

OSTEOPOROSIS

What Is Osteoporosis?

If you're a woman over fifty, chances are you'll have osteoporosis in your lifetime. It is also likely you'll suffer a fracture as a result of the disease. Osteoporosis, a condition marked by weak and brittle bones, affects more than 10 million people in the United States, most of who are female. It is a silent disease until you experience a fracture. Many fractures that are caused by osteoporosis can be prevented.

Osteoporosis is defined as a condition in which the amount of bone and the quality of bone is not normal (quality refers to the structure of the bone which allows it to be strong and flexible at the same time so it can support you and resist fracture).

Signs & Symptoms

You are at risk for osteoporosis if any of the following apply to you. You can remember these signs and symptoms by using the mnemonic SLENDER®.

- **S**lim Build
- **L**ow calcium intake or little exercise
- **E**arly menopause or even a history of irregular periods
- **N**o pregnancies
- **D**ermatologic/ethnic background (very light skinned people are at greater risk than darker skinned people), external factors such as smoking or excess alcohol consumption and drugs such as steroids and anti seizure medication as well as excess thyroid hormone
- **R**elatives with osteoporosis (particularly your mother).

Conditions

There are a number of conditions that cause rapid loss of bone and lead to bones that are more fragile and more likely to fracture. These conditions include calcium and vitamin D deficiency, certain types of cancer, transplanted organs, certain types of liver disease, the prolonged use of the blood thinner heparin (or mast cell disease, a condition in which heparin like substances are made by the body in excess), certain endocrine diseases, including certain pituitary disorders, adrenal

disorders, and an overactive thyroid. Certain types of kidney disorders, including one in which the kidneys leak calcium that can lead to kidney stones and bone loss, and inflammatory arthritis such as rheumatoid arthritis are also possible conditions. There are certain rare diseases such as Paget's disease of bone which causes bone deformity, fracture, and osteogenesis imperfecta, a condition which affects bone collagen, and makes the bone more fragile.

What things make you more likely to have a fracture?

Factors that make you more vulnerable to fracture can be remembered by the mnemonic FAR TRIP®. They include:

Frailty (such as inability to get out of a chair without help)

Age (older people are more likely to fracture) and adiposity (thin people are more likely to fracture)

Relatives who have fractured

Tendency to fall particularly to the side

Radiologic (x-ray) evidence of deformity of the spine, including partial painless fracture of the spine

Increased length of the part of the hip called the femoral neck which can be seen in people of Asian descent

Prior history of fracture

Prevention

To help prevent osteoporosis and bone fractures, determine whether you are getting enough calcium in your diet by using a Calcium Calculator.

Age	Daily Calcium Intake
1-3	500 mg/day
4-8	800 mg/day
9-18	1,300 mg/day
19-50	1,000 mg/day
51-64	1,200 mg/day
65 and older	1,500 mg/day

Please use the chart below to help you prevent osteoporosis. Begin by examining the situations in the left hand column and proceed to read the center and right hand columns to learn what you need to know and what should happen for preventative care.

