Title

2101. Impact of “Code Sepsis” on Antimicrobial Utilization at an Academic Medical Center

Journal

Open Forum Infectious Diseases, 6(Suppl 2)

ISSN

2328-8957

Authors

Kang, Minji

Torriani, Francesca

Sell, Rebecca

et al.

Publication Date

2019-10-01

Peer reviewed

Table 1. Baseline Characteristics (N=26,604, age > 18, with sepsis ICD code)

Characteristic	Sepsis Order Set Used N (%)	Order Set Not Used N (%)
Number of patients	8,872	17,732
Age (Mean, SD)	65.4 (17.1)	64.9 (17.6)
Male Gender (%)	49.4	50.1
ICU Admission (%)	55.2	50.5
Elixhauser Comorbidity Score (Mean)	43.3	43.7
LOS (Median, IQR)	5 (3 – 9)	6 (3 – 10)

Disclosures. **All authors:** No reported disclosures.

2100. A Retrospective Chart Review of Emergent Antibiotic Use

Michelle Blyth, MD[1]; James McNary, MD[2]; Arnold Decano, PharmD, BCPS[3]; Audrey Renson, BS[4]; Jeanne Carey, MD[5]; [1]NYU Langone Medical Center, Brooklyn, New York; [2]NYU Langone, Brooklyn, New York; [3]NYU Langone - Brooklyn Hospital, Brooklyn, New York; [4]UNC, Chapel Hill, North Carolina; [5]Ryan Nena, New York, New York

Session: 241. Antibiotic Stewardship: Sepsis
Saturday, October 5, 2019: 12:15 PM

Background. The need for responsible antibiotic stewardship can be difficult to reconcile with the clinician's task of quickly recognizing and treating sepsis. Empiric antibiotics are often given in patients with any suspicion of infection, yet antibiotics carry non-trivial risks including antibiotic resistance and susceptibility to other infections, such as Clostridium difficile.

Methods. This retrospective chart review includes 200 patients who were admitted to the hospital and administered antibiotics while in the Emergency Department (ED). From clinical documentation several clinical data points were gathered such as: changes to (including discontinuation of) antibiotics by the admitting team, final culture data, discharge diagnosis, vital signs and routine laboratory values.

Results. Our study finds that the majority of patients administered antibiotics in the ED of our academic community hospital were not diagnosed with sepsis (67%) and did not meet SIRS (62.5%) nor qSOFA (88%) criteria prior to administration of antibiotics. Vancomycin (39.7%) and piperacillin–tazobactam (22.2%) were the most frequent empiric antibiotics started. Antibiotics were stopped completely on admission by the admitting team in 22.2% of included patients. A wide variety of sources of infection were suspected, pneumonia (33%), cellulitis (15%), and cystitis (18%) being the most common. The overall mortality rate for this group during the admission was 4.5%, which was comparable to all-cause hospital mortality during the same time period. Infection was ruled out by discharge in 91 of the included 200 patients (45.5%). At least 37.5% of all included patients had received antibiotics within the last 3 months. Intriguingly, recent exposure was nearly twice as common (47.8%) among infected patients than in those without infections (24.7%), with a relative risk of 1.48 (CI 1.0993–2.0014).

Conclusion. These findings suggest that an opportunity exists for increased antibiotic stewardship in the emergency department in the management of suspected sepsis and/or infection. Stable patients in whom infection cannot be definitively ruled out may benefit more from prompt, thorough evaluation by an admitting team prior to the initiation of empiric antibiotics.

Disclosures. **All authors:** No reported disclosures.

2101. Impact of "Code Sepsis" on Antimicrobial Utilization at an Academic Medical Center

Minji Kang, MD; Francesca J. Torriani, MD; Rebecca Sell, MD; Shira Abeles, MD; University of California, San Diego, San Diego, California

Session: 241. Antibiotic Stewardship: Sepsis
Saturday, October 5, 2019: 12:15 PM

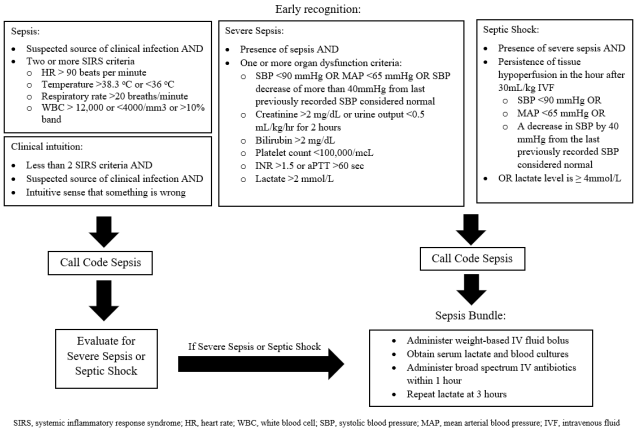
Background. Balancing antimicrobial stewardship with sepsis management is a challenge. At our academic medical center, a "Code Sepsis" was implemented as a nursing driven initiative to improve early recognition and management of sepsis. Per protocol, Code Sepsis is activated in patients who meet two or more systemic inflammatory response syndrome (SIRS) criteria due to a suspected infection to allow for early implementation of the sepsis bundle, which includes laboratory testing, fluid resuscitation, and antibiotic administration (Figure 1). We analyzed the impact that Code Sepsis had on antimicrobial use among hospitalized patients over a six month period.

Methods. We reviewed the electronic medical records of hospitalized patients with Code Sepsis activation between January 1, 2018 and June 30, 2018 to determine whether antibiotics were "escalated" or "not escalated." Among patients who had antibiotic escalation, escalation was classified as "indicated" or "not indicated" (Figure 2). A logistic regression model was used to identify characteristics, SIRS or organ dysfunction criteria predictive of indicated antimicrobial escalation.

Results. Code Sepsis was activated in 529 patients with antibiotics escalated in 247 (47%) and not escalated in 282 (53%) (Table 1). Among patients whose antibiotics were escalated, 64% (152) had an indication. In 36% (89), escalation was not indicated as Code Sepsis was due to a suspected noninfectious source, known infectious source already on appropriate antimicrobials, or a suspected infectious source in which diagnostic results had already shown the absence of the infection (Figure 2). Odds of indicated antibiotic escalation increased with the number of SIRS and organ dysfunction criteria (Table 2).

Conclusion. In our efforts to improve sepsis outcomes, we focused on early recognition (Code Sepsis) and intervention (sepsis bundle). However, our Code Sepsis inadvertently led to antibiotic overutilization. By refocusing Code Sepsis on early recognition of severe sepsis and septic shock, we hope to optimize resource utilization and improve patient outcomes.

Figure 1: Key aspects of code sepsis



SIRS, systemic inflammatory response syndrome; HR, heart rate; WBC, white blood cell; SBP, systolic blood pressure; MAP, mean arterial blood pressure; IVF, intravenous fluid

Figure 2: Code Sepsis analysis

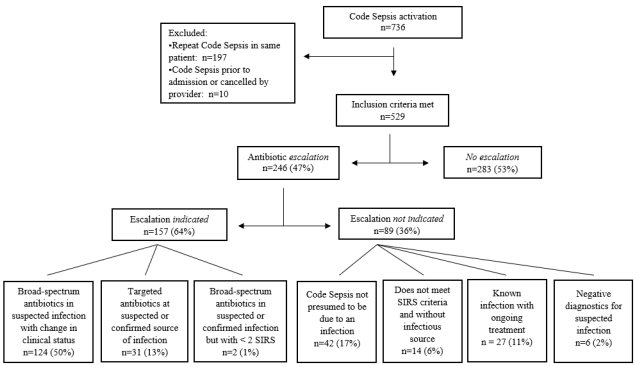


Table 1 Characteristic of patients with Code Sepsis

		Total n=529 (%)	Antibiotic Escalation n=247		No escalation n=282 (%)
			Indicated n=152 (%)	Not indicated n=93 (%)	
Gender	Male	306 (58)	86 (55)	41 (46)	179 (63)
Age	mean ± SD	54.5 ± 18.1	56.2 ± 19.5	56.9 ± 17.1	52.8 ± 17.4
SIRS criteria	Number of criteria with HR (mean ± SD)	2.60 ± 0.92	2.75 ± 0.87	2.37 ± 1.03	2.58 ± 0.90
Organ dysfunction	Number of criteria (mean ± SD)	1.02 ± 1.05	1.21 ± 1.05	1.11 ± 1.07	0.88 ± 1.02
Antibiotics prior to Code Sepsis	None	186 (35)	79 (60)	40 (45)	67 (24)
	Broad-spectrum	139 (26)	16 (10)	11 (12)	112 (40)
	Miscellaneous	204 (39)	62 (40)	38 (43)	104 (37)

Table 2 Predictors of indicated antimicrobial escalation

	Unadjusted		Adjusted	
Predictor	**Odds ratio (95% CI)**	**P-value**	**Odds ratio (95% CI)**	**P-value**
Age	1.01 (0.99, 1.02)	0.16		
DM	1.72 (1.09, 2.71)	0.02	1.70 (1.04, 2.76)	0.03
Post-op	0.50 (0.23, 1.09)	0.08		
Number of SIRS criteria	1.31 (1.06, 1.62)	0.01		
Temp >38.3ºC or <36ºC	1.61 (1.10, 2.36)	0.02	1.92 (1.26, 2.93)	0.03
WBC >12,000 or <4,000/mm^3	1.57 (1.07, 2.31)	0.02	1.72 (1.13, 2.60)	0.01
Number of Organ Dysfunction Criteria	1.27 (1.07, 1.52)	0.01		
Creatinine >2 mg/dL	1.75 (0.98, 3.13)	0.06	1.97 (1.07, 3.63)	0.03
Bilirubin >2 mg/dL	2.04 (1.08, 3.85)	0.03		
Lactate >2 mmol/L	1.73 (1.17, 2.56)	0.01	2.05 (1.35, 3.11)	<0.01

Univariable analysis performed but not retained in model as alpha >0.20 include: gender, ethnicity, HIV, solid organ malignancy, hematologic malignancy, HSCT, ESRD, SOT, CHF, cirrhosis, HR >90 beats/min, respiration >20 per minute, SBP <90 or MAP <65mmHg, platelet count <100,000/mm^3, INR >1.5 or aPTT >60 sec

Disclosures. **All authors:** No reported disclosures.

2102. Does Monitoring Procalcitonin Levels in Septic and Septic Shock Patients Decrease the Use of Antibiotics and Predict Length of Hospital Stay?

Sarah E. Bilbe, PharmD[1]; Ashaur Azhar, MD[2];
Fatima Z. Brakta, Pharm D, BCPS-AQ ID[1];
Katherine N. Aymond, Pharm D, BCPS, BCCP[3];
M. Jacques Nsuami, MD, MPH[4]; Julio E. Figueroa, II, MD[4]; [1]University Medical