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Risk Factors for Osteoporosis

Risk factors that place people with Developmental Disabilities at high risk for Osteoporosis include:

1. Small Physical Frame
2. Hypotonia
3. Reduced Mobility
4. Vitamin D Deficiency associated with anti-convulsant medications
5. Frequent Falls
6. Early Onset of Menopause
7. Inadequate access to healthcare

Preventative Measures

1. Regular exercise
2. Eat foods high in calcium, including dairy products, spinach, and shellfish
3. Take appropriate supplements
4. Vitamin D
5. Early Screening
6. Avoid certain medications
7. Limit alcohol and do not smoke

This Learning Curve is based on information from the Wikipedia, CDC, and WebMD web sites and the following articles:
Preventing Fracture among People with Developmental Disabilities, *Western Journal of Medicine*, Volume 171; *Aging with Developmental Disabilities: Women's Health Issues*, by Allison A Brown and Leone Murphy

Osteoporosis

“Osteoporosis: Its impact on the Developmentally Disabled”

Serving People with Disabilities in Community Settings

What is Osteoporosis

Osteoporosis is a bone disease that leads to an increased risk of fracture. In osteoporosis the bone mineral density (BMD) is reduced, bone microarchitecture is deteriorating, and the amount and variety of proteins in bone is altered.

Osteoporosis is defined by the World Health Organization (WHO) as a bone mineral density that is 2.5 standard deviations or more below the mean peak bone mass (average of young, healthy adults) as measured by DXA; the term "established osteoporosis" includes the presence of a fragility fracture.

It is most common in women after menopause, and is referred to as primary type 1 or postmenopausal osteoporosis. Primary type 2 osteoporosis or senile osteoporosis occurs at age 75 years and older and is seen in both females and males in a 2:1 ratio.

The onset of secondary osteoporosis is at any age, and affects both men and women equally. This type

of osteoporosis is a result of chronic or prolonged use of certain medications and the presence of predisposing medical problems or disease states.



Osteoporosis may also develop in men, and may occur in anyone in the presence of particular hormonal disorders and other chronic diseases or as a result of medication, specifically glucocorticoids, when the disease is called steroid- or glucocorticoid-induced osteoporosis (SIOP or GIOP). Given its influence in the risk of fragility fracture, osteoporosis may significantly affect life expectancy and quality of life.

In the general populations Osteoporosis risks can be reduced with lifestyle changes and sometimes medication; in people with osteoporosis, treatment may involve both. Lifestyle changes include diet and exercise, and preventing

falls. Medication prevention includes calcium, vitamin D, bisphosphonates and several others. Fall-prevention measures may involve exercise to tone de-ambulatory muscles, proprioception-improvement exercises and equilibrium therapies. Exercise with its anabolic effect, may also stop or reverse osteoporosis.

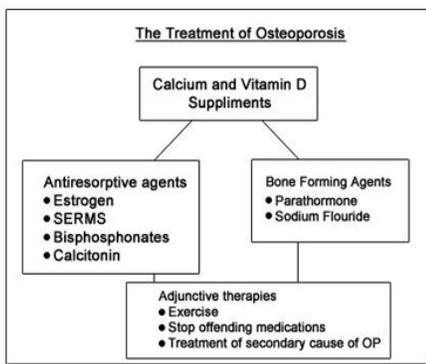
Osteoporosis is a component of the frailty syndrome or a collection of symptoms or markers, primarily due to the aging-related loss and dysfunction of skeletal muscle and bone that place (mostly) older adults at increased risk of adverse events such as death, disability, and institutionalization.

Osteoporosis, Women and Developmental Disabilities:

Women with developmental disabilities may be at greater risk for osteoporosis and related bone fractures due to amenorrhea (absence of periods), earlier menopause, the use of certain medications (anticonvulsants, excessive thyroid hormones, steroids), and because they are

more likely to be inactive or experience falls.

Recent studies suggest that people with certain conditions like Prader-Willi or Klinefelter's Syndromes may be at increased risk for osteoporosis. Women with cerebral palsy may also be at greater risk for developing a number of other bone, muscle, and joint-related diseases as they age, such as scoliosis (abnormal curvature of the spine) and spinal stenosis (neurological problems associated with narrowing of the spinal canal).



Developmental Disabilities and Increased Risk of Fractures:

People with developmental disabilities have a high risk of osteoporotic fractures due to a number of conditions that both diminish attainment of peak bone mass and/or increase susceptibility to falls. Most importantly, many of these factors represent modifiable risk factors and provide opportunities for prevention. An article in the Western Journal of Medicine showed that adults with developmental disabilities residing in a developmental center in California had an increased rate of fracture (5.2 per 100 person-years) compared to the US population.

In this three-and-one-half year study, an increased odds ratio of fracture was associated with age, white race, male gender, coexisting epilepsy, documented osteoporosis, and ambulatory status. Clearly the frequency of osteoporotic fractures in people with

developmental disabilities underscores the importance of offering preventative measures. With more therapeutic options for the prevention and treatment of osteoporosis, clinicians have expanded their view of the population at risk for osteoporotic fractures.

Clinical trials have demonstrated the efficacy of prophylaxis to prevent osteoporosis and reduce fracture risk in groups other than the postmenopausal women. Thus, like other high-risk populations, people with developmental disabilities could be an important target for early diagnosis and treatment. Once clinicians assess bone mineral density with densitometry and/or biochemical markers of bone turnover, they can institute antiresorptive therapies to reduce the personal and economic burden of osteoporotic fractures.

It is well recognized that fracture incidence is the product of dual risk profiles: bone mineral density and propensity for falls. People who have developmental disabilities and are mobile share with aging men and women factors that can increase the probability of falling: balance impairment, because of intrinsic motor coordination difficulties, an increased possibility of dizziness, hypertensive episodes secondary to medication use, and potential for loss of muscle bulk, hypotonia, and generalized loss of muscle strength.

The increased risk of bone density abnormalities in individuals with developmental disabilities is less obvious and can result from factors that influence either the attainment of peak bone mass or the probability of increased bone resorption. People with developmental disabilities often experience coexisting conditions that affect bone mineral content, including hypogonadotropic hypoadism, growth hormone deficiency, Turner's

Syndrome, and thyroid abnormalities.

Many of these people are on drugs that reduce bone mineral density as well, including (1) psychotropic medications used for behavioral modulation, which cause dysregulation of the hypothalamic-pituitary-gonadal axis (presumably, by dopaminergic activity); and (2) drugs to treat epilepsy, which can either have adverse effects on bone mineral density and ultimately reduce osteoblast function and bone formation or promote increased bone resorption, further compromising skeletal health.

Dietary risk factors for osteoporosis

- Low calcium intake, especially long term
- Low vitamin D intake, especially if limited exposure to sun
- Low protein
- Excessive alcohol
- Excess sodium
- Excess caffeine, if calcium intake is low
- Excess vitamin A?
- Low folate, vitamin B₁₂, vitamin K?

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Dietary deficiencies and mobility impairment may further compromise the attainment of peak bone mass during critical years of bone formation. Inadequate exposure to sunlight in certain populations of institutionalized adults may contribute to vitamin D deficiency syndromes.

Women generally live longer than men, so a larger number of the growing population of older people with developmental disabilities will be women. More research is needed to understand all the specific health issues of aging women with developmental disabilities and the ways to support a healthier life-style. Therefore, it is important that older women with developmental disabilities receive the health-related information that is presently available in order to promote well-being and prevent health problems, such as osteoporosis.