OMC is a 317 bed community hospital in Ocean County, New Jersey. It is a member of the Hackensack Meridian Health system which includes 13 hospitals in northern, central and southern New Jersey. OMC is an Accredited Chest Pain Center with PCI by the American College of Cardiology Accreditation Services since 2006 and has participated in the National Cardiovascular Data Registry (NCDR®) ACTION Registry®-GWTG™ since 2012. The Acute Coronary Syndrome (ACS) Committee is an interdisciplinary committee that reviews multiple processes as well as NCDR® metrics relating to the care of the acute myocardial infarction patient. Monthly, ACC accreditation metrics, NCDR data outcomes, and best practice initiatives are discussed.

In May 2018, Ocean Medical Center (OMC) implemented a multidisciplinary quality improvement initiative to improve the utilization of i-STAT troponin. The team identified a rising door to initial troponin result time for emergency room patients. The American College of Cardiology (ACC) accreditation guidelines to troponin testing notes the expectation of troponin T arrival to result in 60 minutes. Our present time puts us considerably above the national standard. This revelation resulted in immediate drilldown of our present process. Ocean Medical Center has continued to grow in patient volume creating quite a challenge. In 2018, our emergency department (ED) had 66,047 patient visits in comparison to the 64,770 patients seen in 2017. Due to these increased numbers, ED throughput is especially concerning. The improved utilization of i-STAT troponin will enable faster diagnosis, treatment, and patient disposition.

We began with initial conferences with the ED director and ED management for preliminary data review. The initial discovery was as follows:

- Complaints from staff that i-STAT machine was cumbersome, time consuming, and "itchy" to use.
- Staff perception that i-STAT machine is unreliable.
- Staff dissatisfaction with the product forcing them to alternately send the troponin specimen to the lab.
- STAT troponin results sometimes not transferring to MEDHOST (EMR) system to view (found to be user error).
- Need for re-education on i-STAT machine usage.

Due to these initial discoveries a multidisciplinary team was organized to create an action plan to improve utilization of i-STAT troponin.

A multidisciplinary team met with a representative from Abbott (i-STAT manufacturer) to discuss the initial concerns and next steps. On July 23, 2018, the evaluation of our ED was performed. Several issues with process and the utilization of the i-STAT machine were sited. On August 1, 2018 a follow up meeting was conducted to discuss findings. These findings included: staff not using the i-STAT machine appropriately, nurses were found to be canceling orders for i-STAT and alternatively sending troponins to the lab. Case studies were presented on actual patients including all times of patient interventions start to finish.

The issues uncovered were then shared with our ACS committee on September 5, 2018. Monthly updates were then given by the emergency department. ED staff re-education was initiated. Re-education included the rationale for i-STAT usage and i-STAT equipment review. Importantly, nurses were instructed not to discontinue i-STAT orders. The assistant ED manager was tasked with monitoring and reporting TAT.

We then organized the first of two focus groups: STAT machine usage. The team identified a STAT troponin result was 105. (Chest Pain Center v5 CM.M10.1). In May 2018, the OMC lab results consisting of troponin TAT (turnaround times, received to result for i-STAT and lab run troponin) was < 30 min=12%, < 30 to 45min = 43.99%, <45 to 60min= 14.76%, and > 60min=9.40%.

We tasked the STAT troponin results sometimes not transferring to MEDHOST (EMR) system to view (found to be user error).

Previously, nurses were instructed not to discontinue i-STAT orders. The assistant ED manager was tasked with monitoring and reporting TAT.

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RESULTS

Chest Pain Center v6 (CPv6) for Q4 2018 median time from arrival to initial troponin (CM.M12) was 86. This was the first quarter available since initiating CPv6 and only inclusive of a sampling of low risk chest pain and unstable angina. OMC lab results for October 2018 Total troponin TAT (Received to result for i-STAT and lab run troponin) was < 30min=28.12%, 30 to 45min=42.18%, 45 to 60min=15.43%, and > 60min=12.22%.

METHODOLGY

The process improvement method that was used in this project is the Plan-Do-Study-Act (PDSA).

REFERENCE


NEXT STEPS

Relocation of the i-STAT machines from the soiled linen room to triage A and B is planned. This will allow for easy access. If approved, in 2019 four new i-STAT wireless machines will be in all four corners of the ED to easily allow for bedside usage. Additionally, a significant subsequent finding was uncovered. It was discovered that the evidence based process of 0-2-6 i-STAT troponins were not being performed to the appropriate intervals. The MEDHOST system utilized in the ED had a programming issue in which 0-2-6 troponins could not be ordered simultaneously. As a result, 0-2-6 i-STAT troponins ordering was reinforced with ED physicians. To date, the chest pain protocol in MEDHOST has been revised to allow for the ordering of serial i-STAT troponins.

CONCLUSIONS

Two wireless systems were ordered to replace our present i-STAT machines. An IT recall of our newly ordered wireless systems caused an unexpected delay in this initiative. The new wireless upgrade benefit includes the ability to perform test to result while bedside within minutes.

Improving the utilization of i-STAT troponin is a continued process improvement initiative. The ACS committee will continue to monitor progress and compliance with nurse driven protocols and order sets. Although collaboration and re-education are ongoing key components of process improvement, updated technology is needed to tackle Ocean Medical Center’s rising patient volume.