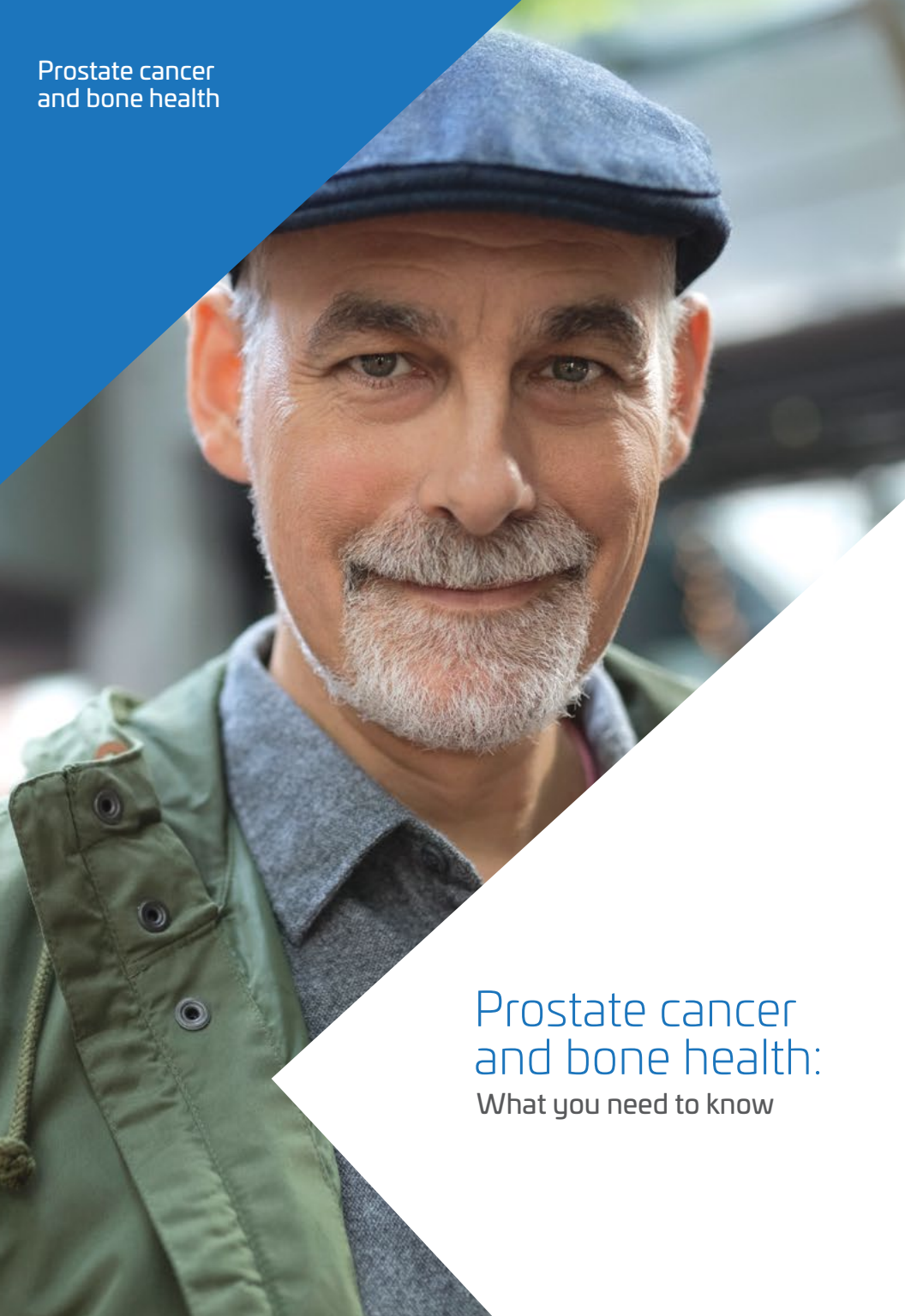

Prostate cancer and bone health:

What you need to know

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This brochure was developed in collaboration with medical oncologists, nurses, and prostate cancer patients.

An introduction to

bone health in prostate cancer

Being diagnosed with prostate cancer can be overwhelming. There is so much information to take in—so much to think about. Understandably, the possible effects on your bones may be the *last* thing on your mind at a time like this. The fact is that, once you're diagnosed with prostate cancer, you have even *more* reasons to think about bone health.

This booklet will help you understand why focusing on bone health is important now that you have a prostate cancer diagnosis. It will introduce you to the types of bone loss that can accompany your cancer, the tests your doctor may perform to check the health of your bones, and some of the ways you can take care of your bones.

