Hospital Sepsis Program
Core Elements: 2023



U.S. DEPARTMENT OF
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The Core Elements are intended to build upon the work of a number of initiatives related to sepsis that have been developed over the years. To find the most updated links to some practical resources that can help hospitals improve specific aspects of their sepsis programs, please visit **https://www.cdc.gov/sepsis/core-elements/resources.html**.

Introduction

The burden of sepsis

Sepsis is defined as "life-threatening organ dysfunction caused by a dysregulated host response to infection."[1] While sepsis is often attributed to bacterial infections, sepsis may result from infections of any etiology, including viral infections such as COVID-19. Sepsis is a leading cause of hospitalization and hospital mortality[2] contributing to over a third of all hospital deaths.[3,4] In the United States (U.S.), there are an estimated 1.7 million adult sepsis hospitalizations annually, of which 350,000 result in hospital death or discharge to hospice.[5] Beyond being a major driver of hospital mortality, sepsis also contributes to incident disability.[6] Patients who survive hospitalization for sepsis are at increased risk for negative health outcomes, including the development of new morbidity, inability to return to work, hospital readmission, and death.[7-9] Due to the burden of morbidity and mortality from sepsis, the World Health Organization recognized sepsis as a global health priority in 2017.[10] Despite the burden of sepsis and importance of early treatment, community knowledge of sepsis remains low.[11]

Who is the Hospital Sepsis Program Core Elements guidance for?

Clinicians, hospitals, and health systems leading efforts to improve the hospital management and outcomes of sepsis.

Effective leadership is required to engage the multidisciplinary expertise required to support the care of patients with sepsis, as detailed later in this document.

Efforts to improve sepsis identification, management, and outcomes

There have been many initiatives to improve the identification, management, and outcomes of sepsis over the past two decades. The Surviving Sepsis Campaign first published international guidelines for the management of sepsis in 2004,[12] and has issued updates to these guidelines every four years.[13] Dedicated pediatric guidelines were added in 2020.[14,15] More recent updates to the guidelines have used the GRADE approach to assess the quality of the evidence and formulate recommendations using an "evidence-to-decision framework" that takes into account not only the magnitude of effect and quality of evidence, but also patient values, resources and cost, equity, acceptability, and feasibility.[16-19] Large-scale quality improvement and state-based regulatory initiatives (e.g., New York State Department of Health's "Rory's Regulations") focused on recognition and early management of sepsis have been associated with reductions in-hospital mortality.[20-24] The Centers for Medicare & Medicaid Services (CMS) Severe Sepsis and Septic Shock: Management Bundle (SEP-1) has further emphasized the importance of early sepsis management in U.S. hospitals. Recently, there has been growing interest in and use of clinical decision support to facilitate sepsis recognition and treatment,[25,26] although more work is needed to improve the accuracy, usability, and clinical impact of clinical decision support for sepsis.[25,27-31]

The challenges of implementing sepsis care

Despite the availability of evidence-based guidelines for sepsis, success of several large-scale quality improvement initiatives, and growing interest in clinical decision support, much

work remains to ensure optimal sepsis care in hospitals. Sepsis is a complex condition that requires care to be coordinated across multiple clinical care locations and disciplines, and to be tailored to specific infections and clinical presentations. Ethnographic studies demonstrate that the implementation of seemingly simple sepsis bundles "involve[s] a complex trajectory comprising multiple interdependent tasks that require prioritization and scheduling, and which are prone to problems of coordination and operational failures."[32] Five factors were identified as critical for improving the delivery of recommended sepsis practices: (1) healthcare staff knowing what to do and why, (2) healthcare staff understanding risks and benefits of treatments, (3) healthcare staff having strong team collaboration, (4) healthcare staff feeling empowered and supported, and (5) hospitals having adequate staffing.[33] Beyond the challenges of coordinating multi-disciplinary care, the best practices for sepsis treatment continue to evolve. Many guideline statements are based on weak evidence, such that guidance may change as more evidence is accrued.[16] Given this landscape, hospitals must have processes in place to implement recommended sepsis practices and also evolve practice over time in response to accruing evidence.

The purpose of the hospital sepsis program core elements

This document summarizes Core Elements of hospital sepsis programs, which are intended to monitor and optimize hospital management and outcomes of sepsis. It complements existing sepsis guidelines[14,18,19,34,35] and helps facilitate implementation of guideline-recommended care practices that apply to a broad range of persons with sepsis, including adults, children, and women who are pregnant or postpartum. There is no single template for a hospital sepsis program. Rather, the complexity of medical decision-making in identification and management of sepsis, and the variability of sepsis epidemiology and patient populations served by hospitals in the U.S. require flexibility in the structure of hospital sepsis programs and the implementation of sepsis care. However, sepsis programs can be implemented effectively in a wide variety of hospitals and healthcare systems, and this guidance lays out key features of effective programs.[36] The guidance is informed by expert knowledge, examination of peer-reviewed literature, and extrapolation from the features of effective quality improvement programs addressing sepsis and other conditions.

Summary of the Hospital Sepsis Program Core Elements

The development of a multi-disciplinary hospital sepsis program is critical to monitoring and improving the management and outcomes of patients with sepsis. Hospital quality improvement programs focused on sepsis have been associated with reductions in hospital mortality, length of stay, and healthcare costs.[37-39]

The structure of hospital sepsis programs may be specific to a single hospital or span an entire healthcare system. Likewise, programs may focus on sepsis specifically or may be part of a broader initiative that addresses multiple areas of quality improvement. Regardless of the structure of the hospital sepsis program, it should help healthcare staff improve outcomes from sepsis by aiding in the recognition of sepsis, facilitating the implementation of evidence-based management of sepsis, supporting the recovery of patients after sepsis, and monitoring the impact of hospital-based interventions to improve care and outcomes of sepsis.

For each Core Element, "Priority Examples" are provided as the top priorities for hospital sepsis programs, and "Additional Examples" are additional important recommendations that can further enhance these programs. For programs that are new or are reorganizing, the "Getting Started" box may be helpful for prioritizing initial activities.

Hospital Sepsis Program Core Elements



Hospital Leadership Commitment

Dedicating the necessary human, financial, and information technology resources.



Accountability

Appointing a leader or co-leaders responsible for program goals and outcomes.



Multi-Professional Expertise

Engaging key partners throughout the hospital and healthcare system.



Action

Implementing structures and processes to improve the identification of, management of, and recovery from sepsis.



Tracking

Measuring sepsis epidemiology, management, and outcomes to assess the impact of sepsis initiatives and progress toward program goals.



Reporting

Providing information on sepsis management and outcomes to relevant partners.



Education

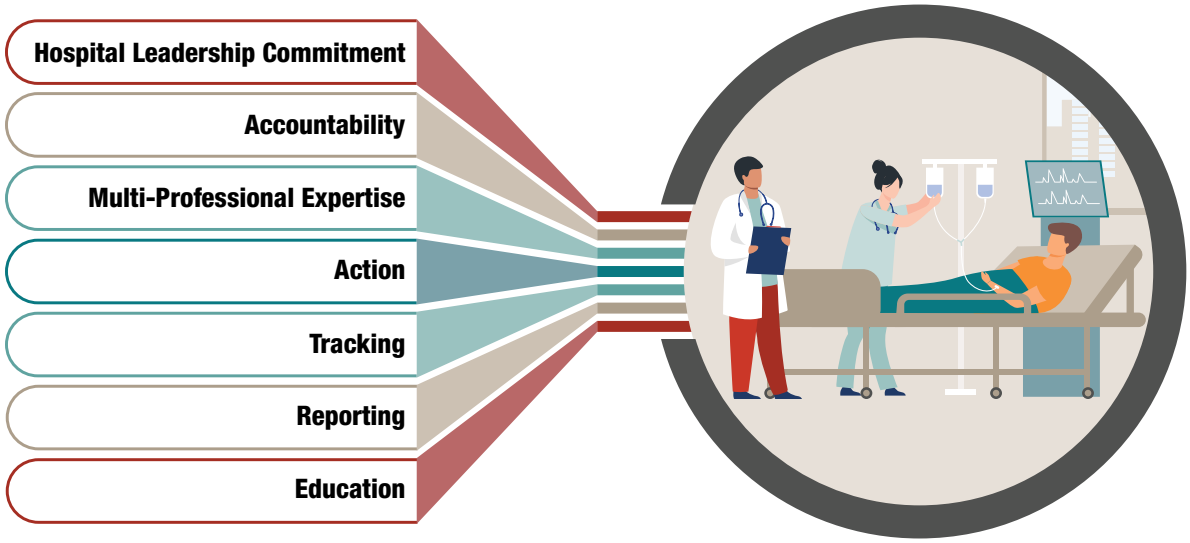
Providing sepsis education to healthcare professionals, patients, and family/caregivers.

