Bladder cancer

Early discovery, vigilance are key

This year alone, more than 68,000 Americans likely will be diagnosed with bladder cancer. Among men, it’s the fourth most common cancer. It ranks as the eighth most common cancer among women.

Fortunately, the great majority of bladder cancers are diagnosed at an early stage, when the cancer is highly treatable. But bladder cancer is often a repeat offender — even early-stage bladder cancer is likely to recur. That’s why vigilant, follow-up exams are generally the norm.

Inside the bladder

Your bladder is a muscular, hollow organ that stores urine, which is the liquid waste filtered from your blood by your kidneys. Urine is eliminated through a narrow tube called the urethra.

The bladder wall itself has multiple tissue layers. Most bladder cancers have their start in the bladder’s inner lining (urothelial cells). From there, depending on the type of tumor, and the cancer’s aggressiveness (grade), it may grow farther into the bladder’s outer layers. Cancer in the bladder’s urothelial cells is generally classified (staged) by how far it has grown into bladder tissue layers:

- **Nonmuscle invasive** — In this earliest form of bladder cancer, only
the innermost surface layers of bladder tissue have tumor cells. The cancer hasn’t extended into the muscle layer of the bladder. Although successful treatment is likely, the risk of recurrence of bladder cancer can be high, which is why regular follow-up medical exams are important throughout life.

■ Invasive — At this stage, the tumor has invaded the bladder’s muscle wall layer. Typically, bladder removal is necessary once the cancer has become invasive.

■ Metastatic — This term is used to describe bladder cancer that has spread beyond the outside wall of the bladder and invaded other parts of your body, such as your lymph nodes.

Risks to consider
In the early stages of bladder cancer, it’s not unusual to have no signs or symptoms. However, some do see blood in their urine (hematuria). This blood may color the urine bright red or it may give it a cola-colored appearance. For some, the blood may only be detectable in a urine lab test.

Other possible signs and symptoms of bladder cancer may include pain with urination, a change in bladder habits — such as increased frequency or an inability to urinate despite the urge to do so — abdominal pain and back pain.

Those at greatest risk of bladder cancer generally are adults over age 60. But there are other factors that may increase risk, including:

■ Smoking — This is a major risk factor, whether you’ve smoked in the past or are a current smoker. Compared with nonsmokers, smokers are two to three times more likely to develop bladder cancer. That’s because the body processes chemicals found in smoke and then excretes some of them in urine. The presence of these chemicals in urine may damage the bladder’s lining.

■ Chemical exposure — Your kidneys help filter harmful chemicals from your bloodstream and then move them out through urination. Some chemicals linked to bladder cancer include arsenic and chemicals used in the manufacture of dyes, rubber, textiles, and leather and paint products.

■ Chemotherapy and radiation therapy — The use of certain anticancer drugs — notably high doses of cyclophosphamide (Cytoxan) — increases bladder cancer risk, as does radiation treatment of cancers in the vicinity of the bladder.

Discovery and treatment
If you’re experiencing signs and symptoms that may be associated with bladder cancer, see your doctor. Other medical problems — such as urinary tract infections, noncancerous tumors or bladder stones — can display similar symptoms.

Certain tests may help your doctor determine if you have bladder cancer, including:

■ Urine tests — These can check not only for blood in the urine, but also for the presence of cancer cells.

■ Diagnostic imaging — Imaging can be done with a computerized tomography (CT) scan called a CT urogram, which involves using a dye to outline the contours of the urinary tract. Depending on initial results, other types of imaging may be done, such as magnetic resonance imaging (MRI) or bone scan.

■ Cystoscopy — This involves introducing a narrow, flexible, lighted instrument into the bladder through the urethra. Local anesthesia is typically used to make the procedure more comfortable. The cystoscope’s tiny camera allows your doctor to view the tissue that lines the urethra and bladder.

■ Removal of suspicious tissues for testing — In transurethral resection of bladder tumor (TURBT), a procedure similar to cystoscopy, a special tool is passed through the urethra to the bladder to collect a small tissue sample (biopsy), which can be examined for cancer cells. Typically, this is done under general anesthesia.

