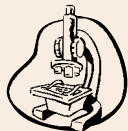
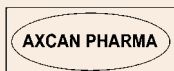


CF Health Matters



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Your Bone Health

Lately, your CF team has probably spoken to you about bone health. People with CF can get weak bones, which can lead to bone pain, broken bones, and changes in the way bones are shaped. This is known as osteopenia or osteoporosis. You may not even know that you have these problems with your bones. Unfortunately, greater than half of all teenagers and adults who have CF have osteopenia. Osteoporosis is less common; less than ¼ have this problem. Most people who suffer from osteopenia or osteoporosis who do not have CF are much older, but it seems to affect people with CF at a younger age. This is why bone mineral density (the thickness of your bones) is a real concern for someone with CF and it is something that should be monitored.

What is the difference between Osteopenia and Osteoporosis?

An easy way to understand the difference between osteoporosis and osteopenia is to think of a sponge. When a sponge is full of water it is very dense. As you squeeze the sponge the water comes out until it is dry. When it is dry the sponge is brittle and easily breaks. This is similar to bone mineral density. The bone is the sponge and the minerals are the water. As the minerals get "squeezed out" of the bone your bone density moves from normal to Osteopenia, and finally to Osteoporosis. When you have Osteoporosis there are very few minerals left in your bone and the risk of fractures is very high.

Both can be identified with the help of a test called a DEXA scan (Dual-Energy X-ray Absorptiometry Scan). The machine that performs this test is like an X-ray machine because it takes pictures of your bones. It usually takes about 20 minutes and it is completely painless.

Why does this happen?

We do not know exactly why this happens. We think there are a number of reasons. A major concern is how well you eat. Some people with CF have a hard time growing and gaining weight because they have a problem with the way their body digests food. To make healthy bones you need a good intake of protein, calories, calcium, phosphorus, Vitamin K and Vitamin D. If you do not have enough of these nutrients when your body is growing, the strength of your bones as an adult will not be as good as it should be.

Vitamin D helps your body absorb calcium from the food you eat. The best source of vitamin D is not from food, but from the sun. In Canada, during the winters, it is very hard for a person to get enough vitamin D from the sun. You can also get vitamin D from the multivitamin you take, ADEK TM. Research has shown that it is common for people with CF to have low levels of vitamin D in their blood. If your levels are low, your body will not absorb enough calcium and your bones will not be as strong as they should be.

When you are a teenager going through puberty, many hormones travel throughout your body. These hormones help make your bones grow and become strong. People with CF might not enter into puberty until they are in their late teens. This means they may need more time to grow strong bones.

The health of your lungs can also affect your bone strength. If you have problems breathing you might not be as active. This may weaken your bones. Also, when you get sick your body is under a lot of stress. When your body is under stress it releases *cytokines* to help fight infection. *Cytokines* are thought to cause the release of calcium from your bones.

Some medications that you may be taking may hurt your bones. Prednisone, which is a *corticosteroid*, is known to weaken bones.

What can I do?

Once bone strength is lost it is hard to replace. It is better to prevent the loss than to correct it. The most important time to build bone strength is when you are a child and when you are a teenager. That is why you need to eat well during these years.

This includes drinking milk and eating milk products with vitamin D, as well as taking your daily vitamin supplements. If you take enzymes it is important to take them with all foods including those that have a lot of fat, protein, calcium, and vitamin D.

If your bones are weak already it is very important to make sure that you are getting enough calcium each day, that your vitamin D blood levels are good, and that you are eating enough protein and energy. Your CF team can help make sure you are eating the right foods. They might also check your blood to make sure your vitamin D levels are normal. A calcium supplement may be suggested.

Research is being done to see if certain medications can stop your bones from becoming weak. These same medications may even help you strengthen your bones. Keep this in mind and ask your CF team to provide you with up to date information on bone health and CF.

The most important time to build bone strength is during childhood and early adulthood.