Getting Started

For hospitals or healthcare systems just starting a sepsis program or those with limited resources, it may be most efficient to address the following steps first:

- Identify the sepsis program leader or co-leaders.
- Secure support from hospital or healthcare system leadership.
- Conduct a needs analysis to identify applicable regulatory or reporting requirements (e.g., Centers for Medicare & Medicaid Services [CMS] Severe Sepsis and Septic Shock: Management Bundle [SEP-1]), existing sepsis screening processes, treatment guidelines, and order sets. Obtain summary data on regulatory performance and use of sepsis screening tools and order sets to identify areas in need of improvement.
- Establish initial goals for sepsis program based on needs analysis.

Figure: Hospital Sepsis Program Core Elements



Hospital Leadership Commitment

Support from hospital and health system leadership, especially that of the chief medical and chief nursing officers, is critical to the success of hospital sepsis programs.[40,41] Barriers to successful hospital sepsis programs include lack of engagement from hospital clinicians and staff and insufficient resources to effectively run the hospital sepsis program (e.g., lack of personnel, lack of analytic support, or insufficient time for sepsis activities). By setting sepsis performance improvement as a priority and allocating necessary resources to the program, hospital leadership can help ensure that sepsis programs have the engagement and resources necessary to accomplish their goals.

Priority examples of leadership commitment include:

- Providing the sepsis program leader(s) with dedicated time to manage the hospital sepsis program and to participate in sepsis-related performance evaluation and improvement activities. The amount of time required will vary depending on the type and size of hospital or healthcare system, but meaningful dedicated effort is required rather than volunteer service.
- Providing resources, including data analytics and information technology support, to operate the program effectively. Analytic and information technology support services may be provided by third party vendors, contracted personnel, or at the system level if expertise is not available in the hospital.
- Ensuring that relevant staff from key clinical groups and support departments have sufficient time to contribute to sepsis activities.
- Appointing a senior administrator (e.g., Chief Clinical Officer, Chief Medical Officer, or Chief Nursing Officer) to serve as an executive sponsor for the sepsis program to ensure the program has the resources and support needed to accomplish its mission.
- Identifying sepsis as a hospital priority and communicating this priority to hospital staff.

Antibiotic Stewardship and Sepsis

There have been some misperceptions that antibiotic stewardship may hinder efforts to improve management of sepsis. However, rather than hindering effective patient care, antibiotic stewardship programs can play an important role in optimizing the use of antibiotics, leading to better patient outcomes. It is possible for hospitals to make simultaneous improvements in sepsis management and antimicrobial stewardship.[42]

Additional examples of leadership commitment include:

- Communicating to hospital staff and patients how the hospital is addressing sepsis.
- Having regular meetings with leaders of the sepsis program to assess the resources needed to accomplish the hospital's goals for sepsis activities and outcomes.
- Integrating sepsis activities into other quality improvement and patient safety efforts, such as emergency department (ED) triage, antimicrobial stewardship, transitions of care, and CMS Severe Sepsis and Septic Shock: Management Bundle (SEP-1) reporting.

- Tying staff performance incentives to the achievement of targets for sepsis care and/or outcomes.
- Including sepsis program-related duties in job descriptions or performance reviews for program leaders and key support staff.
- Supporting external training and education for program leaders and key support staff (e.g., attendance at sepsis meetings and quality improvement trainings).
- Supporting internal training and education on sepsis for hospital staff and trainees.
- Supporting participation in regional, national, and international sepsis quality improvement collaboratives and initiatives.



Accountability

Hospital sepsis programs should have one leader or two co-leaders who are accountable for program management and outcomes within the hospital or healthcare system. Sepsis programs co-led by a physician and a nurse are strongly recommended. Effective leadership, management, and communication skills, as well as clinical expertise in sepsis, are essential to success. Programs with co-leaders should have clear delineation of responsibilities and expectations. For health system-wide programs, physician and nurse champions or point-persons should be identified at each hospital, as local champions are consistently identified as key facilitators to successful quality improvement programs.[41] In addition, hospital sepsis programs must set concrete goals to improve sepsis care and outcomes, monitor progress towards these goals, and revise goals at regular intervals.

Priority examples of accountability include:

- Identifying a single clinician leader or two co-leaders who will be responsible for sepsis program management and patient outcomes. Sepsis programs co-led by a physician and a nurse are strongly recommended.
- Setting ambitious—but achievable—goals for improving sepsis care and patient outcomes that are informed by review of hospital practices, hospital sepsis outcomes, and clinical practice guidelines.
- Assessing progress towards hospital sepsis goals at regular intervals and updating goals periodically (e.g., annually) to promote continual improvement.
- Identifying a physician and nurse leader or champion at each hospital to ensure physician and nursing engagement in the sepsis program.
    - In hospitals with a healthcare system-wide sepsis program, appoint a physician and nurse champion at each hospital.
    - In hospitals with a single leader of the sepsis program, appoint a champion of the other discipline.

Additional examples of accountability include:

- Including sepsis program-related activities and outcomes in annual performance reviews for sepsis program leaders.
- Identifying unit-level physician and nurse champions.
- Reporting sepsis program activities and outcomes to senior hospital leadership and/or board of directors on a regular basis (e.g., including sepsis measures in hospital quality dashboard reports).



Multi-Professional Expertise

Sepsis programs require engagement of multidisciplinary partners throughout the hospital, including clinicians and healthcare staff who support the care of patients with sepsis throughout the organization; individuals who facilitate performance evaluation and improvement activities (e.g., data analytics, information technology); and patients, family members, and caregivers who can provide insight into the experience of being hospitalized with and recovering from sepsis. Dedicated sepsis coordinators can greatly increase the effectiveness of the hospital sepsis program by contributing to action, tracking/reporting, and education activities.

Priority examples of multi-professional expertise include:

- Having a dedicated sepsis coordinator: Hospital sepsis coordinators oversee the day-to-day implementation of the sepsis program activities. The position can greatly enhance the impact of a hospital sepsis program. In many hospitals, a sepsis coordinator can serve as the sepsis program co-leader, but it can also be a separate position. Specific job duties for hospital sepsis coordinators vary, but often include reviewing sepsis cases in near real-time, providing feedback to staff regarding the reviewed cases, educating healthcare staff and trainees, identifying areas of focus for sepsis quality improvement initiatives, monitoring adherence to hospital sepsis protocols, and monitoring the impact of hospital sepsis initiatives. Depending on the size of the hospital, the sepsis coordinator role may be shared with other duties, such as serving on a rapid response team or as a coordinator for teams that oversee other time-sensitive conditions (e.g., stroke coordinator, trauma coordinator). Alternatively, hospitals with a high volume of sepsis hospitalizations are likely to benefit from having multiple sepsis coordinators.
- Collaborating across hospital locations: Clinicians and leaders from the ED, inpatient wards, and intensive care units (ICUs) should be fully engaged in hospital sepsis program activities. Participation and collaboration across care locations is important to ensure coordination of sepsis care throughout the institution.
- Engaging multi-professional experts: In most hospitals, sepsis programs should include representation from antimicrobial stewardship, critical care, emergency medicine, hospital medicine, infectious diseases, nursing, other primary services (e.g., surgery,

oncology, obstetrics, pediatrics), pharmacy, and social work. It is possible that a single individual may represent more than one group.

