

Definition: Osteoporosis is a condition of reduced bone strength causing fragility and an increased risk of fractures. This can occur at any age if bone quality or quantity is low. The diagnosis of “osteopenia” is not used in pediatric patients.

The diagnosis of osteoporosis is based on fracture history (not bone mineral density alone)

- The presence of one or more vertebral compression fractures (VF) occurring *without* major trauma or local disease.

OR

- The presence of low bone mineral content (BMC) or BMD for age (Z-score <-2.0) *plus* a clinically significant fracture history of *long* bone fractures (\geq two fractures by age 10 years OR \geq three by age 19 years).

Causes of Osteoporosis:

- **Primary:** due to heritable bone disorders such as Osteogenesis Imperfecta.
- **Secondary:** due to chronic diseases (such as leukemia, rheumatological disease, muscular dystrophy, cerebral palsy, inflammatory bowel disease, anorexia nervosa etc.) or to the medications used for treatment.

How to screen for osteoporosis: Patients at high risk for osteoporosis should report any long bone or vertebral fracture that occurs with minimal or no trauma. Lateral spine x-rays may be ordered to monitor for vertebral fractures since as many as 40% are asymptomatic.

Therapeutic options:

- Treat the primary disease; minimize use of medications harmful to bone if possible.
- Optimize nutrition.
- Optimize calcium intake and Vitamin D level.
- Optimize weight bearing exercise as tolerated.
- Consider use of drug treatment (bisphosphonates) if fractures occur.

Endocrine bone clinic: Location 730 Welch Road, Palo Alto, CA | Tel (650) 721-1811

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How to refer patients to bone clinic: (800) 995-5724

<http://www.stanfordchildrens.org/en/refer>

References:

1. Gordon CM, Leonard MB, Zemel BS
2013 Pediatric Position Development Conference: executive summary and reflections.
J Clin Densitometry 2014; 17: 219–224.
2. Grover M, Bachrach L. *Osteoporosis in children with chronic illnesses: diagnosis, monitoring, and treatment.*
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