Use of a Burn Sepsis Screening Protocol Results in Lower Antibiotic Usage Rates

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Abstract

Background: Antibiotic stewardship is widely recognized as being a necessary component of modern hospital care but remains difficult to put into practice particularly on burn services where the risk of infection is known to be higher than the general hospital population. Our burn service instituted a protocol for sepsis screening triggers and antibiotic usage, becoming the only unit in our hospital to do so. In-house quality metrics have shown this protocol to be successful in reducing utilization.

Methods: With the opening of our burn unit in April, 2018, a burn sepsis screening protocol was put in place (see attached image). Briefly, the first level of screening consists of threshold hemodynamic and physiologic parameters. If these are met the pathway leads to drawing of basic laboratory tests plus lactate and procalcitonin. Group A findings consist of either Serum Lactic Acid >2.2mmol/L or Procalcitonin >0.69ng/ml, and Group B findings consist of: Platelets 150 mg/dL or New Insulin Requirement. If one finding from each of groups A and B are present, antibiotics are started and a source work up is initiated. De-identified aggregate data on antibiotic usage are routinely tracked as a quality metric by our hospital's Infection Control Committee. The results from calendar year 2019 are presented here for all antibiotics, vancomycin usage, and beta-lactam usage. One-way Analysis of Variance with Tukey's post-hoc testing was used to analyze the differences in intravenous antibiotic usage rates between the Burn Intensive Care Unit (BICU), the Trauma ICU (TICU), and the remainder of the hospital.

Results: The BICU used significantly fewer IV antibiotics than the TICU across all examined parameters and fewer than the remainder of the hospital for all antibiotics and vancomycin usage. See table.

Conclusion: Initiation of a formal protocol for sepsis screening and IV antibiotic initiation significantly lowers antibiotic utilization. Future work will focus on this protocol's impact on clinical outcomes.

Learning Objectives

Discuss the impact that a burn sepsis protocol has on antibiotic stewardship

	BICU	TICU	Overall hospital	Omnibus p value	BICU vs TICU	BICU vs hospital	TICU vs hospital

All antibiotics	300 ± 133	789 ± 116	442 ± 25	<0.001	+	+	+
Vancomycin	53 ± 25	137 ± 23	96 ± 12	<0.001	+	+	+
Beta-lactams	73 ± 65	247 ± 48	119 ± 10	<0.001	+	p=0.057	+

*antimicrobial days/1000 days