Clinical Skills

First Aid

Lubas Medical and Clinical Skills and Simulation Team

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Tools

- Request changes to any of the content (Applies to authors only)
- Give us feedback on your educational experience
- Report to us when you encounter a technical issue
Aims & Outcomes

The aim of this module is to learn and practice first aid in a safe environment

Learning Outcomes

At the end of the session the student should be able to:

✓ Discuss and understand the priorities of treatment in the secondary survey algorithm
✓ Identify signs, symptoms and management of shock (hypovolemic)
✓ Assess and manage minor wounds and bleeding
✓ Assess the severity of a burn and discuss appropriate treatment
✓ Recognise signs, symptoms and management of a fracture
✓ Recognise signs, symptoms and management of a serious spinal injury
✓ Discuss, and understand how to use, the Glasgow Coma Scale
✓ Recognise signs, symptoms and management of asthma
✓ Recognise signs, symptoms and management of a heart attack & angina
✓ Recognise signs, symptoms and management of hypoglycaemia
✓ Recognise signs, symptoms and management of epilepsy
✓ Understand and discuss the uses of Oxygen and how it should be administered
✓ Evaluate own learning and recognise how improvements can be made
What is a Secondary Survey?

The secondary survey is a systematic approach, a head to toe check, identifying any bleeding, burns or fractures. It follows the primary assessment (DRABC) if the casualty is breathing and/or conscious. (Hover over a box to reveal an explanation)
Treating Wounds & Bleeding

SIT/LAY
- Sit/lay the casualty down. This helps to prevent fainting and keeps the casualty in a manageable position.

EXAMINE
- Examine the wound to check the size and severity of the bleed.
- Any embedded objects should be left in the wound.

ELEVATE
- Elevate the injured limb above the casualty’s heart.
- This helps to reduce blood flow to the wound and controls bleeding.

PRESSURE
- Apply direct pressure to the wound and dress using an appropriate dressing.
**Shock**

**Definition:**
Shock is a medical emergency in which the organs and tissues of the body are not receiving an adequate flow of blood. This deprives the organs and tissues of oxygen (carried in the blood) and allows the build up of waste products. Shock caused by a lack of blood volume is known as hypovolaemic shock.

<table>
<thead>
<tr>
<th>SIGNS &amp; SYMPTOMS</th>
<th>TREATMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Dizziness/Light headed</td>
<td>✓ Control external bleeding where possible</td>
</tr>
<tr>
<td>✓ Nausea</td>
<td>✓ Lie the casualty down</td>
</tr>
<tr>
<td>✓ Pale skin</td>
<td>✓ Raise the casualty’s legs above their waist</td>
</tr>
<tr>
<td>✓ Evidence of bleeding</td>
<td>✓ Loosen any tight clothing</td>
</tr>
<tr>
<td>✓ Cold and clammy</td>
<td>✓ Keep casualty warm and comfortable</td>
</tr>
<tr>
<td>✓ Fast, shallow breathing</td>
<td>✓ Call 999 if condition doesn’t improve</td>
</tr>
<tr>
<td>✓ Confusion/anxiety</td>
<td></td>
</tr>
<tr>
<td>✓ Unconsciousity</td>
<td></td>
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</tbody>
</table>
**Definition:**

A wound is an injury to living tissue caused by a cut, blow, or other impact, typically one in which the skin is cut or broken. (Oxford English Dictionary)
Infection Control

- Avoid direct wound contact
- Wear examination glove
- Use sterile wound dressings
- Cover any wounds that you may have
- Irrigate the wound with clean water
**Burns**

A burn is any thermal damage to the skin or tissues in the body. We can use the following to determine the severity of a burn:

<table>
<thead>
<tr>
<th>S</th>
<th>IZE</th>
<th>Generally the larger the surface area or % of the burn, the more severe it is likely to be, however other elements of ‘S.C.A.L.D’ must also be considered.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>AUSE</td>
<td>Certain causes of burns may dictate severity. Consider chemical, electrical or radiation burns.</td>
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<tr>
<td>A</td>
<td>GE</td>
<td>Elderly casualties or children and babies have lower immune systems. This makes it more difficult for them to fight against an infection.</td>
</tr>
<tr>
<td>L</td>
<td>OCATION</td>
<td>Some areas of the body are more sensitive or susceptible to infection and complications. Areas around the face and groin may need further medical attention.</td>
</tr>
<tr>
<td>D</td>
<td>EPTH</td>
<td>The depth of the burn is often the clearest indicator of severity: Superficial (1\textsuperscript{st} degree), partial thickness (2\textsuperscript{nd} degree) and full thickness (3\textsuperscript{rd} degree).</td>
</tr>
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</table>
Measuring the Percentage of a Burn

The surface area or percentage of burns to a casualty can be measured in either of the following ways:

### Palmer Method

The surface area of the palm of the hand is approximately equivalent to 1% of the surface area of the entire body.

The casualty’s hand can be used as an approximate comparison to the size/percentage of a burn.

### Rule of 9’s

The body can be split into sections as indicated above using multiples & factors of 9.

This can also be used as a means of estimating the percentage of burns but only for an adult casualty.
Depth of Burns

- **Superficial** (First degree burn)
- **Partial Thickness** (Second degree burn)
- **Full Thickness** (Third degree burn)
Burns Treatment

**COOL**
Cool the affected area with cold water for a minimum of 10 minutes until the pain subsides.

**REMOVE**
Remove any items of jewellery or clothing that may be close to or restricting the wounded area.
If clothing or jewellery is stuck do not attempt to remove.

**DRESS**
Dress the wound with appropriate burns dressing.
If burns dressings are unavailable, lay cling film lightly over the wound.
Fractures

Signs and symptoms of a fracture can sometimes be deceiving. It is often impossible to diagnose a fracture without an x-ray. Musculoskeletal injuries can often present with similar signs & symptoms to a fracture:

- Fracture
- Dislocation
- Sprain
- Strain
# Fractures – Signs & Symptoms

<table>
<thead>
<tr>
<th>Fractures – Signs &amp; Symptoms</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>Fractures are usually very painful but not always. The casualty will normally feel a degree of pain.</td>
</tr>
<tr>
<td>Loss of Power</td>
<td>A loss of function or power in the injured limb can indicate a fracture. The casualty may not be able to weight-bear.</td>
</tr>
<tr>
<td>Unnatural Movement</td>
<td>The limb may move in an unnatural way or the casualty may not be able to weight-bear.</td>
</tr>
<tr>
<td>Swelling &amp; Bruising</td>
<td>Bruising and swelling around the injured area may indicate a fracture however this is also common in sprains.</td>
</tr>
<tr>
<td>Deformity</td>
<td>Deformity may be present in the injured area. Bones may be visible particularly in compound fracture.</td>
</tr>
<tr>
<td>Crepitus</td>
<td>The noise or sensation of the bones grinding against each other.</td>
</tr>
<tr>
<td>Tenderness</td>
<td>The muscles and tissues in the surrounding area may be sore to touch in addition to the bone itself.</td>
</tr>
</tbody>
</table>
First Aid
Types of Fractures

Fractures can be classed at a basic level in 3 categories:

• Closed/Simple Fracture
• Open/Compound Fracture
• Complicated Fracture
Spinal Cord Injuries

A spinal cord injury (SCI) is caused by damage or trauma to the **spinal cord** that results in a loss or impaired function causing reduced mobility or sensation [www.apparelyzed.com](http://www.apparelyzed.com) (Hover over the spine diagram to reveal further information)

**SIGNS & SYMPTOMS OF SERIOUS SPINAL INJURY INCLUDE:**

- Following traumatic injury, a casualty who is unconscious should be treated as a potential spinal injury
How to Manage a Suspected Spinal Injury

If you suspect a spinal injury:

- Immobilise the spine
- Monitor ABC
- Call emergency services
- Reassure the casualty
- Keep the casualty warm and dry
- Only move the player if essential to maintain ABC
Measuring a Cervical Collar

Cervical collars should only be used under the guidance of a qualified healthcare provider.

A cervical collar should be only be measured and applied with the head aligned in the ‘neutral’ position (an angle of 90 degrees between the spine and the eyes).

Measure the distance from the shoulder to the chin

Transfer the measurement to an appropriate cervical collar
Adapted Spinal Recovery Position

There may be occasions when there is a suspected spinal injury but also a compromise or potential danger to the casualties Airway, Breathing or Circulation.

We must deal with the Airway, Breathing or Circulation issue and at the same time try to protect the casualty’s spine.

If you are alone:
Place the arm above or around the top of the head and roll the casualty onto their side.

With help:
One person supports the head the second person rolls the casualty onto their side.
Removing a Crash Helmet Following Trauma

A crash helmet may need to be removed following a traumatic injury if:

• The airway is blocked and you are unable to clear it using other techniques.
• The breathing is compromised or absent and you are unable to ventilate the casualty with the helmet in place.
• The casualty has a life threatening bleed that can only be stopped by removal of the crash helmet.

Otherwise wait for a qualified healthcare provider to decide when the helmet needs to be removed.

