

Epidemiology of Quick Sequential Organ Failure Assessment Criteria in Undifferentiated Patients and Association With Suspected Infection and Sepsis

Vijay Anand, DO; Zilu Zhang, MS; Sameer S. Kadri, MD; Michael Klompas, MD, MPH; and Chanu Rhee, MD, MPH; for the CDC Prevention Epicenters Program

CHEST 2019; 156(2):289-297

Online supplements are not copyedited prior to posting and the author(s) take full responsibility for the accuracy of all data.

© 2019 AMERICAN COLLEGE OF CHEST PHYSICIANS. Reproduction of this article is prohibited without written permission from the American College of Chest Physicians. See online for more details. DOI: 10.1016/j.chest.2019.03.032

e-Table 1. Characteristics of Patients Excluded vs Included in Study

The initial study cohort underwent sequential sets of pruning based on various exclusion criteria (also see Figure 1 in the main manuscript). First, we excluded hospitals where >75% of encounters were missing Glasgow Coma Scale (GCS) scores on admission or >25% were missing systolic blood pressure or respiratory rate values, since it is likely that those hospitals do not systematically utilize GCS measurements or consistently record vital signs in their EHRs. Second, amongst the remaining patients in the cohort, we further excluded those with unknown vital status at discharge. Third, amongst the remaining patients, we excluded encounters with missing blood pressure or respiratory rates within 1 day of admission. This table reflects the characteristics of all the patients that were ultimately excluded (n=476,773) or included (n=1,004,347) in the analysis.

	Excluded Patients (n=476,773)	Included Patients (n=1,004,347)
Median Age (IQR)	58 (40-72)	60 (43-74)
Median AHRQ Elixhauser Score (IQR)	0 (-1-9)	0 (-1-10)
Median SOFA score on Admission (IQR)	1 (0-2)	1 (0-2)
Suspected Infection on Admission^a(n,%)	87,802 (18.4%)	203,378 (20.3%)
Infection Diagnosis Code^a (n,%)	142,231 (29.8%)	302,063 (30.1%)
Sepsis-3 Criteria on Admission^a (n,%)	27,315 (5.7%)	75,140 (7.5%)
Sepsis Diagnosis Code^a (n,%)	22,332 (4.7%)	57,492 (5.7%)
Median Hospital LOS (IQR)	4 (3-6)	4 (3-6)
In-Hospital Death^b (n,%)	7,337 (2.4%)	23,746 (2.4%)

Abbreviations: AHRQ = Agency for Healthcare Research and Quality; SOFA = Sequential Organ Failure Assessment; ICU = intensive care unit; LOS = length-of-stay; IQR = interquartile range.

^a Suspected infection on admission was defined by sampling of clinical cultures from any anatomical site and administration of antibiotics (for any duration) within 1 day of admission. Sepsis-3 criteria on admission was defined by clinical culture sampling and antibiotic administration within 1 day of admission + antibiotics continued for at least 4 days (unless death, discharge to hospice, or transfer to another hospital occurred before 4 days), coupled with a SOFA score of ≥ 2 within 1 day of admission. Infection diagnosis codes included the infection codes used in the Angus administrative definition of sepsis. Sepsis diagnosis codes included sepsis, severe sepsis, septic shock, and septicemia codes.

^b The in-hospital mortality rate of the cohort of excluded patients was calculated without including the patients that had unknown vital status on discharge (n=160,997).

e-Table 2. Characteristics of Hospitals Excluded vs Included in Study

After the sequential pruning process described above, there were 34 hospitals excluded and a total of 85 hospitals included in the final cohort used for analysis.

	Excluded Hospitals (n=34)	Included Hospitals (n=85)
U.S. Region		
Northeast	8 (24%)	14 (16%)
Midwest	5 (15%)	16 (19%)
South	14 (41%)	31 (36%)
West	7 (21%)	24 (28%)
Teaching Status		
Teaching	8 (24%)	34 (40%)
Nonteaching	24 (71%)	47 (55%)
Unknown teaching status	2 (6%)	4 (5%)
Number of Beds		
<200	28 (82%)	51 (60%)
200-500	3 (9%)	28 (33%)
>500	3 (9%)	6 (7%)