

Determinants associated with longitudinal adherence to annual lung cancer screening: a retrospective analysis of claims data

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Purpose: Lung cancer screening (LCS) efficacy is highly dependent on adherence to annual screening, but little is known about real-world adherence determinants. We used insurance claims data to examine associations between LCS annual adherence and demographic, comorbidity, healthcare usage, and geographic factors.

Methods: Insurance claims data for all individuals with a LCS low dose CT scan was obtained from the Colorado All Payer Claims Dataset. Adherence was defined as a second claim for a screening CT 10-18 months after the index claim. Cox proportional hazards regression was used to define the relationship between annual adherence and age, sex, insurance type, residence location, outpatient healthcare usage, and comorbidity burden.

Results: After exclusions, the final dataset consisted of 9,056 records with 3,072 adherent, 3,570 non-adherent, and 2,414 censored (unclassifiable) individuals. Less adherence was associated with ages 55-59 (hazard ratio (HR)=0.80, 99% confidence interval (CI)=0.67-0.94), 60-64 (HR=0.83, 99% CI=0.71-0.97) and 75-79 (HR=0.79, 99% CI=0.65-0.97), rural residence (HR=0.56, 99% CI=0.43-0.73), Medicare Fee-for-Service (HR=0.45, 99% CI=0.39-0.51), and Medicaid (HR=0.50, 99% CI=0.40-0.62). A significant interaction between outpatient healthcare usage and comorbidity was also observed ($p < 0.0001$). Increased outpatient usage was predictive of increased adherence and was most pronounced for individuals without comorbidities.

Conclusions: This population-based description of LCS adherence determinants provides insight into populations that might benefit from specific interventions targeted toward improving adherence and maximizing LCS benefit. Quantifying population-based adherence rates and understanding factors predictive of annual adherence is critical to improving screening adherence and reducing lung cancer death.