

Choosing Wisely: Spine Imaging

Robert Ferrari, MD, MSc (Med), FRCPC, FACP

Gidwani et al¹ confirm in their February 2016 article, in *The American Journal of Managed Care*, that there is a high percentage of wasteful magnetic resonance imaging (MRI) scans being ordered for patients with low back pain. Their study protocol gives the ordering physician considerable leeway in determining what is inappropriate, and it is likely that the wasteful testing is even higher than the 31% found, given that failure to improve with conservative therapy is not a reason in itself for ordering an MRI. Regardless of how one defines “wasteful” or “inappropriate” testing, there is no doubt that this behavior exists.

Gidwani et al quite rightly point out that efforts to reduce inappropriate ordering cannot rely on financial incentives alone; as such, they suggest that interventions target specific providers, as the researchers found a high concentration of inappropriate ordering among a few providers. Although this seems logical, and there would not seem to be a need to target “nonoffenders,” a more universal solution is even more appropriate. An intervention that universally discourages wasteful testing can be applied to future and new physicians, or physicians whose practices or practice styles change. It also reduces the approach of “blame”—that is, identifying certain physicians as culprits.

One approach may be to change the requisition form used for ordering the MRI. It has been shown that if MRI scanning is used only when red flags are present in patients with subacute or chronic spinal pain, there is a very low risk of missing any cases of serious spinal disorders.² In the aforementioned study, subjects with any region of spinal pain for a period of 6 to 52 weeks were assessed to determine if radiological studies beyond x-rays were indicated, including MRI, computed tomography (CT), or radionuclide bone scans. An a priori threshold (the presence of at least 1 red flag) was set before an MRI, CT, or bone scan would be considered. Those who did not have one of these 3 scans ordered for them were followed for at least 1 year to determine if any went on to have a diagnosis of a more serious form of spinal disorder (eg, infection, fracture, spondylitis, tumor, neurological compression). Of the 1003 subjects, 110 met an a priori thresh-

TAKE-AWAY POINTS

- ▶ Choosing Wisely is a program aimed at reducing harm and costs associated with unnecessary testing.
- ▶ Spinal pain is common, but few patients with spinal pain require advanced imaging (ie, radionuclide bone, computed tomography, or magnetic resonance imaging scans).
- ▶ There are various red flags that can aide the physician in determining who does not need advanced imaging.
- ▶ Using red flags as the threshold for ordering advanced imaging yields a very low risk of missing any serious cases of spinal pain.

old for ordering at least 1 MRI, CT, or bone scan. The remaining 893 subjects were followed for at least 1 year, and none developed evidence of a nonbenign cause for their spinal pain. Thus, in the evaluation of nonspecific spinal pain and symptoms, setting an a priori threshold for ordering MRI, CT, or bone scans with the spirit of the current Choosing Wisely recommendations for spinal imaging results in a very low risk of missing a case of a serious cause of back pain. This approach can be universally applied to a wide array of practitioner types.

Author Affiliations: Department of Medicine and Department of Rheumatic Diseases, University of Alberta, Edmonton, AB, Canada.

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Address correspondence to: Robert Ferrari, MD, MSc (Med), FRCPC, FACP, Department of Medicine and Department of Rheumatic Diseases, 13-103 Clinical Sciences Building, University of Alberta, Edmonton, AB, Canada T6G 2P4. E-mail: robertferrari9@gmail.com.

REFERENCES

1. Gidwani R, Sinnott P, Avoundjian T, Lo J, Asch SM, Barnett PG. Inappropriate ordering of lumbar spine magnetic resonance imaging: are providers Choosing Wisely? *Am J Manag Care*. 2016;22(2):e68-e76.
2. Ferrari R. Imaging studies in patients with spinal pain: practice audit evaluation of Choosing Wisely Canada recommendations. *Can Fam Physician*. 2016;62(3):e129-e137.

Reply From the Author

Risha Gidwani, DrPH

In our article, we suggest that targeted, rather than universal, quality improvement efforts are better suited to reduce inappropriate order of lumbar spine magnetic resonance imaging (LS MRI), based on our results indicating 11% of providers ordered 50% of inappropriate scans and that 24% of providers ordered 74% of inappropriate scans.

In his letter to the editor, Dr Ferrari suggests that a universal quality improvement approach is still preferred, as it applies to all physicians and reduces the approach of blaming physicians. He also proposes a universal requisition form to be used for ordering an MRI, limiting the order only to patients with “red flag” conditions and subacute or chronic spinal pain.

We respectfully disagree with this approach and believe the targeted quality improvement approach is preferred for 3 reasons. First, universal application of a requisition form to justify imaging orders is unlikely to reduce inappropriate scans. Previous attempts to apply this strategy have had small effect.¹ By the time the order is written, the provider has already made a decision to order an MRI, and providers easily learn the answers that will get their order approved.

Second, it is not clear that allowing only patients with red flags—which Dr Ferrari includes as those with cancer, fever, diabetes, muscle weakness, age greater than 65, among other factors—to undergo spinal imaging results in a low risk of missing cases of serious spinal disorder. The study Dr Ferrari references is based on a cohort of patients he saw in clinical practice, and, like all observational studies, suffers from selection bias.² He found that younger, healthier patients without red flag conditions had fewer cases of nonbenign back pain relative to older, sicker patients with red flag conditions. Given the systematic differences in these patients at baseline, these results are not surprising. The generalizability of this study is also compromised by this selection issue, as the healthiest and youngest patients with low back pain are systematically different than the population of other patients who present at physicians’ offices with low back pain.

Third, when implementing quality improvement programs, one must also be cognizant of the burden of the

(unnecessary) quality improvement intervention on the providers who do not order inappropriately. When the majority of inappropriate behavior is concentrated in a few individuals, as our study found, universal programs have the effect of penalizing—in the form of wasted time and undue cognitive burden—the providers who are acting appropriately.

A more effective approach must address the root causes of the inappropriate orders; however, these are not yet fully understood, and may vary in different settings and health plans. Multiple surveys have found that failure to implement guidelines is not only due to lack of familiarity. Providers may not believe the guidelines are correct, or structural factors may make their implementation difficult.³ In the case of LS MRI, lack of support for conservative treatment options and having systems that require scans to process referrals for low back pain care may be important root causes that need to be addressed.

Author Affiliations: VA Health Economics Resource Center and VA Center for Innovation to Implementation, VA Palo Alto Health Care System, Menlo Park, CA.

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Address correspondence to: Risha Gidwani, DrPH, VA Health Economics Resource Center, VA Center for Innovation to Implementation, 795 Willow Rd, 152 MPD, Menlo Park, CA 94025. E-mail: Risha.Gidwani@va.gov.

REFERENCES

1. Goldzweig CL, Orshansky G, Paige NM, et al. Electronic health record–based interventions for improving appropriate diagnostic imaging: a systematic review and meta-analysis. *Ann Intern Med*. 2015;162(8):557–565. doi: 10.7326/M14-2600.
2. Ferrari R. Imaging studies in patients with spinal pain: practice audit evaluation of Choosing Wisely Canada recommendations. *Can Fam Physician*. 2016;62(3):e129–e137.
3. Cabana MD, Rand CS, Powe NR, et al. Why don't physicians follow clinical practice guidelines? a framework for improvement. *JAMA*. 1999;282(15):1458–1465. ■

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