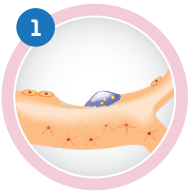
It's important to keep in mind that not all men with prostate cancer will have problems related to their bones. The key is to learn as much as you can about how to keep your bones healthy while treating your prostate cancer.

Before discussing bone health in prostate cancer in more detail, let's take a step back to learn about *healthy* bones...

A quick look at healthy bones

Although people generally think of bone as a hard material, our bones are actually **living tissue**. They are made up of different types of living cells and have their own blood vessels. These different types of cells help bones to grow and to repair themselves so they stay strong.

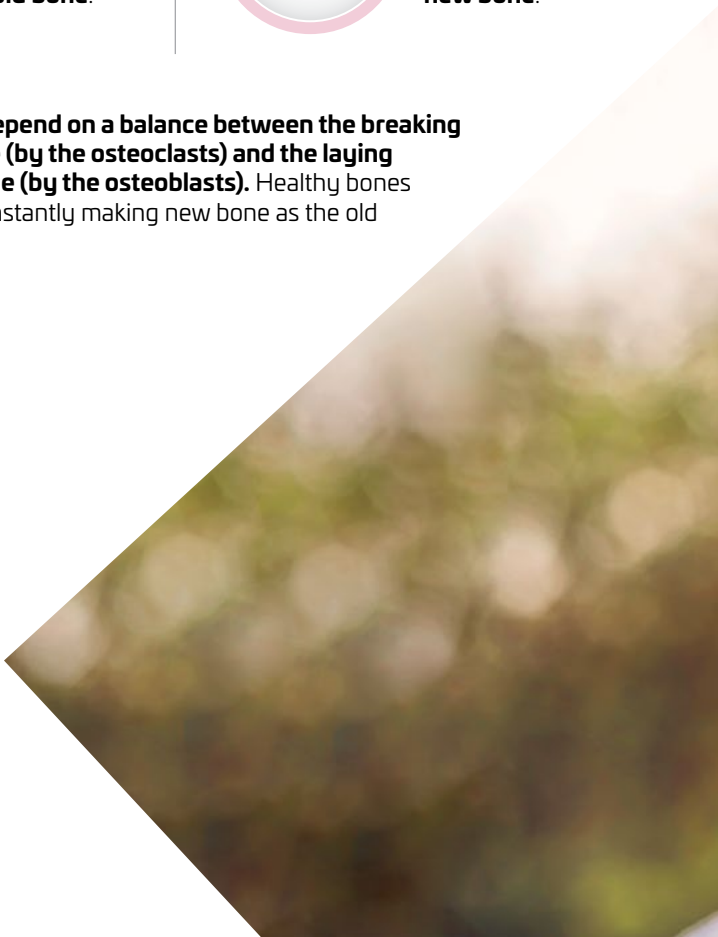
Our bones are constantly being broken down and repaired (or "remodeled") to keep them strong and healthy. In bone remodeling, two main types of bone cells work together to create new bone:



"**Osteoclasts**" are cells that **break down old bone**.

"**Osteoblasts**" are cells that **lay down new bone**.

Healthy bones depend on a balance between the breaking down of old bone (by the osteoclasts) and the laying down of new bone (by the osteoblasts). Healthy bones stay strong by constantly making new bone as the old bone is dissolved.



What is bone loss?

Simply put, bone loss occurs when more bone is being broken down than is being reformed or remodeled.

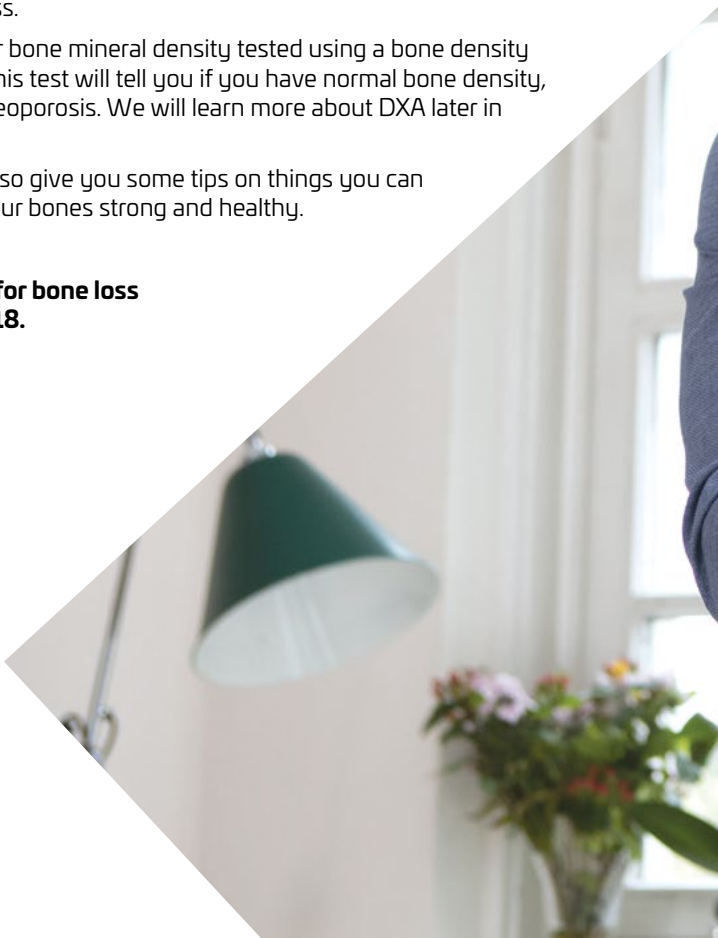
Your bones stopped growing when you reached your peak bone mass—the point when you had the greatest amount of bone you will ever have. This happens in most people between the ages of 18 and 25. After you reach peak bone mass, the balance between bone formation and bone breakdown might start to change—generally, more bone is broken down than is reformed. This happens in both men and women. When you reach midlife, bone loss tends to speed up even more.