- Ensuring flexibility for treatment: Engagement of the antibiotic stewardship program is critical to optimize the treatment of sepsis by ensuring antibiotic recommendations are based on local microbiology data, and that mechanisms are in place to review if antibiotics started for suspected sepsis are tailored or stopped if unnecessary or if treatment is complete.
- Engaging relevant support services: Hospital sepsis programs should have access to ongoing support from individuals with expertise and formal training in data management and analytics; information technology (e.g., individuals with expertise in implementing and revising electronic health records-based tools such as sepsis order sets); and quality improvement and patient safety (e.g., individuals with formal training in quality improvement processes such as the Institute for Healthcare Improvement's plan-do-study-act model[43]).

Additional examples of multi-professional expertise include:

- Having availability of ad hoc domain expertise: Hospital sepsis programs should have at least ad hoc involvement of case management, microbiology, laboratory medicine, phlebotomy, outpatient clinicians, hospital epidemiologists, infection preventionists, patients, families, caregivers, and community members.



Action

The main goal of hospital sepsis programs is to improve the treatment and outcomes of patients with sepsis. To support this goal, sepsis programs should develop and implement structures and processes to facilitate recognition of sepsis, evidence-based management of sepsis, and longer-term recovery from sepsis. When designing and implementing interventions to improve sepsis management, it is important to use structured quality improvement processes[44] and implementation science principles[45] to promote uptake of the intervention. Additionally, hospital sepsis programs should monitor use and effectiveness of hospital interventions and refine interventions as needed to optimize treatment and outcomes.

Priority examples of action include:

- Implementing a standardized process to screen for sepsis: Early administration of sepsis treatment is lifesaving,[46-50] so it is important that clinicians recognize sepsis as early as possible. To this end, hospitals should have a standardized process to screen at-risk patients for sepsis upon presentation to the hospital and throughout their hospitalization. Screening may use paper-based or electronic health record-based tools and may occur at standard recurring intervals (e.g., every 8–12 hours) and/or in response to clinical events (e.g., upon ICU transfer, upon clinical deterioration). Given the variety of clinical decision support systems in use and the low quality of studies evaluating their impact, the optimal approach to screening for sepsis remains unclear.[25,27] The 2021 Surviving Sepsis Campaign Guidelines include a strong recommendation that hospital sepsis programs have a process to screen for sepsis,

but do not recommend any specific tool or approach.[18,19] Regardless of the method chosen, screening for sepsis should be implemented according to user-centered design principles and should be tailored to the specific patient population served (e.g., adult, pediatric, obstetric). Screening should be integrated into clinical workflow in such a way that it enhances recognition of sepsis, while minimizing false-positive alarms and alarms on patients already recognized to have sepsis. Furthermore, newer, complex screening tools such as those using machine learning or super intelligence should be analyzed to ensure they do not project bias by patient race, ethnicity, sex, or other characteristics.

  - Examples of hospital screening tools are available at **https://www.cdc.gov/sepsis/core-elements/resources.html**.

- Developing and maintaining a hospital guideline or a standardized care pathway for management of sepsis: Hospital guidelines or standardized care pathways can greatly enhance the effectiveness of sepsis programs by establishing clear recommendations for care. Ideally, guidelines should address management across the continuum of hospital care including screening, clinical evaluation (e.g., recommended/suggested laboratory, microbiology, laboratory, or imaging studies), diagnosis, antimicrobial selection, source control, fluid resuscitation (e.g., indications, contraindications, type, and volume of fluid), indications for treatment escalation (e.g., admission to critical care unit), antimicrobial narrowing, antimicrobial stopping, patient and family/caregiver education on sepsis, and peri-discharge management. Recommendations should be based on published guidelines and generally accepted standards of care, but also take into consideration the available resources, local epidemiology, and patient population served (e.g., adult, pediatric, obstetric). For example, while international/national guidelines recommend prompt antimicrobials and source control, hospital guidelines can provide guidance on the selection of antimicrobials based on local resistance patterns and antimicrobial formulary options and guidance on approaching source control based on hospital availability of surgical and interventional radiology services. Empiric antimicrobial options should be recommended in conjunction with Antimicrobial Stewardship or Infectious Diseases staff. To ensure viability of hospital guidelines, they should be updated at least biannually and based on existing evidence-based sepsis guidelines.

  - Examples of hospital guidelines and/or clinical pathways addressing sepsis management are available at **https://www.cdc.gov/sepsis/core-elements/resources.html**.

- Hospital order sets for management of sepsis: Templated order sets can further aid in implementation of recommended practices for sepsis evaluation and management, including selection of antimicrobial therapy, timely delivery of the first dose of antimicrobials, clinical evaluation, source control, fluid resuscitation, antimicrobial narrowing, and antimicrobial stopping. Order sets should be tailored to the specific patient population (e.g., pediatric versus adult patients). As with hospital screening for sepsis, the content and scope of sepsis order sets may vary across hospitals, but they should always be developed with user-centered design principles. The easier it is to

order appropriate sepsis evaluation and treatment, the more likely the order set will be used by clinicians.

- Structures and processes to facilitate prompt delivery of antimicrobials: Timely delivery of antimicrobial therapy in sepsis is life-saving.[46-48] In addition to facilitating prompt recognition of sepsis, hospitals should facilitate the prompt administration of initial antimicrobial therapy after the order for antimicrobial therapy has been placed.[51] It has been estimated that one-third of the interval from patient presentation to antimicrobial delivery occurs after the antimicrobial order and that post-order delays are associated with increased mortality.[52] Furthermore, while there is concern that efforts to hasten recognition of sepsis and antimicrobial ordering may increase unnecessary antimicrobial prescribing, efforts to shorten time from antimicrobial order to delivery do not carry this risk.[51] There are many processes that hospitals may use to shorten the time from antimicrobial order to antimicrobial delivery,[51] including, but not limited, some examples below:
  - Stocking of common antimicrobials in locations outside the pharmacy, such as in the ED, the ICU, and on hospital wards.
  - Immediate processing of new antimicrobial orders in patients with sepsis.
  - Clinician order entry systems that default to immediate administration of new antimicrobials (as opposed to the next standard medication administration time).
  - Pharmacists on-site in key locations outside the pharmacy, such as in the ED or ICU.
- Structures and processes to support effective hospital hand-offs in patients with sepsis: Transfers between units (e.g., ED-to-ward, ward-to-ICU, and ICU-to-ward transfers), between treating clinicians (e.g., during physician and nursing shift changes), and between hospitals are high-risk times for information loss. Incomplete awareness of a patient's working diagnosis, uncertainty regarding the diagnosis, and/or treatment-to-date contribute to lapses in the delivery of subsequent care. For example, delays in first-to-second antimicrobial dose in sepsis are common and are associated with worse outcomes.[53,54] Structured communication processes to hand-off key information during transitions of care are consistently associated with reduced errors and improved outcomes. Hospitals should prioritize these procedures, such as templated notes to document sepsis diagnosis and treatment information, to help ensure effective transitions of care within the hospital. Hospitals should also have processes for safe patient transfer between healthcare facilities to continue the plan of care and facilitate infection control, akin to the inter-facility infection control transfer form.[55]

Additional examples of action include:

- Rapid response teams trained in sepsis recognition and care: Rapid response teams (also known as medical emergency teams) were first developed in the 1990s to bring needed expertise to the bedside of patients experiencing acute clinical deterioration. Sepsis rapid response teams are rapid response teams specifically focused on managing patients with sepsis.[56,56] The teams are often multi-disciplinary, consisting of nurses, physicians, respiratory therapists, pharmacists, and phlebotomists. Implementation of sepsis-specific

rapid response teams and training of general rapid response teams on the management of sepsis have been associated with improved care practices.[57]

- A "Code Sepsis" protocol: Many hospitals use "Code Sepsis" huddles to hasten sepsis recognition and treatment.[58-60] "Code Sepsis" is activated by clinical staff based on suspicion of sepsis, often in response to vital signs and chief complaint upon presentation to the ED. Code sepsis activation triggers a multi-disciplinary team huddle (e.g., physician or physician assistant, primary nurse, ED pharmacist, and ED charge nurse) at the patient's bedside for evaluation of the clinical scenario and initiation of expedited early sepsis treatment (e.g., cultures, lactate measurement, imaging, antimicrobials, fluid) if indicated. Implementation of a code sepsis protocol has been associated with increased recognition of sepsis and faster delivery of initial treatment.[58-60] At the same time, some studies have suggested that "Code Sepsis" may also increase delivery of antimicrobials to patients who ultimately turn out to have non-infectious or non-bacterial causes, particularly "Code Sepsis" protocols based on the prior systemic inflammatory response syndrome (SIRS)-based sepsis definition.[61,62] A large, multi-hospital study showed that it is feasible to shorten time-to-antibiotics among patients with sepsis while simultaneously improving antimicrobial stewardship among patients at-risk for sepsis.[42] However, it is still possible that efforts to hasten sepsis treatment may increase unnecessary antimicrobial. Definitive confirmation of infection is rarely possible in real-time, so decisions to initiate antimicrobial therapy must often precede confirmation of infection.[63] Given these challenges, "Code Sepsis" protocols must be designed carefully, should include iterative reassessment with stopping of antimicrobials if an alternative non-infection-related diagnosis is found, and should be evaluated to understand their impact.

- Peri-discharge evaluation: Survivors of hospitalization for sepsis may experience new or worsening functional limitations, cognitive impairment, post-traumatic stress disorder (PTSD)/anxiety symptoms, and chronic health conditions.[7] Up to 40% of patients are re-hospitalized within three months of discharge.[64] Common causes for re-hospitalization include recurrent infection, heart failure exacerbation, chronic obstructive pulmonary disease (COPD) exacerbation, acute renal failure, and aspiration pneumonitis.[64] Some of these hospitalizations may be preventable with optimal medical management.[64] The following practices are recommended to support recovery from sepsis[7,18,19]:

  - Screening for new/worsening difficulty completing activities and instrumental activities of daily living (I/ADLs).
  - Referring patients with new I/ADL limitations to appropriate supports (e.g., physical or occupational therapy).
  - Screening for swallowing dysfunction in at-risk patients and referral to speech therapy as needed.
  - Review of chronic conditions to ensure optimal medical management of chronic conditions and dose-optimization in response to physiologic changes as a result of sepsis (e.g., changes to renal function, blood pressure, weight).

- Medication reconciliation and optimization, including a review of planned outpatient parenteral antimicrobial therapy (OPAT) if indicated and review of medical management of heart failure and COPD (which are common causes of readmission after sepsis).
- Screening for social vulnerability (e.g., food and housing instability) and referral to available resources as needed.

- Post-discharge care coordination and anticipatory guidance: The weeks and months after discharge from sepsis hospitalization are a period of heightened vulnerability to clinical deterioration and hospital readmission. To optimize recovery from sepsis, it is important to convey the ongoing care plan to the patient, involved family and caregivers, and the patient's outpatient clinician(s). When discharging a patient from the hospital, optimal practices to support recovery include:
  - Communicating the diagnosis of sepsis and ongoing care plan to the patient's primary care provider.
  - Providing contact information for clinical staff at the hospital to address post-discharge questions and/or troubleshoot post-discharge issues.
  - Contacting patient within two days of discharge by clinical staff to follow up on discharge instructions, symptoms, and/or issues.
  - Ensuring that patient, family, or caregivers are aware of times and indications for any follow-up visits and tests.
  - Reviewing patient's medication list to ensure that patient, family, or caregiver are aware of the (1) indication for each medication, (2) any changes to the medication regimen during hospitalization, and (3) any anticipated changes to the medication regimen in the following weeks.
  - Discussing the diagnosis of sepsis with the patient, family, or caregiver, including signs/symptoms of sepsis, indications to seek evaluation for potential sepsis, and any infection prevention measures that should be followed post-discharge. Sepsis education may be provided by healthcare staff, written educational material, and/or pre-recorded video material.
  - Discussing the potential effect of sepsis on cognitive, social, and emotional wellbeing, including fatigue and anxiety. Provide information on available support services.
  - Streamlining post-hospital care to the extent possible by scheduling follow-up visits and testing prior to discharge, consolidating visits and tests to single day where possible and preferred.

- Prevention of healthcare-associated infections and hospital-onset sepsis: Hospitals that follow facility-based infection prevention recommendations[65] through use of infection prevention teams may prevent acquisition of infections that lead to sepsis acquired in the healthcare setting. Infection prevention teams that regularly audit provider understanding of hand hygiene[66] and competency-based indwelling device insertion and monitoring bundles have been associated with reductions in healthcare-associated infections,[67] which may include infections from multi-drug resistant pathogens that are difficult to treat.

Tracking

Tracking of sepsis epidemiology, management, and outcomes is critical for identifying gaps, trends, and improvement opportunities, as well as for understanding the impact of hospital-based sepsis interventions and progress towards hospital sepsis goals. However, tracking requires resources, and no program can measure everything. Before tracking sepsis metrics, it is important to prioritize what to measure, focusing on the processes and outcomes that are most important to patients and anticipated to represent the greatest opportunity for improvement in the hospital. Hospital sepsis programs may consider collaborating with hospital infection control programs, which measure healthcare-associated infections that may contribute to hospital-onset sepsis. When tracking sepsis measures, it is important to consider special patient populations (such as neonatal, pediatric, obstetric, oncology, transplant) and patient demographic groups to assess for disparities in sepsis management and outcomes.

Categories of tracking include:

- Sepsis epidemiology metrics, such as hospital sepsis case volume and break-down of community-onset vs hospital-onset sepsis, are important to understanding hospital sepsis case-mix. Example sepsis epidemiology metrics are provided in Table 1.
- Sepsis management metrics, such as antimicrobial timing and fluid administration, are important to understanding hospital processes of care for managing sepsis. Examples of sepsis management metrics are provided in Table 1.
- Sepsis outcomes metrics, such as mortality, ICU admission, and length of hospitalization, are important to understanding the outcomes of hospital sepsis management. Examples sepsis outcome metrics are provided in Table 1.
- Progress towards achieving sepsis program goals: Hospital sepsis program goals may focus on management or outcomes of sepsis, and it is important to track these metrics over time to evaluate the impact of the hospital sepsis program and to update hospital sepsis program goals to drive continual improvement.
- Use, usability, and impact of sepsis program tools: To understand and improve the impact of hospital sepsis program tools (e.g., guidelines, triage algorithms, order sets, clinical decision support), it is important to assess how often they are being used, how acceptable they are to front-line clinicians, and the extent to which they are informing practice. Examples metrics are provided in Table 1.
- Chart reviews of sepsis hospitalizations: Beyond tracking sepsis epidemiology, management, and outcome metrics, chart review of sepsis hospitalizations is helpful for clinician feedback, education, root cause analyses of adverse outcomes, and process. Chart review, which is often done by the sepsis coordinator, is resource intensive. Therefore, hospitals may review a random sample of sepsis hospitalizations or a targeted sample (e.g., over-sampling of hospitalizations with adverse outcomes).

