Proposed Changes to Existing Measure for HEDIS® 2015:
Osteoporosis Management in Women Who Had a Fracture (OMW)

NCQA seeks comments on proposed modifications to the Osteoporosis Management in Women Who Had a Fracture measure. This measure assesses the number of women 67 years of age and older who suffered a fracture and who had either a bone mineral density test or prescription for a drug to treat osteoporosis. The intent of this measure is to prevent secondary fractures in older women resulting from osteoporosis.

We propose the following changes to this measure:

- **Treatment options:** Remove estrogen and hormone therapy from the osteoporosis therapies.
- **Eligible population:** Restrict the measure to women 67–85 years of age.
- **Denominator Exclusions:**
  - Extend the look-back period for exclusions due to bone-mineral density testing from 1 year to 2 years.
  - Extend the look-back period for exclusions due to treatment of osteoporosis from 12 months to 15 months.

Changes to the OMW measure help align it with clinical guidelines recommending that all postmenopausal women who experience a fragility fracture either undergo a bone-mineral density test or be treated for osteoporosis.

Removing estrogens as a drug therapy for osteoporosis allows alignment with the American Geriatrics Society (AGS) Beers criteria. The AGS has estrogen listed as a potentially inappropriate medication in the elderly due to the increased risk of stroke, coronary heart disease and breast cancer.

Restricting the age of the eligible population for the measure reduces the potential for inappropriate testing or treatment for osteoporosis in women with limited life expectancy. The U.S. Preventive Services Task Force (USPSTF) does not define a specific upper age limit for testing in women, because the risk for fractures continues to increase with age; however, it concluded that there are little data on the effectiveness of bisphosphonates (the most common treatment for osteoporosis) in women 85 and older. Clinicians should take a patient’s remaining lifespan into account when deciding with patients whether to screen for osteoporosis in this advanced age group.

The remaining changes will bring the measure in line with recommendations about the frequency of bone mineral density testing (minimum two years between bone mineral density testing) and use of osteoporosis therapies (minimum 12 months waiting period before trying a new medication). NCQA technical expert advisory panels advised us to add a 3-month cushion period to the waiting period before trying a new medication, which changes the exclusion from 12 months to 15 months.

Supporting documents for the proposed measure include the draft measure specification, evidence work-up and performance data.

NCQA acknowledges the contributions of the Geriatric Measurement Advisory Panel and the Osteoporosis Advisory Workgroup.

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Osteoporosis Management in Women Who Had a Fracture (OMW)

**Summary of Changes to HEDIS 2015**

- Extended the look back period for bone-mineral density testing to 2 years.
- Extended the look back period for treatment of osteoporosis to 15 months.
- Restricted the measure to women 67-85 years of age.
- Removed estrogens from the osteoporosis therapies.
- Removed pathological fractures as fractures used to identify the event/diagnosis for the eligible population.
- Removed Single-Photon Absorptiometry and Dual-Photon Absorptiometry tests from the list of eligible bone density tests.

**Description**

The percentage of women 67-85 years of age and older who suffered a fracture and who had either a bone mineral density (BMD) test or prescription for a drug to treat or prevent osteoporosis in the six months after the fracture.

**Definitions**

- **Intake Period**: A 12-month (1 year) window that begins on July 1 of the year prior to the measurement year and ends on June 30 of the measurement year. The Intake Period is used to capture the first fracture.

- **IESD (Index Episode Start Date)**: The earliest date of service for any encounter during the Intake Period with a diagnosis of fracture.
  - *For an outpatient or ED visit*, the IESD is date of service.
  - *For an inpatient encounter*, the IESD is the date of discharge.
  - *For direct transfers*, the IESD is the discharge date from the second admission.

- **Negative Diagnosis History**: A period of 60 days (2 months) prior to the IESD when the member had no diagnosis of fracture.
  - *For fractures requiring an inpatient stay*, use the date of admission to determine Negative Diagnosis History.
  - *For direct transfers*, use the first admission to determine the Negative Diagnosis History.

