

Otterbein University

## Digital Commons @ Otterbein

---

Nursing Student Class Projects (Formerly MSN)

Student Research & Creative Work

---

Summer 2015

### Sepsis & Emergency Management

Sharon Herndon

Otterbein University, [sharon.herndon@otterbein.edu](mailto:sharon.herndon@otterbein.edu)

Follow this and additional works at: [https://digitalcommons.otterbein.edu/stu\\_msn](https://digitalcommons.otterbein.edu/stu_msn)



Part of the [Bacterial Infections and Mycoses Commons](#), [Medical Pathology Commons](#), and the [Nursing Commons](#)

---

#### Recommended Citation

Herndon, Sharon, "Sepsis & Emergency Management" (2015). *Nursing Student Class Projects (Formerly MSN)*. 113.

[https://digitalcommons.otterbein.edu/stu\\_msn/113](https://digitalcommons.otterbein.edu/stu_msn/113)

This Project is brought to you for free and open access by the Student Research & Creative Work at Digital Commons @ Otterbein. It has been accepted for inclusion in Nursing Student Class Projects (Formerly MSN) by an authorized administrator of Digital Commons @ Otterbein. For more information, please contact [digitalcommons07@otterbein.edu](mailto:digitalcommons07@otterbein.edu).



# Sepsis & Emergency Management

Sharon Herndon, RN, BSN

Otterbein University, Westerville, Ohio

## Introduction

Sepsis is a potentially life-threatening complication of an infection and a leading cause of death in the United States (Cawcutt & Peters, 2014). Sepsis is a systemic inflammatory response syndrome (SIRS) to invading microorganisms. Sager, Al-Qaui, and Kim (2013) define sepsis in three categories. "Sepsis" would be defined as the presence of infection along with other general systemic signs and symptoms. "Severe Sepsis" would be defined as sepsis complicated by at least one organ dysfunction, and "Septic Shock" would be defined as severe sepsis with acute circulatory failure that may be characterized by persistent arterial hypotension unexplained by other causes. Pneumonia is the most common cause, accounting for about half of all cases followed by intraabdominal and urinary tract infections (Angus & Vander Poll, 2013). According to new sepsis guidelines, early diagnosis and treatment are keys to improve survival (Pizzolatto, Ulla, Galluzzo, Lucchiari, Manetta, Lupia, Mengozzi, and Battista, 2014). Pathophysiology of sepsis which involves three mechanisms of SIRS: 1) the pro-inflammatory response, 2) failure of the compensatory anti-inflammatory response, and 3) immunoparalysis. As well as the three phases of SIRS: 1) release of bacterial toxins, 2) release of mediators, and 3) effects of excessive specific mediators (Sager et al. 2013).

The purpose of this report is to bring awareness to first responders, emergency room (ER) nurses. Like myocardial infarction and stroke have been recognized as critical outcomes for their conditions, so also should sepsis. In order to screen a large volume of ER patients for sepsis in a timely manner, personnel require a high index of suspicion and an effective screening mechanism. Triage education and tools, such as sepsis posters and triage checklists, are needed to identify patients with severe sepsis or septic shock (Sweet, Marsden, Ho, Krause, and Russell, 2012). Every clinician should have a basic understanding of the incidence, clinical features, and treatment of sepsis, particularly given the rising incidence and the mortality benefit of early treatment (Cawcutt and Peters, 2014). Think, treat, stop sepsis is a new way to think about sepsis (kbimage, 2015).

