Shock

Basic Emergency Care Course
Objectives

- Recognize signs of shock and poor perfusion
- Perform critical actions for patients with shock
- Assess fluid status
- Select appropriate fluid administration based on patient’s age, weight and condition
- Recognize malnourishment, anaemia and burns and adjust fluid resuscitation accordingly
Essential Skills

• Oxygen administration
• IV line placement
• Fluid status assessment
• IV fluid resuscitation
• Burn management
• Needle decompression
• Three-sided dressing
• Bleeding control
• Uterine massage
• Trauma secondary survey
What is shock?

• Poor perfusion
  • The body is not able to get enough oxygen-carrying blood to vital organs
• Uncorrected poor perfusion
  • The organs stop working properly when there is a lack of oxygen to cells and tissue
    • THIS IS SHOCK
• Infants, children and older adults are more likely to be severely affected by shock

Shock can rapidly lead to death!
Causes of poor perfusion

• Loss of blood (haemorrhage)
• Loss of fluid
  • Diarrhoea
  • Vomiting
  • Extensive burns
  • Excessive urination
• Poor fluid intake
• Abnormal relaxation and enlargement of blood vessels
  • Severe infection
  • Spinal cord injury
  • Severe allergic reaction
• Poor filling of the heart
• Failure of the heart to pump effectively
  • Cardiogenic shock
Goals

The goal of **initial assessment** is to identify shock and any reversible causes of shock.

The goal of **acute management** is to restore perfusion (oxygen delivery to the organs) and address ongoing fluid loss where possible.
The ABCDE Approach

**REMEMBER ..........**

Always start with the ABCDE Approach AND treat life-threatening conditions

Then take a SAMPLE history

Then do a Secondary Exam
Key Elements in the ABCDE Approach

- **Airway:**
  - **Check** for face or mouth swelling (allergic reaction)
    - Severe allergic reaction can cause shock

- **Breathing:**
  - *Wheezing* can indicate allergic reaction
    - Severe allergic reaction can cause shock
  - Shock and *absent breath sounds* on one side (tension pneumothorax)
  - DIB or increased respirations can be caused by poor perfusion
  - Heart failure can cause poor perfusion and DIB
  - Severe infections associated with lung inflammation can cause DIB
ABCDE Key Elements

**Circulation**
- **Check** for bleeding
  - From the stomach and intestines
  - After childbirth
  - Traumatic injuries to chest, abdomen, pelvis, long bones, bleeding wounds
- **Check** for fluid loss from vomiting or diarrhoea, extensive burns or excess urination

**Disability**
- **Check** for confusion
  - Confusion in a person with poor perfusion suggests severe shock
  - Paralysis may indicate a spinal cord injury causing shock

**Exposure**
- **Check** for signs of bleeding, trauma, moist, cool skin
- **Look** for rash or hives suggesting allergic reaction or infection
- Keep the patient warm
The SAMPLE History
S: Signs and Symptoms

• **ASK:**
  • Is there vomiting and/or diarrhoea?
  • For how long?

• **THINK**
  • Fluid losses from vomiting and diarrhoea can be severe and lead to shock.
  • Knowing the amount can help you estimate how much fluid the patient will need.
S: Signs and Symptoms

• **ASK:**
  - If the person has blood in their vomit or stool

• **THINK**
  - Bleeding in the stomach and/or intestines can be severe before it is visible
  - A person can lose a significant portion of their blood volume in the intestines
  - Digested blood appears black in the vomit or stool
S: Signs and Symptoms

• ASK:
  • If there has been any vaginal bleeding
  • Is the patient pregnant or has she been pregnant?
  • When was the last menstrual period?
  • Any missed periods?

