



Health and Social Care Pearson BTEC National L3



# Course Companion for BTEC Level 3 Health and Social Care

## Unit 14: Physiological Disorders and their Care

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# Teacher's Introduction

This unit is about physiological disorders and the care and support for individuals with those conditions.

**The learning aims covered by this companion are:**

- A. Investigate the causes and effects of physiological disorders.
- B. Examine the investigation and diagnosis of physiological disorders.
- C. Examine treatment and support for service users with physiological disorders.
- D. Develop a treatment plan for service users with physiological disorders to meet their needs.

**Chapter 1** is divided into three parts. Firstly, it investigates types of physiological disorders and their effects on the body and the health and well-being of the individual with the disorder. Then, it investigates the causes of physiological disorders; for example, inherited traits and lifestyle. The third section investigates the signs and symptoms of physiological disorders, in other words, how an individual might recognise that their body isn't functioning as it should.

**Chapter 2** examines the process of diagnosing a disorder, looking at the various investigations and tests an individual might need and have in order to decide what disorder they have. This includes excluding other disorders that have similar signs and symptoms.

**Chapter 3** examines how physiological disorders are treated and what support is available for service users. This includes medical and surgical intervention, benefits and side effects and what formal and informal support might be available for service users and their families.

**Chapter 4** examines treatment planning processes. When a service user is diagnosed with a physiological disorder, the National Institute for Health and Care Excellence (NICE) expects medical practitioners to follow recommended pathways of care and treatment. However, person-centred care means that these pathways and the formal and informal support needed to implement them have to be adapted and tailored to the individual need of the service user.

March 2019



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# Chapter 1: Investigate the Cause and Effects of Physiological Disorders

## A1: Types of physiological disorders of the body systems and functions

Each body system has its own role in the healthy functioning of the body and many of the functions. For most people the body functions perfectly well most of the time, there are times when something goes wrong with a system's function and the individual will become ill.

The table below shows which body systems and physiological disorders are covered in this chapter.

Body system	Physiological disorder
Endocrine	Diabetes type 1 and type 2; hypothyroidism; hyperthyroidism
Nervous	Parkinson's disease; Alzheimer's disease
Musculoskeletal	Rheumatoid arthritis; osteoporosis
Respiratory	Asthma; chronic obstructive pulmonary disease (COPD)
Circulatory	Coronary heart disease (CHD); leukaemia
Digestive	Bowel cancer
Male reproductive	Prostate cancer

### Physiological disorders of the endocrine system

The endocrine system secretes hormones, which are chemical messengers that control the functions of various parts of the body. There are several hormones found in the body, produced by the endocrine system, including:

Organ	Hormone produced	Function
Hypothalamus and pituitary gland	Growth hormone (GH)	Stimulates growth of tissues
	Antidiuretic hormone (ADH)	Helps control water balance
Thyroid gland	Thyroxine	Helps control the metabolism
	Calcitonin	Helps regulate calcium levels
Pancreas	Insulin	Lowers sugar levels; helps storage of glucose in other body tissues
	Glucagon	Helps release glucose from where it's stored

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## Diabetes

The pancreas is a large gland about six inches long that's part of both the endocrine system as well as insulin and glucagon, the pancreas also releases juices into the digestive system for digestion.

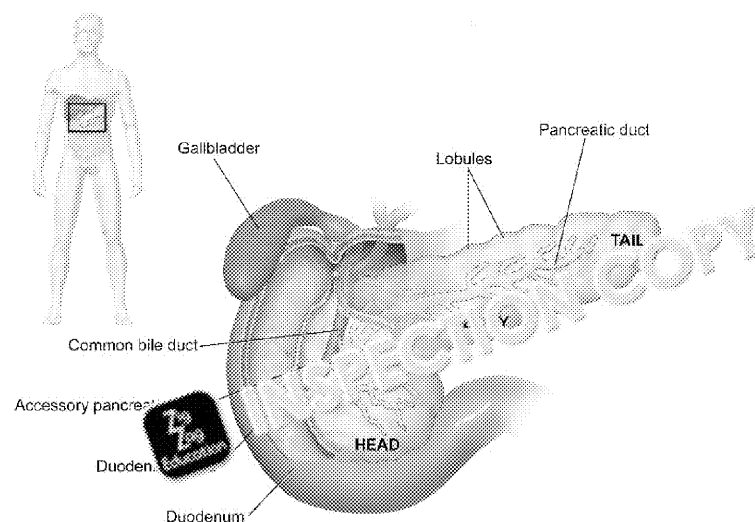


Diagram showing the structure of the pancreas and its position within the digestive system

**Pancreatic**  
pancreas the  
They're also  
Langerhans  
Langerhans

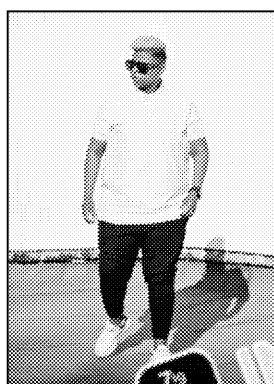
**What other**  
pancreas p

In pairs or  
**create a m**  
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section of t

### Type 1 diabetes

Type 1 diabetes is an autoimmune disorder, meaning that the insulin-producing cells are destroyed by the body's own immune system. As a result, the pancreas is no longer able to produce sufficient insulin for the body's needs. Insulin is necessary to enable glucose to enter the bloodstream into the body's cells for energy production.

In non-diabetic people, after eating and digestion, the blood sugar levels rise and insulin. In those with type 1 diabetes, this doesn't happen and the levels of sugar become dangerously high.



### Type 2 diabetes

Type 2 diabetes occurs when the body develops **insulin resistance**. It is far more common than type 1 diabetes, with 90% of people with diabetes having type 2. It usually occurs in people who are overweight or obese, including children and adolescents.

**Insulin resi**  
cells do not  
**Hyperinsulin**  
levels of ins  
normal

In response to the resistance, the body produces more insulin. People with untreated type 2 diabetes will often have much higher levels of insulin in their blood than non-diabetics, as well as high levels of blood sugar. This is known as **hyperinsulinemia**.

#### Effects on the body

Both types of diabetes will have a serious impact on an individual's health and well-being.

- If the blood sugar level rises too high, they will become **hyperglycaemic**.
- If it drops too much, they will experience **hypoglycaemia**.

Both these situations are life threatening and can mimic those of being drunk.

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**Hyperglycaemia and Ketoacidosis**

If somebody has insufficient insulin in their blood stream for any length of time, their blood sugar levels will become very high and they will develop **hyperglycaemia**. When this happens, the body has to use fats for energy instead of glucose and **ketones** are the result. When ketone levels rise too high, they will make the person very ill and cause them to develop **ketoacidosis**.

The signs and symptoms of hyperglycaemia and ketoacidosis include:

- loss of appetite
- breath that smells like nail varnish or pear drops (due to the high levels of ketones)
- drowsiness
- confusion (when a person doesn't know what they're doing or where they are)
- slurred speech
- coma (unconsciousness)

**Hypoglycaemia**

In diabetics, this can occur when he or she has taken their insulin or their tablets but not eaten. It can also happen if somebody has done lots of exercise, missed a meal, been unwell or consumed alcohol, especially on an empty stomach.

The signs and symptoms of hypoglycaemia include:

- being shaky
- sweating
- confusion
- feeling hungry
- drowsiness
- slurred speech
- coma (unconsciousness)
- nausea

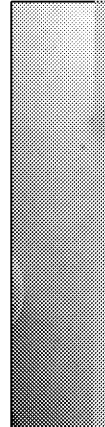
**Hyperglycaemia:** levels rise too high

**Hypoglycaemia:** fall too low

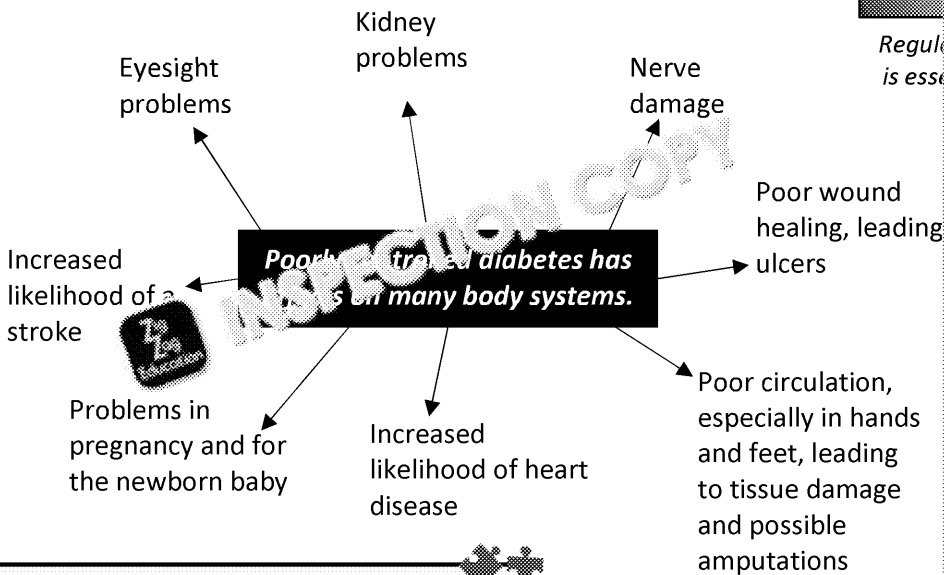
**Ketones:** when the body burns enough insulin, it uses glucose to produce energy. When production is low, the body uses reserves. The ketones in the bloodstream

