

Implementation of a credentialing program for early involvement of Emergency Medicine pharmacists in sepsis alerts

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Background

Time to initiation of antimicrobial therapy is one of the strongest predictors of survival for patients with severe sepsis or septic shock presenting to the Emergency Department¹ (ED). International guidelines recommend the following interventions within one hour of a sepsis diagnosis²:

- i) administration of broad spectrum antibiotics;
- ii) serum lactate measurement;
- iii) blood cultures prior to antibiotic administration;
- iv) crystalloid fluid administration.

A multi-faceted sepsis improvement initiative was implemented in the ED of a major tertiary referral hospital in February 2016 to increase the uptake of the sepsis bundle (Figure 1).

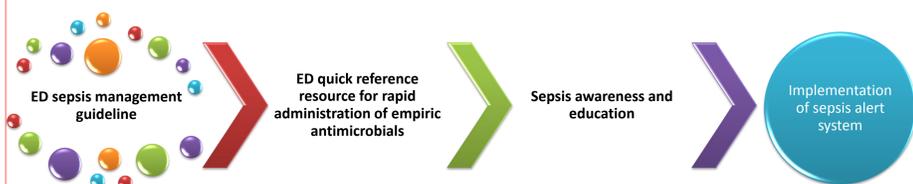


Figure 1: ED sepsis improvement initiative

The ED sepsis alert system incorporated early involvement of the Emergency Medicine (EM) pharmacist during working hours (Figure 2).

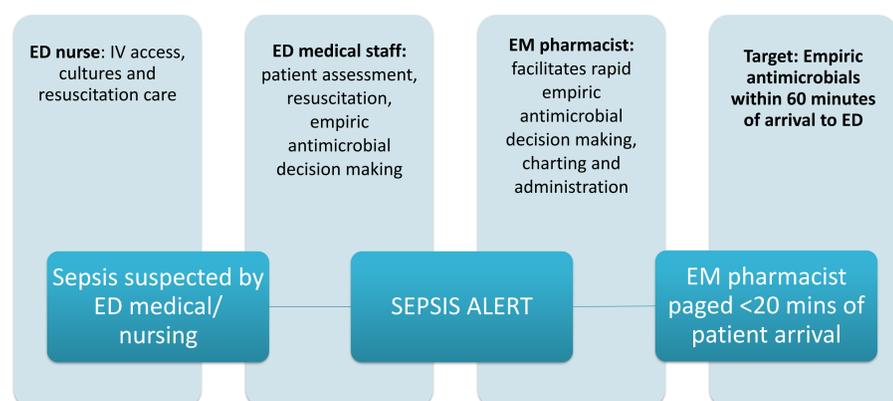


Figure 2: Sepsis Alert Activation Process

Aim

To implement a credentialing program for EM pharmacists enabling early involvement in sepsis alerts.

Methods

In January 2016, a sepsis alert credentialing program was developed by senior pharmacists in EM, General Medicine and Education, in collaboration with senior EM medical staff to enable pharmacists to attend sepsis alerts in the ED.

Key prerequisites for the credentialing program included at least two years of clinical pharmacy experience, and successful completion of other local credentialing programs including partnered pharmacist charting, stroke callouts, and aminoglycoside/vancomycin TDM.

The sepsis credentialing program was implemented using the Moodle online learning platform, and consisted of a learning module followed by an assessment. Pharmacists were assessed on their understanding of the sepsis bundle of care and ability to make decisions on empiric antimicrobials in a range of clinical scenarios.

Credentialed pharmacists attending sepsis alerts in the ED facilitate rapid decision-making and charting of single doses of empiric antimicrobials, and assist in administration. Other components of the sepsis bundle are also expedited.

Results

As of June 2017, 29 pharmacists had completed the sepsis credentialing program, including all pharmacists regularly rostered in the ED. A credentialed pharmacist is available to attend sepsis alerts in the ED from 7am to 9pm, 7 days a week.

A total of 732 patients with suspected sepsis presented to ED from February 2016-June 2017; resulting in 711 sepsis alerts being activated.

Early EM pharmacist involvement occurred for 85% of patients (Table 1). Intensive care unit (ICU) transfer was required in 27% of patients. The EM pharmacist was involved in 53% of sepsis patients transferred to ICU.

Table 1: ED sepsis alerts and sepsis with ICU transfer: February 2016 to June 2017

	N (%)
Total sepsis alerts and sepsis with ICU transfer n=732	
EM Pharmacist involvement	623 (85)
No EM Pharmacist involvement#	109 (15)
Total Sepsis with ICU transfer n=201	
EM Pharmacist involvement	107 (53)
No EM Pharmacist involvement#	94 (47)

#includes after hours presentations and no sepsis alert activation

Since implementation of the ED sepsis alert system, median time to empiric antimicrobials in patients transferred to ICU with sepsis has reduced from 116 minutes to 58 minutes ($p < 0.0001$).

The proportion of patients receiving blood cultures, serum lactate measurement and crystalloid fluid administration within an hour of a sepsis diagnosis has also improved (Figure 3).

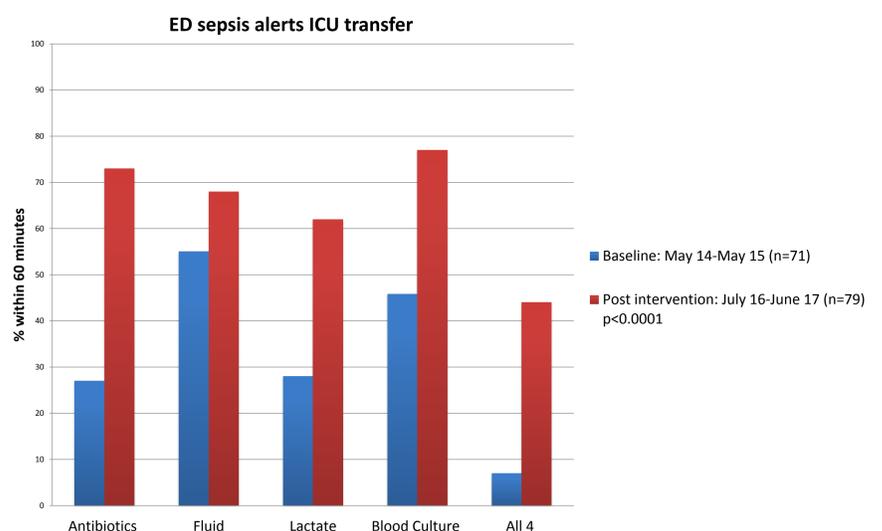


Figure 3: Proportion of interventions received within 60 minutes

Discussion

Development and implementation of a sepsis alert credentialing program has enabled early involvement of the EM pharmacist in a large proportion of patients presenting with sepsis to the ED including those requiring transfer to ICU.

The credentialing program focused on empiric antimicrobial decision making and the sepsis care bundle. Early EM pharmacist involvement in sepsis presentations in combination with targeted sepsis awareness and education and development of local sepsis resources may assist in facilitating rapid empiric antimicrobial administration, a predictor of survival.

Further research into a collaborative model of care involving the EM pharmacist in sepsis presentations is required.

References

1. Kumar A, et al. *Crit Care Med* 2006; 34: 1589-96.
2. Rhodes A et al. *Crit Care Med* 2017; 45 (3) 1-67.