“Over the years, I have learned so much from being involved with Us TOO survivors and it has made me a better prostate cancer doctor.”

- Judd W. Moul, MD, FACS, Professor and Chief, Division of Urologic Surgery, Duke University Medical Center
Better Bone Health for Men with Prostate Cancer

If you (or your loved one) are suffering from prostate cancer, being involved in your wellness can make a difference in your health and continued independence. Knowing your body—and understanding what to expect—is the key to managing your health. As prostate cancer advances, your bones can be impacted. This brochure will help you understand what is going on inside your bones, why men with prostate cancer need to be aware of what can happen to their bones, and what you and your doctor can do to make sure that you maintain bone health. Safeguarding and improving your well-being are positive steps that you can take.
**Prostate Cancer and Bone Health: What’s the Connection?**

Bone health may be affected by prostate cancer and its treatment. Two conditions that can arise and impact bone health are:

- **Treatment-induced bone loss** — could be caused by the side effects of medications taken for prostate cancer
- **Bone metastases** — A result of advancing prostate cancer, when the disease spreads to the bones

First let’s talk about why healthy bones are so important to you, and then we’ll cover bone loss and bone metastases and what you can do about them.
A Quick Lesson on Bones
Maintaining Bone Strength: Why It Matters

The healthier your bones, the more active you can be. The more active you are, the healthier your bones will be and the better you'll feel. Bone health has a major effect on your quality of life and on the quality of life of those who care for you. The better your bone health, the more independent you can be—a benefit for everyone.

Background on Bones

Bones perform several functions. They provide the body's framework; act as the attachment point for muscles, allowing us movement; protect our organs; store and release minerals vital to bodily functions; and produce blood cells.

Throughout our lives, our bones are changing constantly. Bone is a living tissue, not a hard, lifeless structure. It is constantly renewing itself through a process called remodeling. In doing so, cells called osteoclasts break apart old areas of bone, and other cells called osteoblasts create new bone to fill in the old areas.

When this process is balanced—when the breakdown of old bone and the creation of new bone are equal—bone strength and bone health are maintained. Bone strength is greatest between the ages of 20 and 30, when you have reached your peak bone mass or bone mineral density (BMD). After age 30, bone breakdown outpaces bone formation. Although this is generally a very slow process, it is a major reason that bones weaken as you age.

It's never too early or too late to begin taking steps to maintain bone mass and prevent bone loss.
What You Can Do to Maintain Healthy Bones as You Manage Your Prostate Cancer

- **Manage your diet**—It’s important that men over 50 years old get at least 1200 mg of calcium daily. Green vegetables (broccoli, spinach, etc) and defatted soy products (soy milk, tofu, and soy protein powder) are good sources of calcium.

- **Take a calcium supplement**—The best source of calcium is your diet, but you may need to speak with your health care provider to consider taking a calcium supplement to attain your daily calcium requirement. If you do take a supplement, your physician may check your 24-hour urine-calcium output every few months to determine if your calcium levels are in the normal range.

- **Vitamin D**—Vitamin D allows your body to process calcium. Men should have at least 400 international units (IU) of vitamin D daily, but not more than 800 IU. Exposing your skin to the sun for 15 minutes a day and/or supplements allow your body to process calcium. Store-purchased vitamin D (cholecalciferol) at doses of 400 IU (not exceeding 800 IU) is indicated. It is helpful to get a baseline serum vitamin D measurement before supplementation. It may be necessary to take prescription vitamin D (Rocaltrol® calcitriol) if cholecalciferol (store bought) does not elevate serum vitamin D to acceptable levels.

- **Limit salt**—Salt reduces your body’s ability to use calcium, so you should try to limit the amount that you use. Read food labels to find out the sodium content.

- **Limit protein**—Men should have about 56 grams of protein every day, but most men usually have double that amount. Too much protein can prevent your body from holding onto calcium, so try to moderate the amount of protein you eat.

- **Don’t smoke or drink alcohol**—Smoking and alcohol weaken bone, so you should try to avoid them. If you do drink alcohol, limit the amount to 2 to 3 oz/day.

- **Exercise**—You should try to do some type of weight-bearing exercise for 30 minutes a day, 4 days a week. However, it’s important to avoid the kind of exercise that puts sudden or excessive strain on the bones. Ask your health care provider about the type of exercise that is best for you.
Bone Loss: Men Are Not Immune

Bone loss is a condition in which bone mass and density are lost and the bones become weakened, thereby increasing the risk for fracture. There are no warning signs, and most often it affects the bones of the hip, wrist, and spine. Bone loss occurs in men more often than commonly thought. It will cause a fracture in 1 of 4 men older than age 50. It can be managed, and is preventable.

