eCQM Title	**Community-Onset Sepsis – 30-Day Mortality**		
eCQM Identifier (Measure Authoring Tool)	1160FHIR	**eCQM Version Number**	0.0.022
NQF Number	Not Applicable	**GUID**	72de79d8-c3e5-4ef8-957d-2a6bd2fdd62f
Measurement Period	January 1, 20XX through December 31, 20XX		
Measure Steward	Centers for Medicare & Medicaid Services (CMS)		
Population Basis	Encounter		
Experimental	No		
Measure Developer	American Institutes for Research (AIR)		
Endorsed By	None		
Description	This hybrid electronic clinical quality measure (eCQM), with risk adjustment, assesses the proportion of inpatient hospitalizations for adult patients with community-acquired sepsis who die within 30 days of presentation		
Copyright	Limited proprietary coding is contained in the Measure specifications for user convenience. Users of proprietary code sets should obtain all necessary licenses from the owners of the code sets. American Institutes for Research (R), formerly IMPAQ, disclaims all liability for use or accuracy of any third party codes contained in the specifications. LOINC(R) copyright 2004-2021 Regenstrief Institute, Inc. This material contains SNOMED Clinical Terms(R) (SNOMED CT[R]) copyright 2004-2021 International Health Terminology Standards Development Organisation. ICD-10 copyright 2021 World Health Organization. All Rights Reserved.		
Disclaimer	This measure and specifications are subject to further revisions. This performance measure is not a clinical guideline and does not establish a standard of medical care, and has not been tested for all potential applications. THE MEASURES AND SPECIFICATIONS ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND. Due to technical limitations, registered trademarks are indicated by (R) or [R] and unregistered trademarks are indicated by (TM) or [TM].		
Measure Scoring	Proportion		
Measure Type	Outcome		
Stratification	None		
Risk Adjustment	The following data is being collected for the development of baseline risk adjustment model. Claims-based factors: • Demographics (age, sex)		

Risk Adjustment	• Pre-existing comorbidity • Primary site/source of infection
Rate Aggregation	None
Rationale	Sepsis is one of the most common conditions present in hospitalized patients—accounting for an estimated 1.7 million U.S. hospitalizations in 2014—and is the second most common condition resulting in 30-day hospital readmission among Medicare beneficiaries (Hajj et al., 2018; Hines et al., 2011; Rhee et al., 2017). This measure addresses sepsis mortality and the variation in mortality across hospitals. Sepsis is a serious complication, that when not detected and treated early, may result in significant complications and mortality. Overall, in-hospital sepsis mortality estimates have ranged from 15% to 28%; however, these estimates may understate sepsis mortality due to unmeasured post-discharge mortality and discharge to hospice (Hajj et al., 2018; Nguyen et al., 2016; Angus et al., 2001; Karlsson et al., 2007). Mortality may additionally be higher in the Medicare population than in the general US population. One study of Medicare Part A and Part B beneficiaries found 6-month sepsis-associated mortality to be about 60% for septic shock patients, 36% for severe sepsis, 31% for sepsis attributed to a specific organism, and 27% for unspecified sepsis (Rhee & Klompas, 2020; Buchman et al., 2020). Studies have found that sepsis mortality is associated with the quality of hospital care—for instance, it has been estimated that the odds of death for a randomly chosen patient in the 10% of hospitals with the highest risk-standardized sepsis mortality rates is 29% higher than that in the 10% of hospitals with the lowest risk-standardized sepsis mortality rates (Hatfield et al., 2018). This suggests that there remains an opportunity for improvement. Recent studies and current clinical practice guidelines for sepsis have identified processes of care to reduce sepsis morbidity and mortality, including but not limited to screening, timely antimicrobial administration, use of crystalloids, and ventilation strategies. Yet, progress in reducing sepsis mortality has been hindered by lack of consensus regarding the definition of sepsis, which patients are most at risk, and which patients are more likely to benefit from targeted interventions of a healthcare system's limited resources. This measure would address this gap in data.
Clinical Recommendation Statement	The aim of this measure is to improve patient care by providing hospitals with feedback regarding the rate of community-acquired sepsis mortality. This may lead to a reduction in the cases of sepsis mortality, as well as general improvements in sepsis care that may reduce the rate of complications related to sepsis.
Improvement Notation	Decreased score indicates improvement
Reference	Reference Type: CITATION Reference Text: 'Angus DC, Linde-Zwirble WT, Lidicker J, Clermont G, Carcillo J, Pinsky MR. Epidemiology of severe sepsis in the United States: Analysis of incidence, outcome, and associated costs of care. Crit Care Med. 2001;29(7):1303-1310. doi:10.1097/00003246-200107000-00002'
Reference	Reference Type: CITATION Reference Text: 'Barlam TF, Cosgrove SE, Abbo LM, et al. Implementing an Antibiotic Stewardship Program: Guidelines by the Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America. Clin Infect Dis. 2016;62(10):e51-e77.'

