Introduction

Context: Patients diagnosed with severe sepsis will face a 29-50% mortality rate, which is higher than mortality rates associated with myocardial infarction, stroke, or traumatic injury (Seymour et al., 2010). Sepsis treatment costs $17 billion annually in the United States, approximately 2.5% of all health care expenditure in the United States (IHI, 2012). With mortality rates of up to 50% and treatment costs into the billions of dollars in the United States, severe sepsis exhibits clinical significance to both practitioners and patients.

Problem: Sepsis (MS-DRG: 870-872) (1,789 annual cases) is one of the leading causes of death in Covenant Health with average mortality rates of 21% and average variable cost per case from $7,000-$14,500. Early identification of sepsis cases within Covenant Health is often missed, which can result in death within 24-48 hours. Our plan is to reduce mortality O/E ratio to 0.84 or better and direct variable cost per case to average $4,325 per case associated with care delivery for the sepsis population.

Approach: With health care costs rising and high mortality rates associated with severe sepsis, screening tools must be developed based on sound evidence to improve quality of care provided to sepsis patients and decrease costs. As a part of quality improvement, Covenant Health staff (including the chief medical officer, chief nursing officer, director of quality, sepsis coordinator, clinical educators, charge nurses, members of the rapid response team, staff nurses, and staff physicians) committed to finding process solutions to earlier identification and treatment of patients at-risk for deterioration.

Description: The challenge of identifying the at-risk patient prior to rapid response team activation and the often missed sepsis patient identification led to the conceptualization of an assessment tool and algorithm that combined nursing assessment findings with lab results to aid in identification of both the at-risk and septic patient.

Aim: Develop a standardized process to proactively identify 100% at-risk for deterioration/septic patients by November 2012.

Results

Summary of Results: The tool utilization resulted in nursing “gut” instincts being replaced with a quantified and standardized approach to patient assessment findings that guided clinical judgment, improved communication amongst the healthcare team, and improved patient clinical decision making, thus positively impacting failure to rescue, failure to communicate, and failure to plan.

Phase 1: MEWS Tool Conceptualization

- Preliminary literature review
- Shared governance team’s development of a process to identify at-risk for deteriorating patients
- Tool created for measurement of physiological findings with an inclusive clinical judgment, improved communication amongst the healthcare team, and improved patient assessment findings that guided clinical judgment, improved insticts being replaced with a quantified and standardized approach to nursing “gut”

Phase 2: MEWS Literature Review (July 2012)

- Developed PICOT question
- Identified gaps in current evidence and PICOT question being asked
- Validated MEWS tool physiological measurement components
- Validated patient population selected for use

Phase 3: MEWS Tool Pilot (July 2012- Present)

- Pilot of MEWS tool
- MEWS tool design changes and revisions made based on user feedback with PDCA (plan-do-check-act) cycle of change

Phase 4: MEWS Tool Reliability & Usability Testing (October 2012)

- Reliability and usability tested using simulation to minimize variables
- MEWS tool design changes and revisions made based on testing results using PDCA (plan-do-check-act) cycle of change

Actions Taken: Quantification of assessment findings (vital signs, lab values, and physical and neurological assessments) was confirmed through an extensive literature review. Usability and reliability of the resulting modified early warning scoring (MEWS) tool was tested using scripted simulation to minimize variables by a convenient sample of nursing staff.

Conclusions

The reliability/usability testing of the form in a controlled setting, with variables controlled and minimized through the use of simulation, allowed for critical design flaws to be noted, fixed, and measured through the PDCA cycle of change. Reliability testing scores confirmed the positive impact of instrument changes. Quantitative and qualitative feedback was captured during debriefing, with several positive comments about the algorithm—the portion of the tool that drives standardized communication amongst the healthcare team.

Lessons Learned: The piloting of the tool allowed for testing process changes associated with the form on a small scale. Importantly, multiple successful interventions support MEWS instrument usage through a quantified and standardized approach to scoring physiological assessment findings. The MEWS tool has guided clinical judgment, improved communication amongst the healthcare team, and improved patient clinical decision making in the septic and nonseptic patients at multiple units. This tool leads to a shared focus, not simply sepsis screening alone, to identify the at-risk for deterioration patients.

Bibliography


- http://www.ihi.org/knowledge/Pages/Changes/ImplementtheSepsisResuscitationBundle.aspx


