Reducing Sepsis Mortality

NYC Health + Hospitals - Elmhurst
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- NYC Health + Hospitals/Elmhurst is part of an integrated health care system of hospitals, neighborhood health centers, long-term care, nursing homes and home care.

- Located in Elmhurst, Queens, NYC Health + Hospitals/Elmhurst is a 545 bed hospital and a completely modernized facility that has a highly-regarded Trauma Center and Stroke Center, a 911 Receiving Hospital, and an Emergency Heart Care Station. Elmhurst is a regional referral center for trauma services, cardiac catheterization, neurosurgery, Adult, Adolescent, and Pediatric psychiatric services and rehabilitative medicine. NYC Health + Hospitals/Elmhurst has one of the busiest Emergency Rooms in the USA.

- Elmhurst received TJC Disease Specific Advanced Certification for Hip and Knee Replacement in 2017 and has TJC Advanced Certification for Palliative Care.

- Elmhurst serves an area of approximately one million people. Elmhurst, Queens is, perhaps, the most ethnically diverse community in the world with 20,000 recent immigrants from 112 different countries. Our patient population is primarily from South & Central America, Asia, the Caribbean and Eastern Europe. Culturally-sensitive care is a hallmark of our facility.
Hospital Sepsis Committee

- Sharon Behar RN CPHQ - Senior Associate Executive Director
- Nicole Bennett BSN - Assistant Director Quality, Patient Safety
- Barry Brown MD – Director Department of Obstetrics and Gynecology
- Sheree Givre MD - Associate Director, Department of Emergency Medicine
- Joan Gull CNO - Chief Nursing Officer
- Joseph Halbach MD - Deputy Medical Director
- Stuart Kessler MD - Director, Department of Emergency Medicine
- Cathy Lind NP - Director of Nursing, Emergency Department
- Joseph Masci MD - Director, Department of Medicine
- Luz Munoz RN- Associate Executive Director Nursing
- Ann-Marie Muschmacher RN – Pediatrics Emergency Department
- Ram Parekh MD - Attending, Department of Emergency Medicine
- Beverley-Ann Scott BSc CPHQ - Quality Manager
- Luis Uran - Associate Director Quality Management
- Yakov Volkin MD - Associate Director Pediatrics Department
NYS PARTNERSHIP FOR PATIENTS

Hospital Sepsis Committee
Project Description

- GNYHA and the United Hospital Fund (UHF) launched the STOP (Strengthening Treatment and Outcomes for Patients) Sepsis Collaborative in 2009 to support hospitals’ efforts to: improve care and reduce mortality, implement standardized processes for the recognition and treatment of sepsis, and to enhance communication and patient flow between the Emergency Department and other areas of the hospital.

- NYC Health and Hospitals/Elmhurst participated in the Stop Sepsis Collaborative and held a leadership role in the initiative.

- In 2014, NYC Health and Hospitals/Elmhurst ED sepsis quarterly mortality rate ranged from 24% to 31%.

- More than 75% of sepsis patients presented to the Emergency Department with severe sepsis or septic shock.
Project Description

○ From 2014 to 2017, our facility implemented quality improvement initiatives which focused on improving earlier recognition of severe sepsis and septic shock in the Emergency Department and Inpatient Units aimed at:
  ○ Improving recognition of patients presenting to the Emergency Department with severe sepsis or septic shock
  ○ Improving recognition of patients developing severe sepsis or septic shock on Inpatient Units
  ○ Reducing hospital wide sepsis mortality
  ○ Increasing compliance with the sepsis 3-Hour and 6-Hour bundles for NYSDOH
Project Implementation

○ Quality Improvement Principles and Methodologies
  ○ Sepsis FMEA – 2014
  ○ PDSA Methodology

○ Sharing Knowledge
  ○ Monthly Sepsis Committee Meetings were held to:
    ○ Review Sepsis Mortality Data and cases
    ○ Develop and track PI projects to improve sepsis care and decrease mortality
  ○ Sepsis cases were also discussed at ED and Inpatient Provider Conferences
  ○ Participation in sepsis webinars hosted by NYSPFP, CMS and NYSDOH

○ Engaging Key Stake Holders
  ○ Providers and Nurses were involved in continuous education
  ○ In 2015, there was a hospital wide sepsis education session on World Sepsis Day for all staff
Through participation in the STOP Sepsis Collaborative, we developed sepsis screening protocols in the EMR and created a paper tracking tool for documenting care of patients with severe sepsis or septic shock.

