Shock & Primary Assessment of Critically ill Patients
Objectives: SSBAT

- Define the types of shock and the pathophysiological changes.
- Describe the components of primary assessment.
- Demonstrate knowledge of appropriate interventions to stabilise a critically ill patient and evaluate their effectiveness.
Classification & Aetiology of Shock

- Shock is a clinical syndrome resulting from inadequate tissue perfusion needed to meet the oxygen and nutritional needs of cells (Dolan & Holt, 2000).

- The body responds initially by activating intrinsic compensatory mechanisms to improve perfusion to the brain, heart and lungs.

- When these mechanisms fail a cascade of cellular abnormalities result in total organ dysfunction and eventually death. (Lim et al 2007)
<table>
<thead>
<tr>
<th>Classification</th>
<th>Signs &amp; symptoms</th>
<th>Causes</th>
<th>Management</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hypovolemic Shock</strong></td>
<td>• Cool, pale, clammy</td>
<td>• Blood loss</td>
<td>• IV fluid replacement</td>
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<tr>
<td></td>
<td>• ↓ BP, ↑ HR</td>
<td>• Burns</td>
<td>• Volume expanders</td>
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<td></td>
<td>• Cyanosis</td>
<td>• Adrenal crisis</td>
<td>• Blood &amp; blood products</td>
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<tr>
<td></td>
<td>• Restlessness</td>
<td>• Vomiting &amp; Diarrhoea</td>
<td>• Monitor BP &amp; CVP</td>
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<tr>
<td></td>
<td>• ↓ UO &amp; Cap refill</td>
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<tr>
<td><strong>Septic Shock</strong></td>
<td>• Fever</td>
<td>• Vasodilation &amp; pooling of blood caused by release of bacterial toxins (caused often by gram neg septicaemia)</td>
<td>• O2 therapy</td>
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<td></td>
<td>• Chills</td>
<td></td>
<td>• IV Fluids</td>
</tr>
<tr>
<td></td>
<td>• Greyish skin (gram neg shock)</td>
<td></td>
<td>• Antibiotics</td>
</tr>
<tr>
<td></td>
<td>• Reddish skin (gram pos shock)</td>
<td></td>
<td>• Corticosteroids – to ↓ inflammation &amp; increase microcirculation</td>
</tr>
<tr>
<td></td>
<td>• Restlessness</td>
<td></td>
<td>• Assess for S&amp;S of infection</td>
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<tr>
<td></td>
<td>• Confusion</td>
<td></td>
<td>• Remove source of infection</td>
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**Hypovolemic Shock**
- Decreased Blood Volume

**Septic Shock**
- Risk factors:
  - UT procedures
  - Immunosupression
  - Peritonitis from blood in peritoneal cavity
  - Food poisoning

**Causes**
- Blood loss
- Burns
- Adrenal crisis
- Vomiting & Diarrhoea

**Management**
- IV fluid replacement
- Volume expanders
- Blood & blood products
- Monitor BP & CVP
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| **Cardiogenic Shock** | • S&S of MI  
• ↓ BP, ↓ HR  
• Jugular vein distension  
• N&V  
• Dyspnoea  
• Olliguria  
| • MI  
• CCF  
• Cardiac arrhythmias  
• Pericardial tamponade  
• Tension pneumothorax  
| • Dopamine or Dobutamine to ↑ CO & ↑ Myocardial contractility  
• Nor ephinephrine to ↑ BP, ↑ CO ↑ HR  
| **Neurogenic Shock** | • Sudden hypotension  
• Hypothermia  
• ↓ HR due to vagal stimulation  
| • Exposure to unpleasant circumstances  
• Extreme pain  
• Spinal cord injury  
• Head Injury  
• High spinal anaesthesia  
| • Vasopressors  
• Steroids  
• Monitor BP & assess for cardiac arrhythmias  

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<td><strong>Anaphylactic shock</strong></td>
<td>•Dyspnoea,</td>
<td>•Allergic reaction to insect venom, medications, blood transfusion or dyes to radiological studies</td>
<td>•Epinephrine</td>
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<tr>
<td></td>
<td>•Wheezing</td>
<td></td>
<td>•Antihistamines</td>
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<td></td>
<td>•Oedema around site of injection or sting</td>
<td></td>
<td>•Aminophylline for bronchospasm</td>
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<tr>
<td></td>
<td>•Urticaria</td>
<td></td>
<td>•Apply pressure to site of injection or sting to ↓ absorption</td>
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</table>
Patients at risk of Life-Threatening Events

- Admitted as emergencies
- Elderly patients
- Pre-existing disease – chronic
- Acute illness
- Shocked patient
- Post anaesthesia/ post surgery
- Patients transferred from ICU/HDU/CCU
- Patients requiring blood transfusion.
Primary Assessment

Aims: Assist student to

- Predict - Recognise the ‘at risk’ patient
- Prevent - Identify problems early
- Treat - Initiate simple treatment
- Communicate - Improve communication skills to team members
Assessing the critically ill patient

- Use Primary Assessment: A-B-C-D-E to assess, monitor and treat the patient.
- Call for help
- Decision & planning
- Reassess
- Management plan
A-B-C-D-E

- A - Airway
- B - Breathing
- C - Circulation
- D - Disability
- E - Exposure

Remember
Airway adjuncts, oxygen, bag-valve-mask ventilation, fluids, recovery position, blood glucose, monitoring: pulse oximeter, ECG & BP monitor.
AIRWAY

- Assessment
- Patent?
- Compromised?
A - Airway

Obstruction is a medical emergency.

Causes –

Upper airway obstruction
- vomit, secretions – blood/gastric fluid
- Swelling – trauma, allergy, infection

Lower airway obstruction
- laryngeal oedema – burns, allergy
- Laryngeal spasm – foreign body, secretions
- Tracheobronchial obstruction – secretions, inhaled gastric contents, pulmonary oedema
Airway - Assessment

Look
- Chest rise & fall.
- See-saw, use of accessory muscles, tracheal tug
- Central cyanosis is a late sign of obstruction

Listen
- Complete obstruction - no sounds,
- Partial - diminished/noisy
- Gurgling – fluid
- Obstruction by tongue
- Inspiratory stridor – obst above level of larynx
- Expiratory wheeze – airway collapse during expiration

Feel
- Place your hand or face over the mouth
Airway - Management

- Use head tilt/chin lift manoeuvre
- Airway adjuncts: oropharyngeal airway, Naso tracheal intubation
- Suction to remove the secretions
- If not successful - Tracheal intubation/cricothyroidectomy
Breathing - Assessment

**Look** (observe deformity, raised JVP, drains)
- Sweating
- Cyanosis
- Use of accessory muscles/abdominal breathing
- Rate & dept of breaths
- Equality of chest movements

**Listen**
- Near face-note presence of secretions, stridor/wheeze
- Auscultate - note dept & equality, consolidation, sounds

**Feel**
- Position of trachea
- Palpate for crepitus/emphysema, assess depth & equality
- Percussion note – hyper-resonance: pneumothorax, dullness: fluid
Breathing - Management

Present
- Effective: O2 100% via nonrebreather mask (12-15 litres)
- Ineffective: O2 100%, assist ventilations, intubate

Absent
- Ventilate with bag-valve-mask device with oxygen
- Assist with endotracheal intubation
IMMEDIATE LIFE THREATENING CONDITIONS

Open chest wound
IMMEDIATE LIFE THREATENING CONDITIONS

Large Haemothorax
Interventions

➢ Chest drain Insertion
C - Circulation

In almost all surgical & medical emergencies, hypovolaemia should be considered to be the primary source of shock

(S&S:- tachycardia, tachypnoea, altered LOC, uncontrolled external bleeding, distended/flattened jugular veins, pale, cool, diaphoretic skin, distant heart sounds)
Circulation - Assessment

Look
- Signs of compromise, cool pale digits, decreased capillary refill, peripheral cyanosis, decreased LOC
- Signs of external haemorrhage

Listen
- Obtain BP – may be normal. Decreased pulse pressure indicates arterial vasoconstriction (may get other team member to obtain BP)

Feel
- Palpate peripheral & central pulses - rate, rhythm quality & equality

Aim - replace fluid, control haemorrhage, restore tissue perfusion
Circulation - Management

- Adequate Venous Access – insert two 14-16g cannula
- Rapid fluid challenge - 500mls over 5-10 mins
- Repeat 500mls over 5-10mins if hypotensive i.e. systolic BP below 100mmHg
- Reassess pulse rate and BP every 5 mins
- Take bloods – FBC, U&E, clotting, Obtain blood for typing- determine ABO & Rh group
D - Disability

- Examine the pupils – for size, shape & reaction to light
- AVPU scale
  - A Alert
  - V Voice
  - P Pain
  - U Unresponsive
- Hypoglycaemia must be excluded - if below 3mmom/l give 25-50ml of glucose solution IV
- Place in recovery position if decreased LOC
E - Exposure

- Full body exposure is required for examination
- Insure dignity is respected & heat loss prevented
- Perform focused examination of frontal and dorsal aspects of the body.

- Do you need HELP?
Full Patient Assessment

- Review patients notes & charts (TPR, BP, neurological, fluid balance, drug prescription)
- Obtain Patients history
- Review routine investigation & results (Biochemistry, Haematology, Microbiology, Radiology, ECG)
- Decisions & Planning – is patient improving or not: Reassess ABC’s
- Record Keeping
- Definitive Care
Patient History

- **A** Allergies (e.g. Penicillin, Aspirin)
- **M** Medications (beta-blockers Warfarin)
- **P** Past medical history (previous surgery or anaesthetic reaction)
- **L** Last ate/drank
- **E** Events leading to presentation. (i.e. Fall >5m in height, seizure, post-op, received meds)
Communication & Organisational Skills

- Managing critically ill patients using the ABCDE demand good organisational and communication skills.
- Ensure communication is carried out once the patient is assessed, examined and initial treatment is given.
- Ensure the message is clear and succeeds in attaining your intended goal – getting help to you quickly.

‘He is very unwell, I want to you come and review him. I am very worried that he is deteriorating’
Diagnostic procedures

Lab studies
- Blood typing, FBS, U&E, Clotting factor,
- Urinalysis
- Arterial pH, PaO2, PaCO2 and base deficit

Radiological Studies
- CXR – presence of haemothorax or pneumothorax and assess size of mediastinum
- Pelvis radiograph to locate fractures
- Femur radiograph
References

- ALERT – Acute Life-threatening Events Recognition and Treatment 2003, 2nd ed, University of Portsmouth & NHS Trust

- ATLS – Advanced Trauma Life Support, American College of Surgeons, 7th ed. USA.

