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Oldham, Shelby, "Implementation of the Quick Sequential Organ Failure Assessment in Early Identification of Sepsis in Cirrhotic Patients Outside the Intensive Care Unit" (2022). *Posters*. 24.
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Implementation of the Quick Sequential Organ Failure Assessment in Early Identification of Sepsis in Cirrhotic Patients Outside the Intensive Care Unit

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PICOT

Population: Cirrhotic patients that present with signs and symptoms of severe infection

Intervention: The use of the Sepsis-3's bedside qSOFA assessment will aid in nurse's prompt identification, treatment, and surveillance of acutely ill cirrhotic patients with infection

Comparison: Early detection of sepsis in cirrhotic patients with the use of the current systemic inflammatory response syndrome (SIRS) criteria vs the Sepsis-3's qSOFA tool

Outcome: Implementation of qSOFA criteria allow clinicians to promptly identify patients with either suspected sepsis or sepsis outside the ICU setting.

Time: Presentation of symptoms to discharge

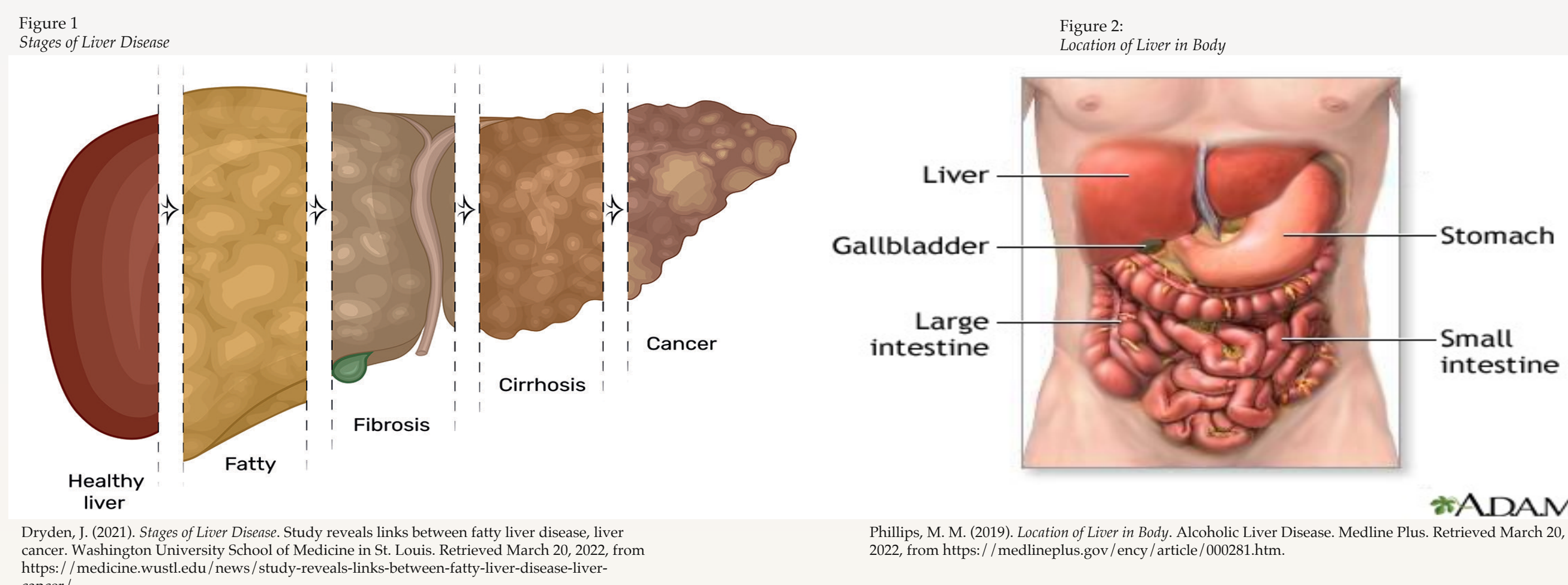


Figure 1. Stages of Liver Disease. Dryden, J. (2021). Stages of Liver Disease. Study reveals links between fatty liver disease, liver cancer. Washington University School of Medicine in St. Louis. Retrieved March 20, 2022, from <https://medicine.wustl.edu/news/study-reveals-links-between-fatty-liver-disease-liver-cancer/>.