**Ketoacidosis:** when ketones become dangerous, leading to coma

**Find out what happens when glucose in the blood is low. What levels are regarded as hypoglycaemia?**



Regular insulin is essential



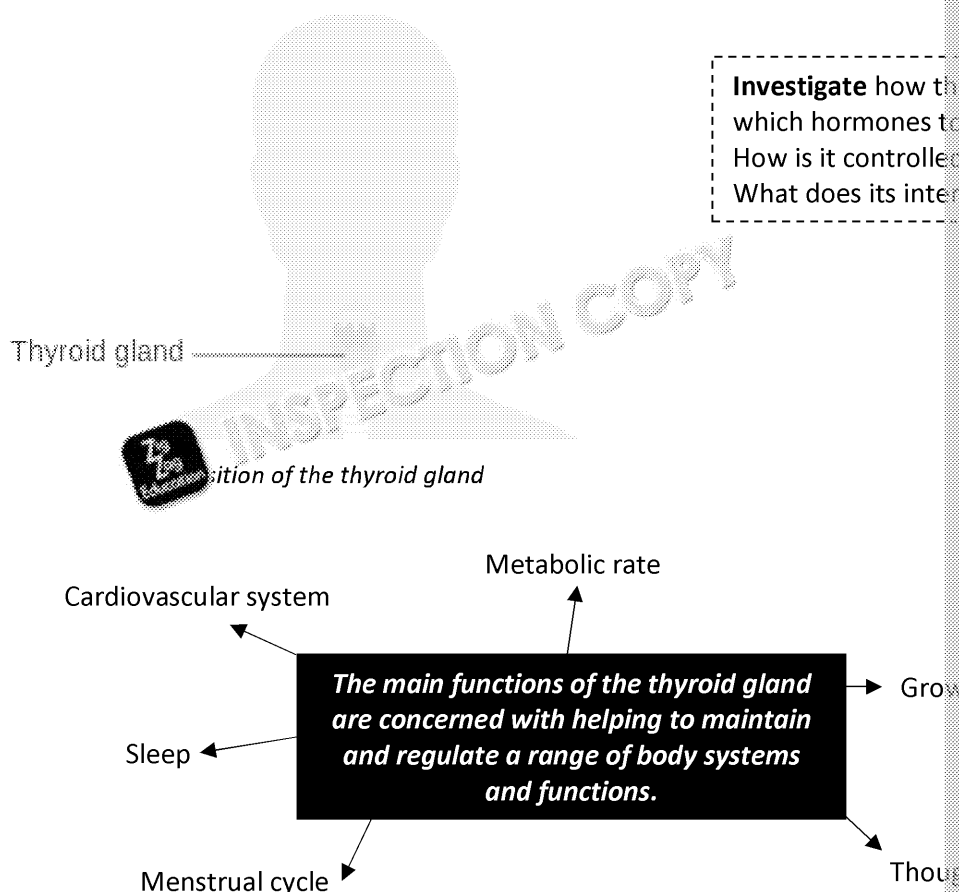
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In pairs, create a poster showing the symptoms of hypoglycaemia for individuals who are non-English speakers.

## Hypo- and hyperthyroidism

The thyroid gland is about two inches long and is usually in two halves, resembling the neck, in front of the trachea, just below the prominent cartilage known as 'Adam's apple'.



**Investigate** how the thyroid gland produces which hormones to regulate the body. How is it controlled? What does its internal structure consist of?

Iodine is an essential ingredient in **thyroxine**. This mineral is needed by the body and is called a 'trace element'. Iodine is found in foods, such as sea fish and shellfish, as well as in dairy products, such as milk, although the amount depends on how much iodine is in the food.

### Did you know?

In the past, hypothyroidism has also been called **myxoedema**. The name continues with the term **myxoedema coma**.

Derbyshire Neck is an old term for a goitre. It was called this because goitres and hypothyroidism were once very common in Derbyshire, which is a long distance from the sea. People didn't have access to sea fish or shellfish so easily and consequently didn't have enough iodine in their diet.

**Congenital:** metabolic condition present from birth.  
**Goitre:** an enlarged thyroid gland.  
**Myxoedema:** a condition of hypothyroidism.  
**Myxoedema coma:** a severe hypothyroidism with very low thyroxine levels.

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## Hypothyroidism

Hypothyroidism is when the thyroid gland doesn't produce enough thyroxine. Although more women than men develop the disorder, babies can be born with it and it can also occur in children.



ii newborn babies have a heel prick test to check for conditions such as hypothyroidism

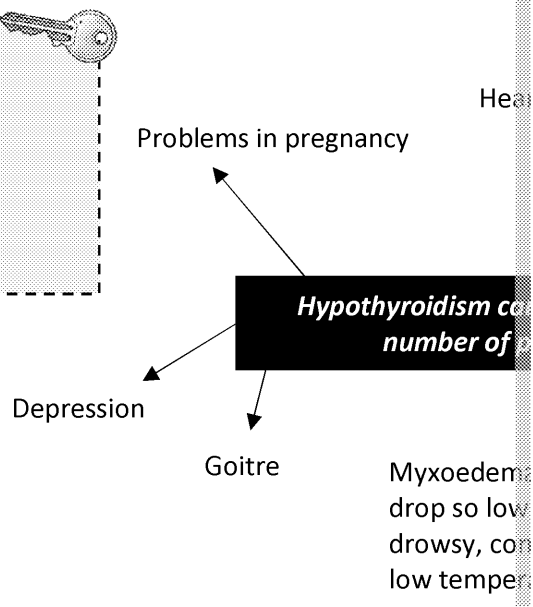
In the UK, all newborn babies are screened for **congenital** hypothyroidism, by a blood test taken from pricking the heel. If the baby has congenital hypothyroidism that is not identified and then treated, the baby or child will have severe developmental problems as they grow older, including moderate-to-severe learning difficulties.

**Hypothyroidism:** when the body fails to produce enough thyroxine

**Hyperthyroidism:** when the body produces too much thyroxine

**Hypothermia:** dangerously low temperature

**Did you know?**  
**Cretinism** is an old fashioned term for people with untreated congenital hypothyroidism.



## Hyperthyroidism

This disorder occurs when the thyroid gland produces too much thyroxine. It can affect anyone but is about ten times more common in women than men and usually begins somewhere between 20 and 40 years of age. Graves' disease is one of the most common causes of hyperthyroidism. In fact, 75% of people diagnosed with hyperthyroidism have Graves' disease, which is an autoimmune disorder.

In pairs, research the causes of thyroid deficiency. Which conditions are most common? Why? What has been done about them?

### Effects on the body

- Hyperthyroidism can cause many problems, including:
- damage to the eyes, including red, gritty eyes or bulging eyes
  - heart failure, where the heart is no longer able to pump blood around the body
  - osteoporosis, leading to weak bones that bend or fracture easily
  - difficulty sleeping
  - mood swings
  - hyperactivity
  - nervousness, anxiety and irritability
  - diarrhoea

What other disorders can be detected by a heel prick test look up

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## Physiological disorders of the endocrine system and their effects – To

1. What is the difference between type 1 diabetes and type 2 diabetes?
2. Identify three effects of diabetes on wider body systems.
3. What is meant by 'hyperglycaemia'?
4. Why do all babies born in the UK have a heel prick test at five days?
5. What is the most common cause of hyperthyroidism?
6. Identify three effects of hyperthyroidism.
7. To answer these questions, you will have to do further research.

Millie is a 40-year-old local authority administrator who works for her local council. She is aged 40 years. Her husband Tim is a self-employed builder who works on construction sites and her mother, who lives nearby, to pick the children up from school on Fridays.

Recently, Millie has been diagnosed with an overactive thyroid gland by her specialist consultant in the nearby hospital.

- i) What signs and symptoms might have made Millie go to her GP?
- ii) What diagnostic tests might be carried out, so that the diagnosis is confirmed?
- iii) What possible treatments might Millie be offered?
- iv) What could their impact be on her life?

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## Physiological disorders of the nervous system

The nervous system is essentially a communication and control system, responsible for passing information between the external environment and the internal.

It consists of:

- the brain and spinal cord, known as the **central nervous system (CNS)**
- nerves that run from the spinal cord to other parts of the body, known as the **peripheral nervous system (PNS)**
- nerves that control the automatic functioning of the body, below conscious control, such as digestion, heartbeat and breathing rate, known as the **autonomic nervous system (ANS)**

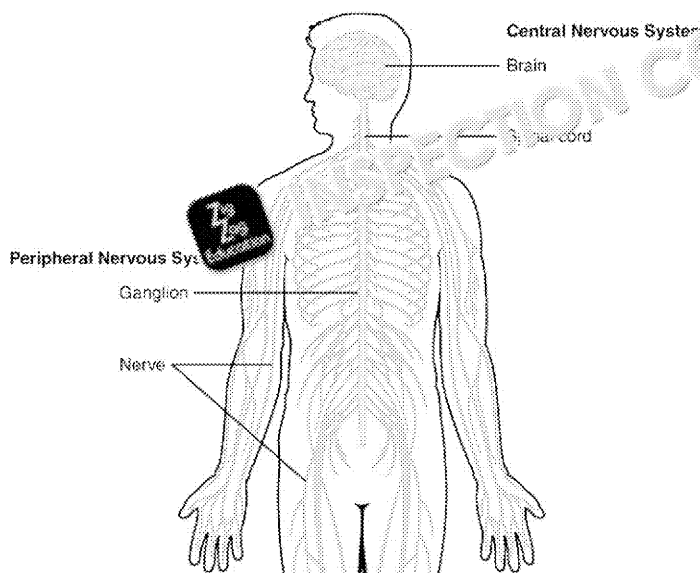


Diagram showing an overview of the nervous system

**Central nervous system:** brain and spinal cord

**Peripheral nervous system:** nerves that run from the spinal cord to other parts of the body

**Autonomic nervous system:** 'automatic' functions such as digestion, heartbeat and breathing rate

**Synapse:** the junction between two neurons

**Neurotransmitters:** chemical messengers that enable a message to be passed from one neuron to another

**Neurone:** another word for neuron

**Motor function:** movement and coordination

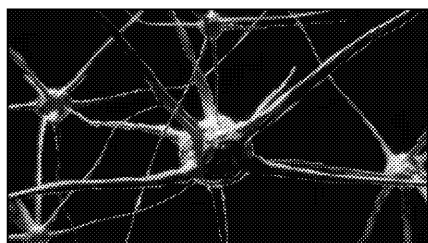
**Dopamine:** a neurotransmitter that is involved in motor function and reward

**Midbrain:** a region of the brain that is involved in motor function and reward

**Substantia nigra:** a region of the midbrain that produces dopamine

### Parkinson's disease

Approximately 145,000 people in the UK are diagnosed with Parkinson's, or one person in every 350. Older adults are more at risk, with one to two people out of every 100 over the age of 65 and about 1 person in 10 over 80; more men than women are affected.



