Osteoporosis and Osteopenia: Low Bone Density
Kevin Conley, MD
Family Medicine Resident at Advocate Lutheran General Hospital

Osteoporosis and osteopenia are conditions where bones become more brittle and prone to breaking. Osteopenia is the less severe form and a signal to work on improving bone health. Anyone can develop these conditions but women are more likely to – one-third of women will have a fracture due to this condition in their lifetime. During menopause, the decrease in estrogen makes women more prone to developing “less dense” bones.

Some evidence suggests adults of both sexes with Down syndrome are more likely to develop osteoporosis. Additional factors known to put people at increased risk of osteoporosis are: lean body type (especially low weight), white or Asian descent, inadequate calcium and vitamin D, consuming too much protein and phosphate, sedentary lifestyle, smoking, consuming more than 2 alcoholic drinks per day, some stomach or intestinal problems such as celiac disease, radiation therapy, and certain medications (e.g. steroids for more than 3 months, seizure medications, chemotherapy).

There are not many signs or symptoms of osteoporosis but in a person with Down syndrome, one might notice them walking differently (which can also signal a different orthopedic cause as well). They may walk more slowly or with a limp. They may or may not be capable of communicating that they are experiencing pain.

To diagnose osteoporosis, your doctor may order a DEXA scan (dual-energy x-ray absorptiometry). It is a painless whole body x-ray which shows where weaknesses in the bones are located and by how much more they are thinned than they should be. They are recommended for women when they reach menopause, people diagnosed with celiac disease, and patients on high-risk medications. The test is interpreted based on a number called a “T-score,” which compares your value to a value of an average young healthy person. A normal score is greater than -1.0. Osteopenia is a value between -2.4 and -1.0. Osteoporosis is a value less than or equal to -2.5. If the DEXA scan is normal, we consider repeating the test in a few years to monitor.
To treat osteoporosis, we have many medications. Biophosphates, such as alendronate (Fosamax) and risedronate (Actonel), have been shown to increase bone density and decrease fractures and can be taken daily, weekly, or monthly based on specifics of the drug. Some side effects include inflammation/bleeding of the esophagus and, rarely, osteonecrosis (bone death) of the jaw. Calcitonin is a hormone that we naturally make, and it can also be taken in nasal spray form. It has been shown to increase bone density but not to reduce fractures. Raloxifene (Evista) is a medication that affects estrogen receptors. It has been shown to increase bone density and decrease fractures of the spinal column bones but not the hip bones. It is not often used in people with Down syndrome because of the increased risk of blood clots in the legs and lungs.

Though it is inevitable that we will lose some bone mass as we age, there are many daily interventions we can use to prevent osteopenia and osteoporosis. Weight bearing exercise such as walking, jogging, and dancing all increase bone density. Non-weight bearing exercises such as swimming do not increase bone density but can increase body awareness which can help prevent falls that lead to fractures.

Getting enough vitamin D in our diet is also essential in slowing and preventing osteoporosis and osteopenia. Our experience has found that many of our patients with Down syndrome are deficient in vitamin D (it is not clear if this is related to having Down syndrome or to the fact that we live in a northern region where vitamin D deficiency is more common). Adults require 600 international units of vitamin D every day, which can come in the form of supplements or diet since most of us do not get adequate sun light exposure which our bodies need to make vitamin D. Good non-supplemental nutritional sources are: fish such as salmon, tuna, and mackerel. Cheese and egg yolks have some vitamin D but not as much as fish. Some foods are fortified with vitamin D, such as milk, many cheeses, yogurt, juices, and cereals.

Calcium is also just as important. Adult men and pre-menopausal women require 1000mg a day, and post-menopausal women require 1500mg a day. Good sources of calcium are dairy (milk, cheese, yogurt), leafy green vegetables, fruits (oranges, tangerines), beans, peas, and fish.

Osteopenia and osteoporosis are concerning conditions we must all look for but they are also treatable and preventable if we take some necessary daily steps.