

# Pain Management Interventions for Elderly Patients With Hip Fracture

## Key Clinical Issue

What are the comparative effectiveness, benefits, and adverse events associated with interventions for acute-pain management, as compared to usual care, in elderly patients with hip fractures from low-impact injury?

### A note about this Clinician Guide

A systematic review of 83 clinical studies published from 1990 through 2010 was conducted by independent researchers, funded by AHRQ, to synthesize the evidence on what is known and not known on this clinical issue.

This topic was nominated through a public process. The research questions and the results of the report were subject to expert input, peer review, and public comment.

The results of this review are summarized here for use in your decisionmaking and in discussions with patients. The full report, with references for included and excluded studies, is available at [www.effectivehealthcare.ahrq.gov/hippain.cfm](http://www.effectivehealthcare.ahrq.gov/hippain.cfm).

## Background Information

Among elderly patients with hip fracture from low-impact injury, mortality rates in the first year after fracture are approximately 25 percent for women and 37 percent for men. Morbidity and poor functional recovery is substantial, with 25 percent of women and 50 percent of men unable to return home within 1 year.

For patients with hip fractures, adequate pain management from the preoperative period through rehabilitation contributes to avoiding complications (e.g., mental status changes, cardiopulmonary consequences), restoring ambulation, and transitioning to less-intensive care settings. For example, treatment of moderate to severe pain may require opioids, which present complications that include habituation, alterations in mental status, nausea and vomiting, constipation, and respiratory depression. Individual variation in narcotic tolerance is a clinical issue. Alternative or adjunctive methods that are safe and effective in the older adult population are of interest.

Studies included in the systematic review evaluated pain management interventions during the pre-, intra-, or postoperative periods of treatment, within the initial 30-day period of care, and in conjunction with the use of standard systemic analgesia. Reviewed studies were limited to those of patients 50 years of age and older.

## Conclusions

Overall, there is limited evidence about the comparative effectiveness, benefits, and adverse events of pain management interventions used for elderly patients with hip fracture. For systemic analgesics and several other modalities, studies are too limited to permit conclusions about optimal regimens. There is moderate strength of evidence that nerve blocks reduce pain and the incidence of delirium, and evidence of low strength indicates that preoperative traction does not improve relief from acute pain. For all modalities, the evidence is generally inadequate to estimate harms and the incidence of adverse events.

## Clinical Bottom Line

### Effectiveness of Pain Management Interventions

#### Systemic Analgesics and Multimodal Approaches:

Studies comparing specific regimens of systemic analgesics or comparing multimodal approaches with standard care were limited, and evidence is insufficient to permit conclusions. ○○○

#### Spinal and Epidural Anesthesia:

The evidence is insufficient to understand the effectiveness, benefits, or adverse events from differing doses, modes of administration, and the addition of opioids to the anesthetic injection. ○○○

Continuous versus single-dose modes of spinal anesthesia do not differ for either 30-day mortality rates or changes in mental status. ●○○

#### Nerve Blocks:

Reduce the intensity of acute pain (3-in-1, fascia iliaca, femoral, psoas compartment, and combined obturator+femoral blocks). ●●○

Can be as effective as spinal anesthesia for relief of acute pain (psoas compartment, posterior lumbar plexus, and combined lumbar and sacral plexus blocks). ●○○

Reduce the incidence of delirium (NNT = 9).\* ●●○

Do not affect mortality rates (pre- and postoperative use). ●○○

#### Skin Traction:

Does not reduce intensity of acute pain. ●○○

#### Rehabilitation,<sup>†</sup> Acupressure, Relaxation Therapy, and TENS<sup>‡</sup>:

The current evidence indicates that these modalities show some promise for pain relief, but the data are too limited to draw conclusions about the benefits or harms. ○○○

### Adverse Events

Overall, adverse event rates were similar in both treated and control groups, but studies were not powered to identify statistically significant differences. Serious adverse events such as myocardial infarction, stroke, and renal failure were either rarely reported or no significant differences were found between groups.

\*NNT = number needed to treat; †strengthening and stretching exercises; ‡TENS = transcutaneous electrical nerve stimulation

#### Strength of Evidence

- High: ●●● There are consistent results from good-quality studies. Further research is very unlikely to change the conclusions.
- Moderate: ●●○ Findings are supported, but further research could change the conclusions.
- Low: ●○○ There are very few studies, or existing studies are flawed.
- Insufficient: ○○○ Research is either unavailable or does not permit estimation of a treatment effect.



## Timing of Use of Pain Management Interventions

This table summarizes the various treatment options examined in the systematic review upon which this guide is based, including the numbers of studies, and the timings of the interventions studied relative to surgery.

Intervention	Number of Studies	Timing Used in Studies
Systemic Analgesia	3	Pre- and postoperative
Anesthesia	30	Intraoperative
Nerve Blocks	32	Pre-, intra-, and postoperative
Traction	11	Preoperative
Transcutaneous Electrical Neurostimulation (TENS)	2	Pre- and postoperative
Acupressure; Relaxation Techniques	2	Preoperative
Rehabilitation	1	Postoperative
Multimodal Pain Management	2	Pre- and postoperative

## Gaps in Knowledge

Additional studies are needed to examine the comparative effectiveness of approaches to pain management in elderly patients with hip fracture. The systematic review revealed areas where evidence is limited or absent, including:

- Knowledge is very limited about the benefits and adverse events associated with pain management approaches in the long term (beyond 30 days).
- Applicability of current studies is limited, as patients in institutional settings and those with cognitive impairment were rarely represented.
- How rehabilitation techniques may affect either acute or chronic pain is unexplored.
- Studies did not report how nerve blocks with both sensory and motor effects may affect rehabilitation, ambulation, or mobility.
- Multicenter research studies are needed that are large enough for statistical analysis of subgroups (by age, gender, comorbidities, or prefracture functional status) and for detection of adverse effects.

## Source

The information in this summary is based on *Pain Management Interventions for Hip Fracture*, Comparative Effectiveness Review No. 30, prepared by the University of Alberta Evidence-based Practice Center under Contract No. 290-02-0023 for the Agency for Healthcare Research and Quality, April 2011. Available at: [www.effectivehealthcare.ahrq.gov/hippain.cfm](http://www.effectivehealthcare.ahrq.gov/hippain.cfm). This summary was prepared by the John M. Eisenberg Center for Clinical Decisions and Communications Science at Baylor College of Medicine, Houston, TX.

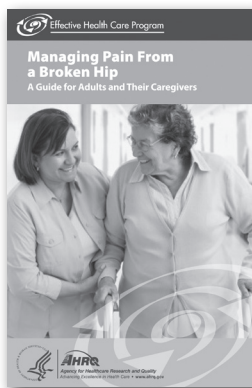
## What To Discuss With Your Patients or Their Caregivers

Clinicians who wish to engage in shared decisionmaking can communicate the critical evidence on effectiveness, benefits, and adverse events to patients and their caregivers, while exploring the patients' values and preferences and encouraging them to be involved in their own care.

- Managing pain during the period from injury through rehabilitation is important for advancing return to function and improvement in quality of life.
- There are options for pain management that may be suitable for patients with a variety of comorbidities.
- There is limited evidence about the benefits and adverse events of pain-control interventions when they are used for elderly patients with hip fractures.

## Resource for Patients

*Managing Pain From a Broken Hip, A Guide for Adults and Their Caregivers* is a free companion to this clinician guide. It covers:



- The importance of pain management during treatment for and recovery from a broken hip.
- A description of the options that are available for patients with a broken hip.
- The evidence about benefits and risks of the various pain-control interventions that may be used for an elderly patient with a broken hip.

## Ordering Information

For electronic copies of *Managing Pain From a Broken Hip, A Guide for Adults and Their Caregivers*, this clinician guide, and the full systematic review, visit [www.effectivehealthcare.ahrq.gov/hippain.cfm](http://www.effectivehealthcare.ahrq.gov/hippain.cfm). To order free print copies, call the AHRQ Publications Clearinghouse at 800-358-9295.

