

## SEPSIS and SIRS

### Definitions

SIRS - Systemic Inflammatory Response

- Body temperature  $>38^{\circ}\text{C}$  or  $<36^{\circ}\text{C}$
- Heart Rate  $>90$  beats/minute
- Tachypnea, respiratory rate  $>20$  breaths/minute or  $\text{PaCO}_2 < 32$  mmHg
- WCC  $>12 \times 10^6$  or  $< 4 \times 10^6$  or the presence of  $>10\%$  immature neutrophils

Sepsis – SIRS as the result of a confirmed infectious process

Severe Sepsis – sepsis associated with evidence of hypoperfusion or end-organ dysfunction

Septic shock – sepsis induced hypotension after adequate fluid resuscitation and evidence of associated end-organ malperfusion, including but not restricted to oliguria, lactic acidosis or altered mental status

Hypotension – SBP  $< 90$  mmHg or a fall in baseline BP by more than 40% without other obvious cause

Multiple organ system failure (MOSF)

- CNS – encephalopathy
- CVS – hypotension, lactic acidosis
- Lungs – ARDS, ventilator dependence
- Blood – DIC, thrombocytopenia, leucopenia
- Kidney – acute tubular necrosis
- GIT – stress ulceration, ileus
- Liver - jaundice

### Management

- Supportive treatment
- Aggressive restoration of intravascular volume deficits
  - Colloid vs crystalloid. No answer as to which is better. In our unit we tend to use more gelofusine (potassium-free) for volume expansion
  - Blood transfusion or blood products as required
- Vasopressors may be required after adequate volume
  - Noradrenaline is first line
  - Dobutamine which is an inotrope may be added if demonstrate low cardiac output
  - Vasopressin – decision is made by the ICU consultant

- Identification and eradication of source of infection
  - History and Physical Examination
  - Common sources of infection in ICU
    - Chest, abdomen, urinary tract, lines
    - Others – meningitis, sinusitis, endocarditis, skin infection, bone infection
    - Note on catheter management in ICU. See chapter on catheter-related bloodstream infection
  - Eradication of source of infection
    - Antibiotic usage – refer to IMPACT guidelines (back pages of lactobacillus protocol). Check with ICU senior
    - Drainage of closed space infections/removal of infected catheters and other devices
  - Innovative pharmacotherapies for sepsis
    - Steroids for septic shock – Hydrocortisone 100 mg q8h. Do not prescribe on your own. Check with ICU senior/consultant first
    - Activated protein C – you can read more in the Good Practice Guidelines and Protocol. However, decision is up to consultant on call