

Quality Measures Fact Sheet

Severe Sepsis and Septic Shock: Management Bundle Measure (NQF #0500) National Quality Strategy Domain: Patient Safety

Quality Measures Set: Alternate

Data Source: Hospital Inpatient Quality Reporting Program

BPCI Advanced and Quality

The Center for Medicare & Medicaid Innovation's (the CMS Innovation Center's) BPCI Advanced Model rewards health care providers for delivering services more efficiently, supports enhanced care coordination, and recognizes high quality care. Hospitals and clinicians should work collaboratively to achieve these goals, which have the potential to improve the BPCI Advanced Beneficiary experience and align to the CMS Quality Strategy goals of promoting effective communication and care coordination, highlighting best practices, and making care safer and more affordable. A goal of the BPCI Advanced Model is to promote seamless, patient-centered care throughout each Clinical Episode, regardless of who is responsible for a specific element of that care.

Background on Severe Sepsis and Septic Shock

Severe sepsis and septic shock involve an inflammatory immune response to infection and are associated with high rates of mortality. CMS aims to improve patient outcomes by encouraging proactive, comprehensive management of the infection. Evidence demonstrates that following established guidelines for treatment of severe sepsis and septic shock is associated with lower hospital mortality.⁵⁷

CMS Innovation Center Rationale for Including the Severe Sepsis and Septic Shock: Management Bundle Measure in BPCI Advanced

Patients with severe sepsis have little margin for error, and early goal-directed treatment improves survival.⁵⁸ The Severe Sepsis and Septic Shock: Management Bundle measure contains several elements, including measurement of lactate, obtaining blood cultures, administering broad spectrum antibiotics, fluid resuscitation, vasopressor administration, reassessment of volume status and tissue

⁵⁷ Severe sepsis and septic shock: management bundle (Composite Measure). (2018). Retrieved from <http://www.qualityforum.org/QPS/0500>.

⁵⁸ Vincent, J. L., Pereira, A. J., Gleeson, J., & De Backer, D. (2014). Early management of sepsis. *Clinical and Experimental Emergency Medicine*, 1(1), 3-7. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5052825/>.

perfusion, and repeat lactate measurement. Success on the Severe Sepsis and Septic Shock: Management Bundle measure often requires protocol-driven, team-based practice. The Severe Sepsis and Septic Shock: Management Bundle measure has been used or is currently being used by the following Federal program: CMS' Hospital Inpatient Quality Reporting (IQR) Program. The CMS Innovation Center selected the measure for the BPCI Advanced Model because of the potential to reduce illness, mortality, and hospitalization.

Applicable Clinical Episodes

The Severe Sepsis and Septic Shock: Management Bundle measure is included in the Alternate Quality Measures Set and applies to the following inpatient Clinical Episode⁵⁹:

- Sepsis (Inpatient): Medicare Severity–Diagnosis-Related Groups (MS-DRGs) 870, 871, and 872

Measure Specifications

The Severe Sepsis and Septic Shock: Management Bundle measure selected for BPCI Advanced follows National Quality Forum (NQF) #0500 measure specifications and is also known as the Severe Sepsis and Septic Shock: Management Bundle (Composite Measure) under the Hospital IQR Program. It calculates the proportion of Medicare beneficiaries with severe sepsis or septic shock who received all the elements of the management bundle. The CMS Innovation Center will calculate Acute Care Hospital (ACH) performance at the hospital level for all Medicare beneficiaries included in the denominator. For Physician Group Practices (PGPs), the CMS Innovation Center will calculate the measure as specified at the hospital level, then weight the measure based on PGP Clinical Episode volume for each ACH where a PGP triggers an episode.

Denominator

The denominator for the Severe Sepsis and Septic Shock: Management Bundle measure includes all inpatients age 18 and over who have an International Statistical Classification of Diseases and Related Health Problems (ICD)-10-CM Principal or Other Diagnosis Code of sepsis, severe sepsis, or septic shock, as defined in the following table. This measure is not limited to BPCI Advanced Beneficiaries.

⁵⁹ MS-DRGs are up to date as of Model Year 3 (2020) and will be updated for Model Year 4 as needed.