- Chart reviews for clinician feedback and education: Near real-time chart review of hospitalizations with sepsis allows for timely and focused feedback to clinicians involved in the care. This is an opportunity to recognize good care, as well as to provide focused education on areas for improvement.
- Chart review for root cause analysis and process improvement: Regular review of hospitalizations with adverse outcomes (e.g., hospitalizations with in-hospital death or prolonged ICU stay) can help identify areas for process improvement. These reviews should use formal processes to identify possible causes of the adverse outcome and identify areas for process improvement (e.g., fishbone diagram).

Defining and Counting Sepsis Hospitalizations

While sepsis has been broadly defined as "life-threatening organ dysfunction caused by a dysregulated host response to infection,"[68] different approaches are needed to identify sepsis hospitalizations depending on the setting and patient population (e.g., neonatal, pediatric, maternal, adult).[69-74] Sepsis programs must also carefully consider how to best define sepsis for the intended purpose, which may include clinical care, research, surveillance, quality improvement, and audit.[69,75]

For example, diagnostic codes may be readily accessible and reflect individual clinical judgments. However, use of diagnostic codes may also be subject to provider, hospital, and temporal variation in coding practices.[76-79] Furthermore, sepsis quality improvement initiatives that raise provider awareness can lead to stage migration by including more patients with milder disease,[80] thus lower perceived sepsis mortality.[77,81]

Definitions that use objective clinical data, such as the CDC Adult Sepsis Event (CDC ASE) criteria, can be used to benchmark sepsis quality improvement initiatives that require a consistent measure that can be extracted from data available in electronic health records.[82,83] However, the CDC ASE approach is retrospective in nature and not intended to guide diagnostic or clinical decision making. Furthermore, implementation of CDC ASE may be challenging depending on available information technology resources.

A sepsis program's decisions on how to define and count sepsis will depend on the intended audience (e.g., clinicians, quality improvement, hospital administration, payors), intended uses, and available resources. Thus, a hospital sepsis program may use diagnostic codes for monitoring clinical care processes, but then use objective criteria such as the CDC ASE to evaluate outcomes of a new quality improvement initiative.

Finally, methods for defining and counting sepsis are likely to continue to evolve over time. In this dynamic environment, hospital sepsis programs should be empowered to leverage the definitions of sepsis that will best provide the insights needed to improve patient care and outcomes.

Table 1: Examples of tracking sepsis epidemiology, management, and outcomes

CATEGORY	PRIORITY	CONCEPT	EXAMPLE
Sepsis epidemiology	**Priority**	Community-onset sepsis	**Numerator:** Hospitalizations meeting criteria for sepsis within 48 hours of arrival to hospital or emergency department **Denominator:** All hospitalizations not admitted through inter-hospital transfer
Sepsis epidemiology	**Priority**	Hospital-onset sepsis	**Numerator:** Hospitalizations meeting criteria for sepsis after 48 hours of arrival to hospital or emergency department **Denominator:** All hospitalizations
Sepsis epidemiology	**Priority**	Sepsis (without shock)	**Numerator:** Hospitalizations meeting criteria for sepsis without shock **Denominator:** All hospitalizations
Sepsis epidemiology	**Priority**	Septic shock	**Numerator:** Hospitalizations meeting criteria for sepsis and criteria for shock **Denominator:** All hospitalizations
Sepsis epidemiology	Additional	Sepsis transfers out	**Numerator:** All hospitalizations meeting criteria for sepsis whose hospital discharge disposition was to another acute care hospital **Denominator:** Al hospitalizations meeting criteria for sepsis
Sepsis epidemiology	Additional	Sepsis transfers in	**Numerator:** All hospitalizations meeting criteria for sepsis who were admitted as an inter-hospital transfer **Denominator:** Al hospitalizations meeting criteria for sepsis
Sepsis epidemiology	Additional	Community-onset sepsis in special population(s)	**Numerator:** Hospitalizations among special population meeting criteria for sepsis within 48 hours of arrival to hospital or emergency department **Denominator:** All hospitalizations among special population (e.g., neonatal, pediatric, obstetric, oncology, transplant)

Table 1: Examples of tracking sepsis epidemiology, management, and outcomes (continued)

CATEGORY	PRIORITY	CONCEPT	EXAMPLE
Sepsis epidemiology	Additional	Hospital-onset sepsis in special population(s)	**Numerator:** Hospitalizations meeting criteria for sepsis after 48 hours of arrival to hospital or emergency department **Denominator:** All hospitalizations among special population (e.g., neonatal, pediatric, obstetric, oncology, transplant)
Sepsis epidemiology	Additional	Sepsis site(s) of infection	**Numerator:** Hospitalizations meeting criteria for sepsis with a specific site of infection (e.g., pneumonia, genitourinary, gastrointestinal, neurologic, skin/soft tissue, bacteremia, endocarditis, etc.) **Denominator:** Hospitalizations meeting criteria for sepsis
Sepsis epidemiology	Additional	Sepsis pathogen(s)	**Numerator:** Hospitalizations meeting criteria for sepsis with a specific pathogen identified (e.g., staph aureus, MRSA, etc.) **Denominator:** Hospitalizations meeting criteria for sepsis
Sepsis epidemiology	Additional	Surgical sepsis	**Numerator:** Hospitalizations meeting criteria for sepsis with a surgical or interventional procedure for source control **Denominator:** Hospitalizations meeting criteria for sepsis
Sepsis management	**Priority**	Time-to-antimicrobial in community-onset sepsis with hypotension	**Measure:** Time from emergency department or hospital arrival to time of administration of systemic antimicrobial therapy **Eligibility:** Hospitalizations meeting criteria for community onset sepsis, with evidence of hypotension on presentation (e.g., SBP<90, MAP<65, or initiated on systemic vasopressor therapy), without a viral cause of infection (e.g., influenza, COVID-19), and without intravenous antimicrobial therapy prior to hospital arrival.
Sepsis management	**Priority**	Time from antibiotic order to administration	**Measure:** Time from first antimicrobial order to first administration of systemic antimicrobial therapy **Eligibility:** Hospitalizations meeting criteria for sepsis and not admitted as an inter-hospital transfer and not on intravenous antimicrobial therapy prior to arrival

Table 1: Examples of tracking sepsis epidemiology, management, and outcomes (continued)

CATEGORY	PRIORITY	CONCEPT	EXAMPLE
Sepsis management	Additional	Antimicrobial selection	**Numerator:** Hospitalizations whose initial antimicrobial therapy selection was consistent with institutional guidelines **Denominator:** Hospitalizations meeting criteria for sepsis and initiated on systemic antimicrobial therapy
Sepsis management	Additional	Lactate measurement	**Numerator:** Hospitalizations with a lactate measurement within 3 hours of arrival in community-onset sepsis or 3 hours of onset of hospital-onset sepsis **Denominator:** Hospitalizations meeting criteria for sepsis
Sepsis management	Additional	Lactate remeasurement	**Numerator:** Hospitalizations with a lactate collected within 4 hours of the collection of the first lactate measurement ≥2 mmol/L **Denominator:** Hospitalizations meeting criteria for sepsis and with a lactate measurement ≥2 mmol/L
Sepsis management	Additional	Blood culture prior to antimicrobial initiation	**Numerator:** Hospitalizations with blood cultures collected prior to first administration of systemic antimicrobial therapy **Denominator:** Hospitalizations meeting criteria for sepsis, without a viral cause of infection (e.g., influenza, COVID-19), and not admitted as an inter-hospital transfer
Sepsis management	Additional	Fluid resuscitation	**Numerator:** Hospitalizations receiving ≥30 ml/kg crystalloid fluid within 6 hours of evidence of low blood pressure and/or elevated lactate **Denominator:** Hospitalizations meeting criteria for sepsis, with low blood pressure (e.g., SBP<90, MAP<65, or initiated on vasopressor therapy) and/or elevated lactate (≥2–4 mmol/L), and without contraindications to fluid administration (e.g., excluding patients with severely reduced cardiac function, end-stage renal disease, or evidence of fluid overload)
Sepsis management	Additional	Fluid type	**Numerator:** ≥75% of crystalloid fluid resuscitation provided as a balanced solution (e.g., lactated ringers) **Denominator:** Hospitalizations meeting criteria for sepsis and treated with crystalloid fluid for sepsis-induced hypotension or lactate elevation

