

Utility of Daily CBC in Hospitalized Patients

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Background

- Corpus Christi Medical Center (CCMC) recently published a theoretical itemized bill for an average patient. The Average daily cost of 3-day hospital stay \$16,791.06; which was itemized as routine venipuncture \$222.17, Complete Blood Count (CBC) \$859.00, Comprehensive Metabolic Panel (CMP) \$1,521.96, and a private room \$2,993.89.
- This QI project was designed to investigate the overutilization of daily labs. Overutilization of daily labs, in the context of this quality improvement project, will be defined as daily labs which do not appear to correlate with a change in clinic course or management of the patient and which may in fact expose patients to unnecessary risk. Overutilization has been shown in previous studies to be associated with increased in false-positive results, incorrect diagnoses, increased cost, patient discomfort, further unnecessary medical interventions [1].

Objective

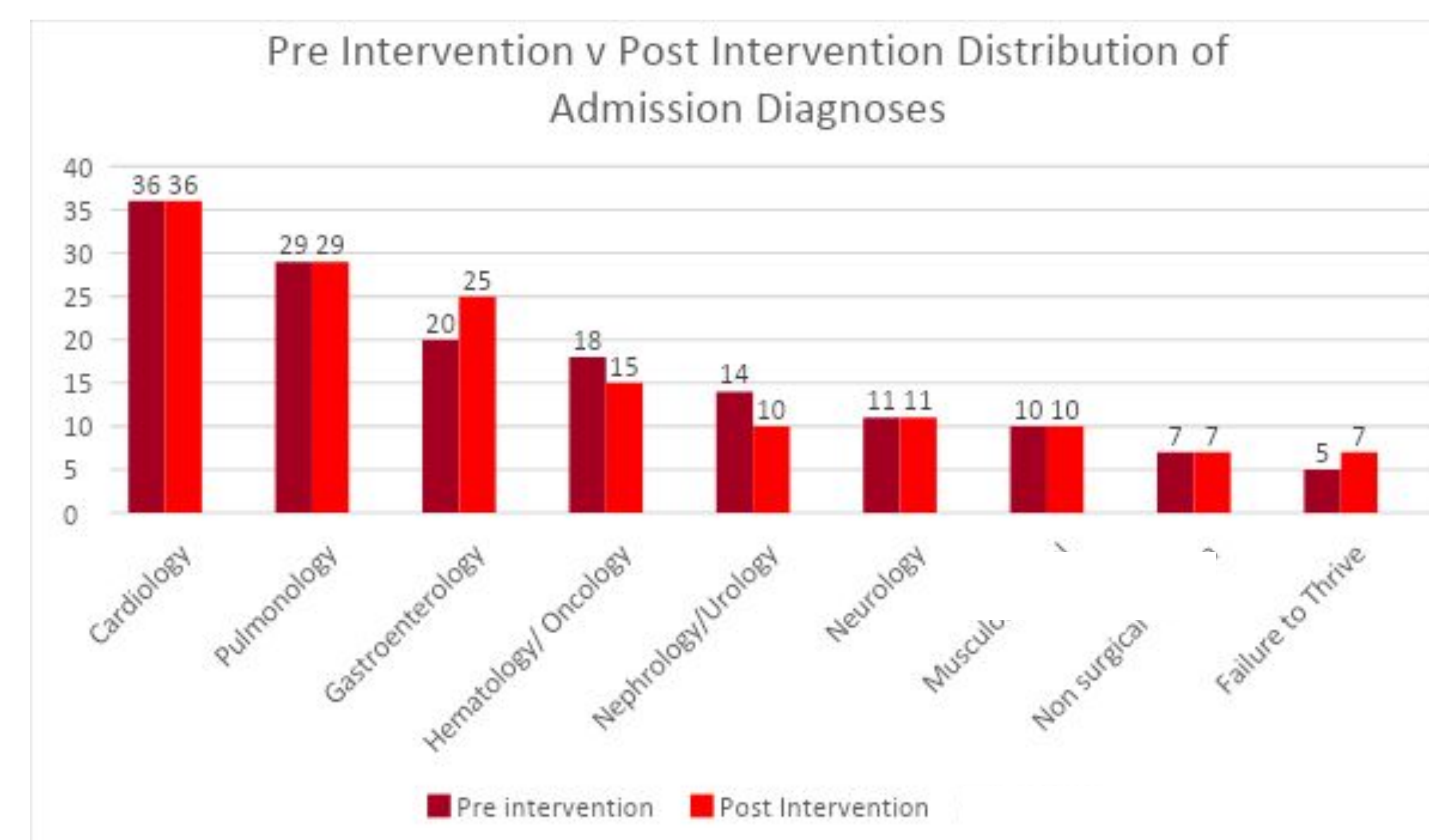
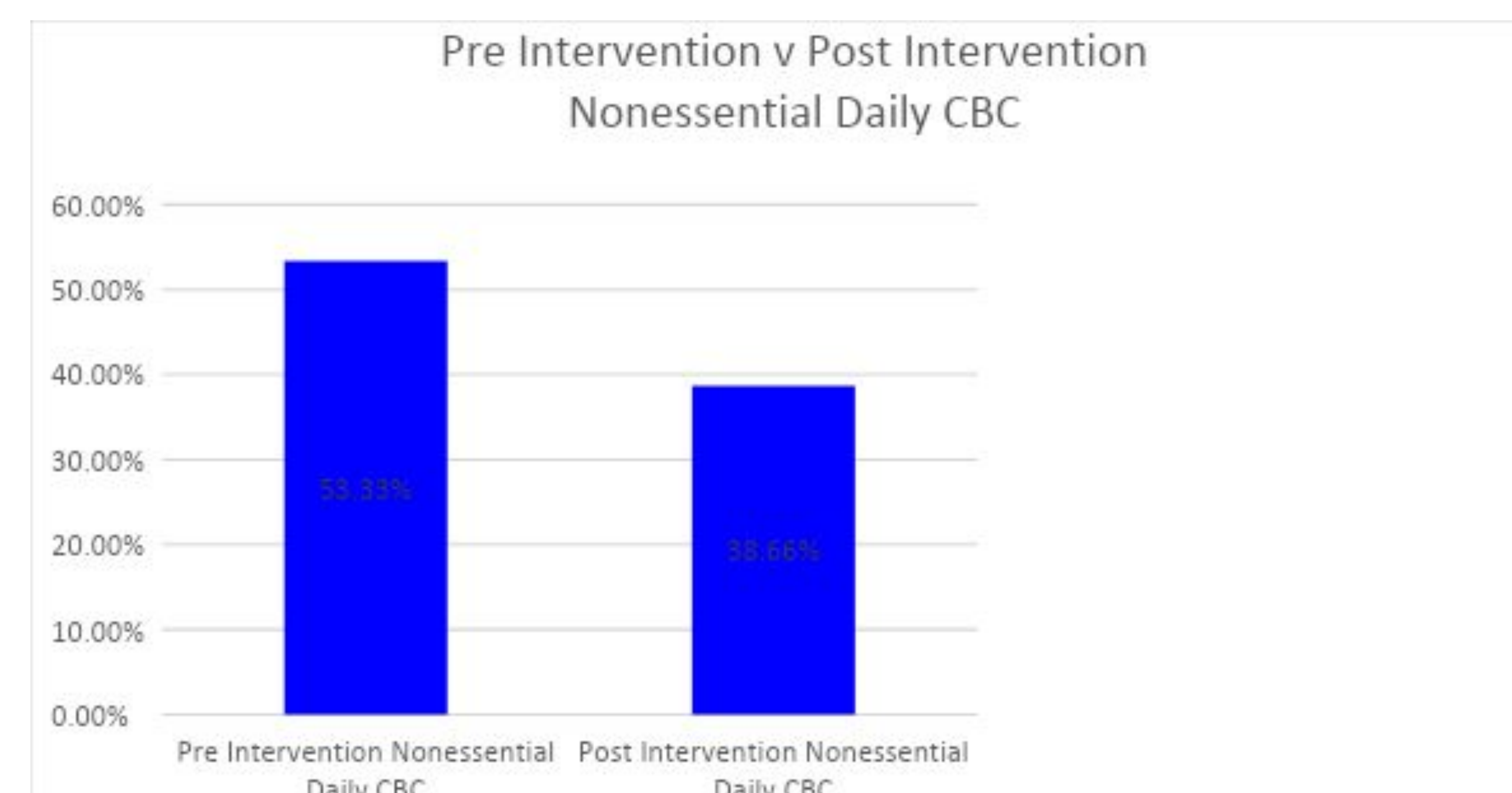
To determine if the burden of daily CBC can be reduced through provider education following a presentation regarding the costs of daily labs and impact on patient care and information flyers distributed through the hospital.

