

Introduction:

- Sepsis is a severe organ dysfunction that threatens life caused by exaggerated, overwhelming and dyssynchronous body response to infection (Mukherjee & Evans, 2017).
- Leading cause of morbidity and mortality prior to Covid-19 pandemic.
- Progresses to septic shock within thirty-six hours of diagnosis (Gary et al., 2016).
- Requires early and aggressive treatment for survival (Hall et al., 2011).

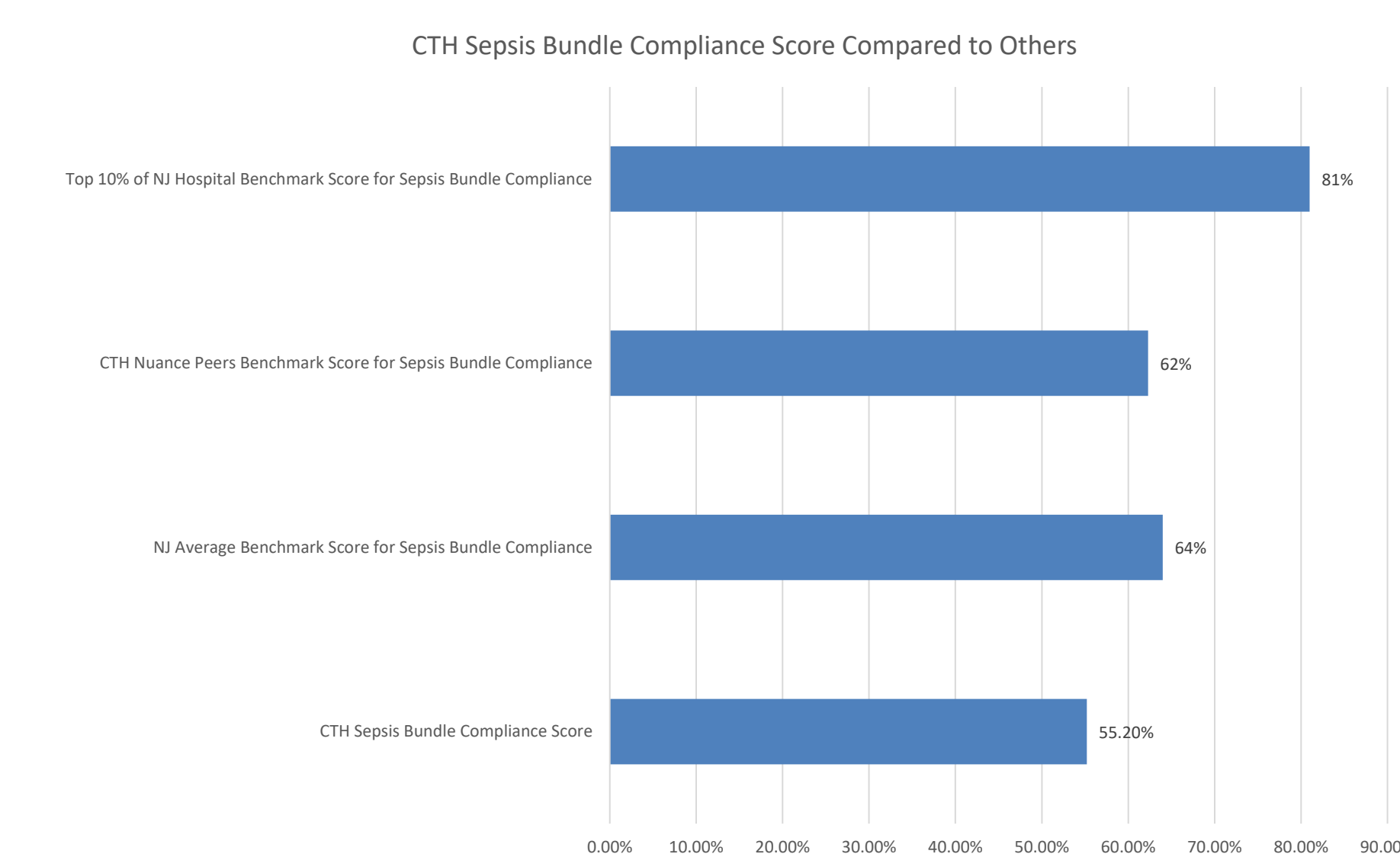
Background & Significance:

- The Surviving Sepsis Campaign (SSC) developed evidence-based guidelines for managing severe sepsis and septic shock
- Guidelines were simplified for ease of use into the 3-hour bundle, 6-hour bundle and most recently the 1-hour bundle to treat early severe sepsis and septic shock (Pruinelli et al., 2018).
- 31.5 million people are treated annually worldwide and nearly 5.3 million people die (Gary et al., 2016).
- Contributes to about 25% to 50% of in-hospital mortality and 45 to 65% mortality after discharge (Pruinelli et al., 2018).
- Responsible for 62% readmission rate and about 40% of ICU cost (Gary et al., 2016).
- The most expensive illness treated in US hospitals in 2015 at a cost of \$23.7 billion (Gary et al., 2016).

