Sepsis and Septic Shock

INTRODUCTION

• Sepsis is becoming more common
• The early identification of ED patients with possible sepsis is vital to enable timely treatment and improve survival, (see q SOFA score ≥2)
• The severely ill should be initially managed after ABC assessment with high flow O2 and large bore IV access x2 with warmed crystalloid. Involve Consultant/Senior +/- ITU.
• Following the Third International Consensus (Sepsis-3 2016) the definitions of Sepsis and Septic Shock have been updated (see below):
  o The term “Severe Sepsis” is now redundant.
  o The use of SIRS (systemic inflammatory response syndrome) criteria to identify sepsis is no longer recommended, due to poor sensitivity and specificity.
  o In adults with suspected infection, The Sequential (Sepsis related) Organ Failure Assessment (SOFA score) is now recommended in ITU patients (based on multiple parameters); increase of 2 or more points = sepsis.
  o In ED, pre-hospital and general ward patients the quick SOFA (qSOFA) score is recommended and is based on bedside measures of respiratory rate (≥22), altered mentation and systolic BP (≤100) in those with suspected infection. Score of 2 or more = high risk.
    See Figure 1 for flow chart of clinical criteria/mx.

TERMS AND DEFINITIONS (see Figure 1)

Sepsis

• Life-threatening organ dysfunction caused by a dysregulated host response to infection, (i.e. the body injures its own tissues and organs in response).
• Organ dysfunction is represented by changes in multiple parameters/results causing an increase of the full/ITU SOFA score of 2 or more.
• In-hospital mortality of >10%.

Septic shock

• A subset with profound circulatory, cellular and metabolic abnormalities.
• Clinically have a vasopressor requirement and lactate >2mmol/L in spite of fluid resuscitation.
• In-hospital mortality >40%.
Figure 1: Clinical Criteria and flow for “Sepsis” and “Septic Shock”

- Patient with suspected infection
  - qSOFA ≥2? (see A)
    - No: Sepsis still suspected?
      - No: Monitor clinical condition; reevaluate for possible sepsis if clinically indicated
    - Yes: Assess for evidence of organ dysfunction
  - SOFA ≥2? (see B)
    - No: Monitor clinical condition; reevaluate for possible sepsis if clinically indicated
    - Yes: Sepsis
      - Despite adequate fluid resuscitation, 
        1. vaspressors required to maintain MAP ≥65 mm Hg AND
        2. serum lactate level >2 mmol/L?
          - No: Septic shock
          - Yes: Monitor clinical condition; reevaluate for possible sepsis if clinically indicated

A: qSOFA Variables
- Respiratory rate ≥22
- Mental status Reduced
- Systolic blood pressure ≤100

B: SOFA Variables
- PaO₂/FIO₂ ratio
- Glasgow Coma Scale score
- Mean arterial pressure
- Administration of vasopressors
- with type and dose rate of infusion
- Serum creatinine or urine output
- Bilirubin
- Platelet count
SEPSIS SCREENING & qSOFA IN ED

Patients with suspected infection with abnormal vital signs/raised EWS >4 should all have a qSOFA score at triage/RAT or ASAP.

A qSOFA score of 2 or more indicates high risk of complications/mortality and prompts investigations, rapid assessment of organ dysfunction and close monitoring (also consider if clinical concern of serious infection even if qSOFA is less than 2).

A full/ITU SOFA score requires multiple parameters and will not be immediately available. qSOFA is NOT a diagnostic test for sepsis.

Consider likely source of infection: respiratory, urinary, bone/joint, soft tissue, abdomen, unknown, neutropenic.

Initiate the SEPSIS SIX and place sticker in notes.

**Aim to complete within 1 hour of arrival:** (mnemonic = OFLUID)

1. O - Oxygen to SaO₂ 94-98% (care COPD)
2. F - Fluids IV (≥ 500ml/hr OR 30ml/kg stat if organ dysfunction.
3. L - Measure Lactate (abnormal > 2mmol/L and FBC (if raised, repeat lactate at 1-2hrs).
4. U - Urine output, catheterize if organ dysfunction apparent.
5. I - Infection screen including blood cultures.
6. D - Drugs – IV Antibiotics as per local guidelines.

Look for signs of organ dysfunction (urgent lab tests and response within 1 hour)

Investigations: VBG, 2 sets of blood cultures, other cultures. FBC, CRP, renal, liver, coags, glucose.

Reassess frequently in 1st hour. Consider other investigations and management.

If poor response and signs of organ dysfunction or other concern at one hour, discuss with Consultant/Senior and consider involving ITU (especially if appropriateness is an issue, ?DNAR/TEP).

| Signs of organ dysfunction, as a guide only (*some of these alone will score 2 on the SOFA score) |
| New need for O₂ to achieve sats >90% | Urine <0.5ml/kg/hr for 2hrs |
| Systolic BP <90 OR MAP <65 | *Creat. >170 |
| GCS reduced | *Bilirubin >32 |
| Lactate >2mmol/L | *Plats <100 |
| (or an increase of 2 or more points on ITU SOFA score) |

If suspicion of developing septic shock, e.g. vasopressor requirement and lactate above 2mmol/L in the absence of hypovolaemia, repeat raised lactate at 1-2hrs after resuscitation. Discuss with Consultant/Senior and ITU bleep holder if not already involved.

Exit/Modification of Guideline:

- Not all patients with raised qSOFA or SOFA score have sepsis (but may indicate serious illness).
- OR May be additional problems/management needs, e.g. current CCF, MI, DKA, GI bleed etc.
- OR Patients may be palliated, consider TEP/DNAR. Discuss with Consultant/Senior, ITU early.