

# Development of an Institutional Sepsis Program: Standardizing Processes to Drive Reliable Quality Care

Melissa Lee, RN, MS, GCNS-BC; Mary C. Sullivan, RN, MS, CNS; Erica Shea, RN, MS

## Background

- Severe sepsis is a deadly yet common syndrome characterized by organ dysfunction in the presence or suspicion of infection
- Severe sepsis and septic shock are increasing in incidence and prevalence, affecting millions of people around the world each year (Lagu et al., 2012)
- The Surviving Sepsis Campaign (SSC): International Guidelines for Management of Severe Sepsis and Septic Shock, outlines time sensitive measures critical for optimal care outcomes
- Screening for the early detection of sepsis and rapid implementation of early evidence-based therapies has been well documented in the literature to improve outcomes and decrease mortality
- UCSF Medical Center identified sepsis screening and review of sepsis care bundles as opportunities to improve standard processes to drive high quality reliable care

## Purpose

- Early identification of patients with sepsis
- Standardize workflows to deliver evidence based guidelines to improve sepsis bundle completion
- Develop sepsis surveillance utilizing existing data and documentation within the Electronic Health Record and streamline communication for emergent situations.
- Incorporate frontline staff to optimize workflows and identify opportunities for improvement related to bundle compliance

## Design & Methods

### Multidisciplinary Sepsis Leadership committee

- Sepsis Project Manager
- Sepsis medical director
- Population based Clinical Nurse Specialists
- Frontline nurse and provider champions
- Nursing unit directors
- Quality analyst
- Pharmacy

### Designing electronic surveillance for early sepsis

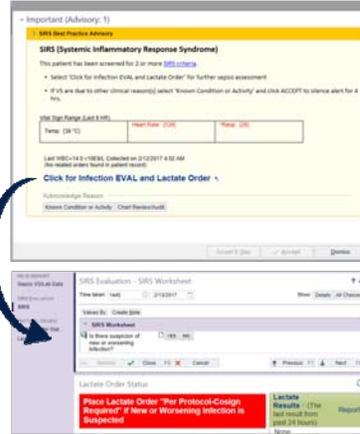
- Interprofessional team collaborated to leverage EHR data incorporating continuous sepsis screening
- Unit based Sepsis Champions tailored sepsis education to unit patient population
- Analysis of alert data to refine workflow processes prior to go live
- Systems improvement:
  - Lactate protocol development
  - Antibiotic availability
  - Code Sepsis process
- Implementation: coordination with leadership and Sepsis Champions

### Challenges

- Capture documentation for changes in mental status due to sepsis
- Configure alert to exclude patients with clinical conditions mimicking sepsis
- Ongoing educational effort with new staff across multiple disciplines on sepsis surveillance system and alert interaction
- Adapt the surveillance system to keep pace with an evolving Core Measure and revisions to metric specifications and requirements

## Nursing Electronic Surveillance Workflow

**SIRS Best Practice Advisory:** Patient meets criteria linked to systemic inflammatory response syndrome (SIRS) and the early stages of sepsis. Trigger points based on existing flowsheet documentation or lab values.



**2\* of the following vital signs trigger alert**

- HR >100
- Temp >38.3°C and <35.5°C
- RR >23
- WBC <4 and >12

\*3 vital signs on the cardiovascular unit; malignant hematology unit excludes WBC

### Infection EVAL and Lactate order

- If RN suspects new or worsening infection

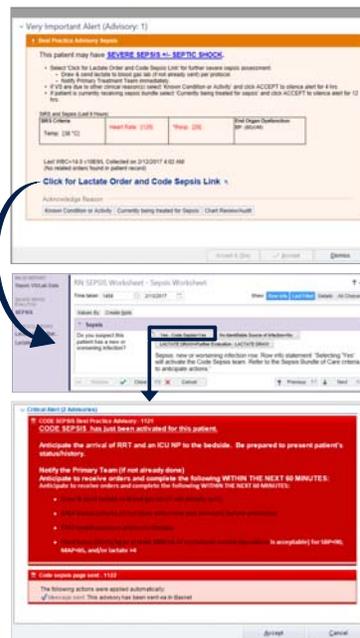
### Lock-out timeframes assist with alert fatigue

- Known Condition or Activity**
  - VS due to other clinical process
  - Silences alert for 4 hours
- Chart Review/Audit**
  - Silences alert for 4 hours for individual user

### Infection EVAL and Lactate Order

- Links out to questions about infection and source to evaluate for sepsis
- No** response silences alert for 12 hours, can be utilized for patients on comfort care
- Yes** response and a lactate result not present further decision support prompts RN to place lactate order per protocol

**Severe Sepsis Best Practice Advisory:** Patient meets signs of SIRS plus one or more end organ dysfunction criteria. Trigger points based on existing flowsheet documentation or lab values.



### End organ dysfunction criteria

- CV: lactate >2; SBP<90; SBP Δ >40mmHG (acute & transitional care)
- Liver: tbili >4
- Resp: O2 sat <90%
- CNS: LOC documentation
- Renal: Creat >2 (exclusions for CRRT, HD)

### Lactate order and Code Sepsis link

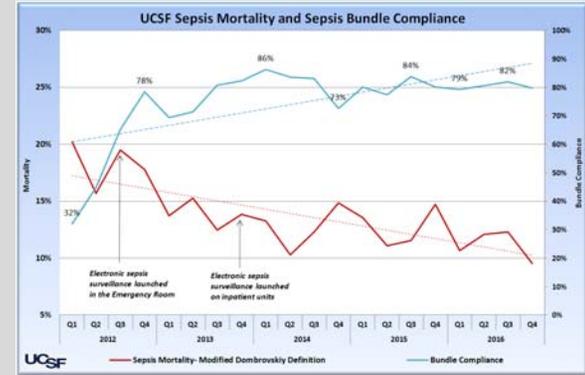
- If RN suspects new or worsening infection
- Links out to Code Sepsis activation

### Lock-out timeframes assist with alert fatigue

- Currently being treated for sepsis**
  - Patients currently being treated or have received sepsis bundle elements within previous 24 hours
  - Silences alert for 12 hours

### Code Sepsis activation

- No identifiable source of infection**
  - Includes patient on comfort care
  - Silences alert for 12 hours
- Lactate draw- Further evaluation**
  - Decision support prompts RN to place lactate order per protocol
- Code Sepsis**
  - Team responds to the bedside for suspicion of new or worsening infection
  - ICU Triage Fellow/ICU Nurse Practitioner
  - Rapid response team
  - Sepsis project manager & project analyst
  - Pharmacy by phone



## Implementation for Success

### Alert go-live

- Proactive rounding to perform just-in-time training and gather feedback
- Sepsis Project Manager led weekly phone conference meetings to address system issues
- Sepsis alert optimization to reduce alert fatigue
- Frontline clinician feedback to improve alert user interface
- Unit based performance on interactions with sepsis alert to reduce total alert volume.

### Empowering frontline staff with data

- Interprofessional team developed an analytic tool based from sepsis surveillance to display sepsis bundle compliance
- Data is displayed at the patient and unit level providing Sepsis Champions information to drive change to improve patient outcomes
- Analytic tool transitioned data review from retrospective to concurrent case review providing opportunities for feedback to the clinical team often while the patient is still hospitalized

### Next Steps

- Optimizations for Sepsis Core Measure: Repeat Lactate reminder alert
- Sustaining performance in bundle compliance
- Optimizing workflows to recognize sepsis in pediatric patients for emergency department staff
- Involving front line staff in identifying areas of improvement to meet institutional goals surrounding sepsis mortality.

## References

- Lagu, T., Rothberg, M.B., Shieh, M.S., et al. (2012) Hospitalizations, costs, and outcomes of severe sepsis in the United States 2003 to 2007. *Critical Care Medicine*, 40:754-761
- Rhodes, A., Evans, L.E., Alhazzani, W. et al. (2017). Surviving Sepsis Campaign: International Guidelines for Management of Sepsis and Septic Shock: 2016. *Intensive Care Medicine*, 1-74.

## Acknowledgements

Sepsis Leadership Operations Committee  
UCSF Medical Center Department of Nursing  
UCSF Medical Center Department of Nursing  
Epic Systems Corporation®

Contact Information:  
Melissa Lee, RN, MS, GCNS-BC [melissa.lee@ucsf.edu](mailto:melissa.lee@ucsf.edu)  
Mary C. Sullivan, RN, MS, CNS [marccook.sullivan@ucsf.edu](mailto:marccook.sullivan@ucsf.edu)