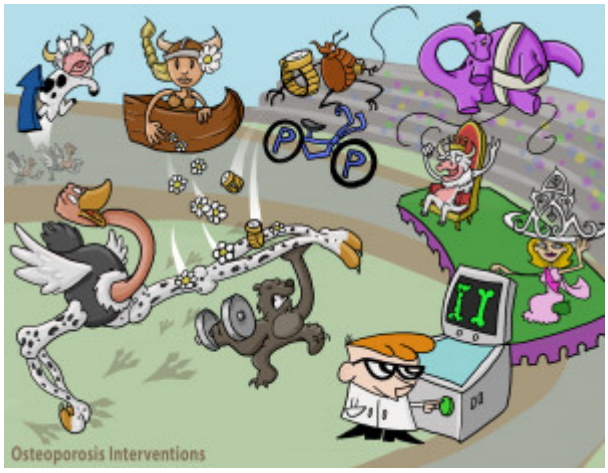
Osteoporosis Interventions

Osteoporosis is a disease that negatively affects bone mass and density, leading to increasingly fragile bones in both men and women. Interventions, including weight bearing exercise, pharmacotherapy, and vitamin and mineral supplementation, can improve a patient’s outcome by replacing essential components necessary for bone formation. It is important to teach the patient to quit smoking and reduce alcohol intake, as both can lead to a loss of bone mass. To evaluate the effectiveness of the treatment regimen, patients may undergo a bone density or DEXA scan.



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Increased Calcium Intake
Up-arrow Calcium-cow
Calcium is an important component of bone health. Increasing daily intake of calcium, either through diet or supplementation, can help promote healthy bone growth. The recommended calcium intake for postmenopausal women who are already getting enough daily calcium is 1200 milligrams (mg) per day. Women should supplement with calcium to reach this amount should their daily intake be lower. Because calcium is best absorbed in doses of 500 mg or less, supplements should be divided into multiple doses throughout the day.

Vitamin D Supplements
Viking (D) Daisy
Vitamin D is essential for the absorption of calcium. Though most people get enough of the vitamin in their diet or from the sun, Vitamin D supplements are recommended in postmenopausal women, older men, and those who have limited exposure to the sun. Typically, 20 minutes in the sun without sunscreen is considered sufficient; however, many individuals prefer to take a supplement rather than not wear sunscreen.

Bisphosphonates
Bike-phosphate-P
Bisphosphonates, such as alendronate (Fosamax), suppress bone resorption and inhibit bone breakdown in patients with osteoporosis.

Raloxifene
Rolex-flea
Raloxifene is a selective estrogen receptor modulator (SERM) that mimics the female hormone estrogen. This drug reduces bone resorption and has been shown to greatly increase bone mineral density in postmenopausal women. Important to note that increased risk of venous thromboembolism and death from stroke has been observed with this medication. Therefore, overall benefit vs harm to patients should be assessed.

Denosumab
Dino-sumo
Denosumab is a monoclonal antibody used to inhibit osteoclast maturation. Preventing the conversion of pre-osteoclasts into osteoclasts reduces bone breakdown in patients with osteoporosis.

Calcitonin
Cow-throne
Calcitonin is a naturally-occurring hormone in the body that works to decrease bone resorption due to osteoclast activity. Patients who take calcitonin to treat osteoporosis should also take calcium supplements to prevent secondary hyperparathyroidism. This medication is no longer a preferred therapy due to its poor efficacy and association with cancer risks.

Teriparatide
Tiara-parade
This medication is a recombinant form of human parathyroid hormone that increases osteoblast activity in the bone. Unlike other osteoporosis drugs that prevent bone breakdown, teriparatide encourages the formation of new bone. Important to note, this mediation comes with an increased risk of osteosarcoma and is not intended to be used for greater than 2 years in high doses.

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Bone Densitometry (DEXA) Scan

Dexter using Bone Scanner

Bone density measurements can be useful in diagnosing osteoporosis or in evaluating the effectiveness of a patient's treatment regimen. A DEXA scan gathers data using x-rays to measure bone density in areas commonly affected by osteoporosis. The results of the scan are reported as both a T-score and a Z-Score. A T-score value represents how far below average the patient's results are compared to a healthy person at age 30. A normal T-score is considered above -1. A Z-score, however, compares the patient's data with a person of the same age and ethnicity. A Z-score less than -2.0 may indicate a problem with bone density.

Weight Bearing Exercises

Weights Bear Exercising

Regular exercise helps keep bones healthy and strong. Weight-bearing activities that the patient enjoys, such as walking, can help prevent further bone loss in patients with osteoporosis.

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