Crash Helmet Removal Technique

https://youtu.be/wO5UUlldu5k
What is the Glasgow Coma Scale?
The Glasgow Coma Scale (GCS) is a common scoring system used to describe the level of consciousness in a person following a traumatic brain injury. It is used to help gauge the severity of an acute brain injury. ([www.brainline.org](http://www.brainline.org))

The GCS measures the following functions:
- Eye Opening (E)
- Verbal Response (V)
- Motor Response (M)

To calculate the total score:

Total = E + V + M
### Glasgow Coma Scale (GCS)

<table>
<thead>
<tr>
<th>Eye Opening (E)</th>
<th>( E )</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 = Spontaneous</td>
<td>Casualty’s eyes open spontaneously</td>
</tr>
<tr>
<td>3 = To sound</td>
<td>Casualty’s eyes open on request</td>
</tr>
<tr>
<td>2 = To pressure</td>
<td>Casualty’s eyes open when pressure or stimulus is applied to the fingers (allow up to 10 seconds for a response)</td>
</tr>
<tr>
<td>1 = None</td>
<td>Eyes do not open following the above tests NB if other factors are preventing eyes opening e.g. Swelling note NT for non-testable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Verbal Response (V)</th>
<th>( V )</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 = Orientated</td>
<td>Casualty answers simple questions correctly e.g. Name, month, where they are</td>
</tr>
<tr>
<td>4 = Confused</td>
<td>Casualty can speak in short phrases but cannot correctly answer simple questions</td>
</tr>
<tr>
<td>3 = Words</td>
<td>Casualty cannot talk sensibly but utters single words</td>
</tr>
<tr>
<td>2 = Sounds (no words)</td>
<td>Casualty moans and groans but doesn’t use recognisable words</td>
</tr>
<tr>
<td>1 = None</td>
<td>Casualty makes no sounds at all (NB if other factors are preventing speech e.g. endotracheal tube note NT for non-testable)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Motor Response (M)</th>
<th>( M )</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 = Obey Commands</td>
<td>Casualty can carry out a 2 step action on command e.g. Grasping and releasing your hand</td>
</tr>
<tr>
<td>5 = Localising</td>
<td>Casualty’s arm moves above the clavical in an attempt to move central stimulus away e.g. trapezial pinch</td>
</tr>
<tr>
<td>4 = Normal Flexion</td>
<td>Casualty’s elbow bends and moves rapidly away from the body following peripheral stimulus</td>
</tr>
<tr>
<td>3 = Abnormal Flexion</td>
<td>Casualty’s elbow moves slowly and their arm comes across the body following peripheral stimulus</td>
</tr>
<tr>
<td>2 = Extension</td>
<td>Casualty extends elbow rather than flexing following peripheral stimulus</td>
</tr>
<tr>
<td>1 = None</td>
<td>Casualty shows no motor response to the above</td>
</tr>
</tbody>
</table>
Using the Glasgow Coma Scale

The GCS is a reliable and objective way of recording the initial and subsequent level of consciousness in a person after a brain injury. Clinicians use this scale to rate the best eye opening response, the best verbal response, and the best motor response an individual makes. The final GCS score or grade is the sum of these numbers.

Every brain injury is different, but generally, brain injury is classified as:

- **Severe**: GCS 3-8 (You cannot score lower than a 3.)
- **Moderate**: GCS 9-12
- **Mild**: GCS 13-15

Limitations of the Glasgow Coma Scale

Following traumatic brain injury, factors like drug use, alcohol intoxication, low blood sugar, shock, or low blood oxygen can alter a patient’s level of consciousness. These factors could lead to an inaccurate score on the GCS.
HEART ATTACK (MYOCARDIAL INFARCTION)

A heart attack or Myocardial Infarction happens when the flow of oxygen-rich blood to a section of heart muscle suddenly becomes blocked and the heart can't get oxygen. If blood flow isn't restored quickly, the section of heart muscle begins to die.

[www.nhlbi.nih.gov](http://www.nhlbi.nih.gov)

ANGINA

Angina is chest pain that occurs when the blood supply to the muscles of the heart is restricted. It usually happens because the arteries supplying the heart become hardened and narrowed.

[http://www.nhs.uk](http://www.nhs.uk)
## Medical Emergencies - Heart

<table>
<thead>
<tr>
<th></th>
<th>ANGINA</th>
<th>HEART ATTACK</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Onset</strong></td>
<td>Sudden, usually during exertion, stress or extreme weather.</td>
<td>Sudden, can occur at rest.</td>
</tr>
<tr>
<td><strong>Location of pain</strong></td>
<td>Central chest. Can radiate into arms, neck, jaw, back, shoulders</td>
<td>Central chest. Can radiate into arms, neck, jaw, back, shoulders.</td>
</tr>
<tr>
<td><strong>Duration</strong></td>
<td>3 – 8 Minutes, rarely longer</td>
<td>Usually longer than 30 minutes.</td>
</tr>
<tr>
<td><strong>Skin</strong></td>
<td>Pale, may be sweaty.</td>
<td>Pale, grey colour. May sweat profusely.</td>
</tr>
<tr>
<td><strong>Pulse</strong></td>
<td>Variable. Often becomes irregular, missing beats.</td>
<td>Variable. Often becomes irregular, missing beats.</td>
</tr>
<tr>
<td><strong>Other signs &amp; symptoms</strong></td>
<td>Shortness of breath, weakness, anxiety.</td>
<td>Shortness of breath, dizziness, nausea, vomiting, sense of ‘impending doom’.</td>
</tr>
<tr>
<td><strong>Factors giving relief</strong></td>
<td>Resting, reducing stress, taking ‘GTN’ medication.</td>
<td>GTN medication may give partial or no relief.</td>
</tr>
</tbody>
</table>
Heart Attack Algorithm