Risk Factors that All Men Need to Consider

- **Age**—The older you are, the greater the risk
- **Family history**—Men whose immediate relatives have or have had bone loss are at greater risk
- **Lifestyle factors**—Smoking, drinking too much alcohol, not consuming enough calcium, and not getting enough exercise
- **Race/ethnicity**—White males seem to be at greatest risk, although men from all racial and ethnic groups can develop bone loss
- **Medications and medical conditions**—Prolonged use of certain medications used to treat chronic medical problems, such as asthma, diabetes, hypothyroidism, liver disease, and rheumatoid arthritis, may have side effects that can damage bone and lead to bone loss

The Relationship Between Prostate Cancer and Bone Loss

Some treatments for prostate cancer can increase bone loss risk:

- Men with decreased testosterone levels resulting from treatment for prostate cancer are at an increased risk for developing bone loss. Examples of medications that decrease testosterone include Lupron® (leuprolide acetate) and Zoladex® (goserelin acetate implant)
- Radiation therapy to the bone and some kinds of chemotherapy also might decrease bone density and increase the risk for bone loss

How Bone Loss Is Diagnosed

- Review of medical and family history, including a survey of your risk factors
- Complete physical examination
- Bone mineral density (BMD) test, an X-ray-type test that measures bone mass, helps determine bone strength and predict the risk for future fracture. It is important to get a bone density test (BMD) before and during hormone therapy (androgen deprivation therapy, ADT) to establish a baseline value and then to monitor it. Keep a copy of the BMD report in your patient files.
How Bone Loss Is Treated

The lifestyle factors mentioned make an important difference in the treatment of bone loss. In addition, some medications are available. Most bone loss medications are “antiresorptives,” which means that they work by slowing down or stopping the action of osteoclasts, the cells that break down and remove old bone tissue. The bisphosphonates are medications that slow bone loss and, in some cases, increase bone mass.

If your test determines that you have low BMD, you may be prescribed a bisphosphonate to help improve your bone density. Fosamax® (alendronate) and Actonel® (risedronate) are 2 bisphosphonates that are approved in the United States for bone loss in men. They are taken orally, usually once a day or once a week. However, these medications have not been studied in men suffering from bone loss due to treatment for their prostate cancer. Therefore, if you are someone who does not like to take medications daily or weekly, and has a sensitive stomach, or has treatment-induced bone loss, there is an intravenous bisphosphonate that can be taken once every 3 months. Recent studies have shown that the intravenous bisphosphonate Zometa® (zoledronic acid) not only prevents bone loss (similar to the oral bisphosphonates) caused by drugs used to treat prostate cancer, but also increases BMD. While taking Zometa, patients should also be administered an oral calcium supplement of 500 mg and a multiple vitamin containing 400 IU of Vitamin D daily.

Questions You May Want to Ask Your Doctor About Bone Loss

• Am I at increased risk for bone loss?
• How do prostate cancer and my past and current treatments affect my bones?
• Am I currently taking any medication or had any treatment in the past that increases my risk for bone loss?
• Is it safe for me to exercise? If so, what exercise is best for me?
• Are there any other steps I can take to slow bone loss or increase my bone density?

Recommendations:

• It is important to get a bone density test (BMD) prior to and during hormone therapy (androgen deprivation therapy, ADT) to establish a baseline value and monitor levels.
• BMD should be evaluated annually.
• Monitor your urinary output of calcium and serum vitamin D.
• The best source of calcium intake is leafy green vegetables, followed by calcium supplements.
Bone Metastases and Advancing Prostate Cancer

Another situation in which bone is affected by prostate cancer is when the cancer metastasizes, or breaks away and travels—usually via the bloodstream—to other parts of the body, primarily in the advanced stages of the disease. When this happens in prostate cancer, the most common place for the cancer to go is to the bone. The bones most commonly affected are the spine, hips, and ribs. Normal bone is constantly being remodeled, or broken down and rebuilt. Cancer cells that have spread to the bone disrupt the balance between the activity of osteoclasts (cells that break down bone) and osteoblasts (cells that build bone), disrupting their normal remodeling and causing excessive bone breakdown or abnormal build-up. Bone metastases cause damage that may make the bone more susceptible to complications such as pain and fractures.

Prostate cancer behaves differently in each individual. In many men, prostate cancer never spreads to any other site. In the men in whom it does spread, bone metastases occur in 65% to 75% of all patients, and the bone is often the only site of metastases.

Prostate cancer that spreads to the bones is still prostate cancer, not bone cancer. Bone metastases result in areas of weak, unstable bone that could cause debilitating pain and fractures.

