Complete Summary

GUIDELINE TITLE

Risk factor assessment for osteoporosis and/or increased fracture risk in men.

BIBLIOGRAPHIC SOURCE(S)

University of Texas, School of Nursing, Family Nurse Practitioner Program. Risk factor assessment for osteoporosis and/or increased fracture risk in men. Austin (TX): University of Texas, School of Nursing; 2008 May. 14 p. [35 references]

GUIDELINE STATUS

This is the current release of the guideline.

COMPLETE SUMMARY CONTENT

SCOPE
METHODOLOGY - including Rating Scheme and Cost Analysis
RECOMMENDATIONS
EVIDENCE SUPPORTING THE RECOMMENDATIONS
BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS
QUALIFYING STATEMENTS
IMPLEMENTATION OF THE GUIDELINE
INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES
IDENTIFYING INFORMATION AND AVAILABILITY
DISCLAIMER

SCOPE

DISEASE/CONDITION(S)

Osteoporosis

GUIDELINE CATEGORY

Prevention
Risk Assessment
Screening

CLINICAL SPECIALTY

Allergy and Immunology
Chiropractic
Endocrinology

Family Practice
Gastroenterology
Geriatrics
Hematology
Internal Medicine
Nephrology
Neurology
Nursing
Nutrition
Oncology
Pharmacology
Preventive Medicine
Psychiatry
Pulmonary Medicine
Rheumatology
Urology

INTENDED USERS

Advanced Practice Nurses
Allied Health Personnel
Chiropractors
Dietitians
Health Care Providers
Health Plans
Managed Care Organizations
Nurses
Pharmacists
Physical Therapists
Physician Assistants
Physicians
Students

GUIDELINE OBJECTIVE(S)

To provide extensive evidence-based recommendations identifying risk factors in men for osteoporosis and/or increased fracture risk

TARGET POPULATION

Men at risk for osteoporosis and associated skeletal fracture

INTERVENTIONS AND PRACTICES CONSIDERED

Risk Assessment

1. Current and past medication use
2. Modifiable lifestyle factors
3. Nonmodifiable lifestyle factors
4. Medical conditions

Screening

1. On the basis of risk factors
2. Dual-energy X-ray absorptiometry (DEXA)
3. Blood marker levels (testosterone, 25-hydroxyvitamin D, urinary calcium/creatinine ratio)

MAJOR OUTCOMES CONSIDERED

- Cost of osteoporosis screening
- Rate of diagnosis of osteoporosis in men
- Incidence of osteoporosis in association with suspected risk factors
- Reduction in sequelae of osteoporosis

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Hand-searches of Published Literature (Secondary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Online searches were limited for publication between the years 2003 and 2008 for the following databases: PubMed, Medline, CINAHL, Cochrane, and UpToDate using keywords such as men, osteoporosis, risk factors, and screening.

NUMBER OF SOURCE DOCUMENTS

35

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Expert Consensus
Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Quality of Evidence (Based on the U.S. Preventive Services Task Force Ratings)

Good: Evidence includes consistent results from well-designed, well-conducted studies in representative populations that directly assess effects on health outcomes.

Fair: Evidence is sufficient to determine effects on health outcomes, but the strength of the evidence is limited by the number, quality, or consistency of the individual studies, generalizability to routine practice, or indirect nature of the evidence of health outcomes.

Poor: Evidence is insufficient to assess the effects on health outcomes because of limited number of power of studies, important flaws in their designs or conduct, gaps in the chain of evidence, or lack of information on important health outcomes.

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Journal articles were analyzed for quality based on type of study design, method, number of subjects, representative sample, generalizability of results, and applicability for target population.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

The guideline was developed by a group of family nurse practitioner (FNP) students, based on review of the studies and journal articles with consensus of the guideline developers.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Grading of Recommendations (Based on the U.S. Preventive Services Task Force Ratings)

A. There is good evidence that the recommendation improves important health outcomes. Benefits substantially outweigh harms.

B. There is at least fair evidence that the recommendation improves important health outcomes. Benefits outweigh harms.

C. There is at least fair evidence that the service can improve health outcomes but the balance of benefits and harms is too close to justify a general recommendation.

