

**CBE ID**

5265

**Title**

Hospital Sepsis Program Core Elements Score

**Project**

Management of Acute Events, Chronic Disease, Surgery, and Behavioral Health

**Endorsement Status**

Not Endorsed

**E&M Committee Rationale/Justification**

Not Endorsed due to No Consensus

**Is Under Review**

No

**Previous Endorsement Cycle**

Fall 2025

**Steward**

Centers for Disease Control and Prevention, National Healthcare Safety Network

**1.0 New or Maintenance**

New

**1.1 Measure Structure**

Single Measure

**1.3 Electronic Clinical Quality Measure (eCQM)**

No

**1.6 Measure Description**

Annual, non-weighted score, assessing acute care hospitals on their leadership support, personnel resources, implementation of quality improvement tools and practices to improve the recognition and care of patients with sepsis.

**Measure score** = Sum of Hospital Sepsis Program Priority Examples in use by hospital

**1.7 Measure Type**

Structure

## 1.8 Level of Analysis

Facility

## 1.9 Care Setting

Hospital: Acute Care Facility

## 1.10 Measure Rationale

This measure will assess uptake of evidence-based best practices for sepsis programs as described in the CDC Hospital Sepsis Program Core Elements and provide guidance to acute care hospitals for optimizing and monitoring hospital management and outcomes of sepsis, leading to improved patient outcomes.

## 1.11 Measure Webpage

<https://www.cdc.gov/sepsis/hcp/core-elements/index.html>

## 1.13 Data Dictionary

Not attached. I attest that all information will be provided where codes and/or value sets are needed (1.14a - 1.15c).

## 1.14 Numerator

The measure is a series of attestations on overall program practices to improve the recognition and care of patients with sepsis. Sum of hospital sepsis program priority examples Domain Priority Example NHSN Annual Survey Question Mapping-2024 Hospital Leadership Commitment - 1 1. Our sepsis program leader(s) are given sufficient specified time to manage the hospital sepsis program Q54 c,d,e: EITHER APP, Nurse, OR Physician with non-0% effort (EITHER 1-10%, 11-25%, 26-50%, OR More than 50%). -AND- Q55. "providing sepsis program leaders with sufficient specified time" Hospital Leadership Commitment - 2 2. Our sepsis program is provided sufficient resources, including data analytics and information technology support, to operate the program effectively Q55. "Providing sufficient resources, including data analytics and information technology support, to operate the program effectively." Hospital Leadership Commitment - 3 3. Relevant staff from key clinical groups and support departments in our hospital have sufficient time to contribute to sepsis activities. Q55. "Ensuring that relevant staff from key clinical groups and support departments have sufficient time to contribute to sepsis activities." Hospital Leadership Commitment - 4 4. Our hospital has a senior leader (e.g., Chief Clinical Officer, Chief Medical Officer, or Chief Nursing Officer) who serves as an executive sponsor for the sepsis program. Q55. "Appointing a senior leader to serve as an executive sponsor for the sepsis program" Hospital Leadership Commitment - 5 5. Sepsis has been identified as a hospital priority by hospital leadership and this priority has been communicated to hospital staff. Q55. "Identifying sepsis as a facility priority and communicating this priority to hospital staff" Accountability - 1 14. Our hospital has a program or committee charged with monitoring/improving outcomes. Q53. "yes" Accountability - 2 15. Our hospital has one leader or two co-leaders responsible for sepsis program or committee management and outcomes. Q54. "yes" Accountability - 3 16. Our hospital sets ambitious but achievable goals at regular intervals

and updates goals periodically to promote continuous improvement Q53a. "Setting annual goals for sepsis management and/or outcomes" Accountability - 4 17. Our hospital assesses progress towards hospital sepsis goals at regular intervals and updates goals periodically (e.g., annually) to promote continual improvement. Q62. BOTH "Progress towards achieving hospital goals for sepsis treatment and/or outcomes", AND Q53a. "Setting annual goals for sepsis management and/or outcomes" Accountability - 5 18. Our hospital has one physician and one nurse lead or champion to ensure physician and nursing engagement in the sepsis program. Q54a: BOTH "Nurse" AND "Physician" are selected (at a minimum). Multi-professional expertise - 1 22. Our hospital has a sepsis coordinator, who oversees day-to-day implementation of sepsis program activities. Q55 - Facility leadership has demonstrated commitment to improving sepsis care by: "Having a sepsis coordinator who oversees day-to-day implementation of sepsis program activities" Multi-professional expertise - 2 23. Clinicians and leaders from the emergency department, inpatient wards, and intensive care units are fully engaged in our hospital sepsis program activities. Q53c. "critical care" selected if hospital has indicated  $\geq 10$  ICU beds in annual survey. Multi-professional expertise - 3 24. 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). Q53b. BOTH  $\geq 4$  options selected, AND 53c.  $\geq 4$  options selected Multi-professional expertise - 4 25. 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. Q53c BOTH "data analytics" AND "information technology" selected. Action - 1 27. Our hospital has implemented a standard process to screen for sepsis on presentation and throughout hospitalization. Q56 - "Our facility uses the following approaches to assist in the rapid identification of patients with sepsis upon presentation to the facility". AND Q57 "Our facility uses the following approaches to assist in identification of sepsis throughout hospitalization" Action - 2 28. Our hospital has a hospital guideline or a standardized care pathway for management of sepsis that addresses Q58. "Hospital guideline or care pathway for management of sepsis" Action - 3 29. Our hospital has order sets for the management of sepsis tailored to the patient populations served. Q58. "Hospital order set for management of sepsis" Action - 4 30. Our hospital has structures and processes in place to facilitate prompt delivery of antimicrobials. Q59.  $\geq 2$  options selected (EXCEPT "None of the above"). Action - 5 31. 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. Q58. EITHER "Structured template for documentation of sepsis treatment", OR "Standardized process for verbal hand-off of sepsis treatment" Tracking - 1 37. Our hospital monitors hospital sepsis epidemiology, such as number of hospitalizations with community-onset sepsis, hospital-onset sepsis and septic shock. Q62. "hospital sepsis epidemiology" Tracking - 2 38. Our hospital monitors hospital sepsis management, such as time to antibiotic delivery and time from antibiotic order to antibiotic delivery Q62. "hospital sepsis treatment" Tracking - 3 39. Our hospital monitors sepsis outcomes, such as in-hospital mortality, length of hospitalization, and new discharge to a healthcare facility Q62. "hospital sepsis outcomes" Tracking - 4 40. Our hospital assesses use, usability, and impact of hospital sepsis tools to inform their ongoing improvement, such as use of sepsis order sets. Q62. ALL the following: "use of hospital sepsis tools", AND "usability or acceptability of hospital sepsis tools", AND "impact of hospital sepsis tools". Tracking - 5 41. Our hospital monitors progress towards achieving hospital goals for sepsis management and/or outcomes Q62. "Progress towards achieving hospital goals for sepsis management and/or outcomes" Reporting - 1 44. 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, and comparative or benchmarking data (e.g., comparison to other similar units or hospitals) Q64a . ALL OF THE FOLLOWING: "unit-specific or service-specific", AND "benchmarking or comparative data", AND "temporal trends" Education - 1 47. Our hospital provides sepsis-specific training and education in the hiring or on-boarding process for healthcare staff and trainees. IF "YES" to Teaching hospital (from page 1 of survey): Q65: BOTH "trainees" AND at least 2 non-trainee categories. IF "NO" to Teaching hospital (from page 1 of survey) Q65: ANY two non-trainee categories. Education - 2 48. Our hospital provides annual sepsis education to clinical staff. Q66:  $\geq 2$  categories selected (except "None of the above") Education - 3 49. Our hospital provides written and verbal sepsis education to patients, families, and/or caregivers prior to discharge. Q61. BOTH "Written educational material about sepsis" AND EITHER "Direct 1:1 education on sepsis from a healthcare personnel" OR "Pre-recorded video material about sepsis "

