihood that they will rupture and trigger heart attacks. The drugs have anti-inflammatory properties that may protect the arterial wall from being damaged by

cholesterol. In addition, the statins inhibit platelet aggregation, helping to prevent artery-blocking blood clots.

Although the statins are quite safe, their many biological activities explain their potential side effects, including liver inflammation, muscle injury, and interactions with other medications. Statin use has also been associated with a reduced risk of various disorders, ranging from dementia and chronic lung disease to osteoporosis and gallstones. None of these possible noncardiovascular benefits has been proven, but they raise the question of how statins might affect America's No. 2 killer, cancer.

Statins and cancer

When the statins were first introduced in the 1980s, some scientists worried that they might protect the heart at the cost of an increased risk of cancer. Their worry was based on a small number of experiments that showed lipid-lowering drugs appeared to increase the risk of cancer in rodents. But men are not mice, and those fears have proven groundless. In fact, a large series of trials agreed that statins do not increase the risk of cancer.

With these concerns aside, the pendulum began to swing in the opposite direction, as scientists began to ask if statins might actually reduce the risk

of cancer. At first, the optimism was based on a series of laboratory experiments. The basic idea is to grow cancer cells in test tubes with or without a statin in the culture medium. Many labs from around the world have been involved, and their results vary. In general, though, scientists agree that statins are able to slow the growth of cells from human cases of prostate cancer, bladder cancer, breast cancer, and other malignancies. Several mechanisms have been identified; they involve altering the expression of cancer genes, affecting the growth of blood vessels or the ability of cancer cells to adhere and spread, and promoting *apoptosis*, cell death by suicide. In addition, some results suggest that statins may strengthen the effects of standard cancer drugs or radiation.

These lab experiments are interesting, even hopeful. Still, it's a long way from the lab to the clinic. What have we learned about the effects of statin drugs on human cancer?

One way to answer the question is to see if people taking statins have a lower (or higher) risk of developing cancer than otherwise similar people who are not taking these drugs. The major clinical trials of statins all focused on heart disease, but they reported no overall effects on the incidence of malignancy. When researchers have re-evaluated

these data to concentrate on cancer, they have reported mixed results. Studies from Canada, Denmark, and the U.S. have found that statin users enjoy a 14% to 28% lower risk of cancer than nonusers, but other studies find no overall reduction in the risk of cancer.

Cancer is not one disease, but many. When scientists have honed in on how statins affect the risk of individual malignancies, they have also produced mixed results for colon cancer, lung cancer, and breast cancer.

Based on these results, most experts agree that there is no conclusive evidence that statins protect against cancer in humans. Still, the hints of benefit are strong enough to warrant additional research. And when the research has turned to prostate cancer, the hints of protection are quite strong.

Statins and prostate cancer

Studies of statins and prostate cancer got off to a disappointing start with a 2002 study that found no benefit for statin use in a case-control study comparing 1,009 men who had prostate cancer with 1,387 men who were healthy. A 2007 study was even more discouraging, reporting that 3,302 men who took a statin had a slightly higher risk of prostate cancer over 15 years than 3,293 men who took a placebo. And a 2008 study of 1,943 men from Washington state found no link between statin use and prostate cancer.

In contrast to these discouraging reports, other studies are much more optimistic. Here are some results:

- A 2005 Oregon study of 302 veterans with an average age of 65 reported a reduction in the overall incidence of prostate cancer and a 76% reduction in aggressive prostate cancer.
- A 2006 Harvard study of 34,989 men linked statin use with a 49% lower risk of prostate cancer and a 61% lower risk of metastatic or fatal disease. The greatest protection was

observed in the men who had been taking a statin drug the longest.

- A 2007 analysis from the 55,454-man Cancer Prevention Study II Nutrition Cohort reported that taking a statin for five or more years was associated with a 40% reduction in the risk of advanced (but not total) prostate cancer.
- A 2007 study of 69,047 California men found no benefit from short-term statin use, but a 28% lower risk of prostate cancer among men who took a statin for five years or longer.
- A 2007 Finnish study of 49,446 men reported that statin users enjoyed a 25% lower risk of advanced prostate cancer when compared with men who took other cholesterol-lowering drugs or no cholesterol medication. The benefit grew with increasing duration of statin use.
- A 2008 American study of 62,842 male veterans linked statin use with a 10% reduction in the risk of prostate cancer.

Limitations and possibilities

The most optimistic information about statins and prostate cancer comes from observational studies, which are less persuasive than randomized clinical trials (see *Harvard Men's Health Watch*, April 2008). And the studies also differ in the doses and duration of statin therapy, the particular statin drugs used, and the characteristics of the population being studied. Still, though the results are far from conclusive, they raise hope that statins may reduce the risk of prostate cancer. And there are biologic mechanisms that could explain this effect.