If casualty shows signs & symptoms of a heart attack, the following algorithm applies:

- **HISTORY**: Does/has casualty suffered from any heart conditions?
  - **NO**: CALL 999
    - Reassure & make casualty comfortable and await further help.
  - **YES**: TREATMENT
    - Does the casualty have any medication e.g. GTN spray?
      - **NO**: CALL 999
        - Reassure & make casualty comfortable and await further help.
      - **YES**: TREATMENT
        - Assist with GTN spray or medication. Does casualty’s condition improve?
          - **YES**: MONITOR
            - Assess the casualties condition following medication. Refer where necessary.
          - **NO**: CALL 999
            - Reassure & make casualty comfortable and await further help.
Medical Emergencies

Diabetes

Hypoglycaemia signs & symptoms include:
- Rapid deterioration of response levels
- Confused & irritable
- Slurring
- Cold, clammy skin
- Casualty may appear to be drunk
- Severe lethargy

Treatment
- Give casualty a sugary drink or dextrose
- Give sugary food/dextrose following recovery
- Ensure casualty is fully recovered before letting them leave
- Call 999 if no improvement

Diabetes

Hyperglycaemia signs & symptoms include:
- Deep sighing breaths that may smell like pear drops
- Deterioration over longer period
- Excessive urination
- Very thirsty/hungry

Treatment
- Refer for medical assessment immediately or call 999.
First Aid
Medical Emergencies - Choking

Medical Emergencies

Choking

Choking is to have severe difficulty in breathing because of a constricted or obstructed throat or a lack of air. This may be a full or partial obstruction.

When a person is choking, air cannot reach the lungs. If the airways cannot be cleared, a respiratory arrest follows rapidly, then death.

Signs & Symptoms

- “Choking noises” or Stridor
- Silence (if complete blockage)
- Difficulty breathing
- Clutching or point at the throat
- Bulging eyes
- Redness of the face
- Anxiety
Medical Emergencies

Treatment of Choking

- Encourage coughing
- Deliver 5 sharps blows to the casualty’s back
- Deliver 5 abdominal thrusts
- Repeat this cycle until the object is removed from the casualty’s airway
- If the airway remains obstructed, or you are unable to manage the casualty, call 999
Medical Emergencies

Treatment of Choking in babies (under 1)

• Turn baby upside down, face down over your leg supporting the head.
• Deliver 5 blows to the casualty’s back
• Turn the baby face-up supporting the head.
• Apply 5 chest thrusts.
• Repeat this cycle until the object is removed from the casualty's airway
• If the airway remains obstructed, or you are unable to manage the casualty, call 999
Medical Emergencies

If the casualty becomes unconscious...

Start CPR!
Oxygen

Oxygen is essential for cell metabolism. Adequate tissue oxygenation is essential for normal physiological activity and brain function.

Trauma can affect the respiratory system’s ability to adequately provide oxygen and eliminate carbon dioxide in 3 main ways:

- **HYPOVENTILATION**
- **HYPOXIA**
- **HYPOXEMIA**
**Oxygen**

Oxygen can be administered at high concentration (full flow 15 litres/min) via a mask with an oxygen reservoir under the following circumstances:

- If oxygen saturations are below 95%
- If the casualty is distressed and is pale, has blue lips, and is sweating, shocked or unconscious
- If the casualty has suffered a serious traumatic injury

Oxygen saturation levels should always be measured with a pulse oximeter.

If the depth or rate of breathing of any casualty is judged to be inadequate (below 10 breaths or above 25 breaths per minute for an adult), or absent, use bag-valve-mask ventilation (attached to oxygen) to improve oxygenation and ventilation, whilst calling urgently for assistance.
1. Select appropriate size mask
2. Turn flow key until fully open
3. Attach oxygen tubing to cylinder
4. Select high flow rate (15 Litres/min) initially
5. Attach the oxygen mask to patient and, if available, titrate flow of Oxygen using a pulse oximeter aiming for SATs above 94% (COPD or emphysema 88-92%)
Web Resources