• THINK
  • Vaginal bleeding may be related to pregnancy
  • A woman may not know she is pregnant in early pregnancy
  • All women are at risk for an ectopic pregnancy (pregnancy outside the uterus)
    • Ectopic pregnancy rupture can happen before a woman knows she is pregnant
  • Vaginal bleeding could also be caused from a mass in the cervix or uterus
S: Signs and Symptoms

• **ASK:**
  - If the person has had chest pain

• **THINK**
  - Chest pain may suggest a heart attack
  - Muscle damage to the heart can reduce pumping ability which can cause shock
S: Signs and Symptoms

• **CHECK**
  • For fever

• **THINK**
  • Fever suggests an infection
    • Severe infection causes abnormal relaxation (dilation) and leakiness of the blood vessels which causes fluid loss into the tissues
      • This lowers blood pressure, causing shock
S: Signs and Symptoms

• **ASK:**
  • Was there any exposure to toxins, medications, insect stings or other substances?

• **THINK**
  • Severe allergic reactions can lead to shock
  • Overdose of many medications including blood pressure and seizure medications can cause shock
S: Signs and Symptoms

• **ASK:**
  - Is there altered mental status?
  - Is there unusual sleepiness?

• **THINK**
  - The brain is one of the last organs to be affected by poor perfusion
  - If the brain does not have enough blood flow and oxygen to function
    this is a sign of severe shock
A: Allergies

• **ASK**
  - Are there any allergies to medications?

• **THINK**
  - Severe allergic reactions can lead to shock by causing abnormal relaxation of the blood vessels
M: Medications

• **ASK**
  • Currently taking any medications?
  • Any new medications or recent dose changes?

• **THINK**
  • Overdose of some blood pressure or seizure/convulsion medications can cause shock
  • Medications that thin the blood can worsen bleeding
  • New medications or changes to medications can cause allergic reaction or unexpected side effects
P: Past Medical History

• **ASK**
  - History of pregnancy or recent delivery?
  - History of recent surgery?
  - History of heart disease (heart attack or heart valve problem)?
  - History of HIV?

• **THINK**
  - Shock can be from postpartum hemorrhage or ruptured ectopic pregnancy
  - Internal bleeding or infection after surgery can cause shock
  - Patients with heart disease are at risk of worsening heart function
  - HIV can increase the risk of infection
L: Last Oral Intake

• **ASK**
  • When did the patient last eat or drink?

• **THINK**
  • A person who is not eating or drinking well can develop severe dehydration
E: Events Surrounding Illness

• **ASK**
  • Was there any recent trauma?

• **THINK**
  • Trauma can cause
    • Hidden internal bleeding
    • Tension pneumothorax
    • Bruising or bleeding around the heart
  • Trauma to the neck or back can cause spinal cord injury
    • Leading to problems with blood vessels’ ability to maintain blood pressure
E: Events Surrounding Illness

• **ASK**
  • Has there been any recent illness?

• **THINK**
  • Any infection can cause a blood infection that leads to shock
Workbook Question 1

Using the workbook section above, list the six questions about signs and symptoms you would ask when taking a SAMPLE history

1.
2.
3.
4.
5.
6.
Secondary Exam Findings
REMEMBER

Shock happens when there is poor perfusion.

This can happen before the blood pressure falls

Low blood pressure with poor perfusion is a very bad sign.

The initial ABCDE approach identifies and manages life-threatening conditions.

The secondary exam looks for changes in the patient’s condition or less obvious causes that might have been missed on the initial survey.
Look, listen and feel

*Remember* you should have ALREADY completed the ABCDE Exam and treated life-threatening conditions BEFORE doing this extensive examination.

*If the secondary exam identifies an ABCDE condition, STOP AND RETURN IMMEDIATELY TO ABCDE to manage it.

*Remember:* Children have different normal vital sign ranges. Their vital signs may remain normal until they are very ill.
Secondary Exam Findings

• **CHECK**: breath sounds and respiratory rate
  • Abnormal or noisy breathing can indicate pneumonia
  • High sugar levels can cause chemical imbalances that the body tries to address by faster or deeper breathing.
    • Note sweet or fruity smelling breath, elevated blood glucose, increased urination

• **LOOK**: for bleeding
  • All external bleeding should be controlled with DIRECT PRESSURE
  • Arterial bleeding is high pressure
    • Person can lose significant blood volume in minutes
    • Put gloved finger on the site and hold pressure until the bleeding stops
  • Consider vaginal bleeding as a significant source of blood loss
Secondary Exam Findings

• **CHECK:** fluid status
  • In dehydrated states the patient may feel thirsty, may have dry lips and mouth, *abnormal skin pinch*, lethargy and delayed capillary refill.

  ![Abnormal skin pinch in a child](image)

  • It can be **high** in fluid overload or heart failure
    • Patient may have difficulty breathing, lower body swelling (usually legs), *crackles* heard in the lungs and distended neck veins
Secondary Exam Findings

• **CHECK:** conjunctiva (inside of lower eyelid)
  • Everyone should have pink, most skin on the inside of the eyelid
  • Pale or white conjunctiva can indicate blood loss
Secondary Exam Findings

• **CHECK:** mental status
  - Confusion in a patient with poor perfusion suggests severe shock

• **CHECK:** for fever
  - Fever in a patient with shock suggests severe infection

• **CHECK:** blood sugar
  - Low blood sugar can sometimes look like shock (without low blood pressure)
  - Give GLUCOSE if less than 3.5 mmol/L
  - If you cannot check a blood glucose and the person has altered mental status, a history of diabetes or another reason to be hypoglycemic (malaria, taking quinine, is very ill or malnourished), give GLUCOSE
Secondary Exam Findings

• **CHECK:** for severe abdominal pain
• **FEEL:** for a very firm abdomen

  • Pain can be a sign of bleeding or infection in the abdomen
  • In a patient that may be pregnant, this can be a sign of ectopic pregnancy
Secondary Exam Findings

• **CHECK:** urine colour and volume
  • Small amounts of darker urine may suggest dehydration

• **CHECK:** stool
  • Significant diarrhoea can cause dehydration
  • A large amount of watery “rice water” stool suggests cholera which can lead to dehydration
  • Black, dark or reddish stool can suggest stomach or intestinal bleeding
Secondary Exam Findings

• **CHECK:** for malnourishment
  - A malnourished patient requires a specialized rehydration plan
  - Be sure to ask about recent weight changes

• **CHECK:** skin for swelling and rash
  - Swelling of mouth or body and rashes can indicate an allergic reaction.
  - Other rashes can indicate systemic infection
  - Swelling of both legs (oedema) can indicate heart failure
  - Sweating may occur with moderate to severe shock
Workbook Question 2

Using the workbook section above, list what you need to CHECK in a person with shock

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
Possible causes of shock
Poor Perfusion Due to Dilated Blood Vessels

• Severe infection:
  • Fever
  • Tachycardia
  • Tachypnoea
  • May have hypotension
  • May have signs of infection
    • Visible infection in the skin
    • Cough and crackles in one area of the lungs (may have fast breathing)
    • Burning with urination or urine that is cloudy or foul-smelling
    • Any focal point pain in association with fever
Poor Perfusion Due to Dilated Blood Vessels

• Spinal cord injury
  • History or signs of trauma
  • Spinal pain/tenderness
  • Vertebrae not in line
  • Crepitus when you touch the spinal bones
  • Movement problems including paralysis, weakness, abnormal reflexes
  • Sensation problems
  • Unable to control urine and stool
  • Priapism (persistent, abnormal erection of the penis)
  • May have hypotension
  • May have bradycardia
  • Difficulty in breathing (in upper c-spine injury)
Poor Perfusion Due to Dilated Blood Vessels

• Severe allergic reaction
  • Swelling of the mouth
  • Difficulty in breathing with stridor and/or wheezing
  • Skin rash
  • Tachycardia
  • Hypotension
Poor Perfusion Due to Fluid Loss

- Diabetic ketoacidosis (DKA)
  - History of diabetes
  - Rapid or deep and slow breathing
  - Frequent urination
  - Sweet smelling breath
  - High glucose in blood or urine
  - Dehydration
Poor Perfusion Due to Fluid Loss

• Severe dehydration
  • Abnormal skin pinch
  • Decreased ability to drink fluids
  • Increased fluid loss
    • Vomiting
    • Diarrhoea
    • Excessive urination
  • Dry mucous membranes
  • Tachycardia
Poor Perfusion Due to Fluid Loss

• Burn injury
  • Red, white or black areas depending on the depth
  • May have blistering
  • Consider inhalation injury

Burn injuries can cause excessive fluid losses through the damaged tissues and patients can become severely dehydrated
Poor Perfusion Due to Blood Loss

• External bleeding
  • History of injury
  • Active bleeding
  • Use of blood thinning medication

• Large bone fractures
  • History of injury
  • Pain or instability of the pelvis, blood at the opening of penis or rectum (pelvic fracture)
  • Deformity or crepitus of femur, shortening of the leg with injury (femur fracture)
Poor Perfusion Due to Blood Loss

• Abdominal bleeding
  • Bruising around the umbilicus or over the flanks (internal bleeding)
  • Abdominal pain
  • Very firm abdomen

• Bleeding in the stomach or intestines
  • Blood in vomit or stool
  • Black vomit or stool
  • History of alcohol use
Poor Perfusion Due to Blood Loss

• Haemothorax
  • Difficulty in breathing
  • Decreased breath sounds on the affected side
  • Dull sounds with percussion on affected side
  • Shock (if large amount of blood loss)
Poor Perfusion Due to Blood Loss

• Ectopic pregnancy
  • History of pregnancy, missed menstrual cycle, woman of child-bearing age
  • Abdominal pain
  • Vaginal bleeding

• Post-partum haemorrhage
  • Recent delivery
  • Heavy vaginal bleeding
    • Pad or cloth soaked <5 minutes
    • Constant trickling blood
    • Bleeding >250ml or delivered outside of the hospital
  • Soft uterus/lower abdomen
Poor Perfusion Due to Heart Problems

• Heart failure
  • Difficulty breathing with exertion or lying flat
  • Swelling to both legs
  • Distended neck veins
  • *Crackles* may be heard in the lungs
  • May have chest pain
Poor Perfusion Due to Heart Problems

• Heart attack
  • Chest pressure, tightness or crushing in the chest
  • Diaphoresis and mottled skin
  • Difficulty in breathing
  • Nausea or vomiting
  • Pain moving to jaw or arms
  • Signs of heart failure
  • History of smoking, cardiac disease, hypertension, diabetes, high cholesterol, family history of heart problems
Poor Perfusion Due to Heart Problems

- Abnormal rhythm
  - Very fast or very slow pulse
  - Irregular pulse

- Heart valve problem
  - Valve disease can damage the heart muscle or limit blood flow
  - History of rheumatic fever or heart disease
  - Murmur
Poor Perfusion Due to Heart Problems

• Pericardial tamponade
  • Signs of poor perfusion
    • Tachycardia
    • Tachypnea
    • Hypotension
    • Pale skin, cold extremities, capillary refill greater than 3 seconds
  • Distended neck veins
  • Muffled heart sounds
  • May have dizziness, confusion, altered mental status
  • History of tuberculosis, trauma, malignancy or kidney failure
Poor Perfusion Due to Heart Problems

• Tension pneumothorax
  • High pressure shifts the large blood vessels in the chest, blocking blood flow and preventing filling of the heart
  • Hypotension WITH the following:
    • Difficulty breathing
    • Absent breath sounds on affected side
    • Hyperresonance with percussion on affected side
    • Distended neck veins
    • May have tracheal shift away from affected side
Hypoglycaemia can look like shock

- Hypoglycaemia
  - Sweating (diaphoresis)
  - Seizures/convulsions
  - Low blood glucose (<3.5mmol/L)
  - Altered mental status
  - History of diabetes, malaria or severe infection
  - In children, can occur in any severe illness
# Workbook Question 3

Using the workbook section, list the possible causes of shock next to the history and physical findings below

<table>
<thead>
<tr>
<th>History and physical findings</th>
<th>Likely cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>35 year old woman presents with shock, fever, burning with urination and cloudy urine</td>
<td></td>
</tr>
<tr>
<td>20 year old woman presents with shock, abdominal pain, missed menstrual cycle and vaginal bleeding</td>
<td></td>
</tr>
<tr>
<td>A 17 year old man presents after a motor vehicle crash with shock, bruising to the pelvis and femur fracture</td>
<td></td>
</tr>
</tbody>
</table>
Management of Shock

REMEmber treat ABCDE problems and life-threatening conditions first
Management

• For all causes of poor perfusion, establish an IV AND give IV FLUIDS
  • Normal Saline or Ringer’s Lactate for all adult patients and children with normal nutritional status
• Then work to treat underlying causes
• If you cannot place an IV consider NASOGASTRIC tube or INTRAOSSEOUS LINE
  • If patient can safely tolerate, attempt oral fluids
For Severely Malnourished or Anaemic children, or anyone with signs of volume overload, this protocol will need to be modified.
Management

- If **vaginal bleeding** after delivery (postpartum haemorrhage):
  - All patients need rapid HANDOVER/TRANSFER to an advanced obstetric provider
  - While awaiting transport, attempt to stop the bleeding
  - Give OXYTOCIN both IM and IV for a loading dose
  - Continue OXYTOCIN IV INFUSION until one hour after bleeding stops
- **Bleeding frequently happens if the uterus is not fully contracted (does not feel hard on palpation)**
  - Perform UTERINE MASSAGE until the uterus is hard
  - Continue OXYTOCIN
  - If the placenta delivers, collect in a leak-proof container and send with patient to an advanced obstetric provider.
  - **LOOK** for a perineal or vaginal tear. If found APPLY DIRECT PRESSURE
  - Even if the bleeding stops, prepare for rapid HANDOVER/TRANSFER
Postpartum Haemorrhage

1. Arrange immediate transfer to qualified obstetric provider.

2. Attempt to control bleeding while arranging and during transfer.
   - Heavy bleeding after delivery?
     - Massage uterus until it is hard.
       - Give oxytocin IM.
       - Give IV fluids and IV oxytocin.
       - Empty bladder.

3. Check:
   - Has the placenta delivered?
     - No
       - Continue uterine massage.
         - When uterus is hard, the placenta will likely deliver.
         - Collect placenta and keep with patient.
         - Continue oxytocin.
     - Yes
       - Continue to massage uterus until hard.
       - Continue oxytocin.

   - Is there a perineal or lower vaginal tear?
     - Yes
       - Apply pressure with sterile gauze, put legs together.
         - Still bleeding?
     - No
       - Continue oxytocin for at least 1 hour after bleeding stops.

   - Still bleeding?
     - No
       - Continue IV fluids with oxytocin.
     - Yes
       - Insert second IV line.

4. Transfer immediately
Uterine massage for postpartum hemorrhage
Management

• If fluid loss is from **burns**:  
  • Burns disrupt the skin barrier and can cause significant fluid loss  
  • Calculate fluid replacement needs using Parkland Formula

• If suspected **hyperglycaemia**:  
  • If concern for diabetic ketoacidosis (DKA) treat with IV FLUIDS  
  • A person with DKA is extremely ill, plan for rapid HANDOVER/TRANSFER
Management

• If fever and shock:
  • Give IV FLUIDS and start ANTIBIOTICS
  • If infectious diarrhoea (like cholera) is suspected:
    • Use gloves, aprons and relevant ISOLATION PRECAUTIONS
    • Always report to local public health agency
  • If signs of poor perfusion do not improve, prepare for rapid HANDOVER/TRANSFER
Management

• If suspected *spinal causes:*
  • Give IV FLUIDS
  • HANDOVER/TRANSFER for ongoing spinal care

