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Sepsis –Who Cares?

Monika Rajani[1], Yash Javeri[2*], Chand Wattal[3], BK Rao[4], Pallab Ray[5], P Senthur Nambi[6] and Jaswinder Kaur Oberoi[7]

[1] Monika Rajani, Assistant Professor-Career Institute of Medical Sciences and Hospital, IIM road, Lucknow, UP-India

[2]Yash Javeri, Convener - Indian Sepsis Forum, Director- Apex Healthcare Consortium – Delhi, India ,Healthcare Consultancy Services

[3] Chand Wattal, MD Chairman & Hony Senior Consultant Dept of Clinical Microbiology & Immunology GRIPMER Sir Ganga Ram Hospital

[4]BK Rao,Chairman and Senior Consultant,Dept of Critical Care and Emergency Medicine,SIr Ganga Ram Hospital,New Delhi, India

[5]Pallab Ray, MD, Dip NB,Professor,Department of Medical Microbiology,PGIMER, Chandigarh, India.

[6] P Senthur Nambi, MD, FNBConsultant Infectious Diseases,Apollo Hospitals, Chennai,India

[7]Jaswinder Kaur Oberoi,Senior Consultant,Dept of Clinical Microbiology & Immunology,Sir Ganga Ram Hospital ,New Delhi, India

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***Corresponding author:** Dr. Yash Javeri, Convener, Indian Sepsis Forum, Director Apex Healthcare Consortium, Healthcare Consultancy Services, Delhi, India. Tel: +91-9818716943;E-mail: dryashjaveri@yahoo.com*

Abstract

Sepsis continues to have high morbidity and mortality despite better understanding of pathobiology. Definition of sepsis still lacks clarity. There is ever increasing demand and need for an easily deployable and more consistent definition.Microbiological, anatomical and physiological [MAP] diagnosis of sepsis renders completeness to diagnosis. Sepsis is now recognized as a medical emergency where timely care can improve outcomes. There are multiple stakeholders in clinical management of sepsis patients. We need consolidated and uniformly binding treatment plans for optimizing outcomes. Early recognition and diagnosis requires triggers from clinical data and laboratory. Team based approach has shown consistent improvement in delivery of care. Sepsis code focuses on faster and reliable mobilization of resources to provide early intervention. Sepsis code and sepsis clock are proven models to improve care process. The assessment and management is done as per surviving sepsis campaign guidelines. Quality parameters in sepsis management should be followed. Certification, audit and quality parameters relevant to sepsis care should be rolled out for units. Training and education for sepsis diagnosis and management requires interdisciplinary efforts. Advance sepsis management courses and other relevant modules need to be drafted for training guidelines. The sepsis campaign needs to be strengthened with involvement of all stakeholders at every level.

Keywords: Sepsis; Septic Definition; Code Sepsis; Sepsis Clock; MAP Sepsis

Introduction

The concept of sepsis recognition has evolved and now it's dealt as a medical emergency. The concept is being rebuilt. There has been a paradigm change in defining and recognizing sepsis. [1] Sepsis causes huge morbidity and mortality in critically ill patients. This is often independent of primary diagnosis. The disease remains a neglected disease. There is confusion surrounding diagnosis and management strategies. [2] Stakeholders in sepsis management are many which often lead to varied opinions and confused treatment strategies. Multiple specialties are involved in care of sepsis patient. Resource utilization and cost of care is high. [3] We need consolidated and uniformly binding treatment plans for optimizing outcomes.

Why Do We Care?

Sepsis causes morbidity and mortality across all healthcare settings. The clinical course varies from outpatient to critical care setting. Early recognition is must at all levels from outpatient to emergency medicine. Swift and protocolised evidence based care process can modify the outcomes favorably. [4] Seriously ill septic patients require comprehensive care plans and consolidated efforts. [5] We have appropriate understanding and right tools to intervene in fight against sepsis. We have the ability to save lives by using the appropriate tools to recognize and treat sepsis. [6] We as intensivist often face the wrath of sepsis across all patient subtypes. Hospital and ICU mortality attributed to sepsis remains high. Intensivist has right understanding, skill set, knowledge and passion to treat seriously ill septic patients. The ownership of sepsis patients largely lie with the critical care specialty. Multiple specialties are involved in recognition and diagnosis of sepsis. Emergency physicians, microbiologist, intensivist, Infectious disease, medical and surgical specialist are stakeholders in sepsis management. [7] (Figure 1)

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Sepsis Definition

Sepsis is difficult to define. Sepsis is a dynamic process. Although, we have some understanding on sepsis for more than 2000 years, the understanding is still evolving. Clinicians often struggle to identify sepsis easily. [8] Classic cases of florid sepsis are easy to identify. But more common are cases of sepsis where diagnosis is not obvious and is often confounded and overlapped. There is ever increasing demand and need for an easily deployable and more consistent definition. The pathobiology of sepsis is evolving with bigger knowledge base. [9] No clear criteria still exist for defining sepsis and clinicians face vagueness in diagnosing sepsis. Lack of a specific biomarker for diagnosis of sepsis further makes diagnosis difficult. Definition of sepsis has been changing over decades. Variables involved in definition of sepsis are also variable. Sepsis is better understood as a syndrome. To define sepsis we must first know the purpose problem. Definition could be utilized for clinical diagnosis, basic research, quality and audit, surveillance and lab research. Different criteria yield different results depending on the context and criteria incorporated. [10] Classification of sepsis needs to be compartmentalized. Ideal disease classification there is discrete sets and very few variables in between. Clinicians need convenience of assigning a label. We understand that there is not one purpose for classifying sepsis. It's unrealistic to have a single gold-standard definition of sepsis. Different populations the definition goals and purpose are different. [10]