For nonmuscle invasive bladder cancer, the biopsy may prove to not only be diagnostic, but also becomes part of the treatment. Depending on the size of the tumor, the specialized tool may scoop out the tumor and burn away cancer with an electric current.

As with other cancers, treatment options for bladder cancer are determined by the type of cancer and how far the cancer has progressed. In some special situations, it may be best to remove just the portion of the bladder (partial cystectomy) where the tumor is located by way of an open or laparoscopic surgical...
procedure. However, if the cancer has invaded deeper layers of the bladder wall, removal of the entire bladder and other nearby tissues is commonly done. This is called a radical cystectomy.

Another option is to attempt to save the bladder using radiation and chemotherapy treatment, followed by surgery if the disease is persistent. After bladder removal, a new urinary tract is constructed by your surgeon. (See “Bladder reconstruction” in our January 2007 issue.)

Additional bladder cancer therapies that may be considered include:

- **Biological therapy (immunotherapy)** — Immunotherapy activates your body’s own immune cells to help fight cancer cells. Bacillus Calmette-Guérin (BCG) is the most commonly used biological therapy. It’s administered with a catheter directly into the bladder through the urethra. Immunotherapy may be done after TURBT to reduce risk of cancer recurrence.

- **Chemotherapy** — Chemotherapy may be administered directly to the bladder through the urethra, or it may be directed to the entire body (systemic) by being given through a vein in your arm. It may be used before surgery to shrink a tumor or after surgery to destroy any cancer that may remain.

- **Radiation therapy** — This involves directing radiation at the cancer from an external machine. Radiation may be used before surgery to reduce tumor size or after surgery to kill any remaining cancer cells. This also can be done in combination with chemotherapy.

**Outcomes**

One of the keys to successful treatment of bladder cancer — as with so many other cancers — is early detection. However, early bladder cancer symptoms sometimes can be hard to distinguish from other, more common conditions. For instance, blood in the urine can also be due to a urinary tract infection or kidney disease.

What is certain with bladder cancer is the need for regular, and usually lifetime follow-ups. Recurrence remains an ongoing concern once you’ve been treated for bladder cancer.

Although initial follow-ups may be needed every few months, eventually these rechecks may be reduced to once or twice yearly.

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**Health tips**

**Canned foods, healthy choices**

Fresh fruits and vegetables are often the best for nutrition, but it’s hard to beat canned foods in terms of convenience. And any way you can add vegetables to your diet is a good idea. In fact, foods such as canned beans are just as good as dried beans. Spare yourself extra sugar and salt by looking for:

- **Low-sugar or “lite” canned fruit** — Buy fruits such as pears, peaches and pineapple that are canned in their own juice or in pear juice, with no added corn syrup. This cuts the number of calories per serving by about half.

- **Reduced-salt or no-salt-added vegetables and beans** — A half-cup serving of no-salt-added vegetables or beans has about 8 to 20 milligrams (mg) of sodium, compared with 300 to 500 mg for the salt-added product. If you can’t find a no-salt-added product, rinse regular or reduced-sodium canned vegetables or beans with water to remove about a third of the sodium.

- **Soups** — A typical canned soup can contain close to 900 mg of sodium a serving. Better choices are reduced-sodium versions of regular soup. Enhance their flavor by sprinkling in seasonings such as oregano, basil or garlic.

- **Applesauce** — Without added sugar, a half-cup serving is about 50 calories, compared with about 90 calories in the sugar-added variety.
Stroke

The critical first hours

When it comes to having a stroke, you may have heard the saying “Time is brain.” It’s an apt phrase, because once you begin to feel the signs and symptoms of stroke, the clock starts ticking. Brain tissue is fragile material that constantly needs to be nourished by the flow of blood. Anytime this supply of blood is interrupted — as is the case with all types of stroke — brain tissue starts to die.

In an emergency medical setting, numerous procedures may be tried to halt further brain damage, depending on the type of stroke. But time is of the essence. The longer it takes to receive proper medical care, the greater the risk of severe brain damage.

