

## **Inpatient laboratory test utilization of procalcitonin and C-reactive protein during and pre-COVID-19 pandemic.**

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### **Background:**

Procalcitonin (PCT) and C-Reactive Protein (CRP) laboratory testing were used as components of the recommended practice by clinical leadership to evaluate severity and prognosis of patients admitted to the hospital for SARS-CoV-2 infection. Elevated serum PCT may be helpful in guiding antibiotic therapy for bacterial superinfection. Plasma CRP level can also positively correlate to the severity of COVID-19, and higher level of CRP showed extended inpatient treatment. Our objective for this study was to understand the inpatient utilization of CRP and PCT tests during and pre-COVID-19 pandemic at Danbury hospital, CT.

### **Methods:**

Cerner Discern Analytics 2.0 (Version 3.28.6) was used to query test order volume and results from the laboratory information system for serum CRP (between Jan 2019- Dec 2020) and PCT (between January- Dec 2020). From the queried results, only inpatients (ICU and ED) were included in the data analysis as this patient population was expected to have a significant impact on test utilization due to SARS-CoV-2 surges. Statistical graphs were generated using Microsoft Excel 2013.

### **Results:**

A total of 1228 CRP tests were ordered in 2019, and 8649 tests was ordered in 2020, a more than 6-fold increase from 2019. Fig. 1 shows utilization was conservative in 2019; however, as expected, there is a distinct exponential increase in ordering pattern around March and April and another increase in November-December 2020, which is correlative to the surge of SARS-CoV-2 admission during those time intervals. CRP distribution based on concentration showed increased number of patients with elevated CRP during the pandemic as compared to pre-pandemic. Interestingly, ordering pattern of PCT revealed a larger increase at the end of 2020.



Figure 1.

Conclusions:

Discern Analytics is a powerful tool to analyze data for laboratory utilization of multiple assays and is essential for monitoring clinical laboratory performance. Increases in CRP and PCT utilization correlated with changes in recommendations from clinical leadership for management of SARS-CoV-2. Increase in CRP levels and utilization in 2020 correlate with increased severity of inpatient disease but is not specific. PCT utilization changes could be related to SARS-CoV-2 or allowing unrestricted order by the physicians concurrently.