2014 Gage Awards

Reference #	7487001
Status	Complete
Name of hospital or health system	University of Texas Medical Branch
Name of project	Improving sepsis mortality with early identification and treatment
CEO name	Donna K. Sollenberger
CEO approval	Check here to confirm that your CEO approves of this project being submitted for a 2014 Gage Award
Submitter name (first and last)	Charles Machner
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Within which of the two categories does your application best align?	Quality

1. Provide a brief description of the project. (This section should resemble an abstract for a poster presentation or an abstract for a peer reviewed journal. Include an objective, data sources, study design, findings, and conclusions.)	BACKGROUND: In fourth quarter CY2011 the UTMB system was noted to have a higher than expected sepsis mortality according to UHC(University Hospitals Consortium) data. The use of EBM strategies such as implementing Early Goal--Directed Therapy has been shown to reduce sepsis--related mortality. A Clinical Safety and Effectiveness (CS&E) team was created to plan and implement changes in processes of care to improve the care and safety of our septic patients. AIM: Achieve an absolute reduction in sepsis mortality of adult ED patients from 39% to 15% by 6/15/2013. The process begins when patients arrives at UTMB ED and ends at discharge. This is important because it aligns with the UTMB institutional strategic goal to improve the care of patients' safety and outcomes. INTERVENTIONS 1. Educated house---staff, nursing, coders, and ancillary care providers on early recognition and treatment of sepsis and regarding each implemented intervention 2. Utilized a sepsis screening tool: initially manual and then integrated into our EMR (electronic medical record) 3. Created a revised workflow (Figure 3c) for the UTMB ED based on Early Goal--Directed Therapy (EGDT) guidelines. Revisions were made based on the capabilities available at the UTMB ED. 4. Used blood cultures AND lactate levels as a diagnostic and monitoring tool for effectiveness of therapy 5. Created a sepsis orderset in our EMR 6. Updated Pyxis antibiotics in concordance with our sepsis orderset suggestions to reduce time from identification to antibiotic MEASURES/IMPROVEMENTS 1. Overall UTMB average mortality in septic patients decreased from 39% (Q2CY2012) to 12% (Q1CY2013). 2. Overall average mortality in septic patients admitted from the ED decreased from baseline of 26% (Aug2009---Jun2012) to 15% (Jul2012---Mar2013) 3. Mean compliance with screening sheets improved from 59% to 76%. 4. Time to antibiotic: triage to administration of first antibiotic decreased from 361 minutes to 297 minutes. 5. Blood cultures with lactic acid screening increased from 28% to 68%. 6. EHR Sepsis Orderset usage increased from~10% to ~ 35%. CONCLUSIONS Overall, the institutional sepsis mortality rate decreased from 39% to 12% and sepsis mortality index decreased from 1.56 to 0.76 from second quarter CY2011 to the first quarter CY2013 based on UHC data. UTMB jumped from UHC rank of 107th out of 117 academic medical centers to 7th out of 116. This methodology is readily transferrable to additional ED's and to community hospitals using existing protocols. Ongoing screening and key metric analyses will assess the sustainability of the interventions.
1A. Attachment, if applicable (Applicable examples include a peer reviewed journal article, other content published in the literature, or a presentation at a national meeting)	2014GageAwardQualityImprovement-UTMBSepsisSubmission.pdf (3782k)

2. Describe the methods use in this project. Include where, why, and how the project was accomplished.	A multidisciplinary team was formed consisting of ICU (surgical, medical, anesthesia) physicians and nurses, administrators, medical coders, and ED physicians. Data collection sheets of 50 septic patients (Figure 1 from above attached file) were created, completed, and analyzed retrospectively via chart audits to discern our own mortality data. Detailed manual review also allowed the team to review the existing process of care for septic patients. The Ishikawa Fishbone Diagram (Figure 2 from above attached file) resulted from the team's multidisciplinary experience and, with the chart audits, revealed areas for improvement in the care of septic patients at UTMB. Additionally, the Fishbone Diagram served as a tool for education and organization as we identified multiple aspects which could be immediately addressed and others which were long---term goals. A process map was created showing the initial patient flow (Figure 3a from above attached file) and an ideal patient flow (Figure 3b) in the UTMB ED. We focused our group efforts on a rapid--cycle aim to screen ED patients for early identification of sepsis and initial treatment. A detailed decision flow was created based on the Surviving Sepsis Guidelines for the ongoing management of septic patients, but based on the capabilities of the UTMB ED (Figure 3c from above attached file).
3. Describe the results of the project. What data was used to support improvement results?	MEASURES/IMPROVEMENTS 1. Overall UTMB average mortality in septic patients decreased from 39% (Q2CY2012) to 12% (Q1CY2013). 2. Overall average mortality in septic patients admitted from the ED decreased from baseline of 26% (Aug2009---Jun2012) to 15% (Jul2012---Mar2013) 3. Mean compliance with screening sheets improved from 59% to 76%. 4. Time to antibiotic: triage to administration of first antibiotic decreased from 361 minutes to 297 minutes. 5. Blood cultures with lactic acid screening increased from 28% to 68%. 6. EHR Sepsis Orderset usage increased from~10% to ~ 35%.
4. Describe what happened as a result of the project. Was the improvement related to the intervention? Can the project be duplicated by other organizations?	CONCLUSIONS Overall, the institutional sepsis mortality rate decreased from 39% to 12% and sepsis mortality index decreased from 1.56 to 0.76 from second quarter CY2011 to the first quarter CY2013 based on UHC data. UTMB jumped from UHC rank of 107th out of 117 academic medical centers to 7th out of 116. This methodology is readily transferrable to additional ED's and to community hospitals using existing protocols. Ongoing screening and key metric analyses will assess the sustainability of the interventions.
5. Describe how patients, families, and if appropriate, community was included in the work.	This was largely a quality improvement initiative that resulted in improved survival rates amongst patinets admitted with sepsis.
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