### **1.14a Numerator Details**

The measure is a series of attestations on overall program practices to improve the recognition and care of patients with sepsis. The information necessary to calculate the Hospital Sepsis Program Core Elements Score comes from required questions on the NHSN Patient Safety Annual Hospital Survey.

The numerator is the sum of priority examples (or domains) that hospital sepsis programs have in place.

The total score possible is 28 (total number of domains).

**See 7.1 Supplemental Information Attachment Pages 1-3, for further details.**

### **1.15 Denominator**

28 Hospital Sepsis Program Priority Examples, as described in the CDC Core Elements document.

#### **1.15a Denominator Details**

Twenty-eight priority examples for hospital sepsis programs, as described in the CDC Hospital Sepsis Program Core Elements document.

<https://www.cdc.gov/nhsn/pdfs/sepsis/Core-Elements-Guidance.pdf>

<https://www.cdc.gov/nhsn/pdfs/sepsis/Hospital-Sepsis-Program-Core-Element...>

#### **1.15b Denominator Exclusions**

None

### **1.15c Denominator Exclusions Details**

None

### **1.15d Age Group**

Other

### **1.15e Age Range in Years**

Age group is not applicable

### **1.16 Type of Score**

Categorical, e.g., yes/no

### **1.17 Measure Score Interpretation**

Better performance = Higher score

### **1.18 Calculation of Measure Score**

The Hospital Sepsis Program Core Elements Score is 0-28, the score is the sum of priority examples/domains based on the hospital's responses to questions in the NHSN Patient Safety Annual Hospital Survey.

### **1.18a Attach measure score calculation diagram**

[1.18-Calculation-of-Measure-Score.pdf](#)

### **1.19 Measure Stratification Details**

The measure is not stratified.

### **1.20 Types of Data Sources**

Other

### **1.20a Other Data Source**

Attestation by team that responses to the NHSN Annual Survey

### **1.20d Format: Other Data Source**

Non-digital

### **1.21a Data Collection Tool URL(s)**

<http://example.com>

### **1.25 Data Source Details**

Data is collected using the Center for Disease Control and Prevention’s National Healthcare Safety Network (NHSN) Patient Safety Annual Hospital Survey.

All U.S. hospitals are eligible to enroll in NHSN. Hospital staff members at each enrolled hospital are required to complete an annual survey using the NHSN web-based application between January 1 and March 1 of each calendar year.

Data from this survey is used to obtain supporting data for many quality measures. Questions pertaining to hospital sepsis program practices have been included in the survey starting with the 2022 survey. Survey respondents are instructed to consult with persons leading sepsis efforts or other local expertise as needed to accurately complete the survey. All of the information necessary to calculate the Hospital Sepsis Program Core Elements Score comes from required questions on the NHSN Patient Safety Annual Hospital Survey.

## 1.26 Minimum Sample Size

N/A

## 2.1 Attach Logic Model

[2.1-Logic-Model-Hospital-Sepsis-Program-Core-Elements-Score.pdf](#)

## 2.2 Evidence of Measure Importance

Sepsis is a leading cause of hospitalization and hospital mortality,<sup>1</sup> contributing to over a third of all hospital deaths.<sup>2</sup> In the United States, there are an estimated 1.7 million cases of adult sepsis hospitalization annually, of which 350,000 result in hospital death or discharge to hospice.<sup>3</sup> Beyond being a major driver of hospital mortality, sepsis also contributes to incident disability.<sup>4</sup> 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.<sup>5,6,7</sup>

Support from hospital and health system leadership, especially from the chief medical and chief nursing officers, is critical to the success of hospital sepsis programs.<sup>8,9</sup> 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

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can help ensure that sepsis programs have the engagement and resources necessary to accomplish their goals.

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 improvement in sepsis management and antimicrobial stewardship.<sup>10</sup>

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. We strongly recommend for sepsis programs to be co-led by a physician and a nurse. 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.<sup>11</sup>

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.<sup>10</sup> Dedicated sepsis coordinators can greatly increase the effectiveness of the hospital sepsis program by contributing to action, tracking/reporting, and education activities.<sup>10</sup>

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.<sup>11,12,13</sup> 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.

