Results of Topic Selection Process & Next Steps

The nominator, the American Academy of Orthopaedic Surgeons (AAOS), is interested in a new AHRQ review on the diagnosis and treatment of symptomatic osteoporotic spinal compression fractures to inform the update their 2010 clinical practice guideline.

Due to limited program resources, the program will not develop a review at this time. No further activity on this topic will be undertaken by the AHRQ Effective Health Care (EHC) Program.

Topic Brief

**Topic Name:** Symptomatic Osteoporotic Spinal Compression Fractures

**Topic #:** 0681

**Nomination Date:** June 9, 2016

**Topic Brief Date:** February 10, 2017

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**Conflict of Interest:** None of the investigators have any affiliations or financial involvement that conflicts with the material presented in this report.

**Summary of Key Findings:**

- **Appropriateness and importance:** This topic is both appropriate and important.
- **Duplication:** A new AHRQ review would not be duplicative of an existing product.
  - We identified evidence reviews examining the diagnostic accuracy of signs and symptoms for identifying spinal fractures among those with low back pain (KQ1a); the effectiveness of bracing (KQ2a), pharmacological interventions (KQ2b), surgical interventions (ie, kyphoplasty, vertebroplasty; KQ2c), and exercise interventions (KQ2d).
  - We did not identify any evidence reviews on the diagnostic accuracy of X-Ray (KQ1b), CT scan (KQ1c), MRI (KQ1d) or DXA (KQ1e), or any reviews on bed rest, complementary or alternative medicine, nerve blocks, electrical stimulation, or improvement of kyphosis angle (KQ2e).
- **Feasibility:** A new AHRQ review is feasible.
  - **Size/scope of review:** We identified 17 potentially relevant studies from our random sample of 200 studies, including 8 studies examining the diagnostic accuracy of either X-Ray (KQ1b), CT scan (KQ1c), MRI (KQ1d), or DXA scan...
1 study on the effectiveness of bracing (KQ2a); and 9 studies on the effectiveness of surgical procedures (KQ2c). We did not identify any studies on the diagnostic accuracy of clinical assessments (KQ1a) or the effectiveness of pharmacological interventions (KQ2b), exercise (KQ2d) or other interventions such as bed rest, complementary or alternative medicine, nerve blocks, electrical stimulation, or improvement of kyphosis angle (KQ2e).

- **Clinicaltrials.gov**: We identified 2 ongoing trials on ClinicalTrials.gov, both of which examined surgical interventions.

- **Impact**: A new AHRQ review on this topic has high impact potential due to the lack of current guidance on the accuracy and reliability of diagnostic tools, as well as inconclusive evidence for the majority of treatment options in the AAOS 2010 clinical practice guidelines.

- **Value**: A new AHRQ review on this topic has high value potential, given that AAOS will use a new AHRQ systematic review to update their 2010 guidelines. This organization has previously produced high-quality evidence-based guidelines, and is transparent about its methodology.
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Introduction

Compression fractures are common among those with osteoporosis, particularly among the elderly. Approximately 25% of all postmenopausal women will have a compression fracture in their lifetime. Spinal compression fractures are the most common type of osteoporotic fractures, affecting 750,000 individuals in the U.S. each year. Symptomatic spinal compression fractures negatively impact patients' quality of life, including pain and functionality. Diagnostic modalities such as a physical examination, X-Ray, CT scan, MRI scan, and DXA bone mineral density scan are often used in conjunction to diagnose spinal fractures and inform treatment decisions. However, there is no good algorithm for determining when certain diagnostic modalities should be utilized, and as a result there are concerns about the under- or over-utilization of diagnostic modalities. In addition, there is no consensus on which patients would benefit the most from surgical interventions such as balloon kyphoplasty and percutaneous vertebroplasty and which patients would benefit from more conservative treatments such as bed rest, bracing, pharmacological treatments, exercise, complementary or alternative medicine, nerve blocks, electrical stimulation, and improvement of kyphosis angle.

Topic nomination #0681 Symptomatic Osteoporotic Spinal Compression Fractures was received on June 9, 2016. It was nominated by American Academy of Orthopaedic Surgeons (AAOS). The questions for this nomination are:

Key Question 1. What are the diagnostic accuracy and reliability and/or comparative diagnostic accuracy and reliability of commonly used tools and clinical signs (alone or in combination) for acute and chronic symptomatic osteoporotic spinal compression fractures?
   a. Clinical assessments
   b. Radiograph (X-ray)
   c. Computed tomography (CT)
   d. Magnetic resonance imaging (MRI)
   e. Bone density assessment (DXA [Dual-energy X-ray Absorptiometry] scan)

Key Question 2. What is the effectiveness and/or comparative effectiveness of interventions to treat symptomatic osteoporotic spinal compression fractures and prevent future symptomatic fractures?
   a. "Bracing
   b. "Pharmacological treatments (eg, for pain management or treatment for osteoporosis)
   c. "Surgical procedures (eg, balloon kyphoplasty, and percutaneous vertebroplasty)
   d. "Exercise
   e. "Other interventions (eg, bed rest, complementary or alternative medicine, nerve blocks, electrical stimulation, and improvement of kyphosis angle)

To define the inclusion criteria for the key questions we specify the population, interventions, comparators, and outcomes (PICOs) of interest. See Table 1.
Table 1. Key Questions and PICOs

| Key Questions | 1. What are the diagnostic accuracy and reliability and/or comparative diagnostic accuracy and reliability of commonly used tools and clinical signs (alone or in combination) for acute and chronic symptomatic osteoporotic spinal compression fractures? | 2. What is the effectiveness and/or comparative effectiveness of interventions to treat symptomatic osteoporotic spinal compression fractures and prevent future symptomatic fractures? |
| Population | Adults (18 years or older) | Adults (18 years or older) with symptomatic osteoporotic spinal compression fractures |
| Interventions | a. Clinical assessments (eg, physical examination to determine tenderness directly over area of acute fracture, increased kyphosis, tests to assess secondary osteoporosis) b. Radiograph c. Computed tomography (CT) Scan d. Magnetic resonance imaging (MRI) e. Bone density assessment (DXA scan) | a. Bracing b. Pharmacological treatments (eg, alendronate, calcitonin, calcitriol, estrogen, etidronate, fluoride, ibandronate, ipriflavone, menatetrenone, minodronate, pamidronate, phosphate, raloxifene, risedronate, strontium ranelate, teriparatide, opioids, analgesics) c. Surgical procedures (eg, kyphoplasty, vertebroplasty) d. Exercise e. Other (bed rest, complementary or alternative medicine, nerve blocks, electrical stimulation, improvement of kyphosis angle) |
| Comparators | Any comparator | Any comparator |
| Outcomes | Accuracy (sensitivity, specificity) and reliability | a. Pain (eg, chronic pain, pain sitting, pain standing, pain walking, pain at rest/night) b. Adult spinal deformity c. Physical functionality (bedridden, functionality scores) d. Quality of life (quality of life scores) e. Analgesic use f. Mortality g. Subsequent fractures |
Methods
To assess topic nomination #0681 Symptomatic Osteoporotic Spinal Compression Fractures for priority for a systematic review or other AHRQ EHC report, we used a modified process based on established criteria. Our assessment is hierarchical in nature, with the findings of our assessment determining the need for further evaluation. Details related to our assessment are provided in Appendix A.

1. "Determine the appropriateness of the nominated topic for inclusion in the EHC program.
2. "Establish the overall importance of a potential topic as representing a health or "healthcare issue in the United States."
3. "Determine the desirability of new evidence review by examining whether a new "systematic review or other AHRQ product would be duplicative."
4. "Assess the potential impact a new systematic review or other AHRQ product.
5. "Assess whether the current state of the evidence allows for a systematic review or other AHRQ product (feasibility).
6. "Determine the potential value of a new systematic review or other AHRQ product.