D. There is at least fair evidence that the recommendation is ineffective or that harms outweigh benefits.

I. Evidence that the service is effective is lacking, of poor quality or conflicting and the balance of benefits and harms cannot be determined.

COST ANALYSIS

Consideration of cost of osteoporosis revealed the following:

- Currently no formal cost analyses are available
- With implementation of this guideline, developers anticipate increased appointment time with providers, and increased cost to screen and treat patients
- Developers suggest decreased health care costs related to appropriate use of diagnostic screening tools to reduce osteoporosis related fractures, complications and hospitalizations in men

METHOD OF GUIDELINE VALIDATION

Comparison with Guidelines from Other Groups
External Peer Review
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The guideline was submitted for review to FNP program faculty and expert reviewers. Before submitting to the guideline committee, revisions were made based on reviewer recommendations.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Strength of recommendations (A, B, C, D, I) and quality of evidence (good, fair, poor) are defined at the end of the "Major Recommendations" field.

Risk Assessment

Assess male patients for the following risk factors during history taking. The following have been identified as being associated with increased risk of osteoporosis in men:

1. Medications
    a. Glucocorticoid use of 5 mg or greater for 3 months or longer (Rosen, 2006; Mauck & Clarke, 2006) **Good Evidence**; (Campion & Maricic, 2003) **Fair Evidence**
    b. Anticonvulsants including phenobarbital, phenytoin, and carbamazepine (Rosen, "Drugs that affect bone metabolism," 2007) **Good Evidence**; (Campion & Maricic, 2003) **Fair Evidence**
    c. Past chemotherapy including methotrexate, ifosfamide and/or imatinib or radiation treatment (Rosen, "Drugs that affect bone metabolism," 2007) **Good Evidence**; (Grey et al., 2006) **Fair Evidence**
    d. Hormone deprivation therapy being used for greater than one year as treatment for prostate cancer (Bruder et al., 2006; Greenspan et al., 2005) **Fair Evidence**; (Finkelstein, 2007) **Good Evidence**
    e. There is mixed evidence of several drugs which may have negative impact on bone density/fracture risk which need further research including:

- Warfarin use for greater than or equal to one year (Rosen, "Drugs that affect bone metabolism," 2007; Gage, Birman-Deych, & Radford, 2006) **Good Evidence**
- Selective serotonin reuptake inhibitors (SSRIs) (Busko, 2007) **Fair Evidence**; (Haney et al., 2007; Rosen, "Drugs that affect bone metabolism," 2007) **Good Evidence**
- Long term use of retinoid and vitamin A supplementation >5000 units of vitamin A/day (Rosen, "Drugs that affect bone metabolism," 2007) **Good Evidence**
- Proton pump inhibitors long-term use greater than 1 year (Rosen, "Drugs that affect bone metabolism," 2007; Yang et al., 2006; Vestergaard, Rejnmark, & Mosekilde, 2006) **Good Evidence**
- Excessive use of antacids (Vestergaard, Rejnmark, & Mosekilde, 2006) **Good Evidence**
- Aggressive treatment of hypothyroidism with overuse of thyroxine (Ross, 2007) **Good Evidence**

2. Modifiable Lifestyle
    a. Body weight <70 kg (Shepherd et al., 2007; Mauck & Clarke, 2006) **Good Evidence**
    b. Heavy tobacco or ≥14 drinks of alcohol/wk use (Campion & Maricic, 2003) **Fair Evidence**; (Cawthon et al., 2006; Finkelstein, 2007) **Good Evidence**
    c. Sedentary lifestyle (Michaelsson, Olofsson, & Jensevik, 2007) **Good Evidence**
    d. Nutritional deficits (vitamin D or calcium deficits) (Mauck & Clarke, 2006) **Good Evidence**; (Vondracek & Hansen, 2004) **Fair Evidence**

3. Non-modifiable Lifestyle
    a. Race (Caucasian & Asian at higher risk) (Vondracek & Hansen, 2004) **Fair Evidence**
    b. Genetic propensity (Finkelstein, 2007) **Poor Evidence**; (Mauck & Clarke, 2006) **Fair Evidence**
    c. Increasing age (Shepherd et al., 2007; Skedros, Sybrowsky, & Stoddard, 2007) **Good Evidence**
    d. Mobility impairments (hemiplegic, wheelchair bound) (Mauck & Clarke, 2006) **Good Evidence**; (Khosla, 2008) **Fair Evidence**
    e. Height loss of 1.5 inches or greater (Finkelstein, 2007) **Good Evidence**

4. Medical Conditions
    a. **Pulmonary** - Asthma, chronic obstructive pulmonary disease (COPD) (Mineo, 2005; Shepherd et al., 2007) **Good Evidence**
    b. **Gastrointestinal (GI)** - Inflammatory bowel disease (especially Crohn's), celiac disease, gastric resection, gastrectomy (Siffledeen et al., 2007; Rosen, "Metabolic bone disease," 2007) **Good Evidence**
    c. **Nephrology** - Hypercalciuria, renal insufficiency or failure (Vondracek & Hansen, 2004; Khosla, 2008) **Fair Evidence**; (Rosen, "Drugs that affect bone metabolism," 2007) **Good Evidence**

d. **Hepatic** - Chronic liver disease (especially primary biliary cirrhosis) (Campion & Maricic, 2003) **Fair Evidence**; (American Gastroenterological Association [AGA], 2003) **Good Evidence**
e. **Endocrine** - Hypogonadism (Bruder et al., 2006; Greenspan et al., 2005; Campion & Maricic, 2003) **Fair Evidence**; hyperthyroidism, hyperparathyroidism (Grey et al, 2006) **Fair Evidence**; diabetes (Vestergaard, Rejnmark, & Mosekilde,2006) **Good Evidence**; Cushing's disease (Vondracek & Hansen, 2004) **Fair Evidence**
f. **Hematology** - Rheumatoid arthritis (Vondracek & Hansen, 2004) **Fair Evidence**
g. **Musculoskeletal disorders** - Osteogenesis imperfecta, ankylosing spondylitis, (Khosla, 2008) **Fair Evidence**; prior history of low impact fractures (Mauck & Clarke, 2006) **Fair Evidence**
h. **Neuro** - Parkinson's Disease (Fink et al., 2005) **Fair Evidence**; dementia, blindness, multiple sclerosis, cerebral vascular accident, (Mauck & Clarke, 2006) **Good Evidence**
i. **Immunosuppression** related to organ transplant, cancer, human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) (Brown et al., 2004; Mauck & Clarke, 2006; Vondracek & Hansen, 2004) **Fair Evidence**

Men with the following risk factors **are strongly recommended for screening** for osteoporosis:

- All men with a height loss of 1.5 inches or greater (Finkelstein, 2007) **Good Evidence**; **Recommendation A**
- All men 65 years and older who have been on glucocorticoid therapy for greater than 3 months at doses greater than or equal to 5 mg/day (Mauck & Clarke, 2006; Rosen, 2006; Sinnott, Kukreja, & Barengolts, 2006) **Good Evidence; Recommendation A**
- All men 65 years and older who have a personal or first degree family member history of non traumatic fracture in adulthood (Mauck & Clarke, 2006; Lewiecki, 2007; Kanis, Borgstrom, & De Laet, 2005) **Good Evidence; Recommendation A**
- All men 65 years and older who have a history of hypogonadism for at least 5 years (Barclay, 2008) **Fair Evidence**; (Mauck & Clarke, 2006; Lie, 2008, Finkelstein, 2007) **Good Evidence; Recommendation A**
- All men **65 years and older** be calculated for risk using the following formula adapted from the **Osteoporosis Screening Tool (OST)**

  [Wt (kg) – age (yrs)] x 0.2

  If results are -1 or less, the man is recommended for screening for osteoporosis, especially if he has a history of COPD and/or a gastrectomy. (Sinnott, Kukreja, & Barengolts, 2006; Adler, Tran, & Petkov., 2003; Skedros, Sybrowsky, & Stoddard, 2007; Zimering et al., 2007; Lynn et al., 2005; Shepherd et al., 2007) **Good Evidence; Recommendation A**

Men with the following risk factors **are recommended** for screening:

