



<b>Body System: Musculoskeletal</b>		
<b>Session Topic: Osteoporosis and Osteopenia Prevention and Treatment</b>		
<b>Educational Format</b>		<b>Faculty Expertise Required</b>
<b>REQUIRED</b>	Interactive Lecture	Expertise in the field of study. Experience teaching in the field of study is desired. Preferred experience with audience response systems (ARS). Utilizing polling questions and engaging the learners in Q&A during the final 15 minutes of the session are required.
<b>OPTIONAL</b>	Problem-Based Learning (PBL)	Expertise teaching highly interactive, small group learning environments. Case-based, with experience developing and teaching case scenarios for simulation labs preferred. Other workshop-oriented designs may be accommodated. A typical PBL room is set for 50-100 participants, with 7-8 each per round table. <u>Please describe your interest and plan for teaching a PBL on your proposal form.</u>
<b>Professional Practice Gap</b>	<b>Learning Objective(s) that will close the gap and meet the need</b>	<b>Outcome Being Measured</b>
<ul style="list-style-type: none"> <li>Patients frequently overestimate the effect of hip fracture prevention medication.</li> <li>There are new American College of Obstetricians and Gynecologists (ACOG) guidelines for diagnosis, evaluation, and treatment options for women with osteoporosis.</li> <li>There is a general lack of adherence to guidelines for fracture risk assessment, screening, and treatment of osteoporosis, including overall osteoporosis management in long-term care.</li> <li>Adherence to oral bisphosphonate therapy is suboptimal, with approximately 50% of patients stopping treatment within one year.</li> </ul>	<ol style="list-style-type: none"> <li>Establish screening protocols, using dual-energy x-ray absorptiometry, in accordance to current clinical practice guidelines.</li> <li>Evaluate elderly patients and patients at risk for low bone mass/osteoporosis using the FRAX<sup>®</sup> algorithm, and consider the impact of fracture risk scores on patient management.</li> <li>Determine appropriate osteoporosis treatment, based on clinical evaluation, diagnostic workup, fracture risk assessments, and BMD measurements.</li> <li>Develop collaborative prevention and treatment plan for patients at risk for falls, emphasizing exercise, physical therapy, home hazard assessment, and possible withdrawal of medications that increase fall risk.</li> </ol>	Learners will submit written commitment to change statements on the session evaluation, indicating how they plan to implement presented practice recommendations.



<ul style="list-style-type: none"> <li>• Knowledge and practice gaps with regard to screening guidelines; appropriate osteopenia treatment; knowing when to refer; using FRAX risk assessment; evidence-based treatment, especially concerning bisphosphonate use; appropriate calcium supplementation; guidelines on appropriate use of imaging (e.g. DEXA); and appropriate guidelines for follow-up and management of hip fracture surgery</li> <li>• AAFP recently (2017) endorsed ACP guideline for Treatment of Low Bone Density or Osteoporosis to Prevent Fractures in Men and Women</li> </ul>		
<b>ACGME Core Competencies Addressed</b> (select all that apply)		
X	Medical Knowledge	Patient Care
X	Interpersonal and Communication Skills	Practice-Based Learning and Improvement
	Professionalism	Systems-Based Practice
<b>Faculty Instructional Goals</b>		
<p>Faculty play a vital role in assisting the AAFP to achieve its mission by providing high-quality, innovative education for physicians, residents and medical students that will encompass the art, science, evidence and socio-economics of family medicine and to support the pursuit of lifelong learning. By achieving the instructional goals provided, faculty will facilitate the application of new knowledge and skills gained by learners to practice, so that they may optimize care provided to their patients.</p> <ul style="list-style-type: none"> <li>• Provide up to 3 evidence-based recommended practice changes that can be immediately implemented, at the conclusion of the session; including SORT taxonomy &amp; reference citations</li> <li>• Facilitate learner engagement during the session</li> <li>• Address related practice barriers to foster optimal patient management</li> <li>• Provide recommended journal resources and tools, during the session, from the American Family Physician (AFP), Family Practice Management (FPM), and Familydoctor.org patient resources; those listed in the <u>References</u> section below are a good place to start             <ul style="list-style-type: none"> <li>○ Visit <a href="http://www.aafp.org/journals">http://www.aafp.org/journals</a> for additional resources</li> </ul> </li> </ul>		



- Visit <http://familydoctor.org> for patient education and resources
- Provide recommendations regarding guidelines for screening protocols, using dual-energy x-ray absorptiometry, in accordance to current clinical practice guidelines.
- Provide recommendations for evaluating elderly patients and patients at risk for low bone mass/osteoporosis using the FRAX® algorithm, and consider the impact of fracture risk scores on patient management.
- Provide recommendations regarding appropriate osteoporosis treatment, based on clinical evaluation, diagnostic workup, fracture risk assessments, and BMD measurements.
- Provide an overview of current and new pharmacologic osteoporosis medications, including evidence-based recommendations for their safe and efficacious use.
- Provide strategies and resources for developing collaborative prevention and treatment plan for patients at risk for falls, emphasizing exercise, physical therapy, home hazard assessment, and possible withdrawal of medications that increase fall risk.
- Provide recommendations regarding guidelines for Medicare reimbursement.
- Provide recommendations to maximize office efficiency and guideline adherence to the diagnosis and management of osteoporosis and/or osteopenia.
- Provide an overview of newly available treatments, including efficacy, safety, contraindications, and cost/benefit relative to existing treatments.

### Needs Assessment

The National Osteoporosis Foundation estimates that more 54 million Americans have osteoporosis and low bone mass, placing them at increased risk for osteoporosis. Studies suggest that approximately one in two women and up to one in four men age 50 and older will break a bone due to osteoporosis.<sup>1</sup>

Data from a recent American Academy of Family Physicians (AAFP) CME Needs Assessment survey indicate that family physicians have statistically significant and meaningful gaps in the medical skill necessary to provide optimal management of geriatric hip fractures, osteoporosis, musculoskeletal exam techniques, and musculoskeletal imaging modalities.<sup>2</sup> More specifically, CME outcomes data from 2012-2016 Assembly: *Geriatric Hip Fracture & Osteoporosis*; and *Osteoporosis & Osteopenia* sessions, indicate that physicians have knowledge and practice gaps with regard to screening guidelines; appropriate osteopenia treatment; knowing when to refer; using FRAX risk assessment; evidence-based treatment, especially concerning bisphosphonate use; appropriate calcium supplementation; physical therapy and exercise prescriptions; guidelines on appropriate use of imaging (e.g. DEXA); and appropriate guidelines for follow-up and management of hip fracture surgery.<sup>3-6</sup>

Additionally, a review of the literature identifies the following practice gaps that should be addressed in this education:

- Patients frequently overestimate the effect of hip fracture prevention medication<sup>7</sup>
- There are new American College of Obstetricians and Gynecologists (ACOG) guidelines for diagnosis, evaluation, and treatment options for women with osteoporosis<sup>8</sup>



- There is a general lack of adherence to guidelines for fracture risk assessment, screening, and treatment of osteoporosis, including overall osteoporosis management in long-term care<sup>9,10</sup>
- Adherence to oral bisphosphonate therapy is suboptimal, with approximately 50% of patients stopping treatment within one year<sup>11,12</sup>