**Eligible Population**

- **Product line**: Medicare.
- **Age**: Women 67-85 years and older as of December 31 of the measurement year.
- **Continuous enrollment**: 12 months (1 year) before the IESD through 180 days (6 months) after the IESD.
- **Allowable gap**: No more than one gap in enrollment of up to 45 days during the continuous enrollment period.
Anchor date | IESD.
---|---
Benefits | Medical and pharmacy.
Event/diagnosis | The earliest fracture during the Intake Period.

Follow the steps below to identify the eligible population.

**Step 1** Identify all members who had an outpatient visit (Outpatient Value Set), an observation visit (Observation Value Set), an ED visit (ED Value Set), a nonacute inpatient encounter (Nonacute Inpatient Value Set) or an acute inpatient encounter (Acute Inpatient Value Set) for a fracture (Fractures Value Set) during the Intake Period. If the member had more than one fracture, include only the first fracture.

**Step 2** Test for Negative Diagnosis History. Exclude members with an outpatient visit (Outpatient Value Set), an observation visit (Observation Value Set), an ED visit (ED Value Set), a nonacute inpatient encounter (Nonacute Inpatient Value Set) or an acute inpatient encounter (Acute Inpatient Value Set) for a fracture (Fractures Value Set) during the 60 days (2 months) prior to the IESD.

*For fractures requiring an inpatient stay, use the admission date to determine Negative Diagnosis History.*

*For direct transfers, use the first admission to determine the Negative Diagnosis History.*

**Step 3** Calculate continuous enrollment. Members must be continuously enrolled during the 12 months prior to the fracture through 180 days (6 months) post-fracture.

**Step 4** Exclude members who had a BMD test (Bone Mineral Density Tests Value Set) during the 730 days (24 months) prior to the IESD or a claim/encounter for osteoporosis therapy (Osteoporosis Medications Value Set) or received a dispensed prescription to treat osteoporosis (Table OMW-C) during the 365-455 days (12-15 months) prior to the IESD.

*For an inpatient encounter, use the admission date to determine the 365 days (12 months) prior to the IESD.*

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**Administrative Specification**

**Denominator** The eligible population.

**Numerator** Appropriate testing or treatment for osteoporosis after the fracture defined by any of the following criteria:

- A BMD test (Bone Mineral Density Tests Value Set) on the IESD or in the 180-day (6-month) period after the IESD.
- A BMD test (Bone Mineral Density Tests Value Set) during the inpatient stay for the fracture (applies only to fractures requiring hospitalization).
- Osteoporosis therapy (Osteoporosis Medications Value Set) on the IESD or in the 180-day (6-month) period after the IESD.
- A dispensed prescription to treat osteoporosis (Table OMW-C) on the IESD or in the 180-day (6-month) period after the IESD.
### Table OMW-C: FDA-Approved Osteoporosis Therapies

<table>
<thead>
<tr>
<th>Description</th>
<th>Prescription</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biphosphonates</td>
<td></td>
</tr>
<tr>
<td>• Alendronate</td>
<td>• Ibandronate</td>
</tr>
<tr>
<td>• Alendronate-cholecalciferol</td>
<td>• Risedronate</td>
</tr>
<tr>
<td>• Calcium carbonate-risedronate</td>
<td>• Zoledronic acid</td>
</tr>
<tr>
<td>Estrogens</td>
<td></td>
</tr>
<tr>
<td>• Conjugated estrogens</td>
<td>• Estradiol</td>
</tr>
<tr>
<td>• Conjugated estrogens</td>
<td>• Estradiol-acetate</td>
</tr>
<tr>
<td>synthetic</td>
<td>• Estradiol-cypionate</td>
</tr>
<tr>
<td>• Esterified estrogens</td>
<td>• Estradiol valerate</td>
</tr>
<tr>
<td>Other agents</td>
<td>• Calcitonin</td>
</tr>
<tr>
<td></td>
<td>• Denosumab</td>
</tr>
<tr>
<td>Sex hormone combinations</td>
<td>• Raloxifene</td>
</tr>
<tr>
<td>• Conjugated estrogens—</td>
<td>• Teriparatide</td>
</tr>
<tr>
<td>medroxy-progesterone</td>
<td></td>
</tr>
<tr>
<td>• Estradiol-levonorgestrel</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** NCQA will post a comprehensive list of medications and NDC codes to [www.ncqa.org](http://www.ncqa.org) by November 1, 2014.

