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

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

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.

Fractures following mild to moderate trauma:
• 2+ long bones by age 10yrs
• 3+ long bones by age 19yrs
Bone Health in Children and Adolescents With Chronic Diseases That May Affect the Skeleton Task Force

Who should get a DXA?
Bone Health in Children and Adolescents With Chronic Diseases That May Affect the Skeleton Task Force

Anyone at high risk for fracture and poor bone mass accrual IF it will influence clinical management.
Bone Health in Children and Adolescents With Chronic Diseases That May Affect the Skeleton Task Force

- **Primary bone disease (OI, IJO)**

- **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**
  

  Baseline DXA scans > 8 years 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:
    - 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