Figure 2. Location of Liver in Body. Phillips, M. M. (2019). Location of Liver in Body. Alcoholic Liver Disease. Medline Plus. Retrieved March 20, 2022, from <https://medlineplus.gov/ency/article/000281.htm>.

Abstract

Patients with the chronic condition cirrhosis suffer from an increased risk of infections. These infections can quickly result in a systemic infection known as sepsis. Sepsis in cirrhotic patients results in high rates of septic shock related mortality. Therefore, this research is to determine if the replacement of the systemic inflammatory response syndrome (SIRS) assessment with the new Sepsis 3's quick Sequential Organ Failure Assessment (qSOFA) will aid in assessing the risk of mortality in this patient population. Early, efficient assessment allows prompt nursing interventions and timely transfers when caring for cirrhotic patients outside the intensive care unit. Studies have shown that the current assessment tool, SIRS, has poor sensitivity and weak generic parameters. qSOFA has shown to be better at determining cirrhotic patient's risk for mortality, need for interventions, and need for transfer. Thus, the qSOFA assessment tool provides nurses with a bedside assessment tool that can be implemented to repeatedly assess the health status in this chronically ill patient population.

Purpose

The purpose of this study is to demonstrate the prognostic accuracy of the utilization of the qSOFA criteria in cirrhotic patients that present outside the ICU with signs and symptoms associated with sepsis and possible organ failure. The qSOFA component of Sepsis-3 allow nurses outside the ICU setting to quickly identify the patient's risk of mortality and therefore guide nursing interventions.

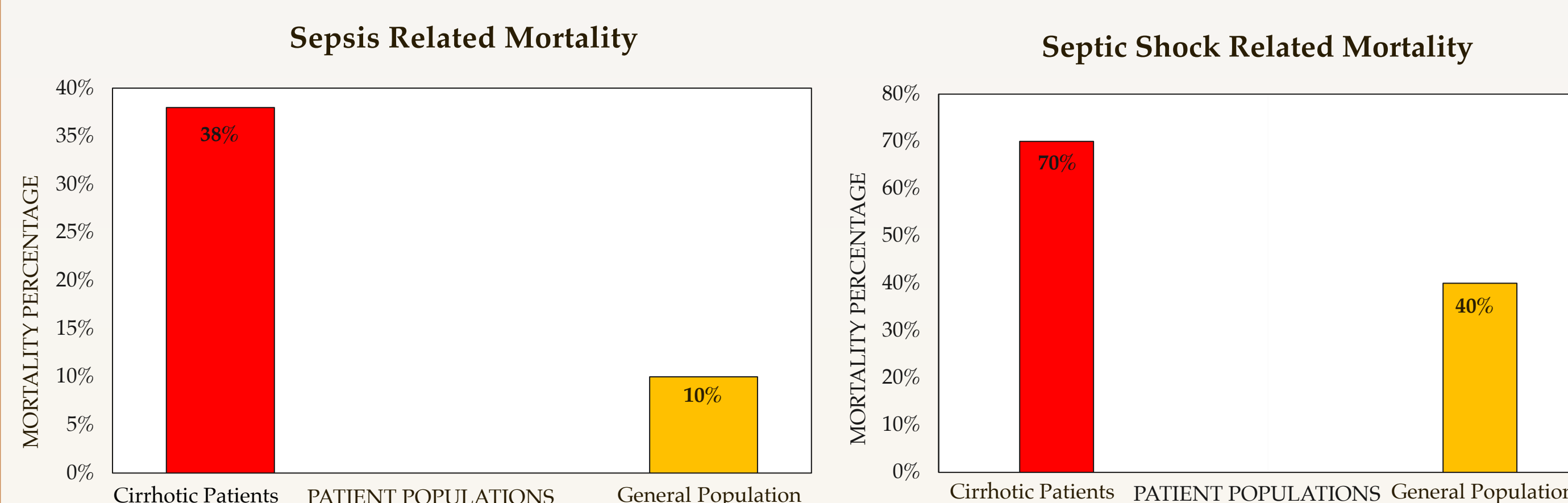
What is qSOFA?