Reference	Reference Type: CITATION Reference Text: 'Buchman TG, Simpson SQ, Sciarretta KL, et al. Sepsis among Medicare beneficiaries: 1. The burdens of sepsis, 2012-2018. Crit Care Med. 2020. doi:10.1097/CCM.0000000000004224'
Reference	Reference Type: CITATION Reference Text: 'Evans L, Rhodes A, Alhazzani W, et al. Surviving sepsis campaign: international guidelines for management of sepsis and septic shock 2021. Intensive Care Med. 2021;49(11):e1063-e1143. doi:10.1007/s00134-021-06506-y'
Reference	Reference Type: CITATION Reference Text: 'Hajj J, Blaine N, Salavaci J, Jacoby D. The “Centrality of Sepsis”: A Review on Incidence, Mortality, and Cost of Care. Healthcare. 2018;6(3):90. doi:10.3390/healthcare6030090'
Reference	Reference Type: CITATION Reference Text: 'Hall MJ, Williams SN, DeFrances CJ, Golosinskiy A. Inpatient care for septicemia or sepsis: a challenge for patients and hospitals. NCHS Data Brief. 2011;62.'
Reference	Reference Type: CITATION Reference Text: 'Hatfield KM, Dantes RB, Baggs J, et al. Assessing variability in hospital-level mortality among U.S. Medicare benefciaries with hospitalizations for severe sepsis and septic shock. Crit Care Med. 2018;46(11):1753-1760. doi:10.1097/CCM.0000000000003324'
Reference	Reference Type: CITATION Reference Text: 'Hines AL, Barrett ML, Jiang HJ, Steiner CA. Conditions With the Largest Number of Adult Hospital Readmissions by Payer, 2011: Statistical Brief #172.; 2014.'
Reference	Reference Type: CITATION Reference Text: 'Karlsson S, Varpula M, Ruokonen E, et al. Incidence, treatment, and outcome of severe sepsis in ICU-treated adults in Finland: The Finnsepsis study. Intensive Care Med. 2007;33:435-443. doi:10.1007/s00134-006-0504-z'
Reference	Reference Type: CITATION Reference Text: 'Nasa P, Juneja D, Singh O, Dang R, Arora V. Severe sepsis and its impact on outcome in elderly and very elderly patients admitted in intensive care unit. J Intensive Care Med. 2012. doi:10.1177/0885066610397116'
Reference	Reference Type: CITATION Reference Text: 'Nguyen AT, Tsai CL, Hwang LY, Lai D, Markham C, Patel B. Obesity and mortality, length of stay and hospital cost among patients with sepsis: A nationwide inpatient retrospective cohort study. PLoS One. 2016;11(4). doi:10.1371/journal.pone.0154599'

