



# NIH PRAGMATIC TRIALS COLLABORATORY

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## Lumbar Imaging With Reporting of Epidemiology (LIRE)

### Principal Investigator

Jeffrey Jarvik, MD, MPH

### ClinicalTrials.gov Identifier

[NCT02015455](https://clinicaltrials.gov/ct2/show/study/NCT02015455)

### Sponsoring Institution

University of Washington

### Collaborators

- Kaiser Permanente, Northern California
- Kaiser Permanente Washington Health Research Institute
- Mayo Clinic Health System
- Henry Ford Health System
- Oregon Health and Science University

### NIH Institutes Providing Oversight

- National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)
- National Center for Complementary and Integrative Health (NCCIH)

### DATA AND RESOURCE SHARING

- [Data sharing checklist](#)
- **Primary study results:** Jarvik JG, Meier EN, James KT, et al. The effect of including benchmark prevalence data of common imaging findings in spine image reports on health care utilization among adults undergoing spine imaging: a stepped-wedge randomized clinical trial. *JAMA Netw Open.* 2020;3(9):e2015713. PMID: [32886121](https://pubmed.ncbi.nlm.nih.gov/32886121/).

## STUDY AT A GLANCE



### STUDY QUESTION AND SIGNIFICANCE

Spine imaging often has incidental findings that can lead to unnecessary tests and treatments. Prior observational research suggested that placing information about the prevalence of common findings in spine imaging reports may help reassure physicians and patients about such findings and reduce subsequent, unnecessary healthcare interventions. The objective of the LIRE trial was to evaluate the impact of including benchmark prevalence data in routine spinal imaging reports on subsequent spine-related healthcare utilization and opioid prescriptions.



### DESIGN AND SETTING

Stepped-wedge, cluster randomized trial with 250,401 participants receiving care in 98 primary care clinics in 4 large healthcare systems between October 2013 and September 2016.



### INTERVENTION AND METHODS

The control group had standard lumbar spine imaging reports, and the intervention group had reports with age-appropriate prevalence data for common imaging findings in individuals

without back pain. The main outcome was healthcare utilization as measured in spine-related relative value units (RVUs) within 365 days of index imaging. A secondary outcome was the number of subsequent opioid prescriptions written by a primary care clinician. Prespecified subgroup analyses examined results by imaging modality.



### FINDINGS

The intervention did not reduce spine-related healthcare utilization. In prespecified secondary analyses, the intervention slightly reduced subsequent opioid prescriptions, and patients for whom computed tomography was the imaging modality had lower spine-related healthcare utilization.



### CONCLUSIONS AND RELEVANCE

Inserting benchmark prevalence information in lumbar spine imaging reports did not decrease subsequent spine-related RVUs but did reduce subsequent opioid prescriptions. The intervention text was simple, inexpensive, and easily implemented.

## GENERALIZABLE LESSONS

Challenge	Solution
Harmonizing data across multiple health care systems	Distributed standard data dictionary and iteratively addressed discrepancies between sites, communicating frequently with regular conference calls involving key personnel
Changes in personnel over time	Strong local leadership in site PI who was an engaged and proactive partner in helping to recruit and replace study personnel
Accounting for temporal trend of opioid decrease as confounder due to the stepped-wedge design	Modeling to account as much as possible for this potential confounder

*“Studies that use a stepped-wedge design should be aware of possible temporal confounders and potentially consider other designs.”* — Jerry Jarvik

*“Have as many key members of your team work closely with Collaboratory Cores. There is much collective wisdom and knowledge among the various Core members and having multiple members of the study team involved with the Cores increases the probability of taking advantage of that shared knowledge for your trial.”* — Jerry Jarvik

## ADDITIONAL RESOURCES

- Article: [Systematic Literature Review of Imaging Features of Spinal Degeneration in Asymptomatic Populations](#)
- Article: [Lumbar Imaging With Reporting Of Epidemiology \(LIRE\)--Protocol for a Pragmatic Cluster Randomized Trial](#)
- Article: [Using Natural Language Processing of Free-Text Radiology Reports to Identify Type 1 Modic Endplate Changes](#)
- Article: [Comparison of Natural Language Processing Rules-Based and Machine-Learning Systems to Identify Lumbar Spine Imaging Findings Related to Low Back Pain](#)
- NIH Collaboratory Steering Committee Meeting Presentation (2020): [Lumbar Imaging with Reporting of Epidemiology \(LIRE\): Lessons Learned](#)

Access the complete set of [LIRE resources](#).