**Note**
- Fractures of finger, toe, face and skull are not included in this measure.

### Data Elements for Reporting

Organizations that submit HEDIS data to NCQA must provide the following data elements.

### Table OMW-3: Data Elements for Osteoporosis Management in Women Who Had a Fracture

<table>
<thead>
<tr>
<th>Data Element</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Measurement year</td>
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</tr>
<tr>
<td>Data collection methodology (Administrative)</td>
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</tr>
<tr>
<td>Eligible population</td>
<td>✔</td>
</tr>
<tr>
<td>Numerator events by administrative data</td>
<td>✔</td>
</tr>
<tr>
<td>Reported rate</td>
<td>✔</td>
</tr>
<tr>
<td>Lower 95% confidence interval</td>
<td>✔</td>
</tr>
<tr>
<td>Upper 95% confidence interval</td>
<td>✔</td>
</tr>
</tbody>
</table>
**Osteoporosis Management in Women Who Had a Fracture (OMW)**

**Measure Work-up**

**Measure Description**

The *Osteoporosis Management in Women Who Had a Fracture (OMW)* measure assesses the percentage of women 67 years of age and older who suffered a fracture and who had either a bone mineral density (BMD) test or prescription for a drug to treat osteoporosis in the six months after the fracture.

**Topic Overview**

**Importance and Prevalence**

**Health importance**

Osteoporosis is the most common metabolic bone disease and is characterized by low bone mineral density and structural deterioration of bone tissue, causing bone fragility and increasing the risk of fractures (NIAMS 2012). More than 40 million Americans live with either osteoporosis or osteopenia (lower than normal bone mineral density that increases risk of osteoporosis) (NIAMS 2011). The prevalence of osteoporosis increases with age: 7 percent of women 50–59 years of age; 10 percent of women 60–69 years of age; 27 percent of women 70–79 years of age; 35 percent of women 80 and older have osteoporosis (Looker 2012).

Osteoporosis is severely undiagnosed in the U.S. In one study, 11 percent of women 65 and older reported having osteoporosis; however, testing revealed the true prevalence to be 26 percent (USDHHS 2004). Due to underdiagnoses of the condition, many adults are unaware they have osteoporosis until they break a bone; most commonly a hip, the spine or a wrist. Postmenopausal women who experience a fracture are at significant increased risk of experiencing additional fractures. One study showed that women who have had a history of vertebral fracture were four times more likely to experience a new fracture within the 15-year follow-up (Harvard Health 2010).

Fractures are extremely dangerous for older adults. Nearly 20 percent of older adults who suffer a hip fracture will die within a year from complications either related to the break itself or the surgery needed to repair it (NOF 2013). 40 percent of those who survive will never return to pre-fracture functional status, which often leads to the need for long-term nursing home care (USDHHS 2004). Osteoporosis fractures are associated with chronic pain and disability, loss of independence, decreased quality of life and increased mortality (USPSTF 2011). Osteoporosis causes nearly 1.5 million fractures each year, including 300,000 hip fractures, 700,000 spinal fractures, 250,000 wrist fractures and over 300,000 other fractures (NOF 2007). The figure below shows the incidence of fracture by age in a population study of men and women; hip and spine fracture rates increase dramatically for women after age 70 (USDHHS 2004).
Disparities in osteoporosis and fracture

People of all ethnic backgrounds are at risk of osteoporosis; however, non-Hispanic Caucasian and Asian women 50 and older have a higher prevalence of osteoporosis (20 percent), compared with Hispanic (10 percent) and non-Hispanic Black (5 percent) populations (NOF, 2013).