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 and implementation science principles to promote uptake of the intervention.<sup>14,15</sup> Additionally, hospital sepsis programs should monitor use and effectiveness of hospital interventions and refine interventions as needed to optimize treatment and outcomes.

- **Implementing a standardized process to screen for sepsis:** Early administration of sepsis treatment is lifesaving, 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.<sup>16,17,18,19,20</sup>
- **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.<sup>10</sup> 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<sup>10</sup>. 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).<sup>10</sup> 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 approaches for source control based on hospital availability of surgical and interventional radiology services.<sup>10</sup> 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.<sup>10</sup>
- **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.<sup>10</sup> Order sets should be tailored to the patient population (e.g., pediatric versus adult patients).<sup>10</sup> 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.<sup>10</sup>
- **Structures and processes to facilitate prompt delivery of antimicrobials:** Timely delivery of antimicrobial therapy in sepsis is life-saving.<sup>16,17,18,19,20</sup> 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.<sup>21</sup> 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.<sup>22</sup>
- **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.<sup>10</sup> 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.<sup>10</sup> 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.<sup>23</sup>

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.<sup>24</sup> 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.<sup>25</sup>
- **A "Code Sepsis" protocol:** Many hospitals use "Code Sepsis" huddles to hasten sepsis recognition and treatment.<sup>58-60</sup> "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.<sup>26,27,28</sup>
- **Peri-discharge evaluation:** Survivors of hospitalization for sepsis may experience new or worsening functional limitations, cognitive impairment, post-traumatic stress disorder/anxiety symptoms, and chronic health conditions.<sup>6</sup> Up to 40% of patients are re-hospitalized within three months of discharge. Common causes for re-hospitalization include recurrent infection, heart failure exacerbation, chronic obstructive pulmonary disease exacerbation, acute renal failure, and aspiration pneumonitis. Some of these hospitalizations may be preventable with optimal medical management.<sup>31</sup>

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.<sup>10</sup> However, tracking requires resources, and no program can measure everything.<sup>10</sup> It is important to prioritize which sepsis metrics 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.<sup>10</sup>

Reporting sepsis treatment and outcomes to relevant staff can help maintain staff engagement, motivate behavior change, and facilitate improvement in sepsis treatment and outcomes.<sup>10</sup> It is critical that information be provided in a clear and transparent manner.<sup>10</sup> Reports should explain how data were collected and how measures were calculated.<sup>10</sup> In addition, providing the option to drill down and review data for individual hospitalizations can help facilitate targeted review of cases for performance improvement.<sup>10</sup> Data that are timely and focused (e.g., to a specific hospital

unit or an individual clinician) are often most actionable.<sup>32</sup> Reports to hospital leadership and the board can also help raise awareness of and support for sepsis program efforts.

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 trainees for health professions. Knowledge of sepsis is also important to patients, families, and caregivers. Patients hospitalized for sepsis are at increased risk for subsequent episodes of sepsis.<sup>31,33</sup> However, despite the increased risk for recurrent sepsis, many patients are unaware of both their diagnosis of sepsis and their risk for recurrent sepsis.<sup>34</sup> In an international survey of sepsis survivors, nearly half reported dissatisfaction with their sepsis education.<sup>35</sup> Hospitalization and post-hospital follow-up are key opportunities 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 because education may facilitate timely health-seeking behavior in sepsis survivors who experience complications.<sup>36,37</sup>

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37. Evans L, Rhodes A, Alhazzani W, et al. Surviving sepsis campaign: international guidelines for management of sepsis and septic shock 2021. Intensive Care Med. Oct 2 2021;doi:10.1007/s00134-021-06506-y

### **Below are recommendations from the Surviving sepsis campaign: international guidelines for management of sepsis and septic shock 2021**

Evans L, Rhodes A, Alhazzani W, Antonelli M, Coopersmith CM, French C, Machado FR, Mcintyre L, Ostermann M, Prescott HC, Schorr C, Simpson S, Wiersinga WJ, Alshamsi F, Angus DC, Arabi Y, Azevedo L, Beale R, Beilman G, Belley-Cote E, Burry L, Cecconi M, Centofanti J, Coz Yataco A, De Waele J, Dellinger RP, Doi K, Du B, Estenssoro E, Ferrer R, Gomersall C, Hodgson C, Møller MH, Iwashyna T, Jacob S, Kleinpell R, Klompas M, Koh Y, Kumar A, Kwizera A, Lobo S, Masur H, McGloughlin S, Mehta S, Mehta Y, Mer M, Nunnally M, Oczkowski S, Osborn T, Papathanassoglou E, Perner A, Puskarich M, Roberts J, Schweickert W, Seckel M, Sevransky J, Sprung CL, Welte T, Zimmerman J, Levy M. Surviving sepsis campaign: international guidelines for management of sepsis and septic shock 2021. Intensive Care Med. 2021 Nov;47(11):1181-1247. doi: 10.1007/s00134-021-06506-y. Epub 2021 Oct 2. PMID: 34599691; PMCID: PMC8486643.

Surviving Sepsis Campaign: International Guidelines for Management of Sepsis and Septic Shock” was first published in 2004 and subsequently revised in 2008, 2012, 2016, and 2021. These guidelines provide recommendations to support clinicians managing hospitalized adult patients with or at risk of developing sepsis or septic shock.

The GRADE approach was used to identify outcomes that were considered important from a patient’s perspective. For each question, the panel developed a list of relevant outcomes and then electronically voted on the importance of each outcome from a patient’s perspective. Mean scores were used to select the most critical and important outcomes.

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The GRADE system categorizes the quality of evidence into four main levels:

**High (Grade 1):**

- The evidence is highly reliable. Further research is unlikely to change our confidence in the estimate of effect.

**Moderate (Grade 2):**

- The evidence is moderately reliable. Further research may have an impact on the estimate of effect and may change the confidence in the result.

