ISCD 2013 Position Statement, Bishop N et al., Journal of Clinical Densitometry: Assessment & Management of Musculoskeletal Health, vol. 17, no. 2, 275-280, 2014

Fracture Prediction and the Definition of Osteoporosis in Children and Adolescents Task Force

1+ vertebral compression fracture(s) (>20% loss of height) in the absence of local disease or high energy trauma

OR

Low BMC or BMD defined as a BMC or areal BMD Z-score ≤ -2.0 SD, adjusted for age, gender, and body size, as appropriate.

AND

Fractures following mild to moderate trauma:

- **2+ long bones by age 10yrs**
- **3+ long bones by age 19yrs**

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Fracture Prediction and the Definition of Osteoporosis in Children and Adolescents Task Force

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Fractures following mild to moderate trauma:

- 2+ long bones by age 10yrs
- 3+ long bones by age 19yrs

A Z-score >-2.0 SD does not preclude the possibility of skeletal fragility and fracture

ISCD 2013 Position Statement, Bianchi ML et al., Journal of Clinical Densitometry: Assessment & Management of Musculoskeletal Health, vol. 17, no. 2, 281-294, 2014

Bone Health in Children and Adolescents With Chronic Diseases That May Affect the Skeleton Task Force

Who should get a DXA?

ISCD 2013 Position Statement, Bianchi ML et al., Journal of Clinical Densitometry: Assessment & Management of Musculoskeletal Health, vol. 17, no. 2, 281-294, 2014

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Anyone at high risk for fracture and poor bone mass accrual IF it will influence clinical management.

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- Primary bone disease (OI, IJO)
  Stagi et al. Italian Journal of Pediatrics 2014, 40:55
- Endocrine Diseases
  - No increased risk for fracture with GH deficiency
  - Type 1 DM if poorly controlled and/or celiac disease
  - Lower BMD in children with congenital hypothyroidism, but not acquired
- Neuromuscular Disorders/immobilization
- Hematologic Diseases
  - Thalassemia with lower BMD, but inconsistent findings on fracture risk; DXA at first fracture or age 10yrs, whichever first
  - Reduced BMD in sickle cell disease
  - ALL high risk for vertebral fracture; LS BMD Z-score predicts future risk

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- Cystic Fibrosis

Aris RM et al. Consensus statement: Guide to bone health and disease in cystic fibrosis. J Clin Endocrinol Metab 2005; 90:1888-96.

Baseline DXA scans > 8years if:

- <90% ideal body weight
- FEV1<50% predicted
- Glucocorticoids of ≥5mg/day for ≥90 days/year
- Delayed puberty
- History of fractures

Baseline DXA at 18 years no risk factors

If normal baseline DXA, repeat every 2–5 years

If low baseline Z-score (≤ -2 SD), repeat yearly and consider bisphosphonate therapy

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- GI Disorders
  - IBD guidelines:

    Pappa H et al. Skeletal health of children and adolescents with inflammatory bowel disease. J Pediatr Gastroenterol Nutr 2011; 53

    DXA scans if any of following risk factors:

    Suboptimal growth velocity or height z score <-2.0 SD
    Weight or BMI Z-score <-2.0 SD or downward crossing percentiles
    Secondary or primary amenorrhea
    Delayed puberty
    Severe inflammatory disease course, especially when associated with decreased albumin level (<3 g/dL)
    6 months or longer of continuous use of systemic glucocorticoids

  - No data to support DXA screening in celiac disease unless refractory to diet

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- Chronic Kidney Disease
  - DXA not recommended in 2007
  - Studies in adults demonstrate that hip BMD predicts incident fracture; no studies in children
- Transplant
  - Impaired pre-transplant BMD due to disease and post-transplant due to steroids
  - 160x increased vertebral fracture risk; 6x increased all fracture risk