This chapter will provide a brief overview of the general principles of assessment. It will include how to undertake an assessment of the scene, conducting a primary and secondary survey, and the evidence that the paramedic/clinician needs to obtain whilst performing the assessment.

**SCENE ASSESSMENT**

As with any situation the attending paramedic/clinician can obtain a wealth of information and details from assessing the scene of the incident: these include safety and the situation.

**Safety**

When approaching any scene/incident consideration should be given to the following:

- Safety for self, colleague/s, patient/s and other persons on scene
- Are other emergency services present on scene; are they required?
- Can the scene be secured? Rescue attempts should only be undertaken by trained personnel (*rescue and fire service staff with breathing apparatus*)
- If the situation is hazardous can the patients be moved to safe area?
- Consider the possibility of further threat to self, colleague or patient from either
  - fire
  - blood or other body fluids
  - weapons
  - traffic
  - environmental conditions (*floods and snow are some recent causes in the UK*).
General principles of assessment

SITUATION

Whilst the situation itself is assessed following the safety assessment, in essence they tend to have significant overlap, as certain situations pose differing safety hazards:

- What has taken place at the scene?
- What is the type of incident/illness (road traffic collision (RTC), medical emergency or exacerbation of existing condition)?
- What is the mechanism of injury (MOI) (fall, blunt or penetrating trauma)?
- How many patients are there, and what are their ages?
- Do you require specialists resources (helicopter emergency medical services (HEMS), hazardous area response team (HART))?  

PRIMARY SURVEY

The purpose of conducting a primary survey is to identify if there are any life-threatening problems, and manage accordingly whilst determining if early transportation is required. As with any situation, the paramedic/clinician conducts a primary survey utilising the DR ABCDE framework (Resuscitation Council (UK) 2008, p5). In essence, the primary survey is undertaken with an instantaneous overview of all elements in relation to the patient’s respective system conditions.

<table>
<thead>
<tr>
<th>Element</th>
<th>System</th>
</tr>
</thead>
<tbody>
<tr>
<td>D – Danger</td>
<td>(Neurological system)</td>
</tr>
<tr>
<td>R – Response</td>
<td>(Neurological system)</td>
</tr>
<tr>
<td>A – Airway/including ‘C’ spine immobilisation</td>
<td>(Respiratory system)</td>
</tr>
<tr>
<td>B – Breathing/severe illness/chest injuries</td>
<td>(Respiratory system)</td>
</tr>
<tr>
<td>C – Circulation/haemorrhage/shock</td>
<td>(Cardiovascular system)</td>
</tr>
<tr>
<td>D – Disability</td>
<td>(Neurological system)</td>
</tr>
<tr>
<td>E – Expose/Examine/Environment</td>
<td></td>
</tr>
</tbody>
</table>

DANGER

This covers the safety of the paramedic/clinician, colleagues and then the patient. It is simultaneously ascertained as part of the scene assessment. The reasoning for this is that if the health care professional(s) are overcome or overwhelmed by the incident/circumstances of the incident, they will be of no benefit to the patient. There is therefore always a need for the paramedic/clinician to differentiate
between the actual and potential aspects of danger of any incident they attend. This could incorporate anything from:

- positioning of the vehicle to provide protection at the scene of a road traffic collision
- approaching fire/hazmat/chemical incidents safely
- requesting that pets are secured in another room
- requesting the attendance of police at a possible crime scene
- ensuring that appropriate personal protective equipment (PPE) is worn in relation to the incident, for example, hi-visibility jackets when attending a road traffic incident.

**Possible actions to be taken:**

- Ensure personal protective equipment (PPE) is worn
- Request fire/police service assistance
- Request hazardous area response team (HART)
- Request mobile medical team (BASICS etc.)

**RESPONSE**

This provides the paramedic/clinician with the opportunity to introduce themselves and obtain an initial assessment of the patient’s ability to respond to verbal communication. The paramedic/clinician introduces themselves and asks the patient what happened. How the patient responds (or does not respond) will provide significant information as to their level of consciousness. In the primary survey the AVPU framework is utilised:

- A – The patient is Alert, conscious and responds directly and appropriately to the paramedic/clinician’s question/s.
- V – The patient responds to Vocal commands (verbally), which may be a grunt or groan.
- P – The patient responds only to Painful stimuli.
- U – The patient is Unresponsive.

