

EVALUATION OF A SEPSIS PROGRAM IN A LONG-TERM ACUTE CARE HOSPITAL

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INTRODUCTION

- Sepsis is a serious health condition that develops when an infection triggers a systemic inflammatory response causing damage to tissues and organs, leading to significant morbidity or death (World Health Organization [WHO], 2018).
- Sepsis in the United States impacts 1.7 million people annually resulting in an estimated 270,000 deaths (Centers for Disease Control and Prevention [CDC], 2020).
- Early recognition and treatment of sepsis has been shown to reduce mortality and complications (Rhodes et al., 2017).
- According to Jump et al. (2019), clinicians in post-acute settings have an opportunity to be first responders to sepsis and could benefit from early identification screenings and treatment protocols.

PURPOSE STATEMENT

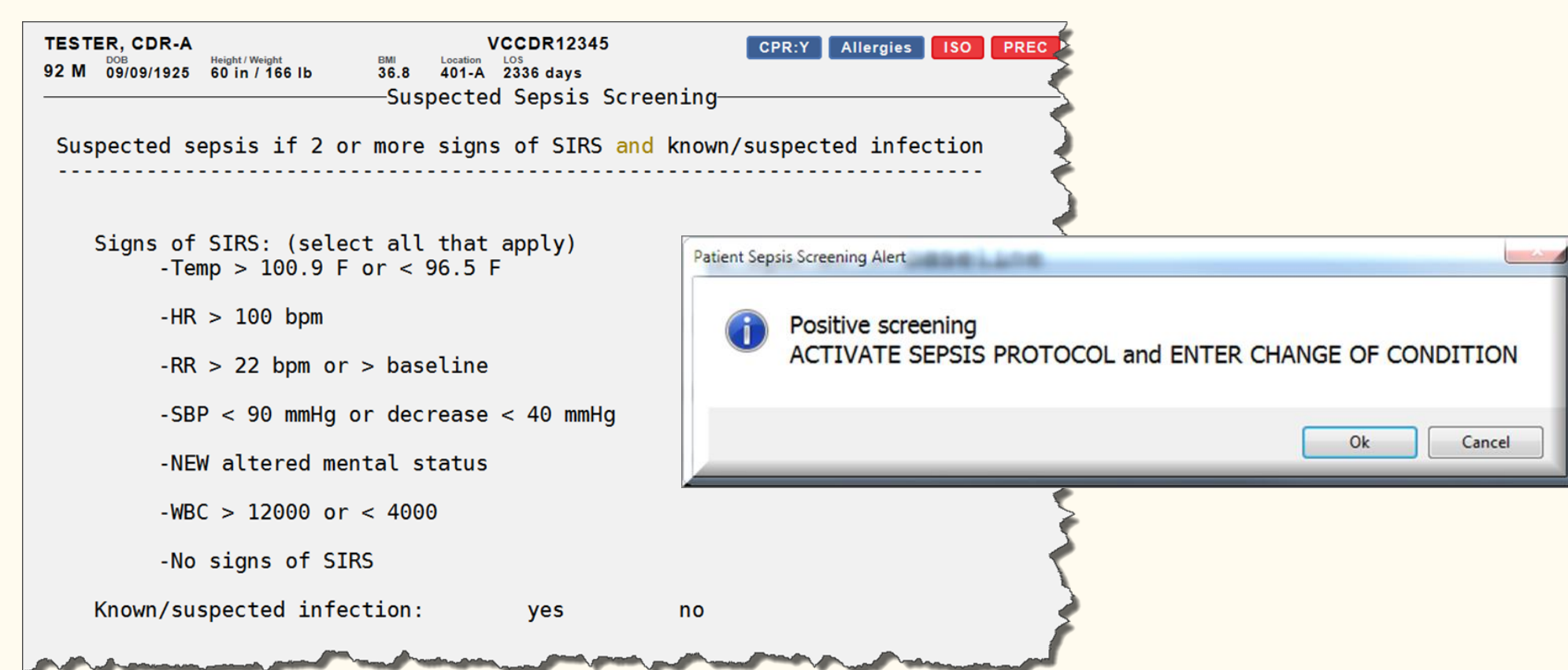
The purpose of this quality improvement (QI) project was to evaluate a new nurse-driven Code Sepsis Protocol to assist in early sepsis identification through nurse sepsis screenings and evidence-based treatment of sepsis with provider bundle order sets in patients at an LTACH.

PICOT Question

In adult patients in a long-term acute care hospital (LTACH) (P) to what extent does the implementation of a nurse-driven code sepsis protocol (I) compared to the previous practice (C) impact nurse sepsis screening orders and initiation of provider sepsis bundle order sets (O) over a three-month period (T)?

OBJECTIVES

- 10% increase in initiation of orders for sepsis screening by the admitting RN
- 10% increase in the initiation of provider sepsis bundle order sets with a positive sepsis screening



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 - Statistician: Jan Sherman, PhD, RN, NNP-BC

MATERIALS AND METHODS

Design: Pre/post intervention program evaluation

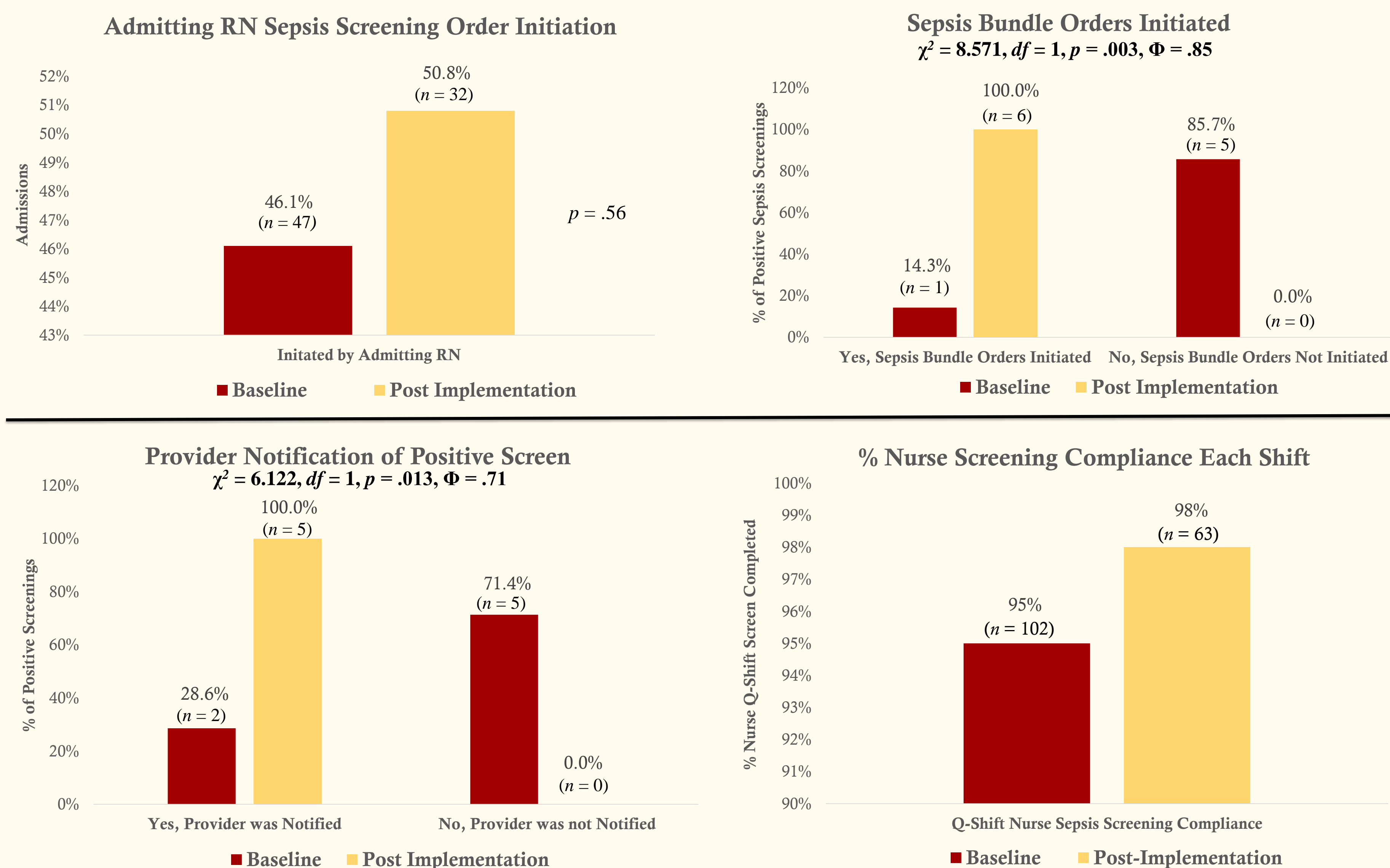
Setting: 68-bed LTACH located in suburban North Texas offering extended hospitalization for medically complex patients.

Intervention: Implementation of a nurse driven Code Sepsis Protocol consisting of nurse orders to complete a sepsis screening assessment each shift, a protocol for positive sepsis screenings, an SBAR provider notification tool, and provider bundle orders for sepsis.

Data Collection:

- Using a confidence level of 95%, a maximum of 5% margin of error, a population size of 196, with a 50% response distribution, a minimum of 131 charts were required at baseline and follow-up (Raosoft, 2004).
- Demographics – age, gender, length of stay (LOS), primary admission diagnosis, insurance type, and discharge disposition.
- Chart Review– number of orders for sepsis screening initiated by admitting RN, ordered sepsis screenings completed each shift, positive sepsis screenings, provider notification of positive screenings, and sepsis bundle provider orders initiated.
- Data Analysis:**
 - The Chi-square Test of Independence was used to analyze the nominal level data.
 - The *phi* coefficient (Φ) was used as an index to describe the magnitude of the effect from the intervention with values .10, .30, and .50 corresponding to small, medium, and large, respectively.
 - Ratio level data was analyzed with the Independent *t*-test.
 - IBM SPSS Statistics version 27 (Chicago, IL) was used for statistical analysis. The level of significance was set at $p \leq .05$.