Appropriateness and Importance
We assessed the nomination for appropriateness and importance (see Appendix A).

Desirability of New Review/Duplication
We searched for high-quality, completed or in-process evidence reviews pertaining to the key questions of the nomination. Table 2 includes the citations for the reviews that were determined to address the key questions. Appendix B includes the list of the sources searched and potentially relevant titles identified by our research librarian.

Impact of a New Evidence Review
The impact of a new evidence review was assessed by analyzing the current standard of care, the existence of potential knowledge gaps, and practice variation. We considered whether a new review could influence the current state of practice through various dissemination pathways (practice recommendation, clinical guidelines, etc.). See Appendix A.

Feasibility of New Evidence Review
We conducted a literature search in PubMed from June 2011 to June 2016.

Because a large number of articles were identified (n=2,899), we reviewed a random sample of 200 titles and abstracts for inclusion and classified identified studies by study design, to assess the size and scope of a potential evidence review. We then calculated the projected total number of included studies based on the proportion of studies included from the random sample. See Table 2, Feasibility Column, Size/Scope of Review Section for the citations of included studies.

We also searched Clinicaltrials.gov for recently completed or in-process unpublished studies. See Appendix B for the PubMed search strategy and links to the ClinicalTrials.gov search.

Value
We assessed the nomination for value (see Appendix A). We considered whether a partner organization could use the information from the proposed evidence review to facilitate evidence-based change; or the presence of clinical, consumer, or policymaking context that is amenable to evidence-based change.
Compilation of Findings
We constructed a table outlining the selection criteria as they pertain to this nomination (see Appendix A).

Results

Appropriateness and Importance
This is an appropriate and important topic. Approximately 25% of all postmenopausal women will have a compression fracture in their lifetime.\(^1\) Spinal compression fractures are the most common type of osteoporotic fractures, affecting 750,000 individuals in the U.S. each year.\(^2\)

Desirability of New Review/Duplication
A new AHRQ review would not be duplicative of an existing product. Although we identified high-quality evidence reviews addressing several of the key questions, none of the reviews fully covered the scope of interventions of interest to the nominator.

We identified 2 evidence reviews examining the diagnostic accuracy of signs and symptoms in identifying spinal fractures among those with low back pain\(^1,4\) (KQ1a), 1 review examining the effectiveness of bracing\(^5\) (KQ2a), 2 reviews examining pharmacological interventions\(^6,7\) (KQ2b), 14 reviews examining surgical interventions\(^8-21\) (ie, kyphoplasty, vertebroplasty; KQ2c), and 1 review examining exercise interventions\(^22\) (KQ2d).

We did not identify any completed or in-process evidence reviews on the diagnostic accuracy of X-Ray (KQ1b), CT scan (KQ1c), MRI (KQ1d) or DXA (KQ1e), or any reviews on the effectiveness of other treatments such as bed rest, complementary or alternative medicine, nerve blocks, electrical stimulation, or improvement of kyphosis angle (KQ2e).

See Table 2, Duplication column for the systematic review citations that were determined to address the key questions.

Impact of a New Evidence Review
The new AHRQ review has high impact potential due to the lack of current guidance on the accuracy and reliability of diagnostic tools, as well as inconclusive evidence for the majority of treatment options in the AAOS 2010 clinical practice guidelines. The nominator states that there has been an increase in the volume of literature in the past several years that could potentially address the evidence gaps from the 2010 clinical practice guidelines.

Feasibility of a New Evidence Review
A new evidence review is feasible. We identified 17 relevant studies from our random sample of 200 studies.

