



## Complete Summary

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### **GUIDELINE TITLE**

Diagnosis of osteoporosis in men, premenopausal women, and children.

### **BIBLIOGRAPHIC SOURCE(S)**

Diagnosis of osteoporosis in men, premenopausal women, and children. J Clin Densitom 2004 Spring;7(1):17-26. [82 references] [PubMed](#)

### **GUIDELINE STATUS**

This is the current release of the guideline.

## COMPLETE SUMMARY CONTENT

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INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT  
CATEGORIES  
IDENTIFYING INFORMATION AND AVAILABILITY  
DISCLAIMER

## SCOPE

### **DISEASE/CONDITION(S)**

Osteoporosis

### **GUIDELINE CATEGORY**

Diagnosis

### **CLINICAL SPECIALTY**

Endocrinology  
Family Practice  
Internal Medicine  
Pediatrics  
Radiology  
Rheumatology

## **INTENDED USERS**

Physicians

## **GUIDELINE OBJECTIVE(S)**

To provide guidelines on the criteria for a densitometric diagnosis of osteoporosis or low bone mass in men, premenopausal women and children

## **TARGET POPULATION**

Men, premenopausal women, and children who have or may be at risk of osteoporosis or low bone mass

## **INTERVENTIONS AND PRACTICES CONSIDERED**

### **Diagnosis of Osteoporosis**

1. Use of World Health Organization (WHO) classification of bone mineral density
2. Use of T-scores for diagnosis
3. Use of Z-scores for diagnosis
4. Use of bone densitometry (dual-energy x-ray absorptiometry [DXA])

## **MAJOR OUTCOMES CONSIDERED**

- Risk of osteoporosis and osteoporotic fractures
- Incidence of osteoporosis
- Prevalence of fractures
- Bone mineral density/content
- Predictive value of bone density measurements

## **METHODOLOGY**

### **METHODS USED TO COLLECT/SELECT EVIDENCE**

Searches of Electronic Databases

### **DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE**

An initial literature search was performed following a method modified from that used by the Cochrane reviews. Searches were conducted using MEDLINE, PubMed, and EMBASE databases. The subcommittee chairs and members selected appropriate articles from those identified by these searches.

### **NUMBER OF SOURCE DOCUMENTS**

Not stated

### **METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE**

Expert Consensus (Committee)

## **RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE**

Not applicable

## **METHODS USED TO ANALYZE THE EVIDENCE**

Systematic Review

## **DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE**

Not stated

## **METHODS USED TO FORMULATE THE RECOMMENDATIONS**

Expert Consensus (Consensus Development Conference)

## **DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS**

Following the first Position Development Conference (PDC) in Denver in 2001, the International Society for Clinical Densitometry (ISCD) leadership recommended formation of a second conference, which was held in Cincinnati, Ohio, July 25-27, 2003. The ISCD Scientific Advisory Committee (SAC) identified five topics of interest in the field of bone densitometry to address at the Cincinnati PDC.

Three SAC members and the ISCD president served as conference cochair, and they, in turn, selected chairs of the subcommittees, each of which was assigned to one of the topics.

Concurrent with these activities, a group of experts in the field of pediatric densitometry developed a series of recommendations for bone mass measurement in children. The opinions of pediatric bone densitometry experts were sought by questionnaires distributed in 2002 at the International Pediatric Bone Health Meeting in Sheffield, England, and the 15th International Bone Densitometry Workshop in Monterey, California. Expert opinions were also solicited at a general forum held in September 2002 in San Antonio, Texas, in conjunction with the annual meeting of the American Society for Bone and Mineral Research. Attendees included radiologists, pediatricians, and other bone experts from the United Kingdom, Poland, Australia, and the United States, as well as some industry representatives. The meeting focused on a discussion of key controversies surrounding the acquisition, analysis, and interpretation of Dual energy x-ray absorptiometry (DXA) studies in children and adolescents.

The conference cochair selected 13 international experts in the field of bone densitometry to serve as panelists for the conference. It was their role to review the SAC presentations and make final recommendations to the ISCD Board of Directors. A nine member affirmative vote by the panel was required for the passage of any recommendation.

The PDC meeting was organized such that on the first afternoon subcommittee chairs presented the topics to the panelists. Preliminary suggestions were given and changes were made to the presentations. On the second day, two sessions were held before an open meeting of ISCD members, representatives of bone densitometer manufacturers, and others. Open commentary to the panel was sought. On the third day of the PDC, the panel, in closed session, determined the final wording of the recommendations. Throughout the entire conference, all proceedings were audio-recorded and a professional writer was present to take notes of the discussions to ensure accuracy.

With input from the subcommittee chairs, the conference cochairs finalized the wording of the recommendations without change in content.

## **RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS**

Not applicable

## **COST ANALYSIS**

A formal cost analysis was not performed and published cost analyses were not reviewed.

## **METHOD OF GUIDELINE VALIDATION**

Peer Review

## **DESCRIPTION OF METHOD OF GUIDELINE VALIDATION**

The recommendations were presented to the International Society for Clinical Densitometry (ISCD) Board of Directors for approval according to ISCD policy. The recommendations approved by a majority vote of the board are presented in the original guideline document as official ISCD positions.

# **RECOMMENDATIONS**

## **MAJOR RECOMMENDATIONS**

### **World Health Organization (WHO) Classification**

- Although there are conceptual problems with the WHO classification, the International Society for Clinical Densitometry (ISCD) has no position for altering it at this time.