• If suspected *internal bleeding, stomach bleeding or intestinal bleeding:*
  • Give IV FLUIDS
  • Give BLOOD
  or
  • Prepare for HANDOVER/TRANSFER for blood transfusion
Management

• If suspected ectopic pregnancy:
  • Give IV FLUIDS
  • HANDOVER/TRANSFER for blood transfusion and obstetrical care

• If suspected postpartum haemorrhage:
  • Give OXYTOCIN
  • Give IV FLUIDS
  • Plan for HANDOVER/TRANSFER to facility with obstetric care
  • Perform UTERINE MASSAGE until uterus is hard
  • COLLECT placenta for inspection by advanced provider
  • Check for perineal and vaginal tears and APPLY DIRECT PRESSURE
Management

• If suspected tension pneumothorax:
  • Perform rapid NEEDLE DECOMPRESSION
  • Give OXYGEN
  • Give IV FLUIDS
  • Prepare for rapid HANDOVER/TRANSFER to a centre that can place a chest tube

• If suspected pericardial tamponade:
  • Give IV FLUIDS to help fill the heart
  • Prepare for rapid HANDOVER/TRANSFER to a centre that can drain the pericardial fluid
Management

• If suspected **heart attack**
  • Give ASPIRIN if indicated
  • Give IV FLUIDS, reassess frequently
  • Give OXYGEN initially
  • Plan for rapid HANDOVER/TRANSFER

• If suspected **heart failure**:
  • Give IV FLUIDS slowly, check lungs for *crackles*
  • Stop IV fluids if overload develops
    • DIB, crackles, increased respiratory rate, increased heart rate
  • Plan for rapid HANDOVER/TRANSFER
Management

• If suspected severe allergic reaction
  • Give intramuscular ADRENALINE
  • Establish IV ACCESS
  • MONITOR closely as adrenaline can wear off
    • You may need a second dose
  • If airway is swollen or if there is DIB, consider HANDOVER/TRANSFER

• If suspected traumatic injury or blood loss
  • Stop the bleeding
  • Give IV FLUIDS
  • Conduct a thorough trauma assessment
  • Plan for rapid HANDOVER/TRANSFER for blood transfusions or surgical care
### Workbook Question 4

Using the workbook section above, list what you would do to manage these patients:

<table>
<thead>
<tr>
<th>Scenario</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 6 year old boy is brought in with fever. He is in shock and does not</td>
<td>1.</td>
<td>2.</td>
<td>3.</td>
</tr>
<tr>
<td>appear malnourished. Your facility has supplies to put in an IV.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A young man is brought in after a motorcycle crash. He has a large</td>
<td>1.</td>
<td>2.</td>
<td>3.</td>
</tr>
<tr>
<td>cut to arm that is bleeding and there is a large pool of blood under</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>him. He is in shock when you examine him.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A 30 year old is brought in after accidentally eating prawns. She has</td>
<td>1.</td>
<td>2.</td>
<td>3.</td>
</tr>
<tr>
<td>a known shellfish allergy, her body is covered in a red, itchy rash</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>and she is in shock</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Special Paediatric Considerations

• Shock from dehydration can occur rapidly in children and is life threatening
  • Children have a relatively large surface area from which to lose fluids
  • Infants and young children are particularly at risk and are unable to say when they are thirsty and cannot drink more on their own

• When assessing shock in children
  • Clinical definition based on 2016 WHO guidelines:
    • Cold extremities, capillary refill >3 seconds, weak and fast pulses
    • Other important signs of poor perfusion include low blood pressure, fast breathing, altered mental status, decreased urination, signs of dehydration
Signs of Dehydration in Children: Danger Signs

• Very dry mouth and lips
• Lethargy (excessive drowsiness, slow to respond, child not interactive)
• Sunken eyes
• Small amounts of dark urine
• Sunken fontanelles in infants under 1 year
• Delayed capillary refill (greater than 3 seconds)
• Skin pinch is abnormal
• Pallor (pale skin)
Paediatric Considerations: Common causes

• Vomiting and diarrhoea:
  • Gastroenteritis causes sudden onset of vomiting and diarrhea with some abdominal pain and fever
  • A large amount of watery diarrhoea may suggest cholera and needs to be reported to public health authorities

• Vomiting without diarrhoea:
  • Vomiting without diarrhoea may be suggestive of increased pressure on the brain (trauma or tumor or brain swelling) or intestinal blockage
  • It is important to examine the child for signs of trauma
  • Vomiting associated with fever may suggest infection

• Overwhelming infection:
  • Fever can make children lose fluids rapidly and become dehydrated quickly
  • Overwhelming infection can make the blood vessels enlarge just as with adults, making the shock much worse
Paediatric Considerations: Special Management of Malnutrition

• Malnourished children are at risk for hypoglycaemia and need sugar in addition to fluids
  • Give specialized IV FLUIDS if available
  • Give less IV FLUIDS more slowly and reassess often
    • listen for crackles in the lungs and signs of fluid overload every 5 minutes
• Stop IV fluids if overload develops
• Switch to ORAL FLUIDS as soon as signs of poor perfusion improve
• Prepare for rapid HANDOVER/TRANSFER to an advanced provider
Workbook Question 5

Using the workbook section above, list signs of severe dehydration in children

1.
2.
3.
4.
5.
6.
7.
8.
Disposition of the Patient

• People with shock can worsen or die quickly and must be closely monitored

• Illnesses that cause shock can also cause problems with the body’s ability to manage fluids, monitor closely for DIB

• Shock patients may be confused or anxious; ensure safety in transport

• Patients may need HANDOVER/TRANSFER for blood transfusion, general/obstetric surgery
  • Communicate with receiving facility to ensure these resources are available
Questions
Quick Cards
### Key ABCDE Findings (Always perform a complete ABCDE approach first!)

<table>
<thead>
<tr>
<th>IF YOU FIND...</th>
<th>REMEMBER...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficulty breathing, stridor/wheezing, skin rash, swelling of mouth</td>
<td>Severe allergic reaction</td>
</tr>
<tr>
<td>Hypotension with absent breath sounds and hyperresonance on one side, distended neck veins.</td>
<td>Tension pneumothorax</td>
</tr>
<tr>
<td>Distended neck veins, muffled heart sounds, tachycardia, hypotension.</td>
<td>Pericardial tamponade</td>
</tr>
<tr>
<td>Sweet smelling breath, deep or rapid breathing</td>
<td>DKA</td>
</tr>
<tr>
<td>History of trauma or no known cause</td>
<td>Hidden sources of significant blood loss (stomach, intestines, intra-abdominal, chest, long-bone trauma) or spinal injury.</td>
</tr>
</tbody>
</table>

### Key Findings from the SAMPLE History and Secondary Exam

<table>
<thead>
<tr>
<th>IF YOU FIND...</th>
<th>REMEMBER...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vomiting and diarrhoea</td>
<td>Ask about contacts and report cases per protocol.</td>
</tr>
<tr>
<td>Black or bloody vomit or stool</td>
<td>Stomach or intestinal bleeding</td>
</tr>
<tr>
<td>Rapid or deep breathing, dehydration, high glucose, sweet-smelling breath, history of frequent urination or known diabetes</td>
<td>Diabetic ketoacidosis</td>
</tr>
<tr>
<td>Burns</td>
<td>Severe fluid loss (calculate fluid needs based on burn size)</td>
</tr>
<tr>
<td>Fever or HIV</td>
<td>Infection</td>
</tr>
<tr>
<td>Recent fall or other trauma</td>
<td>Internal AND external bleeding</td>
</tr>
<tr>
<td>Pale conjunctiva or malnutrition</td>
<td>Severe anemia (adjust fluids)</td>
</tr>
<tr>
<td>Chest pain</td>
<td>Heart attack (give aspirin if indicated)</td>
</tr>
<tr>
<td>Vaginal bleeding</td>
<td>Pregnancy and non-pregnancy related bleeding</td>
</tr>
<tr>
<td>Numbness, weakness or shock that does not improve with fluids</td>
<td>Spinal shock (immobilize spine if indicated)</td>
</tr>
</tbody>
</table>
### CRITICAL ACTIONS FOR HIGH-RISK CONDITIONS

**For all shock:**

- Give oxygen
- Give IV fluids
  - ADULTS: 1 liter RL or NS bolus
  - CHILDREN with NO severe anaemia, NO malnutrition, NO fluid overload: 10–20 ml/kg bolus
  - CHILDREN with malnutrition or severe anaemia: give 10–15ml/kg dextrose-containing fluid **over 1 hour** and assess for fluid overload every 5 minutes.
  - For suspected heart attack with shock, give smaller boluses, and monitor closely for fluid overload.
- Monitor vital signs, mental status, breathing and urine output

### AND for specific conditions:

<table>
<thead>
<tr>
<th>SEVERE ALLERGIC REACTION</th>
<th>TENSION PNEUMOTHORAX</th>
<th>TAMPONADE</th>
<th>FEVER</th>
<th>WATERY DIARRHOEA</th>
<th>POSTPARTUM BLEEDING</th>
<th>DKA</th>
<th>TRAUMA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitor for recurrence, may need repeat doses</td>
<td>Transfer for chest tube</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### ASSESSING SHOCK IN CHILDREN

The 2016 WHO guidelines for the care of critically ill children use the presence of three clinical features to define shock:

- Cold extremities
- Capillary refill greater than 3 seconds
- Weak and fast pulse

Additional important considerations include:

- Young children may not be able to drink enough on their own.
- Children have larger surface area to volume ratio and can lose fluids more quickly than adults.
- For a child in shock WITH severe malnutrition or fluid overload, add dextrose and reduce IV fluids: 10–15 ml/kg over 1 hour.

In children without severe malnutrition, severe anaemia or fluid overload, give fluid resuscitation over 30 minutes.

<table>
<thead>
<tr>
<th>WEIGHT (kg)</th>
<th>FLUID VOLUME (15ml/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>60</td>
</tr>
<tr>
<td>6</td>
<td>90</td>
</tr>
<tr>
<td>10</td>
<td>150</td>
</tr>
<tr>
<td>14</td>
<td>210</td>
</tr>
<tr>
<td>20</td>
<td>300</td>
</tr>
<tr>
<td>30</td>
<td>450</td>
</tr>
</tbody>
</table>

Other important signs of poor perfusion include:

- Sunken eyes; sunken fontanelles in infants
- Abnormal skin pinch test
- Pallor (dehydration with anaemia is more difficult to treat)
- Decreased and dark urine (number of nappies for infants)
- Low blood pressure
- Fast breathing
- Altered mental status
- Decreased urination
- Very dry mouth and lips
- Lethargy (excessive drowsiness, slow to respond, not interactive)
Patients with shock should be at a unit capable of providing IV fluid resuscitation, blood transfusion, and/or surgery, depending on the type of shock.

Maintain fluids during transport. Repeat ABCDE approach and monitor perfusion and breathing closely at all times.

**Giving fluid in shock (No malnutrition, overload or severe anaemia)**

- **Is IV fluid immediately available?**
  - Yes: Start IV fluids. Reassess immediately after bolus. Did perfusion improve?
  - No: Is IV fluid available nearby?
    - Yes: Start ORS via NG nasogastric tube.
    - No: ORS rescue dose 10-20mL/kg ORS. Reassess immediately after bolus. Did perfusion improve?

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- **Adult initial IV bolus**
  - 1L Normal saline or Ringer’s Lactate

- **Child initial IV bolus**
  - 10-20mL/kg Normal saline or Ringer’s Lactate

- **Transfer immediately**

- **Did perfusion improve?**
  - Yes: Switch to oral or IV maintenance fluids as indicated.
  - No: Continue ORS via NG.