

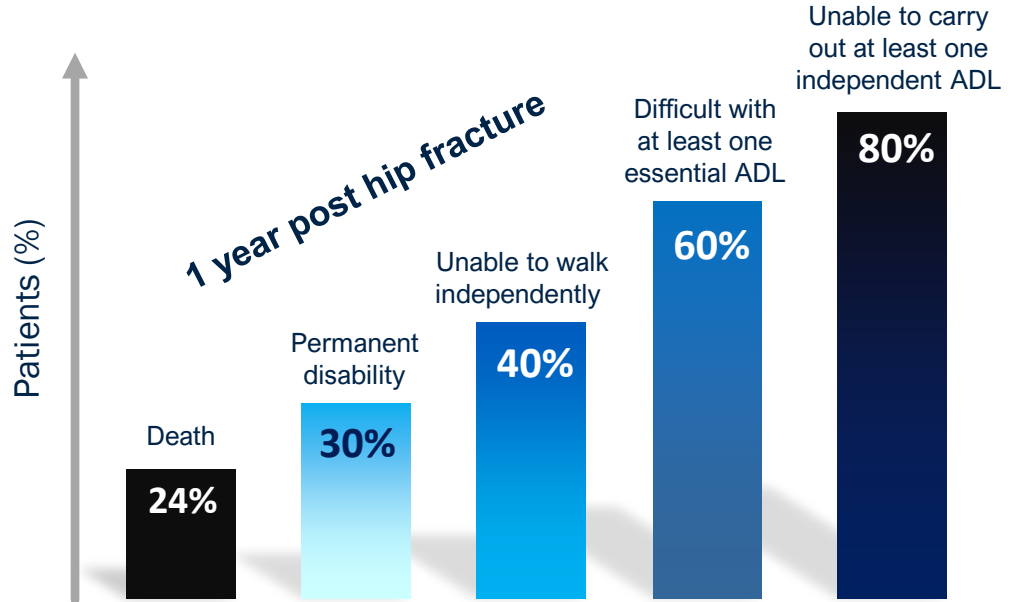
The Fracture Cascade

- The risk of future fractures rises with each new fracture. This is known as the '**cascade effect**'
- Following a low trauma fracture, there is a **2 to 4 times increased** in the risk of have another fragility fracture.



Consequences of *Hip Fractures*

Hip fractures are the **most devastating** of all fractures and often associated with multiple adverse outcomes.



Data from Lyyao et al. Am J Pub Health. 1994; 84:1287-1291; Cooper C, Am J Med, 1997;103(2A):12S-17S.

What is **Osteopenia**?

Osteopenia is the term used to describe low bone density. It is not a disease. It merely indicates a state of relatively low bone density, that is, your bone density is low when compared to a healthy young adult.

Up to **50-60% of low trauma fractures** occur in people with osteopenia (low bone density) and not osteoporosis.



Blausen 0686 Osteoporosis (<http://creativecommons.org/licenses/by/3.0/>),
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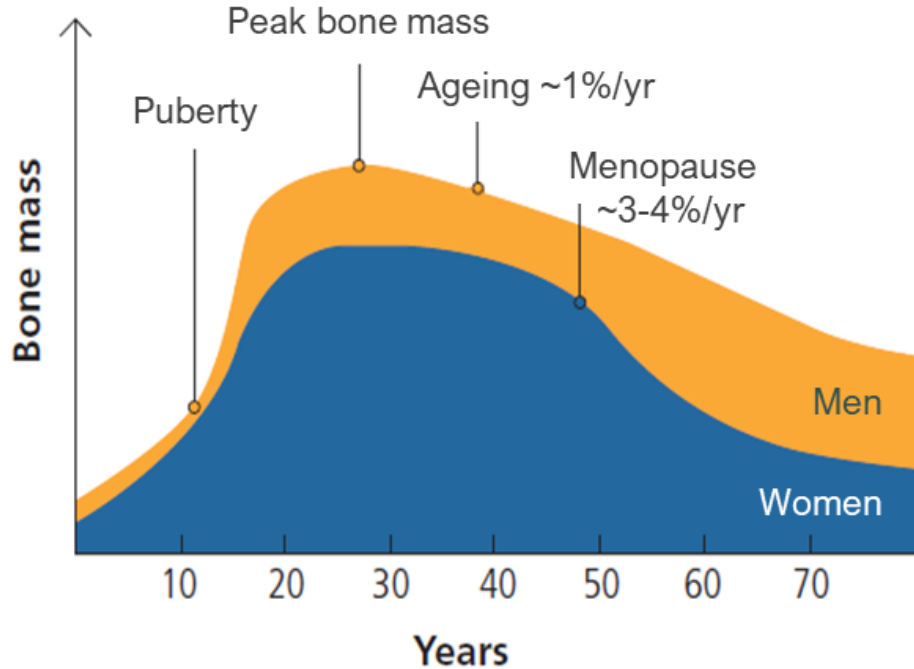


WORLDWIDE Fracture Risk

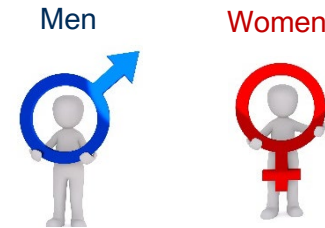
People over the age of 50 who will experience an osteoporotic fracture



Age-related Change in Bone Density



Sex-specific differences in the gain and loss of bone throughout life





Risk Factors for Osteoporosis

Modifiable Risk Factors



- Inadequate dietary calcium

- Vitamin D deficiency

- Physical inactivity

- Sedentary lifestyle

- Low body weight | obesity

- Low BMD

- Glucocorticoid use

- History of falls | low strength

- Smoking

- Excessive alcohol
-



Non-modifiable Risk Factors

- Family history of osteoporosis

- Increasing age (>70 years)

- Caucasian / Asian race

- Gender (female)

- History of fractures as an adults

- Height loss (≥ 3 cm)

- Hormonal and metabolic factors

- *Early menopause*

- *Low testosterone (men)*

- *Hypogonadism*

- *Anorexia nervosa*

- *Low BMI*

- *Hyperthyroidism*



Osteoporosis ► *Secondary Risk Factors*

Diseases or Conditions

- Rheumatoid arthritis
- Hyperthyroidism
- Hyperparathyroidism
- Chronic kidney disease
- Chronic liver disease
- Coeliac disease or malabsorption



- Diabetes
- Hypogonadism
- Myeloma
- Organ transplant
- Bone marrow transplant
- HIV infection
- Depression

Osteoporosis ► *Secondary Risk Factors*

Medications (large effect)

- Glucocorticoids (≥ 7.5 mg/d ≥ 3 months)
- Excessive thyroid hormone replacement
- Aromatase inhibitors
- Anti-androgen therapy (e.g., ADT)

Medications (modest effect)

- Anti-depressants (SSRIs)
- Anti-psychotic
- Thiazolidinediones – diabetes
- Anti-epileptic medications
- Proton pump inhibitors (PPIs)



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