- Men 70 years and older with any of the medical conditions or long term medication use noted in the risk factor list (Mauck & Clarke, 2006; International Society for Clinical Densitometry [ISCD], 2007) **Good Evidence; Recommendation C**
- All men 70 years and older with low body weight (<70 kg) combined with a history of long term alcohol use, smoking >5 years, or immobility >6 months. (Finkelstein, 2007; Cawthon et al., 2006; Kanis, Borgstrom, & De Laet, 2005; Shepherd et al., 2007; ISCD, 2007) **Good Evidence**; (Khosla, 2008) **Fair Evidence; Recommendation B**

Men with the following risk factors **may** be considered for screening:

- All men 70 years and older (Campion & Maricic, 2003) **Fair Evidence**; (ISCD, 2007) **Good Evidence; Recommendation C**
- All men who have a history of hypogonadism for at least 5 years (Finkelstein, 2007; Cawthon et al., 2006) **Good Evidence**; (Khosla, 2008) **Fair Evidence; Recommendation B**

Screening methods may include but are not limited to dual energy X-ray absorptiometry (DEXA), testosterone levels, 25-hydroxyvitamin D (Vitamin D 25-OH) levels, urinary calcium/creatinine ratio. The method for screening should be utilized based upon the mechanism of how the drug and/or disease/condition cause poor bone quality and/or osteoporosis.

Definitions:

Strength of Recommendations (Based on U.S. Preventive Services Task Force [USPSTF] Ratings)

A. There is good evidence that the recommendation improves important health outcomes. Benefits substantially outweigh harms.

B. There is at least fair evidence that the recommendation improves important health outcomes. Benefits outweigh harms.

C. There is at least fair evidence that the recommendation can improve health outcomes but the balance of benefits and harms is too close to justify a general recommendation.

D. There is at least fair evidence that the recommendation is ineffective or that harms outweigh benefits.

I. Evidence that the recommendation is effective is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be determined.

Quality of Evidence (Based on USPSTF Ratings)

- **Good**: Evidence includes consistent results from well-designed, well-conducted studies in representative populations that directly assess effects on health outcomes
- **Fair**: Evidence is sufficient to determine effects on health outcomes, but the strength of the evidence is limited by the number, quality, or consistency of the individual studies, generalizability to routine practice, or indirect nature of the evidence on health outcomes.
- **Poor**: Evidence is insufficient to assess the effects on health outcomes because of limited number or power of studies, important flaws in their design or conduct, gaps in the chain of evidence, or lack of information on important health outcomes.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

REFERENCES SUPPORTING THE RECOMMENDATIONS

References open in a new window

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see the "Major Recommendations" field).

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- Appropriate risk factor assessment for osteoporosis and fracture in men
- More cost effective use of osteoporosis screening resources
- Better survival
- Improved quality of life in men with poor bone quality and/or osteoporosis

POTENTIAL HARMS

- Overuse of diagnostics without evidence of reduced morbidity and mortality in men related to complications of osteoporosis
- Cause of undue psychological concern in men as counseled for increased risk of fracture and/or osteoporosis

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- These guidelines are not intended to serve as a standard of medical care. Standards of medical care are determined on the basis of all clinical data

available for an individual case and are subject to change as scientific knowledge advances and patterns of care evolve.
- The contents of this publication are guidelines to clinical practice, based on the best available evidence at the time of development. Adherence to these guidelines may not ensure a successful outcome in every case, nor should they be construed as including all proper methods of care or excluding other acceptable methods of care. Each physician is ultimately responsible for the management of his/her unique patient in the light of the clinical data presented by the patient and the diagnostic and treatment options available.
- Users must keep in mind that new evidence could supersede recommendations in these guidelines.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Living with Illness
Staying Healthy

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

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ADAPTATION

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

DATE RELEASED

2008 May

GUIDELINE DEVELOPER(S)

University of Texas at Austin School of Nursing, Family Nurse Practitioner Program - Academic Institution

SOURCE(S) OF FUNDING

University of Texas at Austin, School of Nursing, Family Nurse Practitioner Program

GUIDELINE COMMITTEE

Practice Guidelines Committee

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

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Expert Consultant: Sharon Hausman-Cohen, MD

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

None stated

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: None available.

Print copies: Available from the University of Texas at Austin, School of Nursing. 1700 Red River, Austin, Texas, 78701-1499

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

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