



## Healthcare Organization Commitment

### Contact Details

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#### Position

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### Commitment Details

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#### Commitment Name

APSS #9: Early Detection and Treatment of Sepsis

#### What Patient Safety Challenge does your Commitment address?

Challenge 9 - Early detection and treatment of sepsis

#### Commitment Start Date

01/01/2016

#### How Many Hospitals Will This Commitment Represent

## Commitment Summary

Sepsis extracts a high toll of morbidity and mortality in children and adults alike. It is the leading cause of death in hospitalized children, claiming as many as 5,000 lives each year. Tens of thousands more children are treated for annually for sepsis, but that's not the end of it - at least half of survivors will be readmitted and over one-third of survivors of severe sepsis will develop a long term disability. The vast majority of pediatric sepsis is treated in a pediatric intensive care unit, and each hospitalization costs approximately \$75,000. Nationally, sepsis has been estimated to consume 16% of pediatric inpatient expenditures. As one approach, CHOC Children's Hospital is one of some 50 national children's hospitals working together to both improve outcomes and reduce the incidence of severe sepsis and septic shock in children. We aim to reduce the incidence of severe sepsis and septic shock by 75% in three years locally and nationally, including the onset of hospital-onset sepsis. By increasing the awareness, detection and response to early findings of sepsis in children, we aim to decrease mortality by an additional 75% as well. Sepsis is often treatable, but early detection and action are key. The stakes are high to master the collective approach to this oft-understood and frequently very serious illness.

## Commitment Description & Detail

CHOC is basing many of its efforts with the Children's Hospital Association Improving Pediatric Sepsis Outcomes (IPSO) national collaborative. In this collaborative, best practices, monthly data submissions, and benchmarked reports for quality improvement and outcome enhancement are integrated locally and nationally over at least the next three years. An inpatient program is rolling out including efforts across the continuum from ED to medical, surgical and oncology wards, to intensive care units. These activities are in concert with those of the PSMF Sepsis APSS, with its details described herein. One specific tactic of the CHOC plan is the use of Sepsis Huddles when there are strong criteria (3 or more electronic triggers) or other suspicion of sepsis. This briefing includes the immediate clinical caregivers at the bedside and includes the formulation of an action plan. Parents and guardians are a part of that gathering, as possible. Furthermore, when possible, specific indicators of possible sepsis will be included in CHOC's already robust program to detect and prevent clinical deterioration, including non-ICU codes. In alignment with the Patient Safety Movement Foundation's Actionable Patient Safety Solutions (APSS) checklist, CHOC Children's Hospital is actively working on the below checklist items.

## Action Plan

- Commitment from hospital governance and senior administrative leadership to support early detection and appropriate management of sepsis in their healthcare system.
- Develop a team approach to implement a protocol for early sepsis identification and treatment.
- Appoint an MD chairperson to be responsible and accountable for leading this group.
- CHOC participates in the Children's Hospitals Association Improving Pediatric Sepsis Outcomes (IPSO) national collaborative to reduce severe sepsis by 75% -CHOC IPSO



structure includes Steering, Operations and Unit-based committees -Implement a Sepsis Rapid Response Team or incorporate early detection of sepsis into your existing medical emergency teams (e.g. Rapid Response Teams). -Formalize a process to screen patients for signs of sepsis throughout the entire institution. (In progress, although PEWS and RRT criteria also capture the bulk of these) -IPSO screening currently in place in ED -Expands to Hematology-Oncology and wards this year -Implement an effective monitoring system to accomplish continuous monitoring and notification based on acute changes to the following patient data:

- o Fever or Hypothermia (temperature age-based norms for pediatric populations);
- o Tachypnea per age-based norms for pediatric populations;
- o Altered mental status;
- o Hyperglycemia (per pediatric normative values) in the absence of diabetes;
- o Leukocytosis or Leukopenia per age-based norms. Normal WBC count with greater than 10% immature forms;
- o Plasma C-reactive protein above the standardized value;
- o Plasma procalcitonin more than two standard deviations above the normal value (N/A currently at CHOC);
- o Hypotension per age-based pediatric norms;
- o Hypoxemia;
- o Acute oliguria (per pediatric norms);
- o Thrombocytopenia;
- o Hyperlactatemia (> 2mmol/L [CHOC Children's Lab]);
- o Prolonged capillary refill time or mottling.

-Select an EHR to serve as a data collection tool and repository for predicting risk of sepsis for patients. A system that provides a data collection tool and allows for continuous analysis and surveillance will be most beneficial. -Implementation of automated electronic screening based on existing data (SIRS criteria, MEWS or any other warning system being used). -CHOC has used the Pediatric Early Warning System (PEWS) for all inpatients since 2009. -Design a workflow specific to level of alert: (In progress)

- o SIRS met – assess for infection.
- o If patient has sepsis – increase monitoring or assessment for presence of severe sepsis.

-Implement a process for continuous monitoring of electronic systems and protocols: (In progress)

- o Compliance, efficacy and outcome measures.

-Implement case reviews for outliers. -For severe sepsis: -Implement workflow for rapid assessment and intervention at the bedside. -Initiate severe sepsis bundle (3 hour elements):

- Obtain blood cultures prior to administration of antibiotics.
- Administer broad spectrum antibiotics.
- Administer appropriate volume expansion for hypotension or lactate  $\geq$  4 mmol/L.

-Build electronic documentation of process of care (fluids, antibiotics, clinical assessment etc.). -For septic shock:

- o Implement workflow for rapid assessment, intervention and need for higher level of care.
- Initiate septic shock bundle (6 hour elements):
- Apply vasopressors (for hypotension that does not respond to initial fluid resuscitation to maintain a mean arterial pressure [MAP]  $\geq$  low normal range for age).
- In the event of persistent hypotension despite volume resuscitation (Septic Shock) or initial lactate  $\geq$  4 mmol/L (36 mg/dL):
- Measure central venous pressure (CVP).
- Measure central venous oxygen saturation (ScvO<sub>2</sub>).
- Remeasure lactate if initial lactate was elevated.

### Commitment Timeline

CHOC Children's will continue to work on these checklist items, international bundle elements and more in our sepsis prevention program. Our commitment to this disease and APSS is strong, ongoing, and will be reported to PSMF annually.

### Impact Details

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### Lives Saved