CHAPTER 13
PATIENT ASSESSMENT AND ESSENTIALS OF CARE

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ESSENTIALS

- Patient assessment should always begin with DRSABCDE (Danger, Response, Send for help, Airway, Breathing, Circulation, Disability and Exposure). Once life-threatening conditions have been identified and treated, a more comprehensive assessment can be completed, focusing on relevant body regions and systems.
- HIRAID™ is the only evidence-based comprehensive emergency nursing framework, and is applicable to all patient presentations.
- If a patient deteriorates, then reassessment should always start again at DRSABCDE.
- Use an aid such as the SAMPLE mnemonic to ensure that all relevant history data is obtained. Risk of infection and communicable diseases should be considered when collecting a patient history, including appropriate precautions required.
- 'Red flags' may become evident at any stage of the patient assessment and should never be ignored.
- A set of vital signs comprises respiration rate, oxygen saturation, blood pressure, pulse rate temperature, conscious state and new onset confusion or behaviour change.
- When performing a physical assessment, remember to inspect, auscultate, percuss and palpate. Use a structured handover tool, such as IMIST-AMBO or ISBAR; this ensures that no vital information is forgotten. Use a structured approach to and double-check your documentation for errors.
- Patients should be screened to identify risk of falls, pressure injuries, poor nutrition and cognitive impairment, and appropriate strategies put into practice to prevent or minimise complications.

INTRODUCTION

Assessment is the ability to observe and interpret any clinical situation, thereby influencing the decisions of emergency nurses and paramedics. Accurate patient assessment enables the evaluation of actions and practices and lies at the core of both professions. How well patients are cared for has a direct effect on their sense of wellbeing and recovery. This chapter also discusses the essential elements of nursing care.

Assessment enables emergency clinicians to prioritise care. The triage nurse or first-responder paramedic will perform a rapid patient assessment, but, as every patient's condition has the potential to change, there is a need to recognise the importance of a more comprehensive assessment, followed by the ability to determine how often reassessment should take place. Patient reassessment in emergency departments

(EDs) has never been more important, given the prevalence of access block, which results in prolonged length of stay in the ED.[1] Different assessment models exist with their own distinct purpose. The triage assessment is brief with the aim of sorting patients into order of urgency and determining how long they can wait for emergency care.[2] The primary survey ensures life-threatening conditions are identified and treated first.[3] The HIRAID™ emergency nursing framework provides a systematic approach to the comprehensive assessment of patients.[4] Assessment models such as these ensure a structured evidence-based approach to assessment and are imperative to enhance the clinician's performance and optimise patient safety.[5–9]

Emergency clinicians make important clinical decisions every day and these decisions have an effect on the patient's healthcare and the actions of healthcare professionals. As care provision is becoming increasingly complex, emergency clinicians have to rely on sound clinical decision-making skills to maintain up-to-date care and positive outcomes.

THE ASSESSMENT PROCESS

Assessment starts from the first moment you see your patient and begins with a primary survey assessment and collection of details about the patient's history, followed by a systematic assessment of relevant body regions and systems. Assessment findings inform the selection and prioritisation of interventions. Diagnostic tests also contribute to developing a complete picture of the patient's condition.

THE PRIMARY SURVEY

The primary survey, as the first element of patient assessment, ensures a consistent, evidence-informed and sequenced approach promoting patient safety in all clinical settings.[5] The primary survey consists of DRSABCDE (**D**anger, **R**esponse, **S**end for help, **A**irway, **B**reathing, **C**irculation, **D**isability and **E**xposure) (see Box 13.1). There are some slight variations to the primary survey components (e.g. D for Defibrillator in the event of an unconscious collapse, and D for Disability for a primary survey of a conscious patient), but the general principles are the same.[3,10–12] The patient environment should always be checked for danger before commencing patient assessment, to ensure it is safe to approach the patient. Any foreseeable risks should be removed to prevent injury prior to commencing the assessment. A scan of the surroundings will inform you of any danger or hazards that need to be negotiated. These can include a patient who has collapsed in the waiting room bathroom and is lying in a pool of water, or at a motor vehicle collision (MVC), where traffic is still passing at speed. As a paramedic arriving on the scene, assessment can also tell you about the mechanism of injury, how many casualties there are and what resources you may need. You will need to note the position of the casualties and any points of impact, as this is important information to include when handing over your patient. Once the scene has been assessed and any danger removed, an initial patient assessment of ABCDE can take place. See Chapter 9 for a detailed discussion of scene assessment and management.

The Australian Resuscitation Council recommends the primary survey follows DRSABCD (**D**anger, **R**esponse **S**end for help, **A**irway, **B**reathing, **C**PR and **D**efibrillator) to preserve and restore life when resuscitating the unconscious patient.[3] The Advanced Trauma Life Support guidelines also teach the step called 'exposure', which involves the removal of the patient's clothing to expose and identify any immediate life-threatening injuries and ensure adequate temperature control is achieved.[13] Undressing and exposing all patients is necessary to enable a complete physical assessment, particularly once the patient has reached the ED, where privacy may be maintained. Early measurement of temperature is important to identify hypothermia, hyperthermia and febrile illnesses in both trauma- and non-trauma-related presentations such as sepsis, which requires urgent identification and treatment to reduce morbidity and mortality.[14] Exposure is also recommended by the Australian Resuscitation Council when reassessing the patient after the return of spontaneous circulation; targeted temperature control as part of post-resuscitation care has been demonstrated to improve patient outcomes.[3] See Chapter 14 for patient resuscitation and Chapter 42 for a detailed assessment of the major trauma patient.

During this phase, life-threatening problems are identified and interventions commenced if required. The clinician should ensure each step of the primary survey is complete and any identified life-threatening conditions are treated first, before moving on to the next stage of assessment. If nothing imminently life-threatening is detected, a further, more-focused assessment can take place.[3,4] It is important to have a systematic approach to this assessment to ensure that important information is not missed, and prevent further patient deterioration.[15]

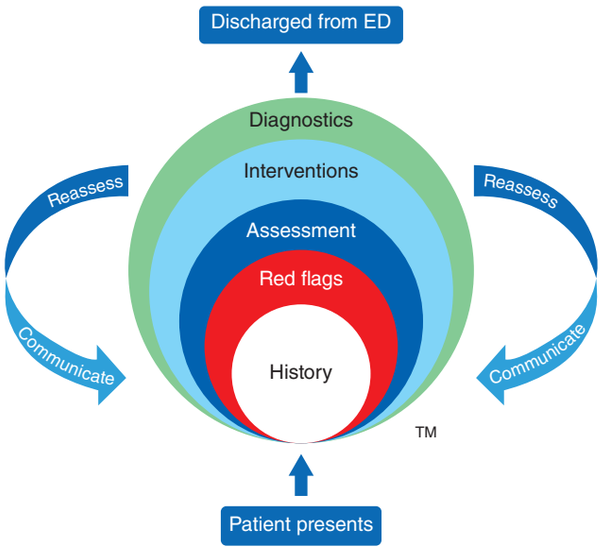
BOX 13.1 ASSESSMENT OF DRSABCDE

DR—Danger and Responsiveness	Check for danger and patient responsiveness
S—Send for help	If patient unresponsive send for help
A—Airway	Is the airway patent and protected? Is there any sign of obstruction? Is the cervical spine immobilised (for trauma patients)?
B—Breathing	Is the chest rising and falling? Is breathing adequate?
C—Circulation	Is the circulation sufficient to meet the needs of the patient? Is there ongoing bleeding?
D—Disability	What is the patient's neurological status? Assess using AVCPU. (**A**lert, responding to **V**oice, new onset of **C**onfusion, responding to **P**ain or **U**nresponsive) scale Check pupil response Don't forget the glucose
E—Exposure	Remove clothing and look for immediate threats to life or limb What is the patient's temperature?

HIRAID™: AN EMERGENCY NURSING FRAMEWORK

The emergency nursing framework HIRAID™, by Curtis and colleagues,[16] can ensure that a systematic approach is taken when performing an initial nursing assessment and ongoing patient care.[17] In the ED setting, HIRAID™ has been shown to

FIGURE 13.1 HIRAID™: AN EVIDENCE-INFORMED EMERGENCY NURSING FRAMEWORK[4]



HI — **HISTORY:** Collection of the presenting problem and health history. **INFECTION RISK:** Nested within history; refers to the patient's risk of infection or suspected/confirmed communicable disease; includes required precautions.

R — **RED FLAGS:** Historical or physiological indicators of urgency that identify potential/actual threat to life or limb; highlights the need for timely escalation of care.

A — **ASSESSMENT:** Comprehensive physical examination, prioritised to ensure life threatening conditions are identified first, followed by focussed assessments guided by the presenting problem.

I — **INTERVENTIONS:** The delivery of appropriate and prioritised interventions based on historical and physical assessment findings.

D — **DIAGNOSTICS:** The ordering, performing and reviewing of further investigations, including pathology and diagnostic imaging.

The HIRAID framework encapsulates the cyclical nature of patient assessment, in which more than one element of the framework may be performed simultaneously. It also embraces the importance of **reassessment** and **communication**, which are vital components of emergency nursing.

REASSESSMENT: The evaluation of care and monitoring of patient progress using a structured approached and repeated at appropriate intervals per condition of the patient.

COMMUNICATION: Verbal/non-verbal skills necessary to effectively communicate with patients, families and clinicians, includes using: a structured approach to comunicate clinical handovers; graded assertiveness to escalate if needed; and, accurate and comprehensive clinical documentation.

significantly reduce ward patient deterioration of emergency admissions and associated healthcare costs.[15,18] The HIRAID™ process is comprised of seven critical components:

- **H**istory (including **I**nfection risk)
- Identify **R**ed flags
- **A**ssessment (clinical examination)
- **I**nterventions
- **D**iagnostics
- Reassessment
- Communication.[4]

Fig. 13.1 illustrates the relationship between the steps. They do not necessarily occur in this order, as in reality they often happen simultaneously. The assessment is a cyclic process, supported by ongoing reassessment and communication.

The history is gained from the patient, relative, carer or significant other. It should include details about the chief complaint and the patient's individual health history, such as past medical history, medications and allergies. Infection risk should be considered as part of the patient's history, comprising of infection and/or suspected or confirmed communicable disease, including personal protective equipment (PPE) required. Identification of red flags involves recognition and response to clinical indicators of urgency identified during any stage of the assessment process. The emergency clinician must respond to red flags and escalate care as required in a timely manner to prevent deterioration and optimise patient recovery. Assessment involves the clinical examination of the patient, including skills such as inspection, auscultation, percussion and palpation. Interventions that may be required include giving first aid, applying oxygen and giving analgesia. Once the patient has arrived at an ED and life-threatening conditions are identified and treated, diagnostic and laboratory testing can take place.

On the patient's arrival to hospital, the triage nurse is initially responsible for identifying the chief complaint and the ideal location within the ED. Once the patient is moved to a treatment area, a more thorough and detailed assessment is performed to ensure that any life-threatening illnesses or injuries not found initially are detected and treatment commenced. Emergency clinicians are often responsible for patients for extended periods and required to commence treatment and monitor response to therapies prior to medical review. Therefore, it is vital that every emergency clinician has the ability to perform an accurate clinical assessment with a view to determining the chief complaint and not just record a set of vital signs which, taken in isolation, is often meaningless.

HISTORY (INCLUDING INFECTION RISK)

Taking a history requires collection of subjective data. This is the information that you gather from the patient, relative, carer or significant other. In the pre-hospital setting this may also be a witness to an accident. Developing and maintaining rapport are central to good communication and effective information gathering.[19] It is important to take some time at the beginning of any assessment to explain who you are and what it is you are planning to do. Ask open-ended questions and let the patient speak for a minute or two without interruption, and the main problem and any concerns should become apparent. Examples of open-ended questions are: 'What's troubling you today?', 'Why have you come to hospital?' or 'Why did you call the ambulance?'. Emergency clinicians should then be able to focus the assessment and gather required additional information, and allay any immediate anxieties. Asking open-ended questions of Indigenous people is very important, as they may not respond well to direct questioning (see Chapter 5 for further discussion of cultural considerations). When the patient is acutely unwell, the amount of time spent asking open-ended questions should be limited so that the assessment can move promptly to the area of concern, allowing quick evaluation and management.[20]

It is important to also speak to family, carers or witnesses, as they may be able to add pertinent information that the patient considers insignificant or is unable to give due to an altered mental state. If the patient has an altered level of consciousness, then the nurse or paramedic has to rely more heavily on other assessment skills, and once the patient has arrived in the ED the nurse may need to obtain old hospital records or contact the general practitioner if friends or relatives are not able to help or are uncontactable. However, such searches can be quite time-consuming. The emergency nurse responsible for assessing the patient once they have been allocated to a treatment space should review the ambulance case sheet and triage form to ensure information has not been omitted during the handover process.

When taking a history, it is useful to develop a systematic approach to ensure that all the important questions are asked. The SAMPLE mnemonic (Box 13.2) is a way to structure history-taking in a pre-hospital environment.[21]

It is also important to consider if the patient is at increased risk of acquiring an infection or transmitting an infection to others, and the relevant infection prevention and control requirements. Focused questioning should be used to identify patients who are immunocompromised. For example, patients on immunosuppressive drugs such as corticosteroids or chemotherapy, or with an immune deficiency disorder such as cancer, diabetes mellitus or human immunodeficiency virus (HIV). Infants (< 1 month of age) are also at increased risk of infection as their immune system is underdeveloped, as well as elderly people (> 65 years old) as the immune response declines with age.[22] Knowledge of the patient's increased infection risk will assist clinicians to put in place appropriate infection control measures to prevent infection in these patients. Placing the patient who presents to the ED 5 days post chemotherapy in the waiting room, for example, should be avoided; ideally they should be located in a single room away from other potentially infectious patients.

Emergency clinicians must be especially vigilant in detecting carriers of communicable diseases, who present an increased risk of transmission of disease to healthcare workers and other patients. Communicable diseases may be spread via direct contact (e.g. methicillin-resistant *staphylococcus aureus* (MRSA), vancomycin-resistant enterococcus (VRE), transmission of large droplet particles that travel short distances (e.g. influenza, meningococcal) or smaller airborne particles that can remain in the air for several hours (e.g. SARS-COV-2, measles, tuberculosis and varicella (chickenpox)).[23] Knowledge of the disease and how it spreads can help clinicians determine PPE and isolation requirements. Obtaining a detailed history of potential exposure risk such as contact with carriers of a disease, recent travel, vaccination status and signs and symptoms of diseases is critical to detecting infections early.[24] Appropriate questioning of a child who presents with a pustule rash and fever, for example, will help identify if they are unvaccinated and have recently attended daycare where there is an outbreak of chickenpox. During outbreaks of disease, clinicians may be required by public health to undertake specific screening questions. See Chapter 27 for more information on healthcare-associated infections and infectious diseases.

Once the patient has arrived at an ED, details about the patient's history can be handed over to the accepting nurse. The patient's condition may have changed during transportation, so conducting a thorough assessment on arrival in a more controlled environment is important. See Box 13.3 for the questions that should be asked and the rationale for these.

When assessing a patient's pain, the mnemonic PQRST can be very useful. It helps determine the Provoking factors, Quality, Radiation, Severity and Timing of the pain, and is a useful tool to assist in exploring all realms of the pain. (See Box 13.4 for full explanation of terms, and Chapter 18 for discussion of pain management.) The information gathered while taking the history will guide emergency clinicians as to which body systems need to be examined, as well as the extent of the investigation. However, during history-taking it is important not to make assumptions about the patient's clinical presentation until a comprehensive assessment has been completed.

BOX 13.2 THE SAMPLE MNEMONIC FOR HISTORY-TAKING

S	Signs and symptoms
A	Allergies
M	Medications
P	Pertinent past history
L	Last oral intake
E	Events leading up to the illness/injury

PRACTICE TIP

When taking a history, it is useful to develop a systematic approach to ensure all the important questions are asked.

BOX 13.3 PERTINENT QUESTIONS TO OBTAIN A HISTORY

PRESENTING PROBLEM

Chief complaint

What is the reason the patient has presented to hospital? It is advisable to document this using the patient's own words. It is then very clear what the patient complained of on presentation, as symptoms can change.

Characteristics

It is important to identify the location and characteristics of the chief complaint and any related symptoms (both ones you may expect and ones that are absent). For example, centralised abdominal pain associated with vomiting or diarrhoea.

Pain history

This can be explored using PQRST (see Box 13.4).

Aggravating causes and relieving factors

What exacerbates or relieves the symptoms? This can provide clues as to the cause. For example, cough started after being commenced on new medication.

Timing

You need to explore when the symptoms started, and whether they are continuous or intermittent. How long do they last?

Medications taken to relieve symptoms and effectiveness

Some patients take multiple pain medications when pain is severe. If one type over another is more effective, this can also offer clues.

INDIVIDUAL HEALTH HISTORY

Past medical/surgical history

This is an essential component of your assessment. Patients may not realise the significance of prior problems and may not think them relevant. You should prompt your patient to divulge all past medical history and previous surgeries, however irrelevant it may seem to them.

Current medications (including smoking, alcohol, illicit drugs)

It is important to elicit details of current medications as they may be linked to the problem. Not only prescription medications, but also over-the-counter and herbal or homeopathic ones.