**Low (Grade 3):**

- The evidence is limited. Further research is likely to have a significant impact on the estimate of effect and may alter the confidence in the result.

**Very Low (Grade 4):**

The evidence is very limited. Any estimate of effect is very uncertain, and further research is likely to have a major impact on the estimate of effect.

- For hospitals and health systems, we recommend using a performance improvement program for sepsis, including sepsis screening for acutely ill, high-risk patients and standard operating procedures for treatment.

Strong recommendation, moderate quality of evidence for screening.

Strong recommendation, very low-quality evidence for standard operating procedures.

Sepsis performance improvement programs generally consist of sepsis screening, education, measurement of sepsis bundle performance, patient outcome reporting, and actions for identified opportunities. Despite some inconsistency, a meta-analysis of 50 observational studies on the effectiveness of sepsis performance improvement programs showed that these programs were associated with better adherence to sepsis bundles and reductions in mortality (OR, 0.66; 95% CI, 0.61-0.72) among patients with sepsis and septic shock (Damiani).

Sepsis screening tools are designed to promote early identification of sepsis and consist of manual methods or automated use of the electronic health record (EHR). Screening tools may target patients in various locations, such as in-patient wards, emergency departments, or intensive care units (ICUs). A pooled analysis of three randomized controlled trials (RCTs) did not demonstrate a mortality benefit of active screening (RR, 0.90; 95% CI, 0.51–1.58) (Downing; Hooper;

Shimabukuro). However, while there is wide variation in sensitivity and specificity of sepsis screening tools, these tools are an important component of identifying sepsis early for timely intervention.

Standard operating procedures are sets of practices that specify a preferred response to specific clinical circumstances (Rao). A large study was conducted to examine the association between implementation of state-mandated sepsis protocols, compliance, and mortality. A retrospective cohort study of 1,012,410 sepsis admissions to 509 hospitals in the United States examined mortality before (27 months) and after (30 months) implementation of New York state sepsis regulations, with a concurrent control population from four other states. In this comparative interrupted time series, mortality was lower in hospitals with higher compliance with sepsis bundles.

Damiani E, Donati A, Serafini G, et al: Effect of performance improvement programs on compliance with sepsis bundles and mortality: A systematic review and meta-analysis of observational

studies. PLoS One 2015; 10:e0125827.

Downing NL, Rolnick J, Poole SF, et al: Electronic health record-based clinical decision support alert for severe sepsis: A randomised evaluation. BMJ Qual Saf 2019; 28:762-768.

Hooper MH, Weavind L, Wheeler AP, et al: Randomized trial of automated, electronic monitoring to facilitate early detection of sepsis in the intensive care unit. Crit Care Med 2012; 40:2096-2101

Shimabukuro DW, Barton CW, Feldman MD, et al: Effect of a machine learning-based severe sepsis prediction algorithm on patient survival and hospital length of stay: A randomised clinical trial. BMJ Open Respir Res 2017; 4:e000234

Rao TS, Radhakrishnan R, Andrade C: Standard operating procedures for clinical practice. Indian J Psychiatry 2011; 53:1-3

Kahn JM, Davis BS, Yabes JG, et al: Association between state-mandated protocolized sepsis care and in-hospital mortality among adults with sepsis. JAMA 2019; 322:240-250

- For adults with possible septic shock or a high likelihood for sepsis, we recommend administering antimicrobials immediately, ideally within 1 hour of recognition. Strong, low quality of evidence (Septic shock)

Early administration of appropriate antimicrobials is one of the most effective interventions to reduce mortality in patients with sepsis (Ferrer; Kalil; Seymour). Delivering antimicrobials to patients with sepsis or septic shock should therefore be treated as an emergency.

Ferrer R, Artigas A, Suarez D, et al; Edusepsis Study Group: Effectiveness of treatments for severe sepsis: A prospective, multicenter, observational study. *Am J Respir Crit Care Med* 2009; 180:861-866

Kalil AC, Johnson DW, Lisco SJ, et al: Early goal-directed therapy for sepsis: A novel solution for discordant survival outcomes in clinical trials. *Crit Care Med* 2017; 45:607-614

Seymour CW, Gesten F, Prescott HC, et al: Time to treatment and mortality during mandated emergency care for sepsis. *N Engl J Med* 2017; 376:2235-2244

- For adults with sepsis or septic shock and their families, we suggest offering written and verbal sepsis education (diagnosis, treatment, and post-ICU/post-sepsis syndrome) prior to hospital discharge and in the follow-up setting. Weak, very low quality of Evidence

Almost 40% of sepsis survivors are re-hospitalized within 3 months, often for preventable conditions, contributing to increased healthcare costs (Gruther). Sepsis education may have a role in the timely healthcare-seeking behavior in sepsis survivors who experience complications. In an international survey of sepsis survivors from 41 countries, 45% and 63% reported dissatisfaction with sepsis education at the acute and post-acute phase, respectively (Huang). We identified six RCTs that evaluated educational interventions for critically ill patients and their families (Azoulay; Bench; Demircelik; Fleischer; Gehrke-Beck; Schmidt). Only one RCT focused on patients with sepsis; this study evaluated a complex intervention that included sepsis education along with primary care follow-up and post-discharge monitoring.

Gruther W, Pieber K, Steiner I, et al: Can early rehabilitation on the general ward after an

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intensive care unit stay reduce hospital length of stay in survivors of critical illness?: A randomized controlled trial. *Am J Phys Med Rehabil* 2017; 96:607-615.

Huang CY, Daniels R, Lembo A, et al; Sepsis Survivors Engagement Project (SSEP): Life after sepsis: An international survey of survivors to understand the post-sepsis syndrome. *Int J Qual Health Care* 2019; 31:191-198

Azoulay E, Pochard F, Chevret S, et al: Impact of a family information leaflet on effectiveness of information provided to family members of intensive care unit patients: A multicenter, prospective, randomized, controlled trial. *Am J Respir Crit Care Med* 2002; 165:438-442

Bench S, Day T, Heelas K, et al: Evaluating the feasibility and effectiveness of a critical care discharge information pack for patients and their families: A pilot cluster randomised controlled trial. *BMJ Open* 2015; 5:e006852

Demircelik MB, Cakmak M, Nazli Y, et al: Effects of multimedia nursing education on disease-related depression and anxiety in patients staying in a coronary intensive care unit. *Appl Nurs Res* 2016; 29:5-8

Fleischer S, Berg A, Behrens J, et al: Does an additional structured information program during the intensive care unit stay reduce anxiety in ICU patients?: A multicenter randomized controlled trial. *BMC Anesthesiol* 2014; 14:48

Gehrke-Beck S, Bänfer M, Schilling N, et al: The specific needs of patients following sepsis: A nested qualitative interview study. *BJGP Open* 2017; 1:bjgpopen17X100725

Schmidt K, Worrack S, Von Korff M, et al; SMOOTH Study Group: Effect of a primary care management intervention on mental health-related quality of life among survivors of sepsis: A randomized clinical trial. *JAMA* 2016; 315:2703-2711

## 2.3 Anticipated Impact

This measure is anticipated to improve the care of patients with sepsis by incentivizing the uptake of sepsis program best practices. These practices are described in the Centers for Disease Control and Prevention’s Hospital Sepsis Program Core Elements, a set of guidance provided to help hospitals develop multiprofessional programs that optimize and monitor the management and outcomes of sepsis.

Potential unintended consequences include increased costs for hospitals that want to implement more sepsis program practices.

## 2.4 Performance Gap

The value of the ‘mean performance score’ in each decile is the mean of the element scores that fall in each decile range. ‘N of Entities’ for each decile is the number of facilities that fall in each decile range.

Performance scores provided are from 5,220 hospitals who submitted a 2024 NHSN Patient Safety Annual Hospital Survey by August 26, 2025. Facility scores ranged from a minimum of zero (0) to a maximum of 28, with a mean performance score of 17. This indicates significant room for improvement on this measure among reporting hospitals. Thirty-five hospitals reported implementing all 28 domains, and 50% of hospitals had the potential to implement at least ten additional domains to meet the recommended number of domains within the Hospital Sepsis Program Core Elements.

**Table 1. Performance Scores by Decile**

	Performance Gap												
	Overall Minimum	Decile_1	Decile_2	Decile_3	Decile_4	Decile_5	Decile_6	Decile_7	Decile_8	Decile_9	Decile_10	Maximum	
Mean Performance Score	17	0	2	7	11.5	15.1	17.5	19.5	21	22.5	24	25.9	28
N of Entities	5220		445	534	518	490	489	605	355	701	395	688	
N of Persons / Encounters / Episodes													

### 2.4a Attach Performance Gap Results

[2.4a-Performance-Gap-Scores-by-Decile.pdf](#)

## 2.5 Health Care Quality Landscape

This measure reinforces uptake of the CDC Hospital Sepsis Program Core Elements (Sepsis Core Elements), whose rationale was best described by Prescott et al. in the Journal of the American

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Medical Association:

The Sepsis Core Elements build on prior large-scale efforts to improve sepsis outcomes, such as the Surviving Sepsis Campaign, the New York state sepsis regulations, and the Centers for Medicare & Medicaid Services' Severe Sepsis/Septic Shock Early Management Bundle. These initiatives have focused on recognition and early management of sepsis in hospitals. While measuring the impact of such programs is notoriously difficult, the best available evidence suggests that these programs have improved sepsis outcomes. However, morbidity and mortality from sepsis remain unacceptably high, indicating more work is needed.

The Sepsis Core Elements reinforce and extend these prior initiatives in several important ways. First, the Sepsis Core Elements emphasize the importance of hospital leadership in directing that clinicians leading the program have the time, resources (including data analytics), and support structures needed to succeed. Second, the Sepsis Core Elements address all hospital-based sepsis activities, including education, tracking of sepsis management, and reporting of sepsis outcomes—while prior sepsis initiatives have focused on improving select processes of care. Third, the Sepsis Core Elements address management of sepsis throughout hospitalization, while prior initiatives have often focused on the first 6 to 24 hours of sepsis management, or the so-called golden hours of sepsis resuscitation. Early recognition and management are critical and are points of emphasis in the Sepsis Core Elements, but subsequent management is also important to optimizing longer-term recovery from sepsis and is an area for improvement.<sup>1</sup>

<sup>1</sup>Prescott HC, Posa PJ, Dantes R. The Centers for Disease Control and Prevention's Hospital Sepsis Program Core Elements. *JAMA*. 2023 Nov 7;330(17):1617-1618. doi: 10.1001/jama.2023.16693. PMID: 37616213; PMCID: PMC10877561.

## 2.6 Meaningfulness to Target Population

We sought feedback from patients, patient advocacy organizations, and professional organizations.

The measure team hosted two virtual meetings with patients, caregivers, and patient advocacy organizations. The first meeting was held in November 2024 and 13 individuals attended. The second meeting was held in April 2025 and nine individuals attended. Content presented at these meetings included an overview of the Hospital Sepsis Program Core Elements, their relationship to sepsis care and outcomes, and how feedback from the first meeting was addressed.

The team also hosted two virtual meetings with a technical expert panel (TEP) to gain feedback from professional organizations. The TEP panel included individuals representing more than 15 professional organizations. The first meeting was hosted in November 2024; 23 individuals attended. The second meeting was hosted in April 2025 and 19 individuals attended. A total of 26

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unique individuals participated in the two meetings.

To assess the measure, participants in both the April patient meeting and April TEP meeting were asked the question “can the Hospital Sepsis Program Core Elements Score be used to differentiate between hospitals providing good from poor quality of sepsis care?”

All voting members (9 in the patient meeting and 19 from the TEP meeting) indicated that the measure could be used to differentiate hospitals providing good from poor quality of care related to sepsis. Additionally, two organizations, END Sepsis and the Sepsis Alliance, provided statements of support for the measure.

Sixty-one patients, caregivers, and experts were invited to provide feedback regarding the measure.