As noted earlier, statins can inhibit the growth of prostate cancer cells grown in the laboratory. But while this effect also applies to other types of cancer cells, there are special reasons to think that statins may have particular effects on the prostate. High cholesterol levels, the true target of statins, appear

to drive the growth of prostate cancer in mice and men. Statins appear to reduce prostate-specific antigen (PSA) levels, suggesting a direct effect on prostate biology. Since statins don't lower levels of testosterone or other androgens, a nonhormonal mechanism must be involved. One possibility involves vitamin D; statins appear to boost vitamin D levels, and vitamin D has been linked to protection against prostate cancer (see *HMHW*, February 2007).

Though the results are far from conclusive, they raise hope that statins may reduce the risk of prostate cancer.

Statins for the prostate?

No—or, at least, not yet. At the present time, doctors should prescribe a statin only to reduce the risk for cardiovascular events in people at risk. Most often, the decisive risk factor is an elevated LDL cholesterol level, but men with heart disease or other forms of atherosclerosis, diabetes, or hypertension are likely to benefit from statin therapy even if they start out with normal LDL levels. If present trends continue, statin therapy may soon be recommended for vulnerable individuals who start out with low LDL levels. But all men should try to reduce their need for statins by pursuing the best form of prevention, a healthy lifestyle (see *HMHW*, March 2008). And instead of feeling “statin envy,” men who succeed should remember that a good lifestyle can protect the prostate as well as the heart.

Much more research is needed before statin therapy can be recommended to reduce the risk of prostate cancer or any other noncardiovascular disease. Still, men who need a statin for their hearts may be pleased to learn that prostate protection is a possible “side effect” of statin therapy. ♥



ON CALL

Vegetarian diets

Q Following the lead of our 12-year-old daughter, my wife has become a vegetarian. She says she's willing to continue serving meat and chicken, but I sense that she'd rather not. What can you tell me about the safety of a vegetarian diet?

A Most people who choose vegetarian diets are motivated by their personal philosophies, ethical beliefs, or religious convictions. But health certainly is a factor, and if a vegetarian eating plan is constructed properly, it can be an asset to health.

Vegetarians come in many stripes. Some avoid all animal products, others allow eggs and dairy products, while some also accept fish.

Without eating any animal products, strict vegetarians may lack certain nutrients. Vitamin B₁₂, for example, is naturally present only in animal foods—but since it's added to fortified grains and cereals, vegetarians who consume these products can get enough. Iron is another

potential problem, at least for menstruating women. Popeye was right in extolling spinach as a source of iron, but he was a step behind today's nutritionists, who know that the body is much less efficient at absorbing iron from vegetable sources than from red meat. Fortunately, inexpensive B₁₂ and iron supplements are available over the counter for people who need them.

Animal protein provides the protein building blocks that best meet the needs of the human animal. But even strict vegetarians can get the proper mix of *amino acids* and proteins if they eat a variety of protein-rich plants, such as beans.

One of the best things about a vegetarian diet is that it's likely to be low in nutrients that contribute to disease. The list includes cholesterol, saturated fat, and sodium. At the same time, fruits and vegetables provide healthful amounts of vitamins and potassium, while nuts and olive oil offer "good" omega-3 polyunsaturates and monounsaturated fats. Fish are particularly desirable for their omega-3s and proteins.

A 2006 study confirms the benefits of vegetarian eating. Scientists compared 35 healthy vegetarians with 35 equally healthy nonvegetarians. None of the volunteers used medications and none were smokers or drinkers. On average, the vegetarians were leaner, had lower blood pressure, and had better cholesterol and blood sugar levels. The vegetarians also had better cardiac function and vascular reactivity. To make vegetarian diets healthful, meal plans should include non- or low-fat dairy products, whole grains, and olive oil and other healthy fats.

Your daughter's vegetarianism may have been motivated by feelings for animals, your wife's by an interest in health and nutrition. If you need additional reasons, consider family solidarity and peace.

HBS

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Variations on a theme

Many people who eschew animal foods think of themselves as vegetarians. But some of these folks simply avoid red meat, while others eliminate all animal products, and many are in between. Here is a glossary of various vegetarian menus:

Vegan. Eats no meat, fish, poultry, eggs, dairy products, or honey.

Lacto vegetarian. Eats no meat, fish, poultry, or eggs but does eat dairy products.

Ovo vegetarian. Eats no meat, fish, poultry, or dairy products but does eat eggs.

Lacto-ovo vegetarian. Eats no meat, fish, or poultry but does eat dairy products and eggs.

Pescetarian (also called pesco vegetarian). Eats no meat or poultry but does eat fish.

Pollo vegetarian. Eats no meat or fish but does eat poultry.

Semi- (or partial) vegetarian. Avoids meat but eats fish and poultry.

Macrobiotic diet. Relies on eating brown rice and other whole grains, supplemented with vegetables, beans or bean products such as tofu, kelp and other sea vegetables, and typically a small amount of fish and a limited quantity of certain fruits. Avoids dairy products and processed or refined foods.

Send us a question for On call

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