Improving Follow-up of ED Patients with Incidental Lung Nodules

Sandy Kohut, RRT, Summa Health; Laura Musarra, MBA

Introduction
The growing use of CT chest imaging has resulted in increased incidental lung nodule findings on imaging studies. These nodules have historically proved problematic for follow-up; according to the Journal of the American College of Radiology (Feb. 2016), follow-up rates for incidental nodules range from 30-50%. Patients seen in the emergency department are particularly vulnerable to being lost on their incidental findings; arranging follow-up care and further diagnostic studies for asymptomatic nodules presents a challenge to healthcare organizations.

Hypothesis
One health system had a multidisciplinary thoracic team in place since 2014.This team is charged with screenings, diagnostics, treatment therapies, follow-up, tracking, communications and quality improvement. Supported by a combination of a speech recognition radiology reporting technology and an NLP-based clinical analytics platform, the team launched a quality improvement project to improve identification, navigation and appropriate follow-up of incidental lung nodules identified in emergency patients.

Methods

- **Speech recognition radiology reporting.** A real-time radiology reporting system provides efficient generation of high-quality reports, powered by speech recognition technology, structured templates, and smart autotext. This solution facilitates quality measure reporting, population health management, and data exchange with EHRs.
- **Natural language processing (NLP) clinical analytics.** Radiology software enables the performance of NLP to query data in radiology reports, drawing out key elements from large amounts of unstructured or dictated notes and data. Advanced analytics provides detailed and actionable information from text-based searches, and eliminates typical, manual data analysis.
- **Multidisciplinary case navigation.** Once patients with lung nodules are identified, the multidisciplinary team of Navigators receive the referrals through the reporting platform. These referrals include the scans, radiology report, and follow-up recommendations to provide Navigators with all necessary information to interpret the data and best serve the patient.

Findings

- **Increase in referrals to lung Navigators.** In the first six months, the program realized a 662% increase in the number of patients identified per month for lung nodule follow-up (from 8 per month to 61 per month).
- **Expedited patient care.** For patients with actionable lung nodules (>8mm), consultations to pulmonologists were expedited by lung Navigators, with approval from primary care physicians.
- **New lung nodule clinic.** The increased volume of patients contributed to the opening of a new Lung Nodule Clinic.
- **Prevention of "Overdiagnosis".** The multidisciplinary team established a best practice in dealing with incidental findings. They conduct regular review of CT scans of incidental lung nodules to prevent the issue of overdiagnosis. The team carefully weighs additional and potentially risky testing or procedures for conditions that may be benign and could cause harm for conditions that would not lead to morbidity or mortality if they were never detected.

Conclusion/Statement of Impact
The quality improvement initiative helped realize a 662% increase in the number of patients identified each month for follow-up, as well as contribute to the approval of a dedicated Lung Nodule Clinic. Natural language processing and advanced text analytics combined to support the organization's population health objectives and utilized emerging technologies for follow-up to enable appropriate patient care.