In April 2016, a new EMR system, EPIC was implemented at our facility. Several modifications were made to the new EMR over time, to assist providers in the timely recognition of sepsis and completion of the sepsis bundles. These included:

- Sepsis screening of all patients to be completed not only by RNs at ED Triage but also on Inpatient units at every shift.
- Sepsis Alerts for RNs in the ED and on Inpatient units, for patients with abnormal vital signs.
- Sepsis specific documentation (Sepsis Alert Event and Reassessment notes) for patients triggering Sepsis Alerts.
- Sepsis order sets with blood culture orders pre-checked and automatic weight based calculation of crystalloid fluids.
Tools & Resources

- Sepsis Alerts for midlevel providers and Attendings
- Sepsis documentation reports which reminded providers to complete documentation of interventions on sepsis patients
- Sepsis Protocol Forms and Flowsheets on ED intranet with sepsis criteria
- ED Tracking Board that includes alerts for patients with positive sepsis screens and lactate values greater than 2mmol/L
- Reminders for blood cultures to be drawn prior to antibiotics in antibiotic order Quick Lists
- Quick Lists with automatic weight based calculation of crystalloid fluids
- Disease specific Broad Spectrum antibiotic order sets in EPIC to ensure appropriate antibiotic administration
- Mousepads with Sepsis 3- Hour and 6-Hour bundle actions
Successful Strategies & Tips

○ Sepsis screening at triage and on Inpatient units improved recognition of patients with sepsis

○ Education for RNs on sepsis screening

○ Sepsis education for providers and all incoming residents

○ Sepsis Alerts in EPIC for midlevel ED providers and Attendings made providers aware of patients meeting sepsis criteria in real time

○ Sepsis specific documentation (Alert Event and Reassessment Notes)
  ○ Provider interventions documented
  ○ Non-sepsis patients with abnormal vital signs ruled out
  ○ Transfer of patients from ED to Inpatient units with sepsis protocol initiated
Successful Strategies & Tips

- Sepsis Protocol Forms on ED intranet with sepsis criteria
- Frequent review of hospital wide sepsis mortality data to ensure appropriateness of care
- ED Tracking Board that includes alerts for patients with positive sepsis screens and lactate values greater than 2mmol/L
- Reminders for blood cultures to be drawn prior to antibiotics in antibiotic order Quick Lists
  - Sepsis order sets with blood culture orders pre-checked
- Disease specific Broad Spectrum antibiotic order sets in EPIC to ensure appropriate antibiotic administration
- Sepsis Order Sets and Quick Lists with automatic weight based calculation of crystalloid fluids
Challenges & Barriers

- System and process issues with blood culture ordering, specimen collection timing and documentation after EPIC implementation in Q2 2016

- Documentation of total crystalloid fluids administered

- Documentation of blood cultures drawn prior to antibiotic administration in EPIC

- Understanding the different requirements for documentation between CMS and NYSDOH

- Dealing with the current CMS guidelines in the context of new and changing studies addressing appropriate sepsis care. i.e. – q-SOFA (different categorization of sepsis) and other recent articles suggesting early fluid initiation does not impact patient outcome

- Current inability to do POC testing

- Handoff of patients enrolled in the sepsis protocol from the ED to Inpatient units
Key Lessons Learned

- Continuous sepsis education is critical
- Frequent case reviews to discuss challenges and highlight successes as well as areas of improvement
- Review of sepsis data to ensure appropriate interventions
- Communication with key stakeholders was more likely to achieve buy-in
Outcomes & Data

Severe Sepsis Septic Shock Adult Mortality vs NYSDOH Statewide Mortality

EPIC Implementation
Outcomes & Data

Compared to the NYSDOH Average Mortality Rate, NYC Health+ Hospitals/Elmhurst Mortality Rate has steadily decreased.
Outcome & Data

**SEPSIS INTERVENTIONS**

- **Initial Lactate**: 93%, 92%, 96%, 98%, 84%
- **Blood Cultures**: 77%, 67%, 61%, 59%, 69%
- **3hr Antibiotics**: 94%, 83%, 88%, 89%, 76%
- **Crystalloid Administration**: 40%, 58%, 62%, 52%, 46%

- System and process issues with blood culture ordering, specimen collection timing and documentation after EPIC implementation in 2Q2016
Steps for Hardwiring & Spread

Future Plans

- Simulation Sepsis Training to be available for all providers and RNs.
- Creation of Sepsis Cards for all providers, residents and nurses.
- Creation of a Sepsis ED tracking board which will focus solely on sepsis patients and will show the lactate results by patient.
- Have EPIC reorder lactates or alert the providers of the need to draw a repeat lactate.
- EPIC alerts for Nursing to ensure blood cultures are drawn and documented prior to antibiotics being administered.
- Continued and expanded interdisciplinary education.
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