Parkinson's is a disorder that affects mainly the motor system, but it can also affect emotional and mental health. Inside the brain, **neurotransmitters** enable messages to be passed from one neuron to another. The image on the left shows neurons communicating in the brain.

There are many different neurotransmitters but the one affected in Parkinson's is **dopamine**. In a region of the brain known as the **midbrain** are collections of cells, the **substantia nigra**, that produce dopamine. Under certain conditions the cells die, the levels of dopamine fall and Parkinson's disease develops. Because dopamine is mainly concerned with motor function, movement and coordination are affected.

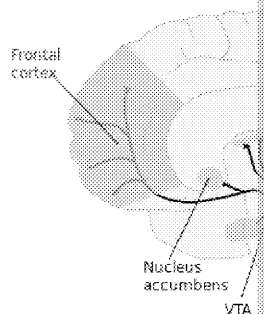


Diagram showing where dopamine is produced in the brain

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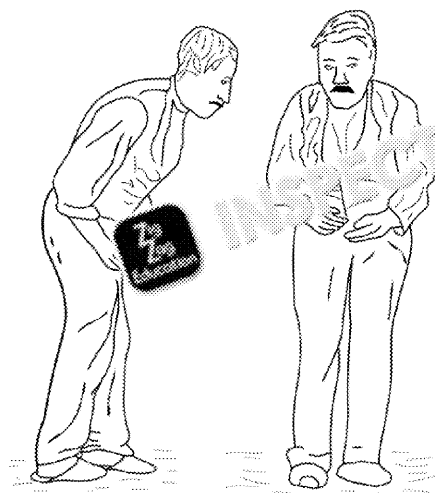


**Effects on the body**

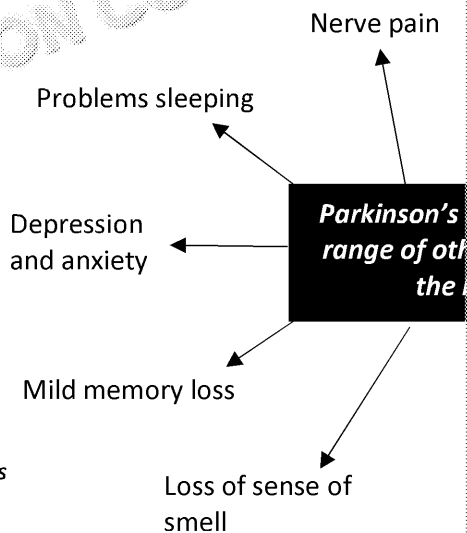
One of the most well-known effects of Parkinson's disease is the **tremor**, usually of the hands and wrists and more noticeable when the person is resting.

Another well-known symptom is **bradykinesia**, which leads to the typical slow, shuffling walk.

Rigid muscles are also a common effect, where the muscles become stiff and tense. This makes it hard to show facial expression and also causes painful cramps.



These old drawings show the shuffling walk and body posture associated with Parkinson's disease.



**Did you know...**  
Parkinson's disease used to be known as the 'shaking palsy'.

Why does Parkinson's cause somebody to lose their sense of smell?

**Hallucinations** smelling something  
**Lewy bodies** protein that causes dementia

**Dementia**

There are two main types of dementia linked to Parkinson's disease, although not all people with Parkinson's also develop dementia. These are Parkinson's dementia and dementia with Lewy

People with Parkinson's disease are more likely to develop certain types of dementia.

**Parkinson's dementia**

Where a person has had physical Parkinson's for at least a year and then develops dementia.

**Dementia with Lewy bodies**

When someone develops both the Parkinson's and dementia at the same time. They experience vivid visual **hallucinations**. They have difficulty with distances and movement, leading to falls for no reason.

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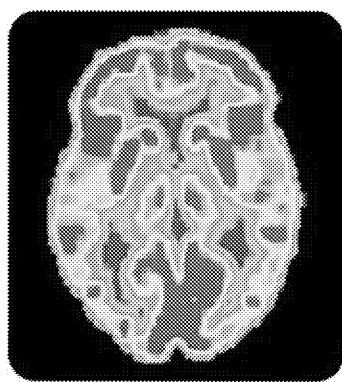
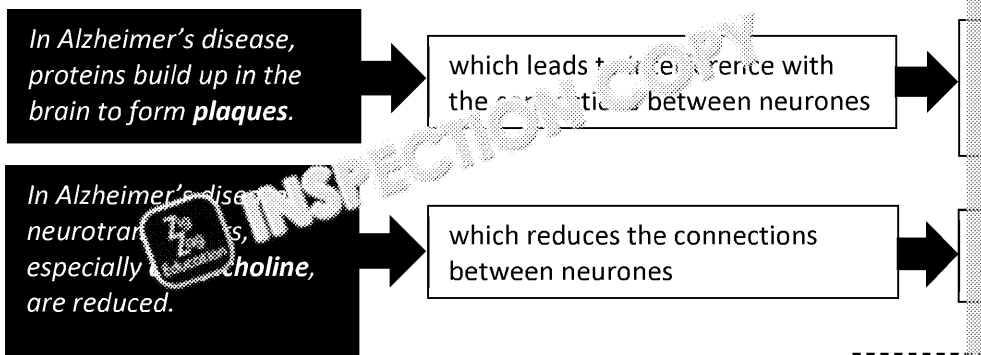
Imagine you are a volunteer working for a local branch of a charity that supports people with Parkinson's disease. Individually or in pairs, **create a leaflet** that gives information about the effects on the body for service users and their carers.

## Alzheimer's Disease

Dementia is the name given to a group of disorders that affect cognitive function, including memory, ability to cope with everyday tasks and organisation. **Spatial awareness** is also affected, so that people with dementia find it hard to judge distances; for example, on stairs.

How many...  
brain produc...  
What are the...

There are several different forms of dementia that share similar signs and symptoms, the most common, making up 60% to 70% of cases. Currently, there are estimated to be 850,000 people with dementia in the UK, most of which are among people over 65 years.



PET Scan of Normal Brain



PET Scan of Alzheimer's Disease Brain

Photographs showing how Alzheimer's disease affects the brain tissue

**Plaques** protein...  
Alzheimer's...  
**Spatial** a...  
distance...  
obstacle...  
**Acetylch**

Imagine...  
an over...  
commu...  
factors...  
use you...  
**Powerl**...  
member...  
people...

### Effects on the body – stages of Alzheimer's disease

<b>Early stage</b>	The signs and symptoms are very mild and can be put down to bereavement, stress or part of natural ageing. The person may have memory loss. A common early sign that is often only recognised as early dementia is getting lost in familiar surroundings.
<b>Middle stage</b>	Changes in memory and ability to cope with everyday life are more pronounced. Individuals may need support with daily activities, such as dressing, eating and walking.
<b>Late stage</b>	The person will be increasingly dependent on others. Their memory will be severely impaired, although there may be times when the person suddenly has a flash of memory and remembers something. Because the brain tissue is dying off, other body systems will become weak, have difficulty walking and may be incontinent (urinary or bowel).

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## **Physiological disorders of the nervous system and their effects – Topic 14**

1. Which organs make up the central nervous system?
2. What is a neurotransmitter?
3. Identify three effects of Parkinson's disease.
4. What two types of dementia are linked to Parkinson's disease?
5. What are 'plaques' in Alzheimer's disease?
6. Outline the three stages of Alzheimer's disease.
7. To answer these questions, you may have to do further research.

Harry is 81 years old. He has always been fit and healthy. He lives with his wife Dorothy. Dorothy has type 2 diabetes and osteoarthritis of her right knee and hip. Her hip is on a waiting list for a hip replacement. Usually, she walks with a walking stick and drives her car everywhere, including to the GP surgery. They live in a small village, 10 miles from the nearest small town. The couple have two grown-up children. Their son, Eddie, lives 250 miles away in a large city. Their other son, Patrick, lives 250 miles away in a large city.

Over the last 12 months, Dorothy has become increasingly concerned about Harry. He has had a number of falls that he's having, resulting in black eyes and cuts to his face. He often forgets that Dorothy has an appointment at the surgery, although she reminds him several times that day. On one occasion, he said he was going out to collect Eddie. On another occasion, he forgot the new road layout and drove the wrong way around a roundabout.

- i) Who can Dorothy talk to about her concerns for Harry?
- ii) What tests might be organised in order to diagnose Alzheimer's disease?
- iii) What other disorders could his symptoms be caused by?

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## Physiological disorders of the musculoskeletal system

The musculoskeletal system is formed of the bony skeleton and the various muscles attached. For the system to work properly, the circulatory system and an intact nervous system have both the energy and the electrical impulses.

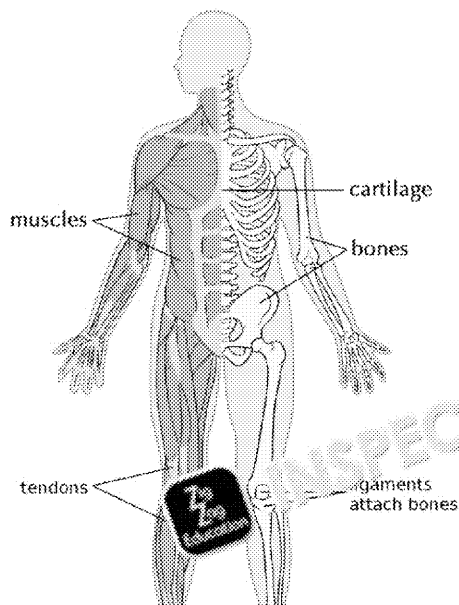


Diagram of the musculoskeletal system

Disorders of the musculoskeletal system are dependent on the disorder and which muscles are likely to be reduced. **gross motor** and **fine motor** function are likely to be reduced.

Which parts of the brain are responsible for controlling movement?

Gross motor skills  
Fine motor skills

### Rheumatoid Arthritis

Rheumatoid arthritis is the second most common form of arthritis in the UK; osteoarthritis. About one person in five will find their arthritis develops rapidly and causes them pain and pain.

