

## CONTENTS

# Web Exclusive: Risk Factors

BY THE AMERICAN CANCER SOCIETY

Different cancers have different risk factors. But having a risk factor, or even several, does not mean that you will get the disease.

Many people with one or more risk factors never develop bladder cancer, while others with this disease have no known risk factors. It is important, however, to know about risk factors so that appropriate action can be taken, such as changing a health behavior or being monitored closely for a potential cancer. Because the bladder is the final exit from the body for many chemicals, these are the major risk factors for bladder cancer.

### **Smoking**

The greatest risk factor for bladder cancer is smoking. Smokers are more than twice as likely to get bladder cancer as nonsmokers. Smoking causes nearly half of the deaths from bladder cancer among men (48 percent) and less than a third of bladder cancer deaths in women (28 percent). Some of the carcinogens (cancer-causing chemicals) in tobacco smoke are absorbed from the lungs and get into the blood. From the blood, they are filtered by the kidneys and concentrated in the urine. These chemicals in the urine damage the urothelial cells that line the inside of the bladder. This damage increases the chance of cancer developing.

### **Occupational Exposures**

Certain industrial chemicals have been linked with bladder cancer. Chemicals called aromatic amines, such as benzidine and beta-naphthylamine, which are sometimes used in the dye industry, can cause bladder cancer.

Other industries that use certain organic chemicals also may put workers at risk for bladder cancer if exposure is not limited by good workplace safety practices. The industries carrying highest risks include the makers of rubber, leather, textiles and paint products as well as printing companies. Other workers with an increased risk of developing bladder cancer include painters, hairdressers, machinists, printers and truck drivers (these because of exposure to diesel fumes).

Cigarette smoking and occupational exposures may act together in the development of bladder cancer. Also, smokers who work with the cancer-causing chemicals noted above have an especially high risk of developing bladder cancer.

### **Race**

Whites are about twice as likely to develop bladder cancer compared with blacks and Hispanics. The reason for this difference is not well understood. Asians have the lowest incidence of bladder cancer.

## **Increasing Age**

The risk of bladder cancer increases with age. Over 70 percent of people with bladder cancer are older than 65 years old.

## **Gender**

Men get bladder cancer at a rate four times greater than women.

## **Chronic Bladder Inflammation**

Urinary infections, kidney and bladder stones and other causes of chronic bladder irritation have been linked with bladder cancer (especially squamous cell carcinoma of the bladder), but they do not necessarily cause bladder cancer. Schistosomiasis (also known as bilharziasis), an infection with a parasitic worm called *Schistosoma hematobium* that can get into the bladder, is also a risk factor for bladder cancer. Although this parasite is found mostly in Northern Africa, it does cause rare cases of bladder cancer in the United States among people who had been infected by the worm before moving to this country.

## **Personal History of Bladder Cancer**

Urothelial carcinomas can form in many areas in the bladder as well as in the lining of the kidney, the ureters and urethra. Even when one bladder tumor is completely removed, you will have a higher risk of forming another tumor in the same or another portion of the urothelium. For this reason, people who have had bladder cancer need close, routine medical follow-up. People who have family members who have or have had bladder cancer are at increased risk.

## **Bladder Birth Defects**

Before birth, there is a connection between the belly button and the bladder. This connection, called the urachus, normally disappears before birth. If part of this connection remains after birth, it could become cancerous. Cancers that start in the urachus are usually made up of malignant gland cells and are called adenocarcinomas. Cancer starting in this way is rare, causing less than a half of 1 percent of bladder cancers. However, it does represent about one-third of the adenocarcinomas of the bladder, which are also rare.

There is another rare birth defect called exstrophy, which greatly (about 400-fold) increases a person's risk of developing bladder cancer. In exstrophy, the skin, muscle and connective tissue in front of the bladder fail to close completely so that there is a hole or defect in the wall of the abdomen. This leaves the inside of the bladder exposed to chronic infection, which may eventually lead to formation of an adenocarcinoma of the bladder.

## **Genetics**

Bladder cancer has been found to be common in some families. This may account for 1 percent of all cases. People with a mutation of the retinoblastoma gene, which causes them to develop cancer of their eye as infants, have a higher rate of bladder cancer. Many studies have found that people differ in their ability to break down chemicals in their body and that this is determined by certain genes they inherit. People who inherit genes that lead to slow breakdown of chemicals are more likely to develop bladder cancer.

## **Chemotherapy and Radiation Therapy**

High doses of cyclophosphamide (Cytosan), a drug used in the treatment of cancer, and ifosfamide (Ifex), a drug similar to cyclophosphamide, increase the risk of bladder cancer. A typical patient would be one with a lymphoma, which is often cured by chemotherapy regimens that include cyclophosphamide. A drug called mesna is used with these two drugs to protect the bladder from irritation and decrease the risk of bladder cancer. People who receive radiation treatment to the pelvis are more likely to develop bladder cancer.

## **Drinking Water and Arsenic**

Arsenic in drinking water has been associated with an increased risk of bladder cancer. Risk depends in large part where you live, and whether your water system meets suggested standards for arsenic content.

## **Fluid consumption**

Low fluid consumption increases risk. People who drink a lot of fluids each day have a lower rate of bladder cancer. This is thought to be because they empty their bladders often. By doing this, they keep chemicals from lingering in their bodies.

**For more information on issues of cancer, visit the American Cancer Society at <http://www.cancer.org>.**

**©American Cancer Society**