### **Diagnosis of Osteoporosis in Men (20 Years of Age and Older)**

- The WHO classification should not be applied in its entirety to men.
- In men 65 years of age and older, T-scores should be used and osteoporosis diagnosed if the T-score is -2.5 or less (male reference database).

- In men from ages 50 to 65 years, T-scores may be used and osteoporosis diagnosed if the T-score is -2.5 or less (male reference database) and other risk factors for fracture are identified.
- Men at any age with secondary causes of low bone mineral density (BMD) (e.g., glucocorticoid therapy, hypogonadism, and hyperparathyroidism) may be diagnosed clinically with osteoporosis supported by findings of low BMD. These patients may have a different fracture risk at a given BMD.
- The diagnosis of osteoporosis in men under 50 years of age should not be made on the basis of densitometric criteria alone.

### **Diagnosis of Osteoporosis in Premenopausal Women (20 Years of Age to Menopause)**

- The WHO classification should not be applied to healthy premenopausal women.
- Z-scores rather than T-scores should be used.
- Osteoporosis may be diagnosed if there is low BMD with secondary causes (e.g., glucocorticoid therapy, hypogonadism, and hyperparathyroidism) or with risk factors for fracture.
- The diagnosis of osteoporosis in premenopausal women should not be made on the basis of densitometric criteria alone.

### **Diagnosis of Osteoporosis in Children (Male or Female Less Than 20 Years of Age)**

- The WHO classification should not be applied to children.
- T-scores should not be used in children; Z-scores should be used instead.
- T-scores should not appear in the reports or on dual energy x-ray absorptiometry (DXA) printouts in children.
- The diagnosis of osteoporosis in children should not be made on the basis of densitometric criteria alone.
- Terms such as "low bone density for chronologic age" may be used if the Z-score is less than -2.0.
- Z-scores must be interpreted in the light of the best available pediatric databases of age-matched controls. The reference database should be cited in the report.
- Spine and total body are the preferred skeletal sites for measurement.
- The value of BMD to predict fractures in children is not clearly determined.
- There is no agreement on standards for adjusting BMD or bone mineral content (BMC) for factors such as bone size, pubertal stage, skeletal maturity, or body composition. If adjustments are made, they should be clearly stated in the report.
- Serial BMD studies should be done on the same machine using the same scanning mode, software, and analysis when appropriate. Changes may be required with growth of the child.
- Any deviation from standard adult acquisition protocols, such as use of low density spine (LDS) and manual adjustment of regions of interest (ROI), should be stated in the report.

### **CLINICAL ALGORITHM(S)**

None provided

## EVIDENCE SUPPORTING THE RECOMMENDATIONS

### TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of evidence supporting the recommendations is not specifically stated.

## BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

### POTENTIAL BENEFITS

Accurate diagnosis of patients with osteoporosis

### POTENTIAL HARMS

False-positive and false-negative results

## IMPLEMENTATION OF THE GUIDELINE

### DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

### IMPLEMENTATION TOOLS

Foreign Language Translations  
Slide Presentation

For information about [availability](#), see the "Availability of Companion Documents" and "Patient Resources" fields below.

## INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

### IOM CARE NEED

Getting Better

### IOM DOMAIN

Effectiveness

## IDENTIFYING INFORMATION AND AVAILABILITY

### BIBLIOGRAPHIC SOURCE(S)

Diagnosis of osteoporosis in men, premenopausal women, and children. J Clin Densitom 2004 Spring;7(1):17-26. [82 references] [PubMed](#)

**ADAPTATION**

Not applicable: The guideline was not adapted from another source.

**DATE RELEASED**

2004

**GUIDELINE DEVELOPER(S)**

International Society for Clinical Densitometry - Private Nonprofit Organization

**SOURCE(S) OF FUNDING**

International Society for Clinical Densitometry

**GUIDELINE COMMITTEE**

The Writing Group for the ISCD Position Development Conference

**COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE**

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**FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST**

Not stated

**ENDORSER(S)**

American Society for Bone and Mineral Research - Professional Association

**GUIDELINE STATUS**

This is the current release of the guideline.

**GUIDELINE AVAILABILITY**

Electronic copies: Available to subscribers of the [Journal of Clinical Densitometry](#).

Print copies: Available from the International Society for Clinical Densitometry, 342 North Main St., West Hartford, CT 06117-2507; Phone: (860) 586-7563; Fax: (860) 586-7550; Website: [www.iscd.org](http://www.iscd.org)

## **AVAILABILITY OF COMPANION DOCUMENTS**

The following are available:

- Official positions of the International Society for Clinical Densitometry. J Clin Densitom 2004 Spring;7(1):1-5. Electronic copies: Available to subscribers of the [Journal of Clinical Densitometry](#). Also available as a power point presentation (In English and Portuguese) from [International Society for Clinical Densitometry Web site](#). Translated Word versions (In Czech and Slovak) are available from the [International Society for Clinical Densitometry Web site](#)
- Executive Summary. J Clin Densitom 2004 Spring;7(1):7-12. Electronic copies: Available to subscribers of the [Journal of Clinical Densitometry](#).
- Introduction, Methods and Participants. J Clin Densitom 2004 Spring;7(1):13-15. Electronic copies: Available to subscribers to the [Journal of Clinical Densitometry](#).

## **PATIENT RESOURCES**

None available

## **NGC STATUS**

This NGC summary was completed by ECRI on May 16, 2005. The information was verified by the guideline developer on May 18, 2005.

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Date Modified: 11/3/2008