RESULTS



- Positive Sepsis Screening.** There was no statistically significant difference between group related to positive sepsis screenings; G1 (6.9%, $n = 7$) and G2 (7.9%, $n = 5$), $p = .79$. There was a moderate statistically significant difference in discharge disposition for those with a positive sepsis screening with 50% ($n = 6$) discharging back to acute care, $\chi^2 = 16.747, df = 4, p = .002, \Phi = .32$.
- Health Equity.** Across both groups, there were no statistically significant differences for sepsis screening orders completed related to gender ($p = .41$) or insurance payer ($p = .56$) and no statistically significant differences for sepsis bundle orders initiated related to gender ($p = .85$) or insurance payer ($p = .37$).

RESULTS

Demographics

165 charts were available for review; 102 charts included in baseline (G1) and 63 charts at follow-up (G2).

Results of Independent *t*-Test examining Age and LOS

	Baseline (G1)		Post-Intervention (G2)		Both Groups		<i>t</i> (163)	<i>p</i>	Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Age (years)	66.00	12.88	65.90	15.12	66.00	12.88	0.05	0.96	12.89
LOS (days)	30.37	21.30	27.48	16.39	29.27	19.57	0.92	0.36	19.58

Note. Mean values are shown for G1 ($n = 102$) and G2 ($n = 63$). Across both groups the age range was 31 to 98 years and LOS range was 4 to 112 days.

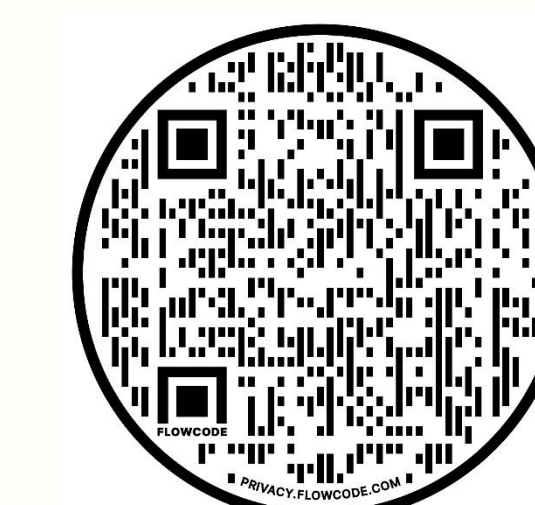
Results of Chi-Square demographic analysis

	Baseline (G1)		Post-Intervention (G2)		Both Groups		χ^2	<i>p</i>
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%		
Gender								
Male	54	52.9	35	55.6	89	53.9	0.107	.74
Female	48	47.1	28	44.4	76	46.1		
Primary Admission Diagnosis								
Respiratory Failure/Disease	51	50.0	24	38.1	75	45.5		
Infection/Sepsis	16	15.7	15	23.8	31	18.8		
Covid-19	19	18.6	0	0.0	19	11.5		
Post-Op Complication	7	6.9	10	15.9	17	10.3	23.628	.001
Other Misc. Renal Disease/Kidney Failure	3	2.9	3	4.8	6	3.6		
Ulcer/Wound	1	1.0	4	6.3	5	3.0		
Diabetes	1	1	2	3.2	3	1.8		
Insurance Type								
Medicare	26	25.5	31	49.2	57	34.5	9.701	.01
Managed Medicare	37	36.3	16	25.4	53	32.1		
Commercial	39	38.2	16	25.4	55	33.3		
Discharge Disposition								
Home Health	37	36.3	13	20.6	50	30.3		
Skilled Nursing	25	24.5	11	17.5	36	21.8	13.226	.01
Inpatient Rehab	22	21.6	12	19	34	20.6		
Acute Hospital	10	9.8	15	23.8	25	15.2		
Home	8	7.8	12	19	20	12.1		

CONCLUSIONS

- The first objective of a 10% increase in sepsis screening orders initiated by the admitting RN was **NOT MET** with an increase of 46.1% to 50.8%.
- A 3% increase in the overall compliance with every shift nurse sepsis screenings completed, from 95% to 98%.
- The second objective of a 10% increase in the initiation of provider sepsis bundle orders with a positive screen was **MET** with an increase from 14.3% to 100%.
- Provider notifications with positive sepsis screenings increased from 28.6% to 100%.
- Implementation of a nurse driven Code Sepsis Protocol can increase the initiation of evidence-based sepsis treatment in an LTACH.

REFERENCES



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