These studies included 7 studies examining the accuracy of diagnostic modalities [1 study\(^23\) on X-Ray (KQ1b), 1 study\(^24\) on CT scan (KQ1c), 2 studies\(^25,26\) on MRI (KQ1d), and 4 studies\(^23,27-29\) on DXA (KQ1e)]. We also identified 1 study\(^30\) examining the effectiveness of bracing (KQ2a) and 9 studies\(^31-39\) on the effectiveness of surgical procedures (KQ2c). We did not identify any studies on the diagnostic accuracy of clinical assessments (KQ1a) or the effectiveness of pharmacological interventions (KQ2b), exercise (KQ2d) or other interventions such as bed rest, complementary or alternative medicine, nerve blocks, electrical stimulation, or improvement of kyphosis angle (KQ2e) from our random sample. We also identified 2 ongoing trials\(^40,41\) on ClinicalTrials.gov, both of which examined surgical interventions (KQ2c). We project there may be 246 total studies examining the key questions.
See Table 2, Feasibility column for the citations that were determined to address the key questions.

Table 2. Key questions with the identified corresponding evidence reviews and original research

<table>
<thead>
<tr>
<th>Key Question</th>
<th>Duplication (Completed or In-process Evidence Reviews)</th>
<th>Feasibility (Published and Ongoing Research)</th>
</tr>
</thead>
</table>
| 1a: Clinical assessments            | Total number of completed or in-process evidence reviews: 2  
  • Cochrane: 1\(^3\)  
  • Other: 1\(^4\) | Size/scope of review  
  None identified.  
  ClinicalTrials.Gov  
  None identified. |
| 1b: Radiograph (X-Ray)              | None identified.                                      | Size/scope of review  
  Relevant Studies: 1  
  • Prospective cohort: 1\(^{23}\)  
  Projected Total Studies: 13  
  ClinicalTrials.Gov  
  None identified. |
| 1c: CT scan                         | None identified.                                      | Size/scope of review  
  Relevant Studies: 1  
  • Prospective cohort: 1\(^{24}\)  
  Projected Total Studies: 13  
  ClinicalTrials.Gov  
  None identified. |
| 1d: MRI scan                        | None identified.                                      | Size/scope of review  
  Relevant Studies: 2  
  • Retrospective case-control: 1\(^{25}\)  
  • Retrospective cohort: 1\(^{26}\)  
  Projected Total Studies: 27  
  ClinicalTrials.Gov  
  None identified. |
| 1e: DXA scan                        | None identified.                                      | Size/scope of review  
  Relevant Studies: 4  
  • Prospective cohort: 2\(^{23}\)-\(^{27}\)  
  • Retrospective cohort: 2\(^{28}\)-\(^{29}\)  
  Projected Total Studies: 54  
  ClinicalTrials.Gov  
  None identified. |
| 2a: Bracing                         | Total number of completed or in-process evidence reviews  
  • Other: 1\(^5\) | Size/scope of review  
  Relevant Studies Identified: 1  
  • Prospective cohort: 1\(^{30}\)  
  Projected Total Studies: 13  
  ClinicalTrials.Gov  
  None identified. |
| 2b: Pharmacological treatments      | Total number of completed or in-process evidence reviews  
  • Other: 1\(^{6,7}\) | Size/scope of review  
  None identified.  
  ClinicalTrials.Gov  
  None identified. |
| 2c: Surgical procedures             | Total number of completed or in-process evidence reviews: 14  
  • Cochrane: 1\(^8\)  
  • Other: 1\(^{25-29}\) | Size/scope of review  
  Relevant Studies: 9  
  • RCTs: 3\(^{31-33}\)  
  • Prospective non-randomized |
<table>
<thead>
<tr>
<th>Key Question</th>
<th>Duplication (Completed or In-Process Evidence Reviews)</th>
<th>Feasibility (Published and Ongoing Research)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kyphoplasty, and other surgical procedures</td>
<td>• In-Process (other): 1\textsuperscript{21}</td>
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<tr>
<td></td>
<td></td>
<td>comparative: 2\textsuperscript{24,36}</td>
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<tr>
<td></td>
<td></td>
<td>• Prospective cohort: 1\textsuperscript{36}</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Retrospective cohort: 2\textsuperscript{37,38}</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Retrospective case-series: 1\textsuperscript{39}</td>
</tr>
<tr>
<td>Projected Total Studies: 121</td>
<td></td>
<td>ClinicalTrials.Gov</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Relevant studies: 2</td>
</tr>
<tr>
<td>2d: Exercise</td>
<td>Total number of completed or in-process systematic reviews: 1</td>
<td>Size/scope of review</td>
</tr>
<tr>
<td></td>
<td>• Cochrane: 1\textsuperscript{22}</td>
<td>None identified.</td>
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<td></td>
<td></td>
<td>Clinical trials</td>
</tr>
<tr>
<td></td>
<td></td>
<td>None identified.</td>
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<tr>
<td>2e: Other interventions</td>
<td>None identified.</td>
<td>Size/scope of review</td>
</tr>
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<td></td>
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<td>None identified.</td>
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<tr>
<td></td>
<td></td>
<td>Clinical trials</td>
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<tr>
<td></td>
<td></td>
<td>None identified.</td>
</tr>
</tbody>
</table>