Overall, the respondents were supportive of this measure. All 61 respondents voted that the measure was meaningful and would improve patient care.

Respondents suggested areas for improvement including increasing engagement of various stakeholders at the hospital, minimizing data collection burden, and ensuring clarity of questions. Some respondents also suggested tools to ensure accuracy of data completion, including data audits, and hospital report cards to promote transparency.

### **3.1 Contributions Towards Closing Care Gaps**

The Equity domain is optional for the Fall 2025 endorsement cycle.

#### **4.1a Data Structure and Availability**

Data for this measure are collected annually using the CDC’s NHSN Patient Safety Annual Hospital Survey. All U.S. hospitals are eligible to enroll in NHSN, as this is a requirement for submitting several quality measures to CMS Hospital Quality Initiative programs. All of the data used to calculate the score is already required of users to report; however, the data isn’t generated/used during care delivery and is not in structured or unstructured fields, as it does not come from an EHR.

Hospitals enrolled in NHSN are required to complete the Patient Safety Annual Hospital Survey by March 1 of each year. Responses to the survey refer to hospital practices during the prior calendar year. Hospital staff members complete the survey electronically using the NHSN web-based application. By the end of August 2025, 5,220 (84%) of 6,208 enrolled acute care hospitals and critical access hospitals had completed the fields of the survey that are used to calculate the Sepsis Core Elements Score.

Facilities have not notified NHSN of any feasibility issues within the past year.

NHSN has built-in business rules for mandatory data elements and does not allow for the submission of incomplete records.

Addressing NHSN data quality issues is integral to NHSN's ability to help facilities collect the data needed to identify areas in need of prevention efforts, measure progress of prevention efforts, and push toward elimination of adverse patient events. To confirm the accuracy of the data reported to NHSN, the NHSN team routinely reviews the data reported to NHSN and contacts facilities to resolve confirmed and suspected data quality concerns. These data quality checks include reviewing survey data, implementing business rules within the application, verifying alerts, and confirming that flags are triggered when the data is incomplete.

#### **4.1b Implementation Costs and Burden**

Per the Paperwork Reduction Act (PRA) of 1995, federal agencies cannot conduct or sponsor the collection of information unless the Office of Management and Budget (OMB) has reviewed and approved the proposed data collection. Federal agencies must submit a set of documents known as an Information Collection Request (ICR) to request OMB approval of an information collection. The ICR documents describe what information is needed, why it is needed, how it will be collected, and how much time, money, and effort it will cost the respondents to collect the information.

Below is the OMB approved estimated burden and the annual cost for all facilities that complete data collection for the NHSN Patient Safety Annual Hospital Survey.

Number of Facilities Completing the Annual Hospital Survey - 5,400

Amount of Time for Each Facility to Complete the Survey - 26 minutes

Total Respondent Cost - \$1,524

#### **4.1c Confidentiality**

The data collected via the NHSN Patient Safety Annual Hospital Survey is not patient-level, and contains no PII or PHI.

An Assurance of Confidentiality is granted for all data collected under NHSN. NHSN's Assurance of Confidentiality states the following:

"The voluntarily provided information obtained in this surveillance system that would permit identification of any individual or institution is collected with a guarantee that it will be held in strict confidence, will be used only for the purposes stated, and will not otherwise be disclosed or released without the consent of the individual, or the institution in accordance with Sections 304, 306 and 308(d) of the Public Health Service Act (42 USC 242b, 242k, and 242m(d))."

### 4.3 Feasibility Informed Final Measure

NHSN's Patient Safety Annual Hospital Survey is approved by the Office of Management and Budget (OMB) to ensure compliance with the Paperwork Reduction Act (PRA) and other regulations.

No adjustments were made to the measure based on these feasibility assessments.

### 4.4 Proprietary Information

Not a proprietary measure and no proprietary components

#### 5.1.1 Data Used for Testing

Reliability Testing:

During January through April 2025, hospitals participating in the Michigan Hospital Medicine Safety (HMS) Sepsis Initiative completed the questions that inform the Hospital Sepsis Program Core Elements Score on both the NHSN Patient Safety Annual Hospital Survey and an annual HMS survey. Responses to the same survey questions were compared between the NHSN and HMS surveys.

Validity Testing:

To assess the validity of the Hospital Sepsis Program Core Elements, we generated a Core Elements Score (range 0-28) as a calculation of the number of priority examples (key program features) present at each hospital based on self-report via survey.

We then assessed the correlation (Pearson's coefficient) of the Core Elements Score with sepsis management and risk-adjusted sepsis outcomes in 67 hospitals participating in HMS. Sepsis management was measured as performance on the HMS Early Sepsis Bundle used for statewide performance benchmarking in Michigan. Performance on the HMS Early Sepsis Bundle was calculated from HMS registry data (January 2022 through August 2024) and entered by professional abstractors at each participating hospital for a random sample of community-onset sepsis admissions (N=35,777 total hospitalizations). The risk-adjusted outcome of interest was the 30-day standardized mortality ratio, calculated as observed mortality divided by predicted mortality using the HMS-Sepsis mortality model<sup>1</sup>. The HMS-Sepsis mortality model uses physiologic, demographic, and baseline health data to predict 30-day mortality after community-onset sepsis.<sup>1</sup> This model has strong discrimination (c-statistic 0.82 in validation).<sup>1</sup>

1. Prescott HC, Heath M, Munroe ES, Blamoun J, Bozyk P, Hechtman RK, Horowitz JK, Jayaprakash N, Kocher KE, Younas M, Taylor SP, Posa PJ, McLaughlin E, Flanders SA.

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Development and Validation of the Hospital Medicine Safety Sepsis Initiative Mortality Model. Chest. 2024 Nov;166(5):1035-1045.

