



## News Release

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Session B102: Novel Approaches to Understand and Improve Health Outcomes

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### **Readmissions in Severe Sepsis Are as Common as Those in Heart Failure and Pneumonia**

ATS 2015, DENVER—Severe sepsis is a significant cause of rehospitalization along the lines of nationally recognized outcome measures and more commonly discussed conditions such as heart failure (HF) and pneumonia, said Darya Rudym, MD, New York University School of Medicine, New York, lead author of a study presented at the 2015 American Thoracic Society International Conference.

Sepsis is an infection of the bloodstream that can lead to organ failure and death. “Severe sepsis continues to be a common cause of hospitalization and has the associated high costs,” Dr. Rudym said. Although some quality measures associated with sepsis have been previously studied, such as length of stay, Dr. Rudym and fellow researchers aimed to study the rate of readmission within 30 days after discharge with a diagnosis of severe sepsis. Researchers wanted to compare this rate to the readmission rates for Centers for Medicare and Medicaid Services reported outcomes such as acute myocardial infarction (MI), HF, and pneumonia.

The researchers examined inpatient discharges from Bellevue Hospital in New York City between July 2011 and July 2014 and identified subsequent readmissions to the hospital within 30 days.

During the 3-year study period, researchers tracked 22,712 discharges, with an overall readmission rate of 15.31%, or 3,477 patients. Using three different previously reported methods to identify patients with severe sepsis, namely Angus, Martin, and the explicit International Classification of Diseases-9-CM sepsis codes, 1,801, 798, and 579 patients, respectively, were identified as discharged with severe sepsis. “Of those, 266, 119, and 71 were readmitted within 30 days, accounting for 14.77%, 14.91%, and 12.26%, respectively,” Dr. Rudym said.

The readmission rate for MI was 8.67%; for HF, it was 15%; and for pneumonia, it was 14.46%.

“Readmission rates in severe sepsis are shown not to be significantly different from readmission rates in heart failure and pneumonia,” Dr. Rudym said.

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*\* Please note that numbers in this release may differ slightly from those in the abstract. Many of these investigations are ongoing; the release represents the most up-to-date data available at press time.*

Abstract 65331

Readmission Rates in Severe Sepsis

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### **Abstract Body**

#### **Rationale:**

Severe sepsis continues to be a common and an expensive cause of hospitalizations. Some of the quality measures associated with severe sepsis such as length of stay have been previously studied but many still remain unclear. The objective of this study is to examine the rate of readmission within 30 days after discharge with diagnosis of severe sepsis, and compare this rate to overall readmission rate as well as readmission rates of Centers for Medicare & Medicaid Services (CMS) reported outcomes, namely acute myocardial infarction (MI), heart failure (HF), and pneumonia.

#### **Methods:**

We examined all inpatient discharges from Bellevue Hospital between July 2011 and July 2014 and identified subsequent readmissions to Bellevue Hospital within 30 days. Inpatient records were searched for all discharges, and were not restricted to Medicare only. Using previously reported methodology of Angus implementation, Martin implementation, and explicit ICD-9-CM sepsis codes, cases of severe sepsis were identified. ICD-9-CM codes were used to identify cases of MI, HF, and pneumonia as previously reported by Krumholz.

#### **Results:**

During the 3-year study period, there were 22712 discharges, 3477 of whom were readmitted within 30 days, accounting for 15.31% of all discharges. Using Angus, Martin,

and explicit codes, 1801, 798, and 579 patients, respectively, were identified as discharged with diagnosis of severe sepsis. Of those, 266, 119, and 71 were readmitted within 30 days, accounting for 14.77%, 14.91%, and 12.26%, respectively. Further, of the 1130 discharged cases of MI, 98 were readmitted, accounting for 8.67%. Of the 3746 discharged cases of HF, 562 were readmitted, totaling 15.00%. Lastly, of the 1326 of discharged cases of pneumonia, 192 were readmitted, representing 14.46%.

Absolute differences in readmission rates are illustrated in the table. Readmission rates in severe sepsis (as defined by Angus, Martin and explicit codes) are shown not to be significantly different from readmission rates in HF and pneumonia, as well as the overall readmission rate. This finding held true with alternative definitions of severe sepsis like the Martin implementation and using the explicit ICD-9-CM sepsis codes.

Absolute Difference in Readmission Rates between Severe Sepsis and Overall Readmissions as well as MI, HF, and Pneumonia			
	Angus Implementation (95%CI)	Martin Implementation (95%CI)	Explicit ICD-9-CM Codes (95%CI)
Overall Readmissions	0.0054 (-0.0126 - 0.022) <i>p</i> = 0.2699	0.004 (-0.0235 - 0.0281) <i>p</i> = 0.3798	0.0305 (-0.0001 - 0.056) <i>p</i> = 0.022
CMS Reported Outcomes			
MI	0.061 (0.0367 - 0.0843) <i>p</i> < 0.0001	0.0624 (0.0325 - 0.0936) <i>p</i> < 0.0001	0.0359 (0.0049 - 0.0698) <i>p</i> = 0.0093
HF	0.0023 (-0.0184 - 0.0222) <i>p</i> = 0.4098	0.0009 (-0.0284 - 0.0274) <i>p</i> = 0.4741	0.0274 (-0.0048 - 0.0551) <i>p</i> = 0.0413
Pneumonia	0.0029 (-0.0229 - 0.0281) <i>p</i> = 0.4102	0.0043 (-0.0269 - 0.037) <i>p</i> = 0.3924	0.0222 (-0.0131 - 0.0544) <i>p</i> = 0.0985

**Conclusion:**

We conclude that the readmission rates in severe sepsis are not significantly different from readmission rates in HF and pneumonia. This suggests that severe sepsis is just as significant of a cause of rehospitalization as nationally recognized outcome measures such as HF and pneumonia readmissions.