*Clinician Summary*

## *Description of This Summary*

This is a summary of an original research article that was published in the *Journal of the American Medical Association* in March 2015. The original article is available at *http://jama.jamanetwork.com/article.aspx?articleid=2203801*. This summary of evidence is provided to assist in informed clinical decisionmaking and should not be construed to represent clinical recommendations or guidelines.

## STUDY DESIGN AND OUTCOME MEASURES

This prospective observational study enrolled patients 65 years of age or older who had a new or index primary care visit for back pain between 2011 and 2013. The study population consisted of patients who underwent lumbar spine imaging within 6 weeks of their index visit (including 1174 patients who had radiographs and 349 patients who had computed tomography [CT] or magnetic resonance imaging [MRI]). Controls did not have any spine imaging within 6 weeks of the index visit. Cases and controls were subjected to 1:1 propensity score* matching of demographic and clinical characteristics.

The primary outcome was disability related to back or leg pain as measured by the modified Roland-Morris Disability Questionnaire (RMDQ; score range, 0–24, with higher scores indicating greater disability) 12 months after study enrollment. Secondary patient-reported outcomes included average back pain intensity in the past week, average leg pain intensity in the past week, pain interference with activities, depression and anxiety, health-related quality of life, and falls in the past 3 weeks; these outcomes were assessed at 3, 6, and 12 months.

*A propensity score is a tool that helps control for bias due to heterogeneity and imbalance in comparative clinical studies.

# Early Imaging for Back Pain and Clinical Outcomes in Older Adults: A Brief Summary of Findings and Key Points for Clinician-Patient Discussions

## KEY CLINICAL ISSUE

What were the clinical outcomes and use of health care resources among older adults who received early imaging when compared with those who did not receive early imaging after a new primary care visit for back pain?

## BACKGROUND

Many guidelines recommend that older adults seeking health care for back pain undergo early imaging because of the higher prevalence of serious underlying conditions. However, there is limited evidence to support this recommendation. A previous systematic review suggested that there is an under-representation of the older population in clinical studies of back pain.[1]

Early imaging for back pain may be associated with adverse consequences. Approximately 90 percent of older adults have incidental findings on spine imaging studies, which may lead to followup interventions that are not beneficial and may be associated with harms and high costs.

## KEY FINDINGS

- At 12 months, neither the early radiograph group nor the early MRI/CT group differed significantly from controls on the Roland-Morris Disability Questionnaire.
- The proportion of cancer diagnoses was similar for the early imaging and no early imaging groups at 1 year (1.7% in the early radiograph group vs. 2.2% in the matched control group; 2.0% in the early MRI/CT group vs. 2.0% in the matched control group).
- Patient-reported outcomes were not significantly different at any time point between the early imaging and no early imaging groups for measures of back pain intensity, pain interference with activities, depression and anxiety, health status, and falls.
- Patients in the early radiograph group had lower numerical scores for leg pain at 3, 6, and 12 months when compared with those who did not receive early imaging. However, the difference in leg pain was less than 1 point between groups and was well below any threshold believed to represent a minimal clinically important difference.
- Patients with early MRI/CT, when compared with the no early imaging group, reported lower leg pain intensity at 6 months and better health status at 12 months, but these differences were small and clinically unimportant. The two groups did not differ on these measures at other time points and did not differ on other patient-reported outcomes at any time point.
- More fractures were detected in the early imaging group versus the no early imaging group (2.0% in the early radiograph group vs. 0.6% in the matched control group; 0.9% in the early MRI/CT group vs. 0.0% in the matched control group).

## OTHER FINDINGS OF THE STUDY

One-year use and costs of health care resources were significantly higher in the early radiograph and early MRI/CT groups than in the no early imaging control group.

- Overall costs (including costs for use of health care resources, imaging procedures, and medications) were 27-percent higher ($p<0.001$) in the early radiograph group and 30-percent higher ($p<0.04$) in the early MRI/CT group versus the no early imaging group. This increase in cost was in the absence of a clinical benefit.

1. Bressler HB, Keyes WJ, Rochon PA, et al. The prevalence of low back pain in the elderly. A systematic review. Spine (Phila Pa 1976). 1999 Sep;24(17):1813-9. PMID: 10488512.

AHRQ Agency for Healthcare Research and Quality
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## STUDY LIMITATIONS

» There was potential for confounding by health care site: patient characteristics and patterns of care varied by site. Adjustments were made for the site in each analysis.

» Baseline measures were administered up to 3 weeks after the index visit and, thus, could reflect responses to therapy after the index visit.

» Out-of-system use of resources and medications was not assessed.

» There was potential for confounding by clinical indication among study participants: patients who underwent early imaging likely had a worse prognosis when compared with patients who did not undergo early imaging. Since the study was not randomized or double-blinded, there was also potential for confounding by study design. Propensity matching was performed to reduce confounding.

## CONCLUSIONS

Among older adults with a new or index primary care visit for back pain, early imaging was not associated with better 1-year outcomes. No evidence indicating a higher incidence of missed cancer diagnoses in the absence of early imaging was found; the proportion of cancer diagnoses was similar in both the early imaging and the control groups at 1 year. The study results support a position that, regardless of age, early imaging should not be performed routinely for older adults with back pain without radiculopathy in the absence of red flags (symptoms such as weight loss, significant trauma, or fever).

The findings from this study provide evidence that aligns with the guidelines from the American College of Physicians (ACP). The guidelines from the ACP suggest the following approach:

» Immediate imaging is recommended in patients with acute low back pain who have major risk factors for cancer, risk factors for spinal infection, risk factors for or signs of the cauda equina syndrome, or severe or progressive neurologic deficits.

» Imaging after a trial of therapy is recommended in patients with minor risk factors for cancer, risk factors for inflammatory back disease, risk factors for vertebral compression fracture, signs or symptoms of radiculopathy, or risk factors for or symptoms of symptomatic spinal stenosis.

## SUGGESTED KEY POINTS FOR CLINICIAN AND PATIENT AND CAREGIVER DISCUSSIONS

» For patients with back pain without radiculopathy, there is no evidence that routine imaging within the first 6 weeks of initially seeing a health care provider for this problem results in better pain and related outcomes over the next year.

  – Furthermore, there is no evidence that *not* performing imaging in this patient population within the first 6 weeks results in missing a serious problem such as cancer. Imaging can always be done at a later date if symptoms persist or worsen.

» In discussions with patients who have concerns about delays in imaging, health care providers can highlight the fact that early imaging has not been found to be of benefit in caring for patients with back pain but is associated with more testing and higher costs. Taking a careful medical history and performing a thorough physical examination provide all the information that is needed to guide early treatment and management of back pain.

» There are potential adverse effects of radiation associated with radiography and CT; however, some of these adverse effects might take years to develop.

» It is possible that imaging might reveal incidental findings that could lead to subsequent interventions that might not be beneficial and that might be associated with harms (e.g., unnecessary surgery, unnecessary worry).

» It is important to contact a health care professional if back pain does not improve in 6 weeks, if pain worsens, or if there is any other change in symptoms.

» It is important for people with back pain to stay active and to limit bed rest as much as possible.

## SOURCE

This summary is based on the article "Association of Early Imaging for Back Pain With Clinical Outcomes in Older Adults" (Jarvik JG, Gold LS, Comstock BA, et al. JAMA. 2015 March;313(11):1143-53. PMID: 25781443). An electronic copy of this summary is available at *www.effectivehealthcare.ahrq.gov/back-pain/*. This summary was prepared by the John M. Eisenberg Center for Clinical Decisions and Communications Science at Baylor College of Medicine, Houston, TX.

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