Allergies

Information about allergies is important. However, many patients attribute adverse reactions or intolerance to allergies. Therefore, the reaction to any drug should be noted, e.g. 'Patient states they are allergic to morphine, but the reaction they suffered was nausea and vomiting. This is a common side-effect and not a true allergy.'

Relevant family and social history

The patient's problem may be hereditary or genetic. Important diseases to ask about are cardiovascular, respiratory, cancer, diabetes, renal disease, allergies and mental health problems. Although family history is not diagnostic, it allows risk stratification. The social history should be tailored to the individual, but an understanding of the patient's social habits helps to determine further risk factors. Recognition of social supports at home for an elderly person can assist with early identification of the likelihood of needing admission. It is also important to identify the carer responsible for paediatric patients and any child protection concerns that need to be considered.

Tetanus status; last menstrual period

These are asked about only if relevant to the presenting problem.

BOX 13.4 PAIN ASSESSMENT USING PQRST

P—Provoking factors	What factors precipitated the patient's discomfort? What were they doing at the onset of pain?
Q—Quality	Get the patient to describe the pain/ache/dullness. Ask them to tell you its characteristics: 'Describe the pain and how it feels.'
R—Region/radiation	Ask the patient to show you where the pain is and where it radiates to, if applicable. Ask if there is pain anywhere else.
S—Severity	Get the patient to rate their pain/ache/dullness on a pain scale.
T—Time	How long has the patient had the pain; or, if it has gone, how long did it last? Does anything make it worse or better?

IDENTIFY RED FLAGS

In determining the severity of the patient's illness and how urgent the need for intervention is, the emergency clinician relies on a combination of clinical signs and historical data. These may be actual or potential cues that indicate presence or risk of serious illness or injury, including abnormal vital signs, a history of pre-existing illness or time-sensitive presentations (such as chest pain or the onset of acute neurological signs). These can be referred to as clinical or historical indicators of urgency, also termed 'red flags'. They can be identified when listening to the patient's history or conducting a clinical assessment. See Table 13.1 for examples. Identification of red flags prompts the clinician to initiate appropriate management early on. Early recognition and response to signs of clinical deterioration or issues that increase the risk of deterioration improve the delivery of care and save lives.[25] Each patient should be assessed using the 'worst first' approach, and no assumptions should be made until all high-morbidity and high-mortality conditions have been ruled out.[16]

TABLE 13.1 HISTORICAL AND CLINICAL RED FLAGS

PRESENTING COMPLAINT	HISTORICAL RED FLAG	CLINICAL RED FLAG
Chest pain	History of ischaemic heart disease	Abnormal ECG
	Prolonged chest pain	Pale and diaphoretic
	Diabetes or chronic renal failure	Abnormal vital signs
Abdominal pain	Recent abdominal surgery	Pregnancy
	Vascular disease	Rigid abdomen
	Haematemesis or melaena	Abnormal vital signs
Fever	Prolonged fever	Infected wound
	Recent surgery	Elevated white blood cell count
	Immunosuppressed	Abnormal vital signs
Vomiting	Elderly or paediatrics	Hypo/hyperglycaemia
	History of diabetes	Haematemesis
	Pregnancy	Abnormal vital signs
Shortness of breath	Sudden onset	Abnormal CXR
	History of COPD	Use of accessory muscles
	Productive cough	Abnormal vital signs

ECG: electrocardiogram; COPD: chronic obstructive pulmonary disease; CXR: chest x-ray.

PRACTICE TIP

Red flags can be found at any stage of the assessment process, when listening to the patient's history or conducting a clinical assessment.

ASSESSMENT (CLINICAL EXAMINATION)

The next step of the assessment process is the clinical examination. Once life-threatening problems have been identified and stabilised in the primary survey, the general survey of the patient and collection of vital signs should be performed. It is advisable to use the ABCDE approach and reassess for potential or actual threats to the airway, breathing, circulation, disability (neurological status) and exposure, before moving on to a focused assessment. If any of the ABCs are compromised, then interventions will need to be performed before moving on with the assessment. In airway management, this could be as simple as performing a jaw thrust or chin lift (while maintaining cervical spine precautions), through to intubating the patient and securing the airway for transportation. If at any stage during the assessment the patient appears to deteriorate, you must return to ABCDE and reassess these again, stopping if any interventions are required and only moving forwards once the patient is stable.

A head-to-toe review of the relevant body regions and systems should follow. The examination sequence is then inspection, auscultation, percussion and palpation. The emergency clinician should also consider the patient's ability to perform everyday tasks, such as eating, drinking, mobilising, toileting and personal hygiene.[26] A decline in the ability to perform these tasks can threaten the safety of the patient while in hospital and once discharged.[27–29] It is also important to screen for specific risk of harm. Patients should be screened for pressure injuries, falls, poor nutrition and cognitive impairment to prevent or minimise harm. Preventing complications is discussed in more detail under 'Essentials of care' later in this chapter.

GENERAL SURVEY

Your general survey commences the moment you first see your patient. This may be as you approach them in their house or at the scene of an accident, or as they approach you at the triage window. Posture and gait should be noted. Listening to the patient speak will reveal clues to neurological and respiratory function. The overall appearance of the patient can also give clues to mood, altered level of consciousness and signs of pain and distress.

PRACTICE TIP

The overall appearance of the patient can give clues to mood, altered level of consciousness and signs of pain and distress.

Vital signs

Taking vital signs and identifying clinical deterioration is an essential part of the role of the nurse or paramedic, and they must know the normal limits. Monitoring of vital signs, in addition to other objective data, such as urine output and lactate results, have been shown to assist in the early detection of clinical deterioration and prevents loss of life.[30,31] The initial vital signs performed pre-hospital can be a predictor of adverse hospital outcomes.[32] The majority of patients who suffer an in-hospital cardiac arrest or unplanned ICU admission have abnormal vital signs in the hours prior to the event.[33,34] Failure to recognise and respond to clinical deterioration in a timely manner increases the incidence of high-mortality adverse events such as cardiac arrest[35] and unplanned admissions to the intensive care unit.[34] One Australian study reported that clinical deterioration goes undetected in as many as one in seven ED patients (12.9%).[36] There are times when seriously ill patients are not recognised because of the staff's busy, unpredictable workload.[37,38] This is particularly prevalent in areas of lower staff to patient ratios such as the ED waiting room.[39]

A set of vital signs is considered to consist of:

- respirations (R)
- oxygen saturations (SpO_2)
- blood pressure (BP)
- pulse (P)
- temperature (T)
- level of consciousness
- new onset confusion or behaviour change.[40]

Patients who present to the ED for the first time do not have any baseline observations to compare their condition against. It

TABLE 13.2 NORMAL VALUES FOR BLOOD PRESSURE (BP), PULSE (P) AND RESPIRATIONS (R) IN PAEDATRICS[43] AND ADULTS[38]

AGE	SYSTOLIC BP*	P?	R‡
< 3 months	60–100	110–160	30–55
3–12 months	70–110	100–160	30–45
1–4 years	90–110	90–140	20–40
5–11 years	90–110	80–120	20–30
12–16 years	90–120	60–100	15–20
Adult (>16 years)	90–120	60–100	12–20

**mmHg*
?beats per minute
‡breaths per minute

can therefore be challenging to determine if the patient's vital signs are within normal limits for them. Repeating vital signs at appropriate intervals helps to determine trends and to detect clinical deterioration.[41] Studies have shown wide variation in the frequency of vital signs performed in the emergency context.[42] The time interval between vital signs should be determined by the clinical situation and local protocols. The clinician may be required to increase or decrease frequency of vital sign measurement if the patient's condition changes.

Normal ranges for vital signs differ in paediatric patients and adults (see Table 13.2 for normal values). Changes that occur in pregnancy also affect vital signs; blood pressure decreases and heart rate increases according to the effects of increased progesterone and increased circulating blood volume.[44] Once the patient has arrived at the hospital, an accurate history and a review of hospital records may assist in determining what is normal for the patient. The Australian Commission of Safety and Quality in Health Care (ACSQHC) recommend the use of observation charts with parameters that indicate when vital signs are abnormal and when escalation should occur.[40] It should be noted that having normal vital signs does not necessarily guarantee a stable physiological status. Examples of this include: failure to detect large blood losses in a fit, healthy person; failure to identify serious illness in infants, and inability to detect an inadequate plasma volume in burn injury patients or a patient taking beta-blockers who cannot mount a tachycardic response to correct hypotension. Therefore, it should be remembered that although the vital signs may appear within normal limits, this may be due to compensatory mechanisms and/or be masked by medications; the patient may in fact be compromised.

PRACTICE TIP

Vital signs may appear within normal limits; however, this may be due to compensatory mechanisms and/or may be masked by medications; the patient may in fact be compromised.

Respirations

The respiratory rate is considered one of the most important vital signs as it is the most accurate in detecting clinical deterioration, as well as predicting the need for admission to the intensive care unit (ICU) and for cardiac arrest.[41,45] Despite this, the respiratory rate, often called the 'forgotten vital sign', is commonly not accurately measured and is poorly documented.[46] Abnormal respiratory rate is a significant predictor of deterioration, cardiac arrest and/or need for admission to the ICU.[47,48] Clinical deterioration can be detected early on by a change in respiratory rate of as few as four breaths per minute either side of the normal range, which would otherwise go undetected through monitoring of other vital signs.[46,49] A rise in respiratory rate from 24 to 28 breaths per minute in an adult has been reported to increase mortality by 5% and a respiratory rate from four to eight by 10%.[50] Respiratory rate is normally more rapid in infants and children.[51] For normal ranges of respiratory rates see Table 13.2.

The rate, depth, rhythm and effort of respiration should be assessed and recorded.[51] To obtain the most accurate respiratory rate it is recommended that respirations be counted for a full 60 seconds and not telling the person you are measuring their respiratory rate as awareness of this can alter their normal breathing patterns.[52] It can often be difficult to count respirations in paediatric patients, particularly if they are crying or moving around. Counting respirations in paediatric patients may be made easier by the use of a stethoscope or by placing a hand on the child's chest. The depth of respiration can be established by watching the person's chest rise and fall, and is best done at a distance, so that the patient is not aware of what you are counting. It can be described as shallow, normal or deep. The chest wall should expand symmetrically. The rhythm of breathing should be regular, without presence of tracheal tug, nasal flaring, accessory muscle use or signs of intercostal, substernal or suprasternal recession. On auscultation, air entry should be clear and equal, with no added breath sounds, such as wheeze or crackles.

PRACTICE TIP

The depth of respiration can be established by watching the person's chest rise and fall, and is best done at a distance, so that the patient is not aware of what you are counting.

Oxygen saturation

Oxygen saturation (SpO_2) is measured using a pulse oximeter, which detects the amount of haemoglobin that is bound to oxygen, and is used as an adjunct to assessing respiratory function. Peripheral probes are commonly used on the fingers, toes or ears; they are easy to apply and non-invasive. However, these probes will not work through nail varnish, dirt or dried blood. Dysrhythmias or poor peripheral circulation may also cause low readings because of inadequate and irregular perfusion.[53] Forehead probes should be used when an accurate reading is not obtainable via peripheral means.[53] Anaemic patients will have a normal SpO_2 reading, but may be hypoxic. The pulse oximeter measures how much haemoglobin is saturated, but the patient may have insufficient haemoglobin to attain tissue perfusion. Following smoke or exhaust inhalation, SpO_2 readings

are of no value as carbon monoxide has a greater affinity to haemoglobin than to oxygen, so saturation levels could be 99% while the haemoglobin molecule is saturated with carbon monoxide, not oxygen, placing the patient in a hypoxic state.[53] An arterial blood gas should be performed in these patients to accurately measure the partial pressure of oxygen, partial pressure of carboxyhaemoglobin and saturation levels. The oximetry probe can cause pressure areas on the skin if left in one position for an extended period of time, so it is recommended to change and document probe placement regularly.[54]

PRACTICE TIP

The pulse oximeter tells how much haemoglobin is saturated, but the patient may have insufficient haemoglobin to attain tissue perfusion.

Blood pressure

Blood pressure (BP) is the force of the blood pushing against the blood vessel wall. This measurement of force is determined by: (1) cardiac output (how much blood is pumped by the heart with each contraction); (2) the ability of the vessels to stretch; (3) the volume of the circulating blood; (4) the amount of resistance the heart must overcome when it pumps blood; and (5) blood viscosity (thickness of the blood).[51] The systolic pressure is the pressure within the arterial system when the ventricles contract. The diastolic pressure is the pressure within the arterial system when the ventricles relax and fill with blood. The pulse pressure is the difference between the two; a pulse pressure of between 30 and 50 mmHg is considered a normal range.

There are several factors that can influence BP, which need to be taken into account. These include the patient's age, gender, fitness, emotional state and medications (see Box 13.5). It is important to remember that a fit, healthy person has compensatory mechanisms and may not display signs of depleted circulating volume until late. For normal ranges of systolic blood pressure according to age, see Table 13.2.

BP is most commonly measured non-invasively by inflating a cuff on the patient's arm using a manual or automatic sphygmomanometer. However, various factors can affect the accuracy of non-invasive BP measurement, such as the position of the patient, cuff size and cuff placement.[55] If the BP cuff is too large, the result will be a false low reading. If the cuff is too small, the result will be falsely elevated.

To obtain the most accurate BP reading, the patient should ideally be seated, with their back supported and both feet resting on the ground, and remain resting in this position for 5 minutes.[54] The arm should be supported at heart level as the position of the arm affects the pressure observed. If the upper arm is below the level of the heart the BP reading will be too high, and if the arm is above the heart the reading will be too low.[56] It is often not possible to place the patient in a seated position; the emergency clinician should therefore consider the effects that the position of the patient has on the blood pressure reading.

If a patient has poor peripheral circulation or cardiac dysrhythmias, electronic BP machines become inaccurate and may not be able to record a reading at all. In this instance, and with any resuscitation or clinically unwell patient, a manual reading should be obtained. It is also good practice to double-check any high or low reading obtained from an electronic BP machine manually. For the most accurate measurement of blood pressure an arterial catheter should be used; these are very invasive and therefore are usually only used when the patient is critically unwell or when close BP monitoring is required.[55]

While most healthy patients will demonstrate little difference in their lying and standing blood pressure, a significant fall (systolic BP 20 mmHg or diastolic BP 10 mmHg) can occur in older people, patients with diabetes and those with symptoms suggestive of postural hypotension, such as dizziness, syncope and falls on changing position.[57] A lying and standing blood pressure should be recorded for these groups. First, the patient should have been lying down for 5 minutes, and have their arm supported at heart level. Record the blood pressure and then get the patient to stand, keeping the cuff in place. Allow the patient to stand for 3–5 minutes to allow for delayed orthostatic hypotension, which usually occurs in the first 5 minutes of standing. Support the arm at heart level and repeat the reading. If on standing, the patient reports dizziness, faintness or light-headedness, the procedure should be aborted for safety reasons.[57]

For patients with a side affected by stroke, mastectomy or renal fistula, the BP should be taken on the opposite arm. It is important to remove the BP cuff for all patients between readings to prevent injury from prolonged pressure in one area. Significant discrepancies in BP reading between the left and right arm should be escalated to a senior clinician as this can be an indicator of a ruptured abdominal aortic aneurism, which is life-threatening.

PRACTICE TIP

Patients with diabetes and those with symptoms suggestive of postural hypotension, such as dizziness, syncope and falls on changing position, should have a lying and standing blood pressure taken.

BOX 13.5 FACTORS AFFECTING BLOOD PRESSURE

AGE

Blood pressure (BP) tends to rise with age—attributed to arteriosclerosis, a process whereby the arteries become rigid and lose elasticity, and atherosclerosis, a narrowing of the arteries caused by cholesterol deposits.

GENDER

Women generally have lower BP than men of a similar age.

FITNESS

Athletes tend to have BP in the lower ranges.

EMOTIONAL STATE

Strong emotions and pain can cause the BP to rise as a result of sympathetic nervous system stimulation.

MEDICATIONS

Consider if the patient is taking antihypertensives. Also drugs such as nicotine, caffeine and cocaine tend to constrict arteries and raise BP.

Pulse

There is more to a pulse than its rate; pulse rhythm and character should also be noted. The clinician must palpate the pulse to determine its rate, rhythm and aptitude (strength). In healthy adults the normal pulse rate is between 60 and 100 beats/minute,[51] but this is higher for children and babies (see Table 13.2). Tachycardia is defined as a pulse rate greater than 100 beats/minute, while bradycardia is a pulse rate less than 60 beats/minute.[58] Factors which can affect the pulse rate need to be considered when obtaining the patient history. A slow pulse rate may be normal for a fit athlete, but it may also indicate a cardiac dysrhythmia, metabolic disturbance, hypothermia, hypoxia or neurological issue, or be caused by certain medications, such as beta-blockers. A fast pulse rate can be triggered by emotion, exercise, drugs, infection/inflammation, cardiac dysrhythmias, hypovolaemia or haemorrhage and hypoxia.[59] The pulse volume may be described as bounding, normal, weak, thready or absent. A bounding pulse may indicate sepsis, carbon dioxide retention or liver failure, and a thready pulse is indicative of shock. A pulse should be felt for a minimum of 30 seconds to obtain an accurate reading, and a minimum of 60 seconds if the pulse is irregular.[51] In adults, the pulse is generally taken over the radial artery, but in a patient in shock it may be difficult to assess the pulse at this site; the carotid or femoral artery can be used instead. Brachial, carotid and femoral arteries are the preferred sites in children.[3] Palpation or auscultation of the apical heart rate is also recommended in babies[51,60] (see Fig. 13.2). If a patient is found to have an irregular pulse, an ECG should be performed and cardiac monitoring should be considered (see Chapter 16).

