Use of Electronic Health Record Tools and Data to Facilitate the Implementation and Evaluation of a Bundled Care Process for Delirium in the Intensive Care Unit

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Motivation/Discussion Topics
- How do we use EHR tools and data to improve patient care in ICUs?
- How do you build infrastructure that allows for “measure-verify” in health care systems?

Introduction
- EHR tools that enhance clinical workflow and provide real-time performance feedback can improve adoption of patient safety practices.
- Delirium is a common and severe problem for intensive care unit (ICU) patients.
- Use of evidence-based care processes such as the ABCDE bundle may reduce incidence and severity of delirium.

Objective
- To describe our approach for using EHR tools and data to facilitate the implementation of the ABCDE bundle in ICUs of 3 hospitals and evaluate the effect of the bundle on adherence to delirium care processes and patient outcomes.

Background/Methods
- ABCDE bundle consists of 5 elements:
  - Awakening and Breathing Coordination
  - Delirium Monitoring & Management
  - Early Mobility
- To facilitate uptake of ABCDE practices and measure their adoption, we needed to capture EHR data that would allow us to measure and report performance of ABCDE care processes, patient sedation levels, and incidence of delirium.
- These data were captured in various sections of the critical care record in the inpatient EHR (Allscripts®) not all at.
- Consolidation of this information into a single viewable location could facilitate the delivery of care.
- The use of a team of programmers, nurses, and physical, occupational, and respiratory therapists from 3 Baylor, Scott & White (BSW) hospitals to assist with redesign of the critical care record.

Findings/Innovation

EHR Modifications
- NURSING CRITICAL CARE FLOWHEET
  - Added a pull-down box labeled “Sedation Vacation/Daily Awakening Trial” under the ventilator bundle section of the critical care flowheet, indicating if a SAT was performed, and if not, why not.
- RESPIRATORY THERAPIST STRUCTURED NOTE
  - Added a line in the respiratory therapist note for “Spontaneous Breathing Trial” with a pull down box indicating whether or not a STB was performed, if not, why not.

Discussion/Lessons Learned
- EHRs are often not optimised for the provision of efficient and effective patient care in ICUs or the collection of data necessary for comparative effectiveness and patient-centered outcomes research.
- We are creating a learning health system by making modifications to the EHR that streamline the delivery of care and allow for standardization of collected relevant data.
- We achieved efficiencies by eliminating double documentation within the EHR of various ABCDE care processes by different care providers and creating structured data fields.
- It is critical to understand the different workflows of members of multidisciplinary care teams and to involve them in the redesign of the front end of EHRs.
- Staff need to be trained to properly document in the EHR and reminded of the importance of doing so.
- Improving and streamlining EHR documentation provides infrastructure for quality improvement efforts in health care systems, however, the ability to generate automated, real-time performance data and provide feedback to frontline staff is key to driving adoption of processes of care such as the ABCDE bundle.

Next Steps
- To create a business intelligence (BI) dashboarding tool that allows ICU managers to pull bundle compliance data in real-time, monitor key performance indicators, and provide feedback to frontline staff.
- To abstract patient outcomes data from the EHR to determine bundle adherence rates and the effect of bundle implementation on patient outcomes including incidence and duration of delirium, ventilator days, coma days, length of stay, nursing home utilization, and mortality.