

How 'R' are you coding severe sepsis? Why the R-code matters

WHITE PAPER

Summary: This article briefly reviews aspects of differing definitions of severe sepsis, and provides commentary on perceived areas of agreement and dissonance.

by **Paul Evans, RHIA, CCDS, CCS, CCS-P**



Documentation and coding of severe sepsis matters in terms of patient risk assessment and establishing sepsis as a diagnosis, as well as the effect of such documentation (and subsequent code assignment) on quality measures.

This white paper does not endeavor to offer new clinical insight into what defines sepsis or severe sepsis. This is a matter of great controversy best discussed by physician subject matter experts, who, to date, seem to have difficulty achieving a consensus amongst themselves as to what constitutes sepsis and defining various consequences that may delineate its severity.

Instead, I seek to offer practical, real-world advice to CDI or coding professionals who perform sepsis record reviews and to provide some thoughts for sepsis query strategies. In this white paper I will cite when something is my opinion; conversely, where an official source may be applicable it shall be referenced. My hope is that this article will stimulate you, and also offer you a tip or two that you can use in a practical manner.

Quality

Why should anyone really care if or when we report a form of severe sepsis with either R65.20, severe sepsis without septic shock, or R65.21, severe sepsis with septic shock? After all, if we capture any MCC with a principal diagnosis of sepsis, then the presence or absence of these codes may not affect the MS-DRG assignment, so why be concerned about the reporting of an R-code as a secondary code with sepsis?

Mortality rates and quality reporting metrics are two good reasons to worry. Sepsis and severe sepsis are leading causes of inpatient mortality at many hospitals. As CDI professionals know well, their physicians and facilities get graded by outside entities (both public and private), such as Healthgrades, Leapfrog, Truven, and CMS, on observed to expected outcomes and cost efficiency in their treatment of sepsis (without acute organ dysfunction) and severe sepsis (with acute organ dysfunction). Since these entities use ICD-10-CM-based administrative (coded) data to make their judgments, every CDI program has a vested interest in ensuring the integrity and clinical validity of every submitted sepsis-related case based on industry and clinical standards.

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So, parsing which cases actually get coded as sepsis and which can accurately get coded as severe sepsis matters, given that each code also comes with its own severity and risk coefficients. For example, MIDAS+ (a program that helps facilities track their profiles against more than 800 other hospitals nationally and includes a database of roughly 100 million encounters), assesses users' risk of mortality by a "Combined Severe Sepsis and Septic Shock Mortality Rate." The MIDAS+ program defines the measure as the observed mortality rate for all inpatients with any ICD discharge diagnosis of severe sepsis or septic shock for a rolling 12 months.

The failure to consistently apply classification of a case as severe sepsis or septic shock with the appropriate R-code, would adversely affect the outcomes reporting for this metric. To emphasize, a patient may have sepsis and also acute organ dysfunctions such as acute tubular necrosis or acute respiratory failure, but unless the documentation is such that severe sepsis is reported via the appropriate R-code the case will not be classified as severe sepsis.

Also bear in mind the numerous value-based purchasing measures—such as Patient Safety Indicators and readmission reduction measures—in which accurately capturing a sepsis diagnosis may cause a particular case to be included or excluded from that given measure.

For those working with APR-DRG groupers, assigning the appropriate R-code matters for severity of illness and risk of mortality (SOI/ROM) measures as well since sepsis has a SOI/ROM of 3 and severe sepsis has a SOI/ROM of 4. Higher contributions to these affect other quality metrics such as the observed versus expected mortality ratio, which is a common method of risk-adjusted mortality metrics.

Varying definitions

Let's review some of the competing definitions of severe sepsis to compare and contrast the areas of agreement and dissonance found among the Surviving Sepsis Campaign; the Sepsis-3 definitions released by the Society of Critical Care Medicine and the European Society of Intensive Care Medicine in the *Journal of the American Medical Association* in February 2016; and the codes themselves.

Official Guidelines for Coding and Reporting: Septic shock is severe sepsis. In order to code severe sepsis not stated as septic shock, the chart must either state "severe sepsis" or link sepsis to an acute organ dysfunction that permits the use of the R-code for severe sepsis. A code from subcategory R65.2, severe sepsis, should not be assigned unless severe sepsis is documented or an associated acute organ dysfunction is documented. If the documentation is not

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clear as to whether an acute organ dysfunction is related to the sepsis or another medical condition, query the provider. Those working in CDI and related fields should familiarize themselves with the entire text of these recommendations.

ICD-10-CM code set: Sepsis is coded as severe sepsis by default in ICD-10-CM if certain factors are present. Review the listing of acute organ dysfunctions (actually failures) that permit the reporting of severe sepsis if these are “linked” to sepsis, from the Tabular Section for subcategory R65.2, severe sepsis, which states “Use additional code to identify the specific acute organ dysfunction, such as:”

- Acute kidney failure, n17.x
- Acute respiratory failure, j96.0x
- Critical illness myopathy, g72.81
- Critical illness polyneuropathy, g62.81
- DIC, d65
- Encephalopathy, g93.41
- Hepatic failure, k72.0x

I personally view the list in ICD-10-CM as examples of some dysfunction/failures that, when documented as due to sepsis, code to severe sepsis. I do not view these examples as an exhaustive and complete listing of such conditions.

