Research Prioritization Topic Brief

Topic 3: “Hip Fracture”

Comparative effectiveness of surgical options for hip fracture in the elderly.

PCORI Scientific Program Area: Assessment of Prevention, Diagnosis and Treatment Options

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April 16, 2013
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<th>Criteria</th>
<th>Brief Description</th>
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| **Introduction** | DESCRIPTION OF CONDITION¹,²,³  
- “Hip fracture” refers to a break of the upper part of the femur (large bone of the upper thigh)  
- Classified into different types depending on location  
- Treatment options vary by fracture type  
- Two main causes:  
  - Simple falls (90%)—affect mostly the elderly, more common in women  
  - Major trauma (e.g., motor vehicle accident)—mostly younger, more common in men |
| **Patient-centered outcomes** | SYMPTOMS/OUTCOMES¹,²,³  
- Hip fracture can result in:  
  - Pain  
  - Functional impairment  
  - Prolonged rehabilitation  
  - Loss of ability to live independently  
  - Premature death  
- Goal of treatment usually to return patients to pre-fracture level of functioning |
| **Burden on Society** | INCIDENT (NEW CASES)¹  
- 957 per 100,000 for women and 414 per 100,000 for men from 1986 to 2005  
- Increased risk in women due to changes in bone strength (osteoporosis) after menopause  
  - Unclear if decreased use of postmenopausal hormone replacement therapy after findings of Women’s Health Initiative in 2002 will lead to increased incidence in women |
| **Recent incidence and prevalence in populations and subpopulations** | QUALITY OF LIFE¹,²,³  
- 80% of elderly women surveyed preferred death to a “bad” hip fracture that would result in nursing home need  
FUNCTIONAL CAPACITY  
- 50% of previously independently living elderly patients able to walk unaided after fracture, but many (25–75%) never completely recover full pre-injury functional status  
MORTALITY  
- 20% one-year mortality after a hip fracture  
- 2–3% in-hospital mortality among patients 65 and over⁴ |
| **Effects on patients’ quality of life, productivity, functional capacity, mortality, use of health care services** | USE OF HEALTH CARE SERVICES⁴  
- 304,000 hospitalizations in the United States (in 2010) secondary to hip fractures  
  - Ages 65–84: 0.9% of all hospitalizations for men, 1.8% for women  
  - Ages 85 and older: 2.7% of all hospitalizations for men, 4.5% for women |
| How strongly does this overall societal burden suggest that CER on alternative approaches to this problem should be given high priority? | • Common condition with potential for severe consequences and overall high societal burden  
• Also high potential for decreasing the incidence of hip fractures via fall prevention measures  
• Multiple different treatment options and potential for wide variety of different outcomes depending on nature, quality, and extent of medical/surgical care provided  
• CER on alternative approaches may have significant impact on clinical outcomes, societal costs, and patient and provider decision making |

| Options for Addressing the Issue | Based on recent systematic reviews, what is known about the relative benefits and harms of the available management options? | Four Key Questions in 2009 AHRQ “Treatment of Common Hip Fractures” report ³  
1) Relationship between patient variables, fracture type, and patient outcomes  
2) Relationship between fracture type and patient outcomes  
3) Relationship between implant variables and patient outcomes  
4) Relationship between intervention type and patient outcomes  
Results:  
• Five of the included trials were conducted in the United States  
• Limited evidence to answer most of the key questions  
• High degree of uncertainty regarding the best way to treat unstable hip fractures and about which treatment options are most appropriate for various clinical populations |

| What could new research contribute to achieving better patient-centered outcomes? | 2010 AHRQ “Future Needs for the Treatment of Common Hip Fractures” report⁵ identified the following research gaps:  
• Predictors of short time-to-recovery and functional outcomes  
• Impact of suboptimal surgical quality on functional outcomes  
• Optimal treatment for different types of fractures (eg, unstable intertrochanteric hip fractures) or defined populations (eg, frail elderly, patients with dementia)  
• Between-class and within-class comparisons (eg, intramedullary nail vs. screws, cement vs. not, number and placement of screws, plate length and position, nail length, and other parameters) |

| Have recent innovations made research on this topic especially compelling? | • Comanaged geriatric fracture centers and organized geriatric fracture programs represent novel approaches that are associated with shorter times to surgery, fewer postoperative infections, fewer complications overall, and shorter lengths of stay.⁶  
• Further research on health care redesign involving multidisciplinary collaboration is timely and may result in both improved outcomes and more efficient use of health care resources. |

| How widely does care now vary? | VARIABILITY IN CARE  
• Very large variation in quality, nature, and extent of care provided across the many clinical settings throughout the United States that offer hip fracture repair  
• High variability in training and quality of surgeons and hospital-based clinicians who provide medical care to elderly patients with multiple comorbidities during hospitalization for hip fracture repair |
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<th>What is the pace of other research on this topic (as indicated by recent publications and ongoing trials)?</th>
<th>RECENT PUBLICATIONS</th>
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<tr>
<td>• Treatment of Common Hip Fractures (AHRQ, 2009)&lt;sup&gt;3&lt;/sup&gt;</td>
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<td>• Future Needs for the Treatment of Common Hip Fractures (AHRQ, 2010)&lt;sup&gt;5&lt;/sup&gt;</td>
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<td>• Pain Management Interventions for Hip Fractures (AHRQ, 2011)&lt;sup&gt;7&lt;/sup&gt;</td>
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<td>ONGOING TRIALS</td>
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<td>• FAITH (Fixation using Alternative Implants for the Treatment of Hip Fractures)&lt;sup&gt;8&lt;/sup&gt;</td>
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<td>• HEALTH (Comparing Total Hip Arthroplasty and Hemi-Arthroplasty on Revision Surgery and Quality of Life in Adults with Displaced Hip Fractures)&lt;sup&gt;9&lt;/sup&gt;</td>
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<th>How likely is it that new CER on this topic would provide better information to guide clinical decision making?</th>
<th>• The research gaps listed above were identified by key stakeholders. This suggests that CER on these topics is likely to inform stakeholder clinical decision making.</th>
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<td>• Many areas of uncertainty involve technical issues regarding surgical management; relative involvement of patients/capacity for shared decision making may vary</td>
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<td>Potential for New Information to Improve Care and Patient-Centered Outcomes</td>
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<td><strong>What are the facilitators and barriers that would affect the implementation of new findings in practice?</strong></td>
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<td><strong>FACILITATORS</strong></td>
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<td>• The current lack of consensus on questions identified by stakeholders as being important is likely to facilitate implementation of new, compelling findings.</td>
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<td>• 80% of hospitalizations have Medicare as primary payer—potential for CMS to help facilitate implementation</td>
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<td><strong>BARRIERS</strong></td>
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<td>• Cost of implementation (eg, to payers, providers, patients, caregivers, and others)</td>
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<td>• Lower barriers to market entry for surgical instruments and devices (eg, hip implants), as opposed to drugs</td>
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<td>• Reimbursement structure for providers and financial incentives/disincentives associated with changing existing practices</td>
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<td>• Dissemination of findings across a large spectrum of providers, payers, and patients</td>
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| **How likely is it that the results of new research on this topic would be implemented in practice right away?** |
| **EVIDENCE OF BENEFIT** |
| • Highly likely to be implemented because most stakeholders likely to be motivated to improve decision making and patient outcomes |
| • General sense that orthopedic surgeons are open to—and would welcome—greater clarity on treatment options |

**EVIDENCE OF NO BENEFIT OR HARM** |
• Depending on balance, may be less likely to be implemented if findings do not provide additional clarity |
  • Especially true if current financial/other incentives favor continued use of intervention with no benefit relative to other options |

| **Would new information from CER on this topic remain current for several years?** |
| **New information from CER on this topic may remain current if it is compelling and clear, and if it addresses questions deemed relevant by stakeholders.** |
| **CER on certain technical questions may be rendered obsolete by unforeseeable technological advances (eg, availability of new materials for hip replacement).** |

**REFERENCES:**


**APPENDIX: TOPIC QUESTIONS**

1. What predicts short time-to-recovery after hip fracture?
2. What predicts functional outcomes after one year, especially one to two years after hip fracture?
3. What is the impact of suboptimal surgical quality on functional outcomes?
4. Do certain procedures (eg, internal fixation) work better than others for frail older patients?
5. Are most fragile patients more or less likely to have suboptimal fracture reduction/implant position than the most active, mobile patients (making them higher risk for implant failure?)
6. Which procedures are better for patients with dementia?
7. What is the optimal treatment for displaced femoral neck fractures?
8. What is the optimal treatment for unstable intertrochanteric hip fractures?
9. What is the optimal treatment for subtrochanteric hip fractures?
10. Between class comparisons (eg, IM nail vs. screws)
11. Within-class comparison of arthroplasty—cement vs. not
12. Within-class comparison of number and placement of screws
13. Within-class comparison of plate length, position
14. Within-class comparison of nail length (IMN)