

HLTAAP001

Recognise healthy body systems

Release 1

Learner guide

Aspire Version 1.3



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Version control and modification history

Version	Release date	Modification
Release 1, version 1.1	April 2017	First release.
Release 1, version 1.2	November 2017	Minor corrections as part of our continuous improvement program.
Release 1, version 1.3	September 2019	Correction to calculated BMI on p59. Minor corrections as part of our continuous improvement program.

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Before you begin

This learner guide is based on the unit of competency *HLTAAP001 Recognise healthy body systems*, Release 1. Your trainer or training organisation must give you information about this unit of competency as part of your training program. You can access the unit of competency and assessment requirements at: www.training.gov.au.

How to work through this learner guide

This learner guide contains a number of features that will assist you in your learning. Your trainer will advise which parts of the learner guide you need to read, and which practice tasks and learning checkpoints you need to complete. The features of this learner guide are detailed in the following table.

Feature of the learner guide	How you can use each feature
Learning content	<ul style="list-style-type: none"> ▶ Read each topic in this learner guide. If you come across content that is confusing, make a note and discuss it with your trainer. Your trainer is in the best position to offer assistance. It is very important that you take on some of the responsibility for the learning you will undertake.
Examples and case studies	<ul style="list-style-type: none"> ▶ Examples of completed documents that may be used in a workplace are included in this learner guide. You can use these examples as models to help you complete practice tasks and learning checkpoints. ▶ Case studies highlight learning points and provide realistic examples of workplace situations.
Practice tasks	<ul style="list-style-type: none"> ▶ Practice tasks give you the opportunity to put your skills and knowledge into action. Your trainer will tell you which practice tasks to complete.
Video clips	<ul style="list-style-type: none"> ▶ Where QR codes appear, learners can use smartphones and other devices to access video clips relating to the content. For information about how to download a QR reader app or accessing video on your device, please visit our website: www.aspirelr.com.au/help 
Summary	<ul style="list-style-type: none"> ▶ Key learning points are provided at the end of each topic.
Learning checkpoints	<ul style="list-style-type: none"> ▶ There is a learning checkpoint at the end of each topic. Your trainer will tell you which learning checkpoints to complete. These checkpoints give you an opportunity to check your progress and apply the skills and knowledge you have learnt.

Foundation skills

As you complete learning using this guide, you will be developing the foundation skills relevant for this unit. Foundation skills are the language, literacy and numeracy (LLN) skills and the employability skills required for participation in modern workplaces and contemporary life.

The following table outlines specific foundation skills noted for your learning in this learner guide.

Foundation skill area	Foundation skill description
Learning	<ul style="list-style-type: none"> ▶ Understanding your job role, organisational procedures and legal responsibilities ▶ Managing your work and seeing how well you are going and making goals for yourself at work ▶ Seeking professional development opportunities for continuous improvement
Reading	<ul style="list-style-type: none"> ▶ Understanding how documents are presented and being able to navigate through documents ▶ Understanding industry- and job-specific terminology ▶ Interpreting key information in relevant documents ▶ Understanding routine workplace checklists and documentation
Writing	<ul style="list-style-type: none"> ▶ Planning, drafting and writing reports and documents ▶ Communicating through written letters, email and online ▶ Recording progress; reporting incidents
Oral communication	<ul style="list-style-type: none"> ▶ Clarifying instructions ▶ Providing information ▶ Supporting others through encouragement, negotiation and conflict resolution ▶ Using body language to model desired behaviour and responding to others' body language
Numeracy	<ul style="list-style-type: none"> ▶ Calculating costs, weights, measurements of height and distance ▶ Interpreting measurements
Teamwork	<ul style="list-style-type: none"> ▶ Working well with other people by cooperating, collaborating, encouraging and building rapport
Planning and organising	<ul style="list-style-type: none"> ▶ Planning your workload and commitments ▶ Implementing tasks ▶ Completing work on time ▶ Knowing how to deal with hazards and risks
Making decisions	<ul style="list-style-type: none"> ▶ Understanding and applying decision-making processes ▶ Reviewing the impact of your decisions
Problem-solving	<ul style="list-style-type: none"> ▶ Identifying problems ▶ Working out how to fix a problem using problem-solving processes and reviewing the outcome
Innovation and creation	<ul style="list-style-type: none"> ▶ Recognising opportunities to develop and apply new ideas ▶ Generating ideas by thinking of new ways to do something ▶ Making suggestions to improve work

Foundation skill area	Foundation skill description
Technology and digital literacy	<ul style="list-style-type: none"> ▶ Efficiently using digitally based technologies and systems correctly and safely ▶ Accessing, organising and presenting information ▶ Using equipment correctly and safely

What do you already know?

Use the following table to identify what you may already know. This may assist you to work out what to focus on in your learning.

Topic	Key outcomes	Rate your confidence in each section
Topic 1 Work with information about the human body	1A Use and interpret health terminology that describes the structure, function and location of the major body systems	<input type="checkbox"/> Confident <input type="checkbox"/> Basic understanding <input type="checkbox"/> Not confident
	1B Use and interpret information relating to the interrelationships between major components of body systems and structures	<input type="checkbox"/> Confident <input type="checkbox"/> Basic understanding <input type="checkbox"/> Not confident
Topic 2 Recognise and promote ways to support healthy functioning of the body	2A Review factors that contribute to maintenance of a healthy body	<input type="checkbox"/> Confident <input type="checkbox"/> Basic understanding <input type="checkbox"/> Not confident
	2B Evaluate how relationships between body systems affect and support healthy functioning	<input type="checkbox"/> Confident <input type="checkbox"/> Basic understanding <input type="checkbox"/> Not confident
	2C Enhance quality or work activities by using and sharing information about healthy functioning of the body	<input type="checkbox"/> Confident <input type="checkbox"/> Basic understanding <input type="checkbox"/> Not confident



Topic 1

In this topic you will learn how to:

- 1A Use and interpret health terminology that describes the structure, function and location of the major body systems**

- 1B Use and interpret information relating to the interrelationships between major components of body systems and structures**

Work with information about the human body

When working in the community services environment, you need to have and apply a basic knowledge of the structure of the human body. By understanding the structure, function, and location of body systems; the correct terminology; and the principles for maintaining a healthy body, you can play an active role in assisting a person to improve their health and prevent illness and disease. In addition, you can communicate appropriately with other medical, allied health and welfare professionals involved in the care of the person.

1A Use and interpret health terminology that describes the structure, function and location of the major body systems

The tasks and duties associated with a role within the community services environment may vary. Typical duties include providing personal care, conducting assessments, developing care plans and participating in case conferences. A support worker also needs to recognise and report issues that may present a threat to the person's physical or mental health and wellbeing.

You need to be familiar with medical terminology used to describe body parts and medical conditions to minimise the risk of misunderstanding information. If incorrect terms are used when discussing a person with health professionals, it could lead to misunderstandings and confusion. It could also result in delays in treatment, the person becoming unwell or, in extreme cases, dying.



Learn basic health terminology

Medical terms communicate a precise meaning. If you misinterpret a medical term or use it incorrectly, the consequences may be dire.

Here are some strategies for learning medical terminology.

Ask your supervisor

- ▶ They will be able to explain the medical terms in plain language.

Listen to others

- ▶ Listen to how others use medical terms and you will gain a sense of the meaning. If you are unsure about the meaning of a word or a term, ask for clarification.

Break down the word

- ▶ There are many similar medical terms. Each of these words is made up of a prefix, a root word and a suffix.

Refer to a medical encyclopaedia

- ▶ Refer to a medical encyclopaedia or dictionary. Many medical reference books can be found online, which provides ready access.

Refer to anatomical models, charts and labelled diagrams

- ▶ Read about the body's systems, access anatomical models, charts and labelled diagrams to understand the location of, and the relationship between, the body's various systems and structures.

Keep a notebook

- ▶ Make notes to reinforce the information and increase the likelihood of remembering the information. Use the notebook as a reference point when needed.

Use health terminology to describe major body systems

Medical terms communicate a precise meaning. Examples of tasks that require a basic understanding of medical terminology are outlined here.

Questioning people requiring support

A support worker is responsible for finding out about a person's needs on intake. These needs may change, so the worker must continue to find out about a person's needs while providing care and, if relevant, on discharge.

Forms are used on intake and usually include questions about all aspects of the person's health and wellbeing including their medical history, living arrangements, diet and their psychological and physical health and wellbeing. Support workers are also required to communicate with persons throughout their stay or during care.

Documenting medical history

It is important to maintain an accurate record of a person's medical history including current and past illnesses, injuries and diseases.

The effects of some conditions can be made worse or changed by the presence of other disease or illnesses. It is important to be aware of all of a person's conditions.

The use of prescription, non-prescription, legal and illegal drugs should be documented. The effects of some drugs change when used with other drugs or produce adverse effects when administered (given) to people with specific medical conditions.

Preparing admission forms

Admission forms are used to record personal information about a person and are used to help determine the type of care to be provided. Many medical terms sound similar but have quite different meanings. A worker must make sure they use the correct medical term when preparing admission forms and other documents. It is equally important to spell every term correctly to avoid confusion and prevent inappropriate care.

Assisting other healthcare professionals

An understanding of health and the body's structures can help a support worker contribute more effectively when required to assist other health professionals by:

- ▶ conducting transfers
- ▶ lifting and turning a person in their bed
- ▶ observing changes in a person's condition, environment or behaviour
- ▶ applying and changing dressings
- ▶ taking and recording blood pressure
- ▶ monitoring self-medication or assisting with medication.

Health terminology

If you understand the prefixes and suffixes of medical terms, it will help you to determine the overall meaning of the word; for instance, 'pneumo' means referring to the lungs, as in pneumonia.

Below are common suffixes and prefixes that alter the meaning of the root word and will provide clues to the definition.

Common prefixes and suffixes

A–D a- or an- (prefix) without
 ab- (prefix) away from
 ad- (prefix) towards
 -algia (suffix) pain
 anti- (prefix) against
 asthen- (prefix) weakness or lack
 bi- (prefix) two
 -cele (suffix) swelling
 -dema (suffix) swelling

E–H -ectomy (suffix) surgical removal
 edem- (prefix) swelling
 endo- (prefix) within
 epi- (prefix) upper
 hyper- (prefix) excessive
 hypo- (prefix) deficiency

I–N inter- (prefix) between
 intra- (prefix) inside
 -ism (suffix) condition
 -itis (suffix) inflammation

O–S -osis (suffix) disease or condition
 pan- (prefix) all
 -pathy (suffix) disease
 poly- (prefix) many
 post- (prefix) after or behind
 pre- (prefix) before
 -sclerosis (suffix) hardening
 sub- (prefix) below
 super-/supra- (prefix) above

T–Z trans- (prefix) across

Basic structure and functions of the body systems

The human body is an incredibly complicated unit. The various systems work together to ensure the body has sufficient nutrition and oxygen; expels toxins; and deals effectively with diseases and other pathogens. Systems also work together to recognise and respond to pain, to ambulate and keep the body in balance. Cells, tissues and organs make up these body systems.



Cells, tissues and organs

The body is arranged in a hierarchical structure. Each level of organisation depends on the previous layer. Each of the body's systems is made up of a number of organs. Organs are made up of tissues and issues are comprised of cells.

Here is a table summarising information about cells, tissues and organs.

Cells

A cell is the smallest unit of living matter.

Tissues and organs are collections of a large number of cells.

The human body is made up of trillions of cells. The five main cell types are:

- ▶ red blood cells, which move oxygen throughout the body
- ▶ white blood cells, which protect the body from pathogens
- ▶ nerve cells, which help transmit information to and from the brain
- ▶ bone cells, which generate bones
- ▶ stomach cells, which help break down food.

Tissues

Cells and extracellular materials form together to make up tissues. There are four types of tissues:

- ▶ epithelial tissue, which provides a covering to organs
- ▶ connective tissue, which links other tissues
- ▶ muscular tissue, which assists with the movement of limbs and other body parts as well as the contraction and expansion of major organs such as the heart, stomach and lungs
- ▶ nervous tissue, which helps transmit messages to and from the brain.

Organs

An organ is a unit that:

- ▶ is made up of at least two different types of tissues
- ▶ is recognisable as a separate part
- ▶ can be distinguished from other structures
- ▶ has a specific function or functions.

The body systems

Each of the 11 systems in the human body is reliant on the other systems in order to function optimally. When all the body systems are healthy, the person is able to maintain a state of homeostasis, which ensures the internal conditions necessary to maintain life remain stable and constant.

Here is a list of the body systems.

The body systems

- ▶ Cardiovascular system
- ▶ Respiratory system
- ▶ Musculoskeletal system
- ▶ Endocrine system
- ▶ Digestive system
- ▶ Urinary system
- ▶ Reproductive system
- ▶ Integumentary system
- ▶ Lymphatic system
- ▶ Nervous system
- ▶ Immune system

The cardiovascular system

The cardiovascular system seems deceptively simple. It is made up of the heart and the blood vessels leading to and from the heart.

The heart in turn is made up of heart walls, chambers and valves.

The cardiovascular system is responsible for transporting blood throughout the body. It works in conjunction with the respiratory system to help move oxygen throughout the body.



Cardiovascular system terminology

There is specific terminology relating to the cardiovascular system.

The terminology commonly used is outlined below.

Angina

Angina may indicate the presence of coronary artery disease. Discomfort is caused by an insufficient flow of blood to the heart.

Aorta

The aorta is an artery attached to the left ventricle of the heart. Oxygenated blood flows from the heart to the rest of the body via the aorta.

Atria

The heart has two atria – the left atrium and the right atrium. The left atrium receives oxygenated blood whereas the right atrium receives deoxygenated blood. The left atrium pumps blood into the left ventricle. Likewise the right atrium pumps blood into the right ventricle.

Cardiac arrest

Cardiac arrest occurs when the heart fails to work properly and blood flow is stopped.

Cardiomyopathy

Cardiomyopathy means that a person's heart muscle is not working efficiently and effectively. The signs and symptoms of cardiomyopathy vary depending on the severity of the disease.

Coronary artery disease

This condition is caused by narrowed arteries, slowing the flow of blood to the heart.

Heart murmur

This occurs when there is an additional sound made by the heart. A heart murmur can indicate that a person has a defective heart valve. Common causes include old age or pathogens.

Pulmonary circuit

A pulmonary circuit consists of the blood vessels located between the right ventricle and left atrium of the heart.

Stroke

A stroke occurs when the flow of blood to the brain is stopped and brain damage occurs.

Ventricles

The heart is divided up into four chambers. The lower two of these chambers are called the left and right ventricles. Blood is pumped from the atria into the ventricles.

Components of the cardiovascular system

The cardiovascular system consists of the heart, the body's blood vessels and the blood. The heart is located in the middle of the chest (thorax) region and has four chambers: two ventricles and two atria. The left side of the heart consists of a top chamber (atria) and a lower chamber (ventricle) this is repeated on the right side of the heart. The atria and the ventricles are separated by valves that open and close in time with the heartbeat. There is a dividing layer of tissue running lengthwise through the middle of the heart called the septum.



The blood vessels of the body consist of arteries, veins and capillaries. The major artery of the body is the aorta and is shaped like a candy cane. Arteries are very strong and elastic and take blood away from the heart.

The major vein in the body is the vena cava, which transports blood back to the heart. Veins are less elastic than arteries but contain small flaps that assist with the blood transportation back to the heart.

The capillaries are the smallest blood vessels of the body one cell thick to allow substances to cross through the cell wall. They eventually join the arterial and venous systems of the blood vessels at the 'capillary bed'.

Blood is composed of fluid and cells. The fluid part of the blood is called the plasma and is straw coloured. The different types of cells that carry out special functions for the body are transported in the plasma.

The function of the cardiovascular system

The heart's function is to pump blood continually around the body. The left side of the heart pumps blood to the body's cells and the right side of the heart pumps blood to the lungs for the exchange of gases. The septum prevents blood crossing from the left side to the right side of the heart. The atria, ventricles and blood vessels of the heart contain valves that open and close in time with the contraction and relaxation of the heart muscle.



The blood as it is delivered to the cells of the body, transports oxygen and takes carbon dioxide back to the heart to be transported to the lungs for exhalation.

The electrical stimulus of the heart

A person's heartbeat is stimulated by electrical activity. This electrical charge is transmitted through the heart muscle (specialised cardiac muscle tissue only found in the heart). The electrical charge starts in the sinoatrial node, and travels through the rest of the heart. The electrical impulse travels across the atria and down the septum causing the atria contract. The impulse then moves further down the septum and around the ventricles causing them to contract. At this time the atria have relaxed and refilled with blood.



Blood, arteries and veins

Blood is made up of plasma, red and white blood cells. Plasma is a watery substance that carries blood cells, food, chemicals, hormones and waste products throughout the body.

Red blood cells (erythrocytes) assist in the transportation of oxygen throughout the body. White blood cells (leukocytes) protect the body against infection.

Platelets are also found in the blood and assist in the clotting process.

Blood leaves the heart through the arteries. These are very strong and elastic vessels that pulsate with each beat of the heart. The arteries take blood away from the heart to the lungs and to the cells of the body. They become smaller (arterioles) then smaller again to form part of the capillary network. Gaseous exchange occurs across the capillary wall that is only one cell thick.

The venous component of the capillary network enlarges to form venules, then veins. Veins are not as strong as arteries. They contain little flaps that close to prevent backflow of blood and rely on other body mechanisms (such as the large muscle contractions of the legs and the pressure changes in the chest during respiration) to assist with return of blood to the heart.



Cardiovascular system problems

Support workers, especially those working with a person in their home, need to be aware of signs of heart failure and the appropriate actions to take.

If you suspect a person is having a heart attack, you should call emergency services immediately by dialling 000. Immediate medical attention can lessen the likelihood of a stroke, other negative side effects or death.

Signs of possible cardiac problems may include:

- ▶ dizziness
- ▶ lack of energy
- ▶ chest pain
- ▶ tingling arms
- ▶ numbness
- ▶ weakness
- ▶ headache
- ▶ pain in the limbs and other body parts.

How to prevent cardiac problems

There are many actions a person can take to prevent or minimise the chance of cardiovascular problems, such as those listed here.

To help prevent cardiovascular problems:

- ▶ maintain a healthy body weight
- ▶ eat a range of healthy foods
- ▶ undertake regular exercise
- ▶ avoid or limit consumption of foods high in saturated fat and salt
- ▶ avoid excessive consumption of alcohol
- ▶ do not smoke or be exposed to tobacco smoke.

The respiratory system

The respiratory system, is made up of the upper respiratory tract, which includes the nose, mouth, tongue and the voice box (larynx); and the lower respiratory tract comprising windpipe (trachea) and lungs. In the lungs there are the bronchi, bronchioles and alveoli.

The respiratory system is responsible for ensuring the body has sufficient oxygen intake to oxygenate the blood, and that it expels carbon dioxide.



Respiratory system terminology

Here are some terms used to describe illnesses relating to the respiratory system.

Asthma

Asthma is caused by blocked or narrowed airways. Asthma makes breathing difficult.

Bronchitis

The trachea (windpipe) leads into two bronchi. Bronchi help conduct gas into the lungs. In some cases, infection or disease can cause the bronchi to become inflamed, resulting in coughing, wheezing and general difficulty in breathing.

Chronic obstructive pulmonary disease

Chronic obstructive pulmonary disease (COPD) is a general term that can refer to any one of many respiratory conditions. Emphysema and bronchitis are both examples of COPD.

Emphysema

A person with emphysema has damaged lungs that can't process gases efficiently and effectively. The person will probably have trouble breathing and may suffer from fatigue.

Lung cancer

Lung cancer is more common in middle-aged and older adults. It is most often caused by lifestyle choices such as smoking or exposure to toxins such as asbestos.

Sleep apnoea

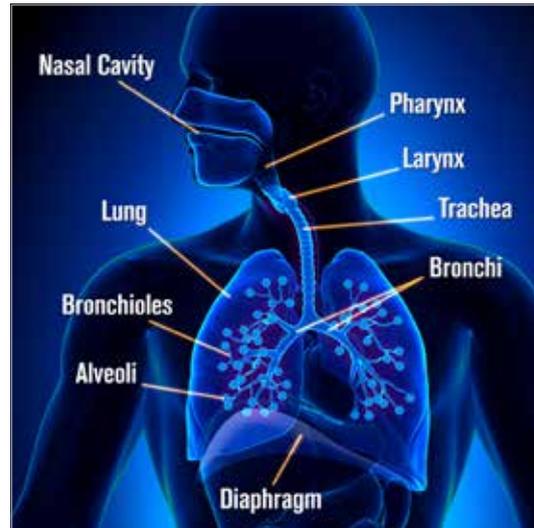
Apnoea refers to a period where a person doesn't breathe. Sleep apnoea refers to any one of a number of conditions that prevent people from breathing for a short period of time while they are sleeping.

The function of the respiratory system

The respiratory system consists of the lungs, the bronchi, the trachea, the larynx, the pharynx, diaphragm and the nose. The main function of the respiratory system is to provide oxygen to the cells of the body and allow for the expulsion of waste material from the body.

Air is breathed in through our nose and sometimes mouth. The air is warmed and any unwanted material is caught in the mucus of the nose and expelled from the body when we blow our nose.

The oxygen carried by the air makes its way down to the surface of the lungs where it transfuses through the alveoli, (small grape-like structures at the end of the bronchioles), across the capillary wall into the blood, and carbon dioxide leaves the capillary to be expelled from the lungs. Any particles of dust or pollen are trapped in the mucus that is secreted by the goblet cells of the lungs and swept in an upward fashion by the cilia (small hair-like structures that line the respiratory passage) to be expelled by the body through coughing or sneezing. The lungs have specialised cells called macrophages that engulf foreign material to protect the body.



Location of the respiratory system

The respiratory system is located in the head, neck and chest. The air enters our nose then travels through the nasal cavity and nasopharynx where the warming process of the air to body temperature continues. The air then enters the oropharynx, which is a shared passage way for food and air. A little flap of tissue called the epiglottis closes the airway when food travels through to the stomach stopping it from entering the trachea. The air continues through the larynx, where the vocal cords are located and then travels through the trachea, before it enters the bronchi, which become smaller then become the bronchioles. At the end of each bronchiole are the alveoli – small grape-like clusters through which gaseous exchange takes place. The respiratory system at this level looks like an upside down tree.



The lungs are two large hollow organs divided into lobes in the chest cavity. They are protected by muscle and bones (the ribs).

Promote a healthy respiratory system

As people age they are more likely to experience the long-term effects of choices such as smoking, overeating (obesity) and a sedentary lifestyle. In addition, their lung function and overall inspiration and expiration abilities decrease. In other words the condition of the parts of the upper respiratory tract and lung declines over time. People who smoke, are overweight and/or inactive are more likely to experience respiratory problems.

You should be aware of any problems people may have with their respiratory system. If a person is experiencing severe breathing difficulties contact a healthcare professional or the emergency services immediately.

Maintain a healthy respiratory system

There are many things a person can do to maintain a healthy respiratory system, as described below.

You can work towards and help others to have a healthy respiratory system by:

- ▶ encouraging people to maintain a healthy weight
- ▶ encouraging people to exercise
- ▶ helping others keep their living environment and clothing free from dust, which can cause breathing difficulties
- ▶ encouraging people to quit smoking and to avoid areas where they are likely to inhale smoke
- ▶ ensuring that people have access to prescribed preventative and relief medications
- ▶ ensuring that people have access to and are using prescribed anti-inflammatory medications and/or bronchodilators
- ▶ helping people with their breathing exercises
- ▶ reporting changes in lung function/breathing.

The musculoskeletal system

The musculoskeletal system incorporates two major systems: the muscular system and the skeletal system. The muscular system is made up of almost 700 muscles and helps control the body's movement and posture, and move blood and other substances through the body.

The skeletal system is made up of all of the bones (206) in the body from the skull to the toes. The skeleton plays a number of roles: some bones, such as the skull and the rib cage, play a protective role shielding the brain and the lungs respectively. Other bones help a person stay upright. The skeleton acts as a frame for the body's tissues and skin; it also makes movement possible.



Musculoskeletal system terminology

Here are some terms used to describe the musculoskeletal system.

A-F	<p>Carpus – The bones connected to the forearm and the finger bones</p> <p>Clavicle – The two bones extending from the shoulder down to the sternum</p> <p>Deep muscles – Muscles located closer to the internal organs and further from the skin</p> <p>Femur – The bone located in the upper leg</p> <p>Fibula – The smaller of the two bones in the calf region</p>
G-M	<p>Humerus – The bone located in the upper arm</p> <p>Muscular dystrophy – A condition that arises when the muscles waste away caused by a genetic disorder</p>
N-S	<p>Patella – The knee bone</p> <p>Pelvis – The large bones located in the hip region at the base of the spine</p> <p>Phalanx – The bones in the fingers and toes</p> <p>Radius – One of the two bones located between the upper arm and the hand</p> <p>Ribs – The bones located in the torso that protect the lungs and other vital organs</p> <p>Skull – The large bone mass protecting the brain</p> <p>Sternum – The breast bone</p> <p>Superficial muscles – Muscles located close to the surface, whose movements are visible to the eye; for example the facial muscles, biceps and triceps (arm muscles) and the abdominal (stomach) muscles</p>
T-Z	<p>Tibia – The larger of the two bones in the calf region</p> <p>Ulna – One of the two bones located between the upper arm and the hand</p> <p>Vertebrae – The bones in the spinal column</p>

The function of the musculoskeletal system

The muscular system consists of three types of muscular tissue: cardiac muscle, which is only found in the heart; skeletal muscle, which is attached to the skeleton and can be controlled; and smooth muscle, which we cannot control and is found in our organs.

The skeletal muscles work with the skeletal system to enable people to move around.

In addition, the muscular system helps to:

- ▶ support a person, enabling them to stay upright
- ▶ enable effective communication; facial muscles are used to smile and to frown; to create rapport and to show disapproval
- ▶ regulate the flow of food from our mouths to our sphincter (anus) and control the movements of the lungs
- ▶ regulate temperature.

Location of the musculoskeletal system

The skeletal muscles are attached to the bones of the skeleton. These are called voluntary muscles as we can control their movement. Tendons attach the muscles to the bone. Tendons are a form of connective tissue. When muscles contract, the tendon exerts force on the bone and this causes movement. Where the muscle is attached to the bone and does not move this is called the origin site of the muscle. The site where the movement occurs is the insertion site of the muscle.



Smooth muscle (also called involuntary muscle as we cannot consciously move it) is found in the internal organs and glands of the body and is stimulated by the nervous system to keep the body in a state of homeostasis.

The skeletal system is comprised of the bones, tendons, ligaments and cartilage that connect them.

There are 206 bones in an adult human body.

Axial skeleton

The axial skeleton consists of the:

- ▶ skull
- ▶ vertebral column
- ▶ thoracic cage.

Appendicular skeleton

The appendicular skeleton consists of the:

- ▶ pectoral girdle
- ▶ upper limb bones
- ▶ pelvic girdle
- ▶ pelvis
- ▶ lower limb bones.

Ligaments

A ligament is a band of tough fibrous connective tissue that connects two bones or cartilage or holds a joint together.

Tendon

A tendon is a flexible but inelastic cord of strong fibrous collagen tissue that attaches a muscle to a bone.

Cartilage

Cartilage is the firm flexible connective tissue found in the:

- ▶ larynx
- ▶ external ear
- ▶ articulating surfaces of joints.

Knowledge of the musculoskeletal system

A working knowledge of the muscular system is essential in situations such as those listed below.

As a support worker you may find yourself working with people:

- ▶ with low bone density
- ▶ who complete exercises as part of their care plan
- ▶ who have trouble communicating due to problems with their facial muscles
- ▶ who experience trouble lifting or moving objects, such as shopping bags
- ▶ who have an increased risk of injury around the house
- ▶ who experience problems maintaining a house and garden
- ▶ who have an increased risk of falls.

Demonstrate knowledge of the musculoskeletal system

Support workers need to be able to demonstrate knowledge of the musculoskeletal system in order to care for people effectively.

Knowledge of the musculoskeletal system helps you to:

- ▶ make sure a person's environment is free from hazards that could lead to trips and falls
- ▶ make sure a person's environment is well lit to prevent falls
- ▶ provide appropriate care to compensate for muscle or bone weakness
- ▶ assist with safe transfers
- ▶ assist people to complete rehabilitation exercises
- ▶ communicate effectively with people with limited facial movement.

The endocrine system

One of the major functions of the body's systems is to keep the body in balance. The medical term that describes the processes used to regulate the body is homeostasis. One of the systems that plays a major role in homeostasis is the endocrine system.

The endocrine system produces and secretes hormones that are distributed throughout the body and regulate other functions of the body, which are listed below.

These hormones regulate:

- ▶ growth
- ▶ metabolism
- ▶ heart rate
- ▶ organ function
- ▶ bone density
- ▶ mood.

Anatomy of the endocrine system

The glands of the endocrine system include the:

- ▶ adrenal gland
- ▶ gonads
- ▶ hypothalamus
- ▶ pancreas
- ▶ parathyroid gland
- ▶ pineal gland
- ▶ pituitary gland
- ▶ thyroid gland.

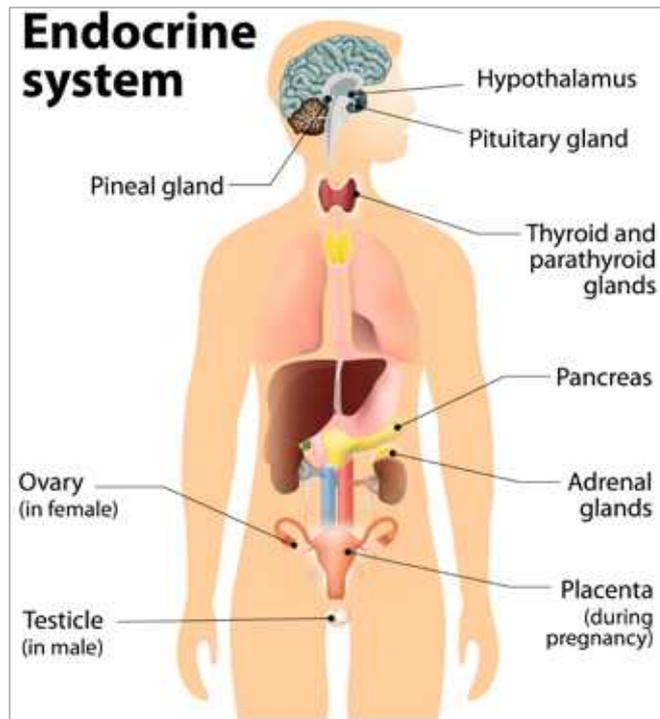
The function of the endocrine system

The endocrine system is a collection of glands that produce hormones to regulate metabolism, growth, development, tissue function, sexual function, reproduction, sleep and all the functions required for development and everyday life.

Endocrine glands secrete hormones directly into the bloodstream where they are carried to the target organs or receptor sites.

Hormones are chemical messages that act as a key in a lock for specific target receptors. They carry specific messages and cannot attach to or unlock another receptor.

Hormones and their effects are closely monitored by a feedback loop system in the body. An example of this is the release of insulin in response to the level of glucose in the blood after a meal.



Location of the endocrine system

The endocrine glands secrete specific hormones to target other glands, organs of the body or body systems. They work to maintain homeostasis. Many of the hormones secreted are vital to body maturation and some are essential for vital body functioning.

Adrenal glands

- ▶ The adrenal glands are located on top of each kidney.
- ▶ The adrenal cortex – the outer part of the gland/s – produces hormones that are vital to life, such as cortisol (which helps regulate metabolism and helps your body respond to stress) and aldosterone (which helps control blood pressure).
- ▶ The adrenal medulla – the inner part of the gland – produces adrenaline (which helps your body react to stress).

Hypothalamus

- ▶ The hypothalamus is the portion of the brain that maintains the body's internal balance (homeostasis).
- ▶ The hypothalamus is the link between the endocrine and nervous systems.
- ▶ It produces releasing and inhibiting hormones, which stop and start the production of other hormones throughout the body.

Ovaries

- ▶ The ovaries are part of and maintain the health of the female reproductive system.
- ▶ They secrete two main hormones: oestrogen and progesterone.

Pancreas

- ▶ The pancreas has an exocrine and an endocrine function.
- ▶ The pancreas maintains the body's blood glucose levels.
- ▶ Primary hormones of the pancreas include insulin and glucagon, which both regulate blood glucose.

Parathyroid

- ▶ The parathyroid glands are located on the back lobes of the thyroid gland. They are separate to the thyroid gland function.
- ▶ Parathyroid hormone regulates the body's calcium levels.
- ▶ There are four parathyroid glands, and they are each about the size of a grain of rice.

Pineal gland

- ▶ The pineal gland is located deep in the centre of the brain and was the once known as the 'third eye'.
- ▶ It produces melatonin, which helps maintain circadian rhythm and regulate reproductive hormones.

Pituitary gland

- ▶ The pituitary gland is often referred to as the 'master gland', and is also located in the brain.
- ▶ The hormones of the pituitary gland help regulate the functions of other endocrine glands.
- ▶ The pituitary gland has two parts – the anterior lobe and posterior lobe – that have two very separate functions.
- ▶ The hypothalamus sends signals to the pituitary to release or inhibit pituitary hormone production.

Testes

- ▶ The testes are part of the male reproductive system.
- ▶ The testes secrete testosterone, which is necessary for proper physical development in boys.
- ▶ In adulthood, testosterone maintains libido, muscle strength and bone density.

Thyroid

- ▶ The thyroid gland is located in your throat and is shaped like a butterfly.
- ▶ The thyroid regulates your metabolism.
- ▶ The two main thyroid hormones are T3 and T4.
- ▶ Thyroid disorders are common and include goitres, hyperthyroidism, and hypothyroidism.

Endocrine system terminology

In some cases, people require medication to help regulate the level of hormones distributed throughout their body. In such cases, support workers may be required to assist with medication and document the medication taken. Workers should also be able to recognise the signs that the endocrine system is not working properly so they can record and report these changes to health professionals who can act on and monitor the person's condition.

Here are some terms you may come across in relation to the endocrine system.

Hyperthyroidism

Hyperthyroidism occurs when a person has an overactive thyroid, which can cause an increase in heart rate, weight loss and feelings of exhaustion.

Hypothyroidism

Hypothyroidism occurs when people have an underactive thyroid, which can lead to depression, exhaustion and weight gain.

Osteoporosis

Oestrogen levels affect bone mass. Post-menopausal women have reduced levels of oestrogen. As a result, they often have reduced bone density. This condition is known as osteoporosis.

Type 2 diabetes

Type 2 diabetes (also known as diabetes mellitus) occurs when a person has insufficient levels of insulin. In the long term this can damage the heart, kidneys, nerves, eyes and blood vessels. It can be managed through a modified diet, exercise, weight loss and in some cases medication.

Indications of overactive or underactive glands

There are many indications to be alert to that someone may have overactive or underactive glands, as described here.

If glands in the endocrine system are overactive or underactive, the person may suffer from:

- ▶ a slowed or racing heart
- ▶ trembling
- ▶ diminished interest in sex
- ▶ changes in temperature that don't relate to external temperature
- ▶ anxiety
- ▶ depression
- ▶ reduced quality of life
- ▶ weight gain or weight loss unrelated to food intake and/or levels of exercise.

The digestive system

The digestive system helps to break down and process food. This system distributes nutrients throughout the body and excretes waste products.

Components of the digestive system include the:

- ▶ mouth
- ▶ teeth
- ▶ oesophagus
- ▶ stomach
- ▶ pancreas
- ▶ liver
- ▶ bile duct
- ▶ intestines
- ▶ rectum
- ▶ anus.



Digestive system terminology

Here are some terms associated with the digestive system.

Digestive system terminology

Cirrhosis: a disease of the liver causing a change in bowel habits, nausea, vomiting and stomach pain

Constipation: difficulty expelling faeces

Dysphagia: difficulty swallowing

Faecal incontinence: difficulty maintaining bowel control

Gastroenteritis: inflammation of the gastrointestinal tract resulting in diarrhoea

Gingivitis: diseased, damaged or inflamed gums

Reflux: heartburn/vomiting

The function of the digestive system

The function of the digestive system is to turn the food we eat into the nutrients the body requires for healthy functioning. That is, it processes food and excretes waste products by breaking down the food we eat into nutrients to meet the body's requirements.

