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## Shock

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### Summary

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Most people think of 'shock' as emotional distress or sudden fright in response to a traumatic event. But in medical terms, shock is when you do not have enough blood circulating around your body. It is a life-threatening medical emergency.

Some of the causes of shock include uncontrolled bleeding, severe burns and spinal injury.

A drop in blood pressure reduces the flow of oxygen and nutrients to a person's vital organs such as their brain, heart and lungs. If the blood flow is not restored, the person may die from complications due to lack of oxygen supply to major organs (hypoxia).

### Shock is a defence response

In medical terms, shock is the body's response to a sudden drop in blood pressure. At first, the body responds to this life-threatening situation by constricting (narrowing) blood vessels in the extremities (hands and feet). This is called vasoconstriction and it helps conserve blood flow to the vital organs. But the body also releases the hormone (chemical) adrenaline and this can reverse the body's initial response. When this happens, the blood pressure drops, which can be fatal.

Many things affect the severity and effect of shock on a person, such as their health, age, gender and personality, where on their body they are injured, and the environment.

If a person has emotional distress or sudden fright, their body releases adrenaline into the bloodstream, but this usually reverses itself in a healthy person. This is where the confusion in the term 'shock' sometimes occurs.

This 'non-medical shock' is a response to anxiety or fear. Although the symptoms can look like those of medical shock, this 'fright-flight' response is short lived and symptoms will disappear once the person is comforted or the reason for the fright or fear is removed.

### Symptoms of shock

Depending on the cause, symptoms and signs of shock may include:

- Pale, cold, clammy skin
- Shallow, rapid breathing
- Difficulty breathing
- Anxiety
- Rapid heartbeat
- Heartbeat irregularities or palpitations
- Thirst or a dry mouth
- Low urine output or dark urine
- Nausea
- Vomiting
- Dizziness
- Light-headedness
- Confusion and disorientation

- Unconsciousness.

## Types of shock

Some of the different types of medical shock include:

- Hypovolaemic – meaning not enough blood volume. Causes include bleeding, which could be internal (such as a ruptured artery or organ) or external (such as a deep wound) or dehydration. Chronic vomiting, diarrhoea, dehydration or severe burns can also reduce blood volume and cause a dangerous drop in blood pressure
- Cardiogenic – caused when the heart cannot effectively pump blood around the body. Various conditions including heart attack, heart disease (such as cardiomyopathy) or valve disorders may prevent a person's heart from functioning properly
- Neurogenic – injury to a person's spine may damage the nerves that control the diameter (width) of blood vessels. The blood vessels below the spinal injury relax and expand (dilate) and cause a drop in blood pressure
- Septic – an infection makes the blood vessels dilate, which drops blood pressure. For example, an *E. coli* infection may trigger septic shock
- Anaphylactic – a severe allergic reaction causes blood vessels to dilate, which results in low blood pressure
- Obstructive – blood flow is stopped. Obstructive shock can be caused by cardiac (pericardial) tamponade, which is an abnormal build-up of fluid in the pericardium (the sac around the heart) that compresses the heart and stops it from beating properly, or pulmonary embolism (a blood clot in the pulmonary artery, blocking the flow of blood to the lungs)
- Endocrine – in a critically ill person, a severe hormonal disorder such as hypothyroidism may stop the heart from functioning properly and lead to a life-threatening drop in blood pressure.

## First aid for shock

Medical shock is a life-threatening emergency. Effective first aid and prompt medical attention can save a person's life.

First aid management includes:

- Follow the DRSABCD Action Plan to assess the situation.
- If the person is conscious, lie them down and keep them warm and comfortable. Loosen their clothing. If possible, raise their legs above the level of their torso and head (to improve blood flow to the brain, heart and lungs). Do not raise their legs if you suspect a spinal injury or if moving their legs causes pain, such as in the case of a suspected fracture in their leg(s).
- Manage any obvious signs of external bleeding. For example, firmly press a clean cloth or pad against a wound to stop blood loss. If blood seeps through and soaks the cloth, do not remove it. Add another cloth or pad over the top of the first one. If the second cloth or pad gets soaked, remove and replace that one with another clean cloth or pad. Continue maintaining firm pressure against the wound. Raise the bleeding injured limb if possible.
- Do not give the person anything to eat or drink, even if they are very thirsty.
- Reassure the person and encourage them to rest or stay still. Stay with them until the ambulance arrives.

Please note that these suggestions are **not** a substitute for first aid training. Refer to the **Where to get help** section of this fact sheet for organisations that offer first aid courses. Your training may save a life.

## Diagnosis of shock

In all cases of medical shock, treatment aims to restore the blood circulation and manage or prevent complications. When the person reaches the emergency department of the nearest hospital, medical staff will often make efforts to secure their airway and boost their blood circulation, before diagnosing the cause of shock.

In some cases (such as stab wounds, severe burns or traumatic amputation), the cause of shock is obvious. In other cases, once the person is out of immediate life-threatening danger, hospital staff may use diagnostic tests to learn the cause of the person's low blood pressure.

Tests may involve:

- Blood tests
- X-rays
- Ultrasound, computed tomography (CT scan) or magnetic resonance imaging (MRI) to check for internal bleeding
- Other tests, depending on the type of shock suspected – for example, diagnosis of cardiogenic shock may need an electrocardiogram (ECG).

### **Treatment of shock**

Specific treatment depends on the type of shock, but could include:

- Hypovolaemic shock – stopping the bleeding and boosting the person's blood volume with intravenous fluids (fluids given directly into the person's bloodstream through a tube and needle). In severe cases, the person may need a blood transfusion. Internal or external wounds may need surgery
- Cardiogenic shock – boosting blood volume with intravenous fluids. Medications to constrict (narrow) the blood vessels will improve the heart's ability to pump. Some people may need heart surgery
- Neurogenic shock – giving intravenous fluids and medications, including corticosteroids
- Septic shock – giving antibiotics for the infection. The person may need supportive hospital care, for example, mechanical ventilation to help them breathe
- Anaphylactic shock – the person may need medications such as antihistamines, adrenaline or corticosteroids
- Obstructive shock – removing the obstruction, for example, surgery or clot-dissolving medication to remove a blood clot in the pulmonary artery
- Endocrine shock – administering medications to correct the hormonal imbalance, for example, thyroid medication to treat hypothyroidism.

You can help a person who has **non-medical shock** by comforting them or encouraging them to use anxiety management techniques, until the reason for their fright or fear is removed.

### **Outlook for people with shock**

Medical shock is a life-threatening condition. A person's chances of surviving medical shock depend on various factors including:

- The person's age and general health
- The type and cause of shock
- The severity of the shock
- How soon they receive medical treatment.

Generally, hypovolaemic, neurogenic and anaphylactic shock respond well to treatment. But in about half of all cases of cardiogenic and septic shock, the person will die.

### **Where to get help**

- In an emergency, always call triple zero (000)
- Emergency department of the nearest hospital
- Your doctor
- St John Ambulance Australia (Victoria) for first aid training Tel. 1300 360 455
- Australian Red Cross for first aid training Tel. 1300 367 428

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