Description of SEP-1 analysis:

We also assessed correlations between a hospital's Core Elements Score calculated using data from the NHSN Patient Safety Annual Hospital Survey and its score on the CMS Severe Sepsis/Septic Shock Management Bundle (SEP-1), which is a publicly reported quality measure abstracted on a limited number of sepsis-coded cases at each hospital. Data for calendar year 2024 from NHSN Annual Survey and 2023Q4-2024Q3 from CMS SEP-1 were used for the analysis. To ensure data quality, only hospitals with  $\geq 25$  cases included in CMS SEP-1 during the study period were included in the analysis.

### 5.1.1a Dates of Testing Data

Reliability Testing:

January through April 2025.

Validity Testing:

Performance on the HMS Early Sepsis Bundle was calculated from HMS registry data (January 2022 through August 2024).

Description of SEP-1 analysis:

Data for calendar year 2024 from NHSN Annual Survey and 2023Q4-2024Q3 from CMS SEP-1 were used for the analysis.

### 5.1.2 Differences in Data

Reliability Testing:

To test reliability, we used hospital-level NHSN and HMS survey data.

Validity Testing:

To test validity, we used the Core Elements Score as calculated from HMS survey data correlated to process measures and risk-adjusted outcomes measured using HMS registry data.

Additionally, the 2,823 facilities that had both submitted 2024 NHSN Patient Safety Annual Hospital Survey and 2023Q4-2024Q3 CMS SEP-1 data with sample denominator  $\geq 25$  were included in a correlation analysis between Core Element Score and CMS SEP-1 score.

### **5.1.3 Characteristics of Measured Entities**

See 7.1 Supplemental Information Attachment Pages 4-5 for details.

### **5.1.4 Characteristics of Units of the Eligible Population**

See 7.1 Supplemental Information Attachment Page 6 for details.

### **5.2.1 Level(s) of Reliability Testing Conducted**

Person or encounter level (i.e., data element) (e.g., inter-abstractor reliability)

### **5.2.2 Method(s) of Reliability Testing**

Representatives from hospitals were asked to respond to the NHSN Patient Safety Annual Hospital Survey questions used in the calculation for the Core Elements Score and were also asked to respond to the same questions via a survey through Michigan HMS. The statistical method used was percent agreement checking for statistical significance using a standard T-test for each individual element. The results of the individual questions and the total score were compared between the two surveys.

### **5.2.3 Reliability Testing Results**

The statistical method used was percent agreement checking for statistical significance using a standard T-test for each individual element. For the overall number of elements, we compared using correlation coefficients. Based on an analysis of 28 measures, hospital concordance rates ranged from 37% to 100%. Overall, 72% of hospitals had total Core Elements Score agreements within 4 points between the two surveys.

### **5.2.4 Interpretation of Reliability Results**

The reliability testing results indicate that the measure is well positioned to determine the differences in hospitals that have widely different scores on number of items. For example, hospitals that have implemented 12 of the items in the measure would be expected to perform differently than those that have implemented 25 of the items on the measure. For this reason, the measure is reliable in identifying higher performing hospitals compared to lower performing hospitals in general. When small, incremental differences are important, a more sensitive or granular measure should be chosen.

### **5.3.1 Level(s) of Validity Testing Conducted**

Accountable entity level (i.e., measure score) (e.g., criterion validity)

### **5.3.2 Type of Accountable Entity Level Validity Testing Conducted**

Empirical validity testing at the accountable entity-level (e.g., criterion validity, construct validity, known groups analysis), Systematic assessment of face validity of the measure's performance score as an indicator of quality or resource use

### 5.3.3 Method(s) of Validity Testing

We evaluated the empiric validity of the Hospital Sepsis Program Core Elements Measure using two methods.

#### 1. Empiric Validity Using Michigan Hospital Medicine Safety Consortium (Michigan HMS) Quality Measures

We compared 2023 Core Elements Measure scores to several quality improvement measures within the 65 hospitals in Michigan HMS for the same time period. Since the Core Elements serve as a high-level guide for running an effective hospital or health system program to improve management and outcomes of sepsis, we sought to assess whether these key features of hospital sepsis programs are associated with better management and outcomes of sepsis. Specifically, Core Elements Measure scores were compared to hospital-level Michigan HMS Early Care Bundle scores and hospital-level 30-day sepsis mortality.

The early sepsis bundle is a composite measure of data including delivery of key care elements early in their hospitalization. These include: **See 7.1 Supplemental Information Attachment Page 7 for list of delivery of key care elements.**

Hospital 30-day mortality is a measure of a 30-day standardized mortality ratio, calculated as observed mortality divided by predicted mortality using the HMS-Sepsis mortality model. This model uses physiologic, demographic, and baseline health data to predict 30-day mortality among patients hospitalized for sepsis; it was previously validated and shown to have strong discrimination (c-statistic 0.82) and acceptable calibration. (Prescott et al 2024: doi 10.1016/j.chest.2024.06.3769)

We expect hospitals with higher scores on the Core Elements Measure to have better compliance with the early sepsis bundle is a composite measure and lower hospital 30-day mortality.

#### 2. Empiric Validity Using CMS SEP-1 Measure

We compared 2024 Hospital Sepsis Program Core Elements Scores to 2024 CMS Sepsis-1 (SEP-1)

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scores. We would expect a weak but positive correlation between these two scores.

SEP-1 is a widely used early sepsis management measure that is mandatory for hospitals enrolled in the CMS Value Based Purchasing program to report. The SEP-1 score is calculated as the proportion of patients with severe sepsis or septic shock who received all the elements of the management bundle, as a single composite measure. While it is useful, it only includes severe sepsis or septic shock patients and did not differentiate patients receive different levels of care in the bundle, so it only partially reflects sepsis care in a facility.

Correlation analysis between Core Element Score and CMS SEP-1 score was performed using data from hospitals that submitted both the 2024 NHSN Patient Safety Annual Hospital Survey and 2023Q4-2024Q3 CMS SEP-1 data. Analysis was limited to hospitals with SEP-1 sample denominators  $\geq 25$ . Hospital-level Core Element Scores (calculated from NHSN data) and CMS SEP-1 scores were linked based on CMS certification number. Multiple hospitals that report to NHSN may be registered under a single CMS certification number. For hospitals that shared a CMS certification number, the number of beds reported to NHSN by each hospital was summed and each hospital's Core Element Score was the weighted average score based on the number of beds. (Prescott et al 2024: doi 10.1016/j.chest.2024.06.3769)

### 3. Face Validity

We also performed face validity and invited 61 experts and patients/caregivers to provide feedback regarding the measure.

