Chasing Sepsis:
Early Recognition and Treatment of Sepsis Outside of Critical Care

Andre Vovan, MD – Director of Critical Care Medicine
Deborah Lepman, RN, MPH, CEN – Director, CCU/CVICU/Sub-ICU
Robin Myran, RN, BSN, PCCN – Sepsis Coordinator

Background
Hoag Hospital has had a sepsis team in place since the first treatment guidelines were published in 2004. The initial implementation efforts focused on early recognition in the emergency department, and prompt transfer of patients to the intensive care unit to receive early goal-directed therapy (EGDT) that was consistent with Surviving Sepsis Campaign (SSC) guidelines. By doing this Hoag was able to reduce the mortality rate from 40% to 28% over 3 years. After recognizing that the mortality rate had plateaued and bundle compliance had decreased, efforts were focused on earlier recognition and treatment in the non-ICU setting.

Project Aim
Patients presenting to the emergency department (ED) with SIRS criteria rather than severe sepsis or septic shock and those with evolving sepsis outside of critical care were not readily identified for protocol initiation. A revised sepsis team set forth to revise the current sepsis orders and create a clear and concise protocol that could be implemented hospital-wide in order to improve quality and standardize the treatment for sepsis, severe sepsis, and septic shock.

Project Design/Strategy
An interdisciplinary committee was formed consisting of executive leadership, emergency medicine physicians, intensivists, hospitalists, anesthesiologists, attending and consulting physicians, nursing leadership and nursing staff, and representatives from performance improvement, information technology, pharmacy, and the laboratory. This committee met bimonthly for planning, protocol development, and outcomes evaluation.

Outcomes
Mortality - All Sepsis DRGs

Changes Made
To increase recognition, a sepsis screening tool was developed. A revised protocol incorporating the bundle recommendations from the SSC set fluid challenges and delivery of antibiotics as top priorities. Specific markers, such as complete blood count with manual differential, lactate level, and procalcitonin level were incorporated to more accurately determine the presence of sepsis and prevent unnecessary tests and therapies. Criteria were established to better support designation of ongoing patient care into three levels of sepsis care: Critical Care, Sub-ICU, and Medical/Surgical/Telemetry units with separate orders sets for each level. Expansion of the Rapid Response Team (RRT) to include a dedicated Sepsis RN available to respond to any “Code Sepsis” called throughout the hospital was integral for initial management and protocol implementation. A final component was the Sepsis Clock which helped facilitate documentation and tracking of bundle elements.

Next Steps
In 2013, senior leadership identified sepsis as a top organizational priority to address the significant increase in the volume of cases as well as the high cost per case. This along with the recently published new guidelines from the SSC offered the perfect opportunity to re-educate and reinvigorate the sepsis program once again. Efforts this year by the interdisciplinary team have included development and implementation of a simplified Sepsis Early Detection Algorithm that we customized to our institution, updated order sets, and nearly real-time data extraction from the EMR regarding compliance with the SSC bundle elements. This electronic surveillance system provides a weekly dashboard to the sepsis coordinator and stakeholders so that improvement opportunities can be addressed in a timely manner. Data gathered since the launch of the new algorithm in July has shown an increase in protocol utilization and bundle compliance as well as an additional decrease in mortality.