**Autoimmune:** where the body 'attacks' itself and produces immune responses that are meant for invaders from outside, such as bacteria and viruses

**Synovial membrane:** the membrane surrounding the joint (see diagram)

**Nodule:** a tiny lump under the skin near an affected joint

**Rheumatoid arthritis**

**Nodules:** some people get these

It's an autoimmune disease

It causes joint pain and swelling

Affected joints can become stiff and inactive

Inflammation can be hot and swollen, and can lead to further damage

The symptoms can be such as fatigue. Often, it affects the same side of the body

The synovial membrane becomes inflamed. It eats into the joint gradually

You are Rachel, aged 42, who has Rheumatoid arthritis. You have a husband, Chris, and two children, aged 5 and 7. You also work full-time as a nursery nurse.

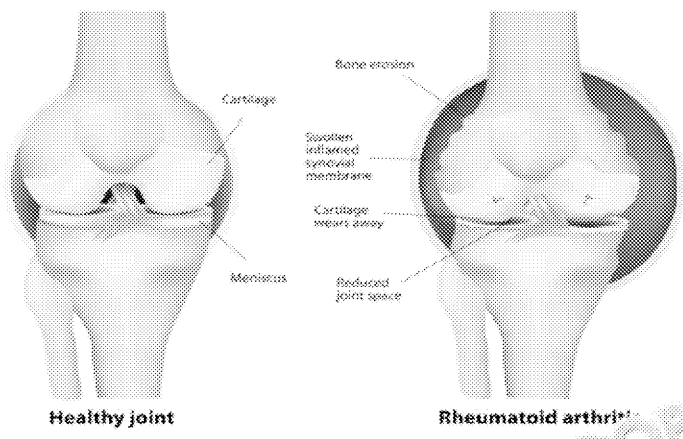
Write a blog over three days, describing how your disorder impacts on your life.

Share your blog with other students.

Discuss how this disorder could affect all aspects of Rachel's health and well-being.

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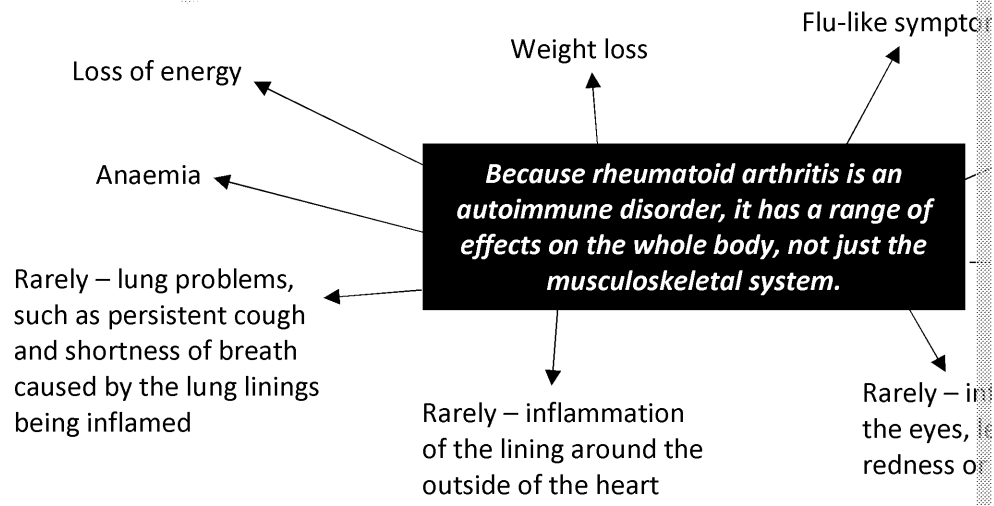


Comparison between a healthy knee joint and one with rheumatoid arthritis

**Causes and triggers**  
 Rheumatoid arthritis is an autoimmune disorder, meaning the body's immune system begins attacking its own joints. The exact cause of what happens is unknown, but a virus has been suggested as a possible trigger.

- However, there are several factors that suggest make it more likely to develop:
- smoking
  - being female (it is more common in women)
  - if somebody has a family history of it
  - being over 40 years old
  - if an individual has a low level of Vitamin D
  - if an individual has a low level of Vitamin B12

**Effects on the body**



What other forms of arthritis are there? How are they different to each other?



The hand of an elderly person with rheumatoid arthritis. Improvements in drug therapy in recent years have made such deformities less common.

**Imagine** that you are a person whose hand is shown in the image on the left. Clearly, this individual would have difficulty carrying out many tasks. In pairs, research examples of assistive devices that can enable people with arthritis to carry out a range of tasks, such as:

- peeling vegetables
- opening a tin
- using a computer
- doing up buttons
- applying make-up
- writing
- using a screwdriver

Create a presentation about the devices, including the cost. Discuss how these devices can help people with rheumatoid arthritis to maintain their independence, self-esteem and quality of life.

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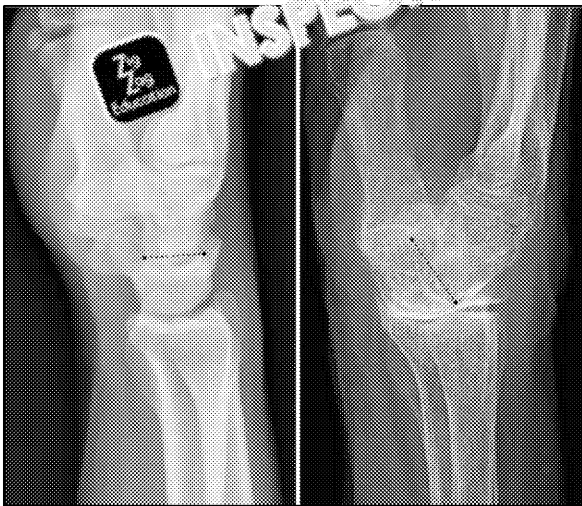
## Osteoporosis

Osteoporosis weakens the bones, making them more at risk of fractures. It progresses so often the first time somebody knows they have the disorder is when they slip or fall. There are over three million people in the UK and is the cause of more than 500,000 people with fractures that occur from standing height or below.

Bones are at their thickest when an individual is aged 25–30. After age 30–35, bone loss happens to everyone, but some people lose their bone density far more and at a faster rate.

Women are more at risk of osteoporosis than men, especially after the **menopause**. However, factors such as family history, being underweight and long-term use of **steroids** also make developing osteoporosis more likely.

Fractures of the spine  
 Involve the vertebrae



X-rays of a healthy wrist (left) and a wrist with osteoporosis (right)

**Bone density:** is. It refers to the bone cells.  
**Menopause:** age 45–55 years.  
**Steroids:** drugs that lower the body's inflammation.  
**Vertebrae:** the bones of the spine. Plus the vertebra

### Effects on the body

Because of the way people fall, it's often the hip, the wrist and the **vertebrae** that are the most commonly affected. However, they can occur in other bones, such as ribs or the pelvis.

A cough or a sneeze can be enough to break a rib or a **vertebra**

Chronic back pain can be caused by osteoporosis of the spine fracturing the vertebrae.

Some older people will develop a stoop, with their back bent, and this can be caused by osteoporosis fracturing the vertebrae.

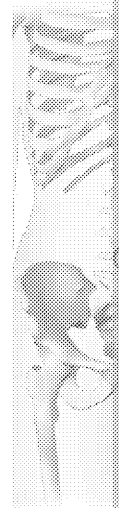


Diagram of a healthy spine

### Effects of osteoporosis



**Create** a poster for your local health centre that gives suggestions about how women can reduce their risk of osteoporosis.

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## Physiological disorders of the musculoskeletal system and their effects

1. What causes rheumatoid arthritis?
2. What part of the joint becomes inflamed in rheumatoid arthritis?
3. Identify three effects of rheumatoid arthritis on the whole body, not just the joint system.
4. How many people in the UK are thought to have osteoporosis?
5. How do many people first discover they have osteoporosis?
6. Which bones are most commonly affected by osteoporosis?



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## Physiological disorders of the respiratory system

The respiratory system ensures the body has sufficient oxygen and removes excess gases as part of the **metabolic** process. Oxygen is needed, along with glucose, for energy. Carbon dioxide and water are produced as a result.

Control of oxygen and carbon dioxide is through the **autonomic nervous system**. This means that if the body is short of oxygen for energy, such as when running or climbing, the brain sends out a message to the lungs to breathe more deeply and more frequently.

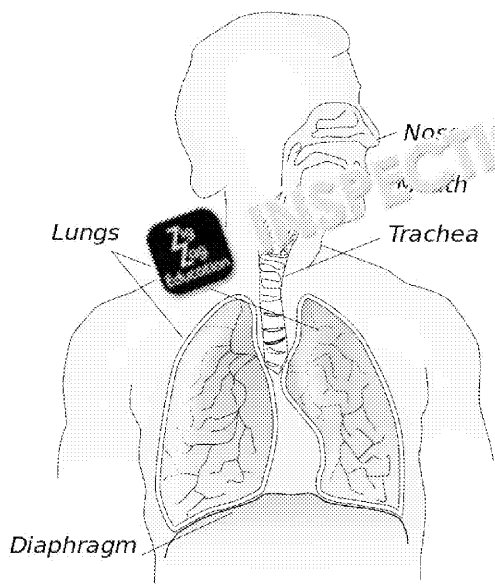


Diagram showing gross structure of the respiratory system

Any disorder of the respiratory system can affect the amount of oxygen the lungs can take in. It can also cause **cyanosis**, loss of oxygen to the body.

Because the need to breathe is so great, any respiratory impairment is likely to make someone who has it struggle to get enough air in. It can feel very different to being out of breath.