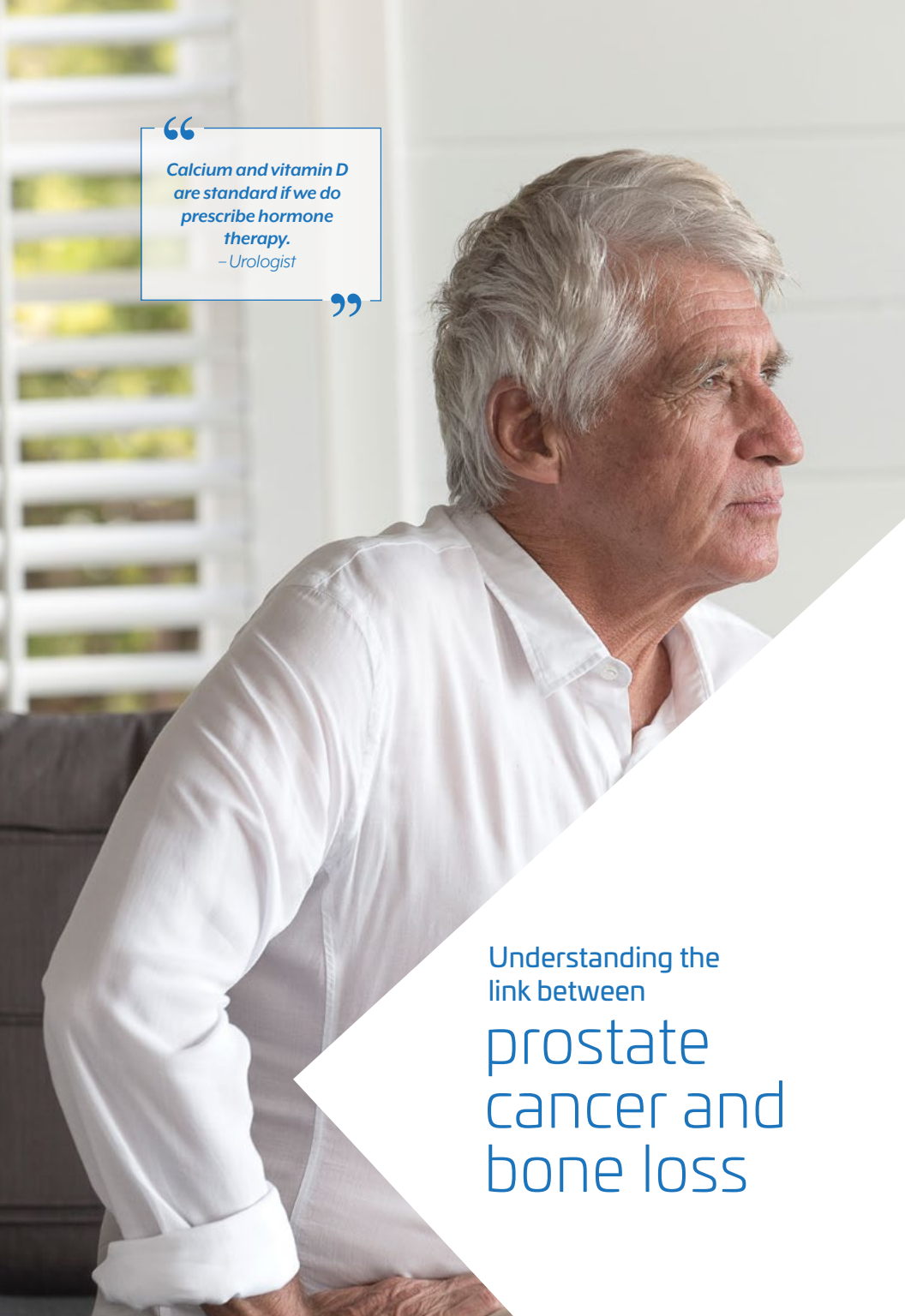
If you make too little bone or lose too much bone, you may develop a condition called "**osteopenia**," which means your bones are less dense and are weaker than what is considered normal. If your bones are even less dense and weaker than *that*, you may have "**osteoporosis**," or extensive bone loss.