Abbreviations: CT=Computerized Tomography; DXA= Dual-energy X-ray Absorptiometry; MRI=Magnetic Resonance Imaging; RCT=Randomized Controlled Trial; SOE= Strength of evidence; SOR= Strength of recommendation

Value
A new AHRQ review has high value potential, given that AAOS will use a new AHRQ systematic review to update their 2010 guidelines. This organization has previously produced high-quality evidence-based guidelines, and is transparent about its methodology.

Summary of Findings

- ** Appropriateness and importance:** This topic is both appropriate and important.
- **Duplication:** A new AHRQ review would not be duplicative of an existing product.
  - We identified evidence reviews examining the diagnostic accuracy of signs and symptoms for identifying spinal fractures among those with low back pain (KQ1a); the effectiveness of bracing (KQ2a), pharmacological interventions (KQ2b), surgical interventions (ie, kyphoplasty, vertebroplasty; KQ2c), and exercise interventions (KQ2d).
  - We did not identify any reviews on the diagnostic accuracy of X-Ray (KQ1b), CT scan (KQ1c), MRI (KQ1d) or DXA (KQ1e), or any reviews on bed rest, complementary or alternative medicine, nerve blocks, electrical stimulation, or improvement of kyphosis angle (KQ2e).
- **Feasibility:** A new AHRQ review is feasible.
  - **Size/scope of review:** We identified 17 potentially relevant studies from our random sample of 200 studies, including 8 studies examining the diagnostic accuracy of either X-Ray (KQ1b), CT scan (KQ1c), MRI (KQ1d), or DXA scan (KQ1e); 1 study on the effectiveness of bracing (KQ2a); and 9 studies on the effectiveness of surgical procedures (KQ2c). We did not identify any studies on the diagnostic accuracy of clinical assessments (KQ1a) or the effectiveness of pharmacological interventions (KQ2b), exercise (KQ2d) or other interventions such as bed rest, complementary or alternative medicine, nerve blocks, electrical stimulation, or improvement of kyphosis angle (KQ2e).
  - **ClinicalTrials.gov:** We identified 2 ongoing trials on ClinicalTrials.gov, both of which examined surgical interventions.
• **Impact**: A new AHRQ review on this topic has high impact potential due to the lack of current guidance on the accuracy and reliability of diagnostic tools, as well as inconclusive evidence for the majority of treatment options in the AAOS 2010 clinical practice guidelines.

• **Value**: A new AHRQ review on this topic has high value potential, given that AAOS will use a new AHRQ systematic review to update their 2010 guidelines. This organization has previously produced high-quality evidence-based guidelines, and is transparent about its methodology.

**References**


40. Centre hospitalier de l'Université de Montréal. Vertebroplasty In The Treatment Of Acute Fracture Trial - The VITTA Trial (VITTA). *Clinicaltrials.gov.* 2016;NCT02370628.


