Definitions and Treatment - Cardiogenic and Septic Shock

**CARDIOGENIC SHOCK**
- Systolic blood pressure: <90mmHg for 30 minutes despite adequate volume status or Vasopressors required to achieve/maintain ≥90mmHg
- Signs of impaired organ perfusion:
  a) Altered mental status
  b) Cold, clammy skin
  c) Oliguria: <0.5ml/h for 6h
  d) Increased serum lactate ≥2mmol/L
- Optional haemodynamic criteria:
  a) Elevated LV-filling pressures: PWP ≥15mmHg
  b) Reduced cardiac index: ≤1.8 L/min/m² without support
  c) ≤2.2 L/min/m² with support

**RIGHT VENTRICULAR FAILURE**
- Criteria: organ dysfunction
- Criteria: risk of infection

**PULMONARY EMBOLISM**
- Typical signs with dyspnoea, chest pain, (pre) syncope, haemoptysis
- Simplified version of the Wells rule or revised Geneva score
- D-Dimer testing

**PULMONARY ARTERIAL HYPERTENSION**
- (pre-capillary)
- Mean PAPm ≥25mmHg and PWP ≤15mmHg
- Low central venous O₂ saturation (<60%)

**CARDIAC TAMPOONADE**
- Tachycardia, dyspnoea, muffled heart sounds, distended neck veins, pulsus paradoxus
- Causes: Trauma, iatrogenic, cancer, pericarditis, tuberculosis, aortic dissection

**POST CARDIAC SURGERY**
- No weaning from cardiopulmonary bypass possible or development of cardiogenic shock after cardiac surgery (including post-heart transplantation)

**ACUTE MYOCARDIAL INFARCTION**
- Coronary angiography - Early revascularization
- Echocardiography - Mechanical complications

**ACUTE MYOCARDIAL ISCHAEMIA**
- (80% of cardiogenic shock)
- Myocardial ischaemia associated with characteristic ischaemic electrocardiographic abnormalities and/or serum troponin elevation, with a diagnosis of a type 1 myocardial infarction

**ACUTE CARDIOMYOPATHY**
- No history of prior heart failure secondary to a primary myocardial process (myocarditis, tachycardia-induced cardiomyopathy, toxic cardiomyopathy (e.g., alcohol, chemotherapy), peripartum cardiomyopathy, Tako-Tsubo cardiomyopathy or idiopathic cardiomyopathy

**CHRONIC CARDIOMYOPATHY**
- Decompensation of a previously known cardiomyopathy of any origin

**DIAGNOSIS SEPTIC SHOCK**

**SEPtic shock**
- Systolic blood pressure:
  a) <90mmHg for 30 minutes despite adequate volume status
  b) Vasopressors required to achieve/maintain ≥90mmHg

- Signs of impaired organ perfusion:
  a) Altered mental status
  b) Cold, clammy skin
  c) Oliguria: <0.5ml/h for 6h
  d) Increased serum lactate ≥2mmol/L

- Optional haemodynamic criteria:
  a) Elevated LV-filling pressures: PWP ≥15mmHg
  b) Reduced cardiac index: ≤1.8 L/min/m² without support
  c) ≤2.2 L/min/m² with support

**CRITERIA: ORGAN DYSFUNCTION**
- Mental status
- Respiratory rate ≥22/min
- Systolic blood pressure <100mmHg
- "qSOFA = quick SOFA"

**CRITERIA: RISK OF INFECTION**
- Clinic, Laboratory,
- Temperature, Leukocytes, Heart Rate,
- "Biomarker", Antibiotics

**DIAGNOSIS SEPSIS**
- Volume AND vasopressor for MAP ≥65mmHg
- Serum lactate ≥2mmol/L

**DIAGNOSIS SEPTIC SHOCK**
- ΔSOFA ≥2
- Sequential organ failure assessment
- PaO₂/FiO₂, platelets, bilirubin, mean arterial pressure (MAP), catecholamines, GCS (Glasgow Coma Scale), creatinine, urine output

**ACTION**
- Blood cultures
- 2 samples of aerobe/anaerobe cultures before antibiotic therapy
- Source control
- Control of apparent foci in the first 12 hours after diagnosis
- Blood products
- Transfusion only if hemoglobin is below 7.0 g/dL
- Mechanical ventilation
- Target tidal volume of 6ml/kg predicted body weight
- Upper limit goal of plateau pressures of 30cm H₂O
- Antibiotics
- Administration of intra venous antimicrobials as soon as possible after recognition and within 1 h for both sepsis and septic shock

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- Tachycardia, dyspnoea, muffled heart sounds, distended neck veins, pulsus paradoxus
- Causes: Trauma, iatrogenic, cancer, pericarditis, tuberculosis, aortic dissection

**ACUTE CARDIOVASCULAR CARE ASSOCIATION (ACCA)**

**European Society of Cardiology (ESC)**

Reference for septic shock: