

The Changing Epidemiology and Definitions of Sepsis



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KEYWORDS

• Sepsis • Severe sepsis • Septic shock • Epidemiology

KEY POINTS

- In the epidemiology of sepsis in the United States, different case definitions have produced varied results, with recent estimates of an average annual age-adjusted incidence between approximately 300 to 1000 sepsis cases per 100,000 persons. Estimates consistently show trends toward an increasing incidence in sepsis with a decreasing case fatality.
- In the United States and globally, respiratory tract infections are consistently the most common source of sepsis although there is more variability in the microbiological distribution of common pathogens.
- Although evidence regarding the epidemiology of sepsis in developing countries is scarce, they seem to have 3-fold to 4-fold increased incidence of mortality from sepsis-related infections.
- Although data for longitudinal risk factors for sepsis are lacking, in the United States this syndrome disproportionately affects the very young and old, males, blacks, and the southeastern states.

INTRODUCTION

Although the first written description of the sepsis syndrome appears in an Egyptian papyrus circa 1600 BC, the origin of the term sepsis comes from the Ancient Greek word *sêpsis*, which means putrefaction or the decay of organic matter.^{1,2} The Greek word is first encountered in Homer's *Iliad* and was also used in the Hippocratic corpus in the fourth century BC.² More than 2000 years passed before humankind first considered the causes and prevention of this syndrome. In the nineteenth century, Hungarian obstetrician Ignaz Semmelweis recognized that physician handwashing drastically decreased the incidence of puerperal sepsis on the maternity ward.² Although Semmelweis' theories were rejected during his lifetime, they were later unknowingly validated by Louis Pasteur and Robert Koch, whose works gave birth to the germ

theory of infectious diseases² (Fig. 1). This pivotal achievement paved the way for further developments in defining the spectrum of sepsis syndromes and studying their impact on human life, which is summarized in this article.

The following overview of the modern epidemiology of sepsis begins with discussion of the recent epidemiology of sepsis in the United States (US) and globally, followed by a review of the literature on the associated risk factors for sepsis, and ends with a discussion of the clinical utility of current definitions of sepsis and future directions in the field.

UNITED STATES TRENDS IN INCIDENCE AND MORTALITY FROM SEPSIS

The epidemiology of sepsis in the US has been primarily based on studies using large, administrative

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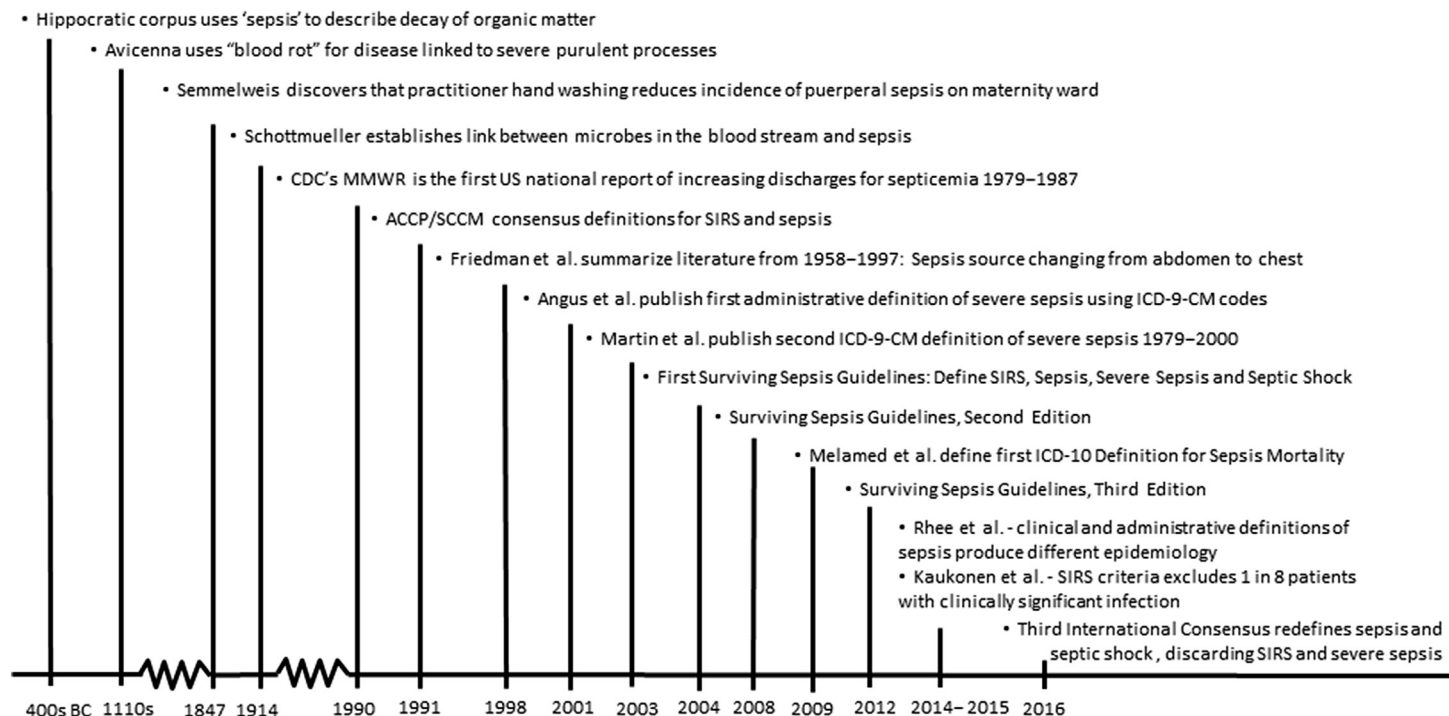


Fig. 1. Abbreviated timeline of the conceptual definition of sepsis. 9-CM, Ninth Revision, Clinical Modification; ACCP/SCCM, American College of Chest Physicians and the Society of Critical Care Medicine; CDC, Centers for Disease Control and Prevention; ICD, International Classification of Diseases; MMWR, morbidity and mortality weekly report; SIRS, systemic inflammatory response syndrome.

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