Situation	You Need	What Should Happen
Woman nearing menopause, or postmenopausal	Complete medical evaluation to ensure good health, Bone mineral density test (BMD); assessment for skeletal risk factors	Discussion with your doctor about the effects of menopause; 1500 mgs of calcium daily, daily exercise program, multi vitamins; consider treatment for osteopenia if BMD t-score is less than 1.5, for osteoporosis if t-score 2.5 or less
Growing teenager	Assess diet, exercise, lifestyle	Regular exercise; no smoking; maintain normal weight; avoid unhealthy foods like soft drinks
Adult Taking thyroid hormone	Thyroid stimulating hormone (TSH) test	Adjust thyroid dose to normalize thyroid level (normalize TSH)
Anyone taking cortisone or related drugs	BMD test	Take medications that counteract effect of these drugs on bone- bisphosphonates, calcium, vitamin D
Male over 55 with sexual dysfunction and/or history of osteoporosis in male family members	BMD test; endocrinologist evaluation for cause of sexual dysfunction	1500 mg calcium daily, vitamin D 1000 units daily, regular exercise. Treat if BMD indicates osteopenia / osteoporosis; treat
Teenager with delayed or absent sexual development	Complete medical and endocrine evaluation; diet assessment	Treat hormone deficiency if present; 1500 mg calcium, vitamin D 400 IU daily, regular vigorous exercise; monitor growth and development
Middle aged woman whose mother just had a hip fracture	BMD test and risk factor assessment	Discussion about good bone health measures (1500 mg calcium, 400 to 1000 IU vitamin D); treat osteopenia / osteoporosis if BMD indicates
Anyone with chronic illness, persistent unexplained weight loss, malignant disease	Complete medical evaluation for diagnosis of illness; BMD	Treat chronic disease: 1500 mg calcium; vitamin D 1000 IU daily; treat osteoporosis / osteopenia if present
Anyone taking cortisone related drugs (for example dexamethasone, prednisone, hydrocortisone)	Medical and endocrine evaluation to assess indication for cortisone and dose	Doctor to determine if dose used is equivalent to more than 5 mg of prednisone; and, if so, a bisphosphonate (for example Actonel, Fosamax), calcium and vitamin D supplements will be prescribed to protect your skeleton from the effects of your medication
Anyone with calcium levels that are higher than normal	An endocrinology evaluation for abnormal parathyroid function, vitamin D metabolism, or other causes of high calcium levels; BMD, tests for kidney function and for kidney stones	Cause of high calcium levels will be determined and treatment options fully discussed and considered

PREVENT ANOTHER FRACTURE

If you have had a fracture that was not caused by severe trauma, as might occur in an auto accident, you are at increased risk to experience another fracture and additional measures may be required to avoid further fracturing.

To find out if you and your doctor are doing all you can to prevent another fracture, find the situation that closest describes you in the left hand column.

Situation	You Need	What Should Happen
Growing healthy child with a fracture suffered at play	Only to be more careful	
Growing child with multiple fractures	Pediatric endocrinology evaluation	Possibility of a congenital cause of osteoporosis will be explored
Teen or young adult with sports-related stress fractures	Medical and endocrine evaluation for possible osteoporosis	BMD in some cases; hormone tests to check for normal sexual development and maturity
Any adult with a low trauma fracture	X-rays; BMD test; evaluation for causes of osteoporosis if BMD low or x-ray suspicious for osteoporosis	1500 mg calcium and multivitamins prescribed and osteoporosis / osteopenia treated if present
Patient 65 or older treated for a hip fracture	BMD medical evaluation	Will be treated for osteoporosis regardless of BMD result
Anyone who fractures while on approved treatment for osteoporosis	Evaluation by an endocrinologist or other specialist in metabolic bone disease	Other bone diseases, such as osteomalacia will be excluded; change in medication will be considered
Anyone who has multiple fractures and can't take prescribed treatment	Evaluation by endocrinologist or other specialist in metabolic bone diseases	Medications will be changed to a more tolerable drug, or intravenous or intramuscular drugs will be considered

Treatment

If you have been diagnosed with osteoporosis, are at high risk for fractures or have suffered a low-trauma fracture, you should begin treatment. In addition to exercise, calcium, and vitamin D supplements, you may also require one or more of the following medications:

BISPHOSPHONATES (ALENDRONATE AND RISEDRONATE)

Bisphosphonates increases BMD and reduces fracture risk

CALCITONIN

Calcitonin minimizes bone loss and reduces fracture risk. It can also reduce pain from acute spinal fractures.

ESTROGEN

Estrogen is perhaps the most effective means of stopping bone loss. Estrogen is often prescribed to women entering menopause.

SELECTIVE ESTROGEN RECEPTOR MODULATORS OR SERMS (RALOXIFENE)

This medication reduces spine fractures and may have beneficial effects on other tissues.

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