Traditionally, coders have had confidence assigning the R-code if the physician documents sepsis caused the conditions referenced in the Tabular Section at R65.2, to include the term “multiple organ dysfunction.”

Surviving Sepsis Campaign criteria for severe sepsis: The Surviving Sepsis Campaign: International Guidelines for Management of Severe Sepsis and Septic Shock, 2012 (SSC), corroborates ICD-10-CM’s definition of severe sepsis as “sepsis-induced tissue hypoperfusion *and/or* organ dysfunction (emphasis added) documented to be due to infection,” including the following clinical markers:

- Sepsis-induced hypotension
- Lactate above upper limits laboratory normal
- Acute lung injury with PaO₂/FiO₂ < 250 in the absence of pneumonia as infection source
- Acute lung injury with PaO₂/FiO₂ < 250 in the presence of pneumonia as infection source
- Creatinine > 2.0 mg/dL
- Bilirubin > 2 mg/dL
- Platelet count < 100,000
- Coagulopathy

Sepsis-3: Sepsis-3 defines sepsis as a “life-threatening organ dysfunction due to a dysregulated host response to infection.” With Sepsis-3, severe sepsis is obsolete.

One key element of sepsis-induced organ dysfunction under these definitions is an acute change in total Sequential Organ Failure Assessment (SOFA) score greater than or equal to “2 points consequent to infection, reflecting an overall mortality rate of approximately 10%.”

The baseline SOFA score may be taken as zero unless the patient is known to have previous comorbidity (e.g., head injury, chronic kidney disease, etc.). (See Figure 1.)

The implication is that all cases reported as sepsis would require that severe sepsis be reported; otherwise, sepsis may not exist. Consequently, some third parties may see this as an avenue to deny claims if a form of severe sepsis, using the appropriate R-code, is not reported.

If your hospital/facility endorses the Sepsis-3 criteria then, theoretically, all sepsis cases could be reported as severe and no cases of early or simple sepsis would be coded as these would not meet criteria.

Figure 1: Calculating SOFA

PaO₂/FIO₂ (mmHg)	SOFA score	Bilirubin (mg/dl) [μmol/L]	SOFA score
< 400	1	1.2–1.9 [> 20–32]	1
< 300	2	2.0–5.9 [33–101]	2
< 200 and mechanically ventilated	3	6.0–11.9 [102–204]	3
< 100 and mechanically ventilated	4	> 12.0 [> 204]	4
Glasgow Coma Scale	SOFA score	Platelets × 10³/μl	SOFA score
13–14	1	< 150	1
10–12	2	< 100	2
6–9	3	< 50	3
< 6	4	< 20	4
Mean Arterial Pressure OR administration of vasopressors required	SOFA score	Creatinine (mg/dl) [μmol/L] (or urine output)	SOFA score
MAP < 70 mm/Hg	1	1.2–1.9 [110–170]	1
dop ≤ 5 or dob (any dose)	2	2.0–3.4 [171–299]	2
dop > 5 OR epi <– 0.1 OR nor <– 0.1	3	3.5–4.9 [300–440] (or < 500 ml/d)	3
dop > 15 OR epi > 0.1 OR nor > 0.1	4	> 5.0 [> 440] (or < 200 ml/d)	4

The Sepsis-3 definition of septic shock is very precise—hypotension requiring vasopressor therapy to maintain mean blood pressure of 65 mmHg or greater and serum lactate level greater than 2 mmol/L after adequate fluid resuscitation. (Read the original article in the *Journal of the American Medical Association*.)

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Take another look at the ICD-10-CM Tabular Listing for sepsis (R65.2) and note it allows for the coding of severe sepsis if multiple organ dysfunction (MOD) is associated with sepsis. By this account, in my understanding, severe sepsis is sepsis with MOD. But consider the difference between the terms “dysfunction” and “failure.”

A patient that has stage 1 acute kidney injury (per the National Kidney Foundation’s Kidney Disease: Improving Global Outcomes [KDIGO] guidelines) may not have total, overt failure such as results in anuria with stage 3, severe acute kidney injury. However, the patient surely has a “dysfunction” that is recognized as acute kidney injury, and if a consequence of sepsis, this defines severe sepsis.

Bilirubin elevations (or jaundice) do not necessarily mean that acute liver failure is present. A platelet count of less than 100,000 does not necessarily mean that the bone marrow has failed or that the patient has disseminated intravascular coagulation. Hypoxemia alone is not acute hypoxemic respiratory failure unless other criteria are met. I believe that such “multiple organ dysfunctions” stated as due to sepsis permit the reporting of severe sepsis.