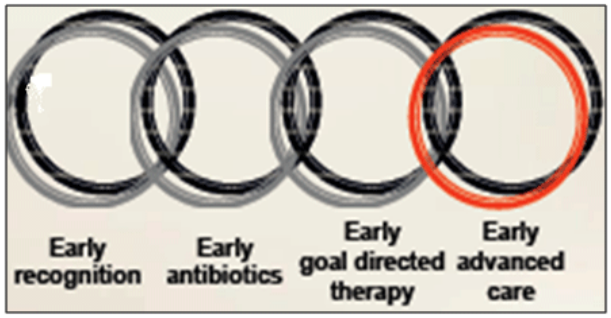

Figure 1: Sepsis -chain of events

MAP Sepsis – Microbiological, Anatomical and Physiological Diagnosis

Diagnosis of sepsis is not the end, it's just the beginning. We propose Sepsis MAP which provides complete diagnosis with microbiological, anatomical and physiological status of patient. Care provider should make every effort to make a complete diagnosis. [11] Quality managers, clinicians and auditors should put every effort to make a complete diagnosis of sepsis which is later reviewed and audited. Site of infection should be part of initial diagnosis. [6] Complete diagnosis of sepsis should follow. [12] Disease classification and coding of sepsis should be proper.

Sepsis Code

Sepsis is life-threatening organ dysfunction caused by a deregulated host response to infection. [1] Organ behavior is a time function. early targeted interventions provides significant benefits with respect to outcome in patients with severe sepsis and septic shock. Traditional; method of calling a code is complex and time consuming. Sepsis triggers can be incorporated in conventional MET triggers. [13] q SOFA (Quick SOFA) score can easily be incorporated as a MET trigger. [14] Computerized sepsis code generation is also possible. [15] Often, the diagnosis is unclear with many confounders. The simple question needs to be asked – Could it be sepsis?

Septic shock is a subset of sepsis in which profound circulatory, cellular and metabolic abnormalities are associated with a greater risk of mortality than with sepsis alone. [1] Team based approach has shown consistent improvement in delivery of care. [13] This applies to code sepsis also. Emergency department (ED) based strategies, Rapid response Team (RRT) based strategies and critical care based strategies should be implemented in bigger setups. [16,17]

Code Sepsis Creates a Team Response

Code Sepsis will be paged overhead with inputs from frontline healthcare provider. [16] The responders are expected to reach and respond in a time bound manner. The response time is documented and audited. [17,18] Responders include intensivist / pediatric intensivist as the team leader. Emergency physician could also lead the team. Critical care nurse manager, house supervisor and admitting consultant are other team members. Infectious disease physician and infection control nurse could be part of the team. Simultaneously an alert goes to the microbiologist. Sepsis coordinator can be an optional member who will focus on reviewing the care process in sepsis and septic shock patients including identification and rectifications on missed opportunities. They shall provide follow up to sepsis program directors and ICU directors on unit performance related to sepsis. [16] The assessment and management is done as per surviving sepsis campaign guidelines. [6]

Why code sepsis?

Sepsis patients are everywhere. It could be diagnosed from community or from inpatient departments. The diagnosis is often missed and delayed. Early recognition is needed for early intervention. [16] Early team response helps deliver early advanced care in critically ill septic patients. [14] Early specialist care with inputs from infectious disease, critical care medicine, radiology, medical and surgical specialist may be required. A strategy for sepsis recognition and management focuses on faster and reliable mobilization of resources to provide early intervention. [15,16]

Sepsis Clock

We are racing against a clock when treating sepsis. Time bound diagnosis, resuscitation and advance care has improved outcomes in sepsis. Early and swift time bound response is needed to optimise outcomes in sepsis. [18] This suggests need for strict timelines from time of suspicion or diagnosis of sepsis. Time zero will always be when the chart annotation suggests signs and symptoms are all present .It might be picked from nursing charts,

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lab flow sheets, and physician documentation, anything with a time stamp. This will equal triage time if all signs and symptoms are present at triage. Severe Sepsis and Septic Shock had three hour and six hour counters earlier. [19]

Have we done enough for sepsis?

Sepsis remains biggest killer across the specialties globally. [21] Little has been done for awareness and for structured training. [22] We need to have structured training modules as in trauma training. Advocacy and help groups have a huge role to play. Advance sepsis management courses and other relevant interdisciplinary groups need to draft training guidelines. [6] Certification, audit and quality parameters relevant to sepsis care should be rolled out for units. Specialist like intensivist should take lead in clinical management and training. Online resources should be judiciously utilized for training and public awareness. [23]

Industry partnership should be sought for education and research. Industry is seen shying away from clinical research in sepsis for various reasons. Sepsis is often regarded as graveyard of clinical research. [24]Their interest should be regenerated. Researchers should work on surrogate end points and revised achievable targets with therapeutic interventions. [25,26]

Conclusion

Sepsis continues to have a high morbidity and mortality. There is still ambiguity in diagnosis of sepsis. Diagnostic uncertainty delays the management. Sepsis recognition and management needs to be emphasized to all healthcare providers. Clinical lead should be there from involved specialties. Interdisciplinary educational and working groups should be formulated. Sepsis campaign should involve all stakeholders at every level.

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