Accuracy of Physician Adjudication of Infection in Patients with Systemic Inflammatory Response Syndrome (SIRS)
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Defining Sepsis:
The definition of sepsis evolves with improved understanding of the pathophysiology, but the presence of infection remains essential for the diagnosis.1

Defining Infection:
There are no universal objective definitions for infections. Current clinical trials use a variety of criteria to identify known or suspected infection including 2,3:
- Collection of bodily fluid culture
- Initiation of antibiotic therapy
- International classification of diseases, ninth revision, clinical modification (ICD-9-CM) codes
- Physician adjudication

Variations in infection criteria can create challenges in the interpretation of new diagnostic studies, utility of prognostic tools, and the impact of therapeutic interventions in sepsis related clinical trials.

Objective
- This was a prospective observational study performed in 2 academic medical center Emergency Departments between February 2016 and December 2016.
- We compared physician adjudication of infection to standardized definitions of infection in patients meeting 2 of 4 SIRS criteria.

Methods
- Diagnostic and physiologic data were abstracted from 151 patients with 2 of 4 SIRS who were enrolled in the Emergency Department.
- Each medical record was independently reviewed by 1 Emergency Medicine and 1 other member adjudicating committee to determine the presence of infection, absence of infection or indeterminate. In the case of disagreement, a third CC physician served as the tiebreaker.
- Objective definitions of infection were derived from consensus surveillance definitions.

Vascular
- Myocarditis
- Pericarditis
- Endocarditis
- Mediastinitis
- Primary bloodstream

Abdominal
- Clostridium difficile gastroenteritis
- Gastrointestinal intra-abdominal

Respiratory
- Pneumonia
- Lower airway
- Osteomyelitis
- Disc space
- Joint or bursa
- Periprosthetic

Bone & Joint
- Breast
- Decubitus ulcer
- Skin

Skin & Skin Structure
- Soft tissue

Genitourinary
- Urinary tract
- Urinary system

Objective Definition of Infection
Not Infected
Infected
Indeterminate
Total

Not Infected
4
11
62
77

Infected
53
8 (5%)
13 (8.5%)
74

Total
57
19
75
151

Table 1: Description of objective definitions for each system.

Results

Demographics

Gender
Male, n (%) 76 (50.3)
Female, n (%) 75 (49.7)

Age, m 62.84

Race
White, n (%) 66 (43.7)
Black, n (%) 58 (38.4)
Other, n (%) 27 (17.9)

Hospital location
ICU, n (%) 44 (29.1)
Floor, n (%) 132 (87.4)
ED Discharge, n (%) 9 (5.9)
In-hospital mortality, n (%) 9 (6.0)
SOFA score, m, M (IQR) 2.97 (2.0)

Table 2: Baseline characteristics for all patients with and without infection. 34 patients spent time on the floor and in the ICU. n= 151, m, mean; M, median; IQR, interquartile range; SOFA, Sequential Organ Failure Assessment.

Conclusions
- Objective definitions of infection may be a reproducible and reliable method to determine the presence of infection for use by clinical investigators. A standard definition may decrease the variability in the diagnosis of sepsis and allow comparability among clinical trials.
- Next steps,
  - Refining the objective definition of respiratory infections to exclude patients presenting with cardiogenic pulmonary edema.
  - Application to a larger patient population.

References