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MRI abundance may lead to excess in back surgeries, study shows

BY JENNIFER WELSH

Patients reporting new low-back pain are more likely to undergo surgery if treated in an area with a higher-than-average concentration of magnetic resonance imaging machines, according to research from the [Stanford University School of Medicine](#).

This may be bad news for patients, since previous studies have found that increased surgery rates don't improve patient outcomes. "The worry is that many people will not benefit from the surgery, so heading in this direction is concerning," said senior author [Laurence Baker](#), PhD, professor of health research and policy.

In their new study, published online Oct. 14 in *Health Affairs*, Baker and first author Jacqueline Baras correlate areas with high numbers of MRI machines to an increased likelihood that MRIs will be performed on new low-back pain patients. In turn, high local MRI availability correlates with increased rates of low-back surgery.

"It is important that policymakers recognize that infrastructure matters, and that the number of MRI machines in any particular area may affect the volume and quality of health care that patients receive," said Baras, a Stanford medical student with a master's degree in health services research.

Low-back pain was the fifth-most common reason for physician visits in the United States, with 26.4 percent of adults reporting low-back pain for a day or more during a three-month period in 2002. More than 80 percent of low-back pain was diagnosed as nonspecific, a category that includes lumbar strains and sprains, degenerative disk disease and spinal instability.

MRIs visualize the body's internal structure and allow doctors to rule out some specific causes of back pain. However, MRIs may also detect anomalies unrelated to back pain, prompting doctors to perform surgery that may not benefit the patient, the authors noted.

To determine how MRI technology influences patient treatment, the researchers collected data on traditional Medicare patients who received care for nonspecific low-back pain from 1998 through 2005. Patient data were linked with the number of MRI machines in the area. The areas of MRI availability were then divided into four groups, from high to low, and the incidence of MRI scans and surgeries were determined in each group.

Researchers projected that in 2004 there would have been 5.4 percent fewer low-back MRIs and 9 percent fewer back surgeries if all Medicare patients reporting new-onset low-back pain had been living in the areas



Loren Baker

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of lowest MRI availability.

Two-thirds of the MRI scans that appear to result from increased availability happened within the first month of onset. Clinical guidelines recommend delaying MRI use until four weeks after onset, during which time most low-back pain patients show spontaneous improvement. "Not only are patients in high-availability areas getting more MRIs, but they are getting them earlier," said Baras.

Between 2000 and 2005, the MRI availability in the United States more than tripled, from 7.6 machines per 1 million persons to 26.6 machines. Each machine costs more than \$2 million and one low-back scan costs \$1,500. Increased rates of scans and surgeries are increasing the cost to treat low-back pain, the authors said.

Doctors and patients face difficult decisions when using high-tech medical equipment, such as MRIs. "The big issue is how we handle new and exciting technologies in ways that allow us to reap the benefits of medical advances, without letting all of our new things generate waste or, worse, actual reductions in patient well-being," said Baker.

John Birkmeyer, MD, professor of surgery and a health policy researcher at the University of Michigan, who was not involved in the Stanford study, said the research confirms fears that greater access to MRI technology leads to more back surgeries. "The net result is increased risks of unnecessary surgery for patients and increased costs for everybody else," Birkmeyer said.

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