

Variability in diagnostic error rates of 10 MRI centers performing lumbar spine MRI examinations on the same patient within a 3-week period

Herzog R, Elgort DR, Flanders AE, Moley PJ.
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- The first peer-reviewed findings to quantify high levels of variation in radiology evaluations between imaging centers
- As treatment decisions, patient outcomes and work status are all impacted by radiology diagnoses, efforts to improve the situation are warranted



Diagnoses based on inaccurate findings may result in incorrect treatment and poor outcomes for patients

Background

Radiology imaging is commonly viewed as a commodity with no meaningful variation in quality




Imaging centers are selected primarily on the basis of price, convenience, or in-network status. If true, patients should expect to receive the same diagnosis regardless of which center is chosen, or which radiologist reviews the scan.

Objective

To test the authors' hypothesis that identical lumbar MRIs performed at multiple imaging centers would demonstrate:

- o Marked variability in interpretive findings
- o A broad range of interpretive errors

Method

1 PATIENT	10 CENTERS	10 EXAMS
		
63-yr-old woman with low back pain and right L5 radicular symptoms	10 MRI centers selected for close proximity and range of equipment types	Over 3 weeks the same MRI exam was performed at each center



Study MRIs were compared to a final, consensus diagnosis derived from two reference MRIs, conducted separately by experienced, practicing radiologists, before and after the study.

Limitations:

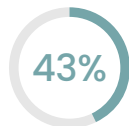
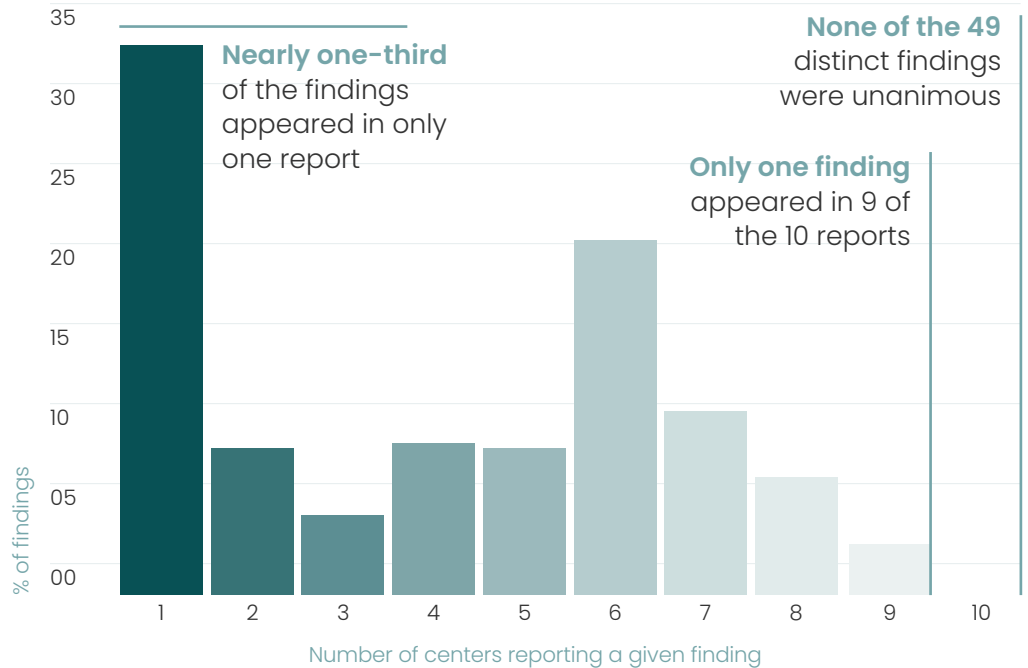
The study authors acknowledge limitations in generalizing patient and pathology comparisons from this single-sample study. Study centers utilized a range of MRI equipment, and only one MRI was performed and reviewed at each facility. Study geography was restricted to areas within easy travel distance of the patient's home.



The study revealed a high rate of interpretive errors across all MRI exams

Results

There were an average of 12.5 interpretive errors across the 10 MRI examinations – both false-positives and false-negatives



Average diagnostic error rate across centers



Miss rate for 4 instances of nerve root involvement

Conclusion

The study authors found marked variability in the quality and accuracy of MRI evaluations across imaging centers.

Broad acceptance of the prevalence of interpretive errors in radiology is a critical first step toward industry-wide, standardized measurements of diagnostic quality

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