Benefits of a Sepsis Program.

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Benefits of a Sepsis Program

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Introduction

• The mortality rate of admission for sepsis stands around 8 times that of the general hospital mortality rate, about 16%.1
• In 2011 it was the single most expensive medical condition to treat, costing $20 billion nationally.2
• Significant increases in the sepsis mortality rate started appearing at the Lehigh Valley Health Network (LVHN) in 2014. Sepsis mortality rate was targeted as a priority for the network.
• Organized interventions to improve sepsis management at LVHN started May 1, 2016 in the emergency departments.
• This project attempted to determine the effects of the Sepsis Task Force’s quality improvement interventions on sepsis management.
• This project also took advantage of the availability of sepsis management data at LVHN to look into two dimensions of quality: (1) equity across personal characteristics and (2) consistency of management across disease presentations.

Methods

• Data was gathered from EPIC for 599 patients who were documented to have sepsis in LVHN Emergency Departments from April through August 2016 (see Table 1).
• Adherence to sepsis resuscitation was evaluated as a bundle – a selected set of actions that, as a group, “have an effect on outcomes beyond implementing the individual elements alone”. 3
• Each of the following were performed for a bundle to be considered completed:
  1. triage to lactate drawn <30 min,
  2. triage to blood ox <90 min,
  3. adequate fluid resuscitation,
  4. correct initial antibiotics selected,
  5. antibiotics administered <30 min.
• To investigate changes correlating with the network’s sepsis interventions, bundle performance was calculated by month.
• To investigate consistency of sepsis management, bundle performance was calculated based on subgroups of age (in decades), sex, day of the week, type of primary diagnosis, and severity of presenting diagnosis.

Results

• There was a large increase in the rate of bundle performance after the intervention period started, which was not explained by normal variation (p = 0.0065). Baseline performance was 4.2%. The post-intervention average was 15.6%, within the established range found at other institutions (see Table 2).
• Men and women experienced 17.1% and 11.2% bundle follow-through, respectively. This difference was found to be statistically significant (p = 0.046) (Table 3).
• General Symptoms of Sepsis (18.4%), Integumentary System (17.6%), and Regional Pain (15.6%) received better care, while Gastrointestinal (0%) and Cardiovascular (0%) diagnoses received poorer care. The influence of primary diagnosis on treatment was found to be statistically significant (p = 0.012) (Table 3).
• There was no association between bundle performance and subcategories of age (p = 0.985), disease severity (p = 0.096), emergency department (p = 0.247), and day of the week (p = 0.420) (Table 3).

Discussion

• There was no association between bundle performance and subcategories of age (p = 0.985), disease severity (p = 0.096), emergency department (p = 0.247), and day of the week (p = 0.420) (Table 3).

Conclusions

1. The sepsis quality improvement interventions were effective.
2. A patient’s sex was found to influence their treatment.
3. A patient’s primary diagnosis was found to influence their treatment.
4. There was no association between bundle performance and subcategories of age, disease severity, emergency department, and day of the week.

Implications:
• Maintaining and expanding the Sepsis Task Force quality improvement interventions will continue to yield benefits for patients and the network.
• There may be system or provider biases based on sex and primary diagnosis. A more detailed investigation into these discrepancies is warranted.

References: