Overview of Sepsis Survivorship in United States

By

Lalita Raja

Dissertation submitted in partial fulfillment of the requirements of the degree

MBA Hospital and Health Management

Academic year, 2018-2020

The IIHMR University, Jaipur

1, Prabhu Dayal Marg, Sanganer, Airport
Jaipur 302029, Rajasthan
Ph: 0141 3924700, Fax: 3924738
Website: **www.iihmr.edu.in**

Overview of Sepsis Survivorship in United States

By

Lalita Raja

Dissertation submitted in partial fulfillment of award of

MBA Hospital and Health Management

Academic year, 2018-2020

Decision Resources Group, Bangalore

The IIHMR University, Jaipur

1, Prabhu Dayal Marg, Sanganer, Airport
Jaipur 302029, Rajasthan
Ph: 0141 3924700, Fax: 3924738
Website: **www.iihmr.edu.in**

Acknowledgements

I would first like to thank my mentor Dr. Anoop Khanna, The IIHMR University. The door to his office was always open whenever I ran into a trouble spot or had a question about my research or writing. He consistently allowed this paper to be my own work but steered me in the right the direction whenever he thought I needed it.

I would also like to thank Leah Bilitz, Research Director at Decision Resources Group who was involved in the helping me with this research project Megha Maheshwari, without her passionate participation and input, the research could not have been successfully conducted.

I would also like to acknowledge my manager Megha Maheshwari at Decision Resources Group as the second reader of this dissertation, and I am gratefully indebted to her for her very valuable comments on this dissertation.

Contents

Abstract-

Centers for Medicare and Medicaid Services introduced the Hospital Readmissions Reduction Program (HRRP) which ensures the quality of care by linking payments to it. The Affordable Care Act (ACA) established it in 2012. According to this act, hospitals are penalized for having high readmission rates.

One of the major reasons for readmission rates accounts for sepsis. Even though many patients survive sepsis, they face medical challenges after that. They are called sepsis survivors. After effects like insomnia and organ dysfunction occur commonly once discharged from the hospital. It a necessity to understand their difficulty, to introduce interventions to reduce their suffering

The purpose of the report is to describe sepsis survivorship and list down the outcomes. There are a lot of challenges ahead in improvement of their situation. Hospitals are working hard to innovate, in order to reduce the negative outcomes after sepsis.

Introduction-

Sepsis refers to medical condition in which the immune system starts harming the body instead of fighting against the infection. This is also called as blood poisoning. It leads to organ dysfunction, such as difficulty breathing (problems with the lungs), low or no urine output (kidneys), abnormal liver tests (liver), and changes in mental status (brain) .

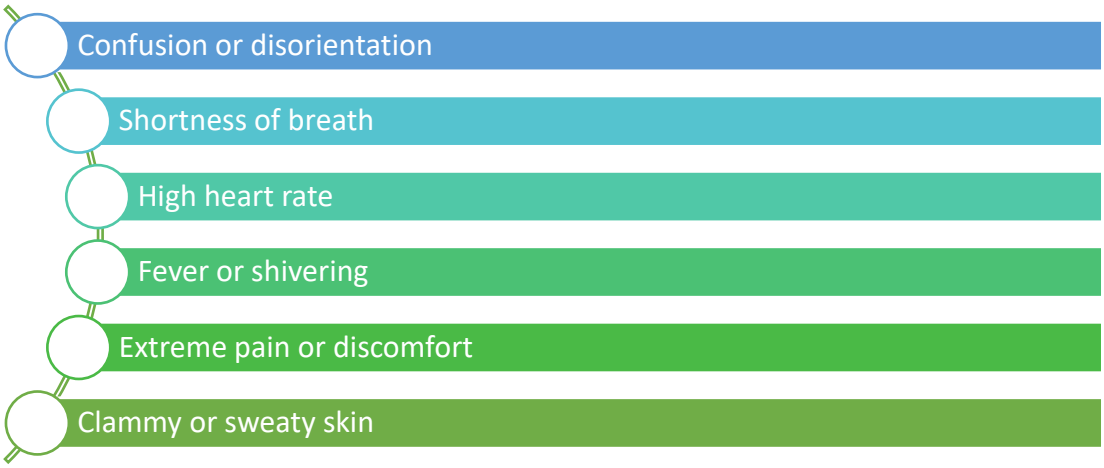


Figure 1: Early Symptoms of Sepsis

It is the cause of death for 270,000 Americans annually. On an average, around 30% of patients diagnosed with severe sepsis do not survive. Around fifty percent of the survivors experience post-sepsis syndrome. Early detection and treatment are the only solution for survival and limiting disability for survivors, until a cure for sepsis is found .