PRACTICE TIP

The rate, regularity and characteristic of the pulse should be assessed through palpation.

Temperature

Accurate temperature measurement is essential to identify the presence of illness, as well as enable appropriate and timely treatment to prevent the negative effects of an abnormal temperature. Historically, the focus of temperature management has been on monitoring fever and treating infection; however, there is growing research demonstrating the significance of hypothermia as an indicator of critical illness.[61,62] Temperature measurement is indicated in all patients to identify hypothermia, hyperthermia and other febrile illnesses.

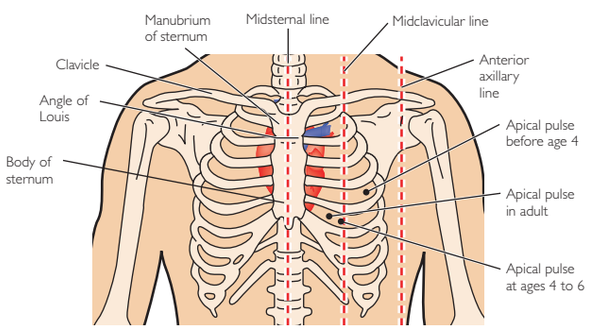
A normal core body temperature is defined as 37°C; however, this may fluctuate by 0.5°C to 1.0°C.[66] The core body temperature is regulated hormonally by the hypothalamus through controlling heat production and conservation.[64] Infants, children and older people are at risk of having difficulty regulating body temperature. Infants have poor heat conservation due to having a greater ratio of body surface area to weight and less subcutaneous fat compared to adults, where it functions as insulation. Elderly people have a poorer response to extreme external temperature variations, resulting from slow circulation and structural and functional changes in the skin.[64]

Maintaining a normal core body temperature is essential to optimise normal cellular function. Hypothermia is defined as a core temperature below 36°C.[65] Hypothermia is commonly caused by prolonged heat loss or exposure to cold environments, but can also be an indicator of critical illness, such as sepsis.[63] Hypothermia has been reported in up to 35% of patients with sepsis,[65] and is associated with higher mortality compared with patients without hypothermia with sepsis.[66,67] Hypothermia causes changes in circulation, coagulation and can cause cellular ischaemia.[64] Clinicians should take care to avoid hypothermia in patients as a result of prolonged exposure to cold environments or to enable assessment and massive intravenous fluid resuscitation, which can result in hypothermia. However, therapeutic hypothermia (32°C to 34°C) has been shown to reduce mortality in patients post-cardiac arrest through preserving ischaemic tissue.[68]

Fever is generally defined as a temperature of 38.3°C or above and is primarily caused by the action of pyrogens on the hypothalamus, such as bacteria or virus.[63] The term fever is often used interchangeably with pyrexia or hyperthermia. An elevated temperature may also result from exposure to extreme environmental temperature, drugs, trauma or autoimmune disease. Fever has been reported to aid the body's response to infection by preventing replication of infective organisms and increasing antimicrobial activity in many classes of antibiotics and improves patient outcomes.[66] A high fever can however be harmful in patients following brain injury or stroke and treatment with antipyretics should be considered to optimise cerebral perfusion.[69,70] Significant cellular changes occur in temperatures above 40°C and are associated with higher mortality, indicating that the harmful effects of fever outweigh the benefits in fighting infection. Temperatures above 41°C are usually drug-related, but can also result from damage to the hypothalamus caused by trauma, prolonged high temperatures (heat stroke) or genetic disorders.[63] Cell death rapidly occurs in adults at 41°C, causing seizures which frequently lead to death.[63,64]

There are a variety of thermometers for use at different sites. The most common types of non-invasive thermometers include tympanic, digital electronic, infrared and single-use chemical-dot thermometers. Both digital electronic and single-use chemical dot thermometers can be used in the oral, tympanic or axillary site. Infrared thermometers may be either contact (touch skin) or non-contact (do not touch skin). Tympanic and infrared thermometers are reported to be more accurate than

FIGURE 13.2 LOCATION OF APICAL PULSE[17]



oral or axilla digital thermometers.[71] However, some studies have reported a wide variation of up to 1°C when comparing temperatures in children < 5 years old using non-contact infrared thermometers compared with axillary and tympanic devices.[72] Chemical thermometers have been found to be less precise than digital thermometers.[50,73] The single-use chemical-dot thermometer only has a range between 35.5°C and 40.4°C, so in patients suspected of having a temperature outside this range an alternative thermometer should be used. Temperature strips, which are liquid-crystal strips applied to the forehead, have been found to be inaccurate and can miss fevers in children.

Infrared thermometers measure temperature by measuring the heat emitted from the skin. Temporal artery thermometers measure the heat radiating from the skin when placed flush on the skin and moved from the forehead to behind the earlobe.[74] The non-touch infrared forehead thermometer measures the temperature of the forehead without touching the skin. Simply hold the thermometer 3–15 cm away from the patient's forehead, activate the device and the temperature reading is available within a few seconds.[51] This method is particularly useful when measuring temperatures in children as it does not wake the child.

When taking an oral temperature, it is vital to ensure the thermometer is placed correctly—it needs to sit in the posterior sublingual pocket of the mouth. This method should not be used in children under the age of 5 years due to the difficulty they experience in holding the thermometer in the correct position. A digital electronic thermometer will beep when ready; a single-use chemical-dot thermometer should be left in place for 3 minutes.[75] Factors that can influence the reading are a respiratory rate of greater than 18 breaths/minute and eating, drinking or smoking prior to the reading being taken.[76]

The axillary site is considered similar to the oral site when measuring temperature in adults; however, lack of precision may result in failure to detect low-grade fevers in paediatric patients.[73]

Tympanic thermometers measure the temperature from the tympanic membrane. Historically there was much debate over the accuracy of tympanic thermometers, particularly in the paediatric population. However, there has been significant development of this device in recent years with studies reporting the tympanic thermometer to be superior over other non-invasive methods of temperature measurement in children and adults.[71,77] Tympanic thermometers can be used in patients over 3 months of age. The ear canal must be straightened by pulling the pinna slightly up and back in an adult. Be cautious not to force the probe into the ear so as to avoid risk of perforation. It can be inaccurate in people with a small ear so canal, a build-up of cerumen, otitis media and incorrect placement.[73,76]

Rectal thermometers are considered the gold standard method of temperature measurement and recommended for when an accurate core temperature is required. However, they are invasive and impractical.[71] The rectal temperature probes can be slow to respond to changes in temperature and the probe needs to be accurately placed to a depth of 4 cm to obtain an accurate reading. They are therefore not recommended in children due to the risk of bowel perforation. In critically ill patients requiring continuous monitoring of temperature, urinary thermometers can be inserted easily into the bladder via urinary catheters. Bladder thermometers have been reported to measure core body temperature close to that of rectal thermometers.[78]

It should be carefully noted on the patient's documentation which kind of thermometer and which site was used to record the temperature. It is not possible to accurately convert the temperature taken at one site to compare it with a temperature taken at a different site, with or without using a different kind of thermometer. This is also an important consideration when the paramedic hands over a patient to the accepting emergency nurse.

PRACTICE TIP

In critically ill patients, thermometers can be easily inserted into the bladder via urinary catheters to accurately measure core temperature.

INSPECTION

It is important to look at the patient as a whole before undertaking a more focused assessment. Inspection commences when you first see the patient, either at the scene or when receiving clinical handover in view of the patient. Questions to consider are: Does the patient appear unwell or in pain? Are they unkempt, inappropriately dressed, under- or overweight? Once a general view of the patient has been obtained, observations should become specific, focusing on the chief complaint and affected system. When inspecting as part of your focused assessment you are looking for discharge, skin integrity, swelling, redness and other abnormalities. You should also take note of any diaphoresis and document pallor.

PRACTICE TIP

Inspection commences when you first see the patient, either at the scene or when receiving clinical handover in view of the patient.

Auscultation

Auscultation is the process of listening, usually with a stethoscope, to sounds produced by the movement of gas or liquid within the body. The heart, lungs and abdomen are the areas most often auscultated. The diaphragm of the stethoscope is used to hear high-pitched sounds, such as bronchial sounds, and the bell is used for low-pitched sounds, such as heart sounds. If too much pressure is applied with the bell, it tightens the skin and acts as a diaphragm. It is important to auscultate before percussing or palpating as these techniques may change sounds that are heard. Discussions of normal and abnormal findings are found below in the section on head-to-toe assessment.

PRACTICE TIP

It is important to auscultate before percussing or palpating as these techniques may change sounds that are heard.

Percussion

Percussion is the technique of examining part of the body by tapping it with the fingertips and hearing the resultant vibratory

TABLE 13.3 PERCUSSION SOUNDS

SOUND	INTENSITY	QUALITY	COMMON LOCATION
Flat	Soft	Muted	Muscle, bone
Dull	Medium	Thud-like	Liver, heart, full bladder
Resonant	Loud	Hollow	Normal lung
Tympanic	Loud	Cavernous	Intestine filled with air
Hyperresonant	Very loud	Booming	Emphysematous lung

sounds. The quality of the sound aids in determining the location, size and density of underlying structures. The sound can be described as flat, dull, resonant, tympanic or hyperresonant. See Table 13.3 for sound characteristics and examples of where they can be heard.

Palpation

Palpation is the process of examining parts of the body by careful feeling with the hands and fingertips. Light palpation is used for feeling the surface of the skin, structures that lie just beneath the skin, vibrations in the chest and for the pulsation of peripheral arteries. The examiner uses the fingertips, or the back or palm of one hand. When examining the abdomen, deep palpation may also be used to identify organ structures. This is performed by placing one hand on the other and using the top hand to apply pressure to depress the abdomen by 2.5 cm. The bottom hand remains relaxed. Palpation provides information about the temperature and moisture of the skin, the presence of tenderness, unusual vibrations, distension and the size, shape, consistency and mobility of organs or masses.

Analgesia should be administered if required before palpation is performed to provide comfort during examination. While many patients have concerns that the use of pain relief before seeing a doctor may mask important physical symptoms, the early provision of analgesics has been reported to have no effect on the accuracy of diagnosis,[79] but there is strong evidence to demonstrate it improves comfort[79] and should not be withheld.

PRACTICE TIP

Analgesia should be administered before palpation is performed to provide comfort during physical examination.

HEAD-TO-TOE ASSESSMENT

In the ED and pre-hospital setting, the history taken will assist you in determining which systems you should review. For a more in-depth review of trauma patient assessment using the primary and secondary survey, refer to Chapter 42.

HEENT (HEAD, EARS, EYES, NOSE AND THROAT)

Inspection of the external surfaces of the head will reveal the presence of foreign bodies discharge, redness, abrasions, contusions and bleeding. Palpation can be performed to feel for any unusual lumps or bumps at the same time.

Inspect the face for asymmetry, swelling or involuntary movements, as abnormalities could indicate facial nerve problems or an allergic reaction. Palpation will reveal step-offs, deformity and tenderness (see Chapters 31 and 44 for more detailed HEENT patient assessment).

Ears are inspected for discharge, foreign bodies, deformities and lumps. If infection is suspected, the tympanic membrane (TM) and external auditory canal are viewed with an otoscope (auroscope). The pinna is pulled up and back to straighten the ear canal in an adult, and down and back in a child. The TM should appear pearly-grey; yellow, redness or a bulging TM are signs of infection. In head injury, blood may be seen in the canal or behind the TM.[80]

Common presentations for eyes include foreign bodies, infection and trauma. The standard examination for eyes is to measure visual acuity using a Snellen chart. If the patient wears glasses or contact lenses for distance vision, these should be worn during testing if available; otherwise, the use of a pinhole is advised. The smallest line the patient can read with each eye individually and then together is noted. Acuity is written as a fraction, with the numerator indicating the distance from the chart (usually 6 m, but a 3 m modified chart can also be used) and the denominator describing the distance at which a person with normal vision could read the line. Therefore, 6/6 is a normal finding. It should be noted if glasses or contact lenses are worn during a visual acuity assessment. The eye should be examined for obvious foreign bodies. Inflammation, pain, discharge, tearing and changes in appearance should be noted.[81] Further eye assessment is discussed in Chapter 32.

The mouth can offer several clues as to the wellbeing of the patient. Assess the tongue for dryness and colour: a dry tongue can indicate dehydration. Examine the gums for evidence of bleeding or swelling. If the patient complains of a sore throat, inspect for swelling, redness and ulceration.

Disability (level of consciousness or new confusion)

Assessing a patient's level of consciousness is an essential component of a neurological examination, which is usually performed alongside an assessment of pupil size and reaction, vital signs and focal neurological signs in the limbs.[82] In the pre-hospital setting and at triage, the ACVPU scale is often used when assessing disability to quickly determine a patient's level of consciousness. The ACVPU scale, a superseded version of the AVPU tool, crudely measures response: is the patient Alert, do they have a new onset or worsening Confusion, are they responding to Voice, responding to Pain or Unresponsive? Acute confusion is a significant indicator for clinical risk, thus acute confusion must be assumed new unless proven otherwise.[83,84] The ACVPU should be followed up with a formal assessment of the patient's score on the Glasgow Coma Scale (see below).

Glasgow Coma Scale

When performing a more focused assessment, a neurological observation chart incorporating a Glasgow Coma Scale

(GCS) is used. The GCS was first described in the early 1970s as an objective and reliable measure of conscious state in patients with head injury.[85–88] The GCS is an internationally accepted measure of conscious state in victims with head injury,[87,89,90] and is now used extensively in non-trauma populations.[89,91,92]

The GCS evaluates three key categories of behaviour that most closely reflect activity in the higher centres of the brain: eye opening, verbal response and motor response. These behaviours enable us to determine whether the patient has cerebral dysfunction.[87,93] There are separate scoring criteria for adults, children and babies, and the appropriate chart should be selected. The GCS evaluates each of these parameters by allocating a numerical score (see Tables 13.4 and 13.5). The scores for each parameter are then added up to give a total out of 15.[86] Because the lowest number that can be given for each part of the assessment is 1, the lowest score that can be given is a GCS of 3. 'Coma' is arbitrarily defined as a GCS score of < 8, and a GCS score ≤ 8 has been used to indicate the need for endotracheal intubation.[91,95–97]

Although widely used in emergency care, research has shown variability in the reliability of the GCS,[89,90,93,98] making consistency of its application an important aspect of the nursing management of patients with a neurological emergency.[90] It is best if the same emergency clinician does the assessment each time, so that if there is a change in score it can be attributed to the patient and not the evaluator. At change of shift or transfer of the patient, the nurse escort or paramedic and receiving nurses should perform the evaluation together in order to avoid misinterpretation and to ensure continuity. Sleeping patients must be woken before commencing the evaluation. A deterioration of one point in the 'motor response' or one point in the 'verbal response' or an overall deterioration of two points is clinically significant and must be reported to medical staff.[87,93]

The Paediatric Glasgow Coma Scale (PGCS) is a modification of the GCS. Assessment of conscious state in infants and young children is difficult due to developmental progression and lack of verbal response in young children.[85,89] Well children may have decreased responses because of fear, and crying may be misinterpreted as a normal response in the context of significant neurological pathology.[85,100,101] If using the adult GCS, it is expected that a child will have a reduced score. Refer to Chapter 35 for further details.

GCS assessment

Assessment of eye-opening tests the function of the arousal mechanisms in the brain stem. There are four possible responses when assessing eye opening: spontaneous, to speech, to pressure and none. If the patient is unable to open their eyes due to paralysis, this should be documented as a 'P', and if the patient's eye is closed secondary to swelling, a 'C' should be documented.[102]

TABLE 13.4 GLASGOW COMA SCALE[85,86]

	SCORE
Eye opening	
Spontaneously	4
To speech	3
To pressure	2
None	1
Verbal response	
Orientated	5
Confused	4
Words	3
Sounds	2
None	1
Motor response	
Obeys commands	6
Localising	5
Normal flexion (withdrawal)	4
Abnormal flexion	3
Extension	2
None	1

TABLE 13.5 PAEDIATRIC GLASGOW COMA SCALE[94]

	SCORE
Eye opening	
Spontaneously	4
To speech	3
To pain	2
None	1
Verbal response	
Coos, babbles	5
Irritable, cries	4
Cries to pain	3
Moans to pain	2
None	1
Motor response	
Normal spontaneous movement	6
Withdraws to touch	5
Withdraws to pain	4
Abnormal flexion	3
Abnormal extension	2
None	1

Verbal response may be assessed as: orientated (5), confused (4), inappropriate words (3), incomprehensible sounds (2) and no response (1). To be assessed as orientated, the patient must *correctly* tell the emergency care provider their name, location, day, month and year. Do not assume that a patient is orientated because they are conversing with you in a normal manner; they need to be able to correctly answer the above questions to be assessed as orientated. If verbal response is altered by other processes, for example, dysphasia, aphasia or facial fractures, this should be documented; and if the patient is intubated, a 'T' should be documented.

Motor response may be assessed as: obeys command (6), localises to pressure/pain (5), normal flexion/withdraws from pain (4), abnormal flexion to pain (3), extension to pressure/pain (2) and no response (1). Although responses of all limbs should be documented as part of neurological observations, only the *best* response counts towards GCS.[93] To be assessed as 'obeys commands', the patient needs to squeeze *and let go* of the emergency care provider's hands on command. It is important that the assessor does not place their hands into the patient's hands: this may elicit a reflex response that may be misinterpreted as obeying a command. If the patient is paralysed, a 'P' should be recorded.

There are two types of pressure, often referred to as painful stimuli: central and peripheral painful stimuli. Use caution when applying stimuli and do not cause injury such as bruising. It is recommended that when eliciting a response using pain that supraorbital pressure be used, but this carries a risk of damage to the eye, so should be used with caution and not used if facial fractures are suspected. Other recommended methods include jaw margin pressure (the flat of the thumb is applied to the corner of the maxillary and mandibular junction and pressure is increasingly applied for up to 60 seconds), squeezing the trapezius muscle or applying pressure to the earlobe.[102,103]

Each limb should be assessed. A peripheral painful stimulus needs to be applied if the patient does not appear to be able to voluntarily move the limb. Bilateral responses should be assessed. Assessing pupils is not necessarily effective in the sedated or paralysed patient; however, any changes in pupil reaction, shape or size are a late sign of raised intracranial pressure. Very small pupils may be a result of opiate or barbiturate use. A more detailed assessment of the patient with altered consciousness is discussed in Chapter 23.

Cognitive screening

As part of the neurological assessment, routine cognitive screening in older people is recommended to increase detection and management of cognitive impairment. Studies have reported that cognitive impairment, commonly resulting from dementia or delirium, occurs in up to 40% of older people presenting to the ED; however, it often goes undetected.[104–107] Cognitive impairment in hospitalised patients is associated with higher rates of adverse events, longer length of stay, functional and cognitive decline and increased medical and surgical complaints.[108–111] The presence of delirium has been reported to be an independent predictor for increased mortality in ED patients,[112] and if discharged from the ED with an undetected delirium, 6-month mortality increases by three-fold.[106,113] Patients hospitalised with dementia had a five-times higher length of stay compared to patients without dementia.[114–116]

A range of different tools exist to screen for cognitive impairment in the ED. To exclude delirium and cognitive impairment, the 4AT tool (Abbreviated Mental Test 4) is recommended as it is quick and easy for clinicians to use and no special training is required.[117] The 4AT tool measures four features: alertness, orientation, attention and whether there are any acute changes or fluctuating course. A score out of 12 is calculated: a score of 0 excludes delirium and cognitive impairment, a score of 1 to 3 indicates cognitive impairment and 4 or above is suggestive of delirium.[108,117] The Confusion Assessment Method (CAM) is a validated tool reported to accurately assess for delirium.[110,118] The CAM consists of four clinical features: 1) acute onset and fluctuating course; 2) inattention; 3) disorganised thinking; and 4) altered level of consciousness. The presence of features 1, 2 and either 3 or 4 are required to make a diagnosis of delirium. It is important to note that a poor score on screening is not a diagnosis but a trigger for further assessment.[104,108] The brief CAM (bCAM) was specifically adapted from the CAM algorithm for use in the emergency care environment. It maintains the four clinical features of the CAM; however, it has clear specified limits when determining inattention and disorganised thinking, and should only take 1 to 2 minutes to complete.[119] While the 4AT screens for both cognitive impairment and delirium, the CAM and bCAM do not assess for general cognitive impairment such as dementia. If the presence of delirium or cognitive impairment cannot be excluded, then the patient should be referred to aged care services for further assessment and management. See Chapter 38 for further information on cognitive impairment in older persons.

PRACTICE TIP

When handing over care of your patient, repeat your GCS and pain assessment with the paramedic or nurse receiving the patient to maintain consistency.

CERVICAL SPINE AND NECK

Examine the external neck for swelling and symmetry. Both the front and the back should be inspected for injuries. Look for enlargement of the parotid or submandibular glands and note any visible lymph glands. Palpate for lumps or enlarged lymph nodes.[102] The potential for C-spine injury in trauma patients should be considered as part of 'Airway' in the primary survey (see Box 13.1). All trauma patients should be presumed to have a cervical spine injury until proven otherwise; clearance of the cervical spine is discussed in Chapter 47.

PRACTICE TIP

All trauma patients should be presumed to have a cervical spine injury until proven otherwise.

Thorax

When examining the thorax, both the respiratory and the cardiovascular systems will be assessed. The respiratory assessment focuses on the function of the respiratory system to exchange

oxygen and carbon dioxide in the lungs and its role in regulation of the acid–base balance.[120]

Start by looking for signs of respiratory distress, such as tachy/bradypnoea, dyspnoea, nasal flaring, use of accessory muscles and cyanosis. The patient's speech, change in voice and drooling are also important signs. Examine the hands for clubbing, indicative of chronic illness such as bronchiectasis, endocarditis and empyema. Observe for evidence of respiratory failure, for example, hypoxia (central cyanosis), or hypercarbia (drowsiness, confusion, warm hands, bounding pulse, dilated veins and a coarse tremor).[121] Observe the pattern of breathing—see Table 13.6.

Inspect the shape of the chest, and look for deformities or asymmetry. The posterior and anterior surfaces should both be inspected; this is most easily done with the patient sitting on the edge of the bed. Note the position of the trachea and watch for unequal movement of the chest. This is more easily ascertained by placing both hands on the chest wall and feeling for movement. Palpation of the chest should identify any tender areas or crepitus. The clavicles, sternum, ribs, spine and shoulder blades should be palpated for any abnormalities and to determine if there are any factors that will restrict the patient's ability to breathe.[121] Respiratory excursion (thoracic expansion) should be measured. This is best assessed by standing behind the seated patient and placing the thumbs next to each other along the spinal processes at the level of the tenth rib. As the patient breathes in, the thumbs will separate. You should watch for a loss of symmetry, absence or delay in movement. These could indicate complete or partial obstruction of the airway, or underlying lung or diaphragmatic dysfunction on the affected side.[121]

Percuss the chest bilaterally for resonance. Dullness or hyperresonance indicates an abnormality.[54] Hyperresonance occurs when the lungs are hyperinflated with air, such as in chronic obstructive pulmonary disease (COPD), or if identified on one side of the chest it is suggestive of a pneumothorax. Dull sounds indicate underlying dense tissue due to fluid or soft tissue, such as pleural effusion or tumour. Dullness to the anterior lower lung fields is not conclusive, as the heart is on the left side and the liver on the right.[121]

Next, auscultate the chest. It is recommended that the patient cough first to remove sputum that could create adventitious sounds. Use the sequence shown in Fig. 13.3 and always compare one side with the other. Listen for normal breath sounds (summarised in Table 13.7), absent or decreased sounds, and added sounds such as wheeze or crackles. Absent or

TABLE 13.6 PATTERNS OF BREATHING

NAME	PATTERN OF RESPIRATION	AETIOLOGY (examples)
Eupnoea	Normal respiration 12–20 breaths/minute	
Tachypnoea	Rapid respiration > 20 breaths/minute	Fever, pneumonia, pleuritic chest pain
Bradypnoea	Slow and regular < 12 breaths/minute	Drug intoxication, tumour
Cheyne-Stokes	Hyperventilation alternating with apnoea	Left ventricular failure, raised intracranial pressure, high altitude
Biot's or ataxic	Irregular in depth and rate, with periods of apnoea	Neurological disorders/disease
Kussmaul	Deep, rapid respiration	Metabolic acidosis
Pursed-lip breathing	Expiration against partially closed lips	Chronic obstructive pulmonary disease

FIGURE 13.3 RECOMMENDED SEQUENCE TO AUSCULTATE THE CHEST[122]

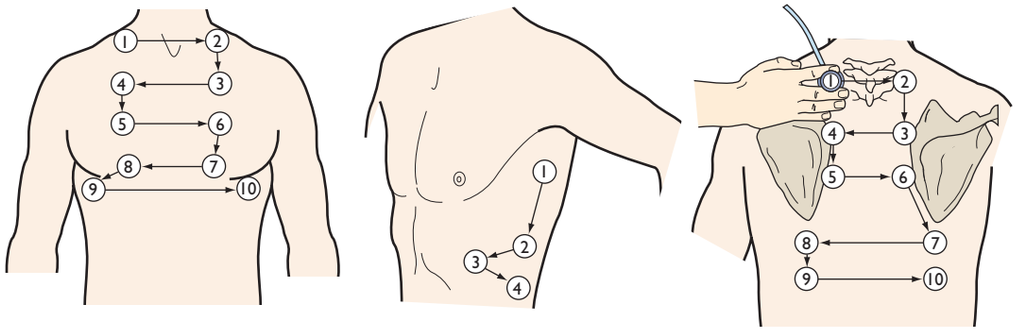


TABLE 13.7 NORMAL BREATH SOUNDS

SOUND	LOCATION
Vesicular	Lung tissue
Bronchovesicular	Near the bronchi
Bronchial	Lower part of trachea
Tracheal	Upper part of trachea

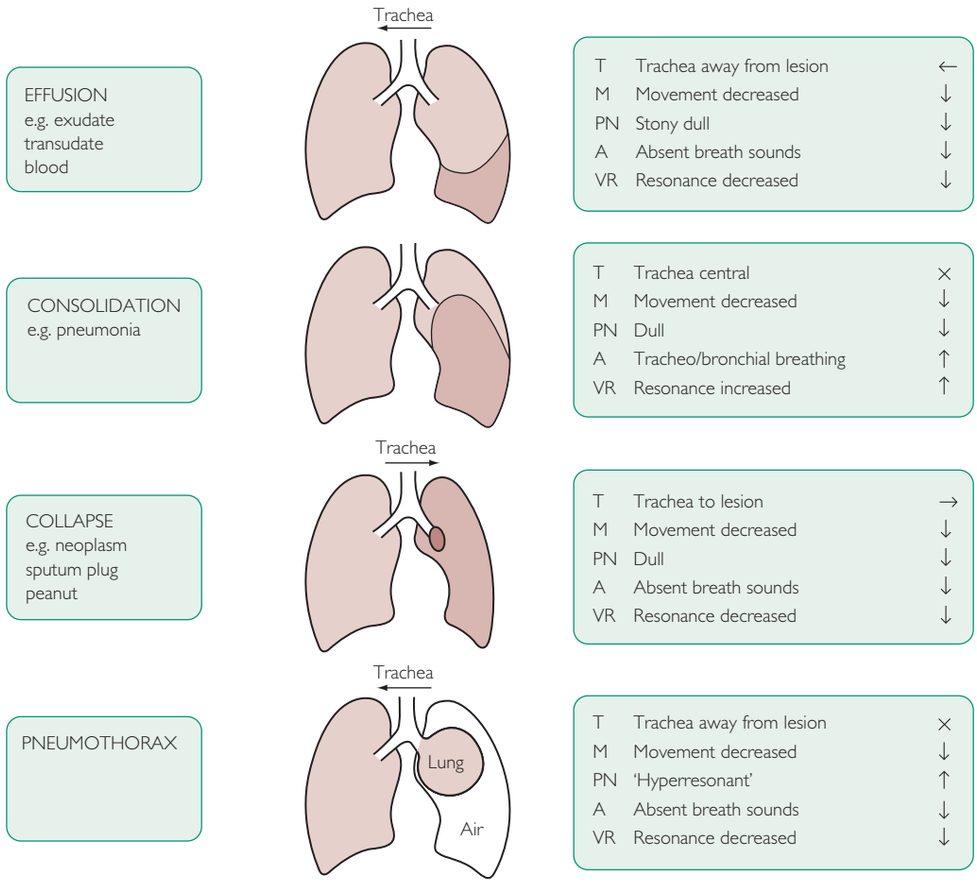
decreased breath sounds may be due to no air movement, caused by an obstructed airway or the presence of air or fluid preventing sound conduction (e.g. pneumothorax or pleural effusion). Wheeze is heard when air rapidly flows through constricted airways, such as in asthma, anaphylaxis or pulmonary oedema. Crackles are caused by either alveoli opening during inspiration or air bubbling through fluid, such as in heart failure, pulmonary oedema or infection. Inspect any sputum produced for colour, consistency, quantity and presence of blood.[121] Fig. 13.4 summarises the clinical findings for certain respiratory pathologies. See Chapter 21 for a more detailed description of respiratory assessment.

PRACTICE TIP

When assessing the patient for chest pain, ask them at rest, then when they take a deep breath and cough.

The purpose of examining the cardiovascular system is to assess the function of the heart as a pump, and of the arteries and veins throughout the body in transporting oxygen and nutrients to the tissues and in transporting waste products and carbon dioxide from the tissues.[124] Refer to Chapter 22 for the anatomy and physiology of these processes.

FIGURE 13.4 CLINICAL FINDINGS OF RESPIRATORY PATHOLOGIES[123]



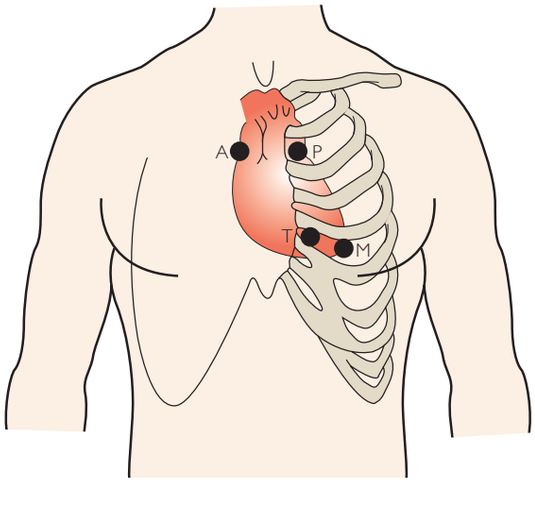
T: trachea; M: movement; PN: percussion note; A: auscultation; VR: vocal resonance.

Sit the patient at 45° and observe the jugular veins. Distension is suggestive of cardiac failure. Auscultate over the main areas of the heart (see Fig. 13.5), listening for normal heart sounds followed by added sounds and then murmurs. Normal heart sounds consist of two distinct parts. The first, named S1, is due to the mitral and tricuspid valves closing at the start of ventricular contraction or systole. It is best heard over the mitral and tricuspid areas (Fig. 13.5). The second sound, S2, is the closing of the aortic and pulmonary valves at the end of systole. It is best heard over the aortic and pulmonary areas[125] (see Fig. 13.5).

Added heart sounds are S3 and S4. S3 is the rapid ventricular filling as soon as the mitral and tricuspid valves open, and is sometimes referred to as a 'ventricular gallop'. It is common in children and young adults, but in the older adult is a sign of failure of the left ventricle, insufficient valves or constrictive pericarditis. S4 occurs from an atrial contraction (also known as atrial kick), which induces ventricular filling towards the end of diastole. This additional heart sound is called an 'atrial gallop'. It may be normal in middle age, but in an older adult it can indicate hypertensive cardiovascular disease, coronary artery disease, aortic stenosis, myocardial ischaemia, infarction and congestive heart failure.[125]

Murmurs are produced by turbulent blood flow. Turbulence occurs when there is high blood flow through a normal valve, or normal blood flow through an abnormal valve or into a dilated chamber. It is also caused by regurgitation of blood through a leaking valve. A pericardial friction rub is a high-pitched noise heard most loudly during systole and is due to inflammation of the pericardial sac. Identifying abnormal heart sounds is a skill that is generally mastered after the practitioner becomes proficient at distinguishing between S1 and S2.[125]

FIGURE 13.5 LOCATIONS FOR ASSESSING HEART SOUNDS[122]



M: mitral area; T: tricuspid area; P: pulmonary area; A: aortic area.

ABDOMEN

The abdomen can be divided into four quadrants (see Fig. 13.6). It is useful to consider this when examining the abdomen, as the area of pain or injury can give clues to the cause and help consider which structures may have been injured in a trauma patient.

The patient is best examined while lying flat with one pillow under the head and knees slightly bent. This allows the abdomen to become as relaxed as possible. Inspect the abdomen for scars, discolouration, distension, symmetry, pulsation and masses. Auscultate over each of the four quadrants. It is important to listen before touching, as palpating can alter the frequency of bowel sounds. Listen for 10–15 seconds, but for up to 4 minutes if bowel sounds are difficult to hear.[122] Normal bowel sounds occur every 5–20 seconds. Hyperactive sounds indicate increased peristalsis. They have a loud tinkling sound and can indicate diarrhoea or an early bowel obstruction. Hypoactive sounds occur infrequently and signify decreased motility of the bowel, and can indicate inflammation or late bowel obstruction. Absent bowel sounds indicate paralytic ileus.[126]

Before palpating the abdomen, allow the patient to empty their bladder, as this makes examination more comfortable. Start away from the pain. Look for tenderness, rebound tenderness, guarding and rigidity (which can indicate peritonism). Rebound tenderness is identified by pressing slowly and deeply over the painful area and then quickly releasing. Sharp pain is felt on release.[126]

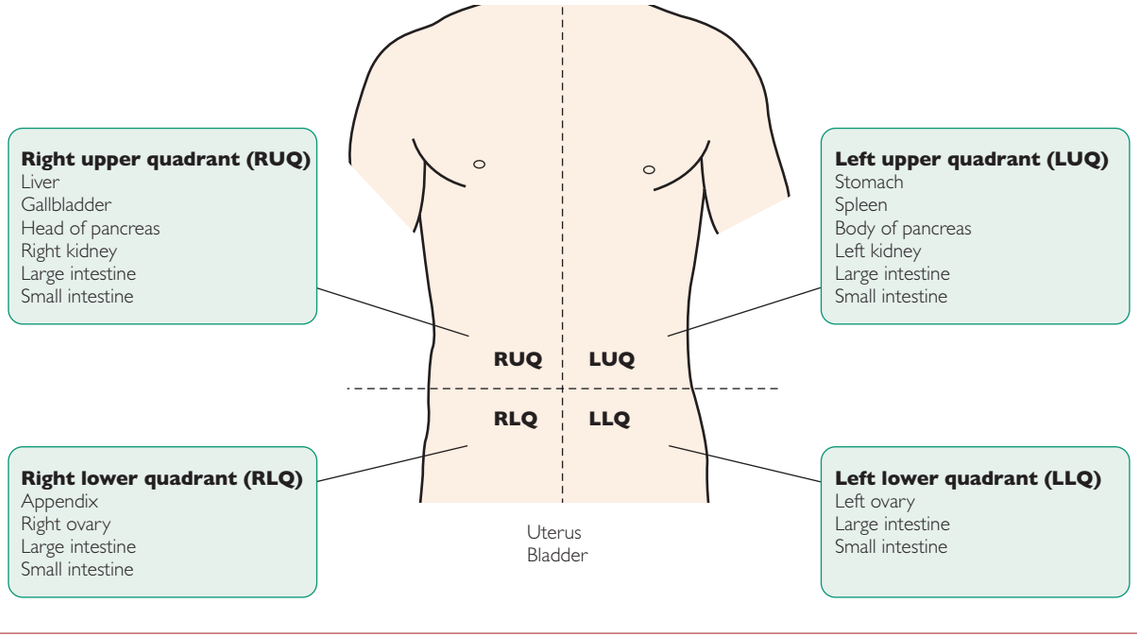
PELVIS

The presence of a genitourinary problem is usually elicited when taking a history. The patient might complain of difficulty passing urine, urgency, burning on micturition, altered volume and flank pain. A mid-stream urine sample is obtained for analysis (see Chapter 25 for more detail regarding renal and genitourinary assessment). In addition to performing a urinalysis, colour, clarity and any offensive odour should be noted.[127]

A menstrual history should be taken in female patients. It should include the date of the last menstrual period, contraceptive use and past pregnancy history. In women of childbearing age, a pregnancy test is indicated if pregnancy status is unclear.[128] Males should be assessed for problems specific to their genitourinary anatomy. A slow stream or inability to void may be indicative of a prostate problem. Painful swelling of the testes could mean a testicular torsion.[129] Presence of any discharge (penile/vaginal) or lesions may be indicative of a sexually transmitted infection (STI) and should prompt an inquiry about the patient's sexual history. The patient should be questioned about sexual partners and their health, contraception methods used, previous history of STI or high-risk behaviour.[128,129] It may be difficult to get a full history in the presence of a partner or parents, and so the emergency care clinician should attempt to speak to the patient alone. This may feel awkward, but most patients understand the necessity of acquiring a full history. Ascertaining sexual practices can provide a valuable arena for safe-sex education and referral, if appropriate.

Genitourinary trauma (saddle injuries) in children can be caused by non-accidental injury and the emergency care

FIGURE 13.6 DISTRIBUTION OF COMPONENTS IN THE FOUR IMAGINARY QUADRANTS OF THE ABDOMINAL SYSTEM[123]



clinician should be alert for this possibility when taking a history (see Chapter 39 for more detail regarding non-accidental injuries).

MUSCULOSKELETAL AND SKIN

Most presentations concerned with the musculoskeletal system are due to pain. This can be caused by trauma, infection and vascular, autoimmune or degenerative disease. Observation and palpation are done simultaneously and should start on the unaffected side to give a base for comparison. Inspect for size, symmetry, deformities, swelling and colour. Palpate for pain, tenderness, swelling and warmth. Compare range of movement to the unaffected side. Assess active range of movement before passive movement. A dislocated limb is considered an emergency if distal circulation and sensation is affected.[130] See Chapter 17 for more information about minor injuries.

Assessment of the skin comprises observation for colour, integrity, rashes, lesions and perspiration and palpation to feel temperature and turgor.[131] Skin colour can also give clues to the underlying pathology; for example, cherry red lips in carbon monoxide poisoning, generalised yellowness in jaundice or the pallor of anaemia.

The hands and feet should also be inspected for colour, warmth, movement and sensation. Adequate peripheral perfusion is established by feeling strong radial and pedal pulses and a capillary refill time of under 3 seconds. Observe the peripheral limbs for pitting oedema, as this can be an indication of heart failure.[125]

PRACTICE TIP

Observation and palpation of both sides/limbs are done simultaneously and should start on the unaffected side to give a base for comparison.

OTHER CONSIDERATIONS

Signs of an endocrine or haematological condition may become obvious during history-taking. Areas to focus on in the clinical examination are discussed in brief here.

Symptoms of an endocrine disorder can include changes in weight, appetite, bowel habits, hair distribution, pigmentation, sweating or alteration in menstruation, as well as lethargy, weakness, polyuria, polydipsia, headaches and impotence.[132] Therefore, it is best to focus on the specific presenting complaint (see Chapter 26 for more information about endocrine emergencies).

A haematological disease can affect red blood cells, white blood cells, platelets and haemostatic mechanisms. Patients may present with anaemia, which is characterised by weakness, tiredness, dyspnoea, fatigue or postural dizziness. Platelet or blood-clotting disorders may present with easy bruising or bleeding problems. Recurrent infections could be an indication of a disorder of the immune system. Laboratory testing of blood confirms the diagnosis. See Chapters 27 and 29 for further discussion.

Mental health assessment

A mental health assessment should consist of gathering general information, then following with more specific questions to clarify ambiguities and confirm or refute initial impressions. The main areas looked at are: appearance (cleanliness, posture, gait), behaviour (facial expression, cooperation, aggression, agitation, activity levels), speech (form and pattern, coherent, logical), mood (apathetic, irritable, optimistic or pessimistic, suicidal), affect (blunted, flat, reactive), thought (stream/speed of thought, preoccupied, content, delusional, safety of patient and others), perception (hallucinations, auditory, visual, smell, taste, touch), cognition (orientation to time, place, person, attention and memory) and insight and judgement (understanding of their condition).[133] For further information on mental health emergencies, see Chapter 36.

PRACTICE TIP

The main areas looked at when performing a mental health assessment are: appearance, behaviour, speech, mood, affect, thought, perception, cognition and insight and judgement.

SPECIAL CONSIDERATIONS

Physiological and anatomical age-specific differences must be taken into account when collecting the patient's history and performing a clinical assessment. Paediatric patients are not just 'small adults', but have physical, cognitive and developmental differences as they progress from infancy and childhood into adulthood. Examination of children can also be challenging as they can often be uncooperative and are often reliant on their carer to provide information about their history.[134] The familiar adage in paediatrics that 'children are not just small adults' could be adapted to the care of geriatric patients. Older people have a higher proportion of chronic diseases, which can make assessment challenging and places them at increased risk of acute illnesses.[135,136] Several age-related structural and physiological changes develop in geriatric patients. See Table 13.8 for a summary of anatomical and physiological differences in paediatric and geriatric patients. For more detail on the assessment and care of paediatric patients and older people, see Chapters 35 and 38 respectively.

PRACTICE TIP

The patient's age must be taken into consideration when performing an assessment.

Changes that occur in pregnancy should also be taken into consideration when assessing the pregnant woman. The development of the baby, as well as hormonal changes, affect the anatomical structure and physiology of the female. See Chapter 34 for further details on the assessment and management of the pregnant patient.

OBESE PATIENTS

The prevalence of obesity is increasing globally and presents several challenges for emergency clinicians, both pre-hospital and in the ED.[137–139] Several physiological changes occur in obese patients which emergency clinicians must be aware of, including chest wall resistance, increased abdominal pressure, decreased lung capacity, increased airway resistance, increased subcutaneous tissue and anatomical distortion.[140–143] These changes may impact on assessment findings and place patients at higher risk of chronic diseases, such as hypertension, diabetes and obstructive sleep apneoa.[144] Bariatric surgery is becoming increasingly popular to assist with weight loss in these patients, resulting in increased presentations to the ED with postoperative complications.[141,145] The collection of a complete patient history, in addition to a comprehensive physical assessment, is key to determining treatment needs and prioritising care for bariatric patients. To ensure the accurate assessment and safe care of bariatric patients pre-hospital and in the ED, emergency services must have the appropriate equipment.[137,144] When measuring blood pressure, for example, the correct sized cuff is essential to ensure an accurate measurement is obtained. A range of manual handling equipment is also available to ensure safe transport of the patient to hospital and to facilitate safe manual handling once the patient has arrived at hospital.[146]

INTERVENTIONS

During the assessment process, a range of interventions may be initiated. This includes simple nursing care, such as repositioning the patient, dressing a wound or the administration of medications such as antibiotics. Some treatments may be nurse-initiated, or carried out in response to a medical order. The delivery of interventions should be prioritised in order of urgency, following the ABCDE approach to ensure all life-threatening conditions are treated first.

Interventions will occur simultaneously with other aspects of the assessment. While helping the patient to get onto the trolley you will already have started to gather historical data, taking note of how the patient moves and signs of pain. You might observe if they have some difficulty breathing, and oxygen therapy may be indicated, or they may appear to have severe pain, so analgesia is given. An intravenous cannula may need to be sited. In the pre-hospital setting this may be used to administer fluid resuscitation or drugs; in the ED setting it could be used to administer analgesia and to collect blood for laboratory testing. It is important to note that isolated pathology is not an indication for the insertion of an IV cannula.

Before delivering care the emergency clinician should question if the care they intend to deliver is best practice. While research knowledge is produced and published at an increasing rate, translation of research into clinical practice remains inconsistent and delayed.[147] Increasing demands for emergency care, and limited support received to change practice, restrict the emergency clinician's capacity to access, critique and adopt research into their clinical practice.[148] As a result, patients who present to the ED frequently do not receive optimal care, with the incidence of preventable adverse errors ranging from 36% to 71%.[149] Clinicians should refer to clinical practice guidelines and pathways available to assist in the delivery of evidence-based care.

TABLE 13.8 AGE-SPECIFIC COMMONALITIES

SYSTEM	PAEDIATRICS		GERIATRICS	
Cardiovascular	S3	Heard in up to a quarter of children	Coronary artery disease	A high incidence over age 60
	Murmurs	Heard in up to 50% of 3- to 7-year-olds		
Respiratory	Inhaled foreign object	At risk of obstruction due to small airway	Lung function	Declines with age
			Pneumonia	Increased risk of death with age
Gastrointestinal	Abdominal pain	Appendicitis, intussusception	Gastric and duodenal ulcers	At greater risk and mortality 4–10 times greater from GI bleeding
	Vomiting and diarrhoea	Caused by viral infection. Give fluids to prevent dehydration	Constipation	Due to decreased mobility and fluid intake or as side-effect of medications
Genitourinary	Scrotal swelling	Generally caused by hernia, but if acutely painful consider torsion	Prostatism	Enlarged prostate causing micturition problems
	UTI	Requires follow-up due to risk of renal scarring	Acute renal failure	Function declines with age, side-effects from medications
			UTI	Due to increased urinary stasis, obstruction or presence of IDC
Neurological	Meningitis	Common in childhood during neonatal period	Dementia	
	Convulsions	Occur in 20% of children under 5 years. Commonly due to fever	Acute confusional state secondary to infection	May be the only sign of infection
			Head injury	Minor trauma can result in significant head injury
Head, ears, eyes, nose and throat	Tonsillitis	If chronic may cause upper airway obstruction, sleep apnoea	Decreased vision	Physiological changes occur in aged eye
	Otitis media	Common until age 7	Ulceration of cornea	Eyelids lose elasticity and turn inwards
			Epistaxis	Due to anticoagulants, hypertension
Integumentary	Jaundice	Common in neonates, but in older children viral hepatitis is the commonest cause	Paper-thin skin	Easily damaged and difficult to heal
	Rashes	Most likely due to measles, chickenpox, with fever	Hypothermia	Increased risk due to fat loss
Musculoskeletal	Painful limb in absence of trauma	Septic arthritis. Present with fever and hot, swollen joint	Osteoporosis	Makes bones more fragile and can sustain fractures from minor trauma
Mental health	Depression and mood swings	Common in adolescence	Depression	Due to social isolation or loss of independence

PRACTICE TIP

Clinicians should refer to clinical practice guidelines and pathways available to assist in the delivery of evidence-based care.

All patients need to be re-evaluated for a response to these interventions and for any deterioration in general condition. Based on the findings of the re-evaluation, more interventions may be required or, in an ED setting, medical review sought earlier.

DIAGNOSTICS/INVESTIGATIONS

Diagnostic tests may commence in the pre-hospital setting, such as the performance of 12-lead ECGs, which, in some settings, are sent to the local hospital during transport to expedite patient transfer to the angiogram suite/catheter lab on arrival to hospital for patients requiring rapid reperfusion. When a patient arrives in the ED there is then an opportunity to obtain more extensive diagnostic and laboratory tests. The availability of this will depend on the facility. Most major metropolitan hospitals will have access to 24-hour facilities; however, in more rural and remote areas access may be restricted, particularly after-hours.[16,150]

While the primary responsibility for determining which diagnostic and laboratory tests are required remains that of the medical practitioner, paramedics and ED nurses need to understand why particular tests might be required and the significance of the results. This will help with the early identification of sick or complex patients, initiating investigations and their subsequent reporting to medical staff. Rather than ordering standard groups of tests for particular sets of presenting symptoms, clinicians need to consider whether the tests they order are relevant to the patient's current condition. For example, ordering thyroid function tests can be fairly common practice for many presentations, yet it is important to think critically about whether this is clinically indicated. If it *is* indicated, findings may not result in clinical intervention in the acute ED setting, for reasons such as time delays in receiving results. However, results can be followed up by the GP if the patient is discharged, or can prevent delay in inpatient treatment; for example, if blood collection did not occur in the inpatient unit until the following day.

There are certain other tests that are performed during an assessment to either confirm or rule out a diagnosis. Electrocardiograms (ECGs) are usually performed on any patient presenting with chest pain, jaw pain, difficulty breathing, nausea and vomiting or collapse. Falls in older persons that are not witnessed could be a result of a cardiac cause, and an ECG should also be recorded.[151] All patients with a suspected cardiac problem should have continuous cardiac monitoring according to department protocol (see Chapters 16 and 22 for more detail on ECGs). Blood glucose levels (BGLs) should be obtained and recorded for all patients with diabetes and in patients who present with collapse, altered consciousness level, multiple abscesses or non-healing wounds, dizziness and nausea and vomiting, and in neonates[84] (see Chapter 16 for more details on BGL). Nurse-initiated x-rays are also a consideration when a patient presents with pain over a distal limb from trauma. Nurses will have to have completed additional training before being assessed as competent to perform this skill, and it will depend on whether the facility has a policy or procedure in place to support this practice (see Chapter 16).

PRACTICE TIP

Rather than ordering standard groups of tests for particular sets of presenting symptoms, clinicians need to consider whether the tests they order are relevant to the patient's current condition.

REASSESSMENT

Reassessment of the patient is essential to monitor patient progress and to ascertain response to interventions. If at any time the patient's condition deteriorates it is important to return to the DRSABCDEs to ensure life-threatening conditions are identified and treated first. When evaluating care and monitoring patient groups, a structured approach should be employed, focusing on relevant body regions, which is repeated at appropriate intervals according to the condition of the patient.[4] The clinician should also review results from any investigations performed (to gain a complete understanding of the patient's condition) and consider the priorities and ongoing plan for the patient.

COMMUNICATION

Effective communication and respectful human relationships with all those involved in the patient's care impact the delivery of safe patient care, emotional intelligence and job satisfaction, and influence how clinicians feel about themselves.[152–157] As paramedics and nurses, we have a responsibility to provide safe and high-quality care. Throughout the assessment process it is essential that communication occurs on several levels: paramedic to paramedic, paramedic to nurse, paramedic/nurse to patient and family/carers, nurse to nurse, and nurse to medical staff. Although paramedics and ED nurses are extremely busy, a large proportion of their time is spent communicating, so good communication is an essential aspect of care and can either facilitate a relationship or create barriers. On this note, public surveys, practitioner accounts, emerging policy and practice-based research are unanimous: communication determines clinical quality, patient safety, clinicians' wellbeing and public satisfaction.[156–159]

PRINCIPLES OF COMMUNICATION

Communication is a reciprocal process in which messages are sent and received between two or more people. The interaction is often interchangeable, with the speaker receiving messages from the person listening and the listener sending messages while the other is speaking.[160]

In general, there are two parts to communication: the verbal and non-verbal expression of the sender's thoughts and

feelings. Verbally, cognitive and affective messages are sent through words, voice inflection and rate of speech; non-verbally, messages are conveyed by eye movements, facial expressions and body language (see Box 13.6). Non-verbal communication can send powerful messages, such as a suspicious glance, a warm smile or eyes widened with fear. However, when telephones or other electronic devices are used to communicate, the effect of gestures and other non-verbal communication is lost.[161] Additionally, mask-wearing creates a physical barrier and reduces the efficiency of non-verbal communication; however, conscious non-verbal communication, particularly use of the eyes, can mitigate some of the challenges experienced.[162] The following basic principles of communication are important to consider:

1. It is impossible not to communicate. All behaviour has a message of some sort. As well as the more obvious carriers of messages like words or gestures, saying or doing nothing is in itself a message. Once a message has been sent it cannot be retracted.
2. Every communication has a context and relationship aspect.
3. A series of communications can be viewed as an uninterrupted series of interchanges. There is no clear beginning or ending to a series of interchanges—communication between two individuals has a history and a future in itself and is affected by the past experiences of each individual.
4. All communication relationships are either symmetrical or complementary, depending on whether they are based on equality or inequality. With a status or power difference between two people, such as between a nurse and a doctor, the complementary relationship will affect any communication between them. In general, how communication is interpreted depends on the relationship the sender has with the receiver.[163]

COMMUNICATION IN THE ED

Effective communication, both among clinicians and between clinicians and patients, is critical in the provision of safe and quality healthcare, yet EDs are becoming increasingly challenging healthcare environments for clinician–patient communication.[158,164] Poor communication practices have consistently been identified as a major cause of adverse events, leading to avoidable patient harm in hospitals around the world.[156,164–166] A number of studies have examined the degree of communication interruptions experienced by clinicians in the ED and the implications for patient safety.[167–170] The ED is well known for being an 'interrupt driven' area,[171] and nurses are interrupted on average once every 6 minutes.[172] Although there have been numerous studies on interruptions in the ED, conclusive strategies to effectively manage these interruptions have not been established.[171,173,174]

One Australian study[164] observed communication across a number of EDs and found two broad areas of communication that affect the quality and safety of the patient journey through the department: how medical knowledge is communicated, and how clinician–patient relationships are established and maintained. Both of these are crucial for effective communication and to deliver care effectively.[164]

BOX 13.6 FACTORS THAT HAVE AN IMPACT ON COMMUNICATION[160]

Type of language used	Jargon, dialect, social linguistics
Paralinguistic features	Pitch, tone, pace, emphasis and volume
Body language	Posture, touch, eye contact, proximity, facial expression, gestures
Social	Age, gender, ethnicity, power, social status, relationship
Psychological	Attitudes and beliefs, prejudices, perceptual distortions, defence mechanisms, frame of mind/mood, stress, trust
Environmental	Privacy, layout of room, odours, lighting, colour

COMMUNICATING WITH OTHER HEALTH PROFESSIONALS

Clinical handover

Paramedics, nurses and doctors undertake segregated and distinct preparation for clinical practice, yet are expected to communicate effectively with each other in the workplace and ensure excellent and accurate clinical handover. There are three distinct transitions of care when handover occurs: the paramedic handing over to the triage nurse or resuscitation team on arrival at the ED; nurse-to-nurse handover at change of shift; and handover by the emergency nurse to the ward nurse. Patients are often critically unwell and may be unstable at the time of handover, while available resources and ED overcrowding may contribute to further constraints.[166,170] The aim of handover in all circumstances is to ensure a seamless exchange of information between care providers.[109] It is acknowledged that without a proper structure to the handover, vital information is likely to be forgotten and this can lead to adverse outcomes.[109,156,165,166,170] Continuing work has been conducted to establish and evaluate structured clinical handovers to reduce communication errors,[156,165] with different tools suited to different practice environments.[175] It is recommended that structured, standardised clinical handovers are implemented, but that flexibility for the context is applied.[109] The mnemonic IMIST-AMBO (**I**dentification of the patient, **M**echanism/Medical complaint, **I**njuries/information relative to the complaint, **S**igns vitals and GCS, **T**reatment and trends/response to treatment—**A**llergies, **M**edications, **B**ackground history and **O**ther (social) information)[176]—is a recommended structure used for handovers from paramedics to emergency staff, and is discussed in detail in Chapter 42. ISBAR (**I**ntroduction, **S**ituation, **B**ackground, **A**ssessment/Agreed plan and **R**ecommendations/**R**ead back) is a demonstrated effective strategy that can be employed to promote good communication with other in-hospital staff (Box 13.7).[177] Variations to ISBAR, such as the use of ISoBAR (**I**dentify, **S**ituation, **O**bservations, **B**ackground, **A**gree to a plan, **R**esponsibility and risk)

BOX 13.7 THE ISBAR COMMUNICATION TOOL

I	**Introduction: identify yourself and introduce the patient**
S	**Situation: what is the main problem? What are your observations?**
B	**Background: pertinent information, including past medical history**
A	**Assessment/Agreed plan: include the clinical assessment and the plan of care**
R	**Recommendation/Read back: outline any outstanding items that need attending to and clarify and check for understanding.**

TABLE 13.9 LEVELS OF GRADED ASSERTIVENESS AND EXAMPLES[152]

LEVEL	EXAMPLE
Level one: express concern with an 'I' statement	I am concerned about ...
Level two: make an inquiry and offer a solution	Would you like me to ...
Level three: ask for an explanation	It would help me to understand ...
Level four: a definitive challenge demanding a response	For the safety of the patient you must listen to me

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and SHARED (**S**ituation, **H**istory, **A**ssessment, **R**isk, **E**xpectation, **D**ocumentation) have been implemented in other clinical settings, highlighting the importance of knowing healthcare guidelines for clinical handover practice. Additionally, it is important to acknowledge that handover is a social, yet stressful time,[156] and that respect and kindness for our colleagues must be maintained.[178]

Using a communication tool allows accurate and relevant information to be shared in a structured format. This leads to a better patient experience, increases the credibility of the handover and allows the person receiving the information to be in possession of all the facts.[109,179] This will lead to them being able to quickly prioritise what they need to do first when taking over the care of the patient.

Escalation of care/graded assertiveness

The ability to escalate care in an assertive manner is a vital skill, particularly in the emergency environment when a patient's condition may be unpredictable. Regardless of how intimidating a situation may be or how senior other staff are, it is important to articulate concerns in order to keep the patient safe. This assertive way of communicating is termed graded assertiveness. Graded assertiveness is a concept adopted from the airline industry where adverse incidents occurred; even though staff knew something wasn't right as they were too afraid to be assertive when communicating.[7] The employment of graded assertiveness aims to assist the staff member in escalating their concerns through a stepped process (Table 13.9).[152]

It is important to emphasise that assertiveness is not the same as aggression. Aggression is disrespectful and denies the other person the opportunity to express their opinions, whereas assertiveness is respectful and allows the expression of opinions.[152,180,181]

COMMUNICATION WITH PATIENTS

Dialogue is more than sending and receiving messages verbally and non-verbally, and each patient should be treated as a unique individual.[182] Research has shown that patients who come to the unfamiliar territory of the ED often experience feelings of bewilderment, loss of control, anxiety and frustration, particularly as they are moved through a number of areas, experiencing prolonged and often unexplained waiting times.[159,183] If clinicians are sensitive to the patient's concerns, communication can be improved.[183] Difficulties arise when the patient is unable to communicate clearly due to their clinical condition, cognitive impairment, treatment side-effects or language. This can further aggravate feelings of anxiety, frustration and stress as they lose control over their life and decisions. There is also evidence to support that patients with communication problems are more at risk of preventable adverse events.[164,184]

The AIDET™ (**A**cknowledge the patient, **I**ntroduce yourself, **D**uration of procedures/test/interaction, **E**xplanation of procedure/test/procedure, **T**hank the patient for their cooperation) mnemonic, developed by the Studer Group, encapsulates five principles of communication identified to promote patient satisfaction[185] (see Box 13.8 for an explanation of each principle). These communication strategies assist clinicians in making patients feel safe and calm, and to gather the key pieces of information needed to treat patients safely.[185]

Communication can also occur through physical contact: touch may communicate empathy and demonstrate warmth.[161] Language barriers may necessitate the assistance of an interpreter with knowledge of healthcare terminology to ensure the content is adequately translated.[161,186]

As a result of greater-than-ever access to medical information through superior communication systems and technology, patients and families recognise and may understand the basic definition of many medical terms and jargon. However, there are large variations of comprehension which may be of clinical significance. Healthcare providers should not assume a patient or family member's level of understanding, and an attempt should be made to determine what their level of comprehension is, particularly when new information is given. Using plain language, a range of modalities to provide information and remembering to actively listen to the patient and/or their family member are key strategies.[186,187]

Communication and patient outcomes

It is important to discuss the relationship between communication, suboptimal care and patient outcomes, as there is a direct correlation.[109,188] The most common characteristics of international crisis-prompted healthcare inquiries are: care is not

BOX 13.8 THE AIDET™ COMMUNICATION PRINCIPLES[185]

A—ACKNOWLEDGE THE PATIENT

Greet the patient and other visitors with a smile, maintaining appropriate eye contact. Demonstrate a warm, receptive attitude. Address the patient by their name. Ask them what they would like to be called. Acknowledge others present.

I—INTRODUCE YOURSELF AND YOUR ROLE

Introduce yourself by name and role. Indicate your desire to help the patient by providing them with your full attention.

D—DURATION OF THE PROCEDURE/TEST/INTERACTION

Provide a brief explanation of how long any procedures/tests will take to perform or for results to come back. Let them know who they are waiting for and possible time-frames. Inform them of any delays.

E—EXPLANATION OF PROCEDURE/TEST/INTERACTION

Keep the patient informed to enable them to make informed decisions and reduce any anxieties they have about the care of their condition. Provide details about tests and procedures, such as why it is being performed, who will perform it, whether there is pain or discomfort associated with the test, and what will happen afterwards. Provide them with an opportunity to ask questions.

T—THANK THE PATIENT FOR THEIR COOPERATION

Thank the patient for their cooperation and patience. Ask if there is anything else you can do.

Courtesy Studer Group.

delivered in multidisciplinary teams; people do not communicate well across the clinical divides; and care is not delivered in a coordinated, organised way. The variety of healthcare areas investigated demonstrates that no one specialty is immune from error if poor communication exists.[109,189,190]

Positive interpersonal relationships between clinicians and patients result in a higher degree of patient involvement, which in turn produces better clinical outcomes.[164] Poor communication can lead to delays in transfer from the ED, and there is a correlation between increased hospital length of stay (LOS) and increased LOS in the ED. This occurs particularly on weekend shifts when patients are not reviewed by specialist teams and are often placed on outlying wards not related to the patient's condition, secondary to insufficient appropriate beds.[191]

Poor communication has been related to staff dissatisfaction, stress and burnout in the nursing profession,[192–194] with stress, wellbeing and burnout linked to patient safety incidents.[195,196] In particular, burnout has been associated with avoidable mistakes, ineffective delivery of care, and nursing shortages.[197] This highlights the need for strategies to be in place to identify and reflect on the causes of stress and burnout, and how it impacts on patient care at both an individual and system level.[198,199]

Patient experience

There is good evidence to suggest that a patient's positive experience is directly associated with safety and clinical effectiveness, across a range of disease areas and population groups.[200] Common public expectations of emergency care include staff communication with patients, appropriate waiting times, the triage process, information management and good quality of care.[157,159,201] Often the healthcare system is portrayed negatively by the media,[199] and while the paramedic and emergency nurse cannot control all of the elements that contribute to this, effective communication is achievable. The way in which communication is conducted is closely related to ED patient satisfaction,[157,159,187,202] and has been linked to the interpersonal skills of staff.[203] Patients and their families need provision of information/explanation on a consistent basis, especially on arrival.[204] Emergency care clinicians need to consider core themes of information sharing during care provision: communication, emotion, waiting, care delivery, physical, and environmental needs.[159] Respectfully communicating the cause of delays, patient management plans and how to get to other locations within the hospital are themes that will improve a patient's satisfaction.[187,205] Regular communication with patients in the waiting room and explaining reasons for any delays improves satisfaction levels, and reduces perceived waiting times.[185,206–209]

OPEN DISCLOSURE

Open disclosure means providing an open, consistent approach to communicating with patients following an adverse event. This includes expressing regret for what has happened, informing the patient about the event and potential consequences, creating a forum for the patient to discuss their experience, and providing feedback on investigations, including the steps taken to prevent an event from recurring.[109] It is also about providing information that will enable systems of care to be changed to improve patient safety. The Australian Open Disclosure Framework provides a nationally consistent basis for open disclosure in Australian healthcare. It was endorsed in 2013 and replaced the former Open Disclosure Standard.[210]

Improving healthcare safety begins with ensuring that communication is open and honest, and immediate. This includes communication between healthcare professionals and patients and their carers. It also includes communication between healthcare professionals, healthcare managers and all staff. It is important that when this framework is put in place people feel supported and are encouraged to identify and report adverse events, so that system improvements can be identified and acted on. This should include the following:

- Providing an environment where patients, their family and carers:
  - receive the information they need to understand what happened
  - can contribute about the adverse event and, where possible and appropriate, participate in the incident review, creating a culture where patients, their family and carers, clinicians and managers all feel supported.
- Integrating open disclosure with investigative processes to identify why adverse events occur.
- Implementing the necessary changes in systems of clinical care based on the lessons learnt.[210]

Disclosure is required where a patient has suffered some harm (physical or psychological) because of treatment. This may be a recognised complication or the result of human or systems error. As soon as an event is noticed, you should ensure patient safety, perform any immediate care interventions required and inform your manager. If the emergency clinician notices harm caused under the care of another clinician, they should always speak first to their manager and the senior clinician of the team involved. If these members of staff are unwilling to initiate the disclosure process, refer the matter to the person responsible for clinical risk or medical administration.

DISCLOSURE WITH THE PATIENT AND FAMILY

The individual making the disclosure should be the most senior healthcare professional involved; for example, the nurse manager, and someone with experience or training in communication and open disclosure. Effective communication is pivotal to the open-disclosure process. Patients, their families and carers, may become upset or angry when they have suffered an adverse event. This is a natural response, so it is important not to become angry or react defensively in this situation. An adverse incident is an emotionally charged event for all parties. Guidelines for communicating with the patient and family can be found on the Australian Commission on Safety and Quality in Health Care (ACSQHC) website,[210] and include the following:

- Arrange a face-to-face meeting that allows adequate time for detailed discussion as soon as possible after an adverse outcome has occurred.
- Listen actively and respectfully to the patient.
- Use plain language and avoid jargon.
- Acknowledge the validity of the emotions the patient and/or carer may feel.
- Where a family member is present, include them in your dialogue where appropriate.
- In all discussions, avoid defensiveness and laying blame. Avoid statements that include terms such as 'fault', 'blame' or 'feel responsible'.[210]

Support for staff involved

If directly involved in an adverse event, staff have the right to seek appropriate legal advice and to disclose information to legal advisers in a manner that ensures it attracts legal professional privilege. The breaking of bad news can be extremely stressful on staff members.[210] They have the right to be treated fairly by the institution and to receive natural justice and procedural fairness, and the right not to be defamed.[210] While an expression of regret and an apology is a part of open disclosure, it is important to avoid speculative statements such as:

- 'I'm sorry—I appear to have made an error in judgement.'
- 'I apologise for this mistake.'
- 'It is my fault that this has happened.'

The best approach is to give an honest and factual account of what happened.

Healthcare professionals who have been involved in an adverse event may be angry with themselves or someone else for what occurred. They may feel that they have let the patient down. It is important to make sure they receive emotional support and advice after the incident, as well as feedback once the investigation has been finalised.[211,212]

Needs of the family

The psychosocial care of family who arrive in the ED with a critically ill relative is stressful for families, as well as complex and challenging for staff.[213,214] Quite often, staff are focused on stabilising a patient and may overlook or ignore anxious family members. Research has shown that communication with family members is the most important need of family members of critically ill patients within the ED.[212,214,219] During such stressful situations, suffering can be exacerbated when there is a lack of information provided.[215] Another important family need is for relatives to be close to their loved one.[213,214,219] Often family members may be left out in the waiting room or be asked to step outside while an assessment or treatment takes place, yet family consider being close to their loved one very important.[214,216] Staff should invite family members to be with the patient whenever possible and engage in family-centred care.[217]

In light of the various definitions of family and the regulations regarding the release of information, how people define themselves has implications for clinicians (see Chapter 4 for further details). It is important to ask the patient who they consider to be family, who they wish to receive information and who should be allowed in the treatment area. When that is not possible, the clinician must be guided by good judgement, policy and regulations and ethics.[218]

Although emergency care clinicians are usually very busy, it can be crucial to conduct a brief family assessment, and determine if social work intervention may be required. There are several ways to develop a dialogue with families and conduct a quick assessment of family strengths and potential resources.

- Introduce yourself to the patient and the family.
- Ask about people at the bedside and determine their relationship to the patient.
- Call patients by name, after having asked how they wish to be addressed.
- Explain procedures and equipment, and be honest about the anticipated length of the wait.
- Repeat information; the anxiety of being in the ED, even in non-urgent situations, decreases the ability to remember what has been said.
- Stop in the patient's doorway or at the foot of the bed to update them and their family whenever the situation in the ED changes.

After any explanation, always ask if anyone has questions. If the answer is not known, say so, then find out the answer. When encountering a family in the initial stages of a life-changing event, paramedics and ED nurses often interact with and provide support for family members who feel despair, fear, anger, guilt or helplessness, or who are in a state of disbelief or denial. Family members present at the scene, or who come to the ED with a loved one nearing the end of a long and debilitating illness, may be fatigued, frustrated or ambivalent. The paramedic or emergency nurse may be the first to recognise a family that is bordering on crisis because of the drain on their emotional and physical resources.

Family needs have been extensively researched, and include the need for information, participation, reassurance, closeness, support and comfort.[213,214] Practical ways to meet these are presented in Box 13.9.

The Australian Institute for Patient and Family-Centred Care (AIPFCC) promotes the relationship between the patient,

BOX 13.9 FAMILY NEEDS[205,211]

Ways to meet families' needs include:

- listen compassionately
- compliment the family on how well members are coping
- involve the family early
- communicate regularly
- praise family strengths
- acknowledge how difficult the experience is
- commend patience
- update them on relative progress and prognosis
- answer questions honestly
- give consistent information
- demonstrate caring (offer a chair and a cup of tea/coffee)
- call them at home to update on patient condition or any change
- inform about transfer plans as they are being made.

their family members and the healthcare professional with the aim to 'ensure safer, more cost effective and satisfying health care experience for all involved'.[219] The core values of patient and family-centred care are:[219]

- compassionate care and communication
- collaboration between patients and carers, both professional and family
- innovation in our practices
- care practices that are sustainable over time
- care that is accessible to both patients and carers
- respectful communication
- ethical behaviour and practice at all times
- openly and honestly sharing information and our experiences.

Documentation

Documentation should occur regularly and be contemporaneous, occurring with each intervention rather than once at the end of a shift. Documentation must also be legible and identify clearly who the author is; this is becoming easier with the implementation of electronic records. Treating clinicians should be able to read the patient notes and determine the patient status (waiting for review, awaiting ward bed), condition, interventions that have been performed and response to those interventions. Up-to-date documentation also allows the patient to be transferred without delay.[109] The use of structured frameworks, such as HIRAID™, have demonstrated improved accuracy of documentation, further evidencing the benefits of structured tools to not only support patient assessment, but communication through documented findings.[220] Documentation is not only a way to communicate the assessment, findings and the plan of care for the patient to other clinicians, it is a legal record of the patient's care (for more details please refer to Chapter 4).

ESSENTIALS OF CARE

Essential care refers to fundamental elements of patient care that have a direct impact on the wellbeing of both patient and healthcare worker.[221] In Australia, NSW Health introduced the Essentials of Care (EOC) program with the intention of improving the experience of everyone involved in patient care (the patient, their families, their carers and staff) by bringing the focus back to caring. Essential care encompasses care that is important to the patient, but is subjective and may be influenced by several factors, such as (but not limited to) culture, age, gender, pain and the patient's previous healthcare experience.[222] Regardless, all patients want to be treated with respect and compassion, particularly when feeling unwell or experiencing pain.[222] Culture and pain are discussed in detail in Chapters 5 and 18 respectively.

While paramedics and ED nurses are expected to work under pressure to many standards, guidelines and protocols related to patient care,[202] it is important that they remain compassionate. Compassionate care is beneficial across a variety of healthcare settings, but it is often reported as lacking among healthcare workers.[223] Recent evidence suggests that healthcare worker empathy declines as clinical experience increases.[223] Therefore, it is important that paramedics and ED nurses regularly consider how the patient and/or their loved ones may be feeling. Paramedics and ED nurses may find it useful to ask themselves: 'How would I want this patient to be cared for if it were me or my mother/grandfather/husband/child?' A similar approach should be taken when interacting with the patient's relatives, but with respect to culture and the wishes of the patient. This question provides an answer that sets a benchmark for nursing practice.[216]

Increasing demands on the health service, increased patient wait times and increased ED length of stay (LOS) impact on both patient and staff experience. Paramedics may need to wait with a patient until a treatment space becomes available, and patients may need to wait extended periods of time for medical review, test results and/or an inpatient bed. This means that paramedics and ED nurses need to consider other essential aspects of patient care such as personal hygiene nutrition and elimination. However, as the roles of the paramedic and ED nurse become more technical, less time is available for direct patient care. Less time for direct patient care has been related to a drecrease in job satisfaction.[224] Paramedics and ED nurses may feel frustrated that they are too busy to provide quality care and may be morally and emotionally torn as they struggle to find the time to meet the basic needs of patients.[225] It is important that paramedics and ED nurses acknowledge these feelings and escalate these issues with management. Care for staff is discussed in more detail later in the chapter.

RISK ASSESSMENT

Increased length of stay in the ED has been associated with adverse events, particularly in elderly patients.[226] While ED length of stay may be outside of our control, performing a risk assessment on each patient will facilitate the identification of potential problems and instigate suitable interventions. Two key areas of care—reducing risk and providing high-quality care—are served by a series of principles (see Table 13.10) and are closely related. Good risk management is an important component of high-quality care; if patients are assessed thoroughly and on a continuing basis then problems may be detected and treated early, thus preventing the development of unnecessary complications.[153] Initial screening and ongoing assessment of patients in line with local and governmental policy will provide information that can help the paramedic and ED nurse plan their care.

TABLE 13.10 PRINCIPLES OF PRACTICE[153]

REDUCING RISKS TO PATIENTS	PROVISION OF HIGH-QUALITY CARE
Recognition of the specific needs of critically ill patients, particularly those who are unconscious, sedated or immobile	Development of knowledge and skills for practice
Recognition of specific complications that may require special observation or treatment	Evidence-based practice
Vigilant monitoring and early recognition of signs of deterioration	Optimal use of protocol-driven therapy
Selection, implementation and evaluation of specific preventive measures	Competent practice
Management of potentially detrimental environmental factors that may affect the patient	Efficient and safe practice
	Selection and application of appropriate nursing interventions
	Monitoring the effects of nursing interventions
	Evaluation of nursing practice

A variety of risk assessment tools are available and include (but are not limited to) falls risk screening in elderly patients, pressure injury risk, non-accidental injury in children and domestic violence screening, to name a few.

CARING

Caring is a core characteristic of healthcare. In emergencies, lifesaving procedures are, of course, the priority, but it is important not to forget to meet the patient's psychological needs as well.[182,211,228] Professional caring consists of three essential elements: competence, caring and connection. *Competence* involves empowering, connecting and educating people, making clinical judgements and being able to do tasks and take action on behalf of people. Aspects of *caring* are outlined below and involve being dedicated and having the courage to be appropriately involved as a professional paramedic and nurse. The *connection* aspects of professional caring involve initiating professional connection, which requires both the patient and the clinician to reach out and respond. A bridge is built when patients realise the connection and feel free to ask for help. Professional intimacy then occurs when patients begin to trust the clinician. As a result of the connection and professional intimacy, emergency clinicians work with patients towards their common goal. Professional boundaries are discussed in more detail in Chapter 3.

An uncaring encounter can consist of incompetence and indifference, lack of trust, mutual avoidance and disconnection between the nurse and the patient. The clinician may be perceived as inconsiderate, insensitive, disrespectful and disinterested.

ASPECTS OF CARING IN EMERGENCIES

- *Being open to and perceptive of others:* patients are often affected by the acute event, as they have abruptly lost control of their own situation and are in a position of dependence. A caring emergency clinician has to be sensitive to such patients and capable of interpreting or predicting their needs. The caring clinician must adopt an open attitude and should communicate openly with the patient.
- *Being genuinely concerned for the patient:* paramedics and nurses with this caring quality display genuine feelings of goodwill towards patients and a holistic view of caring.
- *Being morally responsible:* from the patient's perspective, calling an ambulance and presenting to the ED are not usually planned events. Suddenly, they become dependent on others to help fulfil their basic needs. Clinicians have to act to maintain and strengthen the patient's dignity in this serious situation.
- *Being truly present:* this means that clinicians have to be attentive to the present moment, and be present in dialogue, in listening and responding. They should be present in the situation, physically and emotionally. In order to be truly present in the dialogue, paramedics and nurses require good communication skills.[182]
- *Meeting the patient's psychological needs* could reduce the risk of developing post-traumatic stress syndrome. To create an authentic encounter, paramedics and nurses need to display several aspects of sensitive and effective communication, be dedicated and have the courage to be appropriately involved.[182] It is important to find the balance between being overly involved and too detached.[229]

CARE OF PARAMEDICS

Just as patients require care, so do paramedics. The role of the paramedic has moved away from its focus of giving first aid and transporting patients to hospital, to a more dynamic role that encompasses higher levels of patient care and instigating interventions based on a thorough patient assessment.[230] Paramedics are frequently exposed to highly stressful situations,[229,231] increasing physical and verbal aggression, and there is less down time between calls as the service continues to get busier.[230] There is further concern for the physical and mental wellbeing of not just paramedics, but all healthcare workers as we face the challenges of a global COVID-19 pandemic.[232,233] While formal practices such as debriefing and counselling are advocated to aid resilience, support from colleagues, family and friends, as well as a sense of humour, are reported as methods that assist with resilience.[229] Globally, paramedics have higher rates of post-traumatic stress disorder, anxiety and depression than the general population.[234] Historically it may have been an accepted belief that to do their job well, paramedics should appear 'tough', but by failing to talk about a traumatic incident, the likelihood of suffering stress increases. While it is important that the individual is aware of their own stress and that they act on symptoms,[234] it is just as important that the organisation is responsive to any reports made.[235] Peer support is also imperative,[235] and the value of social support from colleagues cannot be underestimated as it can help to mitigate the impact of traumatic events.[231] Managers in the profession should be empathetic and acknowledge staff reports and, where possible, offer regular debriefing or counselling, and encompass this into the role. Regular debriefing and the promotion of an employee assistance program that offers free, confidential counselling to employees should be encouraged. Even if staff feel it is unnecessary, a regular check-in may be of value, particularly when there has been a significant event.

CARE OF EMERGENCY NURSES

ED nurses also require care. Providing thorough and effective care for emergency patients can be emotionally draining and highly demanding for the busy ED nurse, who often fail to notice or acknowledge their own needs.[236] A certain amount of stress at work can be a motivator, but repeated exposure to stressful events can have adverse outcomes.[237] Nurses have been extensively studied as groups experiencing high levels of stress, burnout and fatigue.[238] Being aware of the signs of stress and developing and implementing coping mechanisms is essential.[239] Nurses depend on colleagues and friends for support and value debriefing sessions, whether it be an opportunity to share feelings or a clinical review of events. The effectiveness of sessions should be evaluated and staff health and welfare monitored by ED managers and colleagues. An awareness of colleagues' needs is key to providing the support they require.[211] Employee assistance programs should also be made available for nursing staff as well as regular debriefings for significant events. Paramedics and ED nurses should also aim to eat a well-balanced diet, exercise regularly and rest when possible. The use of alcohol and/or drugs to alleviate stress should be avoided as this can exacerbate issues. Other strategies such as mindful meditation have proven to improve nurses' stress, anxiety, depression, burnout and wellbeing,[240] with some facilities running weekly mindful meditation programs for staff.[241]

PRIVACY AND DIGNITY

Respect, autonomy, empowerment and communication have been identified within the literature as being the defining attributes of dignity. In the busy ED, maintenance of dignity may be unintentionally overlooked. Patients may be nursed in a corridor, or other patients and relatives may overhear personal information, which does not lend itself to upholding the dignity, privacy and confidentiality of the patient. Discretion should be used if updating relatives in a crowded waiting room; triage assessment should be conducted in a safe and private location, and the patient's dignity should be maintained at all times.[242]

PERSONAL HYGIENE AND PREVENTING COMPLICATIONS

Patients presenting to the ED can be in various states of hygiene as a result of injury, vomiting, incontinence or neglect. Also, despite the 4-hour Emergency Treatment Performance Target (formerly known as National Emergency Access Target),[243] patients may remain in the ED for an extended period of time with the inability to maintain their regular hygiene routine. Personal hygiene is closely related to individual esteem and sense of wellbeing, and is an important sensory determinant by family members that influences their perception of the quality of care the patient is receiving and the confidence they have in the staff. While personal hygiene is a basic right for all patients, it should not be placed above the need for other therapies, forensic requirements and rest.[153]

As with all aspects of care and treatment, the patient has the right to refuse personal hygiene measures. Bathing or washing patients provides opportunities for the emergency nurse to assess the patient's skin and tissue. Often this enables the nurse to identify tissue damage that requires treatment, and to identify dressings or wounds that require attention. Some patients who are sweating, incontinent or bleeding need to be washed and their linen changed more often. Wet, creased sheets alter skin integrity and may cause pressure on dependent areas, increasing the risk of pressure-ulcer development. A bed bath can be a major and painful undertaking, which often requires at least two people to support and move the patient, along with prophylactic pain relief before commencement.[153] The length of time taken to wash a patient, the environmental temperature and the patient's clinical condition are factors that affect cooling. Water on exposed skin causes rapid heat loss and shivering increases metabolism and oxygen consumption, which is detrimental in a compromised patient (see Chapter 28).

It is essential to maintain patient privacy and avoid interruptions that affect the dignity of the patient. All necessary equipment should be prepared prior to performing any procedure with the patient to ensure interruptions are minimised and dignity is maintained. In areas where curtains are used to separate treatment spaces, ensure there are no gaps when they are drawn for procedures. Ensure any necessary discussion remains professional and that the patient is not spoken over. Careful handling of patients to reduce skin friction and shear during repositioning and transfers can prevent skin tears.[153] The management of skin tears is discussed in Chapter 17.

PRACTICE TIP

Consider the length of time a patient has spent, or will spend, in the ED and ensure opportunities are given for attending to their personal hygiene needs. This will differ from person to person and depend on their condition.

EYE CARE

Eye care aims to provide comfort and prevent infection, and is an important aspect of caring for the sedated or unconscious patient.[158] There are a number of physiological processes that protect the eye. The eye is protected from dryness by frequent lubrication, facilitated by blinking. Antimicrobial substances in tears help prevent infection, and the tear ducts provide drainage. When the eye is unable to close properly, tear film evaporates more quickly.[244] If these mechanisms are compromised, the patient is at risk of eye problems. The blink response may be slowed or absent in some patients, such as individuals receiving sedatives and muscle relaxants, which can potentially cause keratopathy, corneal ulceration and viral or bacterial conjunctivitis. Patients who are exposed to high flows of air/oxygen may also be vulnerable to its drying effects.[153] See Chapter 32 for assessment and management of eye injury.

Eye care and the administration of artificial tears should be provided if required, if the patient complains of sore or dry eyes, or if there is visible evidence of encrustation. If a patient is receiving high-flow oxygen therapy via a mask, they may benefit from regular 4-hourly administration of artificial tears to lubricate the eyes and prevent the drying effect of oxygen.[153] Conjunctival oedema is a common problem associated with positive-pressure ventilation with high positive end-expiratory pressure (PEEP) (above 5 cmH_2O), and prone positioning often results in the patient's inability to maintain eye closure.[153] Eye closure may be maintained by applying a wide piece of adhesive tape horizontally

to the upper part of the eyelid. This usually anchors the lid in the closed position, but allows the eyelid to be opened for pupil assessment and access for eye care.[153]

PRACTICE TIP

Apply 4-hourly artificial tears to lubricate the eyes to prevent the drying effect of high-flow oxygen therapy.

ORAL HYGIENE

Poor oral hygiene is unpleasant, and causes halitosis and discomfort. Oral care aims to ensure a healthy oral mucosa, maintain a clean and moist oral cavity, prevent pressure ulcers from devices such as endotracheal tubes (ETTs), prevent trauma caused by grinding teeth or biting the tongue and reduce bacterial activity that leads to local and systemic infection.[153] Although mouth care is one of the most basic nursing activities, in some cases lack of oral hygiene can lead to serious complications or increase the risk of complications, such as ventilator-associated pneumonia (VAP) in the ventilated patient.[153,245] Studies have shown that mouth care decreases the risk of VAP and that chlorhexidine mouthwash or gel reduces the risk of developing VAP from 24% to about 18%.[246]

If the ED patient has had an extended stay, a toothbrush, toothpaste and assistance to clean teeth should be provided. The use of mouth swabs only for oral hygiene is ineffective.[247] Many oncology and immunology patients suffer from mouth ulcers and are on oral care regimens at home. The maintenance of such a regimen is essential for patient comfort and may require the emergency nurse to organise and obtain prescribed mouthwashes from the pharmacy department. Regular sips of fluid or mouthwash with water for those patients who are nil by mouth prevents drying, coating and subsequent oral discomfort. If the patient is able to suck and swallow, small pieces of ice can be very refreshing,[153,248] yet it is important to monitor the amount of ice given so as not to give excessive amounts that would equate to numerous glasses of water. The application of lanolin or petroleum jelly will ease the discomfort of dry lips and maintain the integrity of the lips.

For patients with crusty build-up on their teeth (commonly seen in the elderly or dehydrated patient), a single application of warm dilute solution of sodium bicarbonate powder with a toothbrush is effective in removing debris and causes mucus to become less sticky, although its use is sometimes contested as it can cause superficial burns.[153] Its use should be followed immediately by a thorough water rinse of the mouth to return the oral pH to normal.[153,249]

In the sedated, intubated or unconscious patient, absence of mastication leads to a reduction in saliva production. Saliva produces protective enzymes. An endotracheal tube can cause pressure areas in the mouth (which may be exacerbated if the patient is oedematous). Once the patient is in the intensive care unit, an oral care program will be commenced.

PRACTICE TIP

Ensure patients who have an extended stay in ED have access to a toothbrush and toothpaste as using mouth swabs alone is ineffective.

PREVENTION OF DECONDITIONING

Positioning patients correctly and as soon as possible in the ED, while considering cardiovascular stability, respiratory function and cerebral or spinal injury, is important to contribute to the prevention of common short- and long-term complications of immobility.[153] The complications of immobilisation in the critically ill include pressure injuries, venous thromboembolism and pulmonary dysfunction, such as atelectasis, retained secretions, pneumonia and aspiration.[250] Ideally, the immobile patient should be positioned with the head raised by 30° or more, as this prevents the tongue from obstructing the airway, reduces the risk of aspiration from secretions and saliva and aids cerebral venous drainage, helping to reduce intracranial pressure.[8] It is also important to remember that Australian healthcare organisations are required to be accredited for Standard 8: Preventing and Managing Pressure Injuries.[251]

Provided there are no contraindications, function should be stimulated by regular passive movements of all limbs and joints to maintain both flexibility and comfort. One week of bed rest substantially reduces skeletal muscle mass.[252] Movement of the lower legs, ankles and feet can be achieved in conjunction with a gentle massage or application of moisturiser. Family members may wish to undertake this, giving them an opportunity to provide the patient with care and touch. The emergency nurse should encourage the able patient to perform exercises, and conduct an early physiotherapy referral for patients who may have an extended ED stay awaiting a ward bed.

Within the intensive care setting, the standard for body repositioning is 2-hourly, although this may not always happen.[153] Repositioning may be required more frequently, which will be determined by the nurse, based on patient factors and the clinical situation.[251] When planning to reposition the patient, check that there are enough staff available so that all the patient devices (e.g. endotracheal tube, intravenous lines) are managed and to give the patient a feeling of security during the positioning. It is advisable to have a designated leader in such circumstances to avoid injury or dislodgement of any devices.

PRESSURE INJURY PREVENTION

Many ED patients are at risk of pressure injuries due to immobility, lack of sensory protective mechanisms, excessive moisture, suboptimal tissue perfusion and environmental factors that cause pressure and friction: these issues are exacerbated in the critically ill.[110,253] Patients left on ambulance stretchers for prolonged periods due to delays in transfer of care are also at high risk of developing pressure injuries. The most common locations for pressure injuries are the bony prominences, such as the sacrum, the heels and the head.[227,253,254] Significant risk factors include the age of the patient, malnutrition,[253] and delays in the use of pressure-relieving mattresses (see Box 13.10).[255,256] Pressure injury risk-assessment tools, such as the Braden and Waterlow Scales,[257] can help nurses identify at-risk patients early.

Any pressure injuries should be documented and described in relation to size, grade/stage and treatment and monitored closely. Many facilities require pressure injuries to be reported. If a patient develops one pressure injury, there is a good chance they could develop another. While the pressure injury may not

BOX 13.10 RISK FACTORS FOR PRESSURE INJURIES[227]

- Advanced age
- Anaemia
- Contractures
- Diabetes mellitus
- Elevated body temperature
- Immobility
- Impaired circulation
- Incontinence
- Low diastolic blood pressure (< 60 mmHg)
- Mental deterioration
- Neurological disorders
- Obesity
- Pain
- Prolonged surgery
- Vascular disease

be evident in the ED, the initial reddened areas give clues to potential locations for development, and any preventative measures implemented in the ED contribute greatly to prevention.

Simple preventative measures include water-filled gloves under the heels, removing additional bed linen from under the patient which may have been transferred from the ambulance trolley, ensuring the patient is kept clean and dry (particularly patients with spinal precautions and incontinence), the use of foam boots and alternating pressure-relief mattresses and foam mattresses with adequate thickness and stiffness. However, none of these are a substitute for regular repositioning and avoiding pressure on any affected areas.[256] It is also important to document the details of position each time the patient is repositioned and communicate this on handover, as well as to maintain the patient's hydration and nutrition to improve tissue perfusion and integrity.

Patients are also at risk of developing pressure injuries and injury from a number of devices in everyday use, such as endotracheal tubes, backboards and blood-pressure cuffs (Table 13.11).[153] Close attention to detail with frequent observation of the patient, the patient's position and the presence and location of equipment is required to prevent skin damage.[153]

TABLE 13.11 RISK OF PRESSURE INJURIES FROM COMMONLY USED EQUIPMENT[153]

EQUIPMENT	RISKS
Endotracheal (ETT) tubes	Care should be taken when positioning and tying ETT tapes: friction burns may be caused if they are not secure; pressure injuries may be caused if they are too tight (particularly above the ears and in the nape of the neck).
	Moist tapes exacerbate problems and harbour bacteria.
Oxygen saturation probes	Repositioning of oxygen saturation probes 1–2-hourly prevents pressure on potentially poorly perfused skin.
	If using ear probes, these must be positioned on the lobe of the ear and not on the cartilage, as this area is very vulnerable to pressure and heat injury.
Blood-pressure cuffs	Non-invasive blood-pressure cuffs should be regularly reattached and repositioned. If left in position without reattachment for long periods of time, they can cause friction and pressure damage to skin.
	Care should be taken to ensure that tubing is not caught under the patient, especially after repositioning.
Urinary catheters, central lines and wound drainage	The patient should be checked often to ensure that invasive lines are not trapped under the patient. In addition to causing skin injury, they may function ineffectively.
Bed rails	Limbs should not press against bed rails; pillows should be used if the patient's position or size makes this likely.
Oxygen masks	Use the correct-size mask and a hydrocolloid protective dressing on the bridge of the nose to assist with prevention of pressure from non-invasive or CPAP masks, especially when these are in constant or frequent use.
Splints and cervical collars	Devices such as leg/foot splints and cervical collars can all cause direct pressure when in constant use and friction injury if they are not fitted properly.
Hard backboards	Hard backboards or spine-boards used by ambulance personnel for patient extrication cause pressure areas and should be removed on patient arrival to the ED or on initial log roll.

CPAP: continuous positive airway pressure.

NUTRITION

The impact of adequate nutrition on patient outcomes is well documented. The intake of nutrients, such as protein, calories, vitamins, minerals and fluids, provides the energy source required for growth of all body structures and maintenance of body functions, as well as supporting the immune function of the bowel.[258,259] Patients presenting to the ED are often in an altered metabolic state due to the stress response to illness, injury or starvation (when nutrient intake is unable to meet the body's energy demands). Wounds place increased metabolic and hence oxygen and nutritional demands on patients.[260] Patients with poor nutrition, including malnutrition, are at greater risk of complications, including pressure injuries, healthcare-associated infections and mortality, both in hospital and for up to three years following discharge.[110] Malnutrition also increases length of hospital stay and unplanned hospital re-admissions.[261] Critically ill patients are usually in a hypermetabolic state, characterised by rises in oxygen consumption and use of nutritional substitutes such as amino acids. Malnutrition and starvation increases electrolyte imbalances, muscle wasting, morbidity and mortality; delays recovery; impedes healing of acute and chronic wounds; interferes with the body's ability to fight infection; and increases the cost of hospitalisation.[262,264] Understanding the importance of nutrition and its effect on the

patient is integral for nurses to predict and promote successful outcomes and is a priority of care.[264]

While it is often inappropriate for the ED patient to have oral intake for a number of reasons (the potential to require emergency surgery, cerebral insult that compromises swallowing and gag reflexes, or altered level of consciousness), it is essential to establish nutritional status as soon as possible. Nutritional status should be assessed early and documented clearly and communicated to all relevant parties. In particular, stroke/TIA patients should have their swallow assessed early as this has been shown to improve patient outcomes.[265] Since the implementation of tools, such as the Acute Screening of Swallow in Stroke/TIA (ASSIST), the assessment can be performed by the emergency nurse.[266] Completion of a swallowing assessment will determine whether the patient can swallow safely and re-establish normal nutritional status or identify the need for further referral. The dietetics department should be notified of special requirements and speech pathology referral and assessment conducted promptly.

Particular consideration should be given to the diabetic patient and the monitoring of their blood glucose levels (BGLs); more so if their condition requires a prolonged fasting status. Alterations to their anti-hyperglycaemic medications may need to be made in consultation with medical staff and careful monitoring implemented.

ED patients who are clinically able to tolerate some form of diet should be encouraged to eat and drink and should be assisted if necessary, enlisting the aid of family members, if they are present and willing. This will help prevent the development of a compromised nutritional state.

ELIMINATION

Effective urine and bowel elimination is a basic human need, and adequate privacy, discretion and dignity is essential. While it can be difficult in a busy ED or in an ambulance, it is important to facilitate prompt toileting and maximise access to toilets while ensuring cardiac monitoring and bedrest are not disrupted.

More than one million people living in Australia and Aotearoa New Zealand suffer from urinary incontinence from causes such as poor pelvic floor tone, central nervous system disorders, spinal cord injury, fistulas and bladder disorders.[267] Also, the normally continent patient may present having been incontinent following a seizure or traumatic event. The paramedic and ED nurse must recognise the physical and emotional problems associated with urinary incontinence and frequency. The patient's dignity, privacy and feelings of self-worth must be maintained. The discreet disposal of soiled pads, patient sponging (wet skin contributes to pressure-injury development), cleansing of the perineum, provision of clean incontinence pads and referral to appropriate continence services, should be done if required. If urinary catheter insertion is needed, thorough cleansing and aseptic techniques are essential to prevent the development of urinary tract infections.

Bowel management

Good bowel care promotes patient comfort and reduces the risks of further associated problems such as nausea, vomiting and abdominal/pelvic discomfort. Maintaining good bowel care can range from promoting defecation to containing diarrhoea, as a result of changing therapies, medications, nutrition, hydration and mobility of the patient.[153] The consequences of constipation are not well defined, but can include increased abdominal distension, impedance of lung function, inability to establish adequate enteral nutrition and increased acquired bacterial infections.[153] Risk factors for constipation include: immobility, medications such as opiates, sedatives, anticonvulsants, diuretics and calcium channel blockers, reduced gut motility, a poor dietary intake, dehydration and older age.[153]

Interventions that can be commenced in the ED include exercise—even in the bed-bound patient—as peristaltic movement of the gut is stimulated. Diet and fluids are also important considerations in maintaining normal bowel function, ensuring, if clinically appropriate, that the patient receives adequate administration of fluid and diet in the ED. Prior to patient transfer to the ward from the ED, if the patient is at risk of constipation, ensure that oral aperients have been charted, if clinically appropriate, so that the risk has been handed over to the ward nursing staff and the patient has been educated on prevention techniques.

Recognising and managing loose stools/diarrhoea is just as important as it may signify a particular condition or medication side-effect. Potential complications, such as fluid and electrolyte imbalance, may occur and skin damage is likely, particularly in the incontinent or immobile patient. Protection for staff providing care, as well as other patients and relatives, should be considered and the requirement for isolation discussed with relevant infection control staff (infection control is discussed in Chapter 27).

Bowel care can be an embarrassing and even quite distressing issue for patients, particularly for those who may have lost control of their bodily functions or perhaps have developed particular routines to maintain regular bowel motions. Coming to the ED can interrupt routines and highlight embarrassing issues with bowel motions for the patient, therefore sensitive nursing care that respects the dignity of the patient is paramount.[153] It can be quite difficult for a patient to relax and open their bowels in the busy ED, particularly if limited to a bed pan behind a curtain that offers very little privacy.

SUMMARY

This chapter has discussed a 'head-to-toe' approach to assessment. The emergency clinician should consider the assessment process as more than just recording a set of vital signs. Although the process appears to be time-consuming, with practice and experience the emergency clinician is able to automatically and quickly proceed through the process. This is made easier by adopting an assessment template such as HIRAID™. Reassessment has been highlighted in monitoring dynamic changes in a patient's condition and comparing them with the baseline. This can help initiate timely and appropriate measures to maximise patient care and outcomes. Effective communication between healthcare providers, the patient and

their family, which acknowledges their concerns, is instrumental in patient outcomes and satisfaction. The emergency clinician conducting or commencing the discussed aspects of essential paramedic or nursing care contributes greatly to reducing the risk of the patient developing complications during their hospital stay. Simple measures, such as timely toileting of patients, will assist in maintaining comfort and dignity; documentation of nutritional status will help avoid malnutrition; regular pressure-area and skin care will help to prevent pressure injury development. While it is easy to be distracted by performing advanced procedures, it is vital that these basic but essential elements of patient care are provided and documented for the health, comfort and dignity of the patient and to prevent complications. It is also important to find time to care for ourselves so that we can continue to care for our patients.

CASE STUDY

PART A: PRE-HOSPITAL

You are the treating paramedic of a morbidly obese man in his 40s, who is complaining of shortness of breath. On arrival to his home the patient is sitting upright in a chair talking in short phrases, but complaining primarily of severe left leg pain.

QUESTIONS

1. Where would you start your assessment?
   a. Inspect his leg.
   b. Record a set of vital signs.
   c. Check his BGL.
   d. Assess DRSABCDE.

You assess the scene and identify no immediate dangers to yourself, so you approach the patient. He responds appropriately and you commence taking a history while performing your physical assessment.

2. What mnemonic could you use to structure taking the patient's history?

The patient's wife informs you that she called the emergency number as she is worried that his breathing has become more laboured over the course of the day. You also learn that the patient has a known history of type 1 diabetes and a chronic ulcer on his left leg, which has become malodourous.

3. What 'red flags' have you already identified in this patient?

While undertaking your physical assessment you identify that the patient has a respiratory rate of 28 breaths per minute with some mild accessory muscle use. Oxygen saturations are within normal parameters. On auscultation, air entry is equal. You inspect the left leg ulcer and find a red sloughy, odorous wound. There is decreased sensation to the affected limb, but strong pedal pulses present. You dress the wound to absorb the exudate and transport the patient to hospital.

4. How would you (the paramedic) structure your handover to the receiving emergency nurse on arrival to hospital?

PART B: AT THE ED

You are the emergency nurse receiving care of this patient in the acute treatment area.

QUESTIONS

5. How would you start your assessment?
   a. Collect the patient's history.
   b. Identify red flags.
   c. Perform a set of vital signs.
   d. Apply oxygen.
6. You commence your physical assessment. When attempting to check his blood pressure the cuff keeps popping off. What do you do?
   a. Tape it on with micropore.
   b. Not bother, he only presented with a leg ulcer.
   c. Find an appropriate-size cuff.
   d. Use the manual sphygmomanometer as you can stop inflating before the cuff pops open.

After completing the primary survey you perform a head-to-toe examination, including a focused respiratory assessment. You identify that the patient is still only able to speak in short sentences and has moderate accessory muscle use. The respiratory rate is counted at 32 breaths per minute, oxygen saturations measure 92% on room air and temperature 38.7°C. The patient denies any history of lung disease.

7. What new 'red flags' have been identified and how should you respond to these?
8. What diagnostic test is this patient likely to require?
9. Your patient suddenly becomes very sweaty and disorientated. What do you do next?
10. After medical review and initial treatment the patient is admitted into hospital. There is no access to a bed for several hours. What factors do you need to consider for his ongoing care?

Answers to Case Study Questions can be found on evolve **http://evolve.elsevier.com/AU/Curtis/emergency/**

USEFUL WEBSITES

Australian Institute of Patient and Family Centred Care, www.aipfcc.org.au/about.html.

Australian Resuscitation Council, Australian Resuscitation Council Guidelines, resus.org.au/.

Clinical Excellence Commission, NSW Health Government, www.cec.health.nsw.gov.au/.

College of Emergency Nursing Australasia, Peak professional association representing emergency nurses, www.cena.org.au.

COMPASS ACT Health, provides information on the early recognition of the deteriorating patient and provides a number of learning resources, www.health.act.gov.au/professionals/compass.

HIRAID™: The Emergency Nursing Framework, aci.health.nsw.gov.au/networks/eci/research/current-research-and-quality-activities/hiraid.

New South Wales Emergency Care Institute, set up to provide resources and support to emergency clinicians, www.aci.health.nsw.gov.au/networks/eci.

First2act, interactive online simulation package, first2act.com/.

National Safety and Quality Health Service Standards, www.safetyandquality.gov.au/wp-content/uploads/2011/09/NSQHS-Standards-Sept-2012.pdf.

The 4AT Rapid Clinical Test for Delirium, www.the4at.com/.

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