Sepsis has a higher incidence of hospital stays and poorer morbidity and mortality outcomes in patients with cancer. The development of infection in weakened immune systems and prolonged treatment courses increase the risk for sepsis in patients with cancer. The causes of infection that can lead to sepsis in patients with cancer are further complicated by disease- or therapy-related neutropenia. Early recognition of sepsis is critical for prompt treatment to prevent tissue damage, organ failure, and mortality. The Surviving Sepsis Campaign recommends the Hour-1 bundle as best practice for sepsis management.

AT A GLANCE

- Sepsis has been redefined as a life-threatening organ dysfunction and dysregulated host response to infection.
- According to the Hour-1 bundle, early recognition of sepsis includes the administration of antibiotic therapy.
- Oncology nurses are essential to the early recognition of sepsis and educating patients on how to prevent cancer-related infection.

KEYWORDS
sepsis; cancer-related infection; Hour-1 sepsis bundle; symptom management

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Sepsis

Symptoms, assessment, diagnosis, and the Hour-1 bundle in patients with cancer

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Sepsis, which is defined as a "life-threatening organ dysfunction caused by a dysregulated host response to infection" (Singer et al., 2016, p. 804), is a result of the role of early inflammatory responses and associated system responses. Patients with cancer are at a higher risk for sepsis, with an estimated 60,000 patients hospitalized annually because of neutropenia, which can lead to infection (Centers for Disease Control and Prevention [CDC], 2019b). The Surviving Sepsis Campaign, which was initiated by the Society of Critical Care Medicine ([SCCM], 2019a) and the European Society of Intensive Care Medicine (ESICM) in 2002, aims to reduce the incidence of sepsis by 25% overall and recommends the use of clinical guidelines to improve quality of patient care.

Definitions

The 2016 SCCM/ESICM evaluation of criteria task force redefined the criteria for and definitions of sepsis, termed sepsis-3 (Rhodes et al., 2017). Previous recommendations, which defined sepsis and the critical criteria for identification using the Systematic Inflammatory Response Syndrome criteria (sepsis-1), were changed in sepsis-3 to using the quick Sequential (sepsis-related) Organ Failure Assessment (qSOFA) score for easier identification of organ dysfunction. The qSOFA score is determined by a systolic blood pressure of less than or equal to 100 mmHg (1 point), a respiratory rate greater than or equal to 22 breaths per minute (1 point), an altered mental status with a Glasgow coma scale less than 15 (1 point), with a score greater than or equal to 2 indicating sepsis. Septic shock has also been redefined in sepsis-3 as a subset of sepsis with circulatory and cellular/metabolic dysfunction that is associated with a higher risk of mortality than with sepsis alone (Singer et al., 2016). Sepsis has further evolved to examine biological markers (Kwan, Hubank, Rashid, Klein, & Peters, 2013) and individual factors, based on age (65 years or older), gender, and medical morbidities (e.g., cancer, diabetes, renal failure), as well as the presence of coagulopathy and intracellular stress changes (Iskander et al., 2013).

Sepsis in Patients With Cancer

Because of the complications associated with severe sepsis from immunosuppression related to prolonged and aggressive treatments, patients with cancer have a higher risk for mortality from sepsis (Rosolem et al. 2012). Patients with solid tumors can develop infections from medical devices, such as stents or catheters, venous access devices (e.g., central lines, port-a-caths), or clinical syndromes (e.g., enterocolitis) (Rolston, 2017). Hematologic malignancies, such as leukemia, lymphoma, and myelodysplastic syndrome, increase a patient's susceptibility to infection because of leukopenia from bone marrow infiltration and dysfunction (National Comprehensive Cancer Network [NCCN], 2019).

Respiratory infections, such as pneumonia, are the primary cause of sepsis. The epidemiology for sepsis frequently involves gram–positive (e.g., *Staphylococcus*