

# Time, Technology and Talent: A Multifaceted Approach to Reducing Sepsis Mortality



**Background:** Sepsis is one of the most common underlying causes of mortality in non-coronary ICU's today. Clinical symptoms displayed by the patients are subtle and often times non-specific. Severe sepsis is responsible for the deaths of more Americans than are colon, breast, prostate and pancreatic cancers combined and the mortality rate for sepsis is just below the rate for acute myocardial infarction. If allowed to progress, the disease leads to multiple organ failures and ultimately death. Early recognition and timely initiation of appropriate therapy is key for survival from this potentially devastating condition.

**Purpose:** The purpose of this presentation is to describe how we use early goal directed therapy to improve early recognition, initiate appropriate treatment and reduce mortality associated with severe sepsis and septic shock.

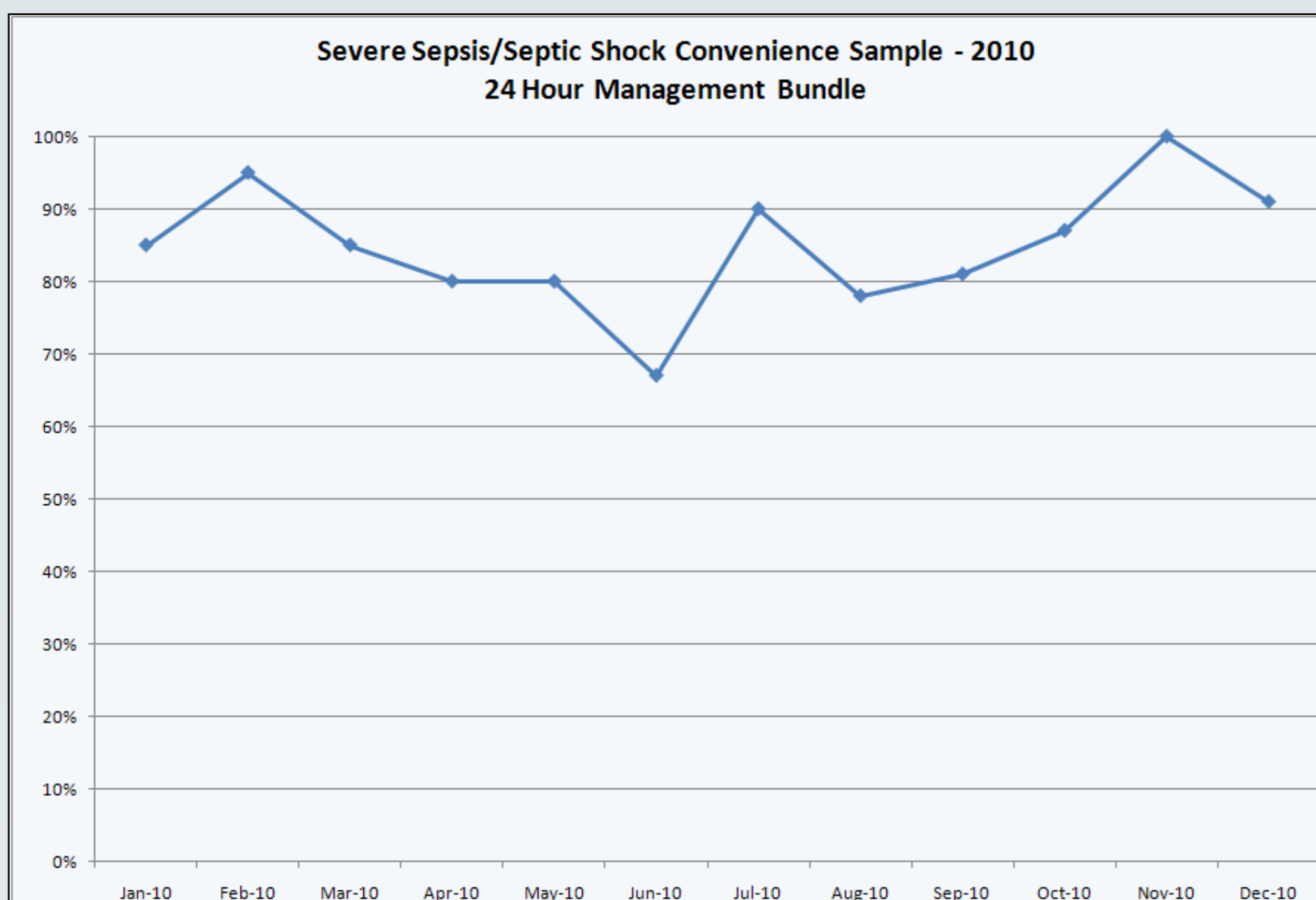
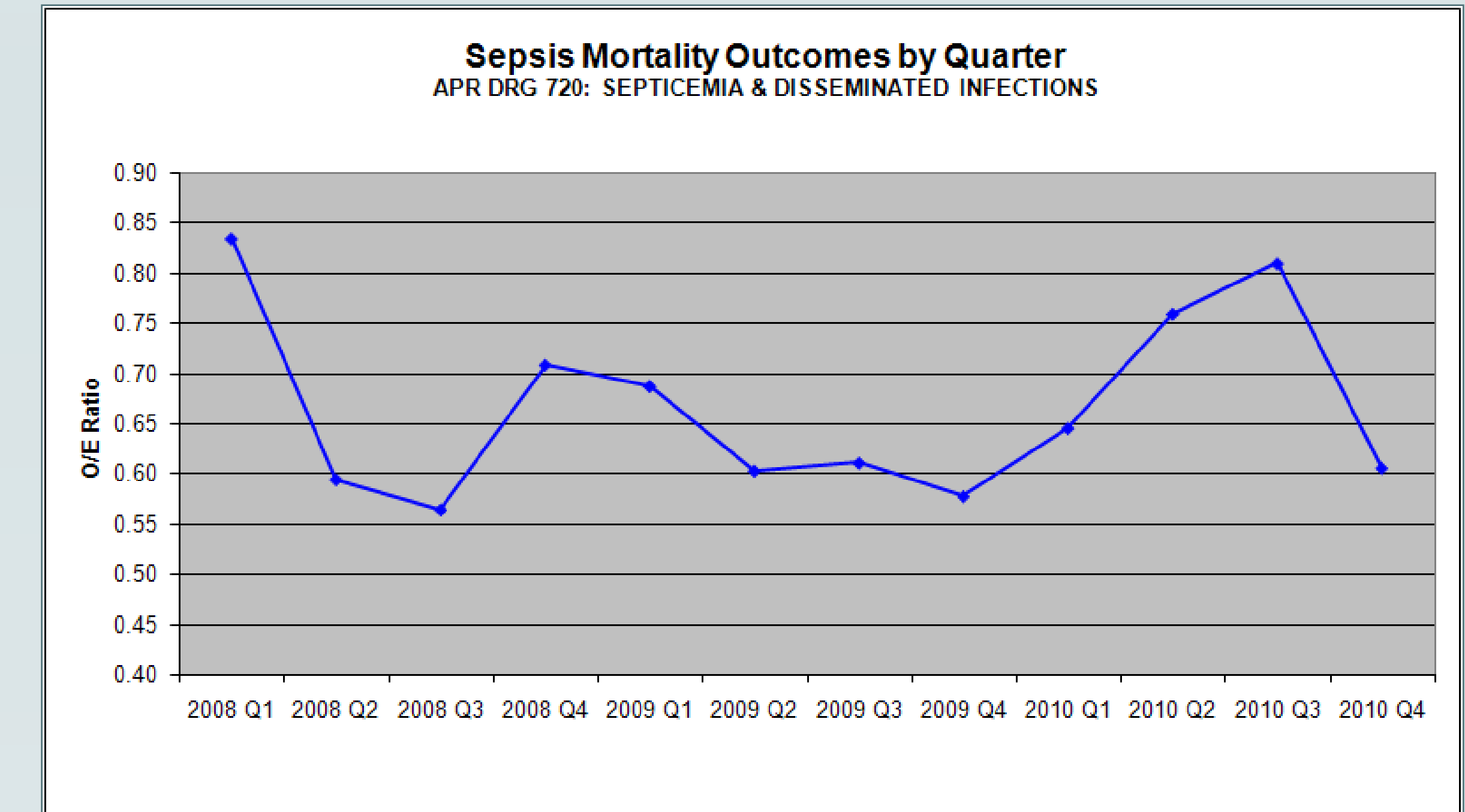
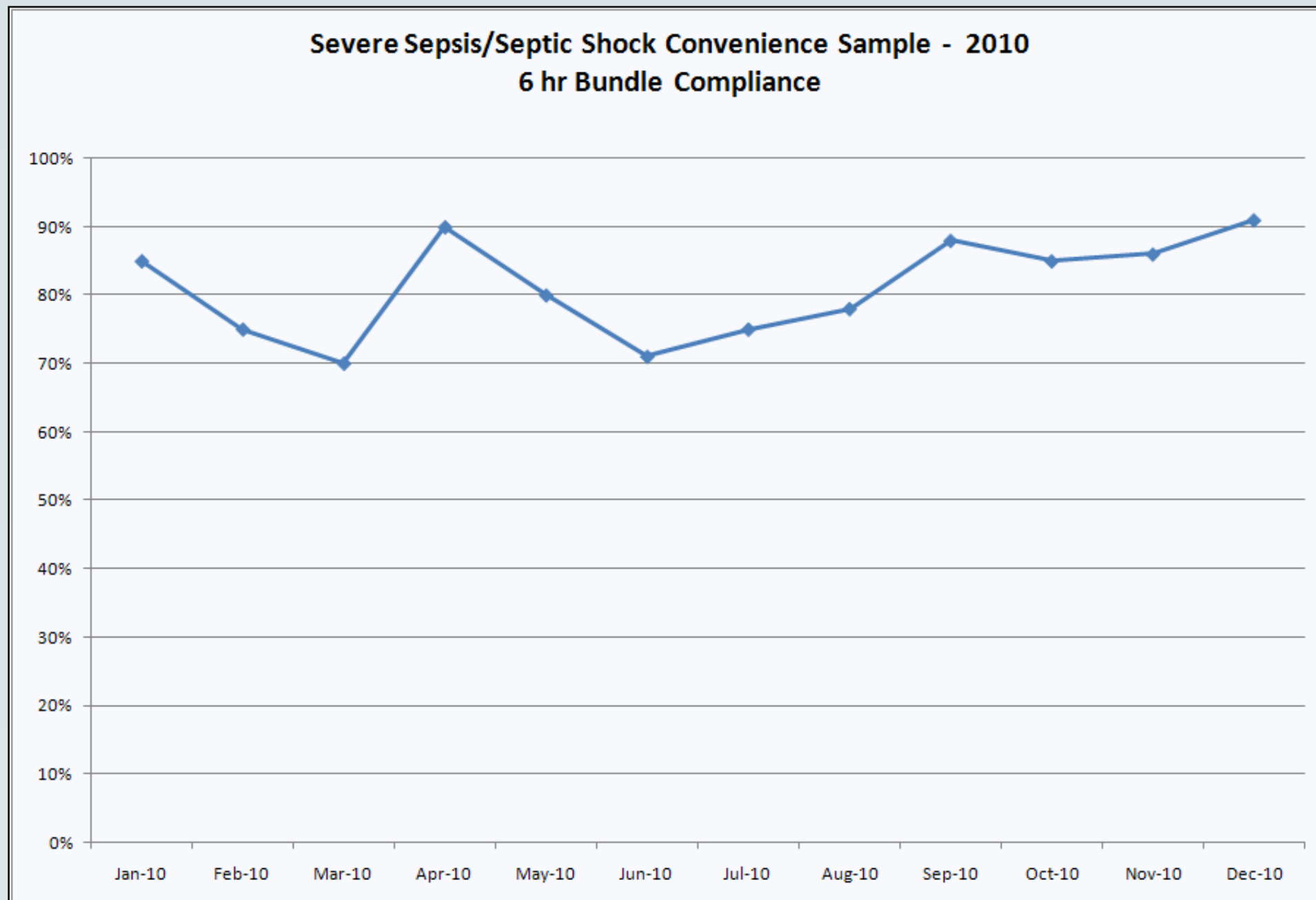
**Methods:** A multifaceted approach utilizing daily rounding, chart reviews, feedback reporting, staff education, computer screen savers, sepsis risk assessment and physician collaboration has been instrumental in improving sepsis bundle compliance. Utilization of protocols, ordersets and standards of care has also influenced outcomes and mortality. Our physician champion provided quarterly case-study conferences for nurses, pharmacists, physicians and other care providers to increase awareness of the complexities of sepsis.

**Results:** Heightened awareness in all areas of care has enhanced sepsis bundle compliance.

Utilizing glucose stabilizers in the ICU has improved glycemic control in this population of patients.

**Conclusion:** An integrated leadership team approach to identify and treat patients with signs and symptoms of sepsis, severe sepsis and septic shock is transforming clinical practice by providers from multiple disciplines to reduce mortality attributed to sepsis.

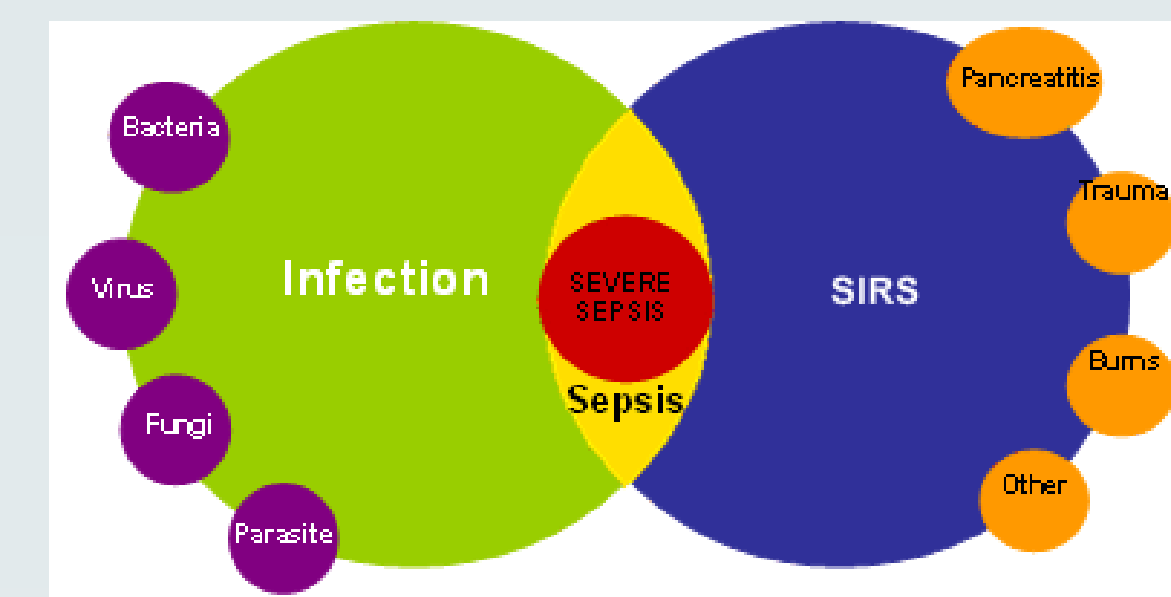
Mortality associated with severe sepsis remains exceptionally high at 30% to 50%. If shock is present, the risk is even higher at a reportedly 50% to 60% mortality. By reducing sepsis associated deaths by 25%, we have the potential of saving 50,000 lives of people in the United States. Potentially, 1,100,000 lives can be saved worldwide by making that 25% reduction in mortality. When implementing the sepsis evidence-based interventions, improved mortality outcomes can be achieved.



## Physician Engagement Essential Element to Reducing Sepsis Mortality

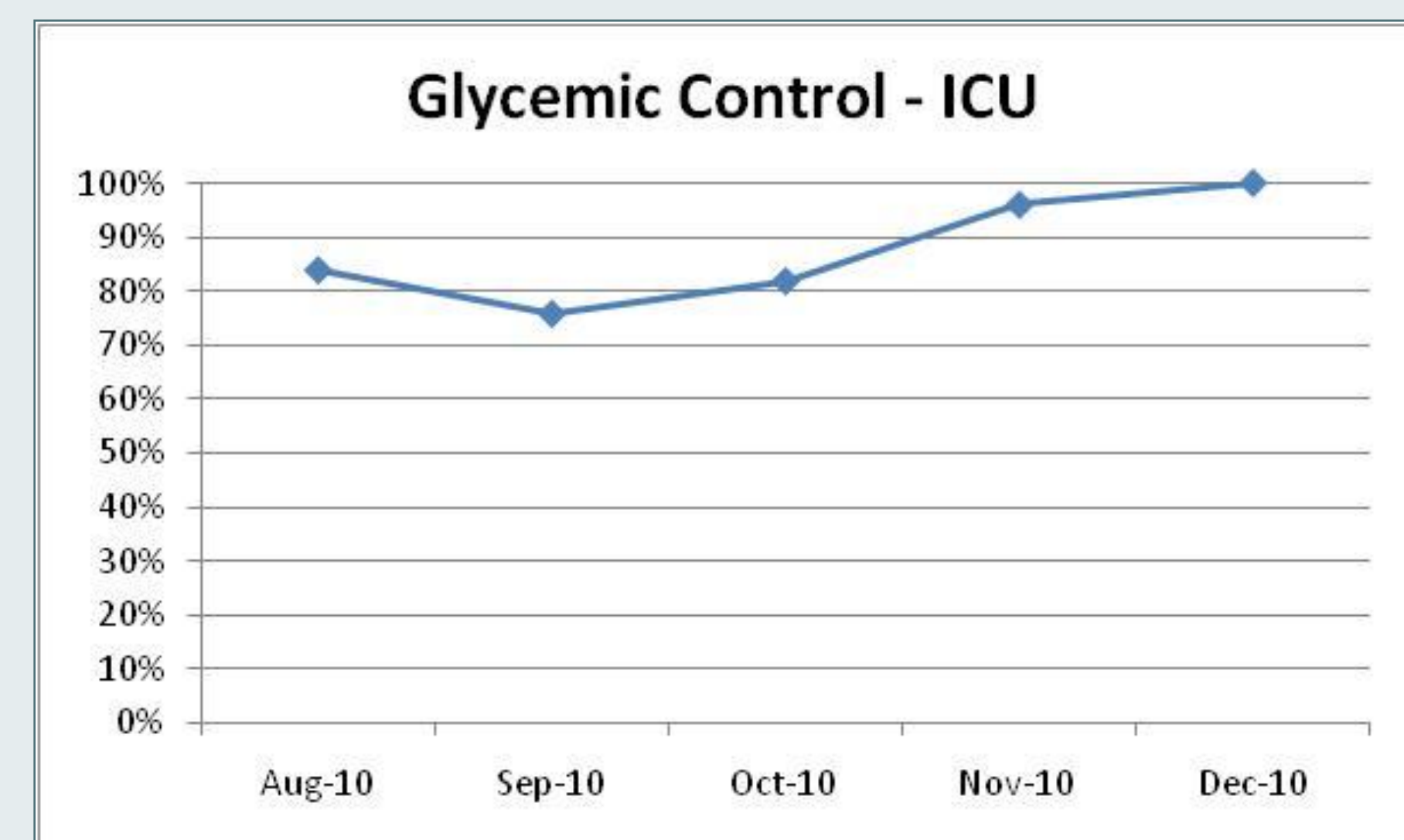


Dr. Steve Marvel, our Sepsis Leadership Physician Champion, has led the march on reducing sepsis-associated deaths at Salem Hospital. Ongoing education with staff, physicians and providers from outlying hospitals has heightened awareness and importance of early recognition and initiation of early goal-directed therapy to reduce sepsis-related deaths. The nursing case studies, physician Grand Rounds and public forums he has provided has been instrumental in widening the knowledge base surrounding the sepsis cascade.



**Glycemic Control – One Measure to Improve 24 Hour Bundle Compliance**  
Improved glycemic control in the Intensive Care Unit was addressed by:

- Staff education at monthly unit meetings
- Weekly communication with nurses
- Daily shift huddles
- 1:1 discussion
- Multi-disciplinary team collaboration to develop a physician order set to capture all elements of the sepsis bundle and aligning with the organization sepsis protocol



## Foundations in Early Sepsis Recognition and Mortality Reduction

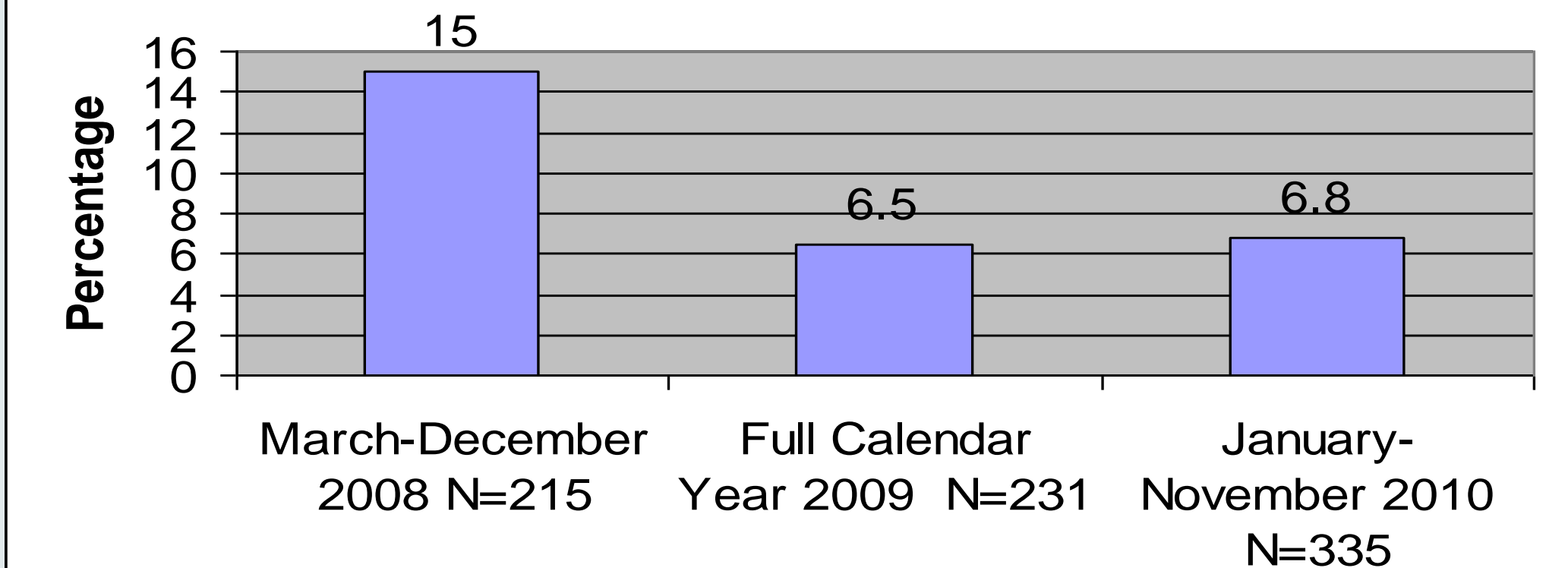
- Early awareness and management of severe sepsis improves outcomes.
- Prompt initiation of antibiotic treatment when sepsis is identified is essential to survival.
- Immediate, intense resuscitation targeting appropriate physiological goals saves lives.
- "Bundling" of evidence-based management techniques is efficacious.
- Utilizing a team approach is essential to optimize the care of the sepsis patient.
- The Sepsis Leadership Team continues to meet monthly, reviewing metrics on goal attainment, including blood culture and antibiotic timeliness, bundle compliance and educational needs.

## Key Improvements

- Collaboration between the Emergency Department, Intensive Care Unit and Medical/Surgical unit staff.
- Comprehensive review of data collection. The Sepsis Coordinator provides one-on-one education to nurses in real-time.
- Timely feedback – this cannot be under-estimated. Rapid communication of data is a key component of success.
- Rapid Response Team is instrumental in assisting non-ICU staff with the early identification of severe sepsis or septic shock patients leading to early initiation of the sepsis bundles. Physicians are rapidly notified, labs are quickly drawn and fluid resuscitation is initiated promptly.
- Development of the Sepsis Screening Tool into the electronic medical record. ED staff complete the screening tool upon patient arrival. The screening tool continues to be utilized for all admitted patients every 6 hours.
- Development of a non-ICU Sepsis order set to facilitate rapid initiation of early goal-directed therapy.

## Salem Hospital Convenience Sample Percentage of Severe Sepsis, Septic Shock Related Deaths Compared over 2008, 2009 and 2010.

(Shapiro et al. in Crit Care Med, 37(1) 2009, report mortality rates 13% at ten academic medical centers)



## References

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## Sepsis Leadership Team:

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