There are six essential nutrients that include carbohydrates, protein, fat, vitamins, minerals and water.

- ▶ Carbohydrates are the body's preferred source of fuel. Carbohydrates consumed are converted to glucose, and any excess glucose is stored as glycogen or fat.
- ▶ Protein is used to build and repair tissues. Protein is an important building block for bones, muscles, cartilage, skin and blood.
- ▶ Fat is another source of energy for the body to use. Fat also contains the fat-soluble vitamins A, D, E and K that are needed by our bodies.
- ▶ Vitamins are essential for maintenance and functioning of our body.



- ▶ Minerals balance our body's fluid levels and help maintain healthy bones
- ▶ Water is essential for most body functions including to keep every cell in the body health, to maintain blood flow, to aid digestion and to help get rid of byproducts from the blood.

Location of the digestive system

The digestive system comprises a long twisted tube that becomes hollow organs, such as the stomach and intestines, and accessory organs such as the liver and gallbladder.

It extends from the mouth (the start of the digestive system) to the anus (the end of the digestive system). Here is more information.

Mouth

Food is chewed into small particles through tearing with the front incisor teeth and ground with the back molar teeth. It is mixed with saliva that commences the breakdown of starch. The tongue then shapes the food into a bolus that this moved to the back of the throat and swallowed.

Oesophagus

Food is moved by a wavelike motion of peristalsis towards the stomach. A flap of tissue called the epiglottis closes the trachea until the food moves past and into the oesophagus.

Stomach

The stomach is a hollow organ that churns the food into a soupy like mixture called chyme. It has a band of tissue at the top called the cardiac sphincter to stop food from re-entering the oesophagus. The food in the stomach is mixed with gastric juice that is acidic. A lower band of tissue called the pyloric sphincter relaxes to allow food to pass into the duodenum of the small intestine.

Small intestine

Food moves through the small intestine by peristalsis. The digestive juices of the small intestine break the food down into smaller molecules of starch, protein and carbohydrates. These digestive nutrients are absorbed through the wall of the small intestine into the bloodstream.

Pancreas

The pancreas secretes pancreatic juice that breaks down starches, fats and proteins into smaller molecules in the small intestine. Fats are absorbed through the central lacteal into the lymphatic system.

Liver

The liver produces bile that mixes with the fat to enable it to be absorbed more easily.

The nutrients from the bloodstream are processed for the body's use in the liver.

Gall bladder

The gall bladder is a small sac that stores the bile produced by the liver until it is required.

Large intestine

All waste products not absorbed by the body travel through the digestive system to the large intestine. Water is absorbed and the waste material is formed into a stool (faeces or poo). This is then stored in the rectum until it is expelled from the body during a bowel movement.

Problems related to the digestive system

Here is further information to help you understand problems related to the digestive system.

Ageing

As people age, their systems can wear down. In the case of the digestive system wear and tear can be caused as a normal part of the ageing process, or from:

- ▶ poor hygiene
- ▶ poor or inadequate nutrition
- ▶ disease and illness
- ▶ disability.

Digestive complications

If the gastro-digestive system is not working properly people may experience:

- ▶ the ill effects of inadequate food intake, which can include weight loss, reduced bone mass density, damage to the brain and/or nervous system
- ▶ embarrassment and social isolation due to poor dental hygiene or inability to maintain healthy bowel function
- ▶ increased risk of heart attack
- ▶ discomfort associated with constipation
- ▶ fatigue.

Support for people with digestive problems

Here are some suggestions for ways you can support a person with digestive problems.

You can support people with digestive problems by ensuring they:

- ▶ eat small, regular meals
- ▶ eat balanced meals that include fibre
- ▶ avoid acidic foods
- ▶ have ready access to a toilet
- ▶ are assisted, when required, with toileting.

The urinary system

The urinary system processes and expels waste fluids from the body; deals with and expels toxins; and helps maintain blood pressure. It maintains the required levels of chemicals in the blood and blood volume. It is made up of the kidneys, ureter, urinary bladder and urethra.

Here are the organs and functions that support the digestive system.

Kidneys

The body has two kidneys: the left and right kidney. These are located in the middle of the torso just below the rib cage toward a person's back. The kidneys process fluids and toxins.

Ureter

The ureter connects the kidneys to the urinary bladder. Fluids are transported from the kidneys to the urinary bladder through the ureter.

Urinary bladder

Once the fluids have been processed by the kidneys they are stored in the urinary bladder.

Urethra

The urethra connects the bladder to an external opening that allows the urine to be passed from the body. The structure of the body varies slightly between men and women. A man's urethra is located in his penis while the opening to a woman's urethra is located in front of the vaginal opening.

Urinary system terminology

Here are terms relating to the urinary system.

Acute incontinence

Acute incontinence (loss of control of the bladder or bowel) may occur as a result of an injury or illness; it can be cured.

Chronic incontinence

Chronic incontinence develops over time and can be managed by following a toileting regime and assisting a person to use toileting and incontinence aids.

Cystitis

Cystitis is an infection of the urinary tract that may be caused by sexual activity or poor hygiene.

Dialysis

Dialysis is a process involving removing blood from the body, removing waste from the blood and then returning the blood to the body. You may help a person requiring support by transporting them to and from a medical centre for dialysis.

Enuresis

Enuresis means bedwetting. People with dementia may begin to wet their beds as their cognitive ability declines. People with physical disabilities may wet their beds as they are unable to get to a toilet in time.

Haematuria

Haematuria occurs when there is blood in the urine.

Incontinence

Incontinence is when a person cannot control their bowel or bladder.

Renal

The word 'renal' is used in relation to the kidneys (patients with kidney problems will see a doctor at a renal clinic).

Urologist

A urologist is a doctor who specialises in the illness and disease related to the urinary tract.

Function of the urinary system

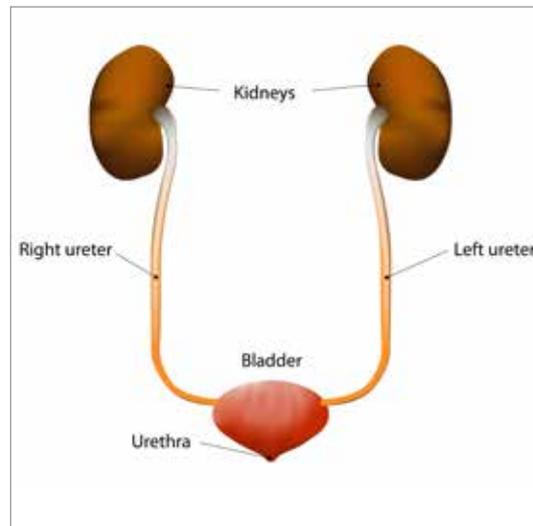
The kidney is comprised of thousands of small filters called nephrons, which are the functional unit of the kidney and filter around 180 litres of blood per day.

The main functions of the kidneys are to:

- ▶ regulate the amount of fluid and electrolytes in the blood
- ▶ filter out waste products
- ▶ secrete the hormone that controls blood pressure.

The blood is filtered through the nephrons. Waste products and fluid not required by the body form the urine. This fluid is transported by the ureters to the bladder. The bladder is able to stretch to hold urine. When the bladder is stretched receptor cells in the wall of the bladder send a message to the brain. The body will expel the urine through the urethra to exit the body.

Any fluid or substance that is required by the body is reabsorbed by the nephrons and moved back into the bloodstream.



Complications due to an inefficient urinary system

When caring for older or infirm people it is important to look out for signs and symptoms of an inefficient or ineffective urinary system. You are required to use the correct terminology for these symptoms.

Symptoms of urinary illness may include:

- ▶ urinary incontinence
- ▶ high blood pressure
- ▶ oedema of the eyes, feet and hands
- ▶ a burning sensation when urinating.

The reproductive system

As the name suggests, the male and female reproductive systems are responsible for reproduction. These systems also help with development – in particular, with the development of secondary sex characteristics such as pubic hair in both males and females.

The information below describes how the male and female reproductive systems differ.

Male

Made up of:

- ▶ testicles
- ▶ a duct system
- ▶ accessory glands including the prostate gland
- ▶ a penis.

Female

Made up of:

- ▶ the vagina, vulva and clitoris
- ▶ ovaries
- ▶ fallopian tubes
- ▶ a uterus.

Reproductive system terminology

Here are terms associated with some complications that can occur within the reproductive system.

Ectopic pregnancy

- ▶ This occurs when a fertilised egg has implanted outside the uterus, usually in the fallopian tubes.

Endometriosis

- ▶ This condition occurs when the tissue from the uterus is lodged on other organs causing bloating, pain and, if not treated, infertility.

Erectile dysfunction

- ▶ This occurs when a man has difficulty gaining or maintaining an erection. The cause can be psychological, such as stress, or physical, such as diabetes, problems with the prostate or cardiovascular conditions.

Ovarian cysts

- ▶ These are sacs of fluid found on the ovaries. Cysts can range in size. Typically they are benign (non-malignant) but can be malignant. They can be painful. In some instances cysts are removed with surgery.

Ovarian tumours

- ▶ An ovarian tumour can be malignant (cancerous) or non-malignant (non-cancerous).

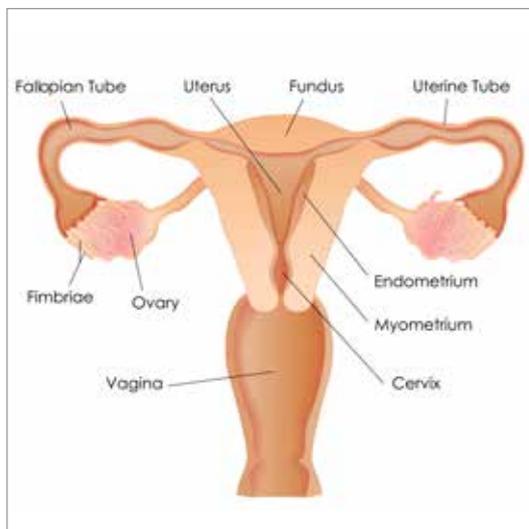
Polycystic ovary syndrome

- ▶ This is a hormonal condition that can lead to women:
- ▶ developing the male sex characteristic of facial hair
- ▶ gaining weight and becoming obese
- ▶ ceasing menstruation
- ▶ becoming infertile.

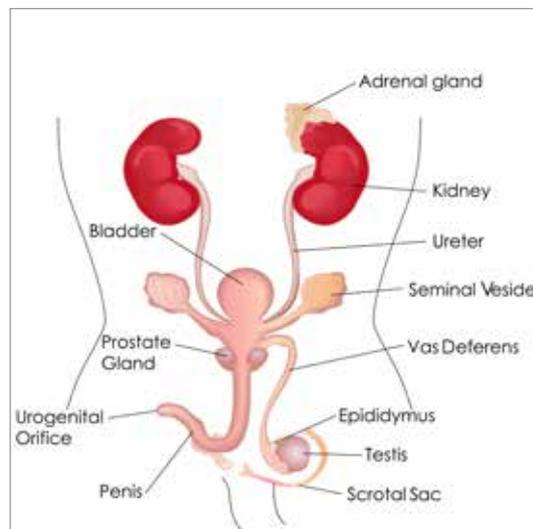
Prostate cancer

- ▶ The prostate forms part of the male reproductive system. Australian statistics suggest that the number of men who die from prostate cancer each year is equal to the number of women who die from breast cancer.

Structure of the reproductive system



Female reproductive system



Male reproductive system

The female and male reproductive systems differ in structure but have the same functions:

- ▶ Maturation of the human body (the secondary sex characteristics developing boy into man and girl into woman)
- ▶ Reproduction – the creation of a new person

Location of the female reproductive system

The functions of the external structure of the female reproductive system are to enable the sperm from the male to enter the body and to protect the internal reproductive system from infection.

Here are the parts of the female reproductive system.

External structures

- ▶ Labia majora – the outer lips of the vagina, they contain sweat and oil glands and after puberty are covered with hair
- ▶ Labia minora – the inner lips of the vagina that surround the opening to the vagina and urethra
- ▶ Clitoris – covered by a fold of skin and consists of erectile tissue

Internal structures

- ▶ Vagina – the canal that joins the cervix to the outside of the body, or birth canal
- ▶ Cervix – the opening to the uterus
- ▶ Uterus – a hollow pear-shaped organ that stretches to hold a developing foetus
- ▶ Ovaries – small oval shaped glands that produce the ova (eggs) and female hormones
- ▶ Fallopian tubes – the passage through which the ova travel to the uterus and within which fertilisation takes place

Location of the male reproductive system

The functions of the male reproductive are to:

- ▶ produce and transport sperm and the protective fluid, semen
- ▶ to eject the sperm into the female reproductive tract
- ▶ produce and secrete the male reproductive hormones.

Here are the parts of the male reproductive system.

External structures

- ▶ Penis – consists of three parts, the base that is attached to the abdomen, the shaft or body of the penis and the glans or head of the penis; the glans is covered with a layer of skin called the foreskin
- ▶ Scrotum – a loose sac of skin that contains the testes (testicles), nerves and blood vessels; the scrotum controls the internal temperature of the testes

Internal structures

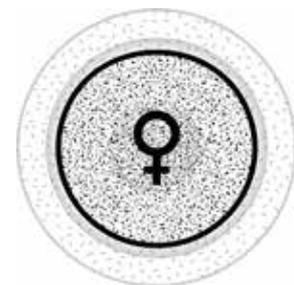
- ▶ Testes – two oval organs secured by the spermatic cord located within the scrotum; the testes produce testosterone – the male sex hormone – and contain many coiled tubes called the seminiferous tubules that produce the sperm cells
- ▶ Epididymis – a long coiled tube that transports and stores the sperm cells; the sperm cells mature within this structure
- ▶ Vas deferens – a tube that takes the sperm from the epididymis to the urethra
- ▶ Ejaculatory ducts – the fusion of the vas deferens and the seminal vesicles; they empty into the urethra
- ▶ Urethra – the tube that carries urine from the bladder to the outside of the body
- ▶ Seminal vesicles – little sacs that are attached to the vas deferens that produce a fluid that provides nutrients to the sperm cells
- ▶ Prostate gland – a gland located below the bladder that produces fluid to also nourish the sperm cells; the urethra runs through the prostate gland

The function of the female reproductive system

At puberty the female reproductive cycle initiates monthly cycles of hormonal activity (the menstrual cycle) to prepare the body for pregnancy. If pregnancy does not occur, the uterus sheds its lining; this is called menstruation.

The menstrual cycle has two phases, the follicular phase and the ovarian phase.

The follicular phase commences on the first day of the period. Follicle stimulating hormone and luteinising hormone are circulated to stimulate the ovaries to produce ova. These hormones also stimulate the rise of oestrogen.



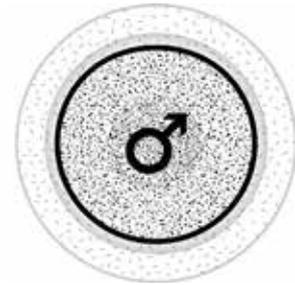
The ovarian phase of the menstrual cycle also consists of two phases, the ovulatory phase and the luteal phase. The ovulatory phase commences when oestrogen levels rise, which results in the release of an ovum. This is ovulation. The ovum is then caught by the fimbriae (finger-like projections) at the end of the fallopian tubes. The ovum progresses through the fallopian tube where fertilisation can take place.

After ovulation, the follicle that released the ovum starts secreting progesterone, which prepares the lining of the uterus for implantation of the fertilised ovum. The lining becomes thick and lush. If no fertilisation takes place, this lining breaks down and is expelled from the body during menstruation.

Function of the male reproductive system

The male reproductive system is also reliant on the production of hormones. The main hormones involved in this system are follicle stimulating hormone, luteinising hormone and testosterone. These hormones do not fluctuate on a monthly cycle like the female hormones.

Here is more information about the hormones of the male reproductive system.



Follicle stimulating hormone

- ▶ Needed to produce sperm – spermatogenesis

Luteinising hormone

- ▶ Stimulates the production of testosterone

Testosterone

- ▶ Stimulates the development of male characteristics including muscle mass and strength, fat distribution, bone mass, facial hair, voice change, development of the sex organs and sex drive

Sexuality

All people have a right to express their sexuality. As a support worker, you need to understand this right and be considerate of how people may express their sexuality differently. You can assist others by:

- ▶ respecting and providing privacy for others
- ▶ referring the individual to an appropriate professional (counsellor, therapist or psychologist, if they express concerns about their attractiveness, sex life or relationships)
- ▶ ensuring that individuals participate in a full range of social activities enabling them to find a partner
- ▶ not judging their sexual choices
- ▶ respecting the person's desire to have children (referring the person to an appropriate healthcare professional).



The integumentary system

The integumentary system is made up of the skin, glands, hair and nails. This system plays a number of roles. The skin, in particular:

- ▶ acts as a barrier protecting internal organs
- ▶ helps make use of vitamin D, an essential vitamin that helps build and maintain bones
- ▶ is a major organ that allows us to sense heat, cold, sharp surfaces and other environmental factors that need to be acted upon.



The appearance of a person's hair, nails and skin may indicate illness or disease. People in aged care and in home and community care settings may spend much of their time inside. As a result, they may not get enough vitamin D. Support workers can assist by transporting and accompanying the person they are supporting outside in the morning or evening when it is safe to be exposed to the sun.

Integumentary system terminology

Here are some terms associated with the integumentary system and complications that can occur.

Integumentary system terminology

- ▶ Carcinoma: Cancer that begins in the skin or in tissues that line or cover body organs
- ▶ Epidermis: The outer layer of the skin
- ▶ Fungal infection: Common infections include tinea and athlete's foot
- ▶ Lesions: Damaged skin tissue
- ▶ Melanoma: A type of skin cancer
- ▶ Sebum: Oily secretions
- ▶ Ulcer: An inflamed lesion

Structures of the integumentary system

The integumentary system consists of many structures to support the functions of the body, including those described below.