Table 1: Examples of tracking sepsis epidemiology, management, and outcomes (continued)

CATEGORY	PRIORITY	CONCEPT	EXAMPLE
Sepsis management	Additional	Antimicrobial narrowing	**Numerator:** Hospitalizations with anti-MRSA treatment stopped within 3 calendar days of initiation **Denominator:** Hospitalizations meeting criteria for sepsis, initiated on anti-MRSA antimicrobial treatment, and with no MRSA identified in culture or microbial testing
Sepsis management	Additional	**Blood culture contamination**	**Numerator:** Number of blood culture sets with growth of skin commensals without the same organism in other sets collected within 24hrs **Denominator:** Total number of all eligible blood culture sets collected
Sepsis management	Additional	Single Blood Culture	**Numerator:** Number of single blood culture sets collected among adult patients **Denominator:** Total number of all blood culture sets collected among adults
Sepsis management	Additional	Sepsis documentation	**Numerator:** Hospitalizations with specific aspects of sepsis diagnosis and management documented during transitions of care (e.g., certainty of sepsis diagnosis, antimicrobial therapy plan) **Denominator:** Hospitalizations with a transition of care (e.g., ED-to-ward; ICU-to-ward transfer)
Sepsis management	Additional	Timely post-hospital follow-up visit	**Numerator:** Hospitalizations with a primary care follow-up visit scheduled prior to discharge, to occur within 14 days of discharge **Denominator:** Hospitalizations meeting criteria for sepsis, discharged to home or assisted living
Sepsis management	Additional	Post-hospital follow-up call	**Numerator:** Hospitalizations with post-discharge follow-up call attempted within three calendar days of discharge **Denominator:** Hospitalizations meeting criteria for sepsis, discharged to home or assisted living

Table 1: Examples of tracking sepsis epidemiology, management, and outcomes (continued)

CATEGORY	PRIORITY	CONCEPT	EXAMPLE
Sepsis management	Additional	Functional assessment	**Numerator:** Hospitalizations with a functional assessment at admission and discharge (e.g., assessment of ability to bathe, dress, toilet, transfer, walk, and manage medications independently) **Denominator:** Hospitalizations meeting criteria for sepsis
Sepsis outcomes	**Priority**	In-hospital mortality, overall	**Numerator:** Hospitalizations meeting criteria for sepsis and with in-hospital mortality **Denominator:** All hospitalizations meeting criteria for sepsis
Sepsis outcomes	**Priority**	In-hospital mortality, subgroup	**Numerator:** Hospitalizations meeting criteria for subgroup (e.g., community-onset sepsis, hospital-onset sepsis, septic shock, sepsis without shock, etc.) and with in-hospital mortality **Denominator:** All hospitalizations meeting criteria for sepsis and the subgroup of interest
Sepsis outcomes	Additional	30-day mortality	**Numerator:** Hospitalizations with sepsis who are alive at 30 days from the date of hospital admission **Denominator:** All hospitalizations meeting criteria for sepsis
Sepsis outcomes	Additional	90-day mortality	**Numerator:** Hospitalizations with sepsis who are alive at 90 days from the date of hospital admission **Denominator:** All hospitalizations meeting criteria for sepsis
Sepsis outcomes	Additional	Post-discharge mortality	**Numerator:** Death within 90 days of discharge from hospitalization with sepsis **Denominator:** All hospitalizations meeting criteria for sepsis with live discharge
Sepsis outcomes	Additional	Discharge to hospice	**Numerator:** Hospitalizations with sepsis who were discharged to inpatient or home hospice **Denominator:** All hospitalizations meeting criteria for sepsis
Sepsis outcomes	Additional	ICU admission	**Numerator:** Hospitalizations in which the patient was admitted to the ICU **Denominator:** All hospitalizations meeting criteria for sepsis

Table 1: Examples of tracking sepsis epidemiology, management, and outcomes (continued)

CATEGORY	PRIORITY	CONCEPT	EXAMPLE
Sepsis outcomes	Additional	In-hospital mortality, special populations	**Numerator:** Hospitalizations meeting criteria for subgroup (e.g., neonatal, pediatric, maternal, oncologic, transplant, etc.) and with in-hospital mortality **Denominator:** All hospitalizations meeting criteria for sepsis and the special population of interest
Sepsis outcomes	Additional	Length of hospitalization, survivors	**Measure:** Length of hospitalization in days **Eligibility:** All hospitalizations meeting criteria for sepsis and with live discharge to a location other than an acute care hospital
Sepsis outcomes	Additional	Length of hospitalization, non-survivors	**Measure:** Length of hospitalization in days **Eligibility:** All hospitalizations meeting criteria for sepsis and with in-hospital mortality
Sepsis outcomes	Additional	New discharge to a healthcare or nursing facility	**Numerator:** Hospitalizations in which the patient is discharged to a long-term acute care facility, skilled nursing facility, or custodial nursing facility **Denominator:** All hospitalizations meeting criteria for sepsis, with live discharge, and in which the patient did not reside at home or in assisted living prior to hospital admission
Usability of hospital sepsis tools	**Priority**	Use of hospital sepsis order set	**Numerator:** Hospitalizations in which the sepsis order set was used **Denominator:** All hospitalizations meeting criteria for sepsis
Usability of hospital sepsis tools	Additional	Use of hospital sepsis decision-support	**Numerator:** Specific response of the clinician receiving the sepsis alert (e.g., snooze, ignore, change in clinical management) **Denominator:** Sepsis alert notification



Reporting

Reporting of sepsis treatment and outcomes to relevant staff can help maintain staff engagement, motivate behavior change, and facilitate improvement in sepsis treatment and outcomes. It is critical that information be provided in a clear and transparent manner. Reports should explain how data were collected and how measures were calculated. In addition, providing the option to "drill down" and review data for individual hospitalizations can be help facilitate targeted review of cases for performance improvement. Data that are timely and focused (e.g., to a specific hospital unit or an individual clinician) are often most actionable.[84] Reports to hospital leadership and the board can also help raise awareness of and support for sepsis program efforts.

Priority examples of reporting include:

- Regular reports to hospital, unit, and clinical leadership: It is important to report sepsis treatment and outcome data to nursing, physician, unit-based, and hospital leadership at routine intervals (e.g., monthly or quarterly). The following data are particularly helpful for engaging clinical leadership:
  - Unit-level data
  - Trends over time
  - Comparative or benchmarking data (e.g., comparison to other similar units or hospitals)

Additional examples of reporting include:

- Focused feedback to individual clinicians: Timely feedback on the management of specific patients with sepsis can be extremely effective at re-enforcing desired behaviors and providing targeted education on any areas where care lagged. In many hospitals, sepsis coordinators review cases in near real-time and provide direct feedback to involved clinicians—both positive feedback for good care and constructive feedback for any areas where care could have been improved. Public recognition of excellent sepsis care (e.g., through department emails, recognition pins) may further engage and motivate clinicians.
- Live sepsis dashboard: Development and maintenance of a sepsis dashboard that is updated in real-time can provide continuous information to nursing, physician, and unit-based leadership.