**THINK  
TREAT  
STOP!**  
sepsis

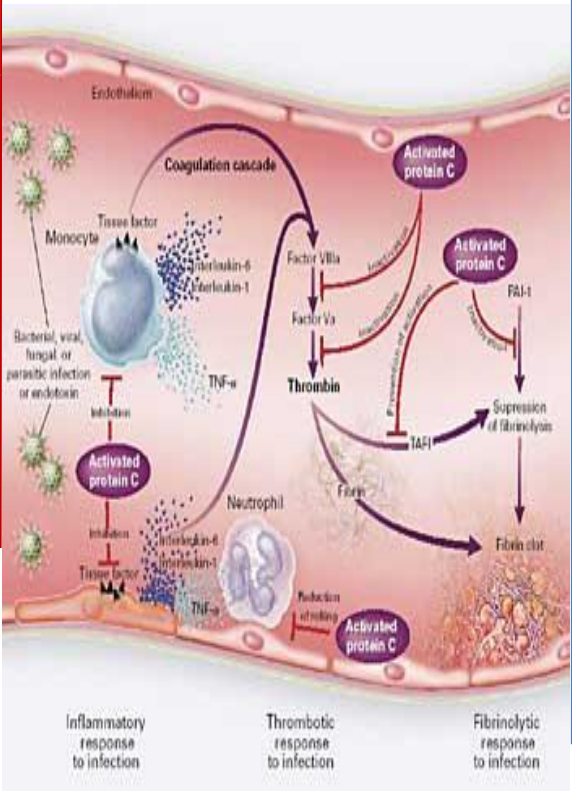
## Pathophysiological Process

SIRS pathophysiology is complex and multifactorial but can be explained in three mechanisms all of which release mediators that result in systemic inflammatory response

- The pro-inflammatory response
  - Failure of the compensatory anti-inflammatory response to act
  - Immunoparalysis
- There are three phases of inflammatory response
- Release of bacterial toxins
  - Release of mediators in response to infections which include pro-inflammatory cytokines and anti-inflammatory cytokines
  - The effects of specific mediators (Sager et al.2013).

An imbalance exists between excessive pro-inflammatory responses resulting in SIRS. At the same time an excessive compensatory anti-inflammatory reaction (CARS) results in inappropriate immunosuppression. Multiorgan dysfunction occurs when there is an imbalance between SIRS and CARS and homeostasis is violated (Sager et al. 2013). The figure below shows inflammatory, thrombotic, and fibrinolytic responses to infection (kbimage,2015).

## Inflammatory Responses



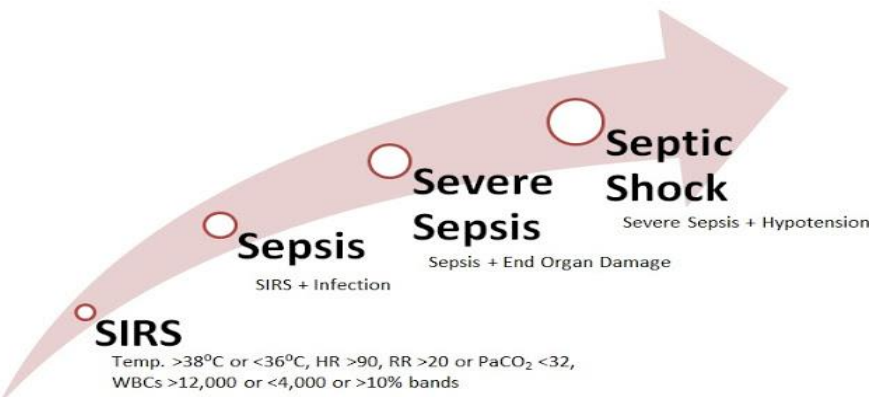
**RECOGNISE • RESUSCITATE • REFER**

## SEPSIS

Signs and symptoms

SIRS = Meet 2 of the following 4:

- Temperature >38°C or <36°C
- Heart rate of >90 beats/min
- Respiratory rate of >20 breaths/min
- WBC count of >12,000 cells/ml



The images above (kbimage, 2015) imply how early recognition and diagnosis are critical to properly managing sepsis. As initiation of early goal directed therapy and protocols are put in motion mortality rates from severe sepsis are reduced. THINK SEPSIS.

## Significance

Millions of patients are seen for sepsis yearly, initiatives working to reduce mortality rates have gained attention because other the success has been poor. The study by Harrison, Thongprayoon, Kashyap, Chute, Gajic, Pickering, and Herasevich (2015) attempts to determine the delay in early recognition and treatment of sepsis by analyzing collected patient data, orders, and nursing interventions. Equipping nurses with the proper tools allows effective analysis and increases critical thinking. The gathering of information, analysis, and forming an appropriate potential diagnosis is fundamental in critical thinking in the ED. Working with the first responders, ED nurses are key to early recognition of sepsis.

