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Abstract Proposal for Poster Display

IMPLEMENTATION OF AN EVIDENCE-BASED PROTOCOL FOR EARLY DETECTION AND TREATMENT OF SEVERE SEPSIS AND SEPTIC SHOCK

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Context: The study was conducted at the Americo Brasiliense State Hospital, Brazil, a medium size general hospital in the southeastern region. It is a medium complexity institution with 104 beds distributed in one ICU, five clinical wards (medical and surgical), one surgical center, and one clinical stabilization room. The hospital does not assist cardiac patients with hemodynamic or polytrauma and does not realize neurosurgery.

Problem: Sepsis is considered a major public health care problem due to its implications to patients, including high rates of mortality, huge expenses for the health care system and a significant loss of productivity stemming from long hospital stays. Thus, there is a need for implementing a system-based change aimed at reducing risks and improving patient outcomes. The objectives were to implement an evidence-based protocol for early detection and treatment of severe sepsis and septic shock, and to determine if compliance led to decreased nosocomial infection mortality over time.

Study design: A descriptive study design was conducted from May 1st to September 30th 2015.

Assessment of problem and analysis of its causes: The institutional protocol was developed by a multidisciplinary team, based on a literature review of published evidence concerning early detection and treatment of severe sepsis and septic shock. Guidelines promulgated by Brazilian accredited hospitals formed the basis of our institutional protocol. A health care consultant validated the protocol and the final version was approved by clinical divisions of the hospital involved in the project. Sepsis diagnosis was performed by local physicians through investigation of suspected or confirmed infectious sites associated with at least two signals of systemic inflammatory response and organic dysfunction of one organ, for severe sepsis. Persistent hypotension not responsive to volume was investigated for septic shock. In addition to the clinical findings, the diagnosis was also based on laboratory nonspecific findings, through the investigation of some biological substances used as biomarkers and mediators of sepsis. Imaging methods (X-ray, ultrasound, CT scan or echocardiogram) were also applied. In the presence of a suspected or confirmed case of sepsis, a checklist developed for the purposes of this study was filled out by an experienced nurse on duty, and the protocol management nurse was communicated by email or phone call. To determine if compliance led to decreased nosocomial infection mortality over time, a total

of 44 medical records of hospitalized adult patients were reviewed. Patients' medical records were eligible after informal discussions with physicians and nurses, in daily visits by the protocol management nurse at the wards and ICU. The prescription orders were also evaluated for evidence of sepsis. The checklist used for data collection included the following variables: warning signs of sepsis; changes in vital signs and suggestive of sepsis; laboratory exams; prescription of antibiotics, vasoactive drugs and volume replacement; and patient comorbidities. Data were managed using Excel spreadsheets and indicators were generated: rate of patients diagnosed with severe sepsis or septic shock, mortality rate from nosocomial sepsis and protocol compliance. These indicators were presented monthly to the hospital staff and discussion on those cases was made.

Intervention: An educational lecture was implemented by the principal investigator to the multidisciplinary team. An in-service lecture occurred in the hospital describing the protocol, the service flowchart and monitoring. An educational lecture was also implemented by the doctor responsible for the hospital infection committee to physicians with the aim of improving protocol compliance.

Strategy for change: The educational lecture was presented in the month prior to protocol implementation and the target audience included 29 nurses (46.8%/n=62), 100 nursing technicians (42.8% /n=234), 6 physiotherapists (54.5%/n=11), 2 speeches therapists (50%/n=4), 3 nutritionists (50%/n=6), and 16 physicians (19.3%/n=83). Physicians representing the following specialties: geriatrics, rheumatology, nephrology, general practitioner, oncology, infectious disease, intensive care, neurology, resident and 6th year students were also trained. The protocol was launched in April 2015 and implemented in May 2015 at the hospital settings.

Measurement of improvement: For both nosocomial and community infection, most patients were male (73.3%) with a mean age of 61.8 years. The main diagnoses were emphysema (15.9%), bacterial pneumonia (13.6%) and shock (11.4%). Common locations for the primary infection included: pulmonary (average 7.4 patients/month), urinary and abdominal (both average 0.8 patients/month), bloodstream and indefinite focus (both average 0.6 patients/month). Most cases of nosocomial sepsis were diagnosed in the ICU (75%), and the average length of stay of nosocomial patients was 24.5 days.

Effects of changes: Since the protocol implementation, a progressive decrease in mortality rate from nosocomial cases was observed (from 50% in May to 37.5% in September). In addition, the protocol compliance increased from 0% in May and June to up to 37% in September.

Lessons learned: After the protocol implementation, an improvement of overall mortality from nosocomial sepsis was noticed. However, a slight increase in mortality occurred while a decrease in adherence to the protocol was observed. Although with a larger historical series, a better demonstration of the direct relationship between increased adherence to protocol and improvement of nosocomial mortality rate could be proved.

Messages for others: It is known that use of a sepsis protocol can result not only in improved mortality but also in substantial savings for institutions and third party payers. Therefore, more investment in institutional protocols in Brazilian public healthcare services is needed.

Ethics Approval: Use of data collected was authorized by institutional director.

References:

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