

Bladder Health after Cancer Treatment

Certain types of cancer and certain cancer treatments can cause damage to the urinary bladder. The information in this Health Link will help you to recognize signs and symptoms of urinary bladder problems that may occur after treatment with chemotherapy or radiation for childhood cancer.

What is the urinary bladder?

The **urinary bladder** is a hollow organ that stores urine. It is located behind the pubic bone. The **kidneys** filter the blood and make urine, which enters the bladder through two tubes called “**ureters**.” Urine leaves the bladder through another tube, the **urethra**. In women, the urethra is a short tube that opens just in front of the vagina. In men, it is longer, and passes through the prostate gland and then the penis.

What are the risk factors for bladder problems?

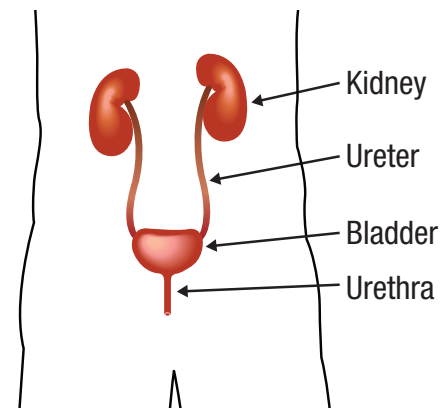
- **Chemotherapy** with cyclophosphamide and/or ifosfamide
- **Radiation therapy** to the pelvic area

What types of bladder problems can occur?

- **Bleeding** into the bladder (hemorrhagic cystitis)
- **Scarring** (fibrosis) of the bladder
- **Bladder cancer**

Hemorrhagic cystitis

- **What is hemorrhagic cystitis?** Hemorrhagic cystitis is a condition in which bladder irritation results in blood in the urine.
- **What are the symptoms of hemorrhagic cystitis?** The urine color may range from slightly pink to bright red. Some people may feel like they have to urinate urgently, or that they cannot release all the urine, but there is usually no pain. Hemorrhagic cystitis may occur off and on for months to years after completion of therapy.
- **How is hemorrhagic cystitis diagnosed?** Usually, blood can be seen in the urine. Sometimes, the amount of blood in the urine is so small that it is seen only during a urinalysis (lab test to examine the urine). When there is blood in the urine, a urine culture is usually done to check for infection.
- **What can I do if I have hemorrhagic cystitis?** Usually it is helpful to drink extra fluids to flush out the bladder. Avoid tea, coffee, cola beverages, and other fluids containing caffeine since they may worsen the sudden urge to urinate. If you have kidney or heart problems, check with your healthcare provider before drinking extra fluid.
- **When should I call my healthcare provider?** Call your healthcare provider any time you see blood in the urine. You should also report any fever, pain with urination, difficulty urinating, or the need to urinate urgently or frequently, because these are common symptoms of a urinary tract infection or other bladder problems.



Bladder fibrosis

- **What is bladder fibrosis?** Bladder fibrosis is scar tissue in the bladder. This may build up and cause the bladder wall to thicken. When this happens, the pressure inside the bladder increases. This may affect the bladder's ability to store and empty urine. Over time these changes can lead to damage to the kidneys.
- **What are the symptoms of bladder fibrosis?** Problems may include difficulty emptying the bladder, leakage of urine, or blood in the urine. Sometimes, bladder fibrosis may not cause any symptoms at all.
- **How is bladder fibrosis diagnosed?** An ultrasound of the bladder may show thickening of the bladder wall. A urologist may also perform a cystoscopy, a test that allows the doctor to look directly in the bladder through a thin, lighted tube.
- **What can I do if I think I have bladder fibrosis?** If you are at risk for bladder fibrosis and have any of the symptoms described above, you should see a urologist.
- **When should I call my healthcare provider?** Call your healthcare provider anytime you have symptoms of bladder fibrosis, such as difficulty emptying the bladder, leakage of urine, or blood in the urine.

Bladder cancer

- **What is bladder cancer?** Bladder cancer is a type of tumor that can develop in people who have been treated with cyclophosphamide or radiation involving the bladder. This is a rare type of secondary cancer due to treatment.
- **What are the symptoms of bladder cancer?** The most common symptom is blood in the urine. There may also be a need to urinate urgently or frequently. If the cancer is advanced at the time of diagnosis, pain over the bladder, in the genital area, or in the bones may be present.
- **How is bladder cancer diagnosed?** The diagnosis is usually made by doing a cystoscopy to obtain a biopsy of bladder tissue. Sometimes the diagnosis can be made by finding cancer cells in the urine.
- **What can I do if I think I have bladder cancer?** If you are concerned about whether your symptoms may represent bladder cancer, ask for a referral to a urologist.

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Additional health information for childhood cancer survivors is available at www.survivorshipguidelines.org

Note: Throughout this *Health Links* series, the term "childhood cancer" is used to designate pediatric cancers that may occur during childhood, adolescence, or young adulthood. Health Links are designed to provide health information for survivors of pediatric cancer,

regardless of whether the cancer occurred during childhood, adolescence, or young adulthood.

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