Similarly, hip fracture rates are highest for White women (140.7 per 100,000) and Asian women (85.4 per 100,000), but still prevalent in Black women (57.3 per 100,000) and Hispanic women (49.7 per 100,000) (Silverman 1988).

Financial importance and cost effectiveness

In 2012, the estimated national direct expenditures for osteoporosis and related fractures in the U.S. totaled approximately $18 billion annually (NIAMS 2012). Since these expenditures do not include indirect costs such as lost productivity or wages, the true financial impact of osteoporosis is likely much larger. The National Osteoporosis Foundation reports that by 2025, osteoporosis will cost approximately $25.3 billion each year (NOF, 2013). Osteoporotic fractures are responsible for more than 432,000 hospital admissions, almost 2.5 million medical office visits and about 180,000 nursing home admissions each year (PhysWeeklyArchives.com 2009).

Supporting Evidence for Screening and Treatment after a Fracture

Fragility fractures (i.e., fractures from falls from the standing position) are considered one of the most serious warning signs of osteoporosis or low bone density. Several organizations recommend that postmenopausal women who experience a fragility fracture should be either screened for osteoporosis with a BMD test or treated for osteoporosis (NOF 2013; NAMS 2010; NICE 2008; Watts 2010; USDHHS 2004). Screening and treatment is critical to prevent secondary fractures.

Screening

The US Preventive Services Task Force (USPSTF) recommends screening for osteoporosis in women 65 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. This is a B recommendation, meaning that the USPSTF recommends the services and there is moderate certainty that the net benefit of screening for osteoporosis by using dual-energy x-ray absorptiometry (DXA) is at least moderate.
DXA of the hip and lumbar spine is the most common bone density test used in screening for osteoporosis because it quantitatively calculates the photon absorption of the minerals in bone tissue. DXA has become known as the “gold standard” for diagnosing osteoporosis and for guiding decisions on which patients should be treated (USPSTF 2011).

After DXA, quantitative ultrasonography of the calcaneus (heel) is the most commonly used test in the United States. Quantitative ultrasonography is less expensive, does not involve as much radiation, and can easily be used in the primary care setting. Unfortunately, the current diagnostic ultrasonography is less expensive, does not involve as much radiation, and can easily be used in the primary care setting. Unfortunately, the current diagnostic ultrasonography is not interchangeable with those obtained from DXA. More research is needed to identify a method for converting results of quantitative ultrasonography to the DXA scale (USPSTF 2011).

### Screening frequency

There is no clear evidence to inform the optimal interval for repeated screening and whether repeated screening is necessary in a woman with normal bone mineral density. A minimum two-year gap between tests is needed to reliably measure change in bone mineral density, but a longer interval may be necessary to improve fracture-risk prediction (Nelson 2010).

### Age to screen

The USPSTF does not define an upper age limit for screening in women because the risk for fractures continues to increase with age and treatment harms remain small. The current guideline recommends that clinicians take remaining lifespan into account when deciding whether to screen patients with significant illness, and that benefits of treatment emerge 18–24 months after treatment initiation (USPSTF 2011).

### Treatment and management

In addition to adequate calcium and vitamin D intake and weight-bearing exercise, the USPSTF found evidence that bisphosphonates, parathyroid hormone (teriparatide), raloxifene and estrogen reduce vertebral fractures in postmenopausal women. Bisphosphonates and raloxifene have the strongest and most consistent evidence (USPSTF 2011).

#### Bisphosphonates

The bisphosphonates, alendronate (brand name Fosamax), risendronate (brand name Actonel), ibandronate (brand name Boniva) are approved for prevention and treatment of osteoporosis in the United States. Zoledronic acid (brand name Reclast) is approved for treatment of osteoporosis only. In the Fracture Intervention Trial, the benefit of drug therapies emerged 18–24 months after initiation of the treatment, with reduced fracture risk in women with low bone mineral density and select fractures (Cummings 1998; USPSTF 2011). However, the effectiveness of treatment for fractures using bisphosphonates has not been consistently demonstrated in all women. Bisphosphonates have been shown to be more effective in women with osteoporosis than those without. The effectiveness of bisphosphonates at reducing the rate of nonvertebral fractures is also mixed. In a pooled analysis of 9 trials, the trend toward a reduction in nonvertebral fractures with bisphosphonates, compared with placebo, was not statistically significant (USPSTF 2011).

The use of bisphosphonates has been linked to gastrointestinal problems, cardiovascular problems, musculoskeletal problems and osteonecrosis. In 2012, the FDA released an article discussing the appropriate time frame for a patient to be on bisphosphonates. It recommended that some patients may be able to stop using bisphosphonates after 3–5 years and still continue to benefit from their use, while at the same time decreasing the potential risk of side effects from the medication (FDA 2012). The most common side effect from bisphosphonates is esophagus irritation. (USPSTF 2011).
According to the USPSTF, there is little data on the effectiveness of bisphosphonates in women 85 and older (USPSTF 2011). There have been only a few randomized controlled trials (RCT) that included participants older than 80 years to investigate the use of antiosteoporotic agents. Risendronate and zoledronic acid are the only bisphosphonates to show a significant reduction in new vertebral, hip and nonvertebral fractures during a 3-year period in those over 80 (Chua 2011).

**Raloxifene**

Raloxifene (brand name Evista) is approved for the prevention and treatment of osteoporosis. In a pooled analysis of two randomized controlled trials, raloxifene reduced vertebral fractures, but not nonvertebral fractures. Fracture risk was reduced for women with and without previous fractures. Raloxifene increases the risk for thromboembolic events, but not coronary heart disease or stroke (Nelson 2010).

**Denosumab**

Denosumab (brand name Prolia) is approved for the treatment of osteoporosis of women at high risk of fracture. It has been shown to significantly reduce the incidence of vertebral, hip and nonvertebral fractures in women up to age 89 (Chua 2011).

**Parathyroid hormone**

Teriparatide (brand name Forteo) is approved for the treatment of osteoporosis in postmenopausal women who are at high risk for fracture. In fair-quality studies, use of Teriparatide in women with a previous fracture increased bone density and decreased incidence of vertebral and nonvertebral fractures (Neer 2001). Evidence of harms associated with parathyroid hormone is limited (Nelson 2010).

**Estrogen**

The Women’s Health Initiative study reported reduced clinical vertebral, hip and all fractures combined among women using estrogen, compared with use of a placebo. However, estrogen with progestin and estrogen alone have been shown to increase thromboembolic events, strokes, risk for coronary heart disease and breast cancer (Nelson 2010). In 2012, the American Geriatrics Society included estrogen in the updated Beers criteria as a high-risk medication for women over 65 (AGS 2012).

**Gaps in care**

Despite the availability of effective treatments, screening and treatment among patients who are at risk and those who have already sustained a fracture remains low.

For the first four years this measure was included in HEDIS (2007–2010), rates showed almost no improvement. However, since 2010, rates have increased about 4.3 percentage points for HMO plans and have remained relatively stable for PPO plans.

In 2013, the national average for HMO plans was 25.0 percent (SD=15.4), with a spread of 12.3 percent–48.0 percent (10th–90th percentiles); for PPO plans, the national average was 19.1 percent (SD=7.9), with a spread of 12.0 percent–27.6 percent (10th–90th percentiles). 2013 results were based on 235 HMOs and 112 PPOs. The number of plans that are unable to report on this measure due to small sample size (i.e., fewer than 30 members in the denominator) is 33.2 percent for HMOs and 27.1 percent for PPOs.