## Nursing Implications

Many patients are seen daily in the ED. Triage nurses play a vital role in early recognition of sepsis. Assigning an acuity and appropriate protocols for illness are imperative in early recognition and treatment for sepsis. When a patient meets two of the SIRS criteria in the ED, immediate actions should be initiated.

Sepsis protocols:

- Immediate physician notification
- Two large bore intravenous accesses
- Blood cultures and lab draws
- Fluid resuscitation
- Antibiotic therapy

Excellent nursing care includes completing all protocol orders in a timely manner. Every clinician should have a basic understanding of the incidence, clinical features, and treatment of sepsis, particularly given the rising incidence and the mortality benefit of early treatment (Cawcutt and Peters, 2014).

## Conclusion

The causes of sepsis are multifactorial but can include virtually any infectious organism (Remick, 2007). Early recognition of sepsis is not always straightforward and clinical signs at presentation can be misleading, especially in patients presenting to the ED, due to frequent comorbidities or variable demographic characteristics (Pizzolatto et al. 2014). Nurses critically thinking while following the nursing process will only warrant success in early recognition of sepsis in the ED.

## References

- Angus, D.C. & Van der Poll, T. (2013). Severe sepsis and septic shock. The New England Journal of Medicine, 369, 840-851. doi: 10.1056/NEJMr1208623
- Cawcutt, K. A., & Peters, S. G. (2014). Severe sepsis and septic shock: clinical overview and update on management. Mayo Clinic Proceedings, 89(11), 1572-1578. doi:10.1016/j.mayocp.2014.07.009
- Harrison, A. M., Thongprayoon, C., Kashyap, R., Chute, C. G., Gajic, O., Pickering, B. W., & Herasevich, V. (2015). Developing the surveillance algorithm for detection of failure to recognize and treat severe sepsis. Mayo Clinic Proceedings, 90(2), 166-175. doi:10.1016/j.mayocp.2014.11.014
- Inflammatory responses. (n.d.). Retrieved from: <http://www.imagekb.com/sepsis>
- Internalized Medicine (2012). Defining systemic inflammatory response syndrome (SIRS) and sepsis criteria. Retrieved from: <http://www.internalizedmedicine.com/2012/02/defining-systemic-inflammatory-response-syndrome-sirs-and-sepsis-criteria.html>
- Short, M. (2004). Linking the sepsis triad of inflammation, coagulation, and suppressed fibrinolysis to infants. Advanced Neonatal Care, 2004;4(5) Retrieved from: [http://www.medscape.com/viewarticle/493246\\_4](http://www.medscape.com/viewarticle/493246_4)
- Pizzolatto, E., Ulla, M., Galluzzo, C., Lucchiari, M., Manetta, T., Lupia, E., & Battista, S (2014). Role of presepsin for the evaluation of sepsis in the emergency department. Clinical Chemistry and Laboratory Medicine: CCLM / FESCC, 52(10), 1395-1400. doi: 10.1515/cclm-2014-0199
- Remick, D. G. (2007). Biological Perspectives: Pathophysiology of sepsis. The American Journal of Pathology, 1701435-1444. doi:10.2353/ajpath.2007.060872
- Sager, M., Al-Qaia, Y., & Kim, P. (2013). Definitions and pathophysiology of sepsis. Current Problems in Pediatric and Adolescent Health Care, 43(Diagnosis and Management of Pediatric Sepsis and Septic Shock), 260-263. doi:10.1016/j.cppeds.2013.10.00
- Short, M. (2004). Linking the sepsis triad of inflammation, coagulation, and suppressed fibrinolysis to infants. Retrieved from: [http://www.medscape.com/viewarticle/493246\\_4](http://www.medscape.com/viewarticle/493246_4)
- Sweet, D., Marsden, J., Ho, K., Krause, C., & Russell, J. A. (2012). Emergency management of sepsis: The simple stuff saves lives. British Columbia Medical Journal, 54(4), 176-182.