

INTRODUCTION

Although the care of a wide range of medical conditions will be quite specific to the presenting condition, there are general principles of care that apply to most medical cases, regardless of underlying condition(s).

ASSESSMENT

Primary Survey – MUST be performed on **ALL** patients.

- The primary survey is an invaluable tool for initial assessment of any ill patient, which will detect any **TIME CRITICAL** problems. In some cases, it may be necessary and appropriate to commence early transport and correct problems en-route.
- Assess **ABCDs**.
- Assess and document vital signs from the above survey, including the time the observations were made.

STEPWISE PATIENT ASSESSMENT AND MANAGEMENT

In ABCD management, manage deficits as they are encountered: i.e. do not move on to rectification of Breathing or Circulation until Airway is secured.

Airway Assessment

LOOK	for obvious obstructions e.g. teeth, foreign bodies, vomit, blood or soot/burns/oedema in burn victims.
LISTEN	for noisy airflow e.g. snoring, gurgling or no airflow.
FEEL	for air movement.

Exclude and be prepared to manage airway obstruction resulting from vomit or other debris.

Stepwise Airway Management

Correct any **AIRWAY** deficits immediately by:

- Positioning and posture:
 - head tilt
 - chin lift
 - jaw thrust.

- Aspiration
- Administer oxygen (O₂) early and select appropriate treatment method:
 - oropharyngeal airway
 - nasopharyngeal airway
 - laryngeal mask airway
 - endotracheal intubation
 - (needle cricothyroidotomy)
 - via the stoma in laryngectomy and other neck breathing patients.

Breathing Assessment (inspection, palpation, percussion, auscultation).

- Assess for skin colour and for any evidence of pallor, cyanosis, peripherally and centrally (apply pulse oximeter).
- Expose the chest to observe chest wall movement. If breathing is absent or inadequate, proceed to resuscitation procedures. If unilateral chest movement is occurring, treat underlying cause if possible.
- Assess **respiratory rate and effort** and other factors to assess the 'work' of respiration. Note any **wheezing, noisy respiration**, either on inspiration or expiration. Listen for **stridor** (higher pitched noise on inspiration), suggestive of upper respiratory obstruction.
- Check position of trachea in suprasternal notch.
- Listen to the chest with a stethoscope. Ask the patient to breathe in and out briskly through their mouth. Listen on both sides of the chest:
 - above the nipples in the mid-clavicular line
 - in the mid-axilla under the armpit
 - at the rear of the chest, below the shoulder blade.
- Listen for:
 - normal or reduced air entry
 - equal air entry on each side
 - wheezing (on expiration)
 - crepitations at the rear of the chest (crackles, heard low down in the lung fields at the rear – indicates fluid in the lung in heart failure)
 - additional crackles and wheeze on inspiration that may be associated with inhalation of blood or vomit.
- Pulse oximetry should be undertaken.

Stepwise Breathing Management

Correct any BREATHING deficits immediately:

- administer high concentration oxygen (O₂)¹ (**refer to oxygen protocol for administration and information**) via a non-re-breathing mask, using the stoma in laryngectomy and other neck breathing patients, to ensure an oxygen saturation (SpO₂) of >95%, except in:
 1. patients with chronic obstructive pulmonary disease (COPD) (who may need a lower concentration **refer to COPD guideline**) and
 2. those with conditions such as chest pain, acute coronary syndrome, sickle cell crisis, and with decreased level of consciousness (Glasgow Coma Scale (GCS) <15) (who should have 100% routinely – **refer to specific guidelines**)
- consider assisted ventilation at a rate of 12–20 breaths per minute if:
 - SpO₂ is <90% on high concentration O₂
 - respiratory rate is <10 or >30
 - expansion is inadequate
- **Restraint (Positional) Asphyxia.** If the patient's condition requires that they are physically restrained (e.g. by Police Officers) in order to prevent them injuring themselves or others or for the purpose of being detained under the Mental Health Act, then it is paramount that the method of restraint allows both for a patent airway and adequate respiratory volume. **Under these circumstances it is essential to ensure that the patient's airway and breathing are adequate at all times.**

Circulatory Assessment

- Assess for evidence of haemorrhage externally (epistaxis, haemoptysis, haematemesis, melaena).
- Assess skin colour and temperature.
- Palpate a radial pulse. If absent, assess for a carotid pulse, which, if present assess for pulse rate, volume and regularity.
- Check capillary refill time in fingertips and toes. If abnormal, check centrally (chest) (normal <2 seconds).
- Check blood glucose levels in all patients with history of diabetes, impaired consciousness, seizures, collapse resulting from heat exhaustion or alcohol consumption.

Stepwise Circulatory Management

Identify any **circulation** deficits:

- arrest external haemorrhage
- where appropriate, consider cannulation for drug administration.

Fluid Therapy

NOTE: Special guidance applies in pregnant women (**refer to specific guidelines in the obstetrics and gynaecological section**).

Current research shows little evidence to support the routine use of IV fluids in adult acute blood loss. In circumstances such as penetrating chest and abdominal trauma, survival worsens with the routine use of IV fluids.²

Fluids may raise the blood pressure, cool the blood and dilute clotting factors, worsening haemorrhage. Therefore, current thinking is that fluids should only be given when major organ perfusion is impaired.

Medical patients may present with significant dehydration resulting in reduced fluid in both the vascular and tissue compartments. Often this has taken time to develop and will take time to correct. Rapid fluid replacement into the vascular compartment can compromise the cardiovascular system particularly where there is pre-existing cardiovascular disease and in the elderly. Gradual rehydration over many hours rather than minutes is indicated.

If there is visible external blood loss (e.g. vomited blood) greater than 500mls, fluid replacement should be commenced with a 250ml bolus of crystalloid.

Central pulse **ABSENT**, radial pulse **ABSENT** – is an absolute indication for urgent fluid.

Central pulse **PRESENT**, radial pulse **ABSENT** – is a relative indication for urgent fluid depending on other indications including tissue perfusion and blood loss.

Central pulse **PRESENT**, radial pulse **PRESENT** – **DO NOT** commence fluid replacement³ unless there are other signs of poor central tissue perfusion (e.g. altered mental state, abnormal cardiac rhythm). If the clinical conditions suggest that major fluid loss (ruptured aortic aneurysm, anaphylaxis, gastrointestinal bleeding) has occurred then commence 250ml bolus of crystalloid.

Re-assess vital signs prior to further fluid administration.

DO NOT delay at scene for fluid replacement; wherever possible cannulate and give fluid **EN-ROUTE TO HOSPITAL**.

Disability Assessment

- Note initial level of responsiveness on AVPU scale (see below), and time of assessment.

A	Alert
V	Responds to voice
P	Responds to painful stimulus
U	Unresponsive

- Assess and note pupil size, equality and response to light.
- Check for purposeful movement in all four limbs. Check sensory function.
- All patients with altered mental status must have their blood glucose levels assessed.
- **Continually re-assess ABCD and initiate appropriate treatments en-route in case of deterioration.**

Evaluate

If any of the following features are identified within the Primary Survey, then the patient should be considered **TIME CRITICAL**. The priority, other than correcting immediately life-threatening **A and B** conditions, is to get the patient to definitive care in hospital. Further assessment and treatment should continue en-route:

- airway impairment
- severe breathlessness
- failing ventilation
- severe haemorrhage
- circulatory collapse and shock due to infection
- Addisonian crisis
- cardiac chest pain
- cardiogenic shock
- severe hypotension due to bradycardia or extreme tachycardia
- anaphylaxis
- any person with GCS <15, who does not have a cause that can be treated in pre-hospital environment such as hypoglycaemia (check airway in all decreased GCS cases, check glucose level)
- status epilepticus
- unable to complete a sentence.

NOTE: This list is not inclusive; patients with other signs may also be time critical, this is where the clinical judgement of the Paramedic is important.

- **CORRECT A AND B PROBLEMS ON SCENE, THEN COMMENCE TRANSPORT TO NEAREST SUITABLE RECEIVING HOSPITAL. If airway and breathing cannot be corrected, or haemorrhage cannot be controlled, evacuate immediately, continuing resuscitation as appropriate en-route and alert.**

Provide a Hospital Alert Message.

En-route – continue patient **MANAGEMENT** (see below).

HISTORY

In order to gather as much relevant information as possible, without delaying care, the accepted format of history taking is as follows:

- presenting complaint – why they called for help at this time
- history of presenting complaint – details of when the problem started, exacerbating factors and previous similar episodes
- direct questioning about associated symptoms, by system. Ask about all appropriate systems
- past medical history, including current medication
- family history
- social history.

Combined with a good physical examination, this format of history taking should ensure that you correctly identify those patients who are time critical, urgent or routine. The history taken must be fully documented. In many cases, a well-taken history will point to the diagnosis.

The presence of “Medic Alert” type jewellery (bracelets or necklets) can provide information on the patient’s pre-existing health risk that may be relevant to the current medical emergency.

SECONDARY SURVEY

In **NON-TIME CRITICAL** conditions, perform a more thorough patient assessment with a brief Secondary Survey. It may be easier and more appropriate to perform this in the ambulance and, in many instances, en-route to hospital, even when the patient is not time critical.

Medical Emergencies in Adults – overview

Head

Re-assess airway, breathing, circulation.

Re-assess levels of consciousness (AVPU), pupil size and activity, and record.

Establish GCS (*see Appendix 1*) and record.

Chest

Re-assess respiratory rate and depth, and record.

Re-listen for breath sounds in all lung fields, and record.