With increasing number of sepsis patients, representatives from the society of critical care medicine and the European society of intensive care medicine started the Surviving Sepsis Campaign in 2002. The team collected data from more than 30,000 patient charts from across the globe to develop evidence-based guidelines, guide implementation of a performance improvement program, and perform statistical and qualitative analysis. These protocols are now proving to be very essential to decrease sepsis patients and increase the quality of care .

In 2004, a non-profit organization named the Sepsis Alliance was founded. Its mission is to raise awareness of sepsis by educating patients, families, and healthcare professionals to treat sepsis as a medical emergency. It collaborates with sepsis survivors and showcases their story. They create content which features information and educational material which helps the general public to

become aware of this often-deadly condition, and for professionals who can then help the public learn about sepsis. It is one of the leading organizations working for this cause.

There are some renowned healthcare professionals who are constantly working to improve sepsis patients' condition in their hospitals. They have carried out extensive research for improving the quality of life of sepsis survivors. Similarly, there are hospitals who are developing various programs for sepsis survivors. One example is Children's Hospital of Philadelphia's Sepsis Survivorship program. They scan patients for potential long-term problems related to sepsis and help families get assistance when needed. They also collaborate with the Care Management Program at CHOP to support families who have children with both pre-existing medical problems and those who were healthy prior to sepsis. Their program conducts meeting with families during hospitalization when possible and following up via phone or email approximately two months after discharge to screen patients for potential concerns and assist with referrals as needed

Research question

What are the outcomes of sepsis survivorship and how to alleviate these affects?

Objectives

- To understand sepsis survivorship
- To identify outcomes of sepsis survivorship
- To find interventions to improve the health of sepsis survivors

Methodology

- Study Design: Descriptive observation study design
- Type of Data: Secondary Data
- Data collection tool: Research studies, Blogs, Surveys, Analyst Reports, Company Websites
- Inclusion Criteria: All articles from 2015 and originating from USA
- Exclusion Criteria: Articles older than 2015 and not from USA
- Sample size: 20 resources which include research, guidelines, paper, blogs and organization websites
- Data analysis plan: A thorough review and conclusion will be done based on the data found

Literature review:

There are 19 million individuals develop sepsis out of which 14 million survive to hospital discharge. However, after discharge half of patients recover, one-third die during the following year, and one-sixth have severe chronic impairments. These can include physical inability to o bathe or dress independently or mental distress like anxiety, depression, or posttraumatic stress disorder. Sepsis survivors are also under high risk of readmission within 90 days of discharge for minor conditions such as infection and exacerbation of heart failure major conditions like renal failure and cardiovascular complications. There can be several reasons behind why these symptoms appear which may include preexisting chronic conditions, residual organ damage, impaired immune function, pre-sepsis health status, characteristics of the acute septic episode and quality of hospital treatment. Therefore, its recommended that the hospitals provide referrals for rehabilitation to give a smooth transition for sepsis survivors and prevent them from developing any health issues.

It's also shown in research that due to sepsis, the survivors tend to visit hospitals more often than other patients. They utilize the inpatient services at the hospitals much more. Due to the increased complication in this situation, there is an increased risk of mortality for the patients. Sepsis survivors spend more time admitted to facilities in the year after hospitalization, compared with the year prior. This data was collected using the Medicare claims.

In another research, they evaluated the association between receipt of care elements and 90-day hospital readmission and mortality, adjusted for age, comorbidity, length of stay, and discharge disposition. They quantified the delivery of post sepsis care for patients discharged after hospital admission for sepsis and examined the association between receipt of post sepsis care elements. After careful analysis they found that delivery of recommended post sepsis care elements that were associated with reduced morbidity and mortality after hospitalization for sepsis. Implementation of strategies to efficiently overcome barriers to adopting recommended post sepsis care may help improve outcomes for sepsis survivors.

It's a given that the quality of life post sepsis reduces drastically. They face problems in mobility, usual activities, and self-care domains after discharge. Approximately one third of patients who survived hospitalization for severe sepsis die at 6 months. Another third experienced problems

with mobility and self-care and were not able to live by themselves. Half of the survivors who have these problems at 6 months either die by 1 year or have regular problems.