Methods

150 patients were randomly selected for evaluation of CBC on hospital day 1 and hospital day 2. Of the inpatient medical wards at CCMC, 75 males and 75 females were randomly selected. The exclusion criteria involved patients in the critical care unit, general inpatient hospice and surgical patients. The patient's ages ranged from 20 years old to 90 years old. The patient's charts were evaluated for parameters pertaining to a change in the CBC from day one to day two and a corresponding change in management. To standardize data, we specifically focused on the white blood cell count (WBC), hemoglobin, and platelet count of the CBC. A change in patient management was defined as initiation, discontinuation, continuation or changing of antibiotics, transfusion consideration, anticoagulation consideration, gastroenterologist/hematologist/oncologist consultation. If it was observed that the CBC did not correlate with a change or contribute to the patient's management as previously defined, the lab was categorized as non-essential. The intervention employed in this QI project included a PowerPoint™ presentation on the costs and risks associated with ordering non-essential daily labs being presented to 20 CCMC physicians as well as flyers posted at both campuses reminding physicians to discontinue daily labs if appropriate. After the intervention was employed, another 150 patients were randomly selected in the same distribution to evaluate the same parameters. The proportion of non-essential daily labs were measured pre-intervention as well as post-intervention for comparison to evaluate if a change in the proportion of non-essential labs was observed after the intervention was employed. This study took place over the span of three months from October 2022 to December 2022 including a blanking period from November 3rd 2022 to December 1st 2022 to allow for the intervention to set in.

Results

The primary endpoint of the study was to achieve a decrease in the percent of non-essential labs and as per the hypothesis, this was accomplished after the intervention was carried out. The percent of non-essential labs pre-intervention was 53.33% and the percent of non-essential labs post intervention was 38.66%. The secondary endpoint was to ascertain how many daily CBCs ordered contributed to management when they were not expected to. We found that daily CBC did contribute to management 2.33% percent out of all 300 patients.



Discussion

- Daily trending CBC is clearly not without utility, monitoring response to antibiotics, septic patients, symptomatic anemia with acute bleeding, and the list goes on; however are clear indications for when daily trending CBC's does not have utility, more expose patients to risk in the form of unnecessary intervention, increased healthcare cost burden, and patient discomfort.
- It is important to consider discontinuing daily trending CBC's in patient where these specific indications for daily CBCs are not met unless a change in clinical status arises.
- Intervention in the form of brief presentations on the costs of lab work and flyers placed in the hospital appear to remind clinicians to be cognizant of erroneous lab ordering.

Conclusion

The focus of this project was to define overutilization as the rote ordering of daily CBC on all patients admitted to a hospital setting, understand the burden of unnecessary testing, implement a viable intervention, and record a measurable outcome to determine if this intervention could reduce this costly healthcare burden. Our QI project retrospectively evaluated the pre-interventional frequency of non-essential daily CBCs on a random selection of 150 patients accepted for inpatient admission and compared this to another post-interventional sampling of 150 patients. We did appreciate a measurable decrease in the frequency of non-essential daily CBC following our intervention. Based on the results of this QI project, it would appear that intervention in the form of provider education and flyers placed in provider charting areas could have a meaningful impact on reducing the burden on overutilized daily CBC.

References

- Jalbert, R., A. Gob, and I. Chin-Yee, Decreasing daily blood work in hospitals: What works and what doesn't. Int J Lab Hematol, 2019. 41 Suppl 1: p. 151-161.