Clinical Practice Guidelines: Medical/Sepsis

<table>
<thead>
<tr>
<th>Policy code</th>
<th>CPG_ME_SE_0221</th>
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<tr>
<td>Date</td>
<td>February, 2021</td>
</tr>
<tr>
<td>Purpose</td>
<td>To ensure consistent management of patients with sepsis.</td>
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<tr>
<td>Scope</td>
<td>Applies to Queensland Ambulance Service (QAS) clinical staff.</td>
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<tr>
<td>Health care setting</td>
<td>Pre-hospital assessment and treatment.</td>
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<tr>
<td>Population</td>
<td>Applies to all ages unless stated otherwise.</td>
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<tr>
<td>Source of funding</td>
<td>Internal – 100%</td>
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<tr>
<td>Author</td>
<td>Clinical Quality &amp; Patient Safety Unit, QAS</td>
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All feedback and suggestions are welcome. Please forward to: Clinical.Guidelines@ambulance.qld.gov.au

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Sepsis is defined as ‘life-threatening organ dysfunction caused by a dysregulated host response to infection.’\[1\] It is the primary cause of death from infection and a major cause of death worldwide.\[2\] All sepsis cases require urgent attention.

The annual incidence of adult sepsis treated in Australian Intensive Care Units has been estimated at 0.77/1000, corresponding to more than 15,700 new cases each year,\[3\] with an estimated cost of $39,300 per episode.

Using a standardised screening and treatment pathway has been shown to significantly decrease the time it takes to recognise sepsis and deliver appropriate treatment.

‘Severe sepsis’ and ‘Systemic Inflammatory Response Syndrome’ (SIRS) criteria are no longer considered when defining sepsis. New definitions were released in 2016\[1\] which offer greater consistency and improved processes for the early recognition and management of patients with, or at risk of developing sepsis.

The Third International Consensus Definition for Sepsis and Septic Shock (Sepsis-3)\[1\] provides the following updated terms and definitions:

**Sepsis (organ dysfunction + infection):** Life-threatening organ dysfunction caused by a dysregulated host response to infection (mortality 10–12%).

**Septic shock (shock + infection):** A subset of sepsis with profound circulatory, cellular and metabolic abnormalities (mortality 20–23%).

There is no one clinical feature or pathology test that reliably identifies sepsis, but rather the diagnosis is made based on a combination of various vital sign abnormalities and clinical features.

**Clinical features**

**ADULT**\[3\]

**High risk (for sepsis OR septic shock):**
- Respiratory rate greater than 25 breaths/min
- Systolic BP less than 90 mmHg (or a drop of greater than 40 mmHg from normal)
- Heart rate is equal to or greater than 130 beats/min
- Needs oxygen to maintain SpO2 greater than 92%
- Non-blanching rash/mottled/ashen/cyanotic
- Deterioration in mental status (from normal)
- Recent chemotherapy
- Anuria in last 18 hours OR significantly reduced urine output

**Moderate risk (for sepsis):**
- Respiratory rate 21–24 breaths/min
- Systolic BP 90–99 mmHg
- Heart rate 90–129 beats/min OR new dysrhythmia
- Temperature less than 35.5°C or greater than 38.4°C
- Anuria in last 12–18 hours OR significantly reduced urine output
- Acute deterioration in functional ability
Clinical features (cont.)

**PAEDIATRIC**

**High risk** (for sepsis OR septic shock):
- Severe tachycardia or bradycardia
- Severe respiratory distress/tachypnoea/apnea
- Needs oxygen to maintain SpO2 greater than 92%
- Hypothermia
- Non-blanching rash/mottled ashen/cyanotic
- Altered GCS/AVPU

**Moderate risk** (for sepsis):
- Moderate tachycardia
- Moderate respiratory distress/tachypnoea
- Capillary refill greater or equal to 3 seconds
- Hypoglycaemia
- Unexplained pain or restlessness
- Pale or flushed/mottled/cold extremities
- Reduced urine output.

Risk Assessment (cont.)

**Red flags**: (for sepsis OR septic shock):
- Re-presentation to a health care professional within 48 hours
- Age less than 3 months OR greater than 65 years
- Recent trauma or surgery/invasive procedure/wound within last 6 weeks
- Indwelling medical devices (e.g. IDC)
- Immunocompromised/asplenia/neutropenia/unimmunised
- Parental/family/health care professional concern for the patient
- Aboriginal or Torres Strait Islander/Pacific Islander/Maori cultural backgrounds

<table>
<thead>
<tr>
<th>Vital Sign</th>
<th>&lt; 1 yr</th>
<th>1–4 yrs</th>
<th>5–11 yrs</th>
<th>12–15 yrs</th>
<th>≥ 16 yrs</th>
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<tbody>
<tr>
<td>Temperature</td>
<td>≤ 35.0º C or ≥ 38.5º C</td>
<td>≤ 35.0º C or ≥ 38.5º C</td>
<td>≤ 35.0º C or ≥ 38.5º C</td>
<td>≤ 35.0º C or ≥ 38.5º C</td>
<td>≤ 35.0º C or ≥ 38.5º C</td>
</tr>
<tr>
<td>Respiration Rate</td>
<td>&lt; 20 or &gt; 50</td>
<td>&lt; 15 or &gt; 40</td>
<td>&gt; 40</td>
<td>&gt; 30</td>
<td>&gt; 25</td>
</tr>
<tr>
<td>Heart Rate</td>
<td>&lt; 90 or &gt; 170</td>
<td>&lt; 80 or &gt; 160</td>
<td>&lt; 70 or &gt; 150</td>
<td>&lt; 45 or &gt; 130</td>
<td>&lt; 40 or &gt; 110</td>
</tr>
<tr>
<td>Systolic BP</td>
<td>≤ 65</td>
<td>&lt; 70</td>
<td>&lt; 75</td>
<td>&lt; 85</td>
<td>≤ 90</td>
</tr>
<tr>
<td>AVPU</td>
<td>Pain</td>
<td>Pain</td>
<td>New Confusion</td>
<td>New Confusion</td>
<td>New Confusion</td>
</tr>
</tbody>
</table>

**Additional information**

- Sepsis should be considered for any deteriorating patient.
- **Note**: Recognition of sepsis may be impeded by *Cognitive Bias*, that is, the possibility of sepsis is often not considered in young, fit and otherwise healthy individuals.
Evidence of meningococcal septicaemia?

- Y: Manage as per: CPG: Meningococcal septicaemia
  - Mandatory early hospital pre-notification if greater than 2 altered VSS (see Risk Assessment).
  - If > 60 minutes transport time to hospital contact the QAS Clinical Consultation and Advice Line to discuss treatment options.

- N: Assess patient for risk of sepsis OR septic shock
  - LOW RISK (for sepsis OR septic shock)
    - Consider:
      - Oxygen
      - Antipyretic
      - IV/IO access
      - IV/IO fluids
  - MODERATE RISK (for sepsis OR septic shock)
    - Consider:
      - Oxygen
      - Antipyretic
      - IV/IO access
      - IV/IO fluids
    - Mandatory early hospital pre-notification if greater than 2 altered VSS (see Risk Assessment).
  - HIGH RISK (for sepsis OR septic shock)
    - Consider:
      - Oxygen
      - Antipyretic
      - IV/IO access
      - IV/IO fluids
      - Adrenaline (epinephrine)

Transport to hospital Pre-notify as appropriate

Note: Clinicians must only perform procedures for which they have received specific training and authorisation by the QAS.