

Patient Screening for Sepsis

This is a screening tool to identify patients with severe sepsis. No screening tool can identify all patients with severe sepsis. If you are concerned that a patient might have severe sepsis or another serious condition, notify the most responsible practitioner (MRP) immediately regardless of whether they meet the criteria in this tool.

A ARE THERE ANY SIGNS OF INFECTION?

- | | |
|--|---|
| <input type="checkbox"/> History of Fever | <input type="checkbox"/> Chest: cough, increased work of breathing |
| <input type="checkbox"/> Anti-Infective Therapy (antibiotics/antivirals) | <input type="checkbox"/> Neuro: decreased mental alertness, stiff neck, headache |
| <input type="checkbox"/> Myelosuppressed or Immunosuppressed | <input type="checkbox"/> Urine: dysuria, frequency, odour |
| <input type="checkbox"/> Indwelling Medical Device(s): e.g. central line, VP shunt, invasive airway | <input type="checkbox"/> Skin: cellulitis, wound, rash |
| <input type="checkbox"/> Recent Surgery/Invasive Procedure/Hospitalization | <input type="checkbox"/> Abdomen: pain, peritonism |
| <input type="checkbox"/> Suspected Perforated Organ e.g. appendix | <input type="checkbox"/> Musculoskeletal: inflamed joint |

B DOES THE PATIENT HAVE 2 OF THE FOLLOWING (one of which must be *temperature* or *WBC count*)?

** For immunosuppressed patients, may accept any 2 of the following:*

- Temperature** – greater than 38.5°C or less than 36°C?
 - WBC count** – abnormal for age (see reverse) or greater than 10% bands? (not secondary to chemotherapy)
 - Heart Rate** – abnormal for age? (see reverse)
 - Respiratory Rate** – abnormal for age? (see reverse)
- NO** – **Sepsis may still be a concern.** Continue to provide care and reassess for any signs of infection as outlined in Section A.
- YES** – **Notify charge nurse** (consider MRP assessment) **AND** continue to assess for Acute Organ Dysfunction as outlined in Section C.

C ACUTE ORGAN DYSFUNCTION — Does the patient have *cardiac* or *respiratory* involvement?

- | | | |
|---|-----------|---|
| <input type="checkbox"/> Cardiovascular – Is perfusion altered (capillary refill greater than 2 seconds; core to peripheral temperature difference; decreased peripheral pulses compared to central pulses) or blood pressure (BP) abnormal for age (see reverse)? | OR | <input type="checkbox"/> Respiratory – Increasing O ₂ requirements to maintain SpO ₂ greater than 90% or need mechanical ventilation |
|---|-----------|---|

If there is no cardiovascular or respiratory organ dysfunction, there must be **2 out of 5** of the following other systems involved to meet the severe sepsis definition:

- Neurological** – Glasgow Coma Scale score less than or equal to 11 or a drop in score of 3 or more?
 - Renal** – Low urine output e.g. less than 1 mL/kg/hr despite adequate fluid intake?
 - Hematologic** – Low platelet count (less than 80,000/mm³) or PT/PTT greater than upper limit of normal?
 - Metabolic** – Low pH (e.g. pH less than 7.30) or elevated lactate (greater than 4 millimols/litre (mmol/L))?
 - Hepatic** – Is ALT greater than 2x upper limit of normal?
- NO** – **Patient does not meet Acute Organ Dysfunction criteria, and may have early signs of sepsis.** Continue to monitor and notify Charge Nurse (consider MRP assessment).
- YES** – **Patient meets Acute Organ Dysfunction criteria. IMMEDIATELY refer to Severe Sepsis/Septic Shock Resuscitation Algorithm 0 – 1 hour.**

Age Group	Respiratory Rate (Breaths/min)	Heart Rate (Beats/min)	Blood Pressure (Systolic mmHg)	Blood Pressure (Diastolic mmHg)
0-28 days	31-60	107-162	60-84*	30-53*
0-3 months	31-60	104-162	60-103*	30-65*
4- 11 months	29-53	109-171	82-105*	46-68*
1-3 years	25-39	89-139	85-109†	37-67†
4-6 years	16-31	71-128	91-114†	50-74†
7-11 years	15-28	60-114	96-121†	57-80†
12 plus years	12 to 25	50-104	105-136†	62-87†
Temperature °C	Oral: 35.5-37.5; Rectal: 36.6-38.0; Axilla: 34.7-37.3			

HR, RR & Temperature Ranges: CTAS 2013

*BP ranges modified from American Heart Association (2012). Pediatric emergency assessment, recognition, and stabilization (PEARS), provider manual.

†BP ranges modified from National Heart Lung and Blood Pressure Institute. (2004). The fourth report on the diagnosis, evaluation, and treatment of high blood pressure in children and adolescents. Pediatrics. 114(2): 555-576.

Definitions:

Infection: A suspected or proven (by positive culture, tissue stain, or polymerase chain reaction test) infection caused by any pathogen OR a clinical syndrome associated with a high probability of infection.

Systemic Inflammatory Response Syndrome (SIRS): The presence of at least two of the following four criteria, one of which must be abnormal temperature or WBC count:

1. Core temperature of greater than 38.5°C or less than 36°C.
2. Tachycardia, defined as a mean heart rate greater than 2 standard deviations (SD) above normal for age in the absence of external stimulus, chronic drugs, or painful stimuli; or otherwise unexplained persistent elevation over a 0.5hr to 4hr time period OR for children less than 1 year old: bradycardia, defined as a mean heart rate less than 10th percentile for age in the absence of external vagal stimulus, B-blocker drugs, or congenital heart disease; or otherwise unexplained persistent depression over a 0.5 hr time period.
3. Mean respiratory rate greater than 2 SD above normal for age or mechanical ventilation for an acute process not related to underlying neuromuscular disease or general anesthesia.
4. WBC elevated or depressed for age (not secondary to chemotherapy-induced leukopenia) or greater than 10% immature neutrophils.

Sepsis: SIRS in the presence of or as a result of suspected or proven infection.

Severe sepsis: Sepsis with failure or dysfunction of at least one organ (see Section C on Screening Tool).

Septic shock: Septic shock is often defined by hypotension in the setting of severe sepsis that is unresponsive to fluid resuscitation. In children, septic shock can occur without the presence of systemic hypotension.

WBC: white blood cells

°C: degrees centigrade

MAP: Mean Arterial Pressure

SpO₂: oxygen saturation

PT/PTT: prothrombin time/partial prothrombin time

mmol/L: millimols/litre

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