Two main kinds

Strokes happen two main ways:

■ When blood flow to brain tissue is somehow blocked — This is called an ischemic stroke, and accounts for about 80 percent of strokes. Ischemic strokes are often related to atherosclerosis, the process of narrowing and hardening of arteries. This is frequently the case in the carotid arteries in the neck. Areas of atherosclerosis are prone to blood clot formation, which can cause artery blockage. Blood clots can also form elsewhere in the body — such as in the heart due to a heart rhythm problem called atrial fibrillation — and be swept downstream to block a narrower brain artery.

■ When blood spills into the brain or surrounding tissues — This is called a hemorrhagic stroke. Rupture of a ballooning weak spot (aneurysm) in an arterial wall is a common cause. Another is uncontrolled high blood pressure, which can cause small arteries inside the brain to

News and our views

Quality of life with cancer may affect survival time

Mayo Clinic cancer researchers have found that people with cancer who feel better also live longer. They reported their study findings in May 2008 at the 44th annual meeting of the American Society of Clinical Oncology.

Survival times for more than 3,700 people who had a variety of cancers—most of which were late-stage cancers—were compared with responses each had made to one question: “On a scale of 0 to 10, how would you rate your quality of life?” That question was asked during their participation in one of 24 different clinical trials. Those who gave higher ratings to their quality of life lived six to seven and a half months longer than did those who gave lower ratings to their quality of life.

Mayo Clinic researchers say that if quality of life issues among cancer patients can be identified in clinical practice, doctors could intervene. Doing so might improve not only patients’ sense of well-being, but also their length of life. For example, if fatigue and emotional distress are negatively affecting a cancer patient’s quality of life, supportive psychosocial therapy and medications might be offered to improve well-being.

A few drinks a week may cut rheumatoid arthritis risk

You’ve heard that alcohol consumption has heart benefits, along with its much-publicized risks. Now, a new study suggests that drinking alcohol also may reduce the risk of developing rheumatoid arthritis.

Rheumatoid arthritis is considered an autoimmune disease in which your immune system mistakenly attacks the lining of your joints (synovium), causing swelling that can result in aching and throbbing and eventually joint destruction. Rheumatoid arthritis is two to three times more common in women than in men and generally occurs between the ages of 40 and 60.

The study, published June 5, 2008, in the online edition of Annals of the Rheumatic Diseases, analyzed data that had been collected from about 3,000 people between the ages of 18 and 70 in Sweden and Denmark. About half had rheumatoid arthritis, and the other half was randomly selected as a control population.

When compared with nondrinkers, those who consumed alcohol in the range of one to two drinks a day reduced their risk of rheumatoid arthritis between 40 and 70 percent.

Mayo Clinic experts caution that this one study isn’t reason to begin drinking, as results are preliminary and long-term, follow-up studies are needed to confirm results. In addition, for those who have been diagnosed with rheumatoid arthritis, even moderate alcohol consumption may worsen potential side effects of medications needed to control the disease.

However, if you do drink, this is just one more sliver of evidence that doing so may be part of a healthy lifestyle.
become brittle and susceptible to cracking and rupture.

Diagnosing the type of stroke — in addition to distinguishing it from other diseases — is crucial to initiating proper treatment. Central to that process is a computerized tomography (CT) scan of the head, which allows for quick differentiation between ischemic and hemorrhagic stroke. In addition, initial emergency testing typically includes an electrocardiogram to check for a concurrent heart attack or atrial fibrillation as well as blood tests and a chest X-ray. A carotid ultrasound also may be considered.

**Emergency care**

No matter what caused your stroke symptoms, getting to the hospital quickly improves your chances of survival and reduces the amount of disability that may result.

One of the main reasons is that with ischemic stroke, you may be a candidate for one of several treatment methods used to clear away an artery-blocking blood clot. Most commonly, this involves an intravenous injection of the “clot-busting” tissue plasminogen activator (TPA) drug. This drug circulates throughout the body, eventually reaching and dissolving the blood clot that’s causing the stroke. However, for intravenous use, TPA is only a consideration if it can be administered within the first three hours after the start of symptoms. After three hours, the risk of bleeding outweighs potential benefits.

Fortunately, recent advances have led to interventions that extend this time window. One advance involves using X-ray imaging to guide the threading of a tiny tube (catheter) through arteries to the site of the clot where TPA is then given. This can be used in some situations up to six hours after the start of symptoms. After three hours, the risk of bleeding outweighs potential benefits.

Advances continue

Developing new agents to break up blood clots is a key in emergency stroke care. A major trial is being done on ancrod (Viprinex), a drug derived from the venom of the Malayan pit viper. It can be administered up to six hours after stroke symptoms begin. Another clot-busting drug being tested — V10153 — has a nine-hour treatment window. It also has the advantage of being active only at the site of clot formation, therefore reducing risk of unwanted bleeding.

Trials are also being done on inducing hypothermia to slow down the cell damage that occurs in the hours after a stroke begins. Numerous drugs that may have a damage-slowing effect on brain cells also are being tested.

**Hemorrhage control**

Emergency treatment for a hemorrhagic stroke is typically provided in the intensive care unit. This allows for optimal medical management, including controlling headache, keeping blood pressure and body temperature under control, and preventing brain swelling, seizures or other complications.

In some cases, neurosurgery to drain or remove a blood clot or a procedure to close off a bleeding aneurysm may be warranted.

**Prevention still best**

If you’re at high risk of stroke, your doctor may recommend certain medications — or even surgery — to prevent stroke.

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**Warning signs**

Call for emergency help if you or someone nearby suddenly experiences one or more of the following:

- Confusion, trouble speaking or understanding, or slurred speech
- Numbness or weakness of the face, arm or leg, especially if all these occur on only one side of the body
- Vision trouble in one or both eyes, or double vision
- Sudden unsteadiness, dizziness, loss of balance or loss of coordination
- A severe, “thunderclap” headache or an unusual headache with no apparent cause
Making
the flu vaccine

Outflanking a virus

Last winter, you had the flu and you felt like you were going to die. Fever, sweating, chills, muscle aches, coughing and weakness were so bad that you hardly left your bed for a week. What’s more, earlier in the fall you went out of your way to get your flu shot. Well, a lot of good that did!

Coming down with the flu despite getting a flu vaccination can be frustrating, but there’s no doubt that an annual flu shot significantly reduces the odds that you’ll get the flu, and can lessen its severity if you do get it. For higher risk older adults, the flu shot can reduce hospitalizations by up to 70 percent and deaths by over 80 percent.

However, the flu vaccine’s effectiveness varies from year to year and from person to person. Effectiveness partly depends on how well your system responds to the vaccine.

Moving target

Your immune system helps keep infectious organisms — such as the influenza virus — contained. Or, if they do invade your tissues, it destroys them. Once this happens, antibodies develop that carry a memory of the organism, so it can be recognized and eradicated.

A flu shot harnesses this power by introducing to the immune system “dead” or inactivated virus material from selected virus variations (strains). An alternative vaccine called Flumist is a nasal spray that contains live, but weakened flu viruses, but it isn’t recommended for adults over 50. A couple of weeks after vaccination, your immune system produces antibodies that can recognize a true influenza virus of the same strain.

Permanent vaccines

On the horizon of influenza prevention is the prospect of a “permanent” influenza vaccine that can teach our immune systems to recognize and more effectively destroy all strains of influenza A or influenza B — no matter how they mutate.

The key advance in this quest has been the identification of particular proteins of the flu virus that don’t change as the virus mutates — and are capable of triggering an immune response.

Recent laboratory and human research with vaccines targeting nonchanging virus proteins have shown promise, but a once-and-for-all flu shot is still years away.

The two main influenza viruses are called influenza A and influenza B. Both cause seasonal epidemics almost every winter in the United States. Both these viruses are simple organisms capable of rapid genetic mutations and evolution. They can quickly mutate enough so that your immune system no longer recognizes them.

That’s why getting the flu vaccine is a yearly affair. Each year, a new formulation of the flu vaccine is made to account for the mutations of the influenza strains.

Global effort

Producing the flu vaccination is a year-round effort. For starters, the World Health Organization (WHO) coordinates the ongoing collection and analysis of influenza strains from about 180 laboratories scattered around the world. From January to March, the WHO, Centers for Disease Control and Prevention, and the Food and Drug Administration undertake the process of deciding which influenza strains will be selected for vaccine production in the United States for the following winter. The flu vaccine in the U.S. contains three inactivated viruses — usually two strains of influenza A and one strain of influenza B.

While the selection process is going on, the six influenza vaccine manufacturers licensed by the U.S. prepare for production. The vaccine viruses are grown in chicken eggs, so manufacturer’s tasks include buying enough eggs to manufacture about 130 million doses of vaccine.

After the decisions have been made on which virus strains to include in the vaccine, it’s produced and packaged, and then distributed in time for vaccination campaigns starting in late September to October.

Despite the rigorous analysis involved in selecting the virus strains to be included in the vaccine, there’s no guarantee that they’ll end up matching the strains of influenza that end up circulating throughout the population. However, the match is good about 90 percent of the time.

If you get it

Mayo Clinic doctors recommend an annual flu shot for adults over 50, except those with allergies or other reasons that make them medically unable. It’s also recommended for those with medical conditions such as heart disease or diabetes, and for all others at high risk of complications.

If you think you’re coming down with the flu — despite being vaccinated — quickly contact your doctor. Your doctor may be able to prescribe an antiviral drug such as oseltamivir (Tamiflu) or zanamivir (Relenza). Taking an antiviral drug within 48 hours after you first notice flu signs and symptoms may reduce the length of your illness by a day or two and help prevent more-serious problems.
Toenail infections

A vexing, but common problem

Toenails never have been your big concern, but it’s embarrassing to have a shoe fitting in which your big toe’s thick and yellowed nail is exposed for all to see. Can anything be done about it?

That depends on the cause. Did the problem arise due to tight or poorly fitting shoes? Was there a previous injury to that toe? Or might it possibly be a skin condition, such as psoriasis? Any of these are possible explanations, but a fungal nail infection is the most common cause.

For starters

The medical term for fungal nail infection is onychomycosis (on-i-ko-mi-KO-sis). Nail fungus isn’t the same as athlete’s foot, which primarily affects the skin of the feet, but the two may coexist and can be caused by the same type of fungus.

Fungi don’t need sunlight to survive and do very well in warm, moist environments. So, not surprisingly, an ideal setup for potential fungal infection is warm toes encased in a dark shoe — that’s why fungal infections occur more on toenails than on fingernails.

Fungal organisms can find their way into your skin through tiny skin breaks or even by way of a small separation between a nail and the nail’s bed. Initially, you may notice a yellow or white spot under the tip of your nail. Over time, the nail may thicken, become crumbly or ragged, and it may start to separate from the nail bed.

Nail fungus tends to be more common among older adults for several reasons:

- Diminished blood supply
- Decreased resistance to infections, due to conditions such as diabetes, circulation problems or a weakened immune system.

In addition, nails may grow more slowly and thicken with age, making them potentially more susceptible to infection.

Other factors that may increase risk of fungal nail infection include perspiring heavily, working in a humid or moist environment, wearing shoes that impair ventilation and socks that don’t absorb perspiration, going barefoot in damp public settings such as gyms or swimming pools, and minor skin or nail injuries.

Addressing the problem

Once a fungal nail infection sets in, it can go on indefinitely if not treated. Even with treatment, nail fungus can be difficult to clear up, and repeat infections are common.

Early on, any nonprescription antifungal cream applied to the nail’s surface may be helpful in treating a superficial infection. Home remedies — such as Vicks VapoRub, tea tree oil or white vinegar — may be tried early on, but there haven’t been rigorous studies to see if there’s evidence that they work.

If the nail isn’t bothersome, some may opt not to treat the fungal infection, and instead watch for any changes, while keeping the affected nail trimmed and thinned with careful filing.

If a thickened toenail is causing embarrassment or pain, or if it continues to thicken even without pain, consult with your doctor. Doing so is especially important if you have diabetes or a weakened immune system, because a minor foot injury can lead to more-serious wound complications.

To determine whether a fungal infection is present, your doctor may scrape some debris from your toenail to view under a microscope. Once a fungal nail infection is identified, there are various treatment options to consider, including:

- Antifungal oral medications — Two commonly prescribed are itraconazole (Sporanox) and terbinafine (Lamisil). Fluconazole (Diflucan) is another option. They’re typically used for six to 12 weeks and are quite expensive. Results of treatment aren’t evident until there’s complete regrowth of the nail. This may take up to a year for toenails.

Successful treatment outcomes range from 40 to 90 percent, although rates for people over age 60 are more typically between 60 and 64 percent. But in those treated successfully, 15 to 20 percent may encounter a relapse of the infection.

Side effects with these drugs are a serious consideration, since they potentially include heart failure, liver damage and liver failure, and possible interaction with other drugs, including some blood thinners and certain cholesterol-lowering drugs.

- Antifungal nail lacquer — Ciclopirox (Penlac) may be of help if the infection is superficial and isn’t affecting the nail bed. It’s necessary to coat the affected nail daily for about one year. However, cure rates are low, usually about 10 percent.

In the case of significant problems associated with nail pain and deformity of an infected nail, you may want to consider with your doctor having your toenail permanently removed.
Second opinion

Questions and our answers

Q: I’ve heard that sleeping with light in your bedroom — like a night light or a TV that’s left on — can cause cancer. Is this true?

A: There’s some evidence suggesting there may be an association, but what the link may be is still very unclear, and unlikely to be the main cause of someone’s cancer.

Interest in this topic centers around the body’s nighttime production of a hormone called melatonin. Laboratory studies have suggested that melatonin inhibits the growth of certain cancers. It’s also been shown that exposure to light at night — even for short amounts of time — can blunt melatonin production. However, there’s no proven link between melatonin levels and human cancer.

Very preliminary research suggests that women who are regularly exposed to light late into the nighttime hours — whether asleep, awake or briefly awake — may be at increased risk of breast cancer. A recent study from Israel found that breast cancer rates were 37 percent higher in the most well-lit neighborhoods than in the darkest.

Still, it’s far too early to make a cause-and-effect link between nighttime light and cancer. But if you’re concerned, and you feel safe sleeping in a dark environment, try turning off lights and the TV and blocking outside light with a window shade or eye covers. However, Mayo Clinic experts don’t recommend melatonin supplementation, because the risks of long-term use aren’t known, and there are no known benefits.

Q: My doctor wants me to have an exercise stress test on a treadmill to measure how well my heart is working. But with the arthritis in my hip, it’s going to be really painful. Can it be done another way?

A: Yes. Stress testing is an important diagnostic tool, but you don’t have to exercise to have it done.

Typically, a stress test involves walking on a treadmill where the speed and grade are gradually increased. If you’re unable to safely exercise, several drugs can be safely used to mimic the effects of exercise on the heart. This is called pharmacological stress testing.

Depending on which drug you’re given, you may experience flushing, headache or a feeling that the heart is beating faster and harder. Some people may also experience chest pain and shortness of breath, but these side effects don’t necessarily mean that something is wrong.

Imaging is often done along with pharmacological stress testing to record pictures and other readings of heart function both when at rest and when it’s working hard. Heart pictures can be recorded using an ultrasound device (echocardiogram) or, in the case of nuclear imaging, by using a special camera that detects the signals given off by a radioactive substance that reaches the heart after it’s injected into a vein.

Q: I recently began strength training and love it, but it takes a lot of time to do three sets of each exercise. Is it really necessary to do that many sets to get the benefit?

A: The short answer is no. If you’re using proper technique and a weight that tires your muscle after 12 repetitions, then a single set of strength training exercises can build muscle as effectively as multiple sets.

Scientific literature backs up the one-set approach to strength training. A review of 35 studies found that all but two showed no significant difference between the single-set approach and multiple sets in terms of strength gains or an increase in lean muscle mass.

So to save yourself some time, aim to work your major muscle groups two to three times a week doing a single set of 12 repetitions with proper technique and using a weight that tires the muscle.

Have a question or comment?
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