Improving the Monitoring of Nosocomial Infections in the Intensive Care Unit with Real-time Medical Informatics

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Abstract

Nosocomial infections in the surgical and trauma intensive care unit (STICU) are responsible for significant morbidity and mortality. We developed the Surgical Intensive Care – Infection Registry (SIC-IR), to monitor all infections and record mandatory Joint Commission on the Accreditation of Healthcare Organizations’s (JCAHO) core measures in an easy to use application; which will enable us to easily undertake STICU quality of care improvement initiatives to enhance the diagnosis and treatment of these important infections.

Introduction

Infections in the intensive care unit are extremely common with approximately two million nosocomial infections occurring annually1. The diagnosis and treatment of nosocomial infections has been estimated to cost 4.5 billion dollars each year1. Most of these costs occur in the intensive care unit. Therefore, effective and efficient diagnosis of infections in the STICU becomes paramount both to improving patient outcome and to helping contain health care expenditure.

The Joint Commission on the Accreditation of Healthcare Organizations (JCAHO) recognizes the importance of nosocomial infections and enforces ICU core measures that are aimed at reducing infections such as ventilator associated pneumonias and catheter-related blood-stream infections1. Tracking these core measures helps ICU teams to pursue quality improvement programs.

Developing, implementing, evaluating, and sustaining such quality of care improvement programs in the STICU is critical to combat nosocomial infections. A recent report by the Critical Care Medicine’s Outcomes Task Force outlined a “how-to” guide for ICU quality improvement. Two of the seven key components dealt with development of data collection and reporting systems4. We developed SIC-IR as such a system to document, report, and research our STICU infections with the goal to improve their diagnosis and treatment.

Surgical Intensive Care Infection Registry

SIC-IR is a relational database application which includes components for data capturing, reporting, and clinical decision support. SIC-IR was developed to: improve patient care through real-time monitoring of STICU infections; improve house staff time utilization, documentation, and transfer of care; and to provide a quality data repository for STICU infection-related research and modeling. A formal evaluation of SIC-IR is recently concluded, and the methodology and results will be highlighted in the poster during the AMIA 2007 Annual Symposium.

SIC-IR is directly linked with our laboratory and microbiology systems to allow it to report infection results in a concise, user friendly format. SIC-IR also offers the ability to write initial patient history and physicals, daily progress notes and consolidates data to generate a resident sign-out for transfer of care. It also provides many metrics as decision support aids.

Conclusion

Infections in the STICU are a critical problem recognized by JCAHO. SIC-IR was developed to improve overall patient care through assisting in the diagnosis and treatment of these often deadly infections.

References