Evidence Synthesis Pilot Program

VA HSR&D

Screening Men for Osteoporosis: Who & How

EXECUTIVE SUMMARY

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** Service as a technical expert for this report does not imply endorsement of
the report's findings.*

PREFACE

VA's Health Services Research and Development Service (HSR&D) works to improve the cost, quality, and outcomes of health care for our nation's veterans. Collaborating with VA leaders, managers, and policy makers, HSR&D focuses on important health care topics that are likely to have significant impact on quality improvement efforts. One significant collaborative effort is HSR&D's Evidence-based Synthesis Pilot Project (ESP). Through this project, HSR&D provides timely and accurate evidence syntheses on targeted health care topics. These products will be disseminated broadly throughout VA and will: inform VA clinical policy, develop clinical practice guidelines, set directions for future research to address gaps in knowledge, identify the evidence to support VA performance measures, and rationalize drug formulary decisions.

HSR&D provided funding for the two Evidence Based Practice Centers (EPCs) supported by the Agency for Healthcare Research and Quality (AHRQ) that also had an active and publicly acknowledged VA affiliation—Southern California EPC and Portland, OR EPC—so they could develop evidence syntheses on requested topics for dissemination to VA policymakers. A planning committee with representation from HSR&D, Patient Care Services, Office of Quality and Performance, and the VISN Clinical Management Officers, has been established to identify priority topics and to insure the quality of final reports.

Comments on this evidence report are welcome and can be sent to Susan Schiffner, ESP Program Manager, at Susan.Schiffner@va.gov .

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BACKGROUND

Although 25% of men over the age of 60 will sustain osteoporotic fractures during their lifetime, data suggest that male osteoporosis is underdiganosed and undertreated. In order to help inform decisions about whether the Veterans Health Administration should develop screening guidelines for male osteoporosis, summaries of what is known about 1) the epidemiology of male osteoporosis, and 2) the validity of tools to screen and diagnose male osteoporosis are needed.

The Key Questions were:

Key Question 1. What are the prevalence of and risk factors for osteopenia, osteoporosis and osteoporotic fractures among men in general and among male Veterans specifically?

Key Question 2. Are there any validated tools (outside of central bone density) to screen for osteoporosis in men?

Key Question 3. What values of BMD determined by Dual energy X-ray Absorptiometry (DXA) (and by different DXA techniques) have been used to diagnose osteopenia and osteoporosis; and what is the evidence regarding the relationship between differing definitions and the development of osteoporotic fractures?

METHODS

We searched PubMed from 1990-2006 using standard search terms. Titles, abstracts, and articles were reviewed in duplicate by physicians trained in the critical analysis of literature. Data were extracted by quantitative analysts. Pooled analyses were performed for the comparison of either calcaneal ultrasound or the Osteoporosis Screening Tool compared to central DXA; all other data were narratively summarized.

RESULTS

We screened 564 titles and performed a more detailed review on 378 articles. From this, we identified 173 articles that addressed risk factors for osteoporosis, 27 articles that addressed diagnostic tools, and 31 articles about differing DXA levels and fracture risk. We identified an older high quality meta-analysis of risk factors for osteoporosis. Of the risk factors assessed in this review that the authors classified as something other than high risk, VA policymakers selected alcohol use, diabetes mellitus type II, and spinal cord injury as the factors for assessment in this review.

KEY QUESTION #1: What are the prevalence of and risk factors for osteopenia, osteoporosis and osteoporotic fractures among men in general and among male Veterans specifically?

PREVALENCE

- There are no VA specific data on prevalence of osteopenia and osteoporosis in men.
- Applying NHANES III estimates of prevalence to veteran-specific enrollee data we estimate the prevalence of osteoporosis in male veterans of 200,000 – 400,000; and of osteopenia in male veterans of 2-3 million.

RISK FACTORS

- We found a high quality meta-analysis, and a limited number of articles specific to the risk factors alcohol use, diabetes mellitus type II and spinal cord injury. Based on these findings, our review suggests the following.
- Strong predictors of an increased risk of osteoporosis in men include age, low body weight, physical inactivity, and weight loss. (GRADE quality of evidence = High; further research is very unlikely to change our confidence on the estimate of effect.)
- Certain health conditions and medications also are strong or moderate predictors of an increased risk of osteoporosis in men. The most relevant to VA are prolonged systemic corticosteroid therapy and androgen deprivation (in the context of prostate cancer treatment). (GRADE quality of evidence = Moderate; further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.)
- Alcohol use is probably associated with an increase in osteoporotic fractures, but is not clearly associated with an increase in osteoporosis as measured by BMD. (GRADE quality of evidence: Fractures = Moderate; further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate; BMD = Very Low; any estimate of effect is very uncertain.)
- There is no evidence that diabetes mellitus type II is a significant risk factor for osteoporosis in men. (GRADE quality of evidence: Low; further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.)
- Spinal Cord Injury is likely associated with an increase risk of osteoporosis and possibly osteoporotic fractures. (GRADE quality of evidence: BMD=Moderate; further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate; Fractures=Low; further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.)

KEY QUESTION #2: Are there any validated tools (outside of central bone density) to screen for osteoporosis in men?

- The evidence for screening tools for men is much more limited than for women. We were only able to synthesize evidence on two screening tools: calcaneal ultrasound and the Osteoporosis Screening Tool (OST).
- There is no evidence to suggest that calcaneal ultrasound performs differently in men than in women. (GRADE quality of evidence = Moderate; further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.)

- The OST appears to have comparable (and possibly better) test characteristics than calcaneal ultrasound in diagnosing DXA-determined osteoporosis. (GRADE quality of evidence = Low; further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.)
- Although calcaneal ultrasound does not appear to be a particularly good test at diagnosing DXA-determined osteoporosis, it is a strong, independent predictor of fractures in men. (GRADE quality of evidence = Moderate; further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.)
- Limited data are available on other screening modalities and there is a large gap in our understanding of osteoporosis screening tests in men.

KEY QUESTION #3: What values of BMD determined by DXA (and by different DXA techniques) have been used to diagnose osteopenia and osteoporosis; and what is the evidence regarding the relationship between differing definitions and the development of osteoporotic fractures?

- The values of BMD determined by DXA that have been used are based on standard deviations (T-score) away from a reference standard, either young female or young male.
- Whether to use a young female or a young male reference range in order to identify men as "at risk" for osteoporotic fractures is an area of controversy that is not possible to resolve with existing data.
- Until more definitive evidence is available, we believe it is most logically consistent for VA to use for the identification of men who might potentially benefit from treatment for osteoporosis the same conditions as were used in the randomized controlled trials (RCT), in other words use of the young male reference standard. (GRADE quality of evidence = Low; further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.)