

News

Sepsis: The clock is ticking

JULY/AUGUST 2016: Opinion: “Big Data and Readmissions”

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The high cost of sepsis, bloodstream infections that can become life threatening quickly, may surprise you. By our best estimates, sepsis conservatively accounts for 5 percent of all acute spending annually (\$20.3 billion annually and \$55.6 million every single day).¹

Incentives are not aligned, as Medicare pays four times more for a patient experiencing septic shock than it does for a patient with simple sepsis. Certainly, that is a significant issue, but the more important issue is that the strategy to address sepsis has not evolved since 1974.

In the last 42 years, medical care has not been able to apply a single technology or clinical advancement beyond the identification protocols that remain the “gold standard” for sepsis identification and management. TREWScore, MEWS, and routine screening identify 70 percent of the problem but don’t take into account the precious value of time in the sepsis treatment equation.² Time truly is of the essence when identifying and treating sepsis. Every hour of delay in the application of effective antibiotics increases mortality by 7.6 percent.³ The clinical indicators and protocols have been fine-tuned to the point that maximum benefit has been achieved, but the combination of a 30 percent miss coupled with the 24 to 26 hours wasted for clinical identification leaves a trail of lives lost and expenses that have risen precipitously. For those lucky enough to survive, “time is tissue.” There are significant, long-term quality-of-life consequences that lead to further hospitalizations and treatment.

In addition, sepsis is a major driver for readmissions, adding another \$3.1 billion annually, because sick patients who leave the hospital unidentified as septic will return, compounding the problem and expense. With the gap in communication between acute and post-acute providers, the clock starts all over again as the problem becomes more complicated.

A strategy that leverages big data to identify patients most likely to acquire (or have) sepsis at the point of admission provides care teams with insights leading to protocol-based treatment earlier, making a difference in addressing the survivability and high cost of sepsis.

A change in strategy

Clinical indicators, beginning with a rise in blood pressure, occur on average 15 hours into the 36-hour decline from infection to death.³ But EHR-based alert systems generally require additional validation, resulting in even more time before the initiation of an aggressive sepsis treatment protocol. Intuition also plays a big role, but between nursing staff changes and the communication breakdown among hospital staff and physicians, additional time plagues the process.

With the clock ticking, a strategy that saves time literally saves lives. By leveraging big data and data science, hours can be given back to clinical staff to save lives and reduce immediate and future expenses associated with readmissions and ongoing treatment. There is hope, but the application of data-driven advances requires a real partnership between clinicians and technology.

A 42-year innovation cycle is too long. It’s more than time for some new thinking when it comes to sepsis — and the time is now.

REFERENCES:

¹Hall et al., “Inpatient Care for Septicemia or Sepsis: A Challenge for Patients and Hospitals,” *NCHS Data Brief*, No. 62, June 2011.

²Hines et al., HCUP Statistical Brief #172, April 2014

<http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/Medicare-Provider-Charge-Data/Inpatient.html>.

³Kumar A. et al., *Crit Care Med* 2006, 34:1286.



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