As an age-related disease characterized by low bone mass and deterioration of bone structure that increases the risk of fractures, osteoporosis is often called “the silent disease” because it typically progresses without symptoms until someone experiences a fracture.<sup>13</sup> While men can also suffer from osteoporosis, the vast majority of individuals affected by it are women. In fact, the annual number of osteoporotic fractures in women is greater than the number of heart attacks, strokes and cases of breast cancer combined. Although the disease can strike at any age, women are at greatest risk for osteoporosis after menopause; bone loss is fastest in the first few years after menopause, and it continues in the post-menopausal years. Overall, ambulatory care visits accounted for the largest share of per-person direct cost for people with an osteoporosis condition. At an average cost of \$3,758 per person between 2009 and 2011, an increase of 42% from 1996 to 1998, ambulatory care accounted for 34% of per-person direct cost between 2009 and 2011. Both the share of per-person cost for inpatient care and the mean cost dropped between 1996 and 1998 to 2009 and 2011, with the share dropping from 36% to 24% and the mean cost from \$3,009 to \$2,681. However, the average per-person cost for prescriptions rose from \$1,477 to \$2,989, in 2011 dollars, an increase of 102%. Total aggregate direct costs for persons with an osteoporosis condition were \$70.5 billion from 2009 to 2011, a rise of 160% from the \$27.1 billion from 1996 to 1998, in 2011 dollars.<sup>13</sup>

While the majority of broken bones attributable to osteoporosis are fractures of the spine, nearly one-fourth are hip fractures, which almost always require hospitalization, major surgery and/or long-term care. Hip fractures are considered the most serious fractures for these reasons, and women in particular over the age of 50 tend to break more hips and lumbar vertebrae than other bones, but the radius, tibia and ribs are also affected. Vertebral compression fractures (VCFs) are the most common complication of osteoporosis, affecting more than 700,000 Americans annually. Patients with VCFs account for 66,000 physician office visits and 45,000 to 70,000 hospitalizations each year, with one-half requiring skilled nursing facility care.<sup>14</sup> Most patients (two-thirds) with VCFs are asymptomatic, and are diagnosed incidentally; therefore, optimal treatment of patients with VCFs includes prevention of additional fractures and treatment of osteoporosis.

The number needed to treat to prevent 1 hip fracture is quite high in most studies (99 or above). Most studies include all osteoporotic fractures to help drop this number, but other fractures do not cause the morbidity and mortality that hip fractures cause. That is probably one reason many docs do not follow the guidelines as strictly as one might think they should.

The U.S. Food and Drug Administration (FDA) recently added a “Warnings and Precautions” section on all labels of bisphosphonates, which are approved for the prevention and treatment of osteoporosis.<sup>15</sup> Bisphosphonates have been implicated as a causative factor for atypical subtrochanteric femur fractures, although conclusive research is still needed. Although diaphyseal femur fractures are believed to account for less than 1% of all hip and femur



fractures, bisphosphonates specifically used to treat osteoporosis (not Paget's disease or high blood calcium levels due to cancer) have been used by a predominant number of patients who sustain femur fractures.<sup>16</sup> The FDA recommends that physicians who prescribe bisphosphonates to their patients:

- Discuss the known benefits and potential risks of using bisphosphonates with patients.
- Evaluate any patient who presents with new thigh or groin pain to rule out a femoral fracture.
- Discontinue potent antiresorptive medications (including bisphosphonates) in patients who have evidence of a femoral shaft fracture.
- Consider periodic reevaluation of the need for continued bisphosphonate therapy, particularly in patients who have been treated for more than five years.

Physicians must recognize the risk factors for the development of atypical femoral fractures (AFF)s, as well as signs of AFFs, from long-term bisphosphonate use; and adjust treatment accordingly.<sup>17,18</sup>

The high rate of falls and injuries that are sustained by elderly people are a concern for fractures as well; more than one-third of adults over the age of 65 in the U.S. fall each year, making falls the leading cause of injury-related death in this population.<sup>19,20</sup> They are also the most common cause of nonfatal injuries and hospital admissions for trauma; in 2006, 38% of all inpatients were over the age of 65. A significant number of falls result in fractures, head traumas and other injuries. Of the 1.1 million discharges for fractures, for instance, more than one-half were aged 65 years and older.<sup>21</sup> Elderly patients may require counseling and guidance on making their living environments safe to avoid falls and injuries that can lead to fractures. Family physicians can provide patients and their family members with information and resources to make the necessary adjustments to their living spaces, or provide direction to their caregivers to pay special attention to environmental safety. Family physicians can also encourage exercise routines that promote balance and strength, and they can review medications – both prescription and over-the-counter – that may cause dizziness or affect balance.

