

Date: May 20, 2019

QUALITY IMPROVEMENT PROJECT COMPLETION DOCUMENT

IMPACT

We received survey responses from 82 of 108 ED staff (75.9%) and 30 of 38 eligible radiology residents (78.9%). The vast majority of both ED staff and radiology residents indicated support for the initiative (98.7% and 80%, respectively) and subjectively improved workflow efficiency (96.3% and 73.3%). The majority of radiology residents also indicated a decrease in number of disruptions (83.3%) and increase in time for imaging interpretation (70%). The majority of ED staff subjectively felt that scans were performed more quickly post-intervention (84.1%). Quantitatively, there was no statistically significant change in the time from order entry to protocol (24:00 post-intervention vs. 26:12 control, $p = 0.19$) or from order entry to scan (1:55:14 post-intervention vs. 1:59:08 control, $p = 0.21$), though there was a trend towards improved times for both. Radiology residents received significantly fewer pages per shift post intervention (19.7 vs 23 control, $p = 0.01$). CT utilization data was collected from January 1, 2017 to December 31, 2018. Multivariate linear regression showed that resident-protocolled CT scan utilization increased over time unrelated to the intervention (6.7 scans per 1000 patients per year, $p < 0.0005$), but demonstrated no increase in utilization attributable to the intervention itself. There was no increase over time or from the intervention for non-contrast CT brains, which served as the control group.

MILESTONES

The milestones of the project charter were largely completed on time as planned. The data collection and analysis milestones were slightly delayed due to the amount and breadth of the data collected.

LESSONS

Describe the LESSONS, individual or organizational, learned through this project.

Engaging the stakeholders that were directly affected (ED providers from UHN and MSH, radiology residents from JDMI) was relatively easy given the near unanimous support for this project and the expected improvements in workflow and disruptions.

The JDMI attending staff were slightly more difficult to convince, as they were concerned that this may lead to a dramatic increase in CT utilization. However, the data does not suggest a significant increase in utilization, and seems to trend towards improvement of patient centered measures (delay to protocol, delay to scan completion).

RECOMMENDATIONS

This project demonstrates that having the radiology resident act as a gatekeeper created more self-perceived workflow inefficiencies and decreased provider satisfaction without significantly affect CT utilization. Similarly, ED physicians showed near-unanimous support. Discussions are currently underway for potentially making this the standard ordering procedure 24 hours a day, 7 days a week.

Future directions of this project are to directly measure outcomes in provider workflow (task switching, interruptions, time spent on the phone/on hold, number of phone calls missed overhead, number of times an overhead page from radiology disrupted workflow) and patient outcomes (time to disposition, time to admission, patient satisfaction).

DISSEMINATION

An abstract has been prepared for presentation for the radiology resident research day, and will be submitted to various quality improvement and research venues such as the EM research day, HQO QIPS Forum, IHI Scientific Symposium, amongst others. A manuscript is being considered as well for submission to QI-oriented journals.