Interventions aimed at coordination of care between hospitals (which often treat the fracture) and outpatient care (which often manages osteoporosis treatment) have the potential to greatly increase the rate of appropriate follow-up after a fracture. In one intervention, the rate of appropriate osteoporosis management (receipt of a bone mineral density test or osteoporosis medication within six months after the fracture) increased from 13.4 percent to 44 percent after implementation of an outreach program at the health plan (Feldstein 2007).
Specific Guideline Recommendations

**USPSTF:** Recommends screening for osteoporosis in women 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.

**American Association of Clinical Endocrinologists (AACE):** Recommends screening for osteoporosis in women 65 and older (Grade B, Best Evidence Level 2) and all younger postmenopausal women at increased risk of fracture (Grade C, Best Evidence Level 2).

*Risk factors* for osteoporosis include prior low-trauma fracture as an adult; advanced age; low bone mineral density; low body weight or BMI; family history of osteoporosis; use of corticosteroids; cigarette smoking; excessive alcohol consumption; and secondary osteoporosis such as rheumatoid arthritis.

AACE recommends pharmacologic therapy for all patients who have a history of a fracture in the hip or spine (Grade A, Best Evidence Level 1); patients without a history of fractures but with a T-score of -2.5 or lower (Grade A, Best Evidence Level 1); and patients with a T-score between -1.0 and -2.5 if FRAX major osteoporotic fracture probability is ≥20 percent or hip fracture is ≥3 percent (Grade A, Best Evidence Level 2).

### Classification of Osteopenia and Osteoporosis

<table>
<thead>
<tr>
<th>Category</th>
<th>T-Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>≥-1.0 or above</td>
</tr>
<tr>
<td>Low Bone Mass (Osteopenia)</td>
<td>-1.0 to -2.5</td>
</tr>
<tr>
<td>Osteoporosis</td>
<td>≤-2.5</td>
</tr>
</tbody>
</table>

**National Osteoporosis Foundation (NOF):** Recommends bone mineral density testing in women 65 and older; men 70 and older; younger postmenopausal women; women in the menopausal transition; men 50–69 with clinical risk factors for fracture; adults who have a fracture after age 50; and adults with a condition (rheumatoid arthritis) or taking a medication associated with low bone mass or bone loss. The NOF recommends that all postmenopausal women and men 50 and older who have the following outcomes be treated for osteoporosis:

- Hip or vertebral fracture.
- T-score ≤-2.5 at the femoral neck, total hip or lumbar spine.
- Low bone mass (T-score between -1.0 and -2.5 at the femoral neck or lumbar spine).
- Ten-year probability of a hip fracture ≥3 percent or a 10-year probability of a major osteoporosis-related fracture ≥20 percent.

The NOF recommends a repeat bone mineral density test every 1–2 years after initiating therapy to reduce fracture risk and every 2 years after that.

**The North American Menopause Society (NAMS):** Recommends a bone mineral density test in all women 65 and older, regardless of clinical risk factors; postmenopausal women with medical causes of bone loss (e.g., steroid use), regardless of age; postmenopausal women 50 and older with additional risk factors; and postmenopausal women with a fragility fracture.

NAMS also recommends that testing be considered for all women 50 and older who have one or more of the following risk factors: fracture after menopause; thinness (body weight <127 or body mass index < 21); history of hip fracture in a parent; current smoker; rheumatoid arthritis diagnoses; and has an alcohol intake of more than two units per day.

NAMS recommends osteoporosis drug therapy in the following populations: postmenopausal women who have had an osteoporotic vertebral or hip fracture; postmenopausal women who have bone mineral density values consistent with osteoporosis; and all postmenopausal women who have T-scores from -1.0 to -2.5 and a 10-year risk based on the FRAX calculator of major osteoporotic fracture (spine, hip, shoulder, wrist) of at least 20 percent or of hip fracture of at least 3 percent.
For women receiving treatment, NAMS recommends a bone mineral density test after 1–2 years, however, for untreated postmenopausal women, NAMS recommends a repeat DXA scan every 2–5 years.

**Grading System Key**

**U.S. Preventive Services Task Force: What the Grade Means and Suggestions for Practice**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Definition</th>
<th>Suggestion for Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>The USPSTF recommends the service. There is high certainty that the net benefit is substantial.</td>
<td>Offer or provide this service.</td>
</tr>
<tr>
<td>B</td>
<td>The USPSTF recommends the service. There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial.</td>
<td>Offer or provide this service.</td>
</tr>
<tr>
<td>C</td>
<td>Clinicians may provide this service to selected patients depending on individual circumstances. However, for most individuals without signs or symptoms there is likely to be only a small benefit from this service.</td>
<td>Offer or provide this service only if other considerations support offering or providing the service in an individual patient.</td>
</tr>
<tr>
<td>D</td>
<td>The USPSTF recommends against the service. There is moderate or high certainty that the service has no net benefit or that the harms outweigh the benefits.</td>
<td>Discourage the use of this service.</td>
</tr>
<tr>
<td>I Statement</td>
<td>The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of the service. Evidence is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be determined.</td>
<td>Read the clinical considerations section of the USPSTF Recommendation Statement. If the service is offered, patients should understand the uncertainty about the balance of benefits and harms.</td>
</tr>
</tbody>
</table>

**U.S. Preventive Services Task Force: Levels of Certainty Regarding Net Benefit**

*High:* The available evidence usually includes consistent results from well-designed, well-conducted studies in representative primary care populations. These studies assess the effects of the preventive service on health outcomes. This conclusion is therefore unlikely to be strongly affected by the results of future studies.

*Moderate:* The available evidence is insufficient to determine the effects of the preventive services on health outcomes, but confidence in the estimate is constrained by factors such as: (1) the number, size or quality of individual studies, (2) Inconsistency of findings across individual studies, (3) Limited generalizability of findings to routine primary care practice, (4) Lack of coherence in the chain of evidence. As more information becomes available, the magnitude or direction of the observed effect could change, and this change may be large enough to alter the conclusion.

*Low:* The available evidence is insufficient to assess effects on health outcomes. Evidence is insufficient because of: (1) the limited number of size of studies, (2) important flaws in study design and methods, (3) inconsistency of findings across individual studies, (4) gaps in the chain of evidence, (5) findings not generalizable to routine primary care practice, (6) and a lack of information on important health outcomes. More information may allow an estimation of effects on health outcomes.
### American Association of Clinical Endocrinologists: Criteria for Grading Recommendation

<table>
<thead>
<tr>
<th>Grade</th>
<th>Definition</th>
</tr>
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<tbody>
<tr>
<td>A</td>
<td>Homogenous evidence from multiple well-designed randomized or cohort controlled trials with sufficient statistical power. ≥1 conclusive level 1 publications demonstrating benefit= risk.</td>
</tr>
<tr>
<td>B</td>
<td>Evidence from at least 1 large well-designed clinical trial, cohort or case-controlled analytic study, or meta-analysis. No conclusive level 1 publication; ≥1 conclusive level 2 publications demonstrating benefit= risk.</td>
</tr>
<tr>
<td>C</td>
<td>Evidence based on clinical experience, descriptive studies, or expert consensus opinion. No conclusive level 1 or 2 publications; ≥1 conclusive level 3 publications demonstrating benefit= risk. No conclusive risk at all and no conclusive benefit demonstrated by evidence.</td>
</tr>
<tr>
<td>D</td>
<td>Not rated. No conclusive level 1, 2, or 3 publication demonstrating benefit= risk. Conclusive level 1, 2, or 3 publication demonstrating risk= benefit.</td>
</tr>
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</table>
2010 American Association of Clinical Endocrinologists Criteria for Rating of Published Evidence*