Family physicians should be prepared to counsel their patients on methods of preventing osteoporosis, including adequate calcium intake, building bone mass through exercise and weight-bearing activities, and modifying behavioral risk factors, such as smoking and excessive alcohol intake. As several risk factors (such as age, smoking, alcohol intake and the use of certain medications) other than low bone density increase the risk of fractures, family patients should also be counseled on methods within their control that can help to prevent fractures.<sup>22</sup>

Family physicians should be aware of AAFP Clinical Preventive Services Recommendations, and Choosing Wisely that pertain to osteoporosis:<sup>23-25</sup>

- The AAFP *recommends* screening for osteoporosis in women aged 65 years or older and in younger women whose fracture risk is equal to or greater than that of a 65-year old white woman who has no additional risk factors. A 65-year-old white woman with no other risk factors has a 9.3% 10-year risk for any osteoporotic fracture.
- The AAFP *concludes that the current evidence is insufficient* to assess the balance of benefits and harms of screening for osteoporosis in men.



- Don't use dual-energy x-ray absorptiometry (DEXA) screening for osteoporosis in women younger than 65 or men younger than 70 with no risk factors. DEXA is not cost effective in younger, low-risk patients, but is cost effective in older patients.
- Do not routinely repeat dual energy x-ray absorptiometry (DEXA) scans more often than once every two years.

In addition to the AAFP Clinical Preventive Services Recommendations, family physicians should receive continuing education that provides guidance for integrating evidence-based recommendations and guidelines for managing osteoporosis and geriatric hip fractures in practice.

In April 2017 the AAFP endorsed the American College of Physicians (ACP) guideline, *Treatment of Low Bone Density or Osteoporosis to Prevent Fractures in Men and Women*. Physicians should receive continuing medical education to help them integrate these recommendations into practice. The key recommendations are summarized as follows:<sup>26</sup>

- Pharmacologic treatment with alendronate, risedronate, zoledronic acid, or denosumab should be prescribed for women with osteoporosis to reduce the risk of hip and vertebral fractures.
- Pharmacologic treatment should continue for five years, during which time bone density monitoring should not be done.
- Menopausal estrogen therapy, menopausal estrogen plus progesterone, or raloxifene should not be used in women with osteoporosis.
- The decision to treat women 65 years of age or older who have osteopenia and are at a high risk for fracture should be based on a discussion of patient preferences, fracture risk profile, benefits and harms of treatment, and costs of medications.
- Treatment with bisphosphonates should be offered to men who have osteoporosis to reduce the risk of vertebral fractures.

Physicians may improve their care of patients with osteoporosis by engaging in continuing medical education that provides practical integration of current evidence-based guidelines and recommendations into their standards of care, including, but not limited to the following:<sup>8,14,25,27,28</sup>

- All women 65 years and older should be screened for osteoporosis with dual energy x-ray absorptiometry of the hip and lumbar spine.
- Women younger than 65 years should be screened for osteoporosis if the estimated 10-year fracture risk equals or exceeds that of a 65-year-old white woman with no risk factors.
- The U.S. Preventive Services Task Force concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening for osteoporosis in men.
- A fall risk assessment should be performed and a multicomponent exercise program and smoking cessation should be recommended to decrease fracture risk in individuals 65 years and older with osteoporosis or a history of vertebral fracture.
- Bisphosphonates should be used as first-line pharmacologic treatment for osteoporosis.
- In patients who cannot tolerate or whose symptoms do not improve with bisphosphonate therapy, teriparatide (Forteo) and denosumab (Prolia) are effective alternative medications to prevent osteoporotic fractures.



- Dual-energy x-ray absorptiometry should be performed in men who are at increased risk of osteoporosis and who are candidates for drug therapy.
- Bisphosphonates decrease the risk of vertebral fracture in men with osteoporosis.
- Teriparatide (Forteo) decreases the risk of vertebral fractures and can be used for treatment of severe osteoporosis.
- All men should receive adequate intake of calcium (at least 1,200 mg daily) and vitamin D (400 to 600 IU daily, with doses of at least 800 IU daily if the intent is to prevent osteoporotic fractures).
- Older persons at risk of falls should consider exercise, physical therapy, home hazard assessment, and withdrawal of psychotropic medication to decrease fall risk.
- Raloxifene (Evista) can be used to prevent vertebral fractures in postmenopausal women with osteoporosis, especially if at high risk of breast cancer.
- Calcitonin (Miacalcin) can be used to prevent recurrent vertebral fractures in postmenopausal women.
- Women should be counseled on the recommended daily dietary allowances for calcium and vitamin D from the Institute of Medicine, which are as follows:
  - Persons nine to 18 years of age: 1,300 mg of calcium, 600 IU of vitamin D
  - Persons 19 to 50 years of age: 1,000 mg of calcium, 600 IU of vitamin D
  - Persons 51 to 70 years of age: 1,200 mg of calcium, 600 IU of vitamin D
  - Persons 71 years and older: 1,200 mg of calcium, 800 IU of vitamin D
- A serum vitamin D level of 20 ng per mL (50 nmol per L) is recommended for good bone health.
- A trial of conservative therapy should be offered to patients with vertebral compression fractures.
- Percutaneous vertebral augmentation can be considered in patients who have inadequate pain relief with nonsurgical care or when persistent pain substantially affects quality of life.
- Patients with vertebral compression fractures should be evaluated for osteoporosis, and preventive therapy should be initiated if necessary.

These recommendations are provided only as assistance for physicians making clinical decisions regarding the care of their patients. As such, they cannot substitute for the individual judgment brought to each clinical situation by the patient's family physician. As with all clinical reference resources, they reflect the best understanding of the science of medicine at the time of publication, but they should be used with the clear understanding that continued research may result in new knowledge and recommendations. These recommendations are only one element in the complex process of improving the health of America. To be effective, the recommendations must be implemented. As such, physicians require continuing medical education to assist them with making decisions about specific clinical considerations.

Resources: Evidence-Based Practice Recommendations/Guidelines/Performance Measures

- Diagnosis and Management of Osteoporosis<sup>25</sup>
- ACOG releases practice bulletin on osteoporosis<sup>8</sup>
- AAFP/ACP Treatment of Low Bone Density or Osteoporosis<sup>26</sup>



- Diagnosis and Management of Vertebral Compression Fractures<sup>14</sup>
- Risks of bisphosphonate use<sup>16</sup>
- AAFP Osteoporosis. *Clinical Preventive Service Recommendation*<sup>23</sup>
- DEXA for Osteoporosis<sup>24</sup>
- Diagnosis and treatment of osteoporosis.<sup>27</sup>
- Osteoporosis in men<sup>28</sup>
- Management of falls in older persons: a prescription for prevention<sup>29</sup>
- Adding health education specialists to your practice<sup>30</sup>
- Envisioning new roles for medical assistants: strategies from patient-centered medical homes<sup>31</sup>
- The benefits of using care coordinators in primary care: a case study<sup>32</sup>
- Engaging Patients in Collaborative Care Plans<sup>33</sup>
- Health Coaching: Teaching Patients to Fish<sup>34</sup>
- Medication adherence: we didn't ask and they didn't tell<sup>35</sup>
- Encouraging patients to change unhealthy behaviors with motivational interviewing<sup>36</sup>
- Integrating a behavioral health specialist into your practice<sup>37</sup>
- FamilyDoctor.org: Osteoporosis Overview (patient resource)<sup>38</sup>

## References

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