Assess for pneumothorax – in small pneumothorax no clinical signs may be detected. A pneumothorax causes breathlessness, reduced air entry and chest movement on the affected side. If this is a **tension pneumothorax**, then the patient will have increasing respiratory distress and distended neck veins, and tracheal deviation away from affected side may also be present.

Assess skin colour and temperature, and record.

Assess heart sounds, assess and confirm heart rate.

Obtain a blood pressure reading using a sphygmomanometer. Document and record results. Obtain a pulse oximeter reading and record.

Re-assess as needed en-route to hospital.

Abdomen

Feel for tenderness and guarding in all four quadrants, check for bowel sounds.

Lower and Upper Limbs (*see below*)

Check for MSC in **ALL** four limbs:

M	MOTOR	Test for movement.
S	SENSATION	Apply light touch to evaluate sensation.
C	CIRCULATION	Assess pulse and skin temperature.

MANAGEMENT

Start correcting:

- **AIRWAY**
- **BREATHING**
- **CIRCULATION**
- **DISABILITY** (mini neurological examination)

Ensure adequate O₂ therapy and support.

Obtain IV access/infusion, if required.

Apply ECG and pulse oximetry monitoring, as required.

Consider patient positioning, e.g. sitting upright for respiratory problems.

Check blood glucose levels in all patients with history of diabetes, impaired consciousness, seizures collapse resulting from heat exhaustion or alcohol consumption.

Provide drug therapy as required, e.g. glucose 10% IV in cases of hypoglycaemia (*refer to the glucose 10% drug protocol for dosages and information*); hydrocortisone IV (*refer to the hydrocortisone drug protocol for dosages and information*) in Addisonian Crisis.

If the level of consciousness deteriorates or respiratory depression develops in cases where an overdose with opiate-type drugs may be a possibility, consider naloxone (*refer to naloxone drug protocol for dosages and information*). In patient's with fixed pinpoint pupils suspect opiate analgesia use.

Follow **ADDITIONAL MEDICAL** guidelines as indicated by the patient's condition, e.g. cardiac rhythm disturbance.

Correct A and B problems on scene and then commence transport to **Nearest Suitable Receiving Hospital**.

Provide a **Hospital Alert Message/Information** Call if required.

At the hospital, provide a comprehensive verbal handover and a completed **Patient Report Form** to the Receiving Hospital Staff.

ADDITIONAL INFORMATION

Remember that the patient history may give you valuable insight into the cause of the current condition. The following may be of great help in your diagnosis:

- relatives, carers or friends with knowledge of the patient's history.
- packets or containers of medication (including domiciliary oxygen) or evidence of administration devices, e.g. nebuliser machines.
- medic alert type jewellery (bracelets or necklets) which detail the patient's primary health risk (e.g. diabetes, anaphylaxis, Addison's disease etc.) but also list a 24-hour telephone number to obtain a more detailed patient history.

- warning stickers, often placed by the front door or the telephone, directing the health professional to a source of detailed information (one current scheme involves storing the patient details in a container in the fridge, as this is relatively easy to find in the house).
- patient-held warning cards denoting previous thrombolysis, at-risk COPD patients, or those taking monoamine oxidase inhibitor (MAOI) medication.
- patients on long-term steroids or who have adrenal insufficiency may deteriorate rapidly because of steroid insufficiency. If significantly unwell they should be given hydrocortisone and fluids if required.

REMINDER:

Any immediately uncorrectable ABCD problem should be considered time critical. The patient should be transported to hospital with a pre-alert message, with treatment continued en-route.

Key Points – Medical Emergencies

- Detect time critical problems early.
- Minimise time on scene.
- Continuously re-assess ABCD, AVPU.
- Initiate treatments en-route if deterioration.
- Provide hospital alert.

REFERENCES

- ¹ Kuisma M, Boyd J, Voipio V, Alaspää A, Roine RO, Rosenberg P. Comparison of 30 and the 100% inspired oxygen concentrations during early post-resuscitation period: a randomised controlled pilot study. *Resuscitation* 2006;69(2):199-206.
- ² Turner J, Nicholl J, Webber L, Cox H, Dixon S, Yates D. A randomised controlled trial of pre-hospital intravenous fluid replacement therapy in serious trauma: The NHS Health Technology Assessment Programme 4(31), 2000.
- ³ Revell M, Porter K, Greaves I. Fluid Resuscitation in Prehospital trauma care: a consensus view. *Emergency Medical Journal* 2002;19(494-98).

METHODOLOGY

Refer to methodology section.

Appendix 1 – Glasgow Coma Scale

GLASGOW COMA SCALE	
Item	Score
Eyes Opening:	
Spontaneously	4
To speech	3
To pain	2
None	1
Motor Response:	
Obeys commands	6
Localises pain	5
Withdraws from pain	4
Abnormal flexion	3
Extensor response	2
No response to pain	1
Verbal Response:	
Orientated	5
Confused	4
Inappropriate words	3
Incomprehensible sounds	2
No verbal response	1