## 5.3.4 Validity Testing Results

1. Among 65 hospitals in the Michigan HMS quality initiative, the correlation between the Hospital Sepsis Program Core Elements Score and the Michigan HMS Early Sepsis Bundle was 0.422 ( $p < 0.001$ ) and the correlation between the Hospital Sepsis Program Core Elements Score and the HMS Risk-adjusted 30-day mortality was 0.261 ( $p = 0.03$ ).

2. Hospitals report SEP-1 data by their CMS Certification Number (CCN), and it is possible for multiple hospitals enrolled in CDC's National Healthcare Safety Network (NHSN) to be included in a single CCN. When this occurred, the composite Hospital Sepsis Program Core Elements Score was weighted by the number of beds in each hospital. For example, if a single CCN consisted of a 100-bed hospital with a Hospital Sepsis Program Core Elements Score of 20 and a 200-bed

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hospital with a Hospital Sepsis Program Core Elements Score of 10, the weighted Hospital Sepsis Core Elements Score for the CCN (with both hospitals) would be 13.3.

After creating weighted Hospital Sepsis Program Core Elements Scores for each CCN reporting SEP-1 data in 2024 and excluding psychiatric hospitals and CCNs reporting 24 or fewer SEP-1 cases (which are excluded from Value Based Purchasing), 2,823 CCNs received corresponding Hospital Sepsis Program Core Elements Scores.

Among all hospitals, the Spearman correlation was 0.208 (95% CI: 0.174,0.243,  $p < 0.0001$ ). The correlation coefficient demonstrated a weak positive correlation between the Hospital Sepsis Program Core Elements Score and CMS's Sepsis-1 score. The positive correlation supports the validity of the Hospital Sepsis Program Core Elements Score.

3. Face Validity: 100%, 61/61, of the voting experts and patients/caregivers on the TEP voted in agreement that the measure could differentiate good from poor quality care.

### 5.3.5 Interpretation of Validity Results

#### Empiric Validity:

The correlation coefficient demonstrated a weak positive correlation between NHSN's Hospital Sepsis Program Core Elements Score and CMS's Sepsis-1 score. The positive correlation supports the validity of NHSN's Hospital Sepsis Program Core Element Score. The interpretation of these findings show that the higher the number of NHSN Hospital Sepsis Program Core Elements, the better hospitals perform in the CMS Sep 1, HMS Sepsis early management bundle and standardized mortality measure.

#### Face Validity:

Overall, respondents were supportive of this measure and voted that the measure could differentiate good from poor quality care.

Some respondents provided additional feedback on areas for improvement of the data collection process. Suggested areas for improvement included increasing engagement of various stakeholders at the hospital, minimizing data collection burden, and ensuring clarity of questions. Some respondents also suggested tools to ensure accuracy of data completion, including data audits, and hospital report cards to promote transparency. None of the individuals responding to the question "can the Hospital Sepsis Program Core Elements Score be used to differentiate between hospitals providing good from poor quality of sepsis care?" provided an answer of "no."

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### 5.4.1 Methods Used to Address Risk Factors

No risk adjustment or stratification

### 6.1.1 Current Status

Not in use

### 6.1.2 Current or Planned Use(s)

Public Reporting, Public Health/Disease Surveillance, Regulatory and Accreditation Programs, Quality Improvement with Benchmarking (external benchmarking to multiple organizations), Quality Improvement (Internal to the specific organization)

### 6.2.1 Actions of Measured Entities to Improve Performance

To improve performance on this measure, facilities should review the best practices described in detail in the CDC Hospital Sepsis Program Core Elements (“Core Elements”), which are publicly available at <https://www.cdc.gov/sepsis/hcp/core-elements/index.html>

For hospitals or healthcare systems just starting a sepsis program or those with limited resources, the Core Elements webpage offers a “Getting Started” section that recommends initial steps to address first.

The rationale for the Core Elements was described well by Prescott et al. “The Sepsis Core Elements complement existing sepsis guidelines and facilitate implementation of best practices across a range of patient populations (adults, children, and women who are pregnant or postpartum) and in a range of hospital settings. The guidance does not provide a specific recipe for treating sepsis, but rather a “manager’s guide” for developing a comprehensive program to monitor and improve outcomes from sepsis. The guidance conceptualizes sepsis performance improvement as a continual process and highlights the importance of using quality improvement tools and implementation science principles to drive ongoing improvement in sepsis management and outcomes.”<sup>1</sup>

1 Prescott HC, Posa PJ, Dantes R. The Centers for Disease Control and Prevention's Hospital Sepsis Program Core Elements. JAMA. 2023 Nov 7;330(17):1617-1618. doi: 10.1001/jama.2023.16693. PMID: 37616213; PMCID: PMC10877561.

### 6.2.5a Potential Unintended Consequences

Hospitals may incur additional costs to implement recommended improvements to their hospital sepsis programs. However, these additional costs are anticipated to result in improved patient

care for one of the most common causes for hospitalization, potentially improving many cross-cutting quality measures including measures of length of stay, cost, and mortality.

## 7.1 Supplemental Attachment

[7.1-Supplemental-Information-Attachment---Hospital-Sepsis-Program-Core-Elements-Score.pdf](#)

### Developer POC email

ujb1@cdc.gov

### Measure Developer POC

Paula Farrell  
CDC NHSN  
Atlanta , GA  
United States

### The measure developer is different from the measure steward

No

### Steward Address

Andrea Benin  
Atlanta, GA  
United States

### Steward Organization

Centers for Disease Control and Prevention, National Healthcare Safety Network

### Steward Organization URL

<https://www.cdc.gov/nhsn/index.html>

### Steward POC email

aqb4@cdc.gov