Vital Sign	qSOFA Specific Parameter
Hypotension	Systolic BP \leq 100 mmHg
Tachypnea	Respiratory rate \geq 22 breaths/minute
Altered Mentation	Glasgow coma scale $<$ 15

- According to qsofa.org, when 2 or more criteria are met (2 points or greater) then the patient is at an increased risk for severe infection and mortality.

Patient Population Susceptibility

- Cirrhotic patients are predisposed to the development of bacterial infections, sometimes spontaneously as such in the case of spontaneous bacterial peritonitis.
- Increased mortality in cirrhotic patients that present with sepsis can be attributed to an altered immune system response that is known as cirrhosis-associated immunodeficiency (CAID)(Martin Mateos & Albillos, 2019).
- Lack of detection of early sepsis can be attributed to "hemodynamic and systemic changes that are suggestive of sepsis" (Phillips et. Al., 2020). In addition to the absence of infection, cirrhotic patients' diagnosis and treatment may be delayed (Phillips et. al., 2020).



Findings

- One study found that "Sepsis-3 [qSOFA] criteria are more accurate than SIRS criteria in predicting the severity of infections" in patients with cirrhosis (Piano, et. al., 2017).
- When qSOFA criteria are met patients often required more emergent interventions and stricter surveillance in the hospital setting (Piano, et. al., 2017).
- The qSOFA provides a prompt and progressive bedside assessment tool that can aid nurses in treatment as well as notifying physicians if the patient's condition declines.
- Another study compared the traditionally used systemic inflammatory response syndrome (SIRS) criteria with the Sepsis-3's qSOFA tool had significantly better discrimination for in-hospital mortality (Piano, et. al., 2017).
- In a study of 879 emergency room patients with suspected infection (screened with SIRS, qSOFA, and severe sepsis criteria); qSOFA demonstrated greater sensitivity to in-hospital mortality when compared to SIRS and severe sepsis criteria (Freund et. al., 2017).
- A 30-day study following 164 cirrhotic patients found that "qSOFA was independently related to survivability and appears to be a valuable tool for determining severity of infection" (Augustinho, et. al., 2019).

Issues with SIRS Criteria

- According to the Sepsis-3 task force the SIRS criteria can be present in many hospitalized patients that do not have any underlying infection and therefore proves to have poor discrimination validity (Seymour, et. al., 2016).
- In terms of SIRS vs qSOFA; SIRS has demonstrated time after time to have continual downfalls when treating cirrhotic septic patients (Piano, et. al., 2017). SIRS Criteria remains non-specific and has poor sensitivity when utilized.

Intervention

- Use of the qSOFA criteria allows the nurse to identify and grade patients with suspected infections and/or suspected sepsis. Thus, allowing identification of patients with the risk of prolonged ICU stays or mortality (Miranda-Zazueta et al., 2020).
- Further implementation of the qSOFA in this chronically ill population may decrease the likelihood of exacerbating the disease process (i.e. acute-on-chronic liver failure, increase of MELD score, or causing further progression from compensated to decompensated cirrhosis) (Miranda-Zazueta et al., 2020).
- Early detection allows for prompt treatment such as broad-spectrum antibiotic treatment (amoxicillin-clavulanic acid, vancomycin), steroids (dexamethasone), fluid resuscitation via LR or NS, and detouring the progression of possible hepatic encephalopathy.

Outcomes

- Onset of sepsis in cirrhotic patients will be promptly identified and subsequently treated therefore resulting in a decrease in sepsis related mortality.
- Utilization of repeated qSOFA bedside assessment to continually monitor patient's condition. Allowing for fast nursing interventions to be implemented upon the identification of declining condition via a qSOFA score of two points or more. Thus, allowing timely patient transfer to the intensive care unit if needed.

How Does This Affect Nursing Practice?

- Sepsis-3's qSOFA criteria provides the "bedside nurse with a tool that can evaluate a patient with infection therefore potentially allowing nurses to both identify at risk patients sooner and treat earlier" (Bonsall, 2016).
- Adapting such a criteria better allows nurses to recognize emergent situations associated with the care of patients with cirrhosis.

References

Augustinho, F. C., Zocche, T. L., Borgonovo, A., Maggi, D. C., Rateke, E., Mattiolo, C., Dantas-Correa, E. B., Narciso-Schiavon, J. L., & Schiavon, L. L. (2019). Applicability of Sepsis-3 criteria and quick Sequential Organ Failure Assessment in patients with cirrhosis hospitalized for bacterial infections. *Liver international: official journal of the International Association for the Study of the Liver*, 39(2), 307-315. <https://doi.org/10.1111/liv.13989>

Bonsall, L. (2016, March 16). Making sense of the updated sepsis definitions. Sepsis-3 | Lippincott NursingCenter. Retrieved October 15, 2021, from <https://www.nursingcenter.com/ncblog/march-2016/making-sense-of-the-updated-sepsis-definitions>

Dryden, J. (2021). Stages of Liver Disease. Study reveals links between fatty liver disease, liver cancer. Washington University School of Medicine in St. Louis. Retrieved March 20, 2022, from <https://medicine.wustl.edu/news/study-reveals-links-between-fatty-liver-disease-liver-cancer/>.

Freund Y, Lemachatti N, Krastinova E, et al. Prognostic Accuracy of Sepsis-3 Criteria for In-Hospital Mortality Among Patients With Suspected Infection Presenting to the Emergency Department. *JAMA*. 2017;317(3):301-308. doi:10.1001/jama.2016.20329

Martin Mateos, R., & Albillos, A. (2019, August 6). Sepsis in patients with cirrhosis awaiting liver transplantation: New trends and Management. *Liver transplantation: official publication of the American Association for the Study of Liver Diseases and the International Liver Transplantation Society*. Retrieved October 15, 2021, from <https://pubmed.ncbi.nlm.nih.gov/31408581/>.

Miranda-Zazueta, G., León-Garduño, L. A. P. de, Aguirre-Valadez, J., & Torre-Delgado, A. (2020, May 1). Bacterial infections in cirrhosis: Current treatment. *Annals of Hepatology*. Retrieved October 13, 2021, from <https://www.sciencedirect.com/science/article/pii/S1665260119322707>.

Phillips, M. M. (2019). Location of Liver in Body. Alcoholic Liver Disease. Medline Plus. Retrieved March 20, 2022, from <https://medlineplus.gov/ency/article/000281.htm>.

Piano, S., Bartoletti, M., Tonon, M., Balassare, M., Chies, G., Romano, A., Viale, P., Vettore, E., Domenicali, M., Stancu, M., Piliutti, C., Frigo, A. C., Brocca, A., Bernardi, M., Caraceni, P., & Angeli, P. (2017, August 31). Assessment of sepsis-3 criteria and quick sofa in patients with cirrhosis and bacterial infections. *Gut*. Retrieved October 18, 2021, from <https://pubmed.ncbi.nlm.nih.gov/28861348/>.

Seymour, C. W., Liu, V. X., Iwashyna, T. J., Brunckhorst, F. M., Rea, T. D., Scherag, A., Rubenfeld, G., Kahn, J. M., Shankar-hari, M., Singer, M., Deutschman, C. S., Escobar, G. J., & Angus, D. C. (2016, February 23). Assessment of clinical criteria for sepsis. *JAMA*. Retrieved October 16, 2021, from <https://jamanetwork.com/journals/jama/fullarticle/2492875>.

Seymour, C. W., Liu, V., Iwashyna, T. J., Brunckhorst, F. M., Rea, T. D., Scherag, A., Rubenfeld, G., Kahn, J. M., Shankar-Hari, M., Singer, M., Deutschman, C. S., Escobar, G. J., & Angus, D. C. (n.d.). What is qSOFA? qSOFA. Retrieved October 15, 2021, from <https://qsofa.org/what.php>