<table>
<thead>
<tr>
<th>Numerical Descriptor (evidence level)</th>
<th>Semantic Descriptor (reference methods)</th>
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<tbody>
<tr>
<td>1</td>
<td>Meta-analysis of randomized controlled trials</td>
</tr>
<tr>
<td>1</td>
<td>Randomized controlled trial</td>
</tr>
<tr>
<td>2</td>
<td>Meta-analysis of nonrandomized prospective or case-controlled trials</td>
</tr>
<tr>
<td>2</td>
<td>Nonrandomized controlled trial</td>
</tr>
<tr>
<td>2</td>
<td>Prospective cohort study</td>
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<tr>
<td>2</td>
<td>Retrospective case-control study</td>
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<tr>
<td>3</td>
<td>Cross-sectional study</td>
</tr>
<tr>
<td>3</td>
<td>Surveillance study (registries, surveys, epidemiologic study)</td>
</tr>
<tr>
<td>3</td>
<td>Consecutive case series</td>
</tr>
<tr>
<td>3</td>
<td>Single case reports</td>
</tr>
<tr>
<td>4</td>
<td>No evidence (theory, opinion, consensus, or review)</td>
</tr>
</tbody>
</table>

*1 = Strong evidence; 2 = Intermediate evidence; 3 = Weak evidence; 4 = No evidence.

References


National Osteoporosis Foundation (NOF). What is Osteoporosis? http://nof.org/articles/7 (November 1, 2013)


HEDIS® Health Plan Performance Rates: Osteoporosis Management in Women Who Had a Fracture (OMW)

Table 1. HEDIS OMW Measure Performance—Medicare HMO Plans

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Number of Plans</th>
<th>Plans Able to Report (%)</th>
<th>Average</th>
<th>Standard Deviation</th>
<th>10th Percentile</th>
<th>25th Percentile</th>
<th>50th Percentile</th>
<th>75th Percentile</th>
<th>90th Percentile</th>
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</thead>
<tbody>
<tr>
<td>2010</td>
<td>298</td>
<td>193 (64.8)</td>
<td>20.7</td>
<td>9.4</td>
<td>13.2</td>
<td>16.2</td>
<td>18.8</td>
<td>22.5</td>
<td>27.7</td>
</tr>
<tr>
<td>2011</td>
<td>314</td>
<td>221 (70.4)</td>
<td>20.7</td>
<td>10.6</td>
<td>12.0</td>
<td>15.6</td>
<td>18.5</td>
<td>22.5</td>
<td>29.8</td>
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<tr>
<td>2012</td>
<td>316</td>
<td>238 (75.3)</td>
<td>22.8</td>
<td>13.5</td>
<td>12.0</td>
<td>14.9</td>
<td>19.2</td>
<td>25.5</td>
<td>38.0</td>
</tr>
<tr>
<td>2013</td>
<td>361</td>
<td>235 (65.1)</td>
<td>25.0</td>
<td>15.4</td>
<td>12.3</td>
<td>14.9</td>
<td>19.8</td>
<td>29.8</td>
<td>48.0</td>
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Table 2. HEDIS OMW Measure Performance—Medicare PPO Plans

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<th>Year</th>
<th>Total Number of Plans</th>
<th>Plans Able to Report (%)</th>
<th>Average</th>
<th>Standard Deviation</th>
<th>10th Percentile</th>
<th>25th Percentile</th>
<th>50th Percentile</th>
<th>75th Percentile</th>
<th>90th Percentile</th>
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<td>110</td>
<td>60 (54.6)</td>
<td>18.1</td>
<td>6.8</td>
<td>8.7</td>
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<tr>
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<td>15.4</td>
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<td>20.9</td>
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