QUALITY IMPROVEMENT PROJECT COMPLETION DOCUMENT

Please include the PROJECT CHARTER and PROJECT UPDATES with submission of this document

IMPACT

Describe the EVALUATION of the outcomes of the project as they relate to the project's aim and deliverables.

The primary outcomes for the project was the number of CT heads performed for patients with a discharge diagnosis of head injury. The outcome was measured on a weekly basis through data obtained from Decision Support. Data was summarized through means for normal data, and medians for non-parametric data. The data was evaluated through QI methodology through run charts.

There were 4,322 qualifying visits at our sites during the 27-month period preceding our planned QI initiatives. The median presenting age was 44.12 years (IQR 27.83,67.45), the median Glasgow Come Scale was 15/15 (IQR 15,15) and the majority of patients presenting had intermediate acuity (Canadian Triage and Acuity Scale [CTAS] score of 3 out of 5 levels). Overall, 43.17% of patients arrived via ambulance, 49.24% of patients received a CT scan of the head, and 10.46% of patients were admitted.

Compared to patients presenting before the CWC campaign release, there was no significant difference in the rate of CT scans of the head after the CWC (50.41% vs 47.68%, P = 0.07). There were also no significant differences between the two groups in the proportion of patients who arrived by ambulance (vs. ambulatory) (42.94% vs 43.48%, P = 0.72) or admission rates (9.85% vs 11.26%, P = 0.15). However, more patients belonged to the high acuity groups (CTAS 1 or 2) in the post CWC campaign release group (12.98% vs 8.11% P <0.001).

Patients that had a CT scan of the head performed had a significantly longer length of stay (6.4 hr vs 4.7 hr P<0.001).Results from the provider survey yielded that 90% of clinicians routinely use the Canadian CT Head Rule, but 85% of clinicians still believe that we perform too many CT scans for patients.

During the 3 months following implementation of our QI initiatives, average CT rates dropped to 41.7%, a relative decrease of 15.3% (P=0.01). Figure 1 shows the run chart and significant shift in the rate of CT scans of the head during the study period.

Process and balance measures stated in the charter are currently pending analysis.



Fig 1. Run chart showing the rate of CT scans of the head performed for patients with head injuries. Significant trends are highlighted in the figure. QI interventions 1) Improving provider knowledge about the CWC recommendations; 2) Implementation of a modified Canadian CT Head Rule checklist in the ED; 3) Giving patients head injury handouts -- were implemented at weeks 1, 5 and 13 respectively.

MILESTONES

Describe the various MILESTONES delineated in your project charter and when/how they were achieved.

The following milestones were included in the project charter. Details regarding completion are included below.

START

Finalize details of project implementation: The projects leader SM reviewed the existing literature and discussed the proposed project with LC to develop an implementation plan. Informal consultations with clinical members at the UHN ED and research and QI faculty were done conducted to improve the implementation plan iteratively. **Completed Nov 2016**

Stakeholder mapping – LC and SM identified various stakeholders and organized meetings with them to engage them and seek their input in the proposed project. **Completed Dec 2016**

Process mapping – A process map was developed using the information obtained from direct observation by the project leads of ED flow for patients that present with a chief complaint of head injury. This included the patients journey from being registered in the ED to being discharged. It also included the various interactions of healthcare providers (RNs, NPs, PAs, MDs) in managing these patients. Information gained from direct

observation was combined with input from the various stakeholders to develop process maps. **Completed Feb 2017**

Driver Diagram completion – A driver diagram was developed using the process maps as a framework by the project leads in consultation with the stakeholders. **Completed Feb 2017**

IMPLEMENTION

Provider Survey – **Completed Jan 19, 2017** All MD/NPs/PAs were sent a survey to gauge their knowledge level of the choosing wisely recommendation and also to educate them regarding the recommendations. The information collected was used for the driver diagram and also as a QI intervention to provide education.

Checklist introduction – Implemented Feb 19th, 2017.

The checklist was implemented at both sites simultaneously with some variation between sites. At TWH, the triage nurse was responsible for adding it to the patient's chart. It was then completed by the bedside RN and MD/NP/PA. Checklists were also stocked next to the order sets for easier access for the care providers.

At TGH, the registration clerk was responsible for adding it to the patient's chart. It was then completed by the bedside RN and MD/NP/PA. Checklists were also stocked next to the order sets for easier access for the care providers.

The checklist was modified using multiple PDSA cycles based on provider feedback from both sites with the final version being implemented in April 2017.

Introduce patient handout - Completed April 27, 2017.

Choosing Wisely approved patients handouts were added/stapled to the checklists. These were given to the patients by the bedside RN prior to being seen by the MD/NP/PA.

Introduce Weekly reports Completed May 24, 2017 -

Weekly rates of CT scan were reported to the RNs through morning huddles, bulletin boards and electronic dissemination.

Data collection and monitoring – On-going since the start of the project and monitored with each QI intervention that has been implemented. Data was obtained from Decision Support services and through chart audits.

Development of PDSA cycles between Interventions - Ongoing with each intervention.

COMPLETION (April – June)

Complete analysis of entire project – On going, to be completed by June 30th 2017 Update with Leadership group – to be completed at Business meeting June 16th, 2017 Plan for sustainability – To be completed by post final analysis by June 30th 2017

LESSONS

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

Organizational

- The Choosing Wisely Canada Campaign did not have a significant impact on reducing CT scan utilization at the UHN EDs
- Local directed initiatives designed through QI methodology were successful in decreasing CT scan rates over a 3 month period.
- Having a QI culture at the UHN with a specific QI committee that was engaged and responsive was important in the success of the project as it expedited various steps and also allowed for constructive feedback in a timely fashion.

Individual

- Engaging potential stakeholders and front line providers earlier could have reduced the number of iterations/version of the CHIMES checklist
- Since the process a checklist being completed includes various steps by multiple individuals (Registration clerk, triage RN, bedside RN, MD/NP/PA), QI efforts and engagement should also be directed at all these individuals since the process is only likely to succeed when all steps are completed.
- Front line providers also need to be engaged separately in additional to various stakeholders in leadership roles since the project's success is largely dependent on them.

RECOMMENDATIONS

Describe the IMPLICATIONS of this project for patient care or for future projects.

In keeping with findings from this project, we can make the following recommendations:

- Providers over-use CT scans for patients with head injuries and our project successfully
 demonstrates that department level QI efforts can be utilized to improve adherence to guideline
 recommendations. For patients with head injuries, this has resulted in a reduction in i) % of CT scans
 performed ii) ED length of stay for iii) potential unnecessary radiation patients would be exposed to.
- A similar framework could also be utilized to address other gaps in evidence based care especially relating to diagnostic testing or imaging utilization.
- Future projects can also incorporate our interventions through an electronic interface that is integrated with the electronic patients records system.

DISSEMINATION

Describe the completed or planned steps for DISSEMINATION of this project's findings (e.g., presentations, posters, manuscripts, etc).

The findings from our project will be disseminated with conference posters/presentations, at the UHN QI day, and through a publication in a peer reviewed journal.

The following conferences have already accepted our work

- Canadian Association of Emergency Physicians Conference (Whistler, Canada)
- International Conference on Residency Education (Toronto, Canada)

- International Conference on Emergency Medicine (Dubai, United Arab Emirates)