You can have your bone mineral density tested using a bone density (or "DXA") scan. This test will tell you if you have normal bone density, osteopenia, or osteoporosis. We will learn more about DXA later in this booklet.

This booklet will also give you some tips on things you can do to help keep your bones strong and healthy.

Assess your risk for bone loss on pages 17 and 18.





> ***Calcium and vitamin D are standard if we do prescribe hormone therapy.***
> *– Urologist*

Understanding the link between

prostate cancer and bone loss

In men with early prostate cancer, there is an additional factor than can contribute to bone loss.

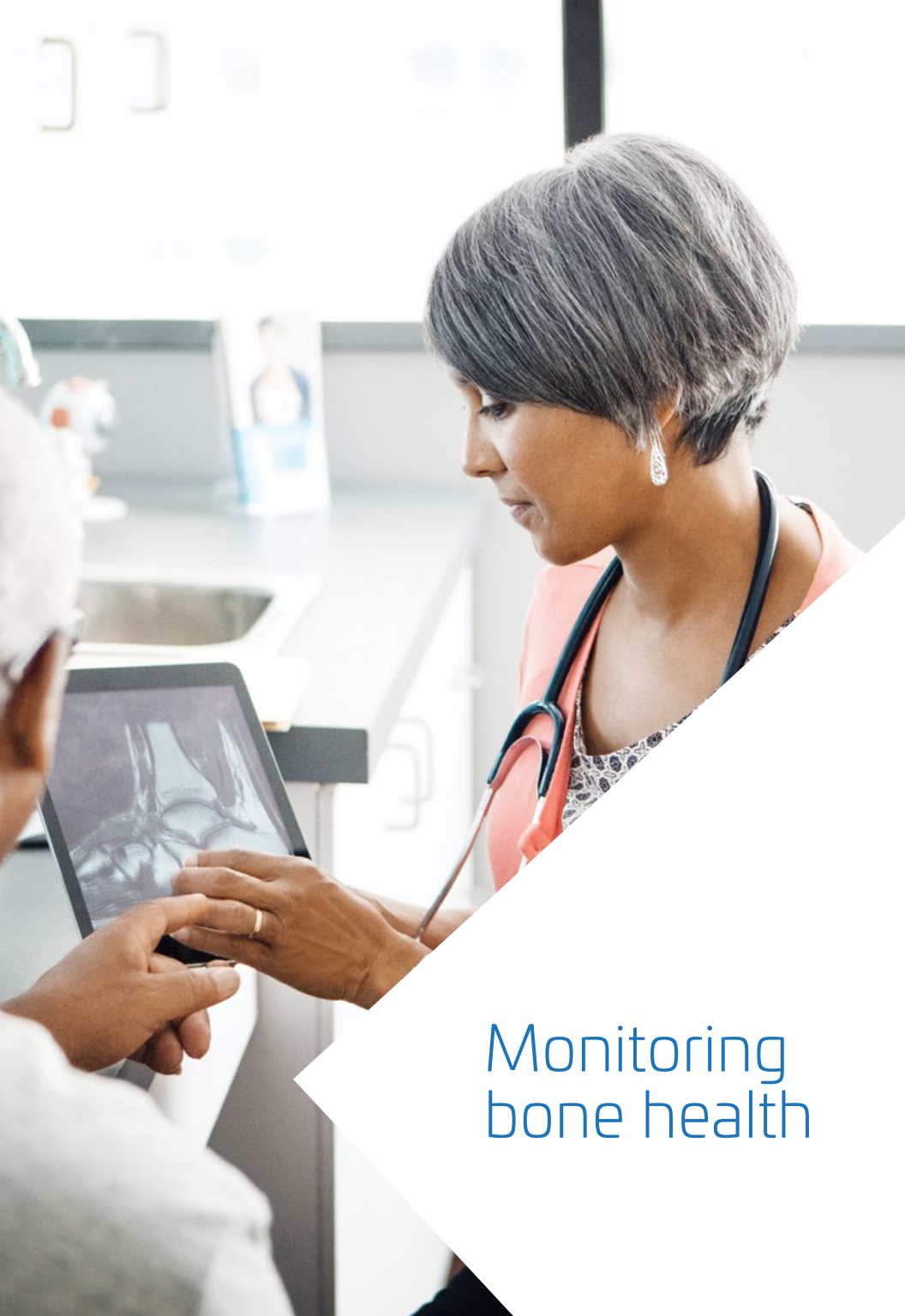
Some medicines, including certain **cancer treatments**, have been linked to bone loss.

