

# Standard Set for community sepsis: variables of the sepsis protocol and mortality rate contributing to its implementation

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## Abstract

In Brazil, mortality from sepsis grows exponentially. Early sepsis identification helps to reduce the mortality rate and provides better clinical outcomes and quality of life for survivors. Our objective to identify the variables of the sepsis protocol and the mortality rate and implementation of a Standard Set for community sepsis. The study evaluated 464 patients, with a mortality rate of 17.5%, showing a distinct profile of variables. Despite a high survival rate of 82.5%, some patients return to the community with sequelae, resulting in a worsening quality of life and a higher probability of readmission. After evaluating the results and focusing on improving medical care quality, the Emergency department together with the VMO and the National Association of Private Hospitals (ANAHP) created a new Standard Set to measure health and quality of life of surviving sepsis patients.

## Introduction

In recent years, mortality from sepsis has been increasing worldwide and, in Brazil, cases have grown exponentially. Early identification helps to reduce the mortality rate and provides better clinical outcomes and quality of life for survivors. Our institution suggested the application of the quick SOFA score (qSOFA) in the screening of adult patients, scores  $\geq 2$  are predictive of mortality risk. Added to this score, other criteria of severity chosen by the institution are included to increase the sensitivity of the screening. Thus, it demonstrates the importance of applying care protocols that enable the early and assertive recognition of sepsis in the first approach to the patient during the risk classification. Our goal was to identify the variables of the sepsis protocol and the mortality rate and implement a Standard Set for community sepsis.

## Methods

Cross-sectional, retrospective and documentary study with a quantitative approach, carried out in the emergency department of a private hospital in southern Brazil. Data were collected from January to September 2019, in the institution's computerized system, including all patients who have the open sepsis protocol at the time of risk classification. The following criteria are triggers for opening the protocol: qSOFA  $\geq 2$  (neurologic worsening (Glasgow  $< 15$ ); respiratory rate  $\geq 22$  breaths per minute (BPM); systolic blood pressure  $\leq 100$  mmHg) and/or severity score (SS)  $\geq 1$  (bacteremia up to 12h; tachycardia  $> 120$  beats per minute (BPM); mottled skin/deep sweating). A descriptive statistical analysis was performed.

## Results

The study sample comprised 464 patients, with mean age of 72.9 years and 53% female. Regarding the qSOFA variables presented at the opening of the protocol at the time of risk classification, it was observed that 76.6% scored at respiratory rate  $\geq 22$  breaths per minute, 51.7% systolic blood pressure  $\leq 100$  mmHg and 31.6% Glasgow  $< 15$ .

**Table 1. Sepsis mortality profile according to the care protocol (n=82)**

qSOFA			Severity score			N (%)	
Neurologic worsening Glasgow $< 15$	Respiratory rate $\geq 22$ BPM	SBP $\leq 100$ mmHg	Bacteremia up to 12h	Tachycardia $> 120$ BPM	Mottled skin/deep sweating	Mortality (n=82)	
*	*	*				20 (74.1)	2 qSOFA points 27 (32.9)
*	*	*				6 (22.2)	
*	*	*				1 (3.7)	
	*	*		*		8 (50.0)	1 qSOFA + 1 SS points 16 (19.5)
	*	*	*	*		3 (18.8)	
	*	*	*	*	*	3 (18.8)	
	*	*	*	*	*	1 (6.3)	
	*	*	*	*	*	1 (6.3)	
*	*	*		*		7 (50.0)	2 qSOFA + 1 SS points 14 (17.1)
*	*	*		*	*	3 (21.4)	
*	*	*		*	*	2 (14.3)	
*	*	*		*	*	1 (7.1)	
	*	*	*	*	*	1 (7.1)	
*	*	*		*	*	4 (57.1)	3 qSOFA + 1 SS points 7 (8.5)
*	*	*		*	*	3 (42.9)	
*	*	*		*	*	6 (100)	3 qSOFA points 6 (7.3)

SBP: systolic blood pressure; BPM: beats per minute; BPM: breaths per minute; SS: severity score; \* refers to the qSOFA and Severity Score verified for each category

Concerning the SS, it was identified that 47.4% presented tachycardia, 12.3% with mottled skin and/or deep sweating and 10.1% reported bacteremia within 12h. The mortality rate corresponded to 17.5% (n= 82), showing that the profile of the variables scored in this group were: 32.1% only two qSOFA variables, 19.8% one point qSOFA and one SS, 18.5% two qSOFA and one SS, 8.6% three qSOFA and one SS, 6.2% three qSOFA, 6.2% only one SS, 2.5% two qSOFA and two SS, 2.5% three qSOFA and two SS and in low prevalence with 1.2 % scored two qSOFA and three SS, 1.2 one qSOFA and two SS and 1.2% scored three SS. Despite a high survival rate of 82.5% (n= 383), some patients return to the community with sequelae, resulting in a worsening in quality of life and a higher probability of readmission. Focusing on improving medical care quality, the Emergency department together with the Value Management Office implemented, in partnership with the National Association of Private Hospitals (ANAHP), a new Standard Set that aims to measure health and quality of life of sepsis surviving patients, seeking the best evidence-based practices to provide patients with safe care, based on scientific principles and with excellence in order to obtain better clinical outcomes and more satisfactory quality of life.

## Conclusion

The identification of the variables qSOFA and SS of patients in the sepsis protocol, showed the sensitivity of these scores in the detection of the disease and the early identification provided a reduction in mortality in the institution. These results made it possible to implement a Standard Set for community sepsis in order to monitor surviving patients in view of their quality of life, seeking alternatives to improve the clinical and prognostic outcomes for this population.