CHAPTER 1

Learning the Language: Terminology

Ian Peate

AIM

This chapter aims to provide insight and understanding with regards to the terminology used in the provision of healthcare related to anatomy, physiology and pathophysiology.

LEARNING OUTCOMES

On completion of this chapter, you will be able to:

- Discuss the terms anatomy, physiology and pathophysiology.
- Describe the prefixes and suffixes used in anatomy, physiology and pathophysiology.
- Explain the directional terms used in medicine.
- Describe the anatomical planes and anatomical regions of the body, and the body cavities.

Test Your Prior Knowledge

1. What do you understand by the term *pathology*?
2. What is the difference between a sign and a symptom?
3. How is the root word altered by a prefix or a suffix?
4. What are the contents of the thoracic cavity?

Introduction

Science, and particularly the provision of healthcare, is replete with Latin and Greek terminology. Latin names are used for all parts of the body and Greek terms are also common (the Greeks are said by many to be the founders of modern medicine). Paramedics and other healthcare staff use pathophysiological concepts as they work with people to whom they offer care and may be experiencing some type of health condition or disease.

Fundamentals of Applied Pathophysiology for Paramedics, First Edition. Edited by Ian Peate and Simon Sawyer.

Red Flag Alert: Jargon

Like any country with its own language, the medical field also has its own jargon. This is important so communication between healthcare professionals can take place quickly and efficiently without the need for too much explanation. It is a specific language that is not just used by paramedics, nurses, doctors and other people who are actively involved in the medical arena but is also important for all others who work in the healthcare arena (e.g. pharmacists, physiologists and dentists). Its correct use can have a significant impact on ensuring the best patient care.

What is important is that we are all speaking the same language; failure to do so or making assumptions can lead to error and mistakes.

Anatomy and Physiology

Anatomy discusses the study of the structure and location of body parts, while physiology is the study of the function of body parts. Both these terms are interlinked. Understanding where the body parts are located can help you to understand how they function. As an example, McGuiness (2021) explains that the various functions of the heart and the four chambers, together with the valves, make up the anatomy. Visualising these many structures can assist in understanding how blood flows through the heart and how the heart beats; this is related to its function and is its physiology.

Anatomy

The Body Map

Learning anatomical terminology is like learning a new language. Developing your learning, understanding more and adding different terms to your vocabulary can help you to talk confidently about the body. The anatomical directional terms and body planes present a universally recognised language of anatomy. When undertaking the study of anatomy and physiology, it is essential that you have key or directional terminology so that you are able to give a precise description as you or others refer to the precise location of a body part or structure.

Reflective Learning Activity

When you are next on placement, identify how many times during a shift you hear the various clinicians describe and discuss the anatomy, physiology and pathophysiology of a patient. Note the terminology being used and how there is a clearer understanding between the team when using one language – anatomical and physiological terminology.

All parts of the body are described in relation to other body parts and a standardised body position known as the anatomical position is used in anatomical terminology. An anatomical position is established from a central imaginary line that runs down the centre or mid-line of the body. When in this position, the body is erect and it faces forwards, with the arms to the side, palms face forwards with the thumbs to the side, the feet are slightly apart with the toes pointing forwards (Figure 1.1).

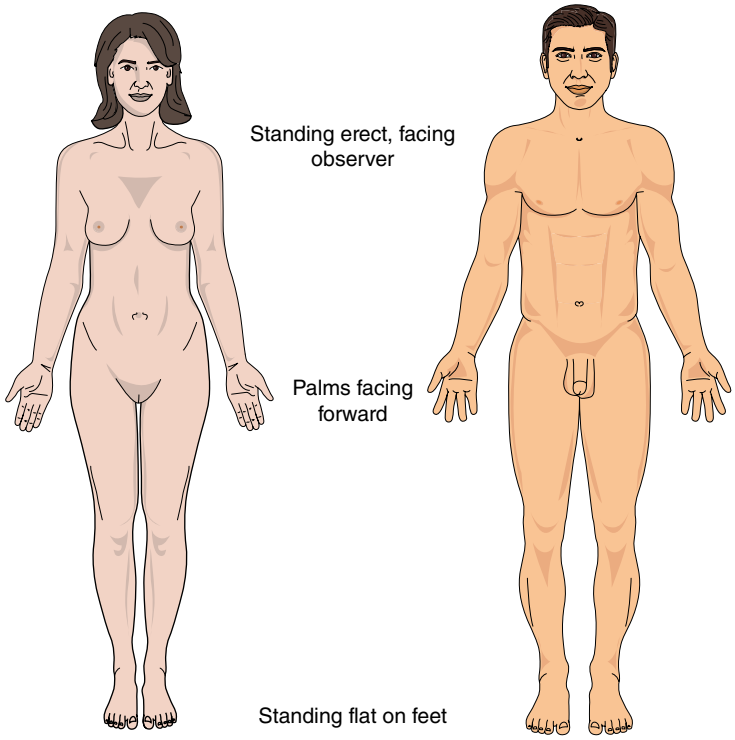


FIGURE 1.1 Anatomical position.

Orange Flag Alert: Speaking with Patients

While you are encouraged to use the correct anatomical and physiological terminology when conversing with other colleagues, caution must be exercised when speaking in front of and with patients. Paramedics can inadvertently use words and jargon that are strange to patients; they may not realise that the meaning is not clear. While there are some concepts that are familiar and obvious to paramedics, these same concepts may be alien to patients.

Try first to establish what the patient knows and understands before you launch into a discussion that begins at a level that is either too complex or too simple for the patient. Too often, our healthcare environments fail to recognise the needs of people with different levels of understanding about their health. This can mean that patients fail to receive the right care at the right time.

Use of jargon can instil fear, cause confusion and result in poor patient care.

The standard body 'map' or anatomical position (just like a map) is that of the body standing upright (orientated with the north at the top), with the feet at shoulder width and parallel, toes forward (Figure 1.1). Humans are bilaterally symmetrical. The standard position is used to describe body parts and positions of patients irrespective of whether they are lying down, lying on their side or facing down.

As well as understanding the anatomy and the physiology (the structure and function), understanding directional terms and the position of the various structures is also required. Table 1.1 lists common anatomical descriptive terms that you will need to become acquainted with. This list is not exhaustive, you will come across additional terms as you work through the various chapters. Figure 1.2 depicts anatomical positions.

TABLE 1.1 **Anatomical descriptive terms.**

Anatomical term	Relationship to the body
Anterior	Front surface of the body or structure
Posterior	Back surface of the body or structure
Deep	Further from the surface
Superficial	Close to the surface
Internal	Nearer the inside
External	Nearer the outside
Lateral	Away from the mid-line
Median	Mid-line of the body
Medial	In the direction of the mid-line
Superior	Located above or towards the upper part
Inferior	Located below or towards the lower part
Proximal	Nearest to the point of reference
Distal	Furthest away from the point of reference
Prone	Lying face down in a horizontal position
Supine	Lying face up in a horizontal position

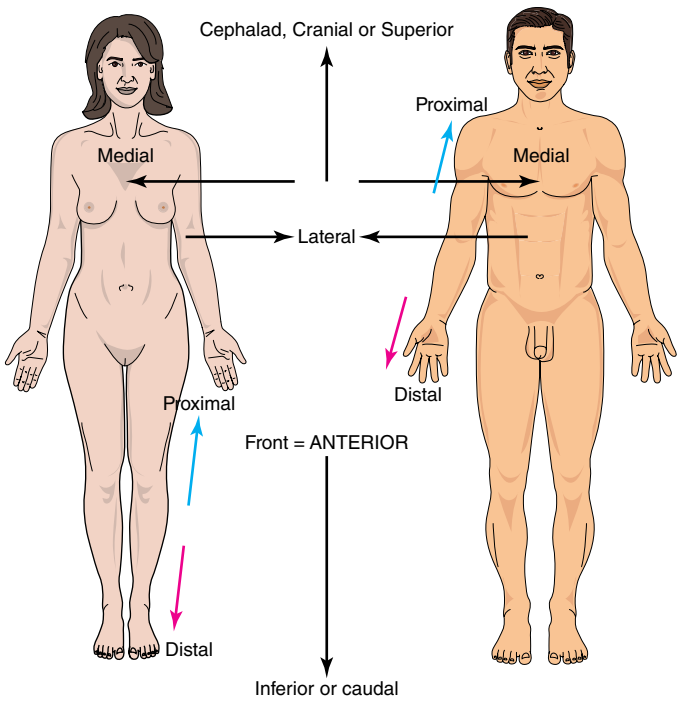


FIGURE 1.2 Anatomical positions.

Snapshot 1.1

You are on a call to a nursing home for a 70-year-old man who is dysphasic.

Pre-arrival Information

The patient is conscious and breathing.

Windscreen Report

The area outside the nursing home looks safe. There is an ambulance parking bay available close to the main door.

Entering the Location

As you arrive, a member of staff greets you; he is waiting at the door. He tells you that the patient was experiencing dysphagia and struggling to swallow his breakfast then he suddenly dropped his spoon. You are told that this is unusual for the patient, as he normally enjoys his breakfast and eats without any assistance.

On Arrival with the Patient

The patient has been put in the left lateral position in the communal dining area with a pillow supporting his head. You explain to the patient what you are doing using terminology that he will understand.

Patient Assessment

General appearance: The patient is alert and conscious, and he appears to be slumped to the left-hand side as if he has a left-sided hemiparesis. He is dysphasic.
Circulation to the skin: pale.
Work of breathing: normal.

Primary Survey

Danger: nil.
Response: alert on the ACVPU (alert, confusion, voice, pain, unresponsive) scale.
Airway: open, clear and patent.
Breathing: rate – appears normal rate (18 breaths/minute); there is no evidence of tachypnoea or dyspnoea. Rhythm – regular. Quality – bilateral equal air entry with chest rise and fall.
Circulation:

- Heart rate feels slightly tachycardic.
- Rhythm – irregular.
- Quality – palpable radial pulse.
- Skin: normal skin temperature, taken with a tympanic thermometer.
- Capillary refill time: two seconds. No evidence of cyanosis.

Disability:

- PEARL: normal pupil size.
- GCS: E4, V3, M6 = 13/15.
- Grip strength: weakness in left-hand side.
- Allergies: penicillin.

Exposure: appropriate for vital signs.

Environment

There is a chair and by patient's front door. Safety reassessed – nil danger.

Reflective Learning Activity

Look through the information provided in Snapshot 1.1 and highlight all of the information that is associated with anatomy, physiology and pathophysiology. Highlight and find the anatomical and physiological terms and determine the meaning.

Anatomical Planes of the Body

A plane is an imaginary two-dimensional surface that passes through the body. There are three planes that are generally referred to in anatomy and healthcare (Figure 1.3).

- Sagittal
- Frontal
- Transverse.

The *sagittal plane*, the vertical plane, is the plane that divides the body or an organ vertically into the right and left sides. If this vertical plane runs directly down the middle of the body, it is known as the midsagittal or median plane. If it divides the body into unequal right and left sides, then it is called a parasagittal plane.

The *frontal plane* is the plane dividing the body or an organ into an anterior (front) portion and a posterior (rear) portion. The frontal plane is often referred to as a coronal plane (the word *corona* is Latin for crown).

The *transverse plane* divides the body or organ horizontally into the superior (upper) and inferior (lower) portions.

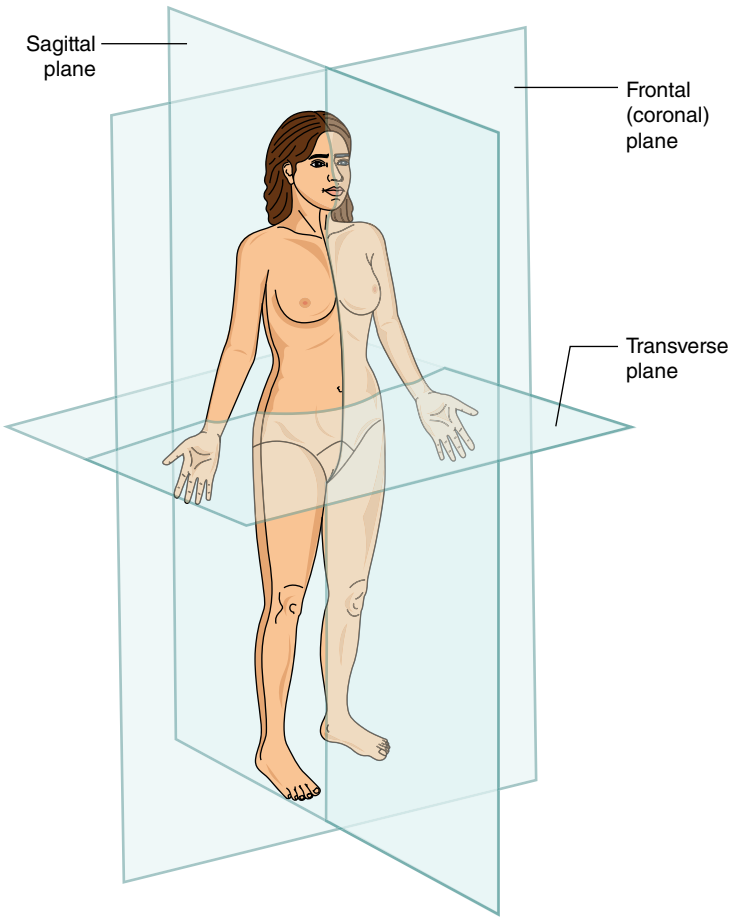


FIGURE 1.3 Anatomical planes.

Anatomical Regions of the Body

The body is divided up into regions, like a map. The anatomical regions of the body refer to a particular area/region of the body, which helps to compartmentalise. The body is divided into:

- the head and neck
- the trunk (thorax and abdomen)
- the upper limbs (arms)
- the lower limbs (legs).

See Tables 1.2–1.5 for a representation of the correct terminology for each region.

Body Cavities

Body cavities are spaces within the body that contain the internal organs (Figure 1.4). The cavity can be filled with air or with organs. Minor body cavities include the oral cavity (mouth), the nasal cavity (nose), the orbital cavity (eye), middle ear cavity and the synovial cavities (these are spaces within synovial joints).

There are two main cavities in the body:

- The dorsal cavity is located in the posterior region of the body.
- The ventral body cavity occupies the anterior region of the trunk.

The dorsal cavity is subdivided into two cavities:

1. The *cranial cavity* encloses the brain and is protected by the cranium (skull).
2. The vertebral/spinal cavity contains the spinal cord and is protected by the vertebrae.

The ventral cavity is subdivided into two:

1. The *thoracic cavity* is surrounded by the ribs and intercostal muscles, the thoracic cavity contains the lungs, heart, trachea, oesophagus and thymus. It is separated from the abdominal cavity by the diaphragm muscle.
2. The *abdominopelvic cavity* contains the stomach, spleen, liver, gallbladder, pancreas, small intestine and most of the large intestine:
   a. The *abdominal cavity* is protected by the muscles of the abdominal wall and partly by the diaphragm and ribcage.
   b. The *abdominopelvic cavity* contains the urinary bladder, some of the reproductive organs and the rectum. The pelvic cavity is protected by the bones of the pelvis.

TABLE 1.2 **Anatomical regions of the head and neck.**

Anatomical phrase	Area of body related to
Cephalic	Head
Cervical	Neck
Cranial	Skull
Frontal	Forehead
Occipital	Back of head
Ophthalmic	Eyes
Oral	Mouth
Nasal	Nose

TABLE 1.3 **Anatomical regions of the trunk (thorax and abdomen).**

Anatomical phrase	Area of body related to
Axilla	Armpit
Costal	Ribs
Mammary	Breast
Pectoral	Chest
Vertebral	Backbone
Abdominal	Abdomen
Gluteal	Buttocks
Inguinal	Groin
Lumbar	Lower back
Pelvic	Pelvis/lower part of abdomen
Umbilical	Navel
Perineal	Between anus and external genitalia
Pubic	Pubis

TABLE 1.4 **Anatomical regions of the upper limbs.**

Anatomical phrase	Area of body related to
Brachial	Upper arm
Carpal	Wrist
Cubital	Elbow
Forearm	Lower arm
Palmar	Palm
Digital	Fingers (also relates to toes)

Physiology

Human physiology is concerned with the study of the function of the body. Anatomy and physiology therefore relate to the study of the structure and the function of the human body.

The human body is organised in a most precise way, whereby atoms combine in appropriate ways forming molecules in the chemical organisation of the body. The molecules combine to form cells, and cells organise themselves collectively as functioning masses that are known as tissues and then organs and systems. Chapter 2 of this text describes cells and the organisation of tissues within the body.

TABLE 1.5 **Anatomical regions of the lower limbs (legs).**

Anatomical phrase	Area body related to
Femoral	Thigh
Patella	Front of knee
Pedal	Foot
Plantar	Sole of foot
Popliteal	Hollow behind knee
Digital	Toes (also relates to fingers)

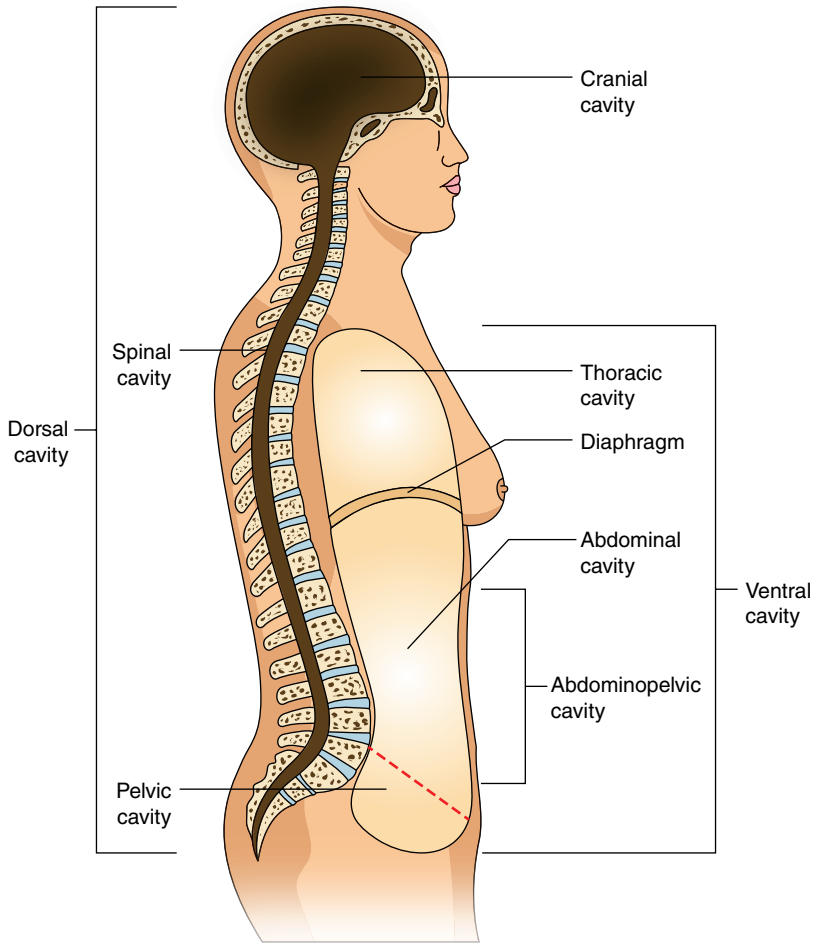


FIGURE 1.4 The cavities of the body.

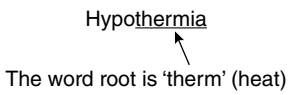
Terminology

Already in this chapter, you may have come across some complex terms. It is important to learn the language (the terminology) that is used in the provision of healthcare, as it is an important part of safe and effective practice. While it is not a precourse requirement to be proficient in Latin or Greek to learn anatomical terminology before becoming a paramedic, it is essential that you understand and are able to use the terminology effectively.

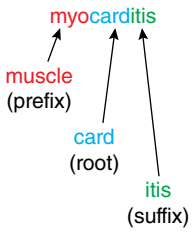
There are three basic parts associated with medical terms (Table 1.6). The word root is the core of the word. It provides the basic meaning to the subject of the word. Prefixes and the suffixes modify the word. In the word 'hepatitis', for example, the word root is *hepa*, which means liver. When the suffix *itis* (which means inflammation) is added, the word changes and it becomes hepatitis – inflammation of the liver.

A prefix is added to the beginning of the word root and also changes the word. If the root word is *nutrition* and the prefix *mal* (meaning bad) is added, then malnutrition means bad or poor nutrition.

Look at this example:



Hypo means low (this is the prefix), so hypothermia means low heat. Now take a look at this word: myocarditis – let's break it up:



myo	card	itis	Inflammation of heart muscle
muscle	heart	inflammation	

The prefix can change the word:

Myocarditis myo + carditis = inflammation of heart muscle.
Endocarditis endo + carditis = inflammation of the inner layer of the heart.
Pericarditis peri + carditis = inflammation of the outer layer of the heart.

TABLE 1.6 Basic components.

Component	Description
Word root	This is usually found the middle of the word and this is its central meaning
Prefix	The prefix comes at the beginning of the word and it usually identifies some subdivision or part of the central meaning
Suffix	Comes at the end and modifies the central meaning as to what or who is interacting with it or what is happening to it

The suffix can also alter the word:

Cardiologist cardi + ologist = a practitioner specialising in the heart.
Cardiomyopathy cardio + myopathy = damage to heart muscle.
Cardiomegaly cardio + megaly = enlargement of the heart.

In these examples, the prefix and suffix can change the word but, the root *card* stayed the same.

There are many frequently used prefixes and suffixes; you will already know some of them. See Table 1.7 for a list of some prefixes and suffixes that are used to make up a number of medical terms.

As is the case when learning any language, it can take time to learn all the words and, indeed, the learning will be lifelong. When you are in practice, you will be able to reinforce your learning, using your new vocabulary with confidence. Take your time, seek clarification if needed, and be patient with yourself.

Knowing the various anatomical terms can make it easier to understand the various pathophysiological concepts that can help you provide care that is patient centred, safe and effective.

Pathophysiology

Pathophysiology brings together a blend of pathology and physiology to consider the connection between disordered physiology and disease or illness. Pathology defines the illness itself and physiology examines how these injuries or diseases change natural biological processes. The study of pathophysiology requires the use of clinical reasoning, which is then used to make a diagnosis and prescribe treatment to address the effects of disease. Learning how pathology, physiology and anatomy interconnect can ensure that the care provided is appropriate, safe and effective.

Pathophysiology, according to Singh et al. (2017) is the study of the changes of normal mechanical, physical and biochemical functions, caused by a disease or resulting from an abnormal syndrome. The chapters in this text address these key pathophysiological concepts. Medical terminology is used to express and describe the various pathophysiological concepts.

Pathophysiology is a key component of paramedic practice. It enables the clinician to take on a number of important responsibilities, such as understanding and ordering diagnostic tests, care for and treating people with acute and chronic illnesses, managing medications and managing general health and wellbeing, as well as disease prevention for patients and their families. Paramedics and other healthcare practitioners who can recognise the pathophysiological signs and symptoms of the conditions in those to whom they offer care will be able to provide a higher quality of safer and more effective care. Asking questions such as 'Why is the person experiencing this?', helps to you to understand what is going on in a person's body at the cellular level, thus helping you to understand how to help them.

Pathophysiology is used to understand the progression of disease so as to identify the disease and implement treatment options for patients. Information gathered is used to identify the next course of the disease so that the most suitable course of action can be taken with the patient, with the appropriate care they need provided. The medical procedures and medications that are administered to patients will depend very much on the nature of the disease. The main objectives when understanding pathophysiology are to assist you to:

- Use critical thinking to understand the pathophysiological principles for care provision.
- Analyse and explain the effects of disease processes at a systemic and cellular level.
- Discuss the many variables that may be at play affecting the healing of the organ and tissue systems.
- Analyse the environmental risks of the progression and development of particular diseases.
- Explain how compensatory mechanisms can be used to make a response to physiological alterations.
- Compare and contrast the effects of culture, ethics and genetics and how these can have an impact on disease progression, treatment and health promotion, as well as disease prevention.
- Evaluate and review diagnostic tests and determine whether the evaluation and review have any relationship to the signs and symptoms that the patient is experiencing.

TABLE 1.7 **Some prefixes, suffixes, their meaning and examples.**

Prefix/suffix	Meaning	Example
a/an	No, not, without, lack of	Anoxia (without oxygen), anuria (without urine), asepsis (without sepsis), asymptomatic (without symptoms)
ab	Away from	Abduction (to move away from the midline), abnormal (away from normal)
ad	Towards	Adduction (to move towards the midline), adrenal (towards the kidney), addiction (drawn towards or a strong dependence on a drug or substance)
aemia	Of blood	Leukaemia (cancer of blood cells), anaemia (lack of red blood cells),
algia	Pain	Cephalgia (headache), mastalgia (breast pain), myalgia (muscle pain)
ante	Before/in front of	Antepartum (before birth), anterior (to the front of the body), anteprandial (before meals)
arthro	Joint	Arthroscope (an instrument used to look into a joint), arthritis (joint inflammation), arthrotomy (incision of a joint)
baro	Pressure/weight	Isobaric (having equal measure of pressure), bariatrics (the field of medicine that offers treatment to people who are overweight), baroreceptor (a sensor reacting to pressure changes)
brady	Slow/delayed	Bradycardia (slow heart rate), bradykinesia (slowness in movement), bradylalia (abnormally slow speech)
cyto	Cell	Leucocyte (white blood cell), erythrocyte (red cell), cytology (study and function of cells)
derm	Skin	Dermatitis (inflammation of the skin), dermatome (a surgical instrument used for cutting slices of the skin), dermatology (the study of skin)
dys	Difficulty/ impaired	Dysphasia (difficulty swallowing), dyspepsia (disordered digestion), dysuria (difficulty in urination)
ectomy	To cut out	Appendectomy (removal of the appendix), mastectomy (removal of the breast), prostatectomy (removal of the prostate)
endo	Inner	Endocardium (lining of the heart), endocarditis (inflammation of the heart), endotracheal (within the trachea)
erythro	Red	Erythrocyte (red blood cell), erythropaenia (reduction in the number of red blood cells), erythema (reddening of the skin)
haem	Blood	Haematogenesis (the formation of blood), haematology (the study of blood), haemarthrosis (bleeding within the joint)
hydro	Water	Hydrophobia (abnormal dread of water), hydrocephalus (accumulation of fluid within the cranium)
hyper	Above/beyond/ excessive	Hypertension (high blood pressure), hyperflexion (movement of a muscle beyond its normal limit), hyperglycaemia (high blood glucose)
hypo	Below/under/ deficient	Hypotension (low blood pressure), hypothermia (low temperature), hypoglycaemia (low blood glucose)

TABLE 1.7 (*Continued*)

Prefix/suffix	Meaning	Example
intra	Within	Intravenous (within the veins), intraocular (within the eye), intracerebral (within the brain)
ism	Condition/ disease	Hirsutism (heavy/abnormal growth of hair), hyperthyroidism (overactivity of the thyroid gland)
itis	Inflammation	Appendicitis (inflammation of the appendix), mastitis (inflammation of the breast) myocarditis (inflammation of heart muscle)
osteo	Bone	Osteoporosis, (a condition that weakens the bones), osteopenia (a generalised reduction in bone mass), osteomalacia (pertaining to soft bones)
otomy	To cut into	Tracheotomy (cutting into the trachea), craniotomy (a hole made into the skull), thoracotomy (cutting into the chest)
ostomy	To make an opening (a mouth)	Colostomy (an opening into the colon), jejunostomy (an opening into the jejunum)
micro	Small	Microscopic (so small can only be seen with a microscope), microcephaly (small brain), microsomia (small body)
macro	Large	Macroscopic (large enough to be seen with the naked eye), macrocytic (an abnormally large cell), macroglossia (an abnormally large tongue)
mega/megaly	Enlarged	Cardiomegaly (enlarged heart), splenomegaly (enlarged spleen), hepatomegaly (enlarged liver)
myo	Muscle	Myocardium (heart muscle), myocyte (muscle cell), myometrium (uterine muscle)
neo	New	Neonate (new born), neoplasm (new growth [tumour]),
nephro	Kidney	Nephritis (inflammation of the kidneys), nephrostomy (an incision made into the kidney)
neuro	Nerve	Neuroma (a tumour growing from a nerve), neuralgia (pain felt along the length of a nerve), neuritis (inflammation of a nerve)
ology	Study of	Dermatology (study of the skin), neurology (study of the nervous system), cardiology (study of the heart)
oma	Tumour (swelling)	Melanoma (a cancer of melanocytes), carcinoma (a type of cancer), retinoblastoma (tumour of the eye)
ophth	Eye	Ophthalmology (study of the eye), ophthalmoscope (an instrument used to examine the inside of the eye), ophthalmotomy (an incision made into the eye)
osteo	Bone	Osteomyelitis (bone infection), osteosarcoma (bone cancer), osteoarthritis (inflammation of the joints)
oto	Ear	Otology (the study of the ear), otosclerosis (abnormal bone growth inside the ear)
patho	Disease	Neuropathy (disease of the nervous system), nephropathy (disease of the kidney), retinopathy (disease of the retina)

(*Continued*)

TABLE 1.7 (*Continued*)

Prefix/suffix	Meaning	Example
para	Beside/alongside	Para thyroid (adjacent to the thyroid), paraumbilical (alongside the umbilicus)
penia	Deficiency	Leucopoenia (deficiency of white cells), thrombocytopenia (deficiency of thrombocytes)
peri	Around	Pericardium, (the serous membrane around the heart) periosteum, (a covering enveloping the bones), peritoneum (the serous membrane lining the walls of the abdominal and pelvic cavities)
plasm	Substance	Plasma (liquid part of blood and lymphatic fluid), cytoplasm (substance of a cell lying outside of the nucleus)
plasty	Repair	Arthroplasty (surgical repair or replacement of a joint), myoplasty (surgical repair of a muscle)
pneumo	Breathing/air	Pneumonia (a type of chest infection), pneumothorax (a collapsed lung), pneumograph (a device used for recording respiratory movement)
poly	Many/much	Polycystic (many cysts), polyuria (much urine), polyarthritis (arthritis affecting more than four joints)
rhino	Nose	Rhinitis (inflammation of the mucous membrane of the nose), rhinoplasty (surgical repair of the nose)
rrhoea	Discharge	Diarrhoea (frequently discharged faeces), rhinorrhoea (excessive discharge of mucus from the nose), galactorrhoea (excessive production of breast milk)
sclero	Toughen/hard	Sclera (hard/tough layer of the eyeballs), scleroderma (hardening and contraction of the skin and connective tissue), sclerosis (abnormal hardening of body tissue)
sub	Under	Sublingual (underneath the tongue), subarachnoid (underneath the arachnoid [layer of the brain]), submucosa (tissue below mucus membrane)
tachy	Fast/rapid	Tachycardia (fast heart rate), tachypnoea (fast respiratory rate),
toxo	Poison	Cytotoxic (having a destructive action on cells), toxaemia (blood poisoning resulting from the presence of toxins), ototoxic (being toxic to the ear)
uria	Urine	Haematuria (presence of blood in the urine), nocturia (passing urine at night), pyuria (pus in the urine)
vaso	Vessel	Vaso constriction (narrowing of the vessel), vaso dilation (widening of the vessel), vaso spasm (sudden contraction of a vessel)

The Determinants of Health

While it is important to understand the pathophysiological changes that a patient may be experiencing, the healthcare provider must also appreciate the socioeconomic and cultural factors that can impact on patient outcomes. These 'non-medical' factors are as important as to whether the most appropriate test or diagnostic tool is being used or treatment implemented. It is important to understand the molecular and genetic determinants of disease; however, the non-biological factors have the potential to influence interactions with patients and their families.

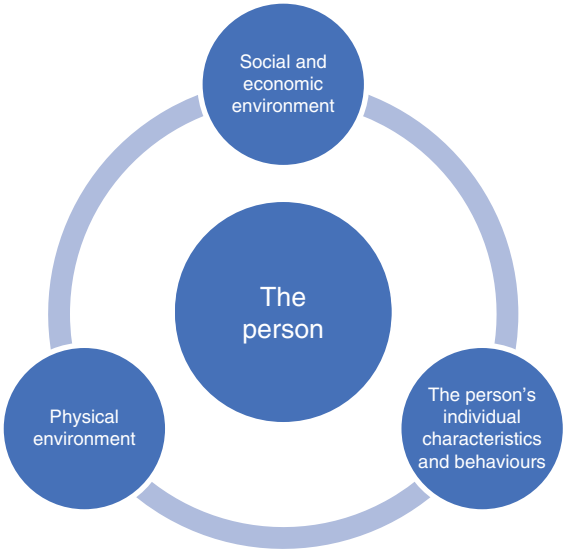


FIGURE 1.5 The determinants of health. Source: World Health Organization (2020).

There are many factors that come together to impact the health of individuals and communities. Regardless of whether people are healthy, health is determined by a person's circumstances and environment. To a large extent, factors such as where we live, the state of our environment, genetics, our income and education level, and our relationships with friends and family all have significant impacts on health. However, the more commonly considered factors, such as access and use of healthcare services may have less of an impact. The social determinants of health are outlined in Figure 1.5. The determinants of health include political, social, economic, environmental and cultural factors, which shape the conditions in which we are born, grow, live, work and age. Creating a healthy population requires greater action on these factors, not simply on treating ill health.

Using a Medical Dictionary, Hints and Tips

Learning to use a medical dictionary and other resources (be these electronic or hard copy) to help find the definition of a term is an important aspect of understanding the correct use of the numerous medical terms. When starting to work with an unfamiliar resource (print or otherwise), spend some time reviewing its user guide. The time spent at this stage can help later when you are looking up unfamiliar terms.

Accuracy in spelling medical terms is extremely important. Changing just one or two letters has the potential to completely change the meaning of a word and the consequences of this can be grave. Some frequently used terms and word parts are confusing because they look and sound alike however, their meanings are very different (Table 1.8). Beware, too, that you may encounter alternative spellings used in the United Kingdom, Australia, Ireland, Canada and the United States.

- If you know how to spell the word:
  - With the first letter of the word, start in the appropriate section of the dictionary. Look at the top of the page for clues (there may be catch words there). The top left word is the first term on the page and the top right word is the last term on that page.
  - Now, search alphabetically for words that begin with the first and second letters of the word you are searching for. Continue looking through each letter until you have found the term that you are looking for.
  - When you think you have found it, be sure to check the spelling, letter by letter, working from left to right. Terms with similar spellings have very different meanings (e.g. prostrate and prostate).
  - When the term has been located, carefully check all the definitions.

TABLE 1.8 **Confusing terminology (Stansfield et al. 2015).**

Term/word	Means	Comments
arteri/o	Artery	Endarterial means pertaining to the interior or lining of an artery (*end* means within, *arteri* means artery, and *al* means pertaining to)
ather/o	Plaque or fatty substance	An atheroma is a fatty deposit within the wall of an artery (*ather* means fatty substance and *oma* means tumour)
arthr/o	Joint	Arthralgia means pain in a joint or joints (*arthr* means joint and *algia* means pain)
-ectomy	Surgical removal	An appendectomy is surgical removal of the appendix (*append* means appendix and *ectomy* means surgical removal)
-ostomy	Surgical creation of an artificial opening to the body surface	A colostomy is the surgical creation of an artificial excretory opening between the colon and the body surface (*col* means colon, and *ostomy* means the surgical creation of an artificial opening)
-otomy	Cutting or a surgical incision	A colotomy is a surgical incision into the colon (*col* means colon, and *otomy* means a surgical incision)

- If you do not know how to spell the word:
  - Listen carefully to the term and then write it down.
  - If you cannot find the word on the basis of your spelling, begin to look for alternative spellings based on the beginning sound; for example, f can sound like f but, the word may begin with ph (such as pharynx, phlegm), k can sound like k but, the word may begin with ch (cholera for example) or c (crepitus). Psychologist begins with p but, it sounds like it should begin with an s.
- Look under categories:
  - Medical dictionaries may use categories, such as diseases and syndromes, and may group disorders with these terms in their titles: so venereal disease would be found under 'disease, venereal' and fetal alcohol syndrome would be found under 'syndrome, fetal alcohol'.
- Multiple-word terms:
  - When searching for a term that includes more than one word, begin the search with the last term. If you don't find it there, then move forward to the next word. Congestive heart failure, for example, is sometimes listed under 'heart failure, congestive'.

Searching for Definitions on the Internet and Handheld Devices

Internet search engines are helpful resources in locating definitions and details about medical conditions and terms. It is important, however, that you use a site such as the National Institute for Health and Care Excellence (known as NICE) or Scottish Intercollegiate Guidelines Network (known as SIGN), as these bodies are known to be reputable information sources.

Beware of suggested search terms. If you don't spell a term correctly, a website might take a guess at what it is that you are searching for. Be sure to double-check that the term you are defining is the term intended.

Take Home Points

- Use the appropriate anatomical terminology to identify key body structures, body regions and directions in the body.
- A standard reference position for mapping the body's structures is the normal anatomical position.
- The terminology used in anatomy, physiology and pathophysiology can be bewildering; however, the purpose of this language is not to confuse, but rather to increase precision and reduce errors.