Needs Assessment:

- New Jersey Hospital Association (NJHA) 73 member hospitals voluntarily report sepsis data on mortality and gaps identified, then reports are created for members on performance (NJHA, 2016).
- In 2015, The Centers for Medicare and Medicaid Services (CMS) adopted SSC sepsis bundle as a core measure (SEP-1).
- All Medicare-participating hospitals to report sepsis bundle compliance rate as a QI measure (Raschke et al., 2017).
- CMS core measure SEP-1 is a data-abstracted, pay-for-performance measure, where any delay in completing one element is a bundle failure (Raschke et al., 2017).

Bundle performance; goal was 64.5%



- CTH sepsis bundle performed below goal in 2019 by scoring 55.2% despite sepsis surveillance which affects reimbursement.

Problem Statement:

- Sepsis is a major cause of in-hospital mortality. Though sepsis mortality rate is low at CTH, its percentage sepsis bundle compliance remain below goals. To improve sepsis bundle compliance, quality improvement (QI) measures that identify gaps in the current program must occur.

Clinical Question:

“Will program evaluation of sepsis bundle identify areas for improvement in order to support modification of existing program?”

Aims and Objectives:

- The aim of this quality improvement project was to perform program evaluation of sepsis bundle and to utilize the data gathered from the program evaluation for the development of a modified program.
- The objectives were to:
 - ◆ Conduct program evaluation of CTH existing sepsis program using the CIPP model
 - ◆ Compile the recommendations for a modified sepsis program
 - ◆ Propose evidence-based recommendations based on study findings to further improve sepsis bundle compliance and hospital benchmark score.

Methodology:



- This QI project utilized the Stufflebeam CIPP (context, input, process, product) evaluation model as the theoretical framework that guided the study (Aziz et al, 2018).
- Setting: The ED and ICU of a 478 beds acute care community teaching hospital in Middlesex County New Jersey.
- Utilized existing hospital sepsis data; RNs survey (n = 50); secondary analysis of chart review data (n =85) and gap analysis.

Nurses' survey with results, n = 50

Questions	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Comments
Sepsis bundle protocol at CTH is user friendly and easy to use?	21 (42%)	24 (48%)	5 (10%)	0 (0%)	0 (0%)	1
Sepsis bundle checklist and QA Tool is user friendly and easy to use?	21 (42%)	20 (40%)	6 (12%)	3 (6%)	0 (0%)	0
Sepsis bundle checklist and QA Tool as a handoff communication Tool is helpful in improving sepsis bundle compliance?	21 (42%)	19 (38%)	6 (12%)	3 (6%)	1 (2%)	2
Sepsis bundle checklist and QA Tool functions well as a handoff communication Tool between the ED and ICU nurses?	14 (28%)	18 (36%)	12 (24%)	5 (10%)	1 (2%)	3
Sepsis bundle checklist and QA Tool audits are helpful in staying vigilant over sepsis bundle compliance?	22 (44%)	21 (42%)	5 (10%)	2 (4%)	0 (0%)	0

Results:

Chart review: 53 passed, 32 failed, n = 85

Category Responsible for Bundle Failure	Q3 + Q4	Total	Failed % (n = 85)
Antibiotic issues	6 + 2	8	9.4%
Intravenous fluid issues	3 + 2	5	5.9%
Lactic acid issues	6 + 8	14	16.5%
Blood culture issues	2 + 1	3	3.5%
Repeat Volume status and tissue perfusion issues	2 + 0	2	2.4%
Vasopressor issues	0 + 0	0	0%

- Context evaluation: Compliance below goal
- Input Evaluation: Sepsis Protocol is adequate in design; needs to improve in function; insufficient knowledge identified.
- Process Evaluation: Lactic acid was the most reason for bundle failure.
- Product evaluation: Sepsis bundle Underperformed in 2019; no gaps identified.

Implications:

Adoption of study recommendations may improve sepsis bundle compliance score, CMS reimbursement and benchmark score.

Future Scope:

- Research using variables so that their relationship to sepsis bundle performance could be measured.
- Quarterly evaluation of the modified sepsis checklist and QA tool and feedbacks.

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