Knowing the Signs and Symptoms of Bone Metastases Is Important

• First, if it happens and you know what to look for, you’re much more likely to catch it early. And if you catch it early, more can be done to help. If bone metastases occur, there is a lot that can be done to manage it and improve your quality of life.
• Second, knowing what the signs and symptoms are means that you don’t have to worry about every little twinge you experience—and that’s something that many individuals who have had cancer say that they tend to do.
Symptoms of Bone Metastases
- A common symptom is pain in the bones, but this is not always the case. Sometimes bone metastases are “silent.” In addition, arthritic pain can be confused with bone metastases. A positive bone scan is necessary to establish the presence of bone metastases.
- The pain of metastases usually does not occur in the joints.
- The bone pain lingers; it won’t just go away by itself in a few days.
- Other signs to look for include history of fracture, prior radiation to bone, rising PSA, and elevated serum or urinary telopeptides and urinary deoxypyridinoline.

How Bone Metastases Are Diagnosed
- Radionuclide bone scans
- X-rays
- MRI scans
- CT scans
- Blood tests

How Bone Metastases Are Treated
- Hormone therapy (androgen deprivation, ADT)—Hormone therapy is an important treatment early in the course of bone metastases. It is based on depriving the cancer cells of the growth stimulus that hormones provide.
- Intravenous (IV) bisphosphonate therapy—IV bisphosphonate therapy is a new option for the treatment of bone complications related to prostate cancer. Unlike other treatments for metastases that focus on the cancer, IV bisphosphonates act on the bones directly and are not a treatment for prostate cancer. These medications slow the bone-destroying activity that occurs with bone metastases by working directly against the cells that cause the abnormal bone formation. Zometa® is the only IV bisphosphonate approved for treatment of bone metastases in men with prostate cancer and is administered as a 15-minute infusion in the doctor’s office every 3 to 4 weeks.
- Radiation therapy—Radiation therapy is the use of high-energy rays to damage cancer cells and keep them from growing. It can be effective in reducing bone pain and preventing fractures and is especially useful if just a single area requires treatment.
• Immunotherapy—Immunotherapy is a form of systemic therapy that helps the immune system recognize and destroy cancer cells.
• Surgery—Surgery may be used in the treatment of bone metastases to reinforce a bone that is at risk for breaking or to repair a bone that already has broken.
• Chemotherapy—Chemotherapy is directed against the cancer itself and involves the use of anticancer drugs, which are injected into a vein or taken by mouth. These drugs enter the bloodstream and travel to the metastases to kill the cancer cells.

Questions You May Want to Ask Your Doctor About Bone Metastases
• What are my treatment options for relieving bone pain?
• What are my treatment options for preventing bone fractures?
• Which of the available treatments do you recommend for me, and why?
• What is the goal of the treatment you’re recommending?
• What side effects might result from treatment, and what can I do to minimize them?
• What does this mean to me?

Recommendations:
• All patients with advanced prostate cancer should get an annual bone scan.
• It is best to have all your dental problems taken care of before you start treatment, because treatment affects bone healing and recovery.
• Keep a copy of the report in your files.

Prostate Cancer and Bone Health: The Bottom Line
An independent, successful, satisfying life is possible with prostate cancer. Because prostate cancer has an affinity for your bones, knowing about your bones is important. You can make a difference in managing your bone health:
• Don’t let symptoms scare you. See them as a signal to get more information and take action.
• Not all symptoms represent recurrence of prostate cancer.
• Maintaining your bone health will help maintain your quality of life.
• If you have symptoms that concern you, quickly tell your health care provider.
• The sooner your symptoms are diagnosed, the more that can be done to help.
• You are the expert on you. Know yourself...and trust yourself.
Resources
Us TOO International Prostate Cancer Education and Support Network,  
(800) 808-7866, www.ustoo.org
American Cancer Society, (800) ACS-2345, www.cancer.org
Prostate Cancer Foundation, (800) 757-2873, www.prostatecancerfoundation.org
Prostate Cancer Research Institute, (301) 743-2110, www.prostate-cancer.org
National Prostate Cancer Coalition, (800) 245-9455, www.4npcc.org
American Urological Association, 1-866-RING AUA (1-866-746-4282),  
American Society of Clinical Oncology, (703) 797-1914, www.asco.org

About Us TOO
Us TOO International Prostate Cancer Education and Support Network is a  
nonprofit, grassroots organization started in 1990 by prostate cancer survivors  
for prostate cancer patients, survivors, their spouses/partners and families.  
Us TOO, through its more than 320 chapters throughout the United States  
and internationally, helps men and their families learn more about prostate  
cancer so they can make better decisions on treatment options and cope  
with emotional and quality of life issues following treatment. Us TOO and its  
chapters reach more than 50,000 men per month through discussion groups,  
lectures, publications and presentations by medical professionals. Visit  
www.ustoo.org or call 800-80-UstToo (800-808-7866) for more information.