**Possible actions to be taken:**

- Record the patient’s level of consciousness (LOC)
- Record any period of unconsciousness (*it may be part of the patient’s lucid interval*)
General principles of assessment

**AIRWAY**

- Does the patient have a patent airway and are they able to maintain it for themselves?
- The patient who responds A on the AVPU scale is described above as Alert. This can be considered to be the case if the patient is talking, therefore the airway is open. However, the patient may be making unusual sounds such as snoring or making gurgling sounds, a stridor or wheezing may be heard, all of which could indicate there is some form of airway obstruction.
- Gurgling indicates that there is fluid in the airway and there is a need for suction.
- Snoring may indicate a soft tissue problem either with the tongue, swelling or foreign body obstruction.
- Stridor indicates a problem above the vocal cords in the upper airway, whereas wheezing indicates the problem below the vocal cords in the lower airways.
- If the patient is unresponsive, open the airway (with the appropriate 'C' spine manoeuvre) ascertain if there fluids or foreign bodies and manage accordingly.

**Possible actions to be taken:**

- Use 'C' spine airway manoeuvre if appropriate
- Ensure airway is patent and secure before proceeding to next element

**BREATHING**

- Look to see that the patient is breathing. If apnoeic then commence immediate ventilations using bag-valve-mask (BVM) and supplemental oxygen before continuing with the next element of the assessment.
- Look to see if the patient is using accessory muscles.
- Is there any flaring of nostrils?
- Look for sucking chest wounds, flail segments, paradoxical breathing, bruising and deformity of the thorax.
- If the patient is breathing assess their respiratory rate and effort and ensure that this is adequate enough to ensure oxygenation. If available, measure the oxygen saturation (SpO₂) and ensure an inspired oxygen concentration >94% or more. If not, maintain this in keeping with the recommendations for acutely ill (94%–98%) or for chronic obstructive pulmonary disease (COPD, patients (88%–92%) (BTS 2008, p1).
Listen to the patient talking and assess if they are able to complete a sentence in one breath.

Auscultate the chest and listen for abnormal breath sounds over a minimum of five positions on each lung (Bickley and Szilagyi 2007, p125, 130). A wheeze indicates bronchospasm, whereas, coarse sounds indicates pulmonary oedema. Feel the patient’s chest for expansion, irregularity and tenderness.

A patient with a respiratory rate of <10 or >29 breaths per minute may potentially require ventilatory support, as both rates are indicative of inadequate minute volumes and respiratory failure.

**Possible actions to be taken:**

- If patient is not responding: look, listen and feel for breathing for 10 seconds
- Ensure that the patient is not hypoxic
- Manage breathing/hypoxia effectively before moving to the next element

**CIRCULATION**

- Look to see if the patient has any form of haemorrhage, internal or external. Manage the haemorrhage accordingly (see Trauma: Chapter 7).
- Assessment of the patient’s circulatory system includes palpating and recording the radial pulse, note the rate and volume/character:
  - Is it tachycardic or bradycardic? Is it full and bounding or weak, regular or irregular. If the radial pulse cannot be palpated, can the femoral or carotid pulses be palpated? A palpable peripheral pulse can provide the paramedic clinician with a rough estimate of blood pressure, radial = a systolic of 80mmHg, femoral = a systolic of 70mmHg and carotid = a systolic of 60mmHg (Salomone and Pons 2007).
- Assess the colour of the skin, is it pale indicating poor perfusion? This indicates partial oxygenation. Assess the temperature and the moisture of the skin: normal skin temperature is warm to touch, whereas cool skin indicates poor perfusion. Is the patient cyanosed? Are they jaundiced? (Longmore et al. 2004, p38). The paramedic/clinician should also assess and examine the patient’s skin turgor to ensure the patient is hydrated (Schilling McCann 2008, p74).
- Check the capillary bed refill (CBR) by pressing over the nail beds: normal refill should occur within two seconds, an alternative location is the patient’s sternum or forehead.
Possible actions to be taken:
- Control external haemorrhage
- Manage shock accordingly (see Trauma: Chapter 7)
- Palpate, assess and record pulse rate and rhythm

DISABILITY

- Assess the patient’s level of consciousness (LOC). The Glasgow Coma Scale (GCS, provides an assessment of three specific key areas, Best Eye (4), Best Motor (5), and Best Verbal (6), with a respective maximum score of 15, and minimum score of 3.
- Record T if an endotracheal (ET) tube is inserted when scoring Best Verbal (Smith et al., 2008 p293).
- A GCS score of 3–8 may indicate that the patient has sustained either a severe head injury or a major cerebral insult.
- A GCS score of 14–15 is mild.
- A GCS score of 15 is normal.
- Remember to assess both the patient’s posture and pupillary response. In patients who are comatose (GCS 8), note any decerebrate or decorticate posture and pupillary responses to light (normal response is constriction).
- Remember that the AVPU scale utilised in the response element is accepted as a quicker tool for use within the primary survey.
- Assess the patient’s pupils for size, reaction and accommodation (occurs the when patient converges their eyes and constrict their pupils to a near object). The use of the following framework will assist the paramedic/clinician; Pupils Equal and Round; React to Light and Accommodation (PERRLA).
- Assess blood glucose levels (hypo/hyperglycaemia may be the cause of altered levels of consciousness).