ICD-10-CM Code	Code Description
A021	Salmonella sepsis
A227	Anthrax sepsis
A267	Erysipelothrix sepsis
A327	Listerial sepsis
A400	Sepsis due to streptococcus, group A
A401	Sepsis due to streptococcus, group B
A403	Sepsis due to Streptococcus pneumoniae
A408	Other streptococcal sepsis
A409	Streptococcal sepsis, unspecified
A4101	Sepsis due to Methicillin susceptible Staphylococcus aureus
A4102	Sepsis due to Methicillin resistant Staphylococcus aureus
A411	Sepsis due to other specified staphylococcus
A412	Sepsis due to unspecified staphylococcus
A413	Sepsis due to Hemophilus influenzae
A414	Sepsis due to anaerobes
A4150	Gram-negative sepsis, unspecified
A4151	Sepsis due to Escherichia coli [E. coli]
A4152	Sepsis due to Pseudomonas
A4153	Sepsis due to Serratia
A4159	Other Gram-negative sepsis
A4181	Sepsis due to Enterococcus
A4189	Other specified sepsis
A419	Sepsis, unspecified organism
A427	Actinomycotic sepsis
A5486	Gonococcal sepsis
B377	Candidal sepsis
R6520	Severe sepsis without septic shock
R6521	Severe sepsis with septic shock

All MS-DRG triggers apply, but this measure only applies to Medicare beneficiaries with severe sepsis and septic shock.

The exclusions for this measure include patients:

- that do not have severe sepsis
- transferred in from another acute care facility
- receiving intravenous antibiotics for more than 24 hours prior to presentation of severe sepsis
- with a directive for comfort or palliative care within three hours of presentation of severe sepsis
- with an administrative contraindication to care within six hours of presentation of severe sepsis
- with an administrative contraindication to care within six hours of presentation of septic shock
- with a directive for comfort or palliative care within six hours of presentation of septic shock
- with septic shock whom providers discharged within six hours of presentation
- with severe sepsis whom providers discharged within six hours of presentation
- with a length of stay longer than 120 days
- included in a clinical trial

Numerator

The numerator includes individuals in the previously defined denominator who received all the following interventions (if applicable) for the early management of severe sepsis and septic shock: initial lactate levels, blood cultures, antibiotics, fluid resuscitation, repeat lactate level, vasopressors, and volume status and tissue perfusion reassessment. Additional requirements include the provision of the following services:

- severe sepsis
 - within three hours of presentation:
 - measure initial lactate level
 - draw blood cultures prior to antibiotics
 - administer broad spectrum or other antibiotics
 - within six hours of presentation:
 - repeat lactate level (if initial lactate > 2 mmol/L)
- septic shock
 - within three hours of presentation:
 - administer 30 ml/kg crystalloid for hypotension or lactate = 4 mmol/L
 - within six hours of presentation:
 - apply vasopressors (for hypotension that does not respond to initial fluid resuscitation) to maintain a mean arterial pressure (MAP) = 65 mm Hg
 - reassess volume status and tissue perfusion in the event of persistent hypotension (MAP < 65 mm Hg) after initial fluid administration or initial lactate level = 4 mmol/L

Measure Submission

The CMS Innovation Center will calculate this measure using chart-abstracted data which BPCI Advanced Participants are already submitting for the Hospital IQR Program. To better align with the performance years of the BPCI Advanced Model, the Model uses January 1 through December 31 for measure calculation. The date of discharge on the index admission will determine the calendar year in which the claim belongs.

Revisions to the Published Specifications

The BPCI Advanced version of this measure uses a one-year calendar period rather than any 12-month period. In Model Year 4, the data will be collected from January 1, 2021 to December 31, 2021.

Composite Quality Score

The Severe Sepsis and Septic Shock: Management Bundle measure is one component of the BPCI Advanced Composite Quality Score (CQS) calculation. The CMS Innovation Center uses the CQS to adjust a portion of any Positive Total Reconciliation Amount and any Negative Total Reconciliation Amount. The CQS adjustment will not adjust the Positive Total Reconciliation Amount down by more than 10 percent, nor will it adjust the Negative Total Reconciliation Amount up by more than 10 percent. More information is available at the BPCI Advanced website provided below.

Other Resources

Organization/ Resource	Website Address
NQF #0500 specifications	http://www.qualityforum.org/QPS/0500
Hospital IQR Program measure specifications	https://www.qualitynet.org/dcs/BlobServer?blobkey=id&blobnocache=true&blobwhere=1228890879728&blobheader=multipart%2Foctet-stream&blobheadername1=Content-Disposition&blobheadervalue1=attachment%3Bfilename%3D2-1-SEP-v5-6.pdf&blobcol=urldata&blobtable=MungoBlobs
BPCI Advanced	https://innovation.cms.gov/initiatives/bpci-advanced
Centers for Disease Control and Prevention (CDC) sepsis guidelines	https://www.cdc.gov/sepsis/clinicaltools/index.html