**Metabolism:** the process by which the body produces energy

**Autonomic nervous system:** the part of the nervous system under automatic control, such as breathing, heart rate

**Homeostasis:** the maintaining of a constant internal environment inside the body

**Cyanosis:** the blue tinge to the skin that occurs when the body is short of oxygen

**Trachea:** the main airway leading from the throat to the lungs

**Bronchi:** the trachea divides into two main branches leading to each lung

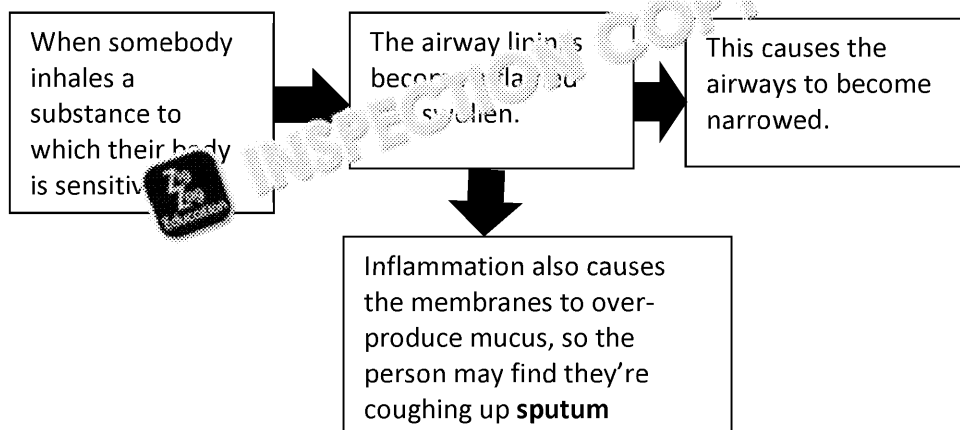
**Bronchiole:** inside each lung there are many smaller and smaller passages

**Sputum:** the mucus produced in the respiratory system

**Find out** what cells line the different parts of the respiratory system. How does the body monitor and control its oxygen and carbon dioxide levels?

### Asthma

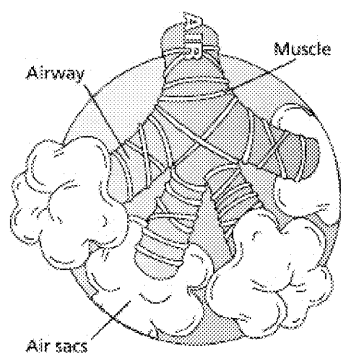
Asthma affects the linings of the **trachea**, **bronchi** and **bronchioles**.



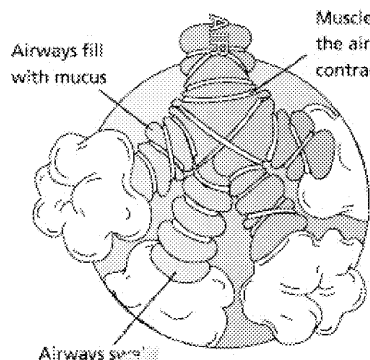
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**Before an Asthma Episode**



**After an Asthma Episode**



*What happens inside the airways during an asthma attack*

In the UK, there are approximately 5.5 million people with asthma, meaning that the disorder, or 1 in 5 households. Current figures suggest that 1 child in 11 has asthma or 3 children in every classroom, making asthma a common disorder among children.



Triggers  
off an

The **triggers** for asthma vary from one person to another. They can include:

- allergies, such as pollen or dust mites
- infections, such as colds or flu
- exercise
- pollution, cold or smoke

What are the  
education

**Effects on the body**

**When somebody experiences an asthma attack, they will probably notice:**

- Breathlessness
- Wheezing, a whistling sound that goes in and out
- Coughing
- A sensation of a tight chest

**If their asthma attack is getting worse, they may notice:**

- Sensation that the effort of breathing is getting faster and that they can't keep up with it, eat and sleep
- Loss of consciousness
- Dizziness
- Difficulty speaking
- Children may complain of tummy ache or of their chest aching.
- Drowsiness
- Cyanosis

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## Chronic obstructive pulmonary disease (COPD)

COPD is the name given to a group of lung disorders, mainly including **emphysema**. It usually develops in middle-aged and older adults, especially those who smoke, and it tends to worsen over time.

Bronchitis causes the airways to become chronically inflamed, so that, similar to asthma, they become narrowed and also produce large amounts of sputum.

- **All that mucus** is an ideal breeding ground for infection, and people with COPD are more prone to chest infections.
- **Emphysema** makes the **alveoli** lose their structure and tone, which reduces the **gaseous exchange** to take place. This is one reason why people with COPD are often out of breath.
- **The lungs** lose their tone and elasticity. This means that the chest wall is less able to support the airways. The air passages tend to collapse in, reducing the volume of the lungs even more.
- **These changes** are irreversible, but, although care can reduce the impact on health, it cannot reverse the damage.

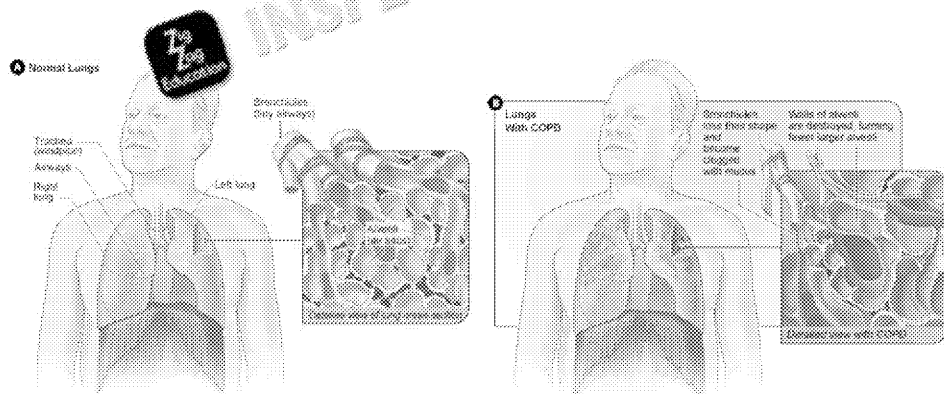
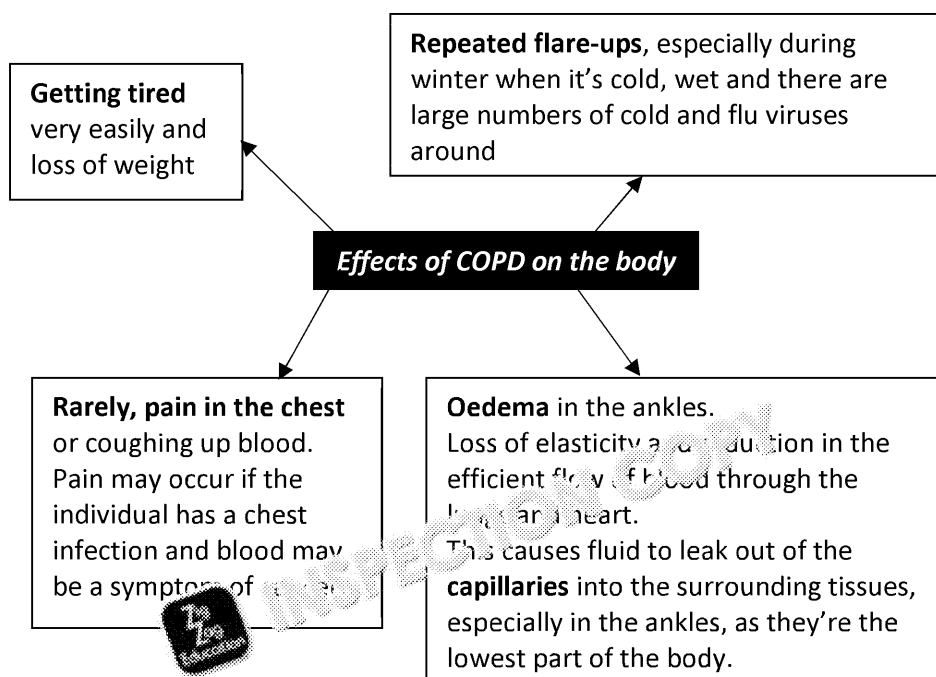


Illustration showing the difference between a healthy lung and one with COPD



Visit the website of the Health and Safety Executive (HSE) and research the factors most likely to cause COPD. What precautions should employers and employees take to reduce the risk? **Present the information you find** as a poster or a PowerPoint to the class.

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## Physiological disorders of the respiratory system and their effects – T

1. What is cyanosis?
2. Explain what happens during an asthmatic attack.
3. Identify three triggers for asthma.
4. What does COPD stand for?
5. What is emphysema?
6. Explain what happens during gaseous exchange.



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# Physiological disorders of the circulatory system

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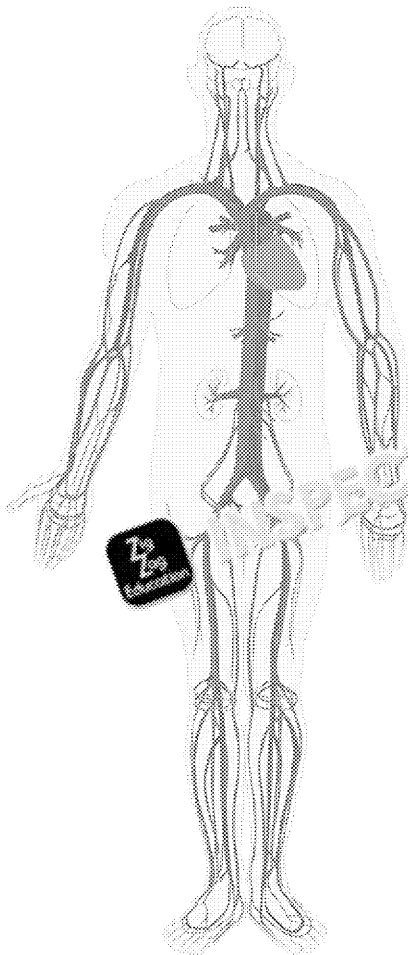


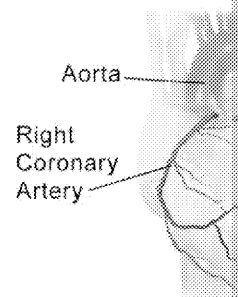
Diagram of the circulatory system

The circulatory system consists of the heart and blood vessels and is the body's transport system for oxygen, glucose, antibodies and hormones.

Like the respiratory system, it's under the control of the nervous system and its role is to maintain homeostasis. This means that heart rate is constantly monitored by the body to meet the individual's needs, without the individual being aware of it.

**Cholesterol:** a type of lipid. Some is essential but too much can lead to it being laid down in arteries, causing atherosclerosis.

**Lipid:** an overall, or generic, name of a group of biomolecules in plants and animals.



Coronary Artery

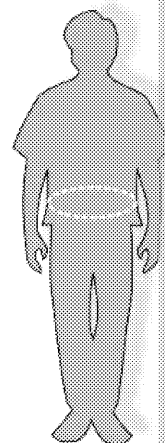
Diagram of the heart of a human

## Coronary heart disease (CHD)

In the UK, it's estimated that over 1.6 million men and over 1 million women have CHD, with the highest rates in older adults.

The factors leading to CHD are extremely well-known these days and include:

- smoking
- high blood pressure
- lack of exercise
- high levels of **cholesterol** in the blood
- diabetes
- being obese or overweight
- a family history of CHD



Being obese

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**Investigate** the role of all the factors above in causing CHD.  
What difference does gender make to the risk of CHD?

## Atherosclerosis

Some individuals lay down layers of fatty tissue in their **coronary arteries**. This process is called **atherosclerosis** and the deposits are known as **atheroma**.

Over time, these build up until eventually the centre of the artery is narrowed or completely blocked.

Bits of atheroma can break off and flow through the blood. If they get stuck, they form **clots** elsewhere. This could be a **coronary artery**, or a blood vessel in the brain or the lung.

When this happens in the coronary arteries, the supply of freshly oxygenated blood to the heart is either reduced or stopped altogether. Dying muscle tissue is extremely painful, leading to the pain of **angina** and the pain associated with a heart attack, or **myocardial infarction**.

### Effects on the body

The severity of the individual's CHD will depend on which coronary arteries are affected and at what point. If the narrowing occurs in a tiny arteriole of one artery, then only a small amount of tissue will be damaged and may die. This is because the arteriole only supplies a small amount of cardiac muscle. If, however, the narrowing or blockage takes place in a wider section of the artery, then a much greater area of that tissue will die off. Potentially, this can lead to cardiac arrest and death, as so much of the heart will have been damaged, it can no longer function.

In some individuals, the heart can become so damaged from the CHD that it no longer works efficiently. Then it becomes enlarged and loses elasticity and tone as a result of so much scar tissue. This condition is known as heart failure.

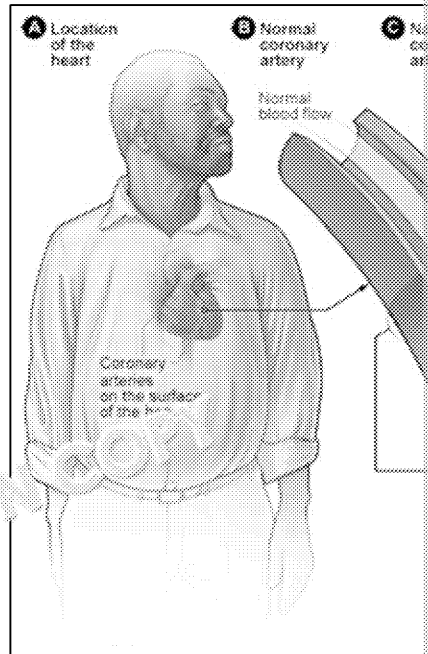


Illustration shows how deposits build up in the coronary arteries, causing them to narrow and restrict blood flow to the muscle.

**Coronary arteries:** arteries that carry oxygenated blood to the heart.

**Atherosclerosis:** the process where fatty deposits are laid down in an artery.

**Atheroma:** the deposits that build up on the artery walls. The deposits are made of cholesterol and fatty acids.

**Angina:** Angina: caused by a partial blockage of the blood flow to the heart. It is often triggered by increased physical activity.

**Ischaemia:** a lack of blood flow to the body. It's especially common in the heart.

**Myocardial infarction:** a heart attack.

Learn how to carry out CPR in chapters twos and threes.

Find out if coronary artery disease is evenly throughout the population or if it is more frequently in some areas of the population.

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Many people take part in charity events, such as the London Marathon, to raise money for research and support of people with leukaemia.

## Leukaemia

Leukaemia means 'white blood cells' and leads to the production of abnormal white blood cells. It usually starts in the bone marrow and treatment for each type is different.

Most types of leukaemia affect adults, especially men. Acute lymphoblastic leukaemia, however, is a very rare type of leukaemia, but a common form of childhood leukaemia. In 2010–2011 for England and Wales, 11% of people with leukaemia, 46% of individuals with acute lymphoblastic leukaemia, were under 16 years old.

Blood cells are formed in the bone marrow, which is the spongy tissue found inside the bones. In the bone marrow, the **stem cells** divide and either produce more stem cells or immature cells that become mature blood cells in time.

A stem cell that's going to mature into a blood cell may become a myeloid stem cell or a lymphoid stem cell, as you can see in the diagram on the right.

The type of leukaemia a person has is classified according to the type of white cell affected and by how quickly it progresses.

- Acute leukaemia means a disorder that progresses quickly.
- Chronic leukaemia means it progresses more slowly.

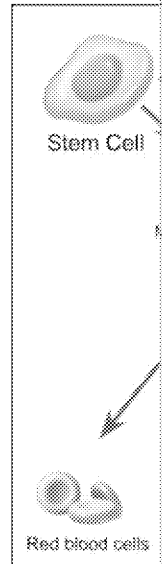


Diagram showing a stem cell dividing into red blood cells.

**Investigate** the different types of leukaemia.

What triggers the bone marrow to begin producing too many abnormal white blood cells? Explain your findings.

**Prognosis:** depends on the type of disorder

**Stem cell:** can be replaced with different types of stem cells

### Effects on the body

Because the bone marrow is producing too many abnormal white blood cells, it is unable to produce normal blood cells.

This leads to a reduction in all the different blood cells the body needs, so the individual might notice...

that they bruise very easily, due to the lack of platelets.

they get tired more easily, feel weak and are short of breath.

that they catch infections more easily, which can be more severe than usual.

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## Physiological disorders of the circulatory system and their effects – To

1. What is the medical name for a heart attack?
2. Explain what's meant by atherosclerosis.
3. Identify three factors leading to coronary heart disease.
4. Explain what leukaemia is in one sentence.
5. What is the difference between acute and chronic leukaemia?
6. Where are white blood cells produced?



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# Physiological disorders of cancer and their effects

There are more than 200 different types of cancer but what they have in common is that they all occur when abnormal cells divide in an uncontrolled way. According to statistics, 1 person in 2 will develop cancer during their lifetime.

Usually, the body has exactly the right number of each type of cell that it needs and the human body contains approximately 37.2 trillion cells. Because cells produce signals that control how much and how often they need to divide, the body can ensure it only ever has the number it needs. However, if any of these signals are missing or faulty, then the cells may begin to multiply too much and will form a tumour.

A **primary tumour** is where a tumour starts.

Tumours can be benign or malignant.

- If it's benign, it's not cancer and will only cause a problem if, for example, it grows too large and begins pressing on other organs.
- Malignant tumours, on the other hand, usually grow faster than benign tumours and can spread to surrounding tissues. They can also spread through the circulatory system or form secondary tumours elsewhere, known as metastases.

**Metastasis:** cancer cells may break away from the primary tumour and settle elsewhere in the body. They may use the bloodstream or the lymphatic system to spread. They may also spread to bones.

**Using enzymes:** some cells produce enzymes that break down cells and tissues; for example, when a tumour grows. Research has shown that some cancer cells produce large amounts of these enzymes and it appears that this is necessary for a tumour to spread through healthy tissue.

**Pressure:** as the tumour grows large, it can push against and damage other tissues nearby and eventually break through the normal tissue. Depending on which route and direction will vary. For example, a tumour may grow between sheets of muscle or straight through the muscle itself.

*Tumours can spread into neighbouring tissues in different ways.*

**Moving cells:** research has shown that cancer cells seem able to move more easily than normal cells and that one way in which they spread is by directly moving. There appears to be a substance that stimulates the cells to move, although this is still being investigated.

**Investigate** what factors are thought to trigger cells to become abnormal and begin multiplying in an abnormal way. Visit <https://www.cancerresearchuk.org/> to read more about the different ways in which cancer grows and spread.

**Lymphatic system:** immune system vessels through tissues and white cells. Infection.

**Metastasis:** different primary tumours. In circulatory system to bones.

**Primary tumour:** body where it starts.



Diagram

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**Did you know?**

Research has shown that cancer cells seem able to move more easily than normal cells and that one way in which they spread is by directly moving. There appears to be a substance that stimulates the cells to move, although this is still being investigated.

Numerical system:	
Stage	How far the cancer has spread
Stage 1	The cancer is still inside the tissue or organ in which it started.
Stage 2	The cancer has spread beyond the tissue or organ and may have invaded nearby organs.
Stage 3	The cancer has spread into nearby lymph nodes and maybe tissues as well.
Stage 4	The cancer has formed metastases and invaded other parts of the body.

### Grades of cancer

Cancer can be graded in different ways. The purpose of grading is to see how far the cancer has developed and how far it has spread to other parts of the body. There are different ways of grading cancer and the number of cells in the cancer has progressed through the lymphatic system and the number of cells that have spread to other parts of the body.

**Research** into cancer treatments can create new treatments, encourage better health care and reduce the impact of cancer.

### TNM:

- **T:** shows the size of the tumour.
- **N:** shows if the cancer has spread to nearby lymph nodes and also how many lymph nodes are affected.
- **M:** shows if the cancer has spread to other parts of the body (metastasis).

### Bowel cancer

Bowel cancer means cancer that starts in the **colon** or **rectum**.

**Investigate** other medical conditions that can lead to cancers. Cancer Research UK provides information.

According to Cancer Research UK, in 2015:

- There were 41,804 new cases of bowel cancer in the UK, equal to more than 110 new cases every day.
- Over half of bowel cancer cases are already at a late stage by the time they're diagnosed.
- 54% of cases in the UK are preventable.

**Colon:** the large bowel  
**Rectum:** the back passage  
**Faeces:** poo or stool  
**Squamous cells:** flat cells that are often found lining organs such as the bowel lining

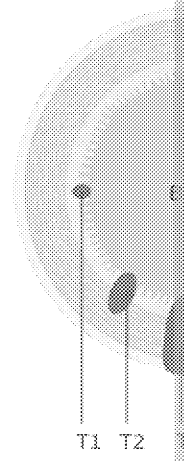


Diagram showing the location of the colon and rectum using the TNM system.