Possible actions to be taken:
- Assess and document LOC
- Note abnormal postures (decerebrate/decorticate)
- Assess and document size, equality and accommodation of pupils
- Assess blood glucose levels
EXPOSE/ENVIRONMENT/EVALUATE

- Expose the patient’s injury/injuries, e.g. on a trauma patient completely remove all clothing but remember to consider the environment and ensure that the patient is covered to prevent hypothermia and maintain dignity, as far as possible. Look for medical alert tag; these will often reveal information about the patient’s past medical history or supply a telephone number where this information can be obtained. (See Chapter 5.)
- Consider consent; where and if applicable. Remember, not every patient is unconscious.
- Crime scene: if the call you are attending is or has the possibility of being a crime scene then make a note of the clothing before removal, the scene and people/vehicles/positioning etc, on arrival.
- Evaluate the findings within the primary survey that you have just completed and if you have identified any time critical problems within any of the elements then consider the need to transport and transfer immediately to an appropriate treatment centre, or remain on scene and conduct a secondary survey.

Possible actions to be taken:

- Expose the patient’s affected area/s and examine
- Ascertaining if the patient has medical alert tag/bracelet
- Remember patient dignity and possible hypothermia
- Evaluate – transfer or move onto secondary survey?

SECONDARY SURVEY

A focused history and physical examination to identify injuries or problems not identified during the primary survey. It provides the paramedic/clinician the opportunity of detecting less obvious injuries and/or signs and symptoms of underlying medical conditions. There are three key elements to the secondary survey:

- history
- vital signs
- the physical assessment.

HISTORY

The key elements of obtaining a patient history is described and an example of how the element/s could be recorded is described:
General principles of assessment

- **Presenting complaint (PC)**

  The following are examples of questions you might ask yourself. See the appropriate chapter for specific questions related to each area of assessment.

  - What is the presenting complaint? *(This may be due to an illness (abdominal pain), or a specific injury (fell over and hurt my ankle).)*
  - Is it because the patient has difficulty in breathing?
  - Involved in a motor vehicle collision? or,
  - They have severe abdominal pain.
  - The paramedic/clinician needs to clearly identify the reason(s) why the patient or caller has requested their attendance; this includes ascertaining the mechanism of injury (MOI) in patients who have suffered trauma (Bledsoe and Benner 2006, p196).

- **History of presenting complaint (HPC)**

  - What is the history of the presenting complaint? If you have good questioning skills, further history may become available. For example, a patient who is complaining of difficulty in breathing (DIB) (dyspnoea). On questioning, it becomes apparent that they have a history of feeling unwell for several days, developing a productive cough over the past three days and today finds it extremely difficult to breathe.
  - The above example explains why the history leading up to the presenting complaint is extremely important and can assist the paramedic/clinician to make a provisional diagnosis, instigate appropriate, timely treatment and management of the patient’s problems (Limmer and O’Keefe, 2009 p294).

- **Past medical history (PMH)**

  - What is the patient’s past medical history?
  - Have they had similar episodes previously?
  - Do they have any other medical conditions?
  - Are they diabetic? If so, what type; I or II? Are they asthmatic? Or suffer from either respiratory diseases and/or conditions such as, chronic obstructive pulmonary disease (COPD), emphysema or chronic bronchitis?
Do they have a cardiac condition such as, hypertension, angina, left ventricular failure (LVF)?

Consider patients’ presenting with DIB and have an inhaler, or chest pain and have a GTN spray, or those with an allergic reaction and have an Epipen. These patients have been prescribed these for an existing medical condition (Limmer and O’Keefe 2009, p295).

Have they ever been hospitalised or had any operations? If so, what for?

Drug/medication history (to include prescribed, over the counter (OTC) and other health products)

Is the patient currently prescribed medications for any pre-existing condition(s)? If so, what medication is it?

Using the patient’s medications, ask the patient to explain to you why they take each medication. This will help you to explore the patient’s knowledge and understanding of their prescribed medications.