Author	Study Article	Result	References
Hallie C. Prescott	Enhancing Recovery From Sepsis: A Review	Post-discharge hospital must identify physical and mental problems of patient and try to reduce readmission due to medical condition.	Prescott H, Angus D. Enhancing Recovery From Sepsis. JAMA. 2018;319(1):62.
Hallie C. Prescott	Increased 1-year Healthcare Use in Survivors of Severe Sepsis	Healthcare use is significantly increased after severe sepsis, and post-discharge management may be an opportunity to reduce resource use.	Prescott H, Langa K, Liu V, Escobar G, Iwashyna T. Increased 1-Year Healthcare Use in Survivors of Severe Sepsis. American Journal of Respiratory and Critical Care Medicine. 2014;190(1):62-69.
Stephanie Parks Taylor	Association between Adherence to Recommended Care and Outcomes for Adult Survivors of Sepsis	Implementation of strategies to overcome barriers to use recommended post-sepsis care helps improve outcomes for sepsis survivors	Taylor S, Chou S, Sierra M, Shuman T, McWilliams A, Taylor B et al. Association between Adherence to Recommended Care and Outcomes for Adult Survivors of Sepsis. Annals of the American Thoracic Society. 2020;17(1):89-97.

Sachin Yende	Long-Term Quality of Life Among Survivors of Severe Sepsis: Analyses of Two International Trials	Participants who lived alone prior to severe sepsis, 1/3rd had died and of those who survived, a further one third had not returned to independent living by 6 months.	Yende S, Austin S, Rhodes A, Finfer S, Opal S, Thompson T et al. Long-Term Quality of Life Among Survivors of Severe Sepsis. Critical Care Medicine. 2016;44(8):1461-1467.
Amanpreet Kaur	Role of sepsis in delayed mortality	An attack of sepsis serves as the driving force behind long term mortality.	Kaur A, Levy M. Role of sepsis in delayed mortality. Annals of Translational Medicine. 2016;4(19):378-378.

Results:

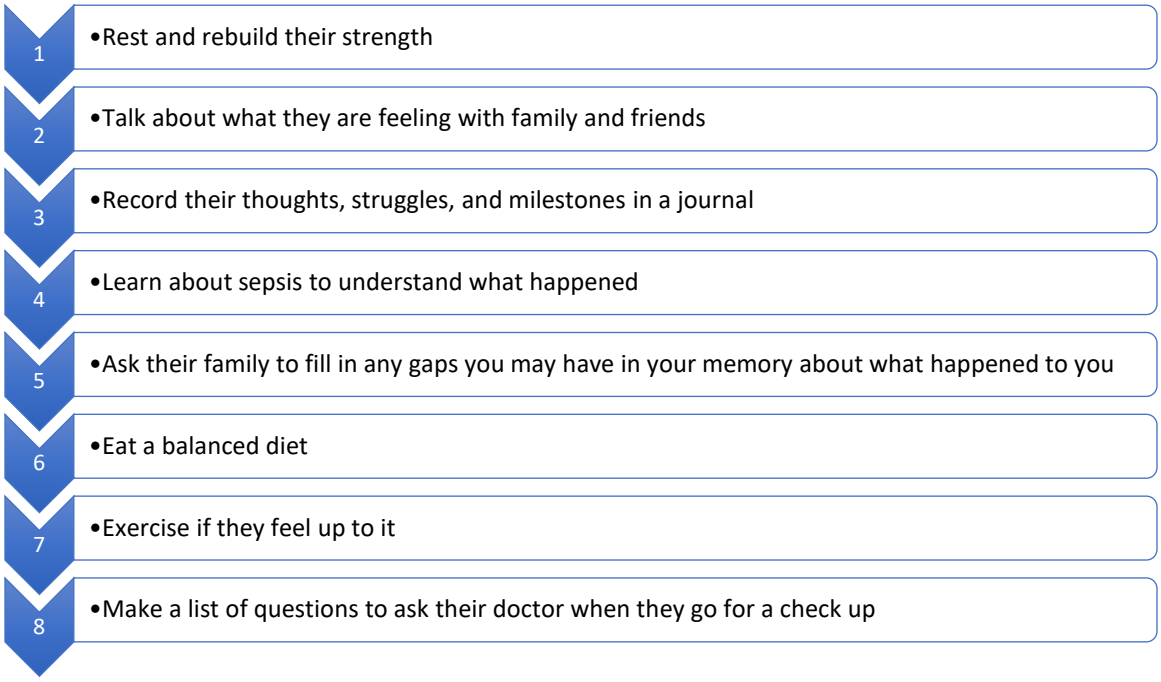
Understanding sepsis survivorship

Patients who survive a severe attack of sepsis are called sepsis survivors. Even though the sepsis survivors are discharged from hospital, their life might be stressful. They suffer from multiple problems. They are at risk of readmission within three months of the first occurrence and contract infection. Sepsis leads to weakening of the immune system in the first few weeks and months following the initial bout. Severe cases of readmission include heart failure, kidney failure, and pulmonary aspiration. Not only are they weak physically, damage occurs mentally as well (Umberger et.al 2019). They face experience difficulties with memory, concentration, and decision making. They need assistance in carrying out basic activities sometimes like bathing, dressing, managing money. Surgical amputations can occur in 1% of the survivors. Sepsis survivors under 45 years old are at a greater risk of death during the first 2 years after hospital discharge than patients hospitalized for infection without sepsis. They tend to have more chronic (co-occurring) conditions (comorbidities) that may contribute to this increased risk. Along with the survivors, their caregivers are prone to high levels of depressive symptoms (Prescott et.al 2018).

The average cost for a hospital readmission at 30 days after the initial sepsis hospitalization is $16,852. This amounts to more than $3.5 billion in annual costs. Readmissions after 30 days following an initial hospitalization for sepsis account for 13% of all sepsis-related hospitalization costs. So not only sepsis physically and mentally draining, it also causes a financial burden on people affected (Sepsis Alliance).

Another common difficulty that 50% of the sepsis survivors is post-sepsis syndrome. It occurs due to extended stay in the intensive care unit. Symptoms include difficulty sleeping, nightmares, hallucinations, panic attacks, disabling, muscle or joint pain, difficulty concentrating, decreased cognitive (mental) functioning, loss of self-esteem and depression. To alleviate the stress, the patients can be referred to emotional and psychological support (counseling, cognitive behavioral therapy, or neuropsychiatric assessment) and physical support such as physical therapy or neurorehabilitation (Schorr et.al 2019).

There are a few ways the discharged sepsis survivors can exercise at home to improve their well-being:



Outcomes of sepsis survivorship

a. Effect on psychological health of patients

   Sepsis survivors reported symptoms of depression after being discharged from the hospital. They also experience anxiety and fatigue. Research also shows that they also undergo a cognitive impairment which makes them makes them dependent on their caregivers to perform daily activities. They have trouble sleeping and often experience nightmares. Post-traumatic stress is common among the patients (Anderson et.al 2016).

b. Increased risk of rehospitalization

   Within the 30 days of discharge from hospital, it's likely that 5 survivors are hospitalized. Due to sepsis, their immune system is weakened. This leads them vulnerable to infection, which is mostly the cause of rehospitalization. They are also prone to pneumonia and cardiovascular infections. 20% of pediatric survivors are readmitted soon after discharge (Shankar-Hari et.al 2020).

c. Effect on physical health of patients.

Most of them complained about being unable to perform their daily activities, mobility and self-care. Many patients also undergo amputation of their limbs which causes a disability. They also experience renal failure in some cases. Many other co-morbidities occur after an attack of sepsis. They face increased risk of mortality. They also experience symptoms like body aches, dry and itchy skin and brittle nails. Organ dysfunctions may also occur after episode of sepsis (Huang et.al 2018).

Interventions to improve health of sepsis survivors.

a. Physician-patient interaction

After discharge of patient, the healthcare facilities should introduce specifically designed telephonic interviews with the patient for 12 months regarding any post-sepsis symptoms or decrease in quality of life (Bowles et.al 2020). This ensures regular monitoring of the patients and supplies relevant information on patient clinical status to the care provider. This updates the existing care model and makes sure that the patient is safe and content with the care provided. In case of any emergency, this makes it easier for the patient to contact the hospital. Also, patients may ignore many symptoms which can lead to adverse results later. With regular checks, it prevents any health issue which may occur due to the damage caused by sepsis to the body (Kaur et.al 2016).

b. Training of physicians and nurses

The care providers must be provided training on teaching their sepsis survivor patients, on how to take care of themselves at home (De. Proper communication of steps to be followed for post-sepsis care is essential to the patient as well as the family members to ensure prevention of any complication further on. A special emphasis must be given to an effective self-management of patients, which improves health-related quality of life in post-intensive care patients. Guidance is crucial for patients as they may feel lost after discharge from hospital (Prescott et.al 2015).

c. Discharge management

Discharge management is one the most important steps to reduce risk of rehospitalization. It should include structured information between inpatient and outpatient care in accordance with the transitional care model, which has shown to reduce costs and rehospitalization rates. A few serious cases can't be released directly and require transitional care nurse who does a complete

examination of the patient's wellbeing , mental health, level of social help, and objectives, builds up a customized care plan unique to the patient with evidence based rules, in a joint effort with the patient and her primary care physicians; and directs daily appointments, focused on improvement in health at discharge. Following release, the nurse behaviors books intermittent home visits as well as booked telephone contacts with the patient dependent on a standard protocol. (Lee et.al 2019).

d. Post-discharge rehabilitation

After discharge, the physician is advised to give the patient a referral to critical illness survivors to post discharge rehabilitation. Usually a physiatrist leads a rehabilitation team, which includes physical and occupational therapists, speech pathologists, social workers, and/or athletic trainers, according to the patient's existing medical problems (Yende et.al 2016). Rehabilitation protocol must incorporate of individualized organized exercise regimens, for example, encouraging muscle strengthening and movement (e.g., dynamic and inactive shoulder height, respiratory muscle preparing, walking or sitting on the edge of bed, moving from a situated to a standing situation with or without help, ergometric leg works out, walking set up, treadmill strolling, step climbing), exercises for daily life, cardiovascular limit, heart capacity, and functional ability and occupational and communication therapy.. Physiatrists determine the frequency of rehabilitation sessions based on patients' medical histories, clinical status, and tolerance. Also, patients are required to perform home-based exercise alone or with the help of family members on days that they did not receive physical therapist–led rehabilitation. Physiatrists need to give printed physical education worksheets to patients for this purpose (Taylor et.al 2019).

Conclusion:

Sepsis is a life-threatening condition which affects thousands of patients in America every year. It may lead to tissue damage, organ failure and death in some cases. However, the problem does not end even after discharge. It can be caused by many reasons which include infections of the lungs (e.g., pneumonia), urinary tract (e.g., kidney), skin, and gut. Sepsis affects the body and may cause many symptoms which are both short and long term. After discharge usually, the sepsis survivors are referred to rehabilitation. During this period the staff assists in them to move around and look after themselves: bathing, sitting up, standing, walking, going to the restroom alone. Its crucial as this helps them to restore themselves back to their previous level of health or as close to it as possible.

After discharge the patient may feel extreme weakness and fatigue, breathlessness and general body pains or aches. They also face difficulty in moving around, difficulty in sleeping. They may lose weight, lose appetite or food may not taste normal. Other symptoms include dry and itchy skin that may peel, brittle nails and hair loss. Mentally they become unsure of themselves and wanting to be alone, avoiding friends and family. They see flashbacks and remember bad memories Often they have a confusing reality and feel anxious. Some patients have complained about poor concentration, depression, aggression, and frustration at not being able to do everyday tasks. There are some long term affects of sepsis faced by sepsis survivors like insomnia, difficulty getting to or staying asleep, nightmares, vivid hallucinations, panic attacks, disabling muscle and joint pains, decreased mental (cognitive) functioning, loss of self-esteem and self-belief, organ dysfunction (kidney failure, respiratory problems, etc.), and amputations.

Research shows that sepsis survivors must spend much more time inpatient and have increased risk of mortality. However, there are several ways in which this can be avoided. Doctors must suggest rehabilitation to every sepsis survivor. Without support, they may feel lost and cannot take good care of themselves. Rehabilitation makes them independent again. But discharge management is equally important. Proper care plan and screening of patients reduces any complications and prevents any health damage. The care plan must be communicated to the patients efficiently. To do this, they must receive adequate training regarding the same regularly. They should be monitored and reviewed. Along with that, the physician providing care must communicate with the patient too. Proper interaction can calm them down and feels reassuring.

They become more mentally stable and know clearly the plan of action. They take care of themselves better.

Research on quality of life of sepsis survivors is very less. Even though many organizations and professionals are working towards finding more solutions, more evidence is required. They face a lot of health-related difficulties after discharge. Organizations must introduce sepsis survivorship programs in their facilities to support them and their families.

References

1. Jdc.jefferson.edu. 2020. [online] Available at: <https://jdc.jefferson.edu/cgi/viewcontent.cgi?article=1015&context=sepsis> [Accessed 31 May 2020].
2. Sepsis Survivorship Program | Children's Hospital of Philadelphia [Internet]. Chop.edu. 2020 [cited 31 May 2020]. Available from: https://www.chop.edu/services/sepsis-survivorship-program
3. Are you a sepsis survivor? [Internet]. Centers for Disease Control and Prevention. 2020 [cited 31 May 2020]. Available from: https://www.cdc.gov/sepsis/life-after-sepsis/index.html
4. [Internet]. Cdc.gov. 2020 [cited 31 May 2020]. Available from: https://www.cdc.gov/sepsis/pdfs/life-after-sepsis-fact-sheet.pdf
5. Karon A. Caring for sepsis survivors [Internet]. Risks of sepsis, including mortality, functional and cognitive impairment, and mental health problems, continue long after discharge. 2020 [cited 31 May 2020]. Available from: https://acphospitalist.org/archives/2018/04/caring-for-sepsis-survivors.htm
6. Wójcik B, Superata J, Nguyen H, Szyguła Z. Exploration of Different Rehabilitation Routes for Sepsis Survivors with Monitoring of Health Status and Quality of Life: RehaSep Trial Protocol. Advances in Therapy. 2019;36(10):2968-2978.
7. Garcia A. Surviving Sepsis [Internet]. Dhs.wisconsin.gov. 2020 [cited 31 May 2020]. Available from: https://www.dhs.wisconsin.gov/disease/surviving-sepsis-are-you-prepared-save-life.pdf
8. De Backer D, Dorman T. Surviving Sepsis Guidelines. JAMA. 2017;317(8):807.

9. Dellinger RP, Schorr CA, Levy MM. A Users' Guide to the 2016 Surviving Sepsis Guidelines. Critical Care Medicine. 2017;45(3):381–5.
10. Lee JT, Brummel NE. Passing the Baton: Improving Postsepsis Care through Better Transitions. Annals of the American Thoracic Society. 2020;17(1):35–7.
11. Huang CY, Daniels R, Lembo A, Hartog C, O'Brien J, Heymann T, et al. Life after sepsis: an international survey of survivors to understand the post-sepsis syndrome. International Journal for Quality in Health Care. 2019Jan;31(3):191–8.
12. Shankar-Hari M, Saha R, Wilson J, Prescott HC, Harrison D, Rowan K, et al. Rate and risk factors for rehospitalisation in sepsis survivors: systematic review and meta-analysis. Intensive Care Medicine [Internet]. 2020;46(4):619–36. Available from: https://link.springer.com/article/10.1007/s00134-019-05908-3#Abs1
13. Surviving Sepsis Campaign (SSC) [Internet]. SCCM. [cited 2020May31]. Available from: https://www.sccm.org/SurvivingSepsisCampaign/Home
14. Sepsis Survivors [Internet]. Sepsis Alliance. [cited 2020May31]. Available from: https://www.sepsis.org/education/patients-family/sepsis-survivors/
15. Anderson BJ, Mikkelsen ME. From self-awareness to self-actualization: empowering sepsis survivors to a meaningful and enduring recovery. Journal of Thoracic Disease [Internet]. 2016;8(10). Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5107540/
16. Umberger RA, Thomas SP. Survivor But Not Fully Recovered. Dimensions of Critical Care Nursing [Internet]. 2019;38(6):317–27. Available from: https://journals.lww.com/dccnjournal/FullText/2019/11000/Survivor_But_Not_Fully_Recovered__The_Lived.7.aspx
17. Prescott HC, Langa KM, Iwashyna TJ. Readmission Diagnoses After Hospitalization for Severe Sepsis and Other Acute Medical Conditions. Jama [Internet]. 2015Oct;313(10):1055. Available from: https://jamanetwork.com/journals/jama/fullarticle/2190975
18. Bowles KH, Murtaugh CM, Jordan L, Barrón Y, Mikkelsen ME, Whitehouse CR, et al. Sepsis Survivors Transitioned to Home Health Care: Characteristics and Early Readmission Risk Factors. Journal of the American Medical Directors Association [Internet]. 2020;21(1). Available from: https://pubmed.ncbi.nlm.nih.gov/31837933/

19. Sepsis Survivors [Internet]. Begin Again Foundation. [cited 2020May31]. Available from: https://beginagainfoundation.com/sepsis-survivors/
20. Roman LA. The University of Tennessee, Health Science Center [Internet]. The University of Tennessee, Health Science Center. 2019 [cited 2020May31]. Available from: https://news.uthsc.edu/nursing-research-sepsis-survivors-express-need-for-follow-up-support/