Education



For optimal sepsis treatment and outcomes, it is imperative that hospital staff have strong knowledge of sepsis and understand their role in team-based management of sepsis. Educational efforts should be focused on all healthcare workers involved in sepsis care, all patient-facing staff, and all health profession trainees. There are many methods of providing education to hospital staff, including simulation or case-based training; in-person or video-recorded lectures; flyers or posters; and email or newsletters. The optimal approach to education may vary by audience.

Knowledge of sepsis is also important to patients, families, and caregivers. Patients hospitalized for sepsis are at increased risk for subsequent episodes of sepsis.[64,85] However, despite the increased risk for recurrent sepsis, many patients are unaware of both their diagnosis of sepsis and their risk for recurrent sepsis.[86] In an international survey of sepsis survivors, nearly half reported dissatisfaction with sepsis education.[87] Hospitalization and post-hospital follow-up are a key opportunity to educate patients and families on sepsis, when to suspect sepsis, and when to seek evaluation for potential sepsis. The Surviving Sepsis Campaign Guidelines suggest offering both verbal and written sepsis education prior to hospital discharge and in the follow-up setting, particularly since education may facilitate timely health-seeking behavior in sepsis survivors who experience complications.[18,19]

Educational resources for healthcare professional, patients, families, and caregivers are available at **https://www.cdc.gov/sepsis/education/index.html**.

Priority examples of sepsis education include:

- Including sepsis-specific training and education in the hiring or on-boarding process for healthcare staff and trainees.
- Providing annual sepsis education to clinical staff.
- Providing written and verbal education on sepsis to patients, families, and/or caregivers prior to hospital discharge.

Additional examples of sepsis education include:

- Posting information on recognition of sepsis in prominent areas for patient-facing staff (e.g., attached to vital sign machines, in staff break rooms).
- Holding hospital lectures (e.g., grand rounds) or an annual meeting focused on sepsis.
- Including sepsis recognition and treatment in annual nursing competencies.

CDC Efforts to Support Sepsis Care

The **Hospital Sepsis Program Core Elements** is one of several initiatives to help improve awareness, management, and outcomes of sepsis.

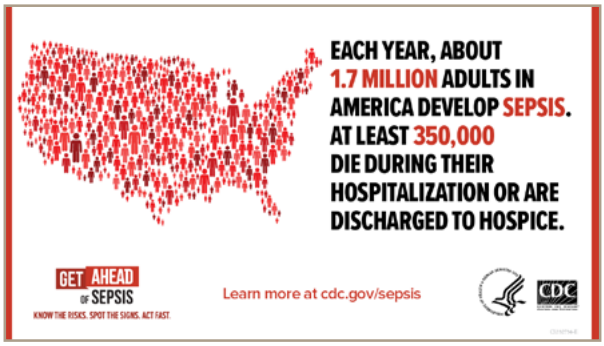
CDC has published a toolkit to support surveillance of sepsis hospitalizations, **Hospital Toolkit for Adult Sepsis Surveillance**.

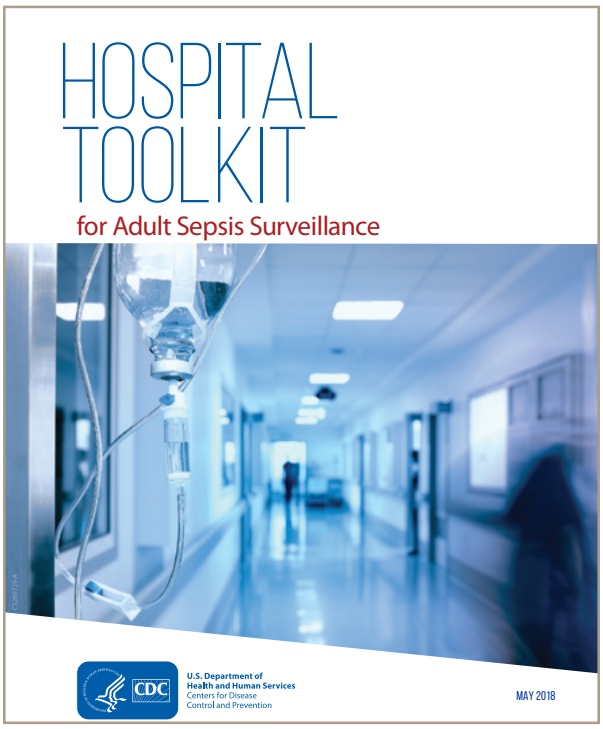
CDC's national educational effort, ***Get Ahead of Sepsis (GAOS)*****,** emphasizes the importance of early recognition, timely treatment, reassessment of antibiotic needs, and prevention of infections. The campaign has a suite of free sepsis patient and healthcare professional educational materials.

Next steps

CDC will measure the uptake of the Hospital Sepsis Program Core Elements via the **National Healthcare Safety Network Annual Hospital Survey**.







Hospital Sepsis Program Core Elements: Assessment Tool

The hospital sepsis program assessment tool is a companion to the CDC *Hospital Sepsis Program Core Elements*. This tool provides examples of ways to implement the Core Elements. The Core Elements are intended to be an adaptable framework that hospitals can use to guide efforts to optimize sepsis care. Thus, not all examples listed in the Core Elements (and below) may be necessary and/or feasible in all hospitals.

The assessment tool can be used on a periodic basis (e.g., annually) to document current program infrastructure and activities and to help identify items that could improve the effectiveness of the sepsis program. Consider listing specific details, such as points of contacts or facility-specific guidelines with the date, in the "comments" column as reference for the hospital sepsis program.

HOSPITAL LEADERSHIP COMMITMENT	ESTABLISHED AT FACILITY	COMMENTS
1. **[Priority Example]** Our sepsis program leader(s) are given sufficient specified time to manage the hospital sepsis program.	❑ Yes ❑ No	
2. **[Priority Example]** Our sepsis program is provided sufficient resources, including data analytics and information technology support, to operate the program effectively.	❑ Yes ❑ No	
3. **[Priority Example]** Relevant staff from key clinical groups and support departments in our hospital have sufficient time to contribute to sepsis activities.	❑ Yes ❑ No	
4. **[Priority Example]** Our hospital has a senior leader (e.g., Chief Clinical Officer, Chief Medical Officer, of Chief Nursing Officer) who serves as an executive sponsor for the sepsis program.	❑ Yes ❑ No	
5. **[Priority Example]** Sepsis has been identified as a hospital priority by hospital leadership and this priority has been communicated to hospital staff.	❑ Yes ❑ No	
6. Our hospital leadership communicates to our hospital staff and patients how our hospital is addressing sepsis.	❑ Yes ❑ No	
7. Our hospital leadership has regular meetings with leaders of the sepsis program to assess the resources needed to accomplish the hospital's goals for sepsis activities and outcomes.	❑ Yes ❑ No	
8. Our hospital sepsis program activities are integrated into other quality improvement and patient safety efforts, such as emergency department triage, antimicrobial stewardship, transitions of care, and Centers for Medicare & Medicaid Services (CMS) Severe Sepsis and Septic Shock: Management Bundle reporting.	❑ Yes ❑ No	
9. Our hospital staff performance incentives are tied to the achievement of targets for sepsis care and/or outcomes.	❑ Yes ❑ No	
10. Sepsis program-related duties are included in job descriptions or performance reviews for our hospital sepsis program leaders and key support staff.	❑ Yes ❑ No	
11. Our hospital leadership supports external training and education for sepsis program leaders and key support staff (e.g., attendance at sepsis meetings and quality improvement trainings).	❑ Yes ❑ No	
12. Our hospital leadership supports internal training and education on sepsis for hospital staff and trainees.	❑ Yes ❑ No	

HOSPITAL LEADERSHIP COMMITMENT	ESTABLISHED AT FACILITY	COMMENTS
13. Our hospital leadership supports participation in regional, national, and international sepsis quality improvement collaboratives and initiatives.	❑ Yes ❑ No	

ACCOUNTABILITY	ESTABLISHED AT FACILITY	COMMENTS
14. **[Priority Example]** Our hospital has a program or committee charged with monitoring and improving sepsis care and/or outcomes.	❑ Yes ❑ No	
15. **[Priority Example]** Our hospital has one leader or two co-leaders (physician and nurse) responsible for sepsis program or committee management and outcomes.	❑ Yes ❑ No	
16. **[Priority Example]** Our hospital sets ambitious—but achievable—goals for improving sepsis care and patient outcomes that are informed by review of hospital practices, hospital sepsis outcomes, and clinical practice guidelines.	❑ Yes ❑ No	
17. **[Priority Example]** Our hospital assesses progress towards hospital sepsis goals at regular intervals and updates goals periodically (e.g., annually) to promote continual improvement.	❑ Yes ❑ No	
18. **[Priority Example]** Our hospital has one physician and one nurse lead or champion to ensure physician and nursing engagement in the sepsis program.	❑ Yes ❑ No	
19. Sepsis program-related activities and outcomes are included in annual performance reviews for our sepsis program leaders.	❑ Yes ❑ No	
20. Our hospital has unit-level physician and nurse champions for sepsis activities.	❑ Yes ❑ No	
21. Sepsis program activities and outcomes are reported to our senior hospital leadership and/or hospital board of directors on a regular basis.	❑ Yes ❑ No	

MULTI-PROFESSIONAL EXPERTISE	ESTABLISHED AT FACILITY	COMMENTS
22. **[Priority Example]** Our hospital has a sepsis coordinator, who oversees day-to-day implementation of sepsis program activities. **Note:** The hospital sepsis coordinator may be the same or different individual as the lead or co-lead of the hospital sepsis program.	❑ Yes ❑ No	
23. **[Priority Example]** Clinicians and leaders from the emergency department, inpatient wards, and intensive care units are fully engaged in our hospital sepsis program activities.	❑ Yes ❑ No	

MULTI-PROFESSIONAL EXPERTISE	ESTABLISHED AT FACILITY	COMMENTS
24. **[Priority Example]** Our hospital sepsis program includes diverse multi-disciplinary representation (e.g., antimicrobial stewardship, critical care, emergency medicine, hospital medicine, infectious diseases, nursing, other primary services [e.g., surgery, oncology, obstetrics, pediatrics], pharmacy, and social work).	❑ Yes ❑ No	
25. **[Priority Example]** Our hospital sepsis program has ongoing support from individuals with expertise and formal training in data management and analytics, information technology, and quality improvement and patient safety.	❑ Yes ❑ No	
26. Our hospital sepsis program has at least ad hoc involvement of case management, microbiology, laboratory medicine, phlebotomy, outpatient clinicians, hospital epidemiologists, infection preventionist, patients, families, caregivers, and community members.	❑ Yes ❑ No	

ACTION	ESTABLISHED AT FACILITY	COMMENTS
27. **[Priority Example]** Our hospital has implemented a standard process to screen for sepsis on presentation and throughout hospitalization.	❑ Yes ❑ No	
28. **[Priority Example]** Our hospital has a hospital guideline or a standardized care pathway for management of sepsis, that addresses: • Screening • Clinical evaluation • Diagnosis • Antimicrobial selection • Source control • Fluid resuscitation • Indications for treatment escalation • Antimicrobial narrowing and stopping • Patient and family/caregiver education • Peri-discharge management	❑ Yes ❑ No	
29. **[Priority Example]** Our hospital has order sets for the management of sepsis tailored to patient populations served.	❑ Yes ❑ No	
30. **[Priority Example]** Our hospital has structures and processes in place to facilitate prompt delivery of antimicrobials, including: • Stocking of common antimicrobials in locations outside the pharmacy • Immediate processing of new antimicrobial orders • Clinician order entry systems that default to immediate administration of new antimicrobials • Pharmacists on-site in key locations outside the pharmacy	❑ Yes ❑ No	

ACTION	ESTABLISHED AT FACILITY	COMMENTS
31. **[Priority Example]** Our hospital has structures and processes in place to support effective hand-offs of patients with sepsis, such as templated notes to document sepsis diagnosis and treatment information.	❑ Yes ❑ No	
32. Our hospital rapid response team is trained in sepsis recognition and care.	❑ Yes ❑ No	
33. Our hospital has a "code sepsis" protocol for facilitating prompt recognition and team-based care of sepsis.	❑ Yes ❑ No	
34. Our hospital completes peri-discharge evaluations of patients after sepsis to screen for new or worsening functional limitations, cognitive impairment, post-traumatic stress disorder/anxiety symptoms, and chronic health conditions.	❑ Yes ❑ No	
35. Our hospital provides post-discharge care coordination and anticipatory guidance designed to optimize recovery from sepsis.	❑ Yes ❑ No	
36. Our hospital has prevention of healthcare-associated infections and hospital-onset sepsis that follow facility-based infection prevention recommendations.	❑ Yes ❑ No	

TRACKING	ESTABLISHED AT FACILITY	COMMENTS
37. **[Priority Example]** Our hospital monitors hospital sepsis epidemiology, such as number of hospitalizations with community-onset sepsis, hospital-onset sepsis, and septic shock.	❑ Yes ❑ No	
38. **[Priority Example]** Our hospital monitors hospital sepsis management, such as time to antibiotic delivery and time from antibiotic order to antibiotic delivery.	❑ Yes ❑ No	
39. **[Priority Example]** Our hospital monitors sepsis outcomes, such as in-hospital mortality, length of hospitalization, and new discharge to a healthcare facility.	❑ Yes ❑ No	
40. **[Priority Example]** Our hospital assesses use, usability, and impact of hospital sepsis tools to inform their ongoing improvement, such as use of sepsis order sets.	❑ Yes ❑ No	
41. **[Priority Example]** Our hospital monitors progress towards achieving hospital goals for sepsis management and/or outcomes.	❑ Yes ❑ No	
42. Our hospital completes near real-time chart reviews for the purpose of clinician feedback and education.	❑ Yes ❑ No	
43. Our hospital completes chart reviews regularly for the purpose of root cause analysis and process improvement.	❑ Yes ❑ No	

REPORTING	ESTABLISHED AT FACILITY	COMMENTS
44. **[Priority Example]** Our hospital reports sepsis treatment and outcome data to nursing, physician, unit-based, and hospital leadership at routine intervals (e.g., monthly or quarterly), which include: • Unit-level data • Trends over time • Comparative or benchmarking data (e.g., comparison to other similar units or hospitals)	❑ Yes ❑ No	
45. Our hospital provides feedback to individual clinicians regarding the care of recent patients with sepsis.	❑ Yes ❑ No	
46. Our hospital has and maintains a live dashboard to report sepsis treatment and outcomes in real-time.	❑ Yes ❑ No	

EDUCATION	ESTABLISHED AT FACILITY	COMMENTS
47. **[Priority Example]** Our hospital provides sepsis-specific training and education in the hiring or on-boarding process for healthcare staff and trainees.	❑ Yes ❑ No	
48. **[Priority Example]** Our hospital provides annual sepsis education to clinical staff.	❑ Yes ❑ No	
49. **[Priority Example]** Our hospital provides written and verbal sepsis education to patients, families, and/or caregivers prior to discharge.	❑ Yes ❑ No	
50. Our hospital posts information on recognition of sepsis in prominent areas for patient-facing staff (e.g., attached to vital sign machines, in staff break rooms).	❑ Yes ❑ No	
51. Our hospital holds lectures (e.g., grand rounds) or an annual meeting focused on sepsis.	❑ Yes ❑ No	
52. Our hospital includes sepsis recognition and treatment in annual nursing competencies.	❑ Yes ❑ No	

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