Are they compliant with their medications?

Have they purchased any OTC medications to relieve their symptoms?

Has the patient taken any analgesics for any pain they may be suffering, if so what time did they take the medicines?

Are they taking or undergoing any courses of complimentary therapy medicines?

Possible actions to be taken:

If transporting the patient, best practice dictates taking their medications with them, as the receiving unit may not stock particular medicines

This also enables the receiving unit to record medicines, dosages and establish patient compliance

Social/family medical history (S/FMH)

Depending upon the age of the patient, ascertain if they live alone or have relatives/carers or external agency input (social service input, meal deliveries etc.).

Consider the activities of daily living (ADL), what can the patient do or not do for themselves? Has this changed?

Remember to differentiate between Physical activities such as bathing, dressing and feeding, and Instrumental activities such as shopping, housekeeping and taking medications (Bickley and Szilagyi 2007, p405).

Depending on the presenting medical condition, do other members of the patient’s family also suffer from the condition/illness? Familial history is
often a factor inpatients presenting with many conditions, for example, cardiac conditions.

**REVIEW OF SYSTEMS (ROS)**

- The signs and symptoms are ascertained as part of the physical assessment, as the paramedic/clinician conducts a review of the patient’s major systems: respiratory, cardiovascular, neurological, gastrointestinal (GI) etc.
- Modify questions to the system: Respiratory – Are you asthmatic? A patient complaining of difficulty in breathing may have a productive cough, ask the patient about the colour and quantity of the sputum/phlegm.
- On auscultation are there adventitious sounds? Is there pain on inspiration?
- When assessing a patient’s pain use the OPQRSTA framework (Limmer and O’Keefe 2009, p436):
  
  **O** – onset, when did the pain commence?
  **P** – pain, what provokes or relieves it?
  **Q** – quality, is it constant, colicky, sharp or heavy?
  **R** – radiate, any radiation from site?
  **S** – severity, any systemic upset?
  **T** – timing, was the onset sudden or gradual? And has it changed?
  **A** – associate, is it associated with any other symptoms?

Record the findings of each element of the physical assessment, which should provide the following evidence regarding the patient.

- **Respiratory rate, character and work of breathing**
- **Heart rate, character, volume and rhythm**
- **Blood pressure (B/P)**
- **Electrocardiogram (ECG), including 12 lead ECG where available and if qualified**
- **Blood glucose levels**
- **GCS neurological status**
- **Pupils**
- **Peak expiratory flow (PEF) (best of 3 readings)**
- **Temperature**
- **Oxygen saturations (SpO₂)**
- **Pain score**
- **Signs and symptoms of each system obtained during the secondary survey.**
The use of the following SAMPLE framework may assist the paramedic/clinician (Bledsoe and Benner 2006, p197):

S – Signs and symptoms  
A – Allergies  
M – Medications  
P – Past medical history  
L – Last meal  
E – Events leading up to the incident.

**IMPRESSIONS (OVERALL OF THE PATIENT/SITUATION) (IMP)**

- What is your overall impression of the patient and the situation? Remember someone who is undressed and or unwashed without their hair being groomed halfway through the day may be like this due to the effects of their illness/condition.
- If the scene is the patient’s home what is the condition of their surroundings?
- All of this information is useful to handover, if the patient is being conveyed. Any information you have about the patient’s home surroundings is lost once you leave the patient, if you do not mention any concerns/observations. If not provided as part of your patient handover then this may mean that the patient is discharged without appropriate support or investigation.
- Is their accommodation safe for them to return to?

**OTHER CONSIDERATIONS**

During each chapter the following considerations will be discussed where appropriate/applicable to either the system and/or the patient’s age/gender/religion:

*Communication problems* – How the paramedic/clinician deals with the problem of communicating with someone whose first language is not English, patients who may be deaf or have a learning disability.

*Destination/receiving specialist units/non-conveyance* – How does the paramedic/clinician decide on the destination if the patient needs to be transported? What specialist units are available 24/7 for primary angioplasty? Are there specialist stroke, burns or trauma units available? What implications are there for the patient and paramedic/clinician if their decision is not to convey the patient?
General principles of assessment

**Social/family/carer/guardian** – What social implications are there when patients are transported for care, either for the patient or the family/carer/guardian? If a full-time carer was taken ill and required hospitalisation, what problems would this cause the attending paramedic/clinician?

**Ethical and legal** – What are the ethical and legal dilemmas of obtaining consent in every emergency situation? What happens when a patient does not have capacity to provide consent?