

The Health Care Improvement Foundation
2018 Delaware Valley Patient Safety and Quality Award
Entry Form

1. Hospital Name

Abington Hospital Jefferson Health

2. Title Of Initiative

Using Technology for Follow-Up Radiology Report Recommendations of Lung Nodules

3. Abstract (Please limit this description to 250 words.)

Problem: Patients are often unaware of or do not even understand the significance of radiology findings or follow-up recommendations reported after imaging procedures. Communication of imaging results to different health care providers and efficient tracking of patients needing followup is poor. Methods: A customized analytics algorithm was applied to a database of radiology reports performed in our institution which contained recommendations for follow-up of lung nodules. The algorithm was continuously adjusted using the Knowledge Discovery of Database (KDD) process. Notification letters were sent to the primary care physician (PCP) and patient informing them of the possible need for radiology followup. Results: We observed that there were 1538 followups in 2016 and 2877 followups in 2017, an overall 87% increase. 625 of the 1339 increase observed in 2017 was due to letters sent, a 47% increase. We performed further analysis on patients who were contacted by letter either directly or through their PCP receiving a letter. We found that 36.32 % of patients whose PCP received a letter returned for followup, however; 28.03 % of patients who received a letter directly without contacting their PCP returned for follow up. Conclusion: The analytics algorithm has reduced the risk of missing potentially important clinical information for the patient and clinician and has allowed our clinical navigators to focus on higher risk patients rather than spending resources on tracking lower risk incidental findings. We have now focused our efforts on improving PCP data entry for inpatients and emergency room patients receiving imaging procedures.

4. What were the goals of your initiative?

The goal of this project was to create a better tracking and communication tool to reduce the likelihood that needed follow-up studies are missed by patients and clinicians. We wanted to integrate and operationalize radiology clinical data to facilitate care coordination and improve patient outcomes.

5. What were the baseline data and the results of your initiative?

We observed that there were 1538 followups in 2016 and 2877 followups in 2017, an overall 87% increase. 625 of the 1339 increase observed in 2017 was due to letters sent, a 47% increase. We performed further analysis on patients who were contacted by letter either directly or through their PCP (Primary Care Provider) receiving a letter. We found that 36.32 % of patients whose PCP received a letter returned for followup, however;

28.03 % of patients who received a letter directly without contacting their PCP returned for follow up. We also observed an approximate 3-month lag after letter notification before patients completed their followup.

6. Describe the interventions that were instrumental in achieving the results for your initiative.

An iterative process using the Plan, Do, Study, Act (PDSA) cycle was used. Education about followup recommendations in radiology reports was instituted using published guidelines from the American College of Radiology.

A natural language processing (NLP) software was initially purchased to identify the radiology reports performed in 2016 that were overdue for follow-up. However, we quickly realized the laborious work needed to track the patients, opting instead to use an export into Excel spreadsheets from the NLP. The spreadsheets soon became quite voluminous and there were many fields to track. A computer programmer was hired to automate this process of gathering all radiology reports and to create a database to track letters sent. Information from the billing system data needed to be accessed to identify the addresses of patients and primary care physicians. Logic profiles were created to identify strings of words in the radiology report text files to identify radiology findings such as lung nodules or other organ lesions for followup. Quality control of this new process was performed 2-3 times each month, and tweaks to the logic profiles were made. Patient risk factors and patient clinical conditions at followup imaging was also tracked.

7. Describe the key steps required to successfully replicate this initiative throughout the region. (Please limit this description to 100 words.)

Creation of a database by the billing company to warehouse the radiology reports, patient demographics, and primary care physician is needed. Connections between the radiology billing company and hospital billing system are needed to continuously update addresses of primary care physicians and patients. The analytics package can then data-mine an entire institution's radiology reports and send notification letters to patients and physicians.

8. Explain how the initiative demonstrates innovation (Please limit this description to 100 words.)

Through this partnership with a billing company, the radiology group has supported the institution's goals of quality and safety while reducing costs. This semi-automated process has closed a communication gap and reduced the resources to track potentially harmful clinical findings. Notification of patients and the primary care physician about these radiology findings has improved education about these findings, often previously unknown to these stakeholders. This new process allows nurse navigators to target high risk patients rather than waste time tracking low risk radiology findings. We have recently expanded the analytics program to identify other organ entities that require followup.

9. How does this initiative demonstrate collaboration with other providers within the continuum of care? (Please limit this description to 100 words.)

Radiologists now have a closer collaboration with primary care physicians and their patients by closing a communication gap. Often, the results of imaging findings were unknown to the patient’s primary physician if the imaging study was performed as in inpatient or in the emergency room. Patients who did not have a primary physician were directed to the hospital clinic for management. The patient has become more engaged in their own care. This process has streamlined communication with specialists such as pulmonologists in the case of suspicious lung nodules.

10. Explain ways in which senior leadership exhibited commitment to the initiative (Please limit this description to 100 words.)

Steering committee comprised of hospital Executive Vice President, Chief Medical Officer, Chief of Safety and Quality, Radiology Director, Chief Informatics Officer, Chair of Radiology, and a surgical house staff resident. Steering committee met monthly to prioritize which organ follow-up would have letter notifications sent first, designed the process of letter notification, and monitored results of this effort. Chief of Staff endorsed the concept that the primary care physician needed to become the gatekeeper of follow-ups once notified of the letter, even if the primary care physician was not the ordering physician of the initial radiology procedure.

11. Appendices (i.e., tables and graphs)

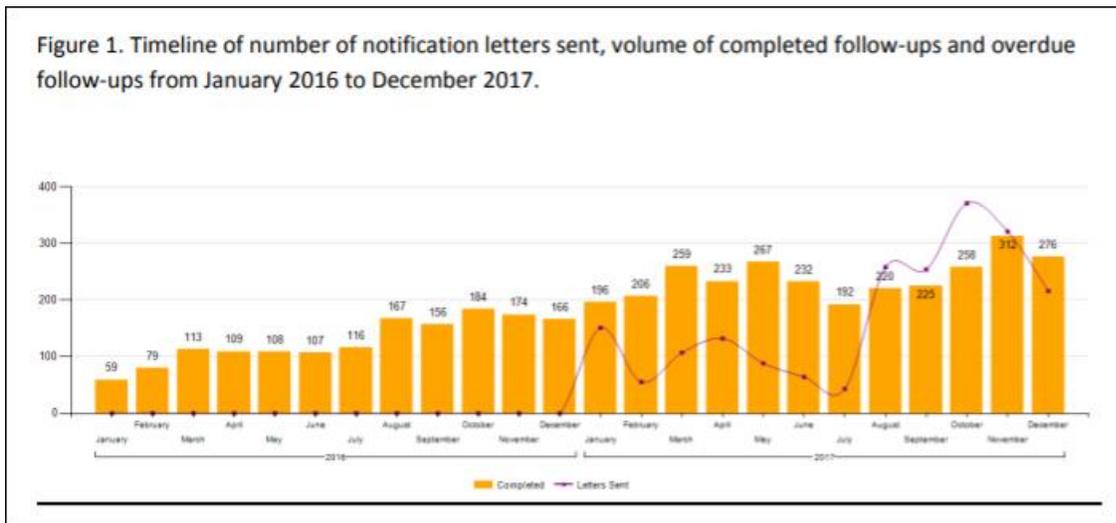


Figure 2. Clinical condition of patients at followup imaging. Pie graph demonstrates the clinical condition of the patients at followup imaging after a letter notification was sent. There was a stable condition in 71%, a worsening of radiology findings in 11% and new lung nodules in 7%.