Ceruminous glands

- ▶ Exocrine glands found only in the ear canal
- ▶ Produce a waxy secretion called cerumen (earwax)
- ▶ Cerumen protects and lubricates the air canal

Dermis

- ▶ The deep layer of skin found beneath the epidermis
- ▶ Contains nerves, blood and blood vessels
- ▶ Consists of two layers: the papillary layer that contains papillae to provide nutrients and oxygen for the epidermis; and the reticular layer that contains collagen and elastin fibres to provide strength and elasticity for the skin, and that has the nerve cells that sense pressure and pain in the skin

Epidermis

- ▶ The outer layer of the skin
- ▶ The outer layer of the palms and feet are thicker than other layers of the epidermis

Hair

- ▶ Made of keratin and covers most of the body except for the palms of the hand and soles of the feet
- ▶ Protects the skin from UV radiation
- ▶ Insulates the body by trapping warm air around the body

Nails

- ▶ Found at the ends of fingers and toes and consist of hardened keratin
- ▶ Reinforce and protect the end of the fingers and toes
- ▶ Allow the person to scrape and manipulate small objects

Sebaceous glands

- ▶ Exocrine glands found in the dermis of the skin
- ▶ Produce sebum, an oily fluid
- ▶ Sebum is transported through a duct to the hair follicle
- ▶ Protects and lubricates the hair cuticles
- ▶ Waterproofs the skin
- ▶ Increases the elasticity of the skin

Subcutaneous layer

- ▶ Consists of areolar connective tissue to allow the skin to stretch and move
- ▶ Connects the skin with the muscles and bones
- ▶ Contains fatty adipose tissue to store fat
- ▶ Provides insulation to the body

Sweat glands

- ▶ There are two types of sweat glands: eccrine sweat glands and apocrine sweat glands
- ▶ Eccrine sweat glands are found throughout the skin and produce fluid consisting of water and salt. This fluid is transported to the surface of the skin via a duct and cools the body when it evaporates.
- ▶ Apocrine sweat glands are found in the axilla and pubic regions of the body. They are inactive until puberty. The ducts empty into the hair follicle and produce an oily liquid that is used by the skin's bacteria. This produces body odour.

Functions of the integumentary system

The integumentary system undertakes many functions including protection, temperature, regulation, Vitamin D synthesis, sensation and excretion, as described here.

Keratinisation

- ▶ Keratinisation is the hardening of cells to provide protection from the external environment.

Temperature regulation

- ▶ If the body becomes too hot (hyperthermia) the temperature is reduced by sweating and vasodilation of the red blood vessels. The red blood cells enlarge letting heat out and giving the skin a flushed appearance that is warm to the touch.
- ▶ If the body becomes too cold (hypothermia) the skin assists to raise the body temperature through the contraction of arrector pili muscles (goose bumps) and vasoconstriction of the blood vessels. The red blood cells become smaller and the skin becomes pale and cool to the touch. The hair stands upright due to the contraction of the arrector pili muscles and traps the air around the body to insulate it.

Vitamin D synthesis

- ▶ When UV rays touch the skin, the skin converts it into Vitamin D for use by the body.

Protection

- ▶ Harmful bacteria cannot penetrate unbroken skin. Cells in the epidermis are constantly replicating to repair any damage to the skin. Specialised cells in the skin produce melanin that absorbs UV light to prevent cells of the body changing and forming cancerous cells.

Sensation

- ▶ The skin allows the body to sense information from the external environment through touch, pressure, vibration, temperature and pain.

Excretion

- ▶ The sweat glands in the skin allow the body to eliminate water, electrolytes and other waste products that are not required and could be harmful to the body.

Maintain a healthy integumentary system

Support workers must look for, record and report any changes to the condition of a person's skin. Workers can help maintain the condition of a person's integumentary system by ensuring the person:

- ▶ eats a variety of foods
- ▶ maintains their personal hygiene (hair, nails and skin)
- ▶ are active or change position, if they spend much of the day sitting or lying, to prevent bed sores (also known as pressure sores).

Assist individuals to maintain body temperature

If a person is unable to maintain a healthy and comfortable body temperature independently, the support worker must assist with this need. Remember:

- ▶ Hyperthermia is an elevated body temperature
- ▶ Hypothermia is a lowered body temperature

The fluctuations in body temperature may be due to:

- ▶ damage to the area of the brain (the hypothalamus) responsible for maintaining the body's temperature
- ▶ environmental factors – climate, inappropriate clothing
- ▶ infection.

The support worker should determine the cause of the altered temperature and adjust the care they provide, as follows.

Care of a person with an elevated temperature

- ▶ Ensure the person drinks adequate fluids as a higher body temperature will cause an increase in sweating in an attempt by the body to cool itself
- ▶ Ensure the environment is at an appropriate temperature – use cooling devices and/or fans
- ▶ Wash the person's limbs and torso with cool or tepid water

Care of a person with a lowered temperature

- ▶ Ensure adequate clothing – immobile people usually feel cooler than a person who can mobilise
- ▶ Ensure when showering or providing personal hygiene the person is covered as much as possible and windows and doors are kept closed to minimise draughts
- ▶ Ensure the environment is at an appropriate temperature – use heating devices
- ▶ Offer warm drinks and food

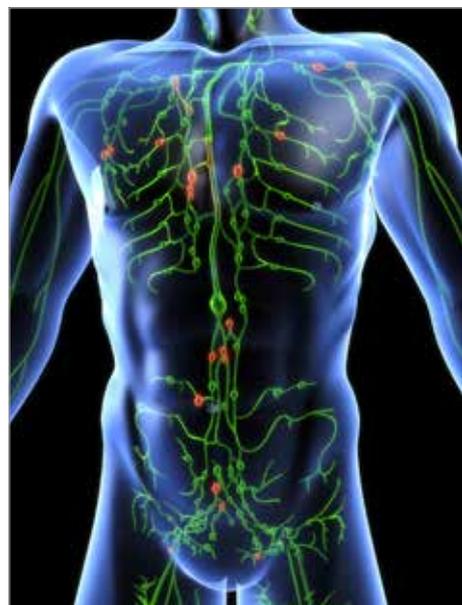
The lymphatic system

The lymphatic system plays an important role in defending the body and its cells against pathogens (disease-causing organisms), by filtering, removing and reacting to them.

People with compromised immune systems or inefficient lymphatic systems need special care. In particular, they must not be exposed to people with contagious diseases, and allergens. The lymphatic system forms part of the immune system.

The lymphatic system is made up of:

- ▶ nodes located at various places throughout the body, including on the neck, under the arms, in the abdomen and intestines, near the genitals and near the knees
- ▶ ducts



- ▶ capillaries and blood vessels
- ▶ the thymus
- ▶ the spleen
- ▶ red bone marrow.

Lymphatic system terminology

Here are some terms associated with complications that can occur within the lymphatic system.

Immunity	The body's ability to fight disease, illness, viruses and other pathogens
Lymphadenopathy	Swollen lymph nodes
Lymphocytes	White blood cells that fight infection
Lymphomas	Cancer of the lymph nodes
Nodes	Small organs that filter lymphatic fluid
Red bone marrow	Red bone marrow produces lymphocytes
Spleen	The organ located in the abdomen that removes diseased cells and other harmful matter from the bloodstream
Splenomegaly	An enlargement of the spleen
Tonsillitis	Inflamed tonsils

Location of the lymphatic system

The lymphatic system is similar to the cardiovascular system and covers all regions of the body. It consists of glands vessels, nodes, tissues and organs. For example, the thymus is a gland that functions in childhood and gradually diminishes after puberty before being replaced by fatty tissue. When the lymphatic system is working to protect the body from disease, the nodes that consist of lymphatic tissue increase in size and can be felt through the skin.

Here is more information (and terminology) about the location of parts of the lymphatic system in the body.

Head and neck

- ▶ Adenoids
- ▶ Cervical nodes
- ▶ Lingual tonsils
- ▶ Palatine tonsils

Arm and hand

- ▶ Cubital nodes

Leg and foot

- ▶ Popliteal nodes

Upper torso

- ▶ Axillary nodes
- ▶ Broncho mediastinal trunk
- ▶ Broncho pulmonary nodes
- ▶ Intercostal nodes
- ▶ Jugular trunk
- ▶ Mediastinal nodes
- ▶ Right lymphatic duct
- ▶ Spleen
- ▶ Subclavian trunk
- ▶ Thoracic duct
- ▶ Thymus gland

Lower torso

- ▶ Appendix
- ▶ Cysterna chyli
- ▶ Iliac nodes
- ▶ Inguinal nodes
- ▶ Intestinal trunk
- ▶ Lumbar trunk
- ▶ Peyer's patches

The function of the lymphatic system

The lymphatic system collects fluid and particles that have moved into the tissue spaces. Initially the vessels are very thin with openings to allow fluid and material to enter. The vessels gradually change and the walls become thicker and vein-like with valves to keep the fluid moving in one direction. People with excess fluid in their tissue have oedema. Their tissue/limbs become swollen and sometimes, if severe, fluid can leak through the skin.

Along the pathway, the fluid passes through lymph nodes, which filter the lymphatic fluid. The main cells found in the lymphatic fluid are lymphocytes, which are white blood cells dedicated to fighting infection. In the node, special cells (lymphocytes and macrophages) collect and destroy harmful matter, such as bacteria. When an infection is present the lymph nodes become swollen as more of the special cells are required to collect the bacteria.

Some body organs also form part of the lymphatic system. These organs are the tonsils, adenoids, spleen and thymus. Other lymphatic tissue is found throughout the body.

The lymphatic fluid is eventually returned to the circulatory system emptying into the large venous vessels of the neck.

Spleen

- ▶ The spleen is located on the left side of the body above the kidneys. It filters the blood and removes old red blood cells. It creates white blood cells called lymphocytes to produce antibodies to kill foreign microorganisms such as bacteria. You can live without a spleen.

Thymus

- ▶ The thymus is located in the chest above the heart. It stores immature lymphocytes until they mature to specialised cells (T cells) that destroy infected or cancerous cells. The thymus is only active in childhood. At puberty it becomes inactive and is replaced by fatty tissue.

Tonsils

- ▶ The tonsils are made up of lymphatic tissue and are the first defence against harmful microorganisms that enter through the mouth and nose.

Lymph

- ▶ Lymph is a clear fluid containing white blood cells called lymphocytes.

Oedema

- ▶ Oedema occurs when tissues of the body fill with excess fluid. This results in swelling of the tissue and limbs.

The immune system

The immune system's main function is to fight infection. The way it does this is through the production of special cells and chemicals. These are white blood cells and antibodies. The main components of the immune system are the white blood cells and lymphoid organs.

A four-stage process is followed by the body's immune system to protect the body from infection.

Infection response

1. Recognition – identification of foreign material
2. Activation and mobilisation – a signal is sent through the attachment of a T cell to the foreign microorganism or B cell recognition, and white blood cells travel to the site
3. Regulation – damage to the body by the immune response is controlled by suppressor T cells
4. Resolution – confining the invading material and eliminating it from the body; the white blood cells then self-destruct and are ingested; however, some do not destruct and become memory cells

Location of the immune system

The immune system is closely linked to the lymphatic system and the circulatory system. The main component of the immune system is the specialisation of white blood cells that help the body overcome infection. These specialised cells are B cells and T cells. These white blood cells are made in the bone marrow and the thymus, the primary lymphoid organs.

Secondary lymphoid organs are found throughout the body and consist of the spleen, lymph nodes, tonsils, appendix and Peyer's patches.



Cells within the immune system that assist with the fight against infection or foreign material include:

- ▶ killer cells that attack infection
- ▶ suppressor cells that stop the immune response
- ▶ helper cells that assist to make antibodies.

Components of the immune system

The components of the immune system are the white blood cells and the lymphoid organs. Specialised white blood cells that fight infection can move freely throughout the whole body and travel within the lymph fluid and also blood.

Lymphoid organs are categorised as primary or secondary organs.

The primary organs for the immune system are the bone marrow found within all bones of the body; and the thymus located in the chest before puberty.

The secondary lymphoid organs include the spleen, lymph nodes, tonsils, appendix and Peyer's patches. Tonsils are found in the neck region of the body, lymph nodes are scattered throughout the body and the spleen, appendix and Peyer's patches are located within the abdomen.

Here is more information about the components of the immune system.

Antibody

Antibodies are produced by B cells and attach to the antigen of the invading microorganism, either identifying it for further attack or neutralising it immediately.

Antigens

An antigen is a substance that is recognised by the immune system and can stimulate a response.

B cells

B cells are white blood cells that produce antibodies in response to the antigen.

Basophils

Basophils are white blood cells that release histamine (allergic response) and attract other white blood cells to an area.

Helper T cell

Helper T cells are white blood cells that help produce antibodies and activate killer cells.

Immune response

An immune response is the reaction of the immune system to an antigen.

Killer T cells

A killer T cell attaches to infected cells and cancer cells and kills them.

Phagocytes

Phagocytes are cells that ingest and kill or destroy invading microorganisms, other cells, and cell fragments.

Phagocytosis

Phagocytosis is the process of a cell engulfing and ingesting an invading microorganism, another cell, or a cell fragment.

T cell (T lymphocyte)

A T cell is a white blood cell that is involved in acquired immunity and that may be one of three types: helper, killer or regulatory.

The function of the immune system

The immune system defends the body against foreign or dangerous invaders such as:

- ▶ microorganisms
- ▶ parasites
- ▶ cancer cells
- ▶ foreign tissues and organs (transplants).

It is able to detect what belongs to the body and what does not belong and will initiate an immediate response to the threat. This is known as the immune response.

The immune response can be an increase in production of white blood cells by the nodes and organs; movement of the white blood cells to a particular location of the body; and fever.

Our immune system helps protect us when the first line of defence of the body is overcome. This can happen when a cut to the skin occurs and microbes enter through this opening. Microbes may be viruses, bacteria and parasites. Viruses tend to be airborne and usually enter the body through the respiratory system.



The immune system at work

A chemical message is sent to the white blood cells by the damaged cells of the body. The white blood cells move to the affected area and engulf the invading microorganisms. A secretion (pus) is produced, which is a mixture of lymph fluid, white blood cells and dead microorganisms.

Fever can be part of the immune response and is the body raising its temperature so it becomes a less favourable host. Fever also supports the immune response.

The body also tries to organise second lines of defence against the invading microorganisms. Special lymphocytes (B cells) try to identify if they have been in contact with the microorganism previously. If they have they can generate the antibodies, made from previous exposure, to overcome the microorganisms.

Here is some more information.

Immune system first line of defence

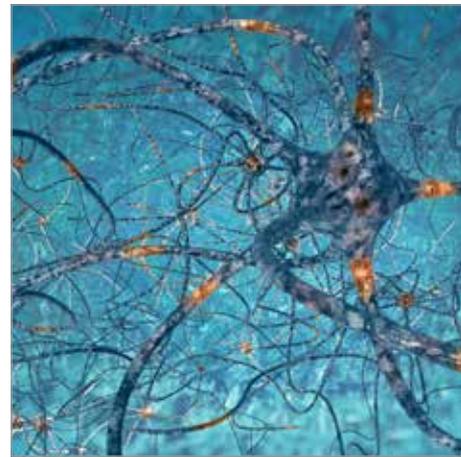
- ▶ Physical or mechanical barriers to infection
- ▶ The skin
- ▶ The cornea of the eye
- ▶ Membranes lining the respiratory, digestive, urinary and reproductive tracts

Immune system second line of defence

- ▶ Innate immunity – through breastfeeding or having had the disease
- ▶ Acquired immunity – through immunisation

The nervous system

The nervous system is responsible for communicating information received by the senses (sight, smell, touch, hearing and taste) to the brain. It processes information and communicates required responses to the muscles and bones of the body.



The nervous system is divided into two parts:

- ▶ The central nervous system is made up of the brain, spinal cord and nerves. These structures are protected by bone, the skull and vertebral bones of the spine, and cerebrospinal fluid that cushions the brain and spinal cord.
- ▶ The peripheral nervous system is made up of the sensory neurons, ganglia and nerves that connect to one another. The nerves are covered by a special insulating tissue called the myelin sheath.

These two parts enable communication between the body and the external environment, and also communication within the internal environment of the body. The way in which this communication takes place is through the transmission of signals fired by the neurons and transmitted along the nerve pathways of the body.

Location of the nervous system

The central nervous system comprises the brain and spinal cord is located within the bony structures of the skull and vertebral column. This provides good protection for these vital organs.

The peripheral nervous system consists of the sensory and motor nerves that reach each part of the body. There are 12 cranial nerves and 31 spinal nerves that are able to transmit information to and from the brain.

Two of the nerves that are very closely located to the brain are the optic nerve and the auditory nerve.

The optic nerve

The optic nerve is located in the back of the eye. It is the second cranial nerve. There is a nerve to both the right and left eye. These nerve fibres separate at an X-shaped space in front of the brain. At this point of the optic nerve, the part of the nerve close to the nose crosses over.

The auditory nerve

The auditory nerve transfers auditory information from the cochlea to the brain. It is the eighth cranial nerve. The function of the cochlear nerve is to gather auditory data from the environment.

Nervous system terms and meanings

Here are some terms associated with the nervous system.

Cerebellum

The cerebellum, also known as the little brain, is located at the back of the head under the cerebrum.

The cerebellum controls:

- ▶ balance
- ▶ voluntary movement of the limbs and muscles
- ▶ facial control
- ▶ speech.

Cerebrum

The cerebrum is the largest part of the brain. The cerebrum is responsible for higher-level intellectual activities such as:

- ▶ planning
- ▶ reasoning
- ▶ perception
- ▶ problem-solving
- ▶ using and understanding language.

Motor control

The term motor control refers to a person's ability to direct and control their movements. These can include fine motor skills, such as writing and sewing and gross motor skills such as walking, running and swinging a golf club.

Motor disorder

A motor disorder arises as a result of any one of a number of conditions (for example, HIV, Huntington's disease and Parkinson's disease) that reduces a person's ability to control and regulate their movements.

Scoliosis

This is a congenital disease, also known as curvature of the spine, because of the way the spine curves from side to side.

Components of the nervous system

Each component of the nervous system is comprised of many parts. Information from many sensory organs is transmitted along various pathways until it reaches the brain, where information processing takes place.

For example, the eye takes in information from the environment. The image enters through the pupil, travels onto the lens then to the optic disc. An impulse is generated and is transmitted along the optic nerve to the brain for processing.

The ear collects sound waves through the external ear and the sound waves cause the tympanic membrane to vibrate, which move three small bones. These small bones in the middle ear cause the fluid in the cochlea to move. The fluid, while moving, bends the little hairs in the ear, which transmit a signal to the auditory nerve.

Here is some more information.

The brain

The brain is made of grey matter on the outside, (nerve cell bodies) the white matter on the inside (nerve processes).

The brain is divided into four main parts:

- ▶ The cerebrum – the largest part, the centre for thought and intelligence. It is further divided into two hemispheres. The left side controls movement and activity for the right side of the body; and the right side controls the left side of the body. There are specialised areas that control speech, hearing, smell, sight, memory, learning and motor and sensory functions.
- ▶ The cerebral cortex – the outside of the cerebrum; its functions include learning, reasoning, language and memory
- ▶ The cerebellum – located below the cerebrum towards the back of the skull; its functions are to control voluntary muscles, balance and muscle tone
- ▶ The medulla – controls the heart rate, breathing, swallowing coughing, vomiting, or vital processes of the body. It helps form the brainstem with the pons and the midbrain that connects the spinal cord to the brain.

Lobes of the brain

The brain is further divided into lobes that have particular functions, as follows:

- ▶ The frontal lobe – general intellect and motor control
- ▶ The temporal lobe – auditory input and interpretation
- ▶ The parietal lobe – general sensory input and interpretation
- ▶ The occipital lobe – visual input and interpretation
- ▶ The insular lobe – linked to emotion and self-perception

The spinal cord

The spinal cord also consists of white and grey matter like the brain.

The spinal cord extends from the medulla to the second lumbar vertebrae. It is the message path between the brain and the body.

Peripheral system

The peripheral system consists of the two parts: the autonomic nervous system: and the somatic nervous system:

- ▶ The autonomic nervous system controls the heart, smooth muscle (organs) and glands and is concerned with the 'fight or flight' system, and the 'resting and digestive' system.
- ▶ The somatic nervous system controls our skeletal muscles.
- ▶ There are 12 cranial nerves and 31 spinal nerves.

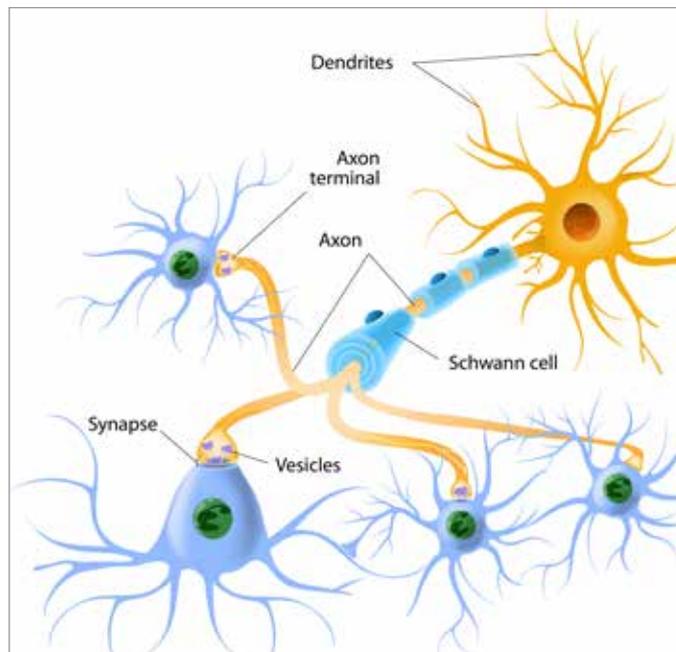
Nerves

- ▶ Nerves are made up of cells called neurons. A neuron has a cell body and an axon (tail like part). Impulses are sent to cell to cell.
- ▶ The axon is covered by a Myelin sheath that is needed for the impulse to be transmitted. If this is missing the impulse does not travel. This can occur in diseases such as Multiple Sclerosis.
- ▶ At the end of the axon the message has to cross a space known as the synapse. Special chemical transmitters take the message to the next cell. Some diseases such as Parkinson's disease have not enough of these chemicals.

Functions of the nervous system

The brain processes the information from the nerves. One part of the nervous system takes messages to and from the brain and the other takes messages from the brain.

Nerves are made up of many neurons, which transmit or relay the messages to each other along a pathway called a nerve. Each nerve is made up of a number of neurones. The message is transmitted via electrical impulses along the axon and via a chemical messenger at the space between each neuron (the synapse). The first component of the neuron is the dendrite, which captures the chemical message and transfers it to the cell body and then through the axon. Sensory neurons transmit messages to the brain, and motor neurons take messages from the brain.



The nervous system also has a specialised pathway to enable protection for the body. This is known as a reflex arc. This is a pathway of impulse transmission that travels from the sensory nerve to the spinal cord and a message is sent back via a motor nerve. At the same time the message is conveyed to the brain. This pathway involves both the peripheral and central nervous system. An example of this process at work is the reflex blinking of the eye when a puff of wind hits the eye. This is a way the body protects itself from harm.

Nervous system disorders

Disorders of the nervous system are caused by conditions such as spina bifida or cerebral palsy.

Here are some ways you can support a person who may have one of these conditions.

Spina bifida

People with spina bifida experience pain sensations and difficulty moving. They also may experience incontinence, spinal deformities and learning difficulties. You can provide support by:

- ▶ assisting with toileting
- ▶ paying particular attention to any wounds or cuts on the person's extremities when providing personal care (the person may not realise that they have cuts due to impaired sensation, which can cause cuts to become infected)
- ▶ assisting with exercises designed to prevent further damage to, or control curvature of, the spine.

Cerebral palsy

People with cerebral palsy may have difficulty controlling the movement of their limbs and head and/or may experience tremors and shakiness. Support workers may need to:

- ▶ use augmentative and alternative communication
- ▶ assist the person to use and maintain aids such as braces and other walking aids
- ▶ provide straws so a person can drink without spilling their beverage.

Acquired brain injury

The nervous system can be damaged by an acquired brain injury (ABI), which may arise as a result of an accident or from exposure to toxins, such as excessive alcohol use. This can affect perception and sensation depending on the location and severity of the brain injury. Care requirements are influenced by the severity of injury.

Workers can support the person by:

- ▶ making the person aware of hot and cold substances due to loss of sensation
- ▶ assisting the person with mobility issues.

The special senses

The special senses include smell, taste, vision, hearing and equilibrium. These senses are used to detect changes and react appropriately to external stimuli. Examples of external stimuli include fumes, gases and temperature.

The nose, ears, eyes and mouth are responsible for sensing external stimuli. This stimulus (the smell, sound, image or taste) is interpreted by the brain. Damage to the brain or certain brain disorders may alter the way the smell, taste, aural or visual information is perceived. Sensation and perception are interlinked, but they are different processes.



Smell

The sense of smell is the ability to detect odours or smells. Smell is used to detect danger such as fumes and gases. A person with a diminished sense of smell cannot taste food and may not notice their own odours, leading to embarrassment in social situations.

A support worker can help promote a person's safety by ensuring that chemicals are stored safely, that gas appliances are working properly and that the person's home has a functional smoke alarm.

Smell is only one of the nose's functions. Noses also help filter air and prevent foreign bodies from entering the respiratory system.

Some terminology that is related to the sense of smell is outlined below.

Terminology
<p>Cilia The tiny hairs in the nose</p>
<p>Nostrils The two openings in the nose</p>
<p>Olfactory Relating to the nose and smell</p>
<p>Septum The walls between the nostrils</p>

Taste

The sense of taste is the ability to detect the flavours of food and other substances. The tongue has a number of receptors (tastebuds) that detect whether food is sweet, sour, salty, bitter or umami.

These receptors also allow people to detect whether food is off. In addition, tastebuds enhance our enjoyment of food. As people age, these receptors become less effective and can affect an older person's enjoyment of food, which can limit the items they select.



Terminology that you need to understand regarding taste includes:

- ▶ Oral – by mouth
- ▶ Xerostomia – dry mouth
- ▶ Saliva – a fluid secreted into the mouth that helps break down food

Sight

The eyes provide vision, which is another important sense. Vision lets people see what is around or near to them. The eyes outer tissue layer is the cornea. The cornea is clear and very sensitive. Light enters the eye through the pupil and is refracted by the lens through the vitreous (the liquid in our eyes). A signal is then sent to the brain from the retina via the optic nerve.

People’s ability to see can be reduced as they grow older. Vision impairment can also arise as a consequence of disease or illness.

Other parts of the eye are listed below.

The main parts of the eye are the:

- ▶ cornea
- ▶ pupil
- ▶ iris
- ▶ macula
- ▶ vitreous
- ▶ lens
- ▶ retina
- ▶ sclera
- ▶ optic nerve.

Terminology related to sight

Terminology that you should understand when describing or discussing sight is defined below.

Terminology
Glaucoma A chronic eye disease
Ocular Relating to the eye
Presbyopia A condition in which the lens of the eye loses its ability to focus on near objects associated with ageing
Hypermetropic Far- or long-sighted

Assist a person with diminished vision

Vision allows us to sense the world around us and to:

- ▶ participate in communication by seeing nonverbal signs of communication such as gestures and facial expressions
- ▶ recognise danger
- ▶ participate in activities of daily living.

Support workers can play a role in assisting others by:

- ▶ making sure that the floor, walkways and the environment are free from hazards
- ▶ promoting the use of adaptive devices and visual aids as listed in the care plan
- ▶ transporting people to and from recreational events to prevent isolation.

Equilibrium

Equilibrium means balance. The ears play a role in creating and maintaining equilibrium. The inner ear contains fluid which, along with our vision, helps us determine whether we are moving, stationary, upright or lying down.

Balance disorders can cause vertigo, dizziness and nausea. Balance is particularly important for older people who are more susceptible to breaks and fractures when falling.



Terminology related to equilibrium

Here are some terms associated with equilibrium.

Vestibular

Relating to the inner ear

Ménière's disease

A disorder of the inner ear

Vertigo

A condition relating to the inner ear that can make people feel as if the world is spinning about them

Labyrinthitis

An infection of the inner ear

Perilymph fistula

A tear or other opening between the middle and inner ear that produces adverse effects such as vertigo

Otolaryngologist

A doctor who specialises in the ear, nose and throat

Assist a person with diminished equilibrium

Balance can be affected by a range of illnesses, diseases and disorders, including Ménière's disease, stroke, ear infections, leakage in the ear and inflammation of the ear.

Some of ways people with diminished equilibrium may need assistance are listed below.

How others can help persons with balance problems

- ▶ Ensuring that the person adheres to any special dietary requirements
- ▶ Assisting with rehabilitation exercises designed to promote a person's sense of balance

- ▶ Ensuring that the floor surface is flat and free from hazards
- ▶ Asking for adaptive devices such as bars for walkways, and in bathrooms and toilets

Hearing

The ears are responsible for processing aural information (sound) as well as maintaining balance.

There are two main types of hearing impairment: conductive and sensorineural. These are outlined below.

Conductive	Sensorineural
<p>Conductive hearing loss is caused by:</p> <ul style="list-style-type: none"> ▶ blockages within the ear canal ▶ damage to the ear canal ▶ problems with the eardrum. 	<p>Sensorineural hearing loss may be a result of:</p> <ul style="list-style-type: none"> ▶ damage to the cochlea or the hearing nerves ▶ being born with sensorineural hearing loss ▶ a normal part of the ageing process ▶ exposure to toxins and pathogens such as illness, disease and drugs.

Terminology related to hearing

Terminology that you need to understand regarding hearing includes the following:

- ▶ Audio – relating to sound
- ▶ Audiologist – a doctor specialising in the ear
- ▶ Aural – by ear



Assist a person with diminished hearing

Hearing, like vision, is an important part of communicating. If you are supporting someone with a hearing impairment, you should:

- ▶ speak directly to the person
- ▶ make sure that your mouth is visible
- ▶ speak naturally
- ▶ use alternative or augmentative aids as listed on the person’s care plan
- ▶ help maintain equipment such as hearing aids.

Example

Use knowledge of the muscular system to benefit others

Jenna has limited movement on the right side of her face due to a stroke that caused partial paralysis. As a result, she has trouble communicating pleasure or displeasure. Support workers are unable to use visual cues to determine whether Jenna is unhappy or happy. As a strategy, workers ask additional open-ended questions to make sure the care they provide is appropriate and in line with Jenna’s preferences.

Practice task 1

1. Name **five** of the body systems.

.....
.....

2. Name the **three** types of muscular tissue and where they are found.

.....
.....

3. Identify the body system responsible for the removal of excess fluids from the tissues of the body.

.....

4. What does the endocrine system produce and secrete that are distributed throughout the body and regulate other functions of the body?

.....

5. What organ is responsible for vision?

.....

[Click to complete Practice task 1](#)

1B Use and interpret information relating to the interrelationships between major components of body systems and structures

As mentioned previously, the various body systems work together to ensure the body has sufficient nutrition and oxygen; expels toxins; and deals effectively with diseases and other pathogens. Systems also work together to recognise and respond to pain, ambulate and keep the body in balance. Within each system there are organs that work together to help maintain optimum health and functioning.



Organs and their functions

A body organ is a recognisable structure that performs a specific function. An organ is made of several types of tissues, and these tissues consist of different types of cells.

A body system consists of groups of organs that work together to assist the functioning of the body.

Here is some information on some of the major organs of the human body.

The brain

- ▶ Controls all vital functions of the body
- ▶ Acts as an information processor of the internal and external environment for the body

The thyroid

- ▶ Secretes hormones that regulate the body's metabolic rate as well as heart and digestive function, muscle control, brain development and bone maintenance

The skin

- ▶ The largest organ of the human body
- ▶ Protects the body from the external environment
- ▶ Regulates the internal environment of the body through excretion of waste substances and temperature control
- ▶ Processes the sensations of temperature, pressure and pain to provide information to the brain

The lungs

- ▶ Are where the oxygen we breathe from the air is able to enter the red blood cells
- ▶ Allow waste substances such as carbon dioxide to be expelled from the body

The heart

- ▶ The heart acts as a pump. It pumps blood to the lungs and to the systems of the body

The pancreas

- ▶ Produces hormones that regulate the blood glucose levels in the body
- ▶ Releases the substances that break down the food molecules in the gut

The liver

- ▶ The largest internal organ of the body
- ▶ Has many functions essential for the maintenance of life
- ▶ Produces bile that is needed for the process of digestion
- ▶ Metabolises carbohydrates, lipids and proteins into substances the body can use
- ▶ Removes harmful toxins from the bloodstream
- ▶ Stores many essential nutrients, vitamins and minerals
- ▶ Produces proteins essential for the generation of blood plasma

The spleen

- ▶ Filters the blood of harmful microorganisms
- ▶ Recycles old red blood cells
- ▶ Stores platelets and white blood cells
- ▶ Fights some types of bacteria

The prostate

- ▶ Secretes fluid that nourishes and protects sperm

The kidneys

- ▶ Eliminate waste products from the blood
- ▶ Form urine
- ▶ Assist with fluid balance of the body
- ▶ Produce hormones that control blood pressure, make red blood cells and maintain strong and healthy bones

The stomach

- ▶ Breaks down and helps digest food by producing enzymes and gastric juices
- ▶ Churns the food to mechanically assist the breakdown of food

The bladder

- ▶ Acts a storage receptacle for urine before it is eliminated from the body
- ▶ Can expand to accommodate the urine produced by the kidneys
- ▶ Holds 300–400 ml of urine (in an adult) before it needs to be emptied

Interrelationships between body systems

The body is a unified and complex assembly of functioning parts and body systems. Each of the body systems and the organs and structures that make up these systems, are designed to perform specific complex functions. All of the systems work together to ensure the healthy survival of the human body, and the immune system protects the body from disease, infection and illness.

The interrelationship between body systems becomes more obvious when a disease or illness affects one body system and other systems are also affected. While you are not expected to have a full understanding of how the body systems work together, it is important to have some knowledge of the interrelationships of the systems. You can learn about the body systems and how they interact below.

Note: information about the immune system is combined with the lymphatic system.

Body system	Interaction with other body systems
<p>Cardiovascular The cardiovascular system is responsible for transporting blood throughout the body. It works in conjunction with the respiratory system to help move oxygen throughout the body.</p>	<p>Respiratory – The cardiovascular system helps the respiratory system transport gases.</p> <p>Musculoskeletal – The cardiovascular system delivers and removes material to and from the musculoskeletal system.</p> <p>Endocrine – The cardiovascular system transports hormones for the endocrine system.</p> <p>Nervous – The cardiovascular system delivers oxygen and hormones to and from the brain and spinal cord.</p> <p>Digestive – The cardiovascular system transports nutrients for the digestive system.</p> <p>Urinary – The cardiovascular system helps maintain kidney function.</p> <p>Reproductive – The cardiovascular system helps with the blood flow needed to maintain and sustain an erection.</p> <p>Integumentary – The cardiovascular system controls sweat production.</p> <p>Lymphatic – The cardiovascular system provides the lymphocytes for the lymphatic system.</p>
<p>Respiratory The respiratory system is responsible for ensuring the body has sufficient oxygen intake to oxygenate the blood and that it expels carbon dioxide.</p>	<p>The respiratory system provides oxygen to the entire body and removes carbon dioxide from cells</p>

Body system	Interaction with other body systems
<p>Musculoskeletal</p> <p>The musculoskeletal system incorporates two major systems: the muscular system and the skeletal system. The skeleton acts as a frame for the body's tissue and skin – the muscles make ambulation and movement possible.</p>	<p>Cardiovascular – The musculoskeletal system helps move blood throughout the system.</p> <p>Respiratory – The musculoskeletal system helps the lungs function.</p> <p>Endocrine – The musculoskeletal system protects some of the organs of this system.</p> <p>Nervous – The musculoskeletal system provides structure for the nervous system.</p> <p>Digestive – The musculoskeletal system allows the mouth to chew and protects some organs.</p> <p>Urinary – The musculoskeletal system controls the movements of the bladder using the sphincter muscle.</p> <p>Reproductive – The muscles of the musculoskeletal system facilitate the movement of the foetus through the birth canal. The musculoskeletal system helps with penile erection and subsequent ejaculation</p> <p>Integumentary – The musculoskeletal system moves the facial muscles to enable communication.</p> <p>Lymphatic – The musculoskeletal system assists the flow of lymphatic fluid. The musculoskeletal system helps with immunity.</p>
<p>Endocrine</p> <p>One of the major functions of the body's systems is to keep the body in balance. The medical term that describes the processes used to regulate the body is homeostasis. One of the systems that play a major role in homeostasis is the endocrine system.</p>	<p>Cardiovascular – The hormones of the endocrine system regulate and impact on heart rate.</p> <p>Respiratory – The hormones of the endocrine system assist with air flow to the respiratory system.</p> <p>Musculoskeletal – The endocrine system helps maintain and develop muscles and releases adrenaline to the muscles of the body.</p> <p>Nervous – The endocrine system makes sure the cells in the body have the required balance of minerals, enabling the nervous system to function effectively.</p> <p>Digestive – Hormones from the endocrine system affect the way food is digested within the body.</p> <p>Urinary – Hormones from the endocrine system regulate urinary excretion.</p> <p>Reproductive – Hormones from the endocrine system facilitate puberty, impact on sex drive and regulate pregnancy and lactation.</p> <p>Integumentary – The endocrine system affects the growth and distribution of hair.</p> <p>Lymphatic – The endocrine system helps activate the lymphatic system's immune response.</p>

Body system	Interaction with other body systems
<p>Nervous</p> <p>The nervous system is responsible for communicating information received by the senses to the brain. It is responsible for processing information and communicating required responses to the muscles and bones.</p>	<p>Cardiovascular – The nervous system regulates heartbeat within the cardiovascular system.</p> <p>Respiratory – The nervous system regulates breathing and respiration within the body.</p> <p>Musculoskeletal – The nervous system instructs the muscles how to move.</p> <p>Endocrine – The nervous system controls and stimulates glands in the endocrine system.</p> <p>Digestive – The nervous system controls appetite and faecal movements.</p> <p>Urinary – The nervous system controls urinary functions.</p> <p>Reproductive – The nervous system helps with lactation.</p> <p>Integumentary – The nervous system regulates sweating and temperature.</p> <p>Lymphatic – The nervous system works in conjunction with the lymphatic system to respond to pathogens.</p>
<p>Digestive</p> <p>The digestive system breaks down food into energy and basic nutrients. The food is broken down into simple forms, such as glucose, amino acids and protein. This converted food is then absorbed into the blood stream from the small intestine and nutrients are carried to the cells throughout the body.</p>	<p>The digestive system provides nutrients to all of the different body systems.</p>
<p>Urinary</p> <p>The urinary system consists of the kidneys, ureters, urinary bladder and urethra. The urinary system filters and eliminates wastes from the body.</p>	<p>The urinary system assists each body system by disposing of waste.</p>

Body system	Interaction with other body systems
<p>Reproductive</p> <p>As the name suggests the male and female reproductive systems are responsible for reproduction. These systems also help with development – in particular with the development of secondary sex characteristics such as pubic hair in both males and females, and breasts in females.</p>	<p>Cardiovascular – Pregnancy is associated with an increase in blood volume carried around the body by the cardiovascular system.</p> <p>Respiratory – Sexual arousal can place greater demands on the respiratory system by increasing the body’s need for oxygen.</p> <p>Musculoskeletal – Facilitates growth and development of the foetus.</p> <p>Endocrine – Communicates with this system to help regulate hormone levels in the body.</p> <p>Nervous – The nervous system controls appetite and faecal movements.</p> <p>Digestive – The digestive system may contribute to heartburn and constipation during pregnancy.</p> <p>Urinary – Pregnancy can place pressure on the bladder and the urinary tract causing incontinence. This can continue after birth and is known as stress incontinence.</p> <p>Integumentary – The integumentary system is responsible for changes in the composition and distribution of hair.</p> <p>Lymphatic – The lymphatic system protects sperm from the female’s immune system, which could otherwise be rejected by the lymphatic system.</p>
<p>Integumentary</p> <p>The integumentary system is made up of the skin, glands, hair and nails. This system plays a number of roles. The skin in particular acts as a barrier protecting internal organs, helps make use of vitamin D and is a major organ that allows us to sense heat, cold, sharp surfaces and other environmental factors.</p>	<p>Cardiovascular – The cardiovascular system is protected by the skin which ensures that blood stays within the system.</p> <p>Respiratory – Hairs in the nose are part of the integumentary system which helps to filter air for the respiratory system.</p> <p>Musculoskeletal – The integumentary system protects the muscles and helps with Vitamin D intake, a nutrient that helps with calcium absorption. Calcium is needed to build and maintain healthy bones and vitamin D is needed for healthy bone function.</p> <p>Endocrine – The integumentary system absorbs vitamin D, which is used by the lymphocytes to help the immune system function effectively.</p> <p>Nervous – The skin acts as a receptor for vital information, such as temperature and pain, for the nervous system.</p> <p>Digestive – Vitamin D is absorbed into the integumentary system which helps the intestines absorb calcium.</p> <p>Urinary – The skin helps with the removal of waste through sweating.</p> <p>Reproductive – The skin is a vital organ during foreplay.</p> <p>Lymphatic – The skin contains special cells that support the role of the lymphatic system.</p>

Body system	Interaction with other body systems
<p>Lymphatic</p> <p>The lymphatic system plays an important role in defending the body and its cells against pathogens. It filters, removes and reacts to pathogens. The lymphatic system forms part of the immune system.</p>	<p>Cardiovascular – The lymphatic system deals with pathogens in the blood.</p> <p>Respiratory – The lymphatic system removes waste from the lungs assisting the respiratory system.</p> <p>Musculoskeletal – The lymphatic system aids production and repair of muscles.</p> <p>Endocrine – The lymphatic system transports hormones used by the lymphatic system.</p> <p>Nervous – The lymphatic system works with the brain to stimulate defence mechanisms against infection.</p> <p>Digestive – The lymphatic system transports digested fats and aids waste.</p> <p>Urinary – The lymphatic system assists the kidneys to remove waste.</p> <p>Reproductive – Immunity is passed onto the baby via his or her mother’s milk.</p> <p>Integumentary – The integumentary system is responsible for changes in the composition and distribution of hair.</p>

Example

Ensure a person’s medical condition is understood

Marita works as a personal care worker at a low-care hostel and is interviewing Bill, a new resident. She asks Bill about his medical history. Bill tells her, ‘I had a bit of trouble with a hypa-active thyroid’. Marita questions Bill, ‘A hypoactive or hyperactive thyroid?’ Bill replies, ‘I’m not really sure. All I know is that it made me put on weight’. Marita responds, ‘It sounds like you had a hypoactive thyroid’. Marita notices that Bill appears to be a healthy weight. She says, ‘Are you currently taking any medication for your thyroid?’ Bill tells Marita that he is currently taking medication and Marita records this information on his admission form.



In this example, Marita used her knowledge of medical terms and the body’s functions. She used probing questions to help establish the correct term. Marita demonstrated knowledge of how problems with the thyroid affect the body and common treatments. She noted that Bill was a healthy weight and asked about medications. Other health professionals using the information will:

- ▶ continue to monitor the status of Bill’s thyroid
- ▶ take care not to prescribe or administer medications that will have adverse effects for his thyroid condition
- ▶ take care not to prescribe or administer medication that will interfere with the effectiveness of Bill’s thyroid medication.

Practice task 2

1. List **two** functions of the integumentary system.

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2. List how the cardiovascular system interacts with **two** other body systems.

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3. List how the reproductive system interacts with **two** other body systems.

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[Click to complete Practice task 2](#)

Summary

1. When working in the community healthcare sector, you need to be familiar with medical terminology.
2. Support workers who understand how the body works can carry out a range of tasks effectively and efficiently.
3. Primary healthcare can help maintain the health of each body system.
4. The major systems are the cardiovascular, respiratory, musculoskeletal, endocrine, nervous, digestive, urinary, reproductive, integumentary, lymphatic and immune systems.
5. The body's systems work together to ensure the body has sufficient nutrients and oxygen, expels toxins, deals effectively with disease and other pathogens, can ambulate and is in balance.
6. There are special senses including smell, taste, vision (sight), equilibrium and hearing.
7. Each body system impacts and is impacted by the other systems.

Learning checkpoint 1

Work with information about the human body

This learning checkpoint allows you to review your skills and knowledge in working with information about the human body.

Part A

Read the case study, then answer the questions that follow.

Case study

Jenny is an older person. You have been given the following excerpt from her completed health status questionnaire. Read the questionnaire, and answer the questions that follow.

Question	Yes	No
Have you had a fall in last three months?	<input checked="" type="checkbox"/>	<input type="checkbox"/> (Please go to question 5)
What caused the fall?	<i>Dizziness</i>	
Were you hurt as the result of the fall?	<input checked="" type="checkbox"/>	<input type="checkbox"/> (Please go to question 5)
How were you hurt?	<i>Fractured arm Skin lacerations</i>	
Can you get in and out of bed, a chair and the bath/shower easily?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are the floor surfaces in your home even?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is there sufficient lighting in your home?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Have you experienced dizziness?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Do you have osteoporosis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are you physically active?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Can you walk comfortably?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Do you experience breathlessness?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Do you have problems seeing?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

1. Based on the information provided, identify five body systems that are affecting or may affect Jenny.

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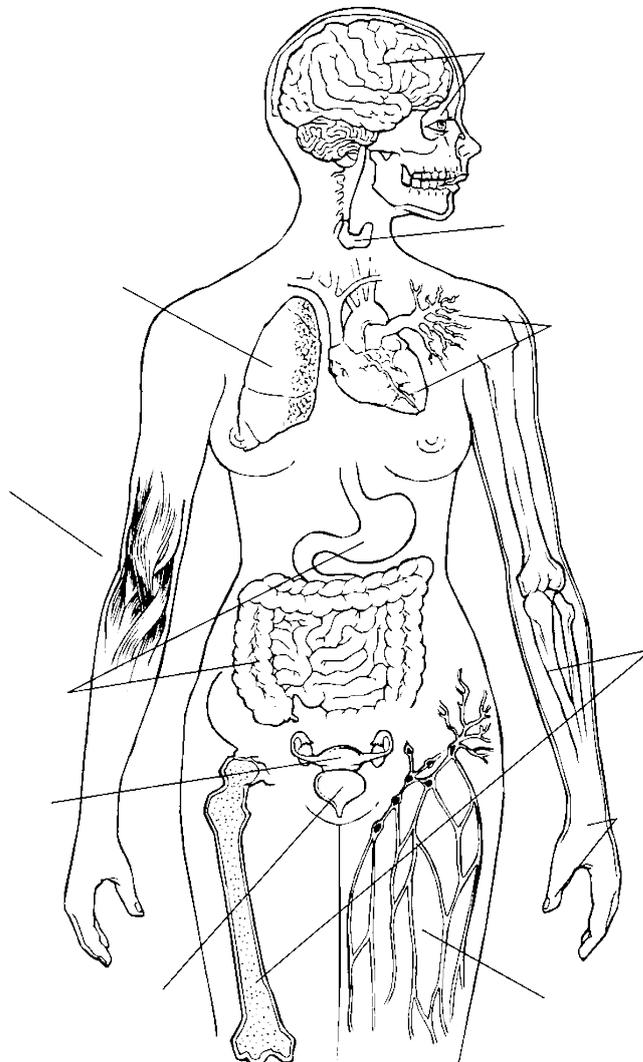
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2. Identify the location of the organs or sensory organs that form part of the body systems by labelling the following diagram.



3. Explain how Jenny’s body systems would interact.

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4. Discuss how, as a support worker, you could help Jenny maintain and improve the health of her body’s systems.

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Part B

Read the scenario, then answer the questions that follow.

Scenario

You are meeting someone new, Ms Anne Tepper, who you will be caring for in the future. The following is an excerpt from a health questionnaire that you asked her to complete.

Name: Ms Anne Tepper	Date: 19/08/2019						
DOB: 5/07/1936	Gender: Female						
Living arrangements							
Who do you live with?	<table border="1"> <tr> <td>Alone</td> <td><input checked="" type="checkbox"/></td> <td>With a spouse</td> <td><input type="checkbox"/></td> <td>With others</td> <td><input type="checkbox"/></td> </tr> </table>	Alone	<input checked="" type="checkbox"/>	With a spouse	<input type="checkbox"/>	With others	<input type="checkbox"/>
Alone	<input checked="" type="checkbox"/>	With a spouse	<input type="checkbox"/>	With others	<input type="checkbox"/>		

Medical history

Do you have or have you had in the past any of the following conditions?						
Heart disease	Now	<input type="checkbox"/>	Previously	<input type="checkbox"/>	Never	<input checked="" type="checkbox"/>
Cancer	Now	<input type="checkbox"/>	Previously	<input type="checkbox"/>	Never	<input checked="" type="checkbox"/>
Diabetes	Now	<input type="checkbox"/>	Previously	<input type="checkbox"/>	Never	<input checked="" type="checkbox"/>
Lung problem	Now	<input type="checkbox"/>	Previously	<input type="checkbox"/>	Never	<input checked="" type="checkbox"/>
Thyroid problem	Now	<input type="checkbox"/>	Previously	<input checked="" type="checkbox"/>	Never	<input type="checkbox"/>
Stomach problems	Now	<input checked="" type="checkbox"/>	Previously	<input type="checkbox"/>	Never	<input type="checkbox"/>
Asthma	Now	<input checked="" type="checkbox"/>	Previously	<input type="checkbox"/>	Never	<input type="checkbox"/>
High blood pressure	Now	<input type="checkbox"/>	Previously	<input type="checkbox"/>	Never	<input checked="" type="checkbox"/>
Depression	Now	<input checked="" type="checkbox"/>	Previously	<input type="checkbox"/>	Never	<input type="checkbox"/>

Comment:

Hyperactive thyroid treated with radioactive iodine. Current records (10 February 2016) show normal thyroid functioning.

Currently experiencing reflux and vomiting.

Asthma managed with Ventolin.

Social activities				
Do you have someone you can call on if you require help or want someone to talk to?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
Do you participate in social activities?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
Do you meet with friends or family weekly?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>
Do you need additional support?	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>

Nutrition index				
Height: 150 cm	Weight: 45 kg	BMI: 20		
Do you have difficulty with swallowing or chewing food?	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
Do you feel like eating?	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
Do you eat alone most of the time?	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>

Falls risk assessment				
Have you fallen in the last three months?	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
How many times?	1			
Were you hurt?	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
How?	Fractured wrist			
What happened?	Did not see a tile was loose, and tripped while walking from the bathroom to the bedroom.			

Ms Tepper tells you that she is bored and she does not know how to fill in her days. She says, 'My life has no meaning.'

1. Review the responses on Ms Tepper's questionnaire. Identify and list the systems and organs that the health questionnaire indicates may impact Ms Tepper's health.

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2. Explain how these body systems work together. In Ms Tepper's case, do you believe these systems are interacting properly and functioning effectively? Provide an explanation to support your answer.

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3. Discuss how the following can help Ms Tepper:

a. Exercising physically

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b. Exercising mentally

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c. Participating in activities

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d. Meeting new people

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e. Eating a range of foods

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f. Using a walking aid

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Part C

Complete the following table with information about the interrelations between two different body systems. The first one has been done for you.

Body system and function	Body system it interacts with	Function/interaction
<p>Nervous: The nervous system is responsible for communicating information received by the senses to the brain. It is responsible for processing information and communicating required responses to the muscles and bones.</p>	Endocrine	<i>The nervous system controls and stimulates glands in the endocrine system.</i>
<p>Urinary: The urinary system consists of the kidneys, ureters, urinary bladder and urethra. The urinary system filters and eliminates wastes from the body.</p>	Reproductive	

Body system and function	Body system it interacts with	Function/interaction
<p>Respiratory: The respiratory system is responsible for ensuring the body has sufficient oxygen intake to oxygenate the blood and that it expels carbon dioxide.</p>	Endocrine	
<p>Lymphatic The lymphatic system plays an important role in defending the body and its cells against pathogens. It filters, removes and reacts to pathogens. The lymphatic system forms part of the immune system.</p>	Urinary	
<p>Digestive: The digestive system breaks down food into energy and basic nutrients. The food is broken down into simple forms, such as glucose, amino acids and protein. This converted food is then absorbed into the blood stream from the small intestine and nutrients are carried to the cells throughout the body.</p>	Musculoskeletal	
<p>Integumentary: The integumentary system is made up of the skin, glands, hair and nails. This system plays a number of roles. The skin in particular acts as a barrier protecting internal organs, helps make use of vitamin D and is a major organ that allows us to sense heat, cold, sharp surfaces and other environmental factors.</p>	Endocrine	
<p>Reproductive: As the name suggests, the male and female reproductive systems are responsible for reproduction. These systems also help with development – in particular, with the development of secondary sex characteristics such as pubic hair in both males and females, and breasts in females.</p>	Lymphatic	



Topic 2

In this topic you will learn how to:

- 2A Review factors that contribute to maintenance of a healthy body**

- 2B Evaluate how relationships between body systems affect and support healthy functioning**

- 2C Enhance quality of work activities by using and sharing information about healthy functioning of the body**

Recognise and promote ways to support healthy functioning of the body

Support workers are often involved in helping clients carry out activities of daily living (ADLs). These activities include assisting the people with general mobility, such as moving in bed or moving from bed to chair, to helping with grooming, showering, dressing or eating. Undertaking these activities means that a support worker is in very close contact with the people they care for. As a result, they will be able to notice changes in things such as skin condition, respiration, swallowing, temperature, weight and behaviour.

Support workers need to understand how the body systems function so they can recognise and report signs that suggest there may be a problem. Support workers also need to know about the factors that help people maintain a healthy body so they can help older people, and those in need of care, to maintain their health.

2A Review factors that contribute to maintenance of a healthy body

Many people wait until they are ill or unwell before seeking medical advice or help. Health care professionals recognise that it is easier and more cost effective to help a person maintain their good health than it is to cure a person who is already unwell. This is called primary health care. Primary health care is also called preventative health care.

Secondary health care (acute or emergency health care) usually occurs in hospitals and tertiary health care is provided by private specialists. Primary health care can be provided by:

- ▶ general practitioners (GPs) and nurses in medical clinics
- ▶ community educators
- ▶ aged care and home and community care supervisors
- ▶ allied health professionals such as physiotherapists, dietitians, psychologists and social welfare workers.



Maintain good health

Ideas about health and sickness have changed. Health and sickness were once seen as being separate: a person was either sick or they were well. Now ideas about health and sickness acknowledge there are different degrees of health ranging from death through to the highest possible levels of wellbeing. According to the World Health Organization, health is a state of complete physical, mental and social wellbeing and not just the absence of disease or infirmity.

Being free from illness and disease is not enough to make a person healthy; a person must also enjoy good physical, mental and social health. These three elements of health are interrelated.



Factors that may impact good health

People who have active social lives, participate in a range of activities, have a good diet, consume a moderate amount of alcohol and maintain a healthy weight are more likely to enjoy good health and less likely to become disabled.

Illness is more likely to occur if a person is depressed, as poor mental health can suppress the immune system. Depression is more likely to occur in people who are sedentary as they miss out on the mood-improving benefits of exercise. People with limited or no social lives may also be susceptible to mental health problems as they do not have the benefits of a social network.

Physical activity

There are two types of activity: passive, such as sitting and sleeping, and active, such as walking and moving.

When participating in passive activity, the body's systems are still working. The body still needs to maintain its temperature, the heart still needs to circulate blood and the digestive system still needs to remove nutrients and excrete waste. When we are moving, the systems work harder.

Physical activity has many benefits for the person, some of which are listed below.

Benefits of physical activity

- ▶ Controls weight
- ▶ Helps prevent and decrease risk of many health conditions and diseases – raises the level of good cholesterol and lowers the level of unhealthy cholesterol, which helps to prevent problems such as stroke, metabolic syndrome, type 2 diabetes, depression, certain types of cancer, arthritis and falls
- ▶ Improves mood – stimulates brain chemicals that make you feel happier and more relaxed
- ▶ Raises energy levels - improves muscle strength and endurance; during exercise, oxygen and nutrients are delivered to the body's tissues and help the cardiovascular system work more efficiently
- ▶ Assists with better sleep
- ▶ Improves sexual functioning – exercise can lead to enhanced arousal for women and less incidence of erectile dysfunction in men
- ▶ Promotes fun and relaxation

Protection from infection

An infection is a pathogen that can damage the body's tissues and their organs. The body has a number of mechanisms designed to prevent and deal with infections. These include the lymphatic system and the integumentary system. If you are working with a person with a low level of immunity, you should make sure that they are not exposed to allergens or people with communicable diseases.



Infection

Infection is the invasion of a microorganism that is not normally present into the environment of the body. It can also occur when an organism is transferred from one area of the body to another area that it does not normally reside in. An example of this is when E Coli moves from the bowel to the bladder. When the microorganism breaches the body's defences, the body becomes a host and the bacteria or virus is able to replicate itself. The conditions that favour multiplication of the organism are warmth, moisture and nutrients – all available in the body. An infection usually results in the person having signs and symptoms that can be seen by another.

General signs and symptoms of infection include:

- ▶ fever
- ▶ fatigue
- ▶ diarrhoea
- ▶ muscle aches.

How the human body becomes infected

The human body becomes infected when the body's defence mechanisms are breached. This can occur when the body's defence mechanisms are not strong or compromised.

Here are some details about how the body becomes susceptible to infection.

How the human body can become infected

Skin

May allow bacteria in if it is cut or scraped.

Coughing deeply

If unable to cough deeply, germs may not be expelled from the lungs and breathing passages.

Bacteria

The human body normally has bacteria present, such as bacteria on the skin. These are called resident flora and cause no problems in their normal environment. If they transfer to another part of the body, they may cause infections.

Inflammatory response

The healthy person produces white blood cells that travel to sites of infection. If the immune system is weakened, this response is less effective and allows the infection to gain hold.

Antibodies

If the microorganism is new to the person, the specialised cells of the body that recognise and fight them are not present. An example is when an unimmunised person comes in contact with the measles virus. If they have not had the disease, they are at risk.

How infections are spread

Infections are spread by water, soil, air or food; contact with an infected person's blood, skin, or mucus; sexual contact; and insect bites.

Infection can also spread from a pregnant woman to the foetus (this is known as congenital infection).

In order for infection to spread, a chain of conditions needs to be present; if we break the chain, we can prevent infection. There are six links in this chain, which are listed below.

Conditions required for infection to spread

1. Microorganism
2. Reservoir – where the microorganism normally resides
3. Portal of exit – a means of escape
4. Means of transmission – how it will move from one area to another
5. Portal of entry – a way to enter the body
6. A host – the person

Prevention of infections

There are ways that the spread of infections can be prevented. Some examples are provided below.

Disinfect wounds	Raise immunity	Ensure hygiene and sanitation
<ul style="list-style-type: none"> ▶ Wash and cover wounds ▶ Use antibacterial ointment or spray. ▶ Get medical attention if the wound is serious. 	<ul style="list-style-type: none"> ▶ Ensure individuals take part in the immunisation recommendations from the Department of Health. ▶ Breastfeed infants with initial breast milk. 	<ul style="list-style-type: none"> ▶ Maintain a clean water supply. ▶ Use a sanitary system for disposing of human waste. ▶ Wash hands properly. ▶ Cook meats and store foods properly. ▶ Abstain from sexual contact if infected or practise safe sexual practices. ▶ Control insect infestations.

Hand hygiene and hand washing

One of the most important things to know and practise is the correct hand-washing procedure to ensure personal hygiene and prevent the spread of infection.

Here is a good hand-washing technique.



Source: NSW Health

Processes, conditions and resources for a healthy body

Aged care and community care workers can play an active role in assisting a person to maintain a healthy body. To carry this out effectively, it is necessary to understand the principles of maintaining a healthy body and use this understanding to ensure the care plan addresses all of the person's needs.

The principles of maintaining a healthy body are outlined below.

Principles of maintaining a healthy body

- ▶ Smoking control
- ▶ Mind–body health
- ▶ Spiritual health
- ▶ Medical self-care
- ▶ Environmental health
- ▶ Nutrition
- ▶ Social health
- ▶ Weight maintenance

Source: Meiner SE & Lueckenotte A 2006, *Gerontology nursing*, 3rd edn, Mosby Elsevier, St Louis, p. 163

Mind–body health

People's state of mind can influence their physical health. Research suggests that depression can increase the likelihood of heart disease. Studies have found that optimistic people have a higher white-cell count than people with a negative outlook. This means that optimistic people have a stronger immune system and are less likely to become ill.

A person's physical health can influence their state of mind. People who are unwell, or experiencing poor health, can experience mental illness. A poorly functioning endocrine system can also create hormonal imbalances, which leads to depression.

Assist a person with mind–body health

Care workers can assist the person with mind–body health in various ways.

You can assist others with mind–body health by:

- ▶ encouraging them to focus on positives
- ▶ encouraging them to make and maintain links within the community
- ▶ encouraging them to participate in activities that they enjoy
- ▶ encouraging them to discuss their mental health with their GP or a mental health professional
- ▶ participating with them in activities designed to enhance and relax the body and mind.

Medical self-care

Medical self-care refers to a person's ability to manage and take responsibility for their own health and wellbeing. Examples of medical self-care include:

- ▶ taking medication
- ▶ seeking help when required
- ▶ making healthy choices about meals, activities and relationships.



Importance of medical self-care

Medical self-care is important for a number of reasons, some of which are outlined below.

Why medical self-care is important

- ▶ People who feel that they have control over their lives enjoy better mental health than those who do not. Taking responsibility for one's own health and wellbeing can promote feelings of control and good mental health.
- ▶ It prevents persons from becoming dependent on one service, service provider or medical support person.
- ▶ It encourages persons to develop and maintain life skills, such as showing initiative, self-management, problem solving and communication.

Environmental health

Environmental health refers to the health of the person's immediate living quarters. Environmental health includes air quality, water quality and the safety of buildings.

Poor air quality can compromise cardiovascular and respiratory systems. Poor water quality can lead to problems in the digestive system. Unsafe buildings and surrounds can increase the risk of trips, slips and falls. If you notice a hazard in the workplace or a person's home, you must report it and follow organisational procedures.

Smoking

Smoking can cause lung, tongue and throat cancer, impacting the digestive and cardiovascular systems. In addition, smoking can impact the integumentary system, damaging collagen and elastin in the skin and accelerating the ageing process, leading to premature wrinkles.

All work buildings must be smoke-free by law. Some facilities may allow smoking in designated outdoor areas. Support workers should also avoid allowing persons to smoke in their presence.

Example

How mind–body health can affect a person

Jonah, 25, has Crohn’s disease. This means that he has to make frequent trips to the toilet. This is a source of embarrassment. He feels ashamed of his disease. To cope with this, he avoids social situations.

Nina, 86, is optimistic. She starts each day with a smile and enjoys the company of others. Her optimistic outlook improves her immune system. As a result, she is healthier than other members of her bowling club, who are less optimistic.

In the second situation, you can see how the mind can affect the body. In the first situation you can see how the body can affect the mind. It is important to remember that seriously ill people can’t recover with just a positive outlook, nor is it true that all people with an illness, disease, disorder or impairment have a negative outlook.

The key point to remember is that the mind and body are connected.

Practice task 3

1. State the most important procedure a care worker can use to prevent the spread of infection.

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2. List **four** principles of maintaining a healthy body.

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Click to complete Practice task 3

2B Evaluate how relationships between body systems affect and support healthy functioning

The body systems all work together. Each system impacts and is impacted by the other systems. Faults, failures or disorders of one system can cause problems with others. The body can react in unpredictable ways to illness, disease and toxins.

Body system interactions

It is important to have some knowledge of the interaction of the systems.

Each of the 11 systems in the human body is reliant on the other systems in order to function optimally.

Here is a list of the body systems. Refer to Section 1A for more information on how all the systems of the body interact.

The body systems	
▶	Cardiovascular system
▶	Respiratory system
▶	Musculoskeletal system
▶	Endocrine system
▶	Digestive system
▶	Urinary system
▶	Reproductive system
▶	Integumentary system
▶	Lymphatic system
▶	Nervous system
▶	Immune system

Relationships between body systems and healthy functioning

Body regulation includes maintaining body temperature, maintaining body fluids and the elimination of wastes.

When the body does not regulate itself there will be changes in behaviour such as disorientation, dizziness and temperature fluctuations. Other signs of unhealthy body regulation could be sweating, increased heart rate, dry and hot skin or headaches and even unconsciousness. Poor regulation, in extreme cases, can lead to organ failure and death.

If you suspect a person's body is not regulating itself effectively, you should seek immediate help from a health professional or a registered nurse. If you are working in a person's home, you should contact your supervisor immediately. If you are unable to reach your supervisor, contact the emergency department of your local hospital, who will give you further instructions.



If the person is unconscious or displaying a number of the signs that the body is not regulating itself, call emergency services by dialling 000.

Regardless of where you are working, you should always follow workplace policies and procedures, document all actions and report all actions.

Fluid balance

Approximately 60 per cent of the adult body consists of water; in babies it is as high as 78 per cent. The human body needs to maintain a healthy fluid balance level for survival.

One of the most important things a support worker can do to assist people to maintain body fluids is to ensure that the person's fluid intake is adequate. The care worker may need to monitor the food and fluid intake of the person. Special charts are used to record intake and output of fluids and food consumed by the person.

Here is some more information.

Water loss from the body

- ▶ The skin (approximately 500ml)
- ▶ When we breathe (approximately 500ml)
- ▶ Bowel actions (approximately 100ml)
- ▶ Urine (approximately 1500ml)

Dehydration

- ▶ A few common early signs of dehydration may include:
- ▶ headache
- ▶ tiredness
- ▶ loss of concentration
- ▶ urine output decreases and the urine becomes darker in colour.

Fluid replacement in the body

- ▶ Metabolic processes (approximately 250ml)
- ▶ Intake of food (approximately 750ml)
- ▶ Fluid intake (usual requirement is approximately 1500ml)

Electrolyte balance

In order to function efficiently, the human body relies on maintaining a stable balance of electrolytes. Electrolytes are electrically charged ions that transmit electrical impulses to our heart, muscle and nerves. Muscles rely on sodium, calcium and potassium to contract, if we do not have enough our muscles will not work. Electrolytes also assist in maintaining a healthy fluid balance. If we have too much sodium in our blood it may cause high blood pressure or fluid retention.

Electrolytes are found in food, especially fruit and vegetables, and fluids such as fruit juices and coconut water. Electrolytes are not replaced by drinking water.

Here is some more information about electrolytes.

Sodium

- ▶ Controls the amount of fluid in the body
- ▶ Regulates blood volume
- ▶ Maintains muscle and nerve function
- ▶ Found mostly in table salt that is added to food

Chloride

- ▶ Maintains stable fluid content in blood, in cells and around the cells
- ▶ Maintains acidity levels in the body
- ▶ Found mostly in table salt that is added to food

Potassium

- ▶ Found inside cells
- ▶ Regulates the heartbeat and muscle function
- ▶ Found in meat, milk, fruit and vegetables

Magnesium

- ▶ Maintains normal nerve and muscle function
- ▶ Maintains the immune system
- ▶ Assists to stabilise blood glucose levels
- ▶ Promotes the formation of bones and teeth
- ▶ Assists in the synthesis of DNA and RNA
- ▶ Found in nuts, spices, leafy green vegetables, coffee and tea

Calcium

- ▶ Helps formation of bones and teeth
- ▶ Aids transmission of nerve impulses
- ▶ Causes blood clotting
- ▶ Causes muscle contraction
- ▶ Found in dairy products, leafy green vegetables, seafood legumes and fruit

Phosphate

- ▶ Strengthens bones and teeth
- ▶ Energy production of the cells
- ▶ Tissue growth and repair
- ▶ Cell membrane and DNA
- ▶ Found in egg yolks, milk, nuts, lentils and pulses, oats and mushrooms

Bicarbonate

- ▶ Counteracts acids in the body
- ▶ Our body creates bicarbonate through combining carbon dioxide with water, converting this to carbonic acid and then changing it to bicarbonate

pH balance

In order to remain healthy, the body must also maintain its pH levels. The pH level refers to the acid or alkaline level. The pH range is from 0 to 14, with 7.0 being neutral. Above 7.0 is alkaline and below 7.0 is acidic. In the human body the pH will vary depending on the organ or fluid; for example, the pH of urine is 6.5–7.0 in the morning and 7.5–8.0 in the evening. This is because of the intake of food and fluid over the day that varies the pH level.

The pH of blood has a normal range of 7.35–7.45 and remains within these levels in healthy people.



Stay hydrated

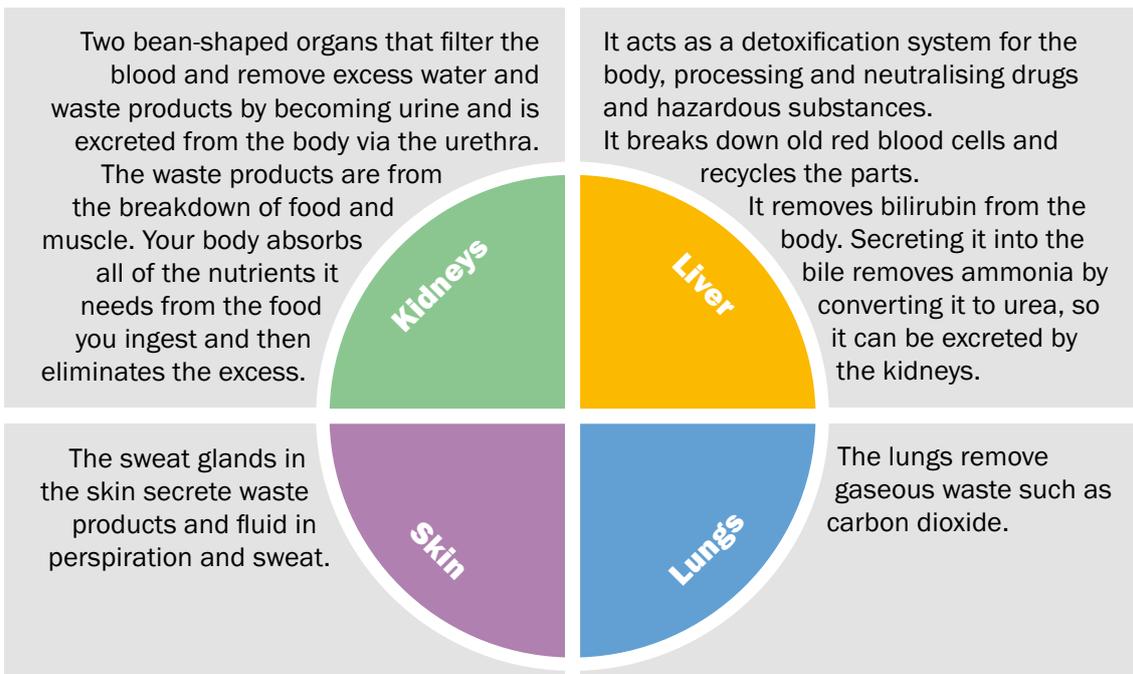
Maintaining the fluid levels of the body is important to overall health. Fluids are needed to regulate the body's temperature and maintain the functions of its systems. Fluids also help to deal with and expel toxins. Drinking plenty of fluids helps the body's systems operate at an optimal level. Remember, alcohol and drinks containing caffeine will act as a diuretic, reducing the amount of fluids in the system.

Support workers can help clients by:

- ▶ providing fluids – preferably water
- ▶ reducing the amount of alcohol and caffeine clients consume
- ▶ monitoring and recording fluid intake
- ▶ seeking medical help if the client sweats excessively, has diarrhoea and/or is vomiting.

Eliminate wastes from the body

In order to survive, the human body must eliminate waste products. The kidneys, lungs, liver and skin play important roles in the elimination of waste products. We take in nutrients for our body through food, oxygen in the air we breathe and fluid in our drinks. Our body only uses what is required, may store some of the excess for later use and then eliminates the remainder. The breakdown of food and metabolic processes within the body also creates waste products that need to be eliminated.



Blood pressure

Blood pressure helps move blood throughout the body, but if it exceeds the normal range, blood pressure can present serious health problems. Often people experiencing blood pressure problems will have prescribed medication to take. The main system involved in maintaining blood flow is the cardiovascular system.

People with low blood pressure may experience dizziness and confusion and are at an increased risk of falls. Support workers can help people with low blood pressure by increasing fluids and salts, encouraging the wearing of pressure stockings and elevating the person's feet. Consult with your supervisor, or a health care professional, prior to undertaking any of these activities.

People with high blood pressure are at increased risk of stroke, heart attack and kidney disease. You can help people by encouraging exercise, supporting them to quit smoking and suggesting they eat a healthy diet to assist in maintaining a healthy BMI.



Body temperature

The correct temperature of the human body is 36.0–37.2 °C. If a person is unable to maintain their correct body temperature, they may suffer serious consequences. These consequences can include organ failure and/or damage to any one of, or a combination of, the nervous system, the digestive system, the urinary system or the cardiovascular system.

Support workers can take steps to help a person avoid high body temperature.

High body temperature can be avoided if a person:

- ▶ drinks water
- ▶ wears appropriate clothing
- ▶ takes a cool shower or bath
- ▶ stays inside and performs only light exercise.

Systems and organs involved in maintaining body temperature

Here are the roles of each system and its responsibility in maintaining body temperature, body fluids, eliminating waste and fighting infection.

Skin
Integumentary system
▶ Senses cold or hot
Hypothalamus
Nervous system
▶ Acts as a thermostat
▶ Initiates heating or cooling
Muscles
Musculoskeletal system
▶ Shivers to increase body temperature if body too cold
Sweat glands
Integumentary system
▶ Produces sweat if the body is too hot

Nutrition

People eat for enjoyment; however, food plays a more important role in fuelling the body's systems. Individuals need to consume a wide range of grains, fruits, vegetables, dairy products, meats, fish and oils and fats to make sure that their nutritional needs are properly addressed.

The human body's needs are explained below.

Water

- ▶ Water maintains body temperature, transports nutrients throughout the body and helps process waste.

Carbohydrates

- ▶ Carbohydrates provide energy to the body's systems.

Lipids

- ▶ Lipids provide energy, improve nerve function, maintain skin and assist with vitamin D synthesis.

Vitamins

- ▶ Vitamins assist with growth and improve metabolic activity.

Minerals

- ▶ Minerals assist with growth and improve metabolic activity.

Protein

- ▶ Protein assists with growth, maintenance and reparation of cells. It also assists with immune system function.

Factors that impact a person's nutrition

There are a number of reasons why a person may not enjoy optimal nutrition.

Below are some factors that may impact a person and suggestions for how that person could be assisted.

Low income

- ▶ Refer the person to social welfare agencies.
- ▶ Encourage the person to access services such as Meals on Wheels.

Gum or teeth disease

- ▶ Refer the person to a dentist.
- ▶ Provide a range of soft, easy to chew and processed food.

Dysphagia

- ▶ Assist the person with rehabilitation exercises designed to improve the strength of muscles involved with chewing and swallowing.
- ▶ Assist the person with an alternative eating system.

Difficulties with activities

- ▶ Assist with daily activities, such as shopping and cooking.

Depression

- ▶ Encourage the person to eat.
- ▶ Refer the person to a GP or other relevant healthcare professional.

Digestive system preventing food absorption

- ▶ Consider meal supplements.
- ▶ Refer the person to a dietitian.

Digestive system delaying defecation

- ▶ Provide small meals more often.
- ▶ Avoid acidic foods.

Maintain a healthy body mass index

Being within a healthy weight range is an important part of good general health. A healthy weight range is determined by your body mass index (BMI).

Some more information is provided below.

Risks associated with underweight BMI

People who are underweight are at risk of:

- ▶ starving their systems of nutrients
- ▶ osteoporosis
- ▶ organ failure
- ▶ death.

Risks associated with overweight BMI

People who are overweight are at risk of:

- ▶ type 2 diabetes
- ▶ musculoskeletal problems
- ▶ skin problems
- ▶ cancer.

People who are overweight may also experience low self-esteem. This can cause them to avoid social activities, which in turn can damage their mental health.

How you can help the client

You can help the client by:

- ▶ supporting them to eat a nutritional range of foods
- ▶ encouraging overweight clients to make healthier choices
- ▶ seeking the assistance of a dietitian
- ▶ encouraging them to exercise.

Weight maintenance

Maintaining a healthy, appropriate weight can improve a person's health, maintain a person's self-esteem and prevent damage to the body's systems thereby decreasing the likelihood of developing illness and disease.

Being underweight or overweight increases a person's likelihood of poor health. A healthy weight varies according to a person's height. For example, John is 60 kg, which seems like a reasonably healthy weight; however, as John is 149 cm tall, he is actually overweight.

Height and weight must be considered when assessing healthy weight. Body mass index (BMI) is one way to determine whether a person is under- or overweight.

You can calculate BMI by using this formula:

$$\text{BMI} = \text{weight (kg)} \div \text{height (m)}^2$$

The impact of weight on health

People who are underweight have an increased risk of malnutrition, dementia, osteoporosis and muscle wasting.

People who are overweight have an increased risk of cardiovascular problems, including high blood pressure and heart attack. They are also more likely to contract cancer, have digestive and respiratory problems, diabetes, arthritis, depression and incontinence.

Support workers can help people who are overweight or obese by referring them to a dietitian, helping them with portion control, and encouraging them to exercise after seeking medical advice.

Healthy ageing

People may assume that disability and disease are features of the normal ageing process. This is not the case. Good primary health care can help ensure that a person maintains a healthy body and systems. However, there are certain changes that do take place as part of the ageing process.

Ageing involves:

- ▶ changes to the appearance of the skin and hair
- ▶ impaired vision or hearing
- ▶ reduced bone density
- ▶ decreased flexibility, damaged joints or decreased muscle strength.

External factors that impact the ageing process

Physical changes can also result in psychosocial changes. For example, a person who is losing their hearing or vision may avoid social outings. As a result their world and networks narrow and diminish. A support worker must make sure that the services delivered to the older person are holistic and address all factors that determine the quality of people's lives.

The aspects of ageing mentioned so far refer to changes in the body's systems, but there are also external factors that impact the ageing process.

Some people are able to reason, use logical thought, communicate clearly and employ sound judgment. However, these skills may be diminished for others due to ageing or conditions such as dementia or an acquired brain injury. Younger clients' understanding of rights, responsibilities and perceptions may also be less developed.

Example

Use knowledge of the body systems to the client’s advantage

Lionel is a home and community care worker. Lionel visits Mrs Brown twice a week to assist with basic household tasks. Mrs Brown tells him, ‘I don’t go outside much now’. She then complains about muscle weakness and constant colds and illnesses. She also tells him that she has been for a bone density test. The results indicated that she is continuing to lose bone mass. She exclaims, ‘I can’t understand why. I have been drinking and eating additional dairy products.’



Lionel recognises that there are several systems affected that may be contributing to the problem.

Mrs Brown is not getting sufficient vitamin D because she is not spending much time outside. The skin (the integumentary system) is not able to take in vitamin D if it is not exposed to sunlight. The intestines (the digestive system) are not able to absorb calcium efficiently. This affects Mrs Brown’s bone density and her muscles (the musculoskeletal system). Her immunity is also lowered as the lymphatic system is not getting the required nutrients needed to perform effectively.

Lionel reports his conversation with Mrs Brown to his supervisor. After consulting with Mrs Brown, her GP and others involved in Mrs Brown’s care, the supervisor amends Mrs Brown’s care plan to allow for time outside.

Practice task 4

1. State **two** changes that occur to the body as a result of ageing.

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2. List and explain **two** body organs or systems that assist in the regulation of the body’s temperature.

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Click to complete Practice task 4

2C Enhance quality of work activities by using and sharing information about healthy functioning of the body

People who have active social lives, participate in a range of activities, have a good diet, consume a moderate amount of alcohol and maintain a healthy weight are more likely to enjoy good health and less likely to develop health problems.

People are social creatures. Unfortunately as people age or develop disabilities, their social network diminishes. Older people may lose confidence and feel worthless as they grow older. Those who once defined themselves through their work or through their roles as parents may have lost their sense of self as their children grow and eventually leave home.



Maintain a healthy level of interaction

Friendships and relationships are essential to good psychological health. Clients must be supported and encouraged to meet new people. Participating in activities is one way to help clients socialise. The focus is on the activity, rather than the making of friends. This can mean meeting people is less daunting and allow them to make friends without feeling pressured.

Meeting new people and participating in activities is important for health and wellbeing. It helps people build up their social networks and feel valued. It provides people with a chance to gain mental stimulation and exercise their mind and body, and provides people with a sense of purpose.

Meet new people and participate in activities

People with disabilities may find that their social networks are difficult to establish or older people may find that their networks may diminish over time. They may not be able to participate in their old clubs. They may no longer be able to work. They may also find that some of their old friends can't cope with their disability and stop contacting them.

However, networking issues are not limited to older people; many younger people may also experience problems with maintaining a network for many reasons.

It may be difficult to maintain a social network due to:

- ▶ lifestyle changes, such as retirement or changing a job
- ▶ friends moving away or joining different social groups
- ▶ the death of friends and family members



- ▶ changes in income, reducing one's ability to participate in a range of events
- ▶ the loss of a driver's licence or the loss of confidence in one's ability to drive, preventing attendance of events
- ▶ loss of self-confidence, causing a person to withdraw.

Assist with social interactions

There are many ways that you can help a person to maintain a healthy level of social interaction. As a support worker, you may help the client by:

- ▶ seeking out opportunities for the client to meet new people
- ▶ encouraging the client to meet new people
- ▶ ensuring that the client can travel to activities where they can meet new people
- ▶ ensuring that the client has sufficient money to pay for the activities
- ▶ referring a client to a psychologist or therapist, if necessary, to help them gain confidence.



Support others to manage their healthcare needs

Support workers can help people to have a fulfilling social life by supporting them to participate in activities that interest them. Transportation may be a reason for someone to become isolated. Arranging transportation for a person to attend social events that interest them will help to overcome isolation.

It is essential to ensure that people have regular check-ups at their GP or specialist healthcare provider. Support workers should also be aware of their dietary requirements and ensure that people in their care have access to a healthy range of foods.

If required, recommend and discuss healthcare aids that may assist those you are caring for. Ensure they have access to these aids and are able to use them.



Use aids safely

Older people and people with disabilities may use any one of a number of aids designed to improve their independence. Correct use of an aid can significantly improve a person's life positively and independently. Ensuring those in your care know how to use their aid correctly is vital to prevent accidents and injuries.

Examples of aids include walking frames, wheelchairs, hearing aids, glasses and specialised cutlery and crockery. As a support worker, you can ensure the aids are well-maintained and in safe, working condition.

Factors that maintain a healthy body

When providing care, you should always listen to those who are in your care and follow their instructions, providing they fall within the boundaries of your job role, your organisation's policies and procedures and the law.

Each of the following areas should be addressed during all stages of a person's care and can help to maintain a healthy body.

Medical check-ups

Regular medical check-ups can help identify diseases and conditions early and recognise potential problems. This enables healthcare professionals to provide earlier intervention. Medical check-ups can help by improving the quality of the person's life, reducing or slowing functional loss and reducing the need for hospitalisation. Support workers should assist the client to have regular check-ups with their GP.

Both men and women should have regular check-ups of their skin to check for changes in moles and freckles that may indicate skin cancer. Women should have regular pap smears and mammograms. Men should have regular prostate checks.

Good diet

Older people and people with disabilities may eat alone, have a reduced income or have difficulty shopping. People may have problems with their mouth or teeth, which can result in reduced taste sensation. Some people may experience discomfort eating, or have difficulty digesting food, which can reduce the body's ability to make use of the foods consumed. These factors mean that people may not have access to nutritional food, find it difficult to prepare nutritional food, or have reduced interest in food.

Support workers can suggest healthy meal choices, assist with shopping and link those in their care into social welfare services if needed.

Physical exercise

Exercising physically can contribute to the strength and resilience of the musculoskeletal system. It can have psychological benefits by reducing cortisol (a stress hormone) and increasing endorphins (a hormone that promotes feelings of wellbeing).

Exercise can also help improve self-esteem by helping people feel good about their body and its shape. Exercises such as walking, aqua aerobics and swimming are low-impact choices that can be suitable for everyone, including people with a range of impairments.

Exercising helps to balance weight gain and loss, strengthen muscles and prevent the loss of bone mass. Support workers can identify exercise options and organise transport if required.

Mental exercise

The brain also requires exercise. This helps prevent cognitive decline and can improve cognitive performance. People who have good cognitive functions are more likely to be able to manage their own lives, including medical care. This can improve the sense of control and self-worth.

Support workers should engage in conversation with people in their care, access puzzles and books that reflect their interests and facilitate their interaction with others.

Not smoking

Smoking tobacco is the leading cause of preventable diseases. If smokers choose to quit smoking, it will improve the appearance of their skin and respiratory and heart function, and boost their finances. It will improve fitness, reduce stress in the long term and decrease the likelihood of developing cancer.

Support workers can use this knowledge in their work by providing referrals to a GP, who may prescribe medication, or to other health professionals. You may also link the client with an organisation such as QUIT and provide support for those who wish to discontinue smoking.

Sometimes people who have disabilities or illnesses that cause pain consume marijuana mixed with tobacco to reduce their pain levels. Note that a connection has been made between marijuana use and a range of psychiatric conditions.

Alcohol

Alcohol, like many things, can damage the body's systems if consumed in excess. The risks to a person's health build up over time. The more drinks consumed, the greater the health risk.

Below is some information you should be aware of with respect to alcohol.

Consumption

- ▶ Drinking too much alcohol may damage the liver, impairing the digestive system. It can increase blood pressure and damage the blood vessels, which impairs the cardiovascular system and increases the likelihood of certain cancers. Alcohol in excess can affect a person's ability to maintain relationships and increase the risk of injury or death from road trauma, violence, falls and accidents. Excessive use can lead to an acquired brain injury that impairs the nervous system.
- ▶ If you think someone is drinking too much alcohol, discuss setting limits and encourage them to consume low alcohol beverages or alternate alcoholic drinks with non-alcoholic drinks.

Responsible drinking

- ▶ Drinking responsibly means enjoying alcohol in moderation and avoiding the potential harm of drinking too much. Alcohol affects a person differently depending on a range of factors, including their gender, age, mental health, drug use and existing medical conditions.

Recommendations

The Australian National Health and Medical Research Council (NHMRC) guidelines (revised in 2009) recommend ways to help reduce the risk of harm from alcohol.

For healthy men and women:

- ▶ drinking no more than two standard drinks a day reduces your risk of harm from alcohol-related disease or injury over a lifetime
- ▶ drinking no more than four standard drinks on a single occasion reduces the risk of alcohol-related injury from that occasion.

For pregnant and breastfeeding women, women planning a pregnancy, children and young people under 18 years of age, the safest option is to refrain from drinking alcohol.

Social consumption

- ▶ Moderate alcohol consumption at a low-risk level can be part of a person's normal social activities. Support workers must take care not to judge others. Signs that a person is drinking at a harmful level may include memory loss, poor grooming and hygiene, having no money for food and other necessities, broken capillaries (small blood vessels) and drinking alone.

Develop care plans

When preparing a care plan checklist, ensure that a people's physical, psychological and social needs are met. Review the care plan in conjunction with other stakeholders to ensure all of the needs for individuals in your care are catered for.

Check that the care plan provides:

- ▶ medical check-ups
- ▶ nutritional checks
- ▶ regular opportunity for exercise
- ▶ opportunities to stimulate the person's mind
- ▶ support for the person to cease smoking
- ▶ a strategy to assist the person to achieve a healthy weight
- ▶ a strategy to assist the person to use aids safely
- ▶ strategies designed to support the person in meeting new people
- ▶ strategies designed to support the person to participate in activities.

Example

How physical conditions can affect a psychosocial state

Sara provides home and community care support to Teresa, who is 80 years of age.

On one visit, Sara says to Teresa, 'How was theatre group?'

Teresa replies, 'Don't know, didn't go'.

Sara responds, 'Were you not feeling well?'

Teresa mutters, 'No – but I can't understand them'.

Sara gently clarifies, 'Could you not understand them or not hear them?'

Teresa replies, 'I can't hear them'.

Sara says, 'Teresa, perhaps we should get your hearing checked'.

Teresa agrees, so Sara arranges a hearing test. Teresa is provided with a hearing aid.

Sara and Teresa's other support workers assist with maintenance of the hearing aid.

The support workers also encourage Teresa continue to participate in the theatre outings. In this situation, Teresa's physical condition was impacting her psychosocial state.

Practice task 5

1. Identify **two** factors that assist in maintaining a healthy body.

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2. List **two** ways that you can assist a person with social interactions.

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Click to complete Practice task 5

Summary

1. As a support worker, it is important to recognise and support ways for people to maintain a healthy life.
2. Support workers who understand how the body works will be able to carry out a range of tasks more effectively and efficiently and assist the person in maintaining a healthy life.
3. The body's systems work together to ensure that the body has sufficient nutrients and oxygen, expels toxins, deals effectively with disease and other pathogens, and is in balance.
4. The body systems are the cardiovascular, respiratory, musculoskeletal, endocrine, digestive, urinary, reproductive, integumentary, lymphatic, nervous and immune systems.
5. The health of the body systems can be promoted through smoking control, mind-body health, spiritual health, medical self-care, environmental health, nutrition, social health and weight maintenance.

Learning checkpoint 2

Recognise and promote ways to support healthy functioning of the body

This learning checkpoint allows you to review your skills and knowledge in recognising and promoting ways to support healthy functioning of the body.

Part A

1. Describe how relationships between body systems affect and support healthy functioning with respect to the following:

a. Body temperature

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b. Fluid and electrolyte (including pH) balance

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c. Elimination of wastes from the body

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d. Blood pressure

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2. Explain how a person's body can be protected from infection.

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3. How can physical activity benefit a healthy body?

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4. Angus weighs 95 kg and is 195 cm tall. Letitia weighs 60 kg and is 140 cm in height. Calculate the body mass index (BMI) for each person. What does their BMI indicate to you?

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Part B

Read the case study, then answer the questions that follow.

Case study

Ben, 27, has put on weight after an accident.

1. What are **two** factors that may have caused Ben to gain weight? List **four** body systems that are involved.

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2. What could happen if Ben continues to gain weight or if he does not return to his normal weight? Identify the body systems that would be affected.

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3. What could Ben's support worker do to assist him to reach a healthy weight?

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Part C

Read the case study, then answer the questions that follow.

Case study

Jeremiah has suffered damage to his skin as a result of a workplace accident. He does not leave the house and spends much of the day reflecting on his accident.

1. What body system is involved?

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2. How could this impact Jeremiah's other body systems?

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3. What could you, as a support worker, do to prevent this from occurring?

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4. What else could you do to help Jeremiah maintain a healthy body?

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