

Partnership with local EMS agencies improves early identification of sepsis patients

BAYSTATE HEALTH

Baystate Health is a not-for-profit, integrated health care system serving the Western New England region. Baystate affiliates include Baystate Medical Center, Baystate Children's Hospital, Baystate Noble Hospital, Baystate Wing Hospital, Baystate Franklin Medical Hospital and more than 80 medical practices.

Challenge

In December 2016, the Massachusetts Department of Public Health's Office of Emergency Medical Services updated the EMS Statewide Treatment protocols to include a protocol for early identification and treatment of adult sepsis.¹ The protocol includes standing orders for emergency medical technicians (EMTs) and a reminder to "notify hospital of incoming Sepsis Alert prior to arrival if applicable."² Knowing that the new sepsis protocols were coming, the EMS coordinators at Baystate Health saw it as an ideal opportunity to collaborate with their local Emergency Medical Services agencies to flag incoming sepsis patients. After all, a growing body of evidence suggests that pre-hospital identification of sepsis patients and administration of intravenous fluids may reduce sepsis mortality.³

Action

The project required training and process changes for both the hospital team and the local ambulance agencies. On the hospital side, the Emergency Department (ED) had to put a system in place for RNs to be able to "flag" sepsis patients during the EMS/ED handover process. When a sepsis alert is called in from the prehospital providers and meets hospital sepsis criteria, the ED flow coordinator nurse and/or the EMS communication specialist will announce a sepsis alert and expedite placement of the patient. This allows for a seamless approach to the care of the potentially septic patient. On the EMS side, the hospital's three EMS coordinators had to coordinate



Left to right: Dr. Gerald (Wook) Beltran, Chief, Division of Prehospital and Disaster Medicine; Kevin Clark, EMS and Prehospital Coordinator; Erin Markt, EMS and Prehospital Coordinator; Nathanael Stanaway, Senior Clinical Business Manager of Mobile Care and EMS; Elizabeth Martinek, Ambulance Coordinator, Capacity Management Center; Richard Paul, EMS and Prehospital Coordinator; Dr. Kenneth Knowles, Associate Regional Medical Director

with around 50 ambulance and fire services in Baystate Health's catchment area to make sure that everyone was properly trained on the EMS sepsis protocol and the hospital's triage process.

Outcomes

The project has helped to further cement the relationship between Baystate's ED nurses and the ambulance agencies that deliver patients to the hospitals every day. It has also helped to get IV fluids on-board quicker for patients with septic shock. In addition, the project has engaged the EMS teams in the hospital's sepsis care improvement work by providing feedback on missed cases and kudos on cases that were recognized by EMS. Missed cases of sepsis give the EMS coordinators an opportunity to deliver feedback and education about ways to better identify borderline cases of sepsis.

The EMS coordinators have also provided training to the EMS agencies about novel ways to monitor patients for signs of sepsis. For example, the MA state EMS protocol allows for a pre-hospital serum lactate, but most ambulance teams do not have that capability due to cost and training. However, they are able to use quantitative waveform capnography to monitor a patient's end-tidal CO₂ (ETCO₂) level, which is a good predictor of lactate levels.⁴ By tracking and reporting this vital information, they are able to give ED clinicians more data to work with prior to the patient arriving in the ED.

Tool for this Project

- [EMS Sepsis Feedback Form](#)

¹Massachusetts Department of Public Health, Office of Emergency Medical Services. Emergency Medical Services Pre-Hospital Statewide Treatment Protocols, Version 2018.2, Apr 1, 2018. Available: <https://www.mass.gov/files/documents/2018/04/04/treatment-protocols-2018.pdf>. ²Id at section 2.17. ³Seymour CW, Cooke CR, Heckbert SR, Spertus JA, Callaway CW, Martin-Gill C, Yealy DM, Rea TD, Angus DC: prehospital intravenous access and fluid resuscitation in severe sepsis: an observational cohort study. *Critical Care* 2014, 18:533. ⁴Hunter CL, Silvestri S, Dean M, Falk JL, Papa L. End-tidal carbon dioxide is associated with mortality and lactate in patients with suspected sepsis. *American Journal of Emergency Medicine*. 2013 Jan; 31(1):64-71.