Reference	Reference Type: CITATION Reference Text: 'Page DB, Donnelly JP, Wang HE. Community-, Healthcare-, and Hospital-Acquired Severe Sepsis Hospitalizations in the University HealthSystem Consortium. Crit Care Med. 2015;43(9):1945-1951. doi:10.1097/CCM.0000000000001164'
Reference	Reference Type: CITATION Reference Text: 'Paoli CJ, Reynolds MA, Sinha M, Gitlin M, Crouser E. Epidemiology and costs of sepsis in the United States-an analysis based on timing of diagnosis and severity level. Crit Care Med. 2018;46(12):1889-1897. doi:10.1097/CCM.0000000000003342'
Reference	Reference Type: CITATION Reference Text: 'Rhee C, Dantes R, Epstein L, et al. Incidence and trends of sepsis in US hospitals using clinical vs claims data, 2009-2014. JAMA - J Am Med Assoc. 2017;318(13):1241-1249. doi:10.1001/jama.2017.13836'
Reference	Reference Type: CITATION Reference Text: 'Rhee C, Filbin MR, Massaro AF, et al. Compliance With the National SEP-1 Quality Measure and Association With Sepsis Outcomes. Crit Care Med. 2018;46(10):1585-1591. doi:10.1097/ccm.0000000000003261'
Reference	Reference Type: CITATION Reference Text: 'Rhee C, Klompas M. The eye-popping costs associated with sepsis diagnoses among Medicare beneficiaries. Crit Care Med. 2020;48(3):420-422. doi:10.1097/CCM.0000000000004228'
Reference	Reference Type: CITATION Reference Text: 'Surviving Sepsis Campaign. About the surviving sepsis campaign. http://www.survivingsepsis.org/About-SSC/Pages/default.aspx. Accessed September 12, 2019.'
Reference	Reference Type: CITATION Reference Text: 'Torio CM, Moore BJ. National Inpatient Hospital Costs: The Most Expensive Conditions by Payer, 2013: Statistical Brief #204.; 2016.'
Reference	Reference Type: CITATION Reference Text: 'U.S. Centers for Disease Control and Prevention (CDC). Making health care safer: think sepsis. time matters. CDC Vital Signs.'
Definition	Inpatient hospitalizations: Includes time in the emergency department and observation when the transition between these encounters (if they exist) and the inpatient encounter are within an hour or less of each other. Severe sepsis is defined as a combination of clinical findings, suspected infection, and organ dysfunction, as follows: Clinical findings, based on Systemic Inflammatory Response Syndrome (SIRS) criteria (≥2 of the following criteria within 6 hours of presentation): ○ Temperature >38° C or <36° C

Definition	○ HR >90/min ○ RR >20/min ○ WBC >12,000 or <4,000 cells/mm^3 Suspected infection (any one of the following criteria): ○ Diagnosis of infection (of suspected bacterial origin) present on admission (POA) ○ Diagnosis of sepsis present on admission (POA) ○ Administration of antibiotics within 30 hours of presentation and continuation for ≥3 days or until discharge Presence of organ dysfunction (≥1 of the following criteria within 6 hours of presentation, in the absence of an alternative explanation): ○ Administration of vasopressors ○ Mean arterial pressure (MAP) <65 mmHg or Systolic Blood Pressure (SBP) <90 mmHg ○ Initiation of mechanical ventilation ○ Creatinine >2.0 mg/dL (and at least 0.5 greater than, or 2x, baseline value) ○ Total bilirubin >2.0 mg/dL ○ Platelet count <100,000/mm3 ○ INR >1.5 or aPTT >60 sec Present on admission (POA) is defined as the conditions present at the time the order for inpatient admission occurs.
Guidance	This eCQM is an episode-based measure. An episode is defined as each inpatient hospitalization or encounter that ends during the measurement period.
Transmission Format	TBD
Initial Population	Inpatient hospitalizations of Medicare beneficiaries between 18 and 115 years of age at the start of the encounter who meet the definition for severe sepsis
Denominator	Equals Initial Population
Denominator Exclusions	Inpatient hospitalizations for patients: ○ Who lack continuous Medicare fee-for-service (FFS) Part A and B enrollment. Continuous enrollment is a duration of at least 30 days before through 30 days after the encounter start date ○ Discharged against medical advice ○ Discharged alive within 6 hours of presentation ○ Who had prior enrollment in hospice ○ Who had a prior inpatient episode of sepsis within a 30-day window (not transferred) ○ Who had a hospitalization following transfer from another facility's ED or inpatient care ○ Who had an influenza or COVID-19 infection present on admission
Numerator	Discharges for patients meeting the denominator criteria who die within 30 days of presentation of severe sepsis
Numerator Exclusions	N/A
Denominator Exceptions	N/A
32	For every patient evaluated by this measure also identify payer, race, ethnicity and sex

Supplemental Data Elements