

BACKGROUND

Sepsis remains an important cause of mortality in hospitals across the globe, estimating up to 32 million cases and 5.4 million deaths per year (1). In the United States, the Centers for Medicare and Medicaid Services (CMS) have made increasing efforts to lower the mortality rate in sepsis patients. In October 2015, the CMS implemented a quality process measure requiring Medicare affiliated hospitals to report their compliance with the sepsis bundle at 3, and 6 hours within time of presentation for patients with severe sepsis or septic shock (2).

Previously, our institution Valley Baptist Medical Center has been above goal at meeting the recommended CMS sepsis bundle compliance of 70%; however, 2020 was an exception. Since the beginning of the COVID-19 pandemic in the year of 2019, the health care system has faced a tremendous challenge. The initial surge in COVID-19 cases overwhelmed clinicians and challenged the way we practice medicine, contributing to a decline in quality of care provided and affecting patients' outcomes.

PURPOSE AND HYPOTHESIS

To determine CMS sepsis bundle compliance rates during the COVID-19 pandemic

To determine mortality rates in patients adequately vs inadequately treated according to the CMS sepsis bundle

We hypothesize that mortality rates will be increased in patients who were inadequately treated by the CMS sepsis bundle

MATERIALS AND METHODS

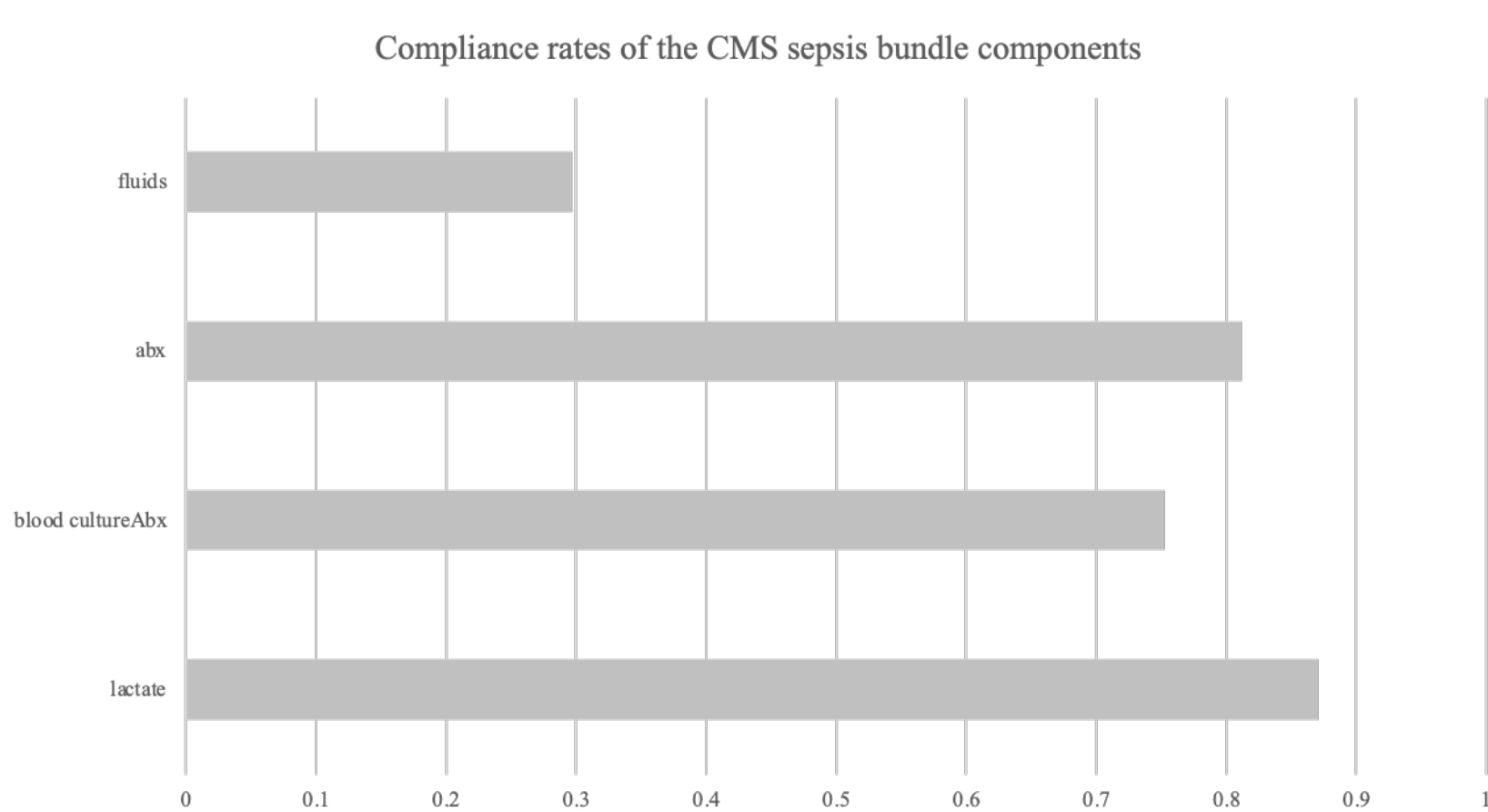
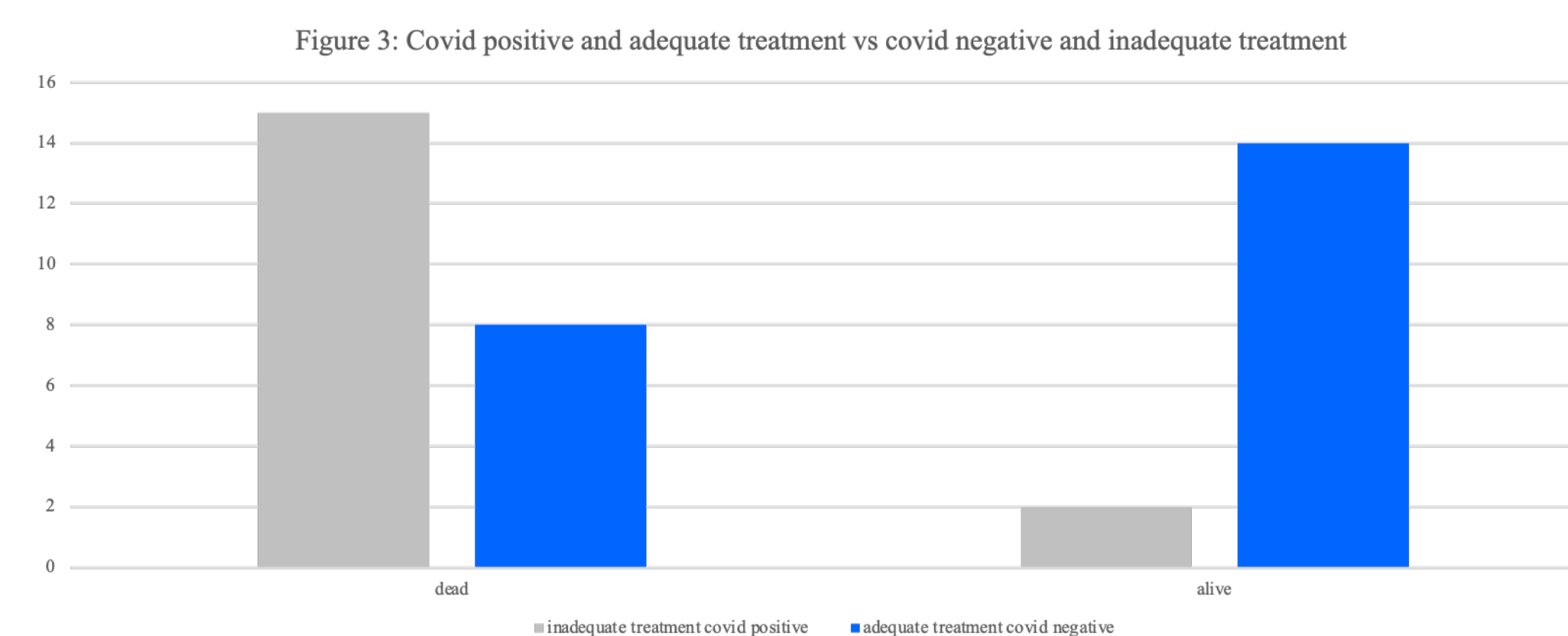
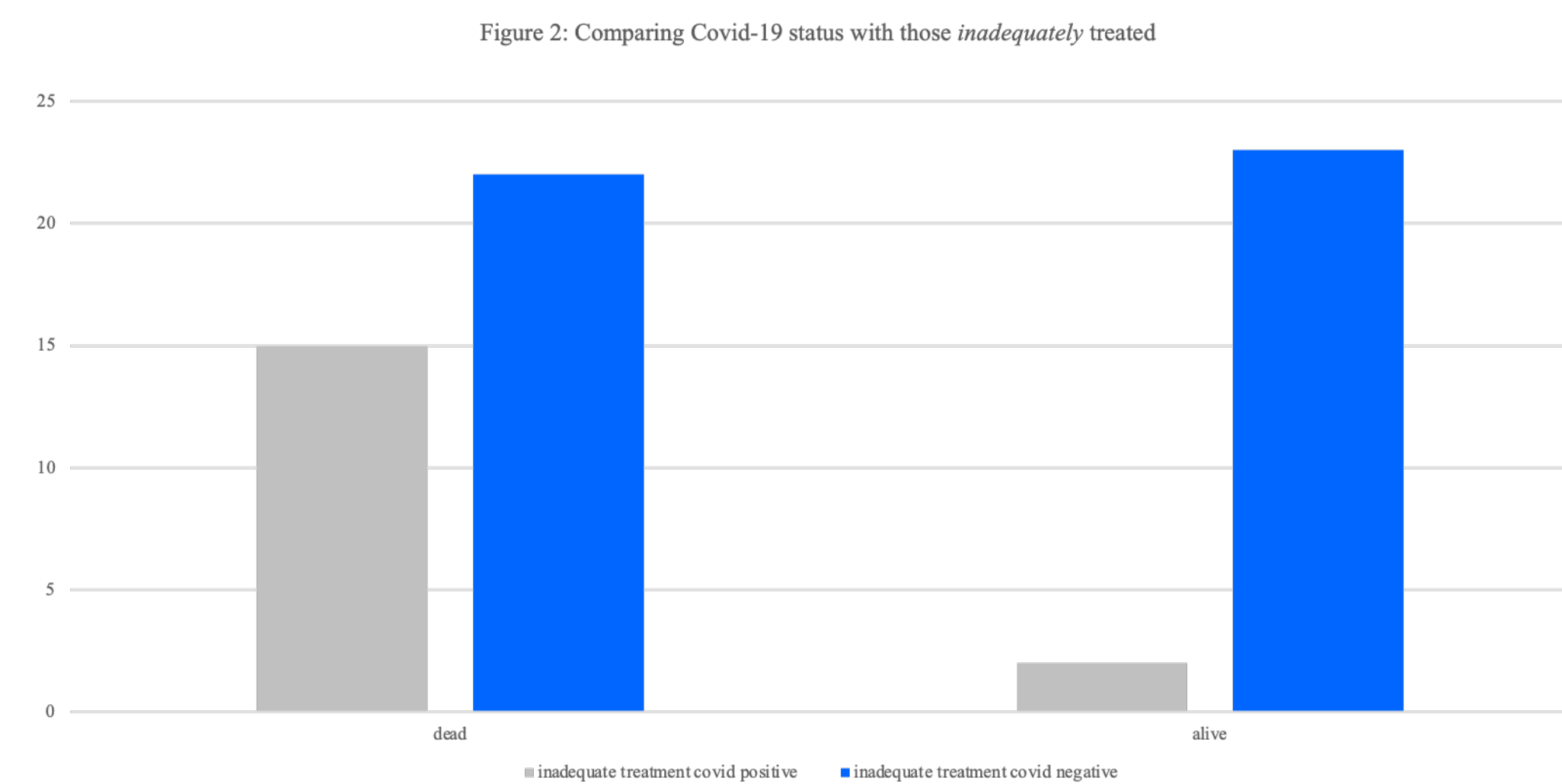
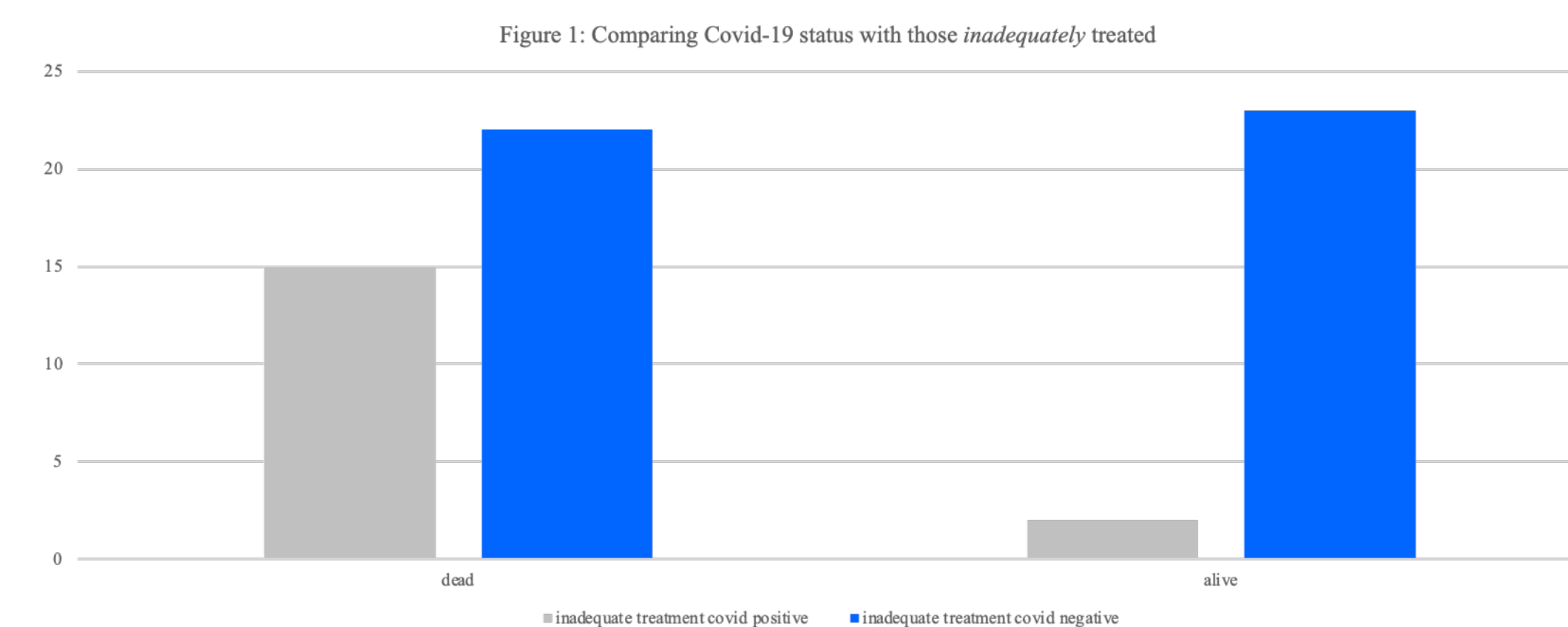
A retrospective chart review was conducted to analyze the adherence to the CMS sepsis bundle. Additionally, patient outcomes including mortality, hospital days, admitting level of care and COVID-19 status were obtained. The quality improvement department at our institution, released 146 records based on age (18-65yo), date and, International Classification of Diseases (ICD) codes of severe sepsis and septic shock. A total of 101 charts met the inclusion criteria in this analysis. Charts were included if there was documentation from a medical provider (Physician, PA, NP) of severe sepsis or septic shock. However, the main parameter of inclusion was if the patients met CMS-specified criteria for severe sepsis or septic shock.