Appendices

Appendix A: Selection Criteria Summary

Appendix B: Search Strategy & Results (Feasibility)
## Appendix A. Selection Criteria Summary

<table>
<thead>
<tr>
<th>Selection Criteria</th>
<th>Supporting Data</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Appropriateness</strong></td>
<td><strong>Yes, this topic represents health care drugs and interventions available in the U.S.</strong></td>
</tr>
<tr>
<td>1a. Does the nomination represent a health care drug, intervention, device, technology, or health care system/setting available (or soon to be available) in the U.S.?</td>
<td><strong>Yes, this topic is a request for a systematic review.</strong></td>
</tr>
<tr>
<td>1b. Is the nomination a request for a systematic review?</td>
<td><strong>Yes, this topic is a request for a systematic review.</strong></td>
</tr>
<tr>
<td>1c. Is the focus on effectiveness or comparative effectiveness?</td>
<td>The focus of this review is on both effectiveness and comparative effectiveness.</td>
</tr>
<tr>
<td>1d. Is the nomination focus supported by a logic model or biologic plausibility?</td>
<td>Yes, it is biologically plausible. Yes, it is consistent with what is known about the topic.</td>
</tr>
<tr>
<td><strong>2. Importance</strong></td>
<td><strong>Yes, this topic represents a significant burden. Approximately 25% of all postmenopausal women will have a compression fracture in their lifetime.</strong> Spinal compression fractures are the most common type of osteoporotic fractures, affecting 750,000 individuals in the U.S. each year.</td>
</tr>
<tr>
<td>2a. Represents a significant disease burden; large proportion of the population</td>
<td><strong>Yes, this topic affects health care decisions for a large, vulnerable population.</strong></td>
</tr>
<tr>
<td>2b. Is of high public interest; affects health care decision making, outcomes, or costs for a large proportion of the US population or for a vulnerable population</td>
<td><strong>Yes, this topic represents important uncertainty for decision makers. There is no good algorithm for determining when certain diagnostic modalities should be utilized, and as a result there are concerns about the under- or over-utilization of diagnostic modalities. In addition, there is no consensus about which patients would benefit from surgical interventions such as balloon kyphoplasty or percutaneous vertebroplasty and which patients would benefit from more conservative interventions.</strong></td>
</tr>
<tr>
<td>2c. Represents important uncertainty for decision makers</td>
<td><strong>Yes, this topic addresses both benefits and potential harms of treatments for symptomatic osteoporotic spinal compression fractures.</strong></td>
</tr>
<tr>
<td>2d. Incorporates issues around both clinical benefits and potential clinical harms</td>
<td><strong>Yes, this topic represents high costs to consumers.</strong></td>
</tr>
<tr>
<td>2e. Represents high costs due to common use, high unit costs, or high associated costs to consumers, to patients, to health care systems, or to payers</td>
<td><strong>A new review would not be duplicative of an existing product.</strong> We identified one Cochrane review and one evidence review for KQ1a, one evidence review for KQ2a (2016), two evidence reviews for KQ2b (2014, 2012), one Cochrane review (2013), twelve evidence reviews (one in 2011, one in 2012, three in 2013, four in 2014, three in 2015, and one in process review (2016).**</td>
</tr>
<tr>
<td><strong>3. Desirability of a New Evidence Review/Duplication</strong></td>
<td></td>
</tr>
</tbody>
</table>
for KQ2c and one Cochrane review for KQ2d (2013\(^22\)). We identified no completed or in-process evidence reviews for KQ1b-e or KQ2e.

### 4. Impact of a New Evidence Review

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>4a. Is the standard of care unclear (guidelines not available or guidelines inconsistent, indicating an information gap that may be addressed by a new evidence review)?</td>
<td>Yes, the standard of care is unclear due to inconclusive evidence supporting previous guidelines.</td>
</tr>
<tr>
<td>4b. Is there practice variation (guideline inconsistent with current practice, indicating a potential implementation gap and not best addressed by a new evidence review)?</td>
<td>Yes, there is practice variation due to inconclusive evidence from previous guidelines.</td>
</tr>
</tbody>
</table>

### 5. Primary Research

| Size/scope of the review: Out of the 200 random articles, we identified 17 studies potentially relevant to the key questions in the nomination. We project there may be 248 relevant studies across all key questions. From our sample, we identified one observational study for KQ1b (2012\(^23\)), one observational study for KQ1c (2011\(^24\)), two observational studies for KQ1d (2012\(^26\) and 2015\(^25\)), four observational studies for KQ1e (2012,\(^23\) 2014,\(^27\) 29 and 2015\(^28\)), one observational study for KQ2a (2014\(^30\)) and three RCTs and six observational studies for KQ2c (one in 2011,\(^35\) three in 2012,\(^34,36,38\) one in 2013,\(^37\) four in 2014,\(^32,33,39\) and one in 2015\(^31\)). We did not identify any studies for KQ1a, KQ2b, KQ2d, or KQ2e from our random sample. |
| Clinicaltrials.gov: We identified clinical trials\(^38,39\) for KQ2c, but not for any other key sub-questions. |

### 6. Value

| A 2009 RCT\(^42\) showing no difference between vertebroplasty and a sham procedure on pain ignited discussion and research on the benefits and harms of surgical versus conservative treatments for osteoporotic compression fractures. There is still debate on how to best diagnose and treat symptomatic osteoporotic spinal compression fractures. A review on this topic would impact inform the development of guidelines for AAOS as well as impact clinical decision-making to optimize benefits of treatment while reducing potential harms. |
| Identified partner who will use the systematic review to influence practice (such as a guideline or recommendation) | Yes, the AAOS will develop evidence-based guidelines based on the results of an AHRQ evidence review. |

**Abbreviations:** AAOS=American Academy of Orthopaedic Surgeons; AHRQ=Agency for Healthcare and Research Quality; KQ=Key Question
### Appendix B. Search Strategy & Results (Feasibility)

<table>
<thead>
<tr>
<th>Topic: Spinal Compression Fractures</th>
<th>Date: June 10, 2016</th>
<th>Database Searched: PubMed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Concept</strong></td>
<td><strong>Search String</strong></td>
<td></td>
</tr>
<tr>
<td>Not Editorials, etc.</td>
<td>((((((&quot;Letter&quot;[Publication Type]) OR &quot;News&quot;[Publication Type]) OR &quot;Patient Education Handout&quot;[Publication Type]) OR &quot;Comment&quot;[Publication Type]) OR &quot;Editorial&quot;[Publication Type]) OR &quot;Newspaper Article&quot;[Publication Type])</td>
<td></td>
</tr>
<tr>
<td>Limit to last 5 years Human English</td>
<td>Filters activated: published in the last 5 years, Humans, English</td>
<td></td>
</tr>
<tr>
<td><strong>N=2899</strong></td>
<td><strong>Systematic Review</strong></td>
<td>PubMed subsection &quot;Systematic [sb]&quot;</td>
</tr>
<tr>
<td><strong>Randomized Controlled Trials</strong></td>
<td><strong>Cochrane Sensitive Search Strategy for RCT's</strong></td>
<td></td>
</tr>
<tr>
<td><strong>N=890</strong></td>
<td>&quot;((((((groups[tiab]) OR (trial[tiab])) OR (randomly[tiab]) OR (drug therapy[sh])) OR (placebo[tiab]) OR (randomized[tiab]) OR (controlled clinical trial[pt])) OR (randomized controlled trial[pt]))</td>
<td></td>
</tr>
<tr>
<td><strong>Other</strong></td>
<td><strong>N=1799</strong></td>
<td></td>
</tr>
</tbody>
</table>

ClinicalTrials.gov searched on June 10, 2016
20 studies found for: (spinal OR vertebral) compression fracture | received on or after 06/10/2011
Link to Results: