OSTEOPOROSIS INFORMATION SHEET

According to the National Osteoporosis Foundation (n.d.), osteoporosis is a bone disease that occurs when the body loses too much bone, makes too little bone, or both. As a result, bones become weak and may break from a fall or, in serious cases, from sneezing or minor bumps.

**Osteoporosis** means “porous bone”. Viewed under a microscope, healthy bone looks like a honeycomb. When osteoporosis occurs, the holes and spaces in the honeycomb are much larger than in healthy bone. Osteoporotic bones have lost density or mass and contain abnormal tissue structure. As bones become less dense, they weaken and are more likely to break. If you’re 50 or older and have broken a bone, ask your doctor or healthcare provider about a bone density test (National Osteoporosis Foundation, n.d.).

When a person has osteoporosis, fracture is more likely to occur in the spine, hip or forearm. People with osteoporosis can break a bone from a minor fall, and when osteoporosis is severe, a fracture can occur when sneezing or even turning over in bed. Hip fractures are associated with significant morbidity, mortality and loss of independence. It is important to remember that fracture prevention is critical when caring for individuals who are at risk for fractures.

**Osteopenia** is a condition in which the person loses bone mass and as a result their bones weaken. This occurs when bones become brittle due to a loss of calcium. Total bone mass peaks around age 35. A diagnosis of osteopenia is based on bone density testing results. People with osteopenia have a greater chance of continuing with bone loss that progresses to osteoporosis.

# BONE DENSITY TESTING

The gold standard for testing for osteopenia or osteoporosis is the DEXA scan (**D**ual **E**nergy **X**-ray **A**bsorptiometry). It is painless and uses X-rays to measure how much calcium and other bone minerals are packed into the bone. Usually the spine, hip and femur are the bones which are measured during a DEXA scan. The forearm may also be measured if the individual has hardware (i.e., medical implants) in the other sites listed. Those bones cannot be scanned because the implanted device invalidates the score. A T-score is utilized to diagnose osteopenia and osteoporosis.

**WHAT DOES A T-SCORE TELL YOU?**

A normal T-score on a DEXA scan is above -1.0. Generally, the larger the number (more positive), the denser the bones. As the numbers are more negative, the more brittle the bones. Using a traffic light analogy, each category below is assigned a color to the classifications designated by the World Health Organization:

**Color T-Score What it means**

* Green (GOOD) -1.0 and greater (+) Bone density considered normal
* Yellow (CAUTION) -1 to -2.5 Osteopenia – some bone loss (which

may later lead to osteoporosis)

* Red (STOP- TREAT) -2.5 and lower (-) Osteoporosis – fracture likely

**OSTEOPOROSIS RISK FACTORS**

**Age** (over 50)

**Gender** (females at higher risk)

**Family history**

**Autoimmune disorders** (rheumatoid arthritis - RA, lupus, multiple sclerosis, ankylosing spondylitis)

**Digestive and Gastrointestinal disorders** (celiac disease, inflammatory bowel disease – IBD, weight loss surgery)

**Medical Procedures** (gastrectomy, gastrointestinal bypass)

**Hematologic/Blood disorders** (leukemia and lymphoma, multiple myeloma, sickle cell disease)

**Neurological/Nervous System disorders** (stroke, Parkinson’s disease, multiple sclerosis – MS, spinal cord injuries)

**Cancers** (breast and prostate cancer)

**Blood and Bone Marrow disorders** (Thalassemia)

**Endocrine/Hormonal disorders** (diabetes, hyperparathyroidism, hyperthyroidism, Cushing’s syndrome, irregular menstrual cycles, premature menopause, low levels of testosterone and estrogen in men)

**Mental Illness** (depression, eating disorders)

**Other diseases and conditions** (AIDS/HIV, chronic obstructive pulmonary (COPD), emphysema, female athlete triad - includes loss of menstrual periods, eating disorders, and excessive exercise, chronic kidney disease, liver disease - including biliary cirrhosis, organ transplants, polio and post-polio syndrome, scoliosis, weight loss, history of fractures, immobility)

**Medications:**

* Anti-seizure meds (only some, such as Dilantin [phenytoin] and Solfoton [phenobarbital])
* Steroids/Corticosteroids (e.g., Prednisone, Nasonex, Flonase)
* Psychotropic meds (e.g., Haldol, Seroquel)
* Gastric meds (e.g., Nexium, Prevacid, Prilosec**)**
* Aluminum containing antacids
* Aromatase inhibitors (e.g., Arimidex, Aromasin, Femara)
* Cancer chemotherapeutic drugs
* Cyclosporine A and FK506 (Tacrolimus)
* Gonadotropin releasing hormone (GnRH) (e.g., Lupron, Zoladex)
* Heparin
* Lithium
* Medroxyprogesterone acetate for contraception (Depo-Provera)
* Methotrexate
* Proton pump inhibitors (PPIs) such as Nexium, Prevacid and Prilosec
* Selective serotonin reuptake inhibitors (SSRIs) (e.g., Lexapro, Prozac, Zoloft)
* Steroids (glucocorticoids) (e.g., cortisone, prednisone)
* Tamoxifen (premenopausal use)
* Thiazolidinediones (e.g., Actos, Avandia)
* Thyroid hormones in excess

The U.S. Preventive Services Task Force (USPSTF) recommends screening for osteoporosis in women age 65 years and older, and in women younger than age 65 years who have been through menopause and are at increased risk for osteoporosis. This recommendation applies to adults without a history of low-trauma fractures, conditions that cause secondary osteoporosis (i.e., metabolic bone disease or untreated hyperthyroidism), and other conditions which may cause secondary osteoporosis (US Preventive Services Task Force [USPSTF], 2018).

**TREATMENT**

Treatment may be recommended based on osteoporosis diagnostic criteria and symptoms. Treatment may include the following medications:

**Osteoporosis drugs (bisphosphonates)** Some bisphosphonates are taken by mouth, while others are given by injection. Bisphosphonates include:

* Alendronate (Fosamax) – oral
* Ibandronate (Boniva)
* Risedronate (Actonel)
* **Reclast (zoledronic acid)** - intravenous
* **Aredia (pamidronate)** - intravenous
* Prolia (denosumab) – subcutaneous injection
* Forteo (teriparatide rDNA origin) – intravenous or intramuscular injection
* Bonsity (teriparatide) – subcutaneous injection

People who cannot tolerate bisphosphonates may be prescribed calcitonin (Miacalcin), a naturally occurring hormone involved in calcium regulation and bone metabolism. Calcitonin is a drug that administered by injection or nasal spray.

In rare cases, surgery might be required to:

* Help fractures heal
* Replace joints damaged by severe arthritis
* Realign deformed bones
* Reduce pressure on nerves

TIPS ON WORKING WITH INDIVIDUALS WITH OSTEOPOROSIS

Individuals who are non-ambulatory and wheelchair bound are much more likely to develop osteopenia or osteoporosis than those who are ambulatory. Osteoporosis increases the individual’s risk of sustaining a fracture. Being aware of this risk and practicing preventative measures to decrease the incidence of fractures is beneficial to the individuals supported by DDS.

# POINTS TO REMEMBER

1. During transfers, dressing and repositioning use gentle touch and maneuvers to avoid injury. Individuals who have fragile bones may be predisposed to fractures.
2. For persons who are prescribed a motorized lift (i.e., Hoyer Lift), it should be utilized for all transfers unless otherwise specified.
3. When a motorized lift is not prescribed, in order to safely complete a two-person lift the two-staff must synchronize the lift with each other, this ensures a safe lift for individuals and staff.
4. Gently place the individual on a bed or chair.
5. When transporting individuals in wheelchair through doorways, always check their arms and legs to make sure that they are safely positioned to prevent injury. It is better to reverse the wheelchair/Comfy chair through the doorway for added safety.
6. An individual’s feet should always be placed on footrests when the wheelchair is in motion. If the person self-propels the wheelchair with his or her feet, always check to make sure that the lower legs are not dragging under the chair.
7. Do not pull individuals by their arms or legs when repositioning or dressing. Use safe supportive techniques. Whenever possible, two staff should be used to reposition heavier individuals.
8. When completing range of motion exercises, move the limbs only within the existing range. Do not force a movement. Due care must also be taken when putting on and taking off shoes and splinting devices.
9. When completing mechanical transfers, make sure that the individual’s arms and legs are protected from injury.
10. Residential home staff are the first line of prevention in making sure that the home is safe. Notify the supervisor/charge person of any areas inside of the home, outside perimeter, or vehicle which may increase the risk for falls; or may cause trauma to the feet, such as uneven floors, rugs, or uneven thresholds leading into or out of rooms.

**REFERENCES**

**National Center for Biotechnology Information** <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3597289/>

**MAYO Clinic**

<https://www.mayoclinic.org/diseases-conditions/osteoporosis/symptoms-causes/syc-20351968>

**World Health Organization**

<https://www.who.int/chp/topics/Osteoporosis.pdf>

**National Osteoporosis Foundation. (n.d.).**

<https://www.nof.org/patients/what-is-osteoporosis/>

**NIH Osteoporosis and Related Bone Disease National Resource Center**

<https://www.bones.nih.gov/health-info/bone/osteoporosis/overview>

**US Preventive Services Task Force (USPSTF)** <https://www.uspreventiveservicestaskforce.org/uspstf/document/RecommendationStatementFinal/osteoporosis-screening>

**RXList Bonsity** <https://www.rxlist.com/bonsity-drug.htm>

<https://www.accessdata.fda.gov/drugsatfda_docs/label/2019/211939s000lbl.pdf>

**RxList Forteo** <https://www.rxlist.com/forteo-drug.htm>

<https://www.rxlist.com/bonsity_vs_forteo/drugs-condition.htm>