Sepsis has the highest mortality rate and cost of any condition treated in U.S. hospitals, and causes significant morbidity. It ranks high on health care’s key process analysis of opportunity based on financial and volume metrics from a large normalized data set. This high-level Care Process Improvement Map illustrates key evidence-based best practices and associated improvement opportunities that drive metrics and data visualization in the Sepsis application. It is not intended as an inclusive care process model or protocol, but rather to catalyze iterative care process analysis and outcomes improvement.

**Early Recognition in the ED**
- As part of triage, routinely screen for sepsis; components may include: Fever, tachycardia, altered mental status, hypotension, hypoxia, immunocompromised status.
- Notify MD of potential sepsis.
- Initiate standard sepsis order set (bundles).

**Early Recognition Inpatient (IP) or ICU**
- Standardize nursing practice and training in inpatient units to recognize and respond to emerging symptoms.
- Routinely screen in the ICU to recognize and respond to emerging symptoms.
- Notify MD of potential sepsis.
- Initiate bundle/standard sepsis order set.

**Early Intervention (3-hour bundle) – ED, IP, ICU**
- **3-hour bundle (1-hour triage):**
  - Measure lactate level within 1 hour of triage.
  - Obtain 2 blood cultures prior to antibiotic administration if antibiotics not delayed > 1 hour.
  - Consider cultures from other potential infection sites (e.g., urine, CSF, sputum).
- Give broad-spectrum antibiotics (1B) within 1 hour of recognition (1B-septic shock; 1C-severe sepsis without septic shock).
- If hypotensive or lactate ≥4 mmol/L, provide fluid resuscitation with 30 mL/kg crystalloid (1B); consider albumin if large volume of crystalloids needed.
- Obtain labs for organ dysfunction or inflammation: e.g., creatinine, bilirubin, INR, platelets, CRP, procalcitonin.
- Target resuscitation to achieve normal lactate level.
- Do timely transfer to ICU as indicated.

**Early Therapy for Septic Shock (6-hour bundle)**
- Give vasopressors for hypotension that do not respond to initial fluid resuscitation; use norepinephrine before other vasopressors (1B).
- Insert central line and measure CVP and ScvO2 for persistent arterial hypotension despite volume resuscitation or initial lactate ≥2 mmol/L.
- If initial lactate was elevated, repeat lactate measure.

**Supportive Therapy of Severe Sepsis: ICU**
- Continue goal-directed therapy from 3-hour bundle (1C).
- For sepsis-induced ARDS, target tidal volume of 6 mL/kg predicted body weight (1A); measure plateau pressures (1B); apply PEEP (1B).
- For mechanically ventilated patients, minimize continuous or intermittent sedation (1B); target specific tidal volume endpoints; elevate head of bed 30-45 degrees (1B); follow weaning protocol (1A).
- For hemoglobin ≤7 g/dL, after tissue hyperperfusion has resolved, transfuse RBC to target a concentration of 7-9 g/dL in adults (1B).
- For persistent hypotension, consider low-dose steroids with standardized ICU policy within 24 hours.

**Predictive and diagnostic indices:**
- % compliance with ventilator weaning protocol (if data available).
- % of patients discharged to home versus care facility.

**Key Outcome Metrics**
- **Sepsis:** The presence (probable or documented) of infection, together with systemic manifestations of infection.
- **Severe sepsis:** Sepsis plus sepsis-induced organ dysfunction or tissue hypoperfusion.
- **Septic shock:** Sepsis-induced hypotension persisting despite adequate fluid resuscitation.

**Definitions**
- **Pre-Hospital/Transport**
  - Use an early detection and treatment protocol (EMS personnel).

**CARE PROCESS IMPROVEMENT MAP**

**Notes about evidence sources:**
- Practices with the strongest recommendation level (Grade 1) and high to moderate quality of evidence (Class A or B), based on the grading system used in the above guidelines, are noted as such.

See the Sepsis Outcomes Improvement Packet for aims, interventions, and resources related to each of these areas of focus.