The following section will provide you with more information to help reduce the risk.

> **Take action:** It's never too late to think about your bone health. Talk to your doctor or another healthcare provider about how you can start to strengthen your bones today.

Lifestyle tips for strengthening your bones during cancer treatment

Cancer therapy–induced bone loss and bone fractures can be minimized by supplementing your diet with **vitamin D and calcium**. Doing more **weight-bearing exercise** may also help strengthen your bones. In this type of exercise, your body is supporting its own weight (for example, walking or dancing). For this reason, it is important to choose low-impact activities, such as walking or yoga. Always be sure to talk to your cancer care team to help create a safe exercise plan for you.



Monitoring bone health

Bone density tests

If you are undergoing chemotherapy or hormonal therapy that may harm your bones, your doctor may request that you have tests to measure the density of your bones. These tests are safe and painless. They can help you and your doctor make decisions to help your bones stay strong.

The most common bone density test in use today is called dual-energy X-ray absorptiometry (DXA).

Bone density (DXA) scan

A bone density scan is an imaging test that **measures bone density using X-rays and computer technology**. This type of scan can be used to:

- Measure the amount of minerals (such as calcium) in your bones;
- Assess your risk of bone fractures; and
- Check for bone loss (osteopenia and osteoporosis).

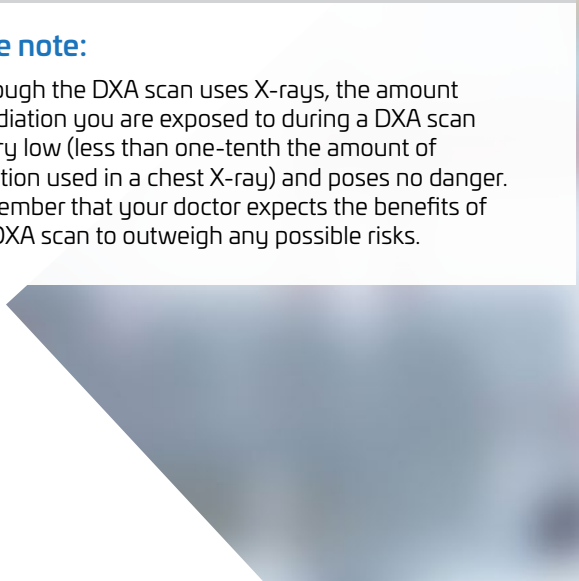
Your **bone density test results** are reported using a measurement called a "**T-score**". Your T-score indicates how much higher or lower your bone density is compared to the bone density of a healthy 30-year-old person. The **lower your T-score (bone density)**, the **higher your risk of breaking a bone**:

Your T-score	What it means
-1.0 or higher (for example, -0.7)	Your bone density is normal
Between -1.0 and -2.5 (for example, -1.7)	Your bone density is low
Lower than -2.5 (for example, -2.8)	You have bone loss

A DXA scan is usually done as an outpatient procedure (not requiring an overnight stay) in the X-ray (or "radiology") department of a **clinic** or **hospital**. The test takes **5 to 20 minutes**, depending on the number of body areas being scanned.

Although you can eat normally before the test, you should not take calcium supplements for 24 hours before the scan. You may be asked to wear clothing that has **no metal zippers, belts, or buttons**, or you may be asked to **change into a hospital gown** and remove anything that may interfere with the test, such as eye glasses or jewelry.

While the scan is being performed, you must **lie still on the table**. During the test, the **DXA scanner moves over the area of your body to be scanned** and uses low doses of X-rays to generate pictures on a computer screen. Scans are taken of the hip bones and lower spine, and sometimes of the forearms. In some cases, the whole body is scanned by the DXA machine.



Take note:

Although the DXA scan uses X-rays, the amount of radiation you are exposed to during a DXA scan is very low (less than one-tenth the amount of radiation used in a chest X-ray) and poses no danger. Remember that your doctor expects the benefits of the DXA scan to outweigh any possible risks.

Protecting your bones

In this section, you'll learn what factors may be putting you at risk for bone loss, and get helpful tips so you can take action to keep your bones as healthy and strong as possible.

> ***We're on a team, and I'm the guy that's carrying the ball, unfortunately—but I'm not alone in it.*** *– Prostate cancer patient*

Factors putting you at risk for bone loss

As you know, people with early-stage prostate cancer are at an increased risk for bone loss because of some treatments. However, there are other risk factors for broken bones and bone loss you should be aware of.

> ***Patients who drink a lot of alcohol, are heavy smokers, and don't exercise are already at high risk of bone loss.*** *– Uro-oncologist*

Use the following checklist to find out what factors may be putting you at risk for bone loss.

Younger adults (age < 50 years):

- ◯ Fragility fracture (breaking a bone as a result of a minor accident)
- ◯ Long-term use of glucocorticoids, such as prednisone
- ◯ Hypogonadism
- ◯ Having other disorders strongly associated with rapid bone loss and/or fracture, such as rheumatoid arthritis, malabsorption syndrome, and primary hyperparathyroidism

If you are under the age of 50 and checked off one or more of the above, talk to your doctor about having a bone density test (DXA scan) as well as a fracture risk assessment.

Older adults (age > 50 years):

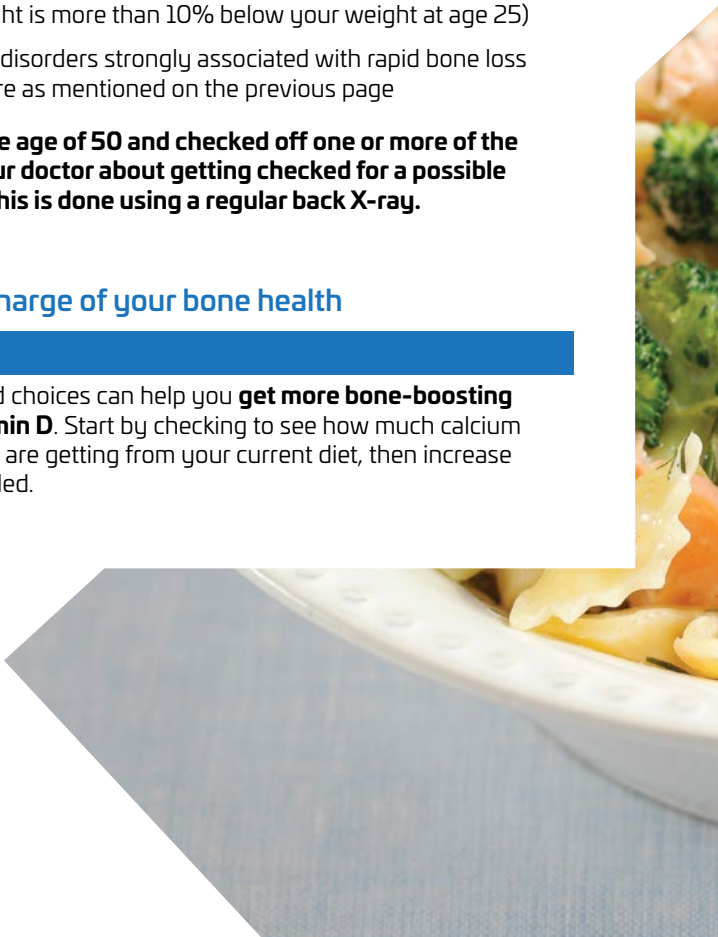
- ◯ Being 65 years or older
- ◯ Clinical risk factors for fracture (men aged 50 to 64 years)
- ◯ Fragility fracture (breaking a bone as a result of a minor accident)
- ◯ Long-term use of glucocorticoids, such as prednisone
- ◯ Having a parent who had a hip fracture
- ◯ Having a spine fracture or low bone mass identified on X-ray
- ◯ Being a smoker
- ◯ High alcohol intake (greater than or equal to 3 units per day on a consistent basis)
- ◯ Low body weight (less than 60 kg or 132 lb.) or major weight loss (present weight is more than 10% below your weight at age 25)
- ◯ Having other disorders strongly associated with rapid bone loss and/or fracture as mentioned on the previous page

If you are over the age of 50 and checked off one or more of the above, talk to your doctor about getting checked for a possible spinal fracture. This is done using a regular back X-ray.

Tips to take charge of your bone health

Watch your diet

Making smart food choices can help you **get more bone-boosting calcium and vitamin D**. Start by checking to see how much calcium and vitamin D you are getting from your current diet, then increase your intake if needed.



Good sources of calcium

Milk products

- Milk
- Cheese
- Yogurt

Fish products containing bones

- Canned salmon
- Sardines

Calcium-fortified beverages

- Soy beverage
- Orange juice

Other

- Calcium-set tofu
- Leafy greens
- Soy beans
- Chickpeas

Good sources of vitamin D

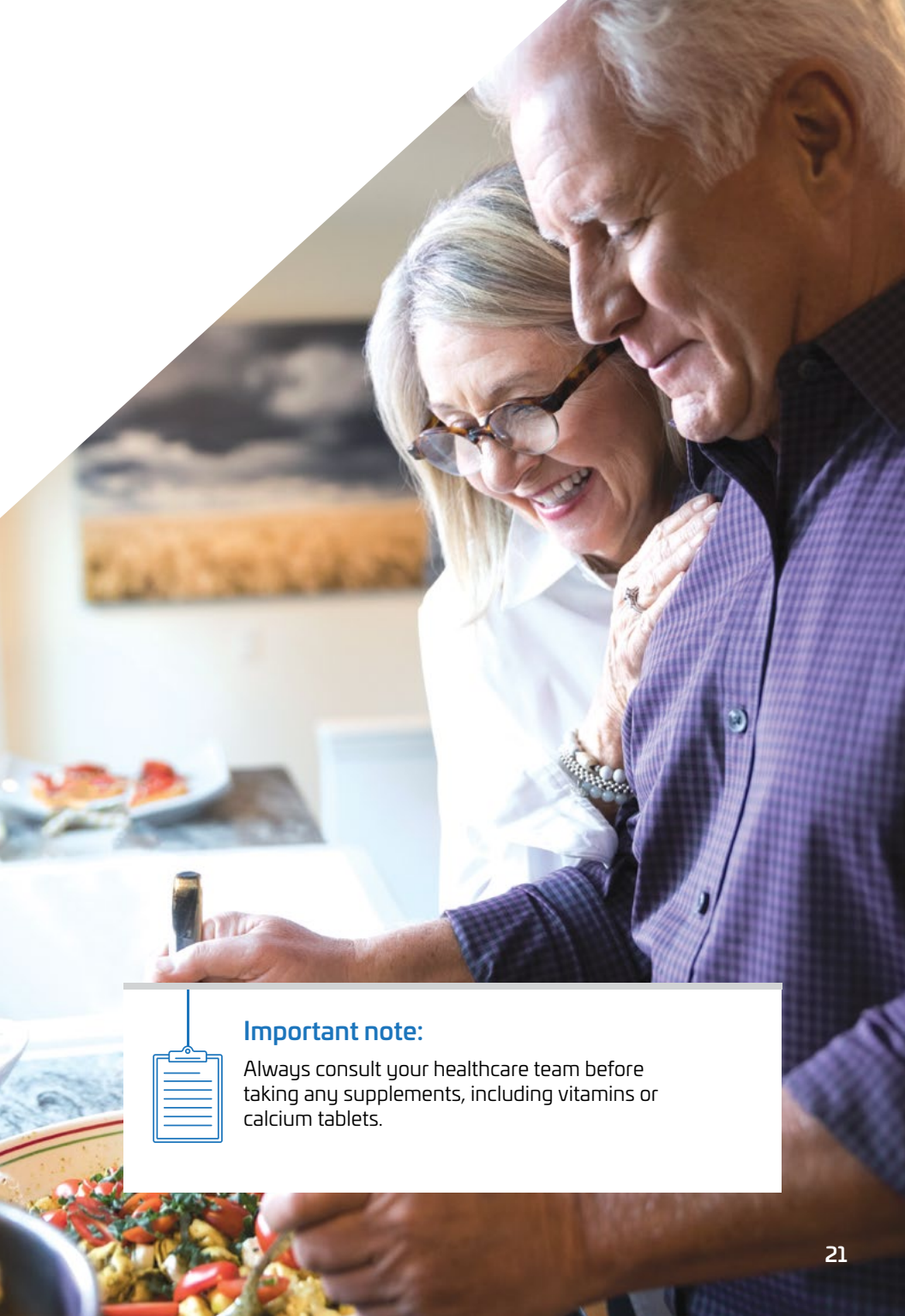
- Fatty fish
- Fish liver oils
- Egg yolk
- Fortified milk

In Canada, it is required that cow's milk and margarine be fortified with vitamin D.

To ensure you get enough vitamin D, a supplement is sometimes recommended. Health Canada has advised that everyone over the age of 50 take a daily supplement of 400 IU in addition to following Canada's Food Guide.

Vitamin D can be made in the skin following exposure to the ultraviolet (UVB) rays in sunlight. Since too much sunlight can be harmful and cause skin cancer and eye damage, recommendations for vitamin D are made assuming minimal exposure to sunlight.

If you are not getting enough calcium or vitamin D from your diet, you should talk to your doctor or a registered dietician to determine whether you should be taking supplemental calcium and/or vitamin D, and to determine the amounts you need. Supplements can be purchased at your local drugstore.



Important note:

Always consult your healthcare team before taking any supplements, including vitamins or calcium tablets.

Get some exercise

Ensure you get some physical activity daily, as it is particularly beneficial in maintaining muscle and bone health. Regular and weight-bearing exercises can help prevent bone loss and prompt bone tissue to become stronger.

Activities you might consider include:

- Walking
- Dancing
- Lifting weights
- Tennis

> **Remember:** Consult with your healthcare team before engaging in any physical activity to make sure it is safe to do so.

Stop smoking and avoid excessive alcohol consumption

More rapid bone loss and more frequent fractures have been observed among men who smoke. Smoking causes the body to absorb less calcium from the diet. **Quitting smoking** can help.

You should also try to **limit the amount of alcohol** you drink, as heavy consumption of alcohol weakens bones and increases the risk of a fracture.

Prevent falls: outdoor and indoor safety tips

Some falls can be prevented by taking some simple steps.

Outdoor safety tips:

- Use hand rails as you go up and down the stairs
- Avoid slippery surfaces
- Keep your deck, walkway, and driveway free of clutter and well lit
- Use a walker or a cane as needed
- Avoid going out in poor weather

> *[Men with prostate cancer] have to stay healthy by doing weight-bearing exercise like walking or playing golf or something, not just sitting down and lifting weights—that's not enough. We have to do much more than that.*
>
> – *Urologist*

Fall-proofing your home:

- Place items you use often within easy reach
- Keep floors free of clutter
- Be sure all carpets and rugs have skid-proof backing or are tacked to the floor
- Keep stairs well lit, install sturdy handrails on both sides, and secure carpeting
- Install grab bars on the bathroom wall beside the tub, shower, and toilet
- Use a non-skid rubber mat and a chair, if necessary, in the tub or shower

Also remember:

- Slow down—accidents are more likely to happen when you rush
- Stay alert and focused when in public places

Take note:

The tips mentioned above can help you protect your bones, but remember that your healthcare team is the best source of information for specific ways you can safely improve your bone health.

> ***Patients should ask what they can do to be as healthy as they can.***
> *– Registered nurse*

Frequently asked questions

What kind of exercise is best for my bones?

Being physically active maintains optimal bone health and decreases the risk of a bone fracture by improving bone mass and increasing muscular strength, coordination, and balance, and thereby reducing falls. Physical activity that is weight bearing is best; examples include walking, dancing, stair climbing, aerobics, skating, and weight lifting. **If your doctor has told you your risk for fracture is high, you must talk to him/her before doing activities that involve running, skipping, or jumping, or before doing any other high-impact exercises.**

How does aging cause bone loss?

When you reach your peak bone mass (usually between the ages of 18 and 25), the balance between bone breakdown and bone formation begins to shift. Generally, from that point on, more bone gets broken down than reformed, resulting in gradual bone loss over time.

How does a bone densitometer measure bone density?

Think about the sunlight passing through the curtains of a window: if the fabric is very thick, very little sunlight passes through them; if the fabric is thinner, more light will pass through the curtains. Similarly, a bone densitometer uses a detector to measure the amount of X-rays (light) that passes through your bones (the curtains). This provides a radiologist with a picture that shows how dense (thick or thin) your bones are.

> ***Patients tend to go to 'Dr. Google' and gain their own insight, and I often remind them that they should be going to... legitimate sites when they are on the Internet.*** *– Registered nurse*

Additional resources

While this booklet has provided you with a lot of information about bone health, you may still have questions. Medical organizations regularly publish guidelines for people who are dealing with prostate cancer or bone loss. The websites listed below can provide you with more information. If you can't find the answers you are looking for, be sure to ask your doctor.

- The **National Comprehensive Cancer Network (NCCN)** has published a number of guides for people with prostate cancer. You can access the information at www.nccn.org/patients/guidelines/cancers.aspx#prostate.
- The **European Society for Medical Oncology (ESMO)** has also published a guide for men with prostate cancer. It is available at www.esmo.org/Patients/Patient-Guides/Prostate-Cancer.
- If you are looking for more information on bone health, you might want to visit the website of **Osteoporosis Canada** at www.osteoporosis.ca or the **National Osteoporosis Foundation** at nof.org.

Other websites that can offer helpful information on bone health and prostate cancer include:

- **Canadian Cancer Society:** www.cancer.ca
- **American Cancer Society:** www.cancer.org
- **Urology Care Foundation:** www.urologyhealth.org
- **Prostate Cancer Canada:** www.prostatecancer.ca

Glossary

- **Osteoblast** – a type of bone-forming cell
- **Osteoclast** – a type of bone cell responsible for bone breakdown (resorption)
- **Osteopenia** – low bone density (DXA T-score between -1.0 and -2.5)
- **Osteoporosis** – bone loss (DXA T-score less than -2.5)

Notes

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