RESULTS

From the 101 charts reviewed, 61.38% of the patients were not treated according to the CMS Sepsis guidelines during the period of April to August 2020. In other words, there was a CMS sepsis bundle compliance rate of 38.62% for the same period. The most commonly missed intervention was the administration of IVF for patients with lactate >4 mmol/L or hypotension. The second most commonly missed item was obtaining repeat lactate levels for patients with initial lactate >2mmol/L.

COVID-19 status was then taken into consideration for both groups. Patients treated optimally, who were COVID-19 positive had a mortality rate of 70.60% compared to those who were COVID-19 negative and were treated optimally, had a mortality rate of 36.40% (P = 0.034) Figure 1. For the sub-optimally treated group, the mortality rate for the COVID-19 positive arm was 88.20% compared to those who were COVID-19 negative with a mortality rate of 48.90% (P = 0.0048) Figure 2. Patients treated inadequately who were COVID-19 positive were then compared with patients inadequately treated who were COVID-19 negative (p = 0.001) Figure 3. Though not significant, there was a trend when comparing those who missed 2 or more components of the 3hr sepsis bundle compared to those who received the full bundle (p = 0.073)

Values that were found to be insignificant but were calculated include the following: The mortality rate for patients treated optimally vs those who were treated sub-optimally was 48.7% and 58% respectively (P = 0.28). Comparing COVID-19 positive patients who were adequately vs inadequately treated (p = 0.203). Conversely COVID-19 negative patients adequately vs inadequately treated (p = 0.333).



CONCLUSIONS

- CMS sepsis bundle compliance rate is lower than previously recorded during the COVID-19 pandemic.
- The CMS sepsis protocol had no significant impact on mortality rates compared to patients who did not follow the CMS protocol. COVID-19 positive individuals had a significantly higher likelihood of mortality.
- Other studies have also found that sepsis protocols did not lead to decreased mortality rates. Perhaps the CMS sepsis bundle is not a reliable tool for best practice of treating patients with sepsis.

References

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