As a corollary, note that one can achieve a SOFA score of 2, or greater, using the Sepsis-3 definition, yet the patient may not have any acute and overt organ failure; rather, the patient may have dysfunctions not rising to the level of overt failure.

Case example

Consider a case in which a patient is admitted with respirations of 22, temperature of 38.1 Celsius, elevated white blood count (14K,) and heart rate of 100 with pneumonia. Per the admit note and multiple progress notes, the patient is septic secondary to pneumonia and is being treated with IV antibiotics and fluids, insertion of central line for sepsis protocol, and supplemental oxygen. On admission, the physician notes “hypoxia” and the patient is placed on 24% oxygen via Venturi mask in order to achieve and hold a pulse oximetry SpO₂ of 94%. SpO₂ of 94% is equal to a pO₂ of 73 mmHg. The patient has no history of chronic lung disease, such as any form of COPD. The P/F ratio = 73 divided by 0.24 = 304. This is not supportive of either acute respiratory distress syndrome or acute respiratory failure, but does equate to a SOFA score of 1.

In addition, the physician documents “concern for abnormal platelet count in the setting of sepsis” as the value is 141, INR is 1.6. The abnormal platelet count leads to a total SOFA score of 2, with 1 for the respiratory status and 1 for platelet count. (See Figure 1.)

Following treatment for sepsis, the patient’s hypoxia resolves and platelet counts rebound. Per the Sepsis-3 guidelines, this patient would have severe sepsis, and yet no evidence of overt organ failure is charted.

So, how should CDI specialists or coders confirm the severity of this situation given the fact that the code set does not support use of SOFA criteria? In my view, this represents “multiple organ dysfunction” due to sepsis and qualifies for the reporting of severe sepsis, if documented as such.

A query might be formulated as:

Dear Dr. Sep Sis.

Per H&P, per admit note and subsequent progress notes the patient has sepsis due to pneumonia. Also noted is concern for declining platelets in the setting of sepsis. On admission, the pt was placed on 24% oxygen in order to achieve and hold a pulse oximetry SpO2 of 94%.

Please indicate the severity of sepsis and, if present, please document any acute organ dysfunction associated with severe sepsis. Any potential association must be documented explicitly.

Severity of sepsis

- Severe sepsis (with acute organ dysfunction)
- Early sepsis w/o associated acute organ dysfunction

Associated organ dysfunction(s), if applicable

- Acute respiratory distress
- Hypoxia
- Thrombocytopenia
- Coagulopathy
- Multiple organ dysfunction syndrome (MODS)
- Other diagnosis (please specify)* _____
- No associated acute organ dysfunction

Reviewing the criteria cited by SSC and Sepsis-3, one can find *some* areas of commonality, although some of the means of measurement and cited variables are not the same. Take a cursory look at the tables and classifications for severe sepsis and common overlapping manifestations can be seen, as well as areas of dissonance.

What else do we need to consider? Under ICD-10-CM, additional consequences of sepsis—critical illness myopathy and critical illness polyneuropathy—map to severe sepsis. Are there other acute organ dysfunctions that are consequences of sepsis, such as sepsis causing an acute exacerbation of congestive heart failure and demand ischemia resulting in an acute myocardial infarction, that could result in the classification of sepsis as severe? The CDI specialist could formulate a query as follows:

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Dear Dr. Sep Sis,

The medical record documents sepsis and non-ST segment elevation myocardial infarction, due to demand ischemia. Please clarify in the medical record any association between these two conditions Sepsis and NSTEMI. An association between diagnoses may not be assumed by the coding staff and must be explicitly documented.

- An association exists
- No association between these conditions exists
- Unable to determine
- Other (please specify) _____

In this scenario, the diagnosis of sepsis is established as well as the existence of acute myocardial infarction. There is no need to confirm any of these conditions. The query was issued in order to establish any linkage between the sepsis and myocardial infarction. If the physician responds affirmatively, then a code for severe sepsis, R65.20, can be assigned as the response established cause and effect.

Conclusion

In this article I sought to briefly review some of the aspects of differing definitions of severe sepsis and demonstrate why the coding of severe sepsis is important while providing some practical tips. It is my belief that the coding of sepsis is strengthened if the manifestations of sepsis are clearly documented in a fashion that supports application of one of the R-codes used to report severe sepsis.

I hope you can use this information in a practical manner in your daily work as a CDI professional.

Editor's note: Evans is clinical documentation integrity leader for Sutter West Bay Area in San Francisco. He holds degrees in business administration and healthcare information management. He has previously worked as a data quality coordinator, senior internal auditor, project manager for a national consulting firm, and the director of various HIM departments. A member of the American Health Information Management Association and an Advisory Board member for ACDIS, he has published or contributed to multiple articles regarding quality and data management and has been a featured speaker for various educational seminars. Contact him at evanspx@sutterhealth.org.

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