- Anatomical terms are very often derived from Greek and Latin words.
- Anatomical terms are made up of roots, prefixes and suffixes.
- Without doubt, it is important to understand the pathophysiological changes that a patient may be experiencing. The paramedic must also appreciate the socioeconomic and cultural factors that can impact on patient outcomes – the determinants of health.
- Learning how to use a medical dictionary and other resources to find the definition of a term is an important aspect of understanding the correct use of the numerous medical terms. The time that is spent at this stage can help later when looking up any unfamiliar terms.

Medications Management: Name Confusion

Recent examples of medicine names that have been confused resulting in medication errors include:

- mercaptamine and mercaptopurine
- sulfadiazine and sulfasalazine
- risperidone and ropinirole
- zuclopenthixol decanoate and zuclopenthixol acetate

Some of these errors could result in life-threatening conditions.
Be extra vigilant when administering medicines with commonly confused drug names to ensure that the intended medicine is administered.

- Human factors can be associated in recognising medications of similar names with similar packaging, such as 500mL bags of fluids (e.g. dextrose 50% and dextrose 10%).
- Adhere to local professional guidance in relation to checking the right medicine.

Summary

Medical terminology may appear intimidating and complicated. A number of terms used in healthcare and medicine are derived from Latin and Greek. To understand the terminology used, it is essential when learning to break it down into its parts. When this is done, you can see how it all fits together – like the carriages of a train. In translating medical terms, it is important to understand the word root. The word root (the foundation of the term) can have a prefix and suffix attached to it.

To communicate safely with other healthcare professionals, it is imperative that there is a consistency in the language being used so as to reduce any risk of confusion. Learning the language requires practice.

It is vital to understand the pathophysiological changes that a patient may be experiencing so as to provide the most appropriate care intervention. It is equally important to have an understanding of the impact of socioeconomic and cultural factors that can impact on patient outcomes – the 'non-medical' factors.

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Further Reading

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Online Resources

Health Information and Quality Authority. Safer better care. www.hiqa.ie (accessed 27 September 2023).
National Institute for Health and Care Excellence. www.nice.org.uk
NHS England (2022). Abbreviations you may find in your health records. https://www.nhs.uk/using-the-nhs/nhs-services/the-nhs-app/abbreviations (accessed 27 September 2023).

Glossary

Acute disease	Sudden appearance of signs and symptoms that last a short time.
Aetiology	Study of the cause(s) of disease and/or injury.
Chronic disease	Develops more slowly, lasting a long time or a lifetime.
Clinical manifestations	Also known as signs and symptoms.
Diagnosis	The naming or identification of a disease.
Exacerbations	Periods when clinical manifestations become worse or more severe.
Iatrogenic	Diseases and/or injury that occur as a result of medical (or paramedical) intervention.
Idiopathic	Diseases with no identifiable cause.
Nosocomial	Diseases that are acquired as a consequence of being in a hospital environment.
Pathology	Study of structural alterations in cells, tissues and organs that help to identify the cause of disease.
Pathogenesis	Pattern of tissue changes that are associated with the development of disease.
Prognosis	Expected outcome of a disease.
Remissions	Periods when clinical manifestations disappear or diminish significantly.
Sequelae	Any abnormal conditions that follow on and are the result of a disease, treatment or injury.

Multiple Choice Questions

1. A vasectomy is:
   a. The surgical removal of the vagal nerve
   b. The surgical cutting and sealing of part of each vas deferens
   c. A medical procedure that causes infertility
   d. A specific test to determine the diameter of a vein

2. Lymphoedema refers to:
   a. Removal of lymph glands in the neck
   b. Removal of lymph glands in the groin
   c. A chronic condition that causes swelling in the body's tissues
   d. Infection of the lymph nodes located in the thorax

3. Abduct:
   a. Is the same as adduct
   b. Means to pull away from the body
   c. Relates to the torso only
   d. Is to pull towards the body

4. What is the difference between the words afferent and efferent?
   a. Afferent means 'bringing to or leading towards an organ or part' and efferent 'conveys or conducts away from an organ or part'.
   b. Afferent means 'conveys or conducts away from an organ or part' and efferent means 'bringing to or leading towards an organ or part'.
   c. Afferent is associated with the kidney only and efferent is associated with the brain only.
   d. None of the above.

5. The term xerosis means
   a. Liver disease
   b. Abnormal dryness, as seen in the eyes, skin or mouth
   c. Excessive and abnormal production of mucous
   d. Depleted production of mucous

6. What are determinants of health:
   a. They are the measures that are used by physiotherapists to determine prognosis
   b. Determinants of health are only applicable in low income countries
   c. The determinants of health include: the social and economic environment, the physical environment and; the person's individual characteristics and behaviours
   d. All of the above

7. The sagittal plane:
   a. Divides the body top and bottom
   b. Divides the abdomen only left and right
   c. Divides the contents of thoracic cavity top and bottom only
   d. Divides the body or an organ vertically into the left and tight sides

8. The word corona is Latin for:
   a. Halo
   b. Neck
   c. Heart
   d. Crown

9. The prefix is added to:
   a. The end of the second letter of a sentence
   b. The beginning of a word
   c. The end of a word
   d. Words beginning with a vowel only

10. Pathophysiology is:
   a. Another term for renal failure
   b. A mental health disorder
   c. The study of functional changes in the body occurring in response to disease or injury
   d. All of the above