Low Back Pain and Cancer: Are We Imaging in a Timely Manner?

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Research Objectives

Most guidelines recommend no early (<6 weeks) imaging of back pain patients, unless they have red flags such as cancer histories. **Our purpose was to determine the timing of low back imaging in a cohort of patients with low back pain with and without histories of cancer.**

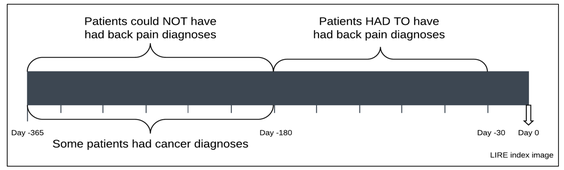
Methods

Study Design and Setting

- Data were derived from the Lumbar Imaging with Reporting of Epidemiology (LIRE) study, a pragmatic, cluster randomized control trial (RCT)
- **All patients in our analyses received lumbar spine imaging, but at varying times from their first visit for back pain**
- Data were collected from 4 study sites: Henry Ford Health System in Michigan; Kaiser Permanente Northern California; Kaiser Permanente Washington; and the Mayo Clinic in Minnesota and Wisconsin

Study Sample

- Because we were interested in imaging for new presentations of back pain, we excluded patients who had International Classification of Diseases- Clinical Modification (ICD-CM) 9 and 10 diagnoses for back pain 6 to 12 months prior to their index back image date
- We required the patients to have had ICD-CM-9 or ICD-CM-10 diagnosis codes for **back pain in the 1-6 months prior to imaging**
- Patients were stratified on whether they had a **history of cancer** (ICD-CM-9 or ICD-CM-10 diagnosis code for non-melanomatous skin cancer in the 6-12 months before index back image date)



Analysis

- The main outcome variable was whether the patient received low back imaging within 2 weeks of a diagnosis of back pain
- Demographic variables analyzed using descriptive statistics
- Primary analysis: Logistic regressions, adjusted for study site, gender, race, ethnicity, calendar time, and age
- Analyzed mean number of days between back pain diagnosis and receipt of back imaging among patients who did not receive imaging within 2 weeks, stratified on whether the patients had histories of cancer
- All analyses were stratified on imaging modality (x-ray versus magnetic resonance imaging (MRI)

Limitations

- All patients received imaging. Thus, while we were able to determine the time between back pain and receipt of imaging, we did not have access to data on patients who did not receive back imaging
- Although we attempted to exclude patients with chronic back pain, likely some patients were misclassified
- We could not detect patients who had cancer diagnoses >1 year prior to back image, likely leading to misclassification

Conclusions

- Regardless of whether patients had histories of cancer, most patients received imaging within 2 weeks of their back pain diagnoses
- Adjusting for patient demographics and calendar time, patients with cancer histories were slightly more likely to have received imaging with MRI within 2 weeks compared to patients without histories of cancer
- Patients who were white, non-Hispanic, and older were more likely to have received imaging with x-ray within two weeks relative to patients who were non-white, Hispanic, and younger

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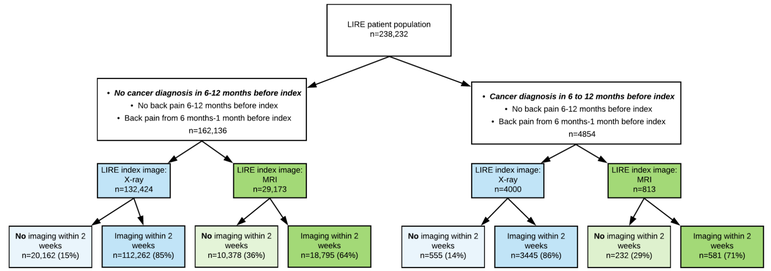
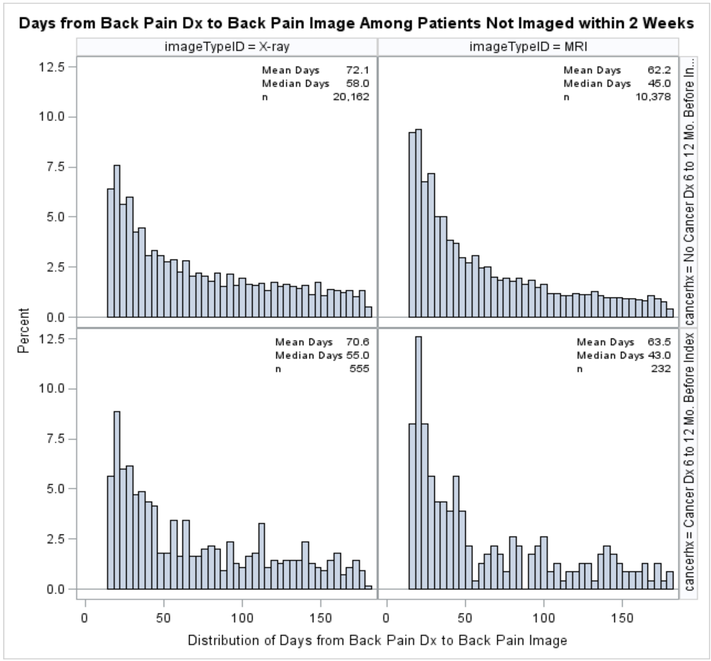
Results





Predictor variable	LIRE Index Image: X-ray n=136,424 Odds ratio (95% CI)	LIRE index Image: MRI n=29,986 Odds ratio (95% CI)
Cancer history	1.06 (0.97-1.16)	**1.37 (1.17-1.60)**
Site		
Site A	Referent	Referent
Site B	**1.09 (1.03-1.16)**	**3.70 (3.26-4.19)**
Site C	**1.46 (1.34-1.59)**	**2.40 (2.03-2.83)**
Site D	0.94 (0.86-1.03)	**2.72 (2.34-3.17)**
Female	**0.90 (0.87-0.92)**	**0.90 (0.85-0.94)**
Race		
Black	Referent	Referent
White	**1.36 (1.29-1.34)**	1.17 (1.07-1.27)
Other	**1.45 (1.37-1.53)**	1.22 (1.10-1.36)
Hispanic	**0.92 (0.88-0.96)**	0.89 (0.83-0.97)
Time of Index Image		
Oct 2013-Mar 2014	Referent	Referent
Apr 2014-Sep 2014	0.99 (0.94-1.05)	**0.87 (0.80-0.95)**
Oct 2014-Mar 2015	0.98 (0.93-1.03)	1.07 (0.99-1.16)
Apr 2015-Sep 2015	0.97 (0.92-1.01)	**1.10 (1.01-1.19)**
Oct 2015-Mar 2016	**0.94 (0.89-0.98)**	1.01 (0.93-1.16)
Apr 2016-Sep 2016	**0.89 (0.85-0.93)**	**0.97 (0.90-0.95)**
Age (Years)		
18-39	Referent	Referent
40-64	**1.16 (1.11-1.20)**	**1.10 (1.03-1.17)**
65+	**1.22 (1.17-1.27)**	**1.18 (1.09-1.27)**