simple uncomplicated infection to severe sepsis (Fig 1). Changes in patients’ condition can be subtle and early indicators of sepsis can be missed. Careful and frequent assessment is the key to spotting deterioration. Respiratory rate is considered to be one of the most sensitive indicators of critical illness, yet it is a vital sign that is often neglected (Stevenson, 2004).

**Severe sepsis**

Severe sepsis is the presence of sepsis with organ dysfunction, hypotension or poor perfusion (Peel, 2008). All organs, including the cardiovascular system, lungs, liver, kidneys and brain, can be affected.

Signs include:

- **Hypotension**: a systolic blood pressure of <90mmHg or a mean arterial pressure of <60mmHg. Changes in blood pressure may be a late indicator of deterioration as the body has compensatory mechanisms to maintain it. Fluid resuscitation must be given with the aim of improving blood pressure and cardiac output (Dellinger et al, 2004);
- **Altered mental state**: the AVPU system (A – alert; V – responsive to voice; P – responsive to pain; U – unresponsive) or the Glasgow Coma Scale (GCS) can be used to assess patients’ neurological status rapidly. Consciousness levels may be decreased due to hypoaxemia, hypoglycaemia or cerebral hypoperfusion due to shock or medications such as sedatives or analgesics;
- **Hyperglycaemia in the absence of diabetes**: this results from the metabolic and hormonal changes that are part of the stress response (Ruffell, 2004). It occurs in critically ill patients and insulin treatment may be required to maintain normoglycaemia;
- **Hypoxaemia**: oxygen saturations <93% or PaO₂ <9kPa on an arterial blood gas analysis. Pulse oximetry must only be used as a guide as the saturation recording may not be a true reflection of gaseous activity. British Thoracic Society (2008) guidelines recommend that arterial blood gases should be checked in all critically ill patients;
- **Acute oliguria**: urine output of <0.5ml/kg/hr. Poor urine output is an early sign that a patient’s condition may be deteriorating. Urine output is a sensitive measure of blood flow to the kidneys and other organs. It is essential that patients have an adequate circulating blood volume; the presence of hypotension, tachycardia and cool peripheries may indicate that extra fluid is required (Smith, 2003);
- **Coagulopathy**: International normalised ratio (INR) >1.5 or platelets <100. The combination of hypotension, slow blood flow, hypoaxemia and metabolic acidosis will interfere with normal clotting mechanisms. Microthrombi form in small vessels, interfering with blood flow to the tissues and the organs, which, combined with hypotension and hypovolaemia, can cause organ failure (Robson and Newell, 2005);
- **Raised serum lactate**: >2mmol/L. Raised lactate is a sign of severe sepsis and indicates that tissues are not receiving enough oxygen and have to rely on anaerobic metabolism, producing lactic acid.

**SEPTIC SHOCK**

Septic shock is defined as severe sepsis with hypotension that does not respond to intravenous fluid resuscitation of 500-2,000ml given rapidly (Dellinger et al, 2004). Hypotension is not always a reliable indicator of shock, as some patients may maintain a systolic blood pressure above 90mmHg, so further signs and symptoms need to be considered before a diagnosis of septic shock can be made. These include:

- Some patients may complain of poor perfusion;

**An unexplained metabolic acidosis**;

- Decreased capillary refill time; >2 seconds (Lever and Mackenzie, 2007). This indicates poor perfusion.

**EARLY IDENTIFICATION OF SIGNS AND SYMPTOMS**

Early identification and treatment within the “golden hour” is the key to reducing mortality (Dellinger et al, 2004). The first six hours after diagnosis present a small window of opportunity in which to reverse tissue hypoxia and prevent established organ failure.

The Surviving Sepsis campaign produced a six hour resuscitation bundle (Dellinger et al, 2004): aspects of patient care that can be carried out at ward level are known as the “sepsis six” (Box 1).

**NURSES’ ROLE**

By increasing their own knowledge and awareness of sepsis, nurses are in an ideal position to ensure patients are reviewed, thereby preventing deterioration into severe sepsis or septic shock. For every hour’s delay in beginning treatment, a patient’s risk of death increases by 7.6% (Kumar et al, 2006).

The process of increasing awareness of sepsis needs a proactive, multidisciplinary approach. Educational programmes have the potential to increase awareness as well as identify advocates, such as link nurses, to champion sepsis awareness.

The critical care outreach team has a pivotal role in supporting nurses to identify and manage sepsis, and in facilitating escalation of care (Carter, 2007).