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Earlier Identification of Sepsis in the Pre- hospital Setting

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Objectives



- By the end of this presentation the participant will be able to identify and discuss sepsis criteria.
- By the end of this presentation the participant will be able to navigate sepsis screening tool(s).
- By the end of this presentation the participant will be able to utilize strategies to identify sepsis in the pre-hospital setting.

Background & Significance of Sepsis



- Sepsis is a life-threatening emergency where each year at least 1.7 million adults in America develop and close to 270,000 die (CDC, 2019)
- Sepsis is a chain reaction in the body in response to infection
- Sepsis requires timely identification and prompt intervention to reduce mortality
- The staggering number of adults in America who die from sepsis warrant the need for modalities to target early recognition and intervention
- Current projects: “Get Ahead of Sepsis”; ”Surviving Sepsis Campaign”

Literature Review



- Literature review to identify current methods in place for pre-hospital sepsis screening by first responders
 - Articles selected from 2010 through 2018 via CINAHL database
 - Keywords: sepsis, pre-hospital sepsis screening, early sepsis identification, qSOFA, SIRS
- There is not a valid tool for pre-hospital screening of sepsis
- One study applied the qSOFA score to pre-hospital patients with a 66.67% positive predictive value
 - The qSOFA is a score that could be further studied in the pre-hospital setting

Methods



- Retrospective chart analysis
- 300 charts were selected from January 1, 2017-June 30, 2018
 - Patients who had an ER diagnosis of sepsis (ICD10); Adults (18 years of age or older) ; Arrived by ambulance
- Exclusion Criteria
 - Patients transferred from other hospitals for higher level of care; Pediatrics (less than 18 years of age); Non-septic; Pregnancy; HIV/AIDS; Normal lactic acid level
- Data collected
 - ER arrival time; disposition; LOS; age; sex; mode of arrival; time of alert; prehospital intervention; chief complaint; primary diagnosis; vitals; fluids; antibiotics
- A SIRS and qSOFA score assigned to each of the the cases to determine how many patients may have screened positive for sepsis in the pre-hospital setting
 - A rechecked score with SIRS + mental status and SIRS + blood pressure

Data Analysis & Results



MEASURES	PERCENTAGE OF CORRECT SEPSIS DIAGNOSIS	NOT DIAGNOSED
MODIFIED SIRS	50.6%	49.4%
MODIFIED SIRS + BLOOD PRESSURE	63.3%	36.7%
MODIFIED SIRS + MENTAL STATUS	64.7%	35.3%
QSOFA	33.4%	66.5%

Conclusion



- There is a minimal literature evaluating pre-hospital sepsis screening by first responders
- Prehospital sepsis screening is currently presumptive and based on clinical assessment
- Both the SIRS and qSOFA scores were used to retrospectively screen 300 patients transferred to the emergency room by first responders
 - Utilizing the SIRS with modification in the pre-hospital setting could allow for earlier recognition and treatment of sepsis

Recommendations



- Further studies evaluating the use of sepsis screening tools in the pre-hospital setting
 - Modified SIRS
- Determine why patients are septic (comorbidities)
- Identifying the knowledge gap in the pre-hospital setting among first responders
- Providing a formal Sepsis Education Program for first responders
 - Education would also need to include emergency room nursing and providers
- Implementing the qSOFA or SIRS with modification in the pre-hospital setting
- Evaluating the impact of sepsis screening in the prehospital setting

References



Barbara, P., Graziano, C., Caputo, W., Litvak, I., Battinelli, D., & Hahn, B. (2018). The quick sequential organ failure assessment (qSOFA) identifies septic patients in the out-of-hospital setting. *The American Journal of Emergency Medicine*, 36(6), 1022–1026. <https://doi.org/10.1016/j.ajem.2018.01.073>

Bayer, O., Schwarzkopf, D., Stumme, C., Stacke, A., Hartog, C. S., Hohenstein, C., ... Winning, J. (2015). An Early Warning Scoring System to Identify Septic Patients in the Prehospital Setting: The PRESEP Score. *Academic Emergency Medicine*, 22(7), 868–871. <https://doi.org/10.1111/acem.12707>

CDC. (2019, January 15). Data and Reports. Retrieved February 19, 2019, from <https://www.cdc.gov/sepsis/datareports/index.html>
CDC Press Releases. (2016, January 1). Retrieved February 19, 2019, from <https://www.cdc.gov/media/releases/2017/p0831-sepsis-recognition-treatment.html>

Franchini, S., & Duca, A. (2016). qSOFA should replace SIRS as the screening tool for sepsis. *Critical Care*, 20(1). <https://doi.org/10.1186/s13054-016-1562-4>

Guerra, W. F., Mayfield, T. R., Meyers, M. S., Cloutre, A. E., & Riccio, J. C. (2013). Early Detection and Treatment of Patients with Severe Sepsis by Prehospital Personnel. *The Journal of Emergency Medicine*, 44(6), 1116–1125. <https://doi.org/10.1016/j.jemermed.2012.11.003>

Polito, C. C., Isakov, A., Yancey, A. H., Wilson, D. K., Anderson, B. A., Bloom, I., ... Sevransky, J. E. (2015). Prehospital recognition of severe sepsis: development and validation of a novel EMS screening tool. *The American Journal of Emergency Medicine*, 33(9), 1119–1125. <https://doi.org/10.1016/j.ajem.2015.04.024>

Wallgren, U. M., Castrén, M., Svensson, A. E. V., & Kurland, L. (2014). Identification of adult septic patients in the prehospital setting: a comparison of two screening tools and clinical judgment. *European Journal of Emergency Medicine*, 21(4), 260. <https://doi.org/10.1097/MEJ.0000000000000084>