### Types of bowel cancer

**Bowel cancers are of different types**

**Adenocarcinoma:** the most common type of bowel cancer. It starts in the mucus gland cells lining the bowel wall. Mucus is secreted to help faeces pass through.

**Neuroendocrine tumour:** This slow-growing cancer is often found in the pancreas. It grows in hormone-producing tissue. It's usually found in the small intestine.

**Squamous cell tumours:** These rare cancers are in the lining of the colon and rectum.

### Effects on the body

Somebody may realise something is wrong with their bowel if:

- They pass blood in their faeces for no obvious reason.
- They may have to go to the toilet more frequently, often with looser faeces.
- They have pain and bloating in their lower abdomen, usually associated with constipation.
- They have unintentional weight loss.

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### Prostate cancer

The prostate gland is a walnut or satsuma-sized gland found at the base of the bladder in men. Its function is to produce thick white fluid in which the sperm swim and so form semen.

According to Cancer Research UK:

- More than half of those diagnosed every year are aged 70 or over.
- It's more common in black Caribbean and black African men than in white men.
- It's less common in Asian men.
- Approximately 46,700 men are diagnosed in the UK each year.
- It's the most common form of cancer among men.
- Among adults, it's the second most common cancer form.



Diagram

#### Types of prostate cancer

There are different types of prostate cancer

##### Acinar adenocarcinoma

This begins in the gland cells that line the prostate gland. They grow extremely slowly and are unlikely to spread. Ninety percent of men diagnosed have this type of prostate cancer.

##### Ductal adenocarcinoma

This starts in the tubes of the prostate gland. It grows more quickly and is a rarer type.

#### Effects on the body

Because the prostate gland is situated so close to the bladder, one of the first ways in which men will realise there is something wrong is that they will frequently need to pass urine. They might also feel they have to strain to empty their bladder and that the **bladder** may feel it's not completely empty.

**Bladder:** bag convenient

**Urethra:** the pass from the bladder through the

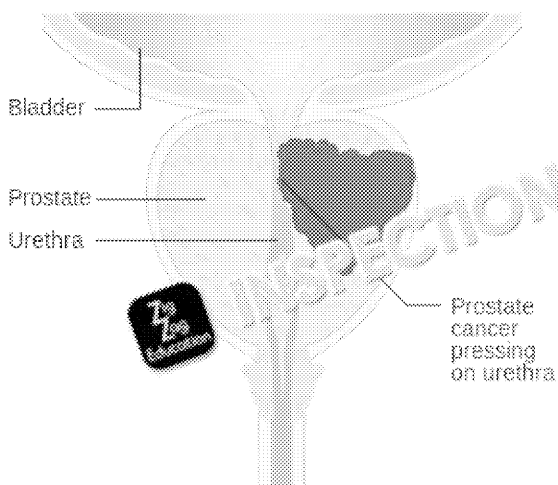


Diagram showing prostate cancer pressing on urethra

In pairs or groups, investigate why prostate cancer targets the most likely population. You might find that prostate cancer is common in these populations because they're more likely to be positively affected.

**Investigate** why prostate cancer is so much among different groups of men.

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## Physiological disorders of cancer and their effects – Topic questions

1. What is a 'primary tumour'?
2. What medical name is given to secondary tumours?
3. Explain one way of grading cancer.
4. Where does bowel cancer usually start?
5. Which part of the prostate gland is usually affected by cancer?
6. What is the most common cancer among men in the UK?



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## Physiological disorders and their impact on the well-being of service users

Care workers, such as nurses, care assistants and physiotherapists, will all be aware that a physiological disorder can impact a service user's health and well-being, as well as that of their family. Each disorder is individual and must be treated as such: listened to, respected and supported as if it were the service user's own. It is important to understand that the impact of the disorder on the service user's life causes as much as or more than the disorder itself.

### Physical impact of physiological disorders

Every one of the disorders outlined will have their own specific effects on the service user's physical health. Diabetes, for example, requires daily monitoring and care to be taken with the amount of sugar and carbohydrates the individual eats and drinks. If they don't, the complications can be severe and even life-threatening. Rheumatoid arthritis makes mobility difficult and painful, which may limit somebody's ability to exercise and carry out daily tasks. There are, however, common physical effects that they are all likely to have in common.

Going for a walk or a run, playing games, driving, housework, cooking or gardening are just a few examples of activities that a service user may well be used to doing on a regular basis. They may either just not feel well enough to do them, or be physically unable to do them any more.

**Investigate** the impact of pain on individual service users. How does the service user manage pain? What is the impact on the nervous system?

**Feeling ill, in pain or finding that their body won't do what they would like it to can seriously hamper somebody's ability to lead a normal life.**

Hygiene could become a challenge for service users, especially if their mobility is reduced, such as with Parkinson's disease. Getting in and out of the shower or hair wash can become more challenging if the individual is unable to do it by themselves. Most people take pride in their appearance. Being unable to keep themselves clean and tidy can be a significant barrier to leading the life they would like to lead.

Appetite may be reduced, so service users may not feel like eating a balanced, nutritious diet and could either lose or gain weight. Both could have long-term consequences for the service user's health and well-being, especially when combined with a reduction in exercise. Children may not grow as they should and have difficulties concentrating at school, while an elderly person may become more frail.



**Christine** is a service user with Parkinson's disease and has no mobility. In pairs or groups, discuss the physical needs of service users like Christine. How do they cope? What services may be able to help?

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## Lifestyle habits

Some service users will have lifestyle habits that can be harmful, such as use of alcohol. They may need to change their habits to help improve their health.

### Smoking



Smoking is a recognized contributing factor to COPD and CHD. Giving up is easier said than done.

**Investigate** the current debate about vaping. Is it as harmless as some people believe?

### Effects of vaping

- Less weight gain
- Increased exercise
- Reduced mortality
- Improved mouth and airways
- Reduced spitting
- Reduced sore throat
- Reduced cough

### Lungs

- Reduced shortness of breath

In recent years, vaping has been promoted as an alternative to smoking. However, its long-term effects are still unknown.

### Travelling

Travelling can also be an issue. Diabetics, for example, may need to inform their travel insurance that they're properly insured while driving, and people with COPD may find some air travel difficult if they use an oxygen cylinder. Both these examples can make travelling more challenging and expensive. People with mobility issues will find it hard to afford.



Imagine going shopping, catching a bus or train or going on holiday if you're unable to walk very far because of your rheumatoid arthritis, COPD or Parkinson's disease.

**Investigate** the physiological challenges of driving insurance for people with chronic conditions.

**Gary, 71**, has a chronic condition and uses an oxygen cylinder. He goes out to work in Jamaica. In groups, discuss the challenges of arranging a trip. Will he be able to afford it?

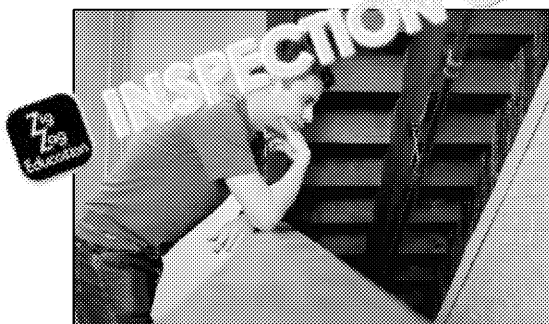
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## Intellectual impact of physiological disorders

Work and school form the core of many people's lives. Many continue to work well past retirement age, as well as enjoying hobbies and interests that they find challenging. Physiological disorders discussed here are likely to have at least some impact on the service user's work and leisure aspect of their life.

Some, such as diabetes and hypo- or hyperthyroidism, mean that the service user may need to take care and inform their school or employer, but once their disorder has settled, they can continue studying as usual. Others, such as cancer or coronary heart disease, are likely to require the service user to need some time off work and their return will depend on how well their body responds. For somebody who has Alzheimer's, the likelihood is that eventually, their cognitive functions will decline to a point where they can no longer work.



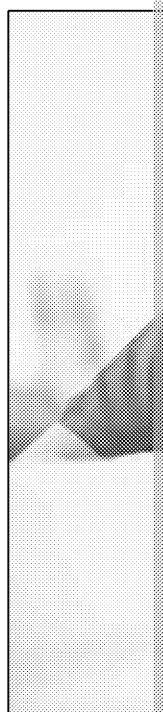
*For most adults, time spent away from work means a loss of pay, which can have serious consequences for the service user and their families. They may have to rely on others for necessities such as rent, food, water and heating, and transport.*

If a child or adolescent has a disorder such as diabetes or asthma, which is badly controlled, they may find they have repeated, lengthy absences. They may also find it very hard to engage when they're back in the classroom. Time spent away from school is likely to have a serious impact on their learning and can negatively affect the qualifications with which they leave school. In turn this will influence the career pathways open to them, their future earnings, and so on.

School provides children and adolescents with opportunities and practice in developing their thinking and learning skills, such as problem-solving and abstract thinking. Repeated absences can lead to the individual student not having these opportunities, which can delay or reduce their development.

On a more positive note, the child or adolescent may develop an interest in their own body and why it responds as it does to their particular disorder. This natural curiosity could lead to an increased knowledge and understanding of themselves and their body.

The fatigue and exhaustion that accompanies many disorders can lead to a service user losing little or no interest in their hobbies or work, which could lead to depression and social isolation. If a service user has Alzheimer's disease, there will probably come a time when they are no longer able to manage their own financial affairs. Under the Mental Capacity Act 2005, relatives will be able to take control, although there are a number of steps that have to be taken to bring



**Create a world where everyone has a chance to thrive.**

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## Emotional and mental impact of physiological disorders

People rarely want to be ill. Most want to get on with their lives, so that when a diagnosis is emotionally devastating. The service user may have had an idea for some time that they were going to the GP. Remember that over half of newly diagnosed bowel cancers have been found at later stages.

**Investigate** the stages of grief and other responses to disorders such as cancer, leukaemia and Alzheimer's disease. Use your information to make a presentation for volunteers in a hospice, who are undergoing training in how best to support service users and their families.

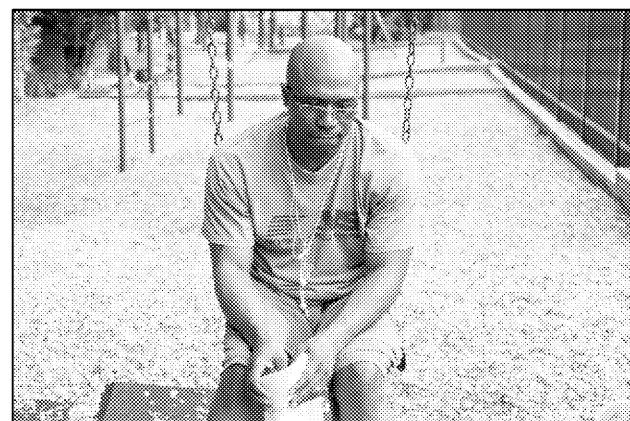
For some, the diagnosis is a shock that they're not prepared for, while for others, anger and grief may be more radical changes. The service user may also be grieving for themselves as they've lost their health.

*There are all sorts of emotional responses to developing and being diagnosed with a disorder.*

People tend to have a range of completely different responses to a disorder and it's important to be positive and supportive and thoroughly investigate the impact.

**Investigate** how children and adolescents cope with long term disorders such as diabetes, cancer and leukaemia.

Some disorders on a service user's list, COPD, are all examples of long term conditions to be fairly common. Service users may feel embarrassed about their condition.



If the service user is concerned about their hair, they may feel that the mirror no longer reflects who they feel they are.

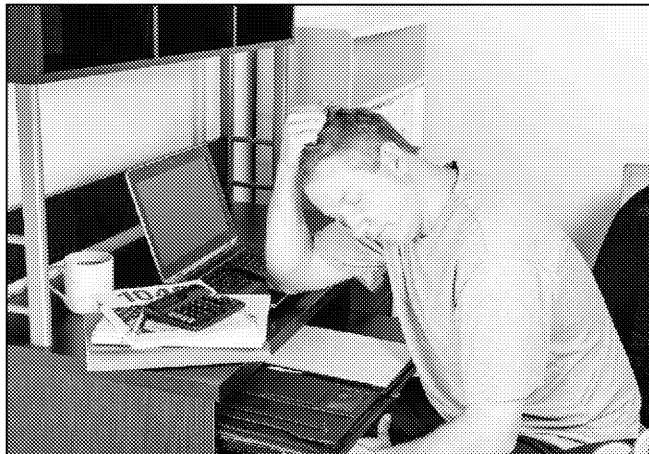
*Living with a physiological disorder or being a carer can leave individuals feeling isolated and lonely. In turn, this can lead to a loss of self-esteem and depression.*

What proportion of people are carers for elderly people? How do they cope with their role and career and family life? What are their elderly relatives like?

People with Alzheimer's are at risk of depression partly due to the physiological changes. It's easy to imagine that anybody who is trying to cope with a serious, possibly life-threatening condition will experience anxiety and depression about their own health and the impact on their family. Remember the emotional impact on family and carers. For example, many families have a member of the family who has to become a full-time carer for an elderly parent and many carers are spouses, possibly with their own health issues.

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### Social impact of physical disorders

Relationships can be difficult at times, when people are experiencing factors such as work, school or experiencing financial worry. If a physical disorder is diagnosed, relationships can be under enormous strain.

Working relationships can be difficult if a service user is unable to carry out their job.

Family members may not have time off sick if the service user's job is different when they are sick.

Family members may not be as understanding as they could be if the service user takes longer to complete tasks.

Although there's legislation in place to protect individuals when they're sick, not all employers are happy to let their employees use their jobs, with the obvious impact on income. If the service user is unable to work, they may find themselves with a much reduced income and their former customers may go to other providers.

Money worries are a real source of stress in family and intimate relationships. Added to the concern that the family is likely to feel about the service user's health, relationships may become tense and difficult.

Younger family members may find they can't express their feelings and show them in other ways, such as getting into trouble at school or becoming very angry, all of which adds to the stress on family relationships.

Periods of illness are likely to affect the sexual side of a service user's intimate relationship, which may cause additional stress and worry in addition to the fear about the outcome of some disorders, such as cancer, leukaemia or CHD. A service user's COPD may be so severe they become breathless. A service user with CHD may be afraid of an angina attack.

Social relationships are also likely to be affected, as feeling ill from the disorder itself may mean a service user no longer feels like meeting friends or going out as they once did. If income is reduced, they may not be able to afford to go out. This can lead to a sense of isolation and loneliness for the service user that everyone else is leading busy, fulfilled lives while they're stuck at home.

**Make a list** of activities near where you live that are fun to use. Use your information to create a poster for the walls of the waiting room of your local GP surgery.

### Effects of physiological disorders on the service user's health and well-being

1. Explain three ways in which rheumatoid arthritis could affect a service user's well-being.
2. Explain three ways in which asthma could impact on the intellectual development of a young person.
3. Explain three ways in which Parkinson's disease could impact the everyday life of a 70-year-old service user.
4. Explain three ways in which COPD could affect a service user's social relationships.

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## A2: Causes of physiological disorders

Causes of physiological disorders are generally pretty complex. There is rarely one cause that cause somebody to develop a particular disorder can be many and varied. The overweight individual, who eats a diet high in fats and sugars, doesn't exercise, smokes, and drinks recommended amounts of alcohol, will develop coronary heart disease or type 2 diabetes. A person who follows the same lifestyle won't.

This section is divided into four main headings:

- inherited traits
- lifestyle
- diet
- environment

### Inherited traits as a cause of physiological disorders

Inherited traits are those that are passed on genetically. They include height, eye colour, and many disorders. Each disorder will have its own specific pattern of inheritance and knowledge. These days, individuals and couples can take part in genetic counselling to make an informed decision before conceiving a child. Examples of disorders where this would be:

- Huntington's disease, which is an inherited disease causing death of brain cells
- cystic fibrosis, which clogs the lungs and digestive system with thick, sticky mucus
- sickle cell anaemia, a disorder that affects the red blood cells

### Sickle cell disease

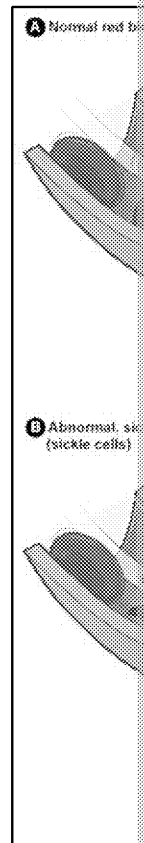
Sickle cell disease is a group of inherited diseases, the most serious of which is sickle cell anaemia. It affects the red blood cells, changing their shape and giving them a characteristic sickle shape. The cells don't live as long as normal red blood cells and can also become stuck in the blood vessels.

People with the disorder are at risk of sickle cell crises, which are severely painful episodes that happen when blood vessels in different parts of the body become blocked and these can last for up to a week. On average, individuals are likely to have one sickle cell crisis per year. They are more likely to catch a serious infection and also to be anaemic, with shortness of breath, tiredness, dizziness and fainting.

Sickle cell disease is found mainly in people of African and Caribbean origin. It's also found in people from Asia, the Mediterranean and the Middle East and occasionally in people of white descent.

Sickle cell inheritance can take two forms:

- Sickle cell disease, meaning that they will develop the disorder in childhood and have it throughout their life.
- Sickle cell trait, meaning that while they may not develop the disease, they are at risk of passing it on to their own children.



Differences between normal red blood cells and those with sickle cell disease

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**Patterns of inheritance**

To inherit sickle cell disease, a child has to inherit a gene from both parents, who have sickle cell trait.

If both parents are carriers:

There is a 25% chance (1 in 4) that each child they have will not inherit any faulty genes. This means the child will not have sickle cell disease and won't pass it on to their children.
There is a 50% chance (1 in 2) that each child they have will inherit one faulty gene. This means that the child will be a carrier of sickle cell trait.
There is a 25% chance (1 in 4) that each child they have will inherit faulty genes from both parents. This means the child will be born with sickle cell disease.

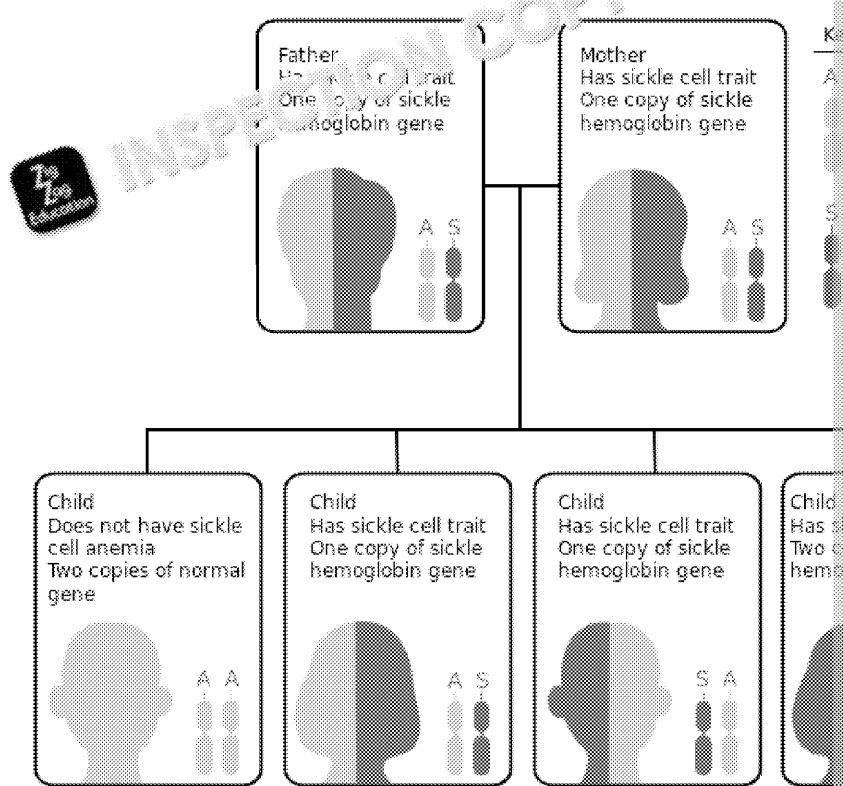


Diagram to show patterns of inheritance in sickle cell disease

**Research** the Sickle Cell and Thