and a margarine whose trans fat “credentials” are not clearly marked, go with the butter — products that are free of trans fat usually feature that fact prominently on the label, and gram for gram, trans fats are worse than the saturated fats in butter.

- **Fry and saute wisely.** Use canola oil or olive oil. And be on the lookout for true-but-tricky advertising in restaurants and on packages of frozen fried foods. Food that’s fried in partially hydrogenated vegetable oils is often labeled “cholesterol free” and “cooked in vegetable oil.”

- **Make it yourself.** Trans fat is also found in unexpected places — commercial breads, soups, cereals, bean and other dips, salad dressings, and packaged entrees. Whenever possible, make these foods from scratch, using non-hydrogenated fats.


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### Bladder cancer in women: No time to wait

Bladder cancer is more common in men, but more often discovered at an advanced stage in women. Know the warning signs — and act on them quickly.

Women aren’t always alarmed when they see blood in their urine. They’re accustomed to menstruation, erratic perimenopausal bleeding, and spotting during urinary tract infections. A woman may wait to see if it stops and not see her doctor unless it persists. Depending on her history, she may be treated with antibiotics before the bleeding is investigated further.

But such delays can be risky. Although visible blood in the urine usually indicates a benign condition, it’s also the chief symptom of bladder cancer. A delay in diagnosis can make an easily curable cancer more invasive and difficult to treat.

Bladder cancer is nearly three times more common in men, which is another reason it’s not always the first consideration when a woman reports blood in her urine. But it’s typically diagnosed later in woman — on average, nine months after symptoms first appear, compared to three to six months for men — and often at a more advanced stage. Also, women’s survival rates lag behind men’s.

**Signs and symptoms**

Bladder cancer is usually heralded by blood in the urine (hematuria) that’s visible to the naked eye. Less often, it’s visible only under a microscope and found during a routine examination. In most cases, the blood is present throughout urination. It may appear pink, orange, or red-wine- or rust-colored. Because it can be intermittent — blood may show up once and not again right away — it’s unwise to “wait and see” before seeking medical help.

Blood in the urine is also a symptom of urinary tract infections, kidney stones, and interstitial cystitis (see HWHW, August 2003). And about one-third of bladder cancers cause daytime or nighttime urinary frequency, urgency, or a feeling of incomplete bladder emptying — all of which mimic a urinary tract infection and sometimes interstitial cystitis. But there are ways to distinguish bladder cancer from these conditions. Bladder cancer seldom causes pain at first, or fever. Kidney stones and interstitial cystitis usually cause pain, and urinary tract infections typically cause both pain and fever.

But whatever other symptoms may accompany it, any unexplained blood in the urine should be looked into immediately. Although it’s scary to assume that the cause is bladder cancer, it may be the safest approach to take.

**Who’s at risk?**

Bladder cancer appears to result from exposure to carcinogens. But the disease can occur years later, so it’s often difficult to identify a specific substance as the culprit. Most studies of risk factors have been done in men — especially those who work with paint, leather, rubber, dye, and metal — because they’re more likely to be exposed occupational-ly to certain carcinogenic chemicals called aromatic amines.

Several studies have also linked bladder cancer to long-term use of permanent hair dyes. Researchers at the University of Southern California reported in 2001 that women who used such dyes monthly for 15 years or more...
tripled their risk of bladder cancer. A year later, they reported that some women are more susceptible because their bodies are genetically slower to flush out hair dye carcinogens called arylamines. On the other hand, a large 40-year study of Swedish hairdressers found no link between bladder cancer and occupational exposure to hair dye.

Do you have blood in your urine? Until bladder cancer is ruled out, don’t assume it’s something else.

Chronic bladder irritation from infections, stones, and other sources can increase the risk of bladder cancer, partly by activating compounds that damage DNA. Women who have undergone pelvic radiation for cervical or ovarian cancer are also at risk.

Worst single risk factor
About half of all bladder cancers occur in people who have smoked cigarettes at some time in their lives. The carcinogens in cigarette smoke — which include aromatic amines — concentrate in urine, which comes into contact with the bladder lining. The longer and more heavily a person smokes, the greater the risk. Although environmental tobacco smoke has been linked to lung cancer, there’s no conclusive evidence that it causes bladder cancer.

Men are at greater risk than women partly because more men smoke. But recent data suggest that at comparable levels of tobacco exposure, women are more susceptible than men to bladder cancer as well as lung cancer. For some women, this has particularly ominous implications. According to a National Cancer Institute report, while the overall death rate from bladder cancer has declined in recent years, it’s remained steady in white women — the only group in which smoking continues to increase.

As you might expect, it helps to quit smoking. In a study published in the Dec. 1, 2002 issue of Cancer, researchers with the Iowa Women’s Health Study followed 37,459 postmenopausal women ages 55–69 for 13 years. Current smokers had almost four times the risk of women who had never smoked, but 15 years after quitting, that difference almost entirely disappeared.

The Iowa researchers also found a greater risk of bladder cancer in women with diabetes. Since regular urine testing is part of diabetes care, this may simply be a matter of earlier detection. But the researchers also speculate that decreased insulin sensitivity may play a role in promoting bladder cancer growth. Women who were physically active and those who were married had a somewhat lower risk, possibly because of better health habits. Alcohol use and coffee consumption, implicated in some earlier research, did not affect bladder cancer rates in the Iowa study.

Diagnostic steps
Diagnosing bladder cancer is a two-step process: first, ruling out other possible causes of blood in the urine, and second, identifying the bladder tumor.

• Urine testing. Your doctor will test your urine to exclude bladder or kidney infection, and send a urine sample for examination under the microscope to identify cancerous and precancerous cells. This test is most valuable for detecting cancers that are high-grade — that is, aggressive and likely to metastasize. It usually does not pick up the more common, less aggressive low-grade tumors.

• Looking inside the bladder. Cystoscopy is the surest way to diagnose bladder cancer. In this procedure, the urologist inserts a thin, lighted tube into the urethra and examines the bladder lining for tumors or other irregularities. The procedure is performed in the doctor’s office under local anesthesia or light sedation.

Anatomy of bladder cancer

Most bladder cancers start in the urothelium, a thin layer of epithelial cells that lines the bladder. Beneath this layer is a membrane called the lamina propria, and below that, a thick muscle layer, which contracts to empty the bladder. Treatment and prognosis depend partly on whether the cancer is confined to the lining (superficial bladder cancer) or has invaded the muscle (invasive bladder cancer). Stage T1a, T1b, and T1 tumors are superficial bladder cancers. Tumors at higher stages (T2, T3a, and T3b) are invasive.

If the cancer extends beyond the bladder wall, it can spread to adjacent organs (the uterus and vagina) and metastasize to distant parts of the body by traveling through the lymph system and bloodstream.
If tumors are present, a second procedure is usually scheduled in a hospital. Under general or regional anesthesia, the cancer is removed with a resectoscope — a cystoscope with a wire loop for removing tissue. The procedure is known as cystoscopic resection or transurethral resection. The urologist may also remove tissue samples (biopsies) of suspicious areas. If cancerous cells were found in the urine, but no tumor was visible during cystoscopy, the urologist may take biopsies of all parts of the bladder wall.

- **Additional tests.** Computed tomography (CT) scans, ultrasound, and other imaging studies may also be used to evaluate the entire urinary tract and pelvic region.

**Treating superficial bladder cancer**

Treatment depends largely on the stage of the cancer — that is, how widespread it is — and its grade, or aggressiveness. Most bladder cancers are superficial, which means they have not invaded the muscle wall. These tumors are usually removed by cystoscopic resection.

To ensure that the cancer is completely eradicated and to thwart progression of high-grade superficial tumors, immunotherapy with bacillus Calmette-Guerin (BCG) may be recommended. BCG is a bacterium developed years ago as a vaccine against tuberculosis. The bacteria are placed directly in the bladder through a catheter, held there for an hour or two, and urinated out. They trigger the body’s natural immune response and cause it to destroy any remaining cancer cells. This procedure may be repeated a number of times over several months. Diluted chemotherapy drugs can also be instilled in the bladder.

Superficial bladder cancer often recurs, so cystoscopic exams should be repeated every three to six months for two years or more after the initial diagnosis and treatment.

**Treating tougher cancers**

A more aggressive approach is necessary for superficial bladder cancers that don’t respond to local therapy and for tumors that have invaded the bladder’s muscle layer. The standard treatment for these tumors is radical cystectomy, or surgical removal of the entire bladder and several other organs. In women, this usually means removing the ovaries, ureters, urethra, and part of the vaginal wall.

After bladder removal, patients traditionally have had a procedure called an ostomy, which creates an artificial passage to the outside of the body, where the urine is collected in a bag. This operation is gradually being replaced by new methods that permit more normal urination. For example, some surgeons now create an artificial bladder from a pouch of bowel tissue and connect it to the urethra.

Chemotherapy may be recommended before or after surgery. An 11-year study published in the New England Journal of Medicine (Aug. 28, 2003) found that three rounds of chemotherapy drugs given before radical cystectomy extended survival time by as much as three years. In some cases, chemotherapy alone appeared to cure the disease.

For people who cannot or do not want to undergo cystectomy, radiation alone or with chemotherapy may be an option through a clinical trial (see “What’s new in treating bladder cancer?”). Sometimes the tumor is reduced first by cystoscopic surgery. In carefully selected patients, surgical removal of the tumor followed by chemotherapy and radiation can be as effective as removing the bladder.

**In the future**

Most of the gene mutations associated with bladder cancer are not inherited but acquired through occupational or other environmental exposure to carcinogens. Researchers are studying whether tests that spot such genetic changes could help make the diagnosis earlier. Other tests may allow scientists to identify people with a hereditary defect that reduces their ability to detoxify cancer-causing chemicals. Scientists would also like to find a way to predict the aggressiveness of individual bladder cancers.

Currently, there’s no effective way to screen the general population for bladder cancer. Testing for blood in the urine is not appropriate for mass screening, because most urinary blood is completely unrelated to bladder cancer. Testing urine for abnormal cells turns up some cancers, but it also misses a fair number.

**Selected resources**

- **National Cancer Institute**
  Cancer Information Service
  800-422-6237 (toll free)
  cancer.gov/cancer_information/cancer_type/bladder

- **National Library of Medicine**
  MedlinePlus Health Information
  www.nlm.nih.gov/medlineplus/bladdercancer.html

- **American Foundation for Urologic Disease**
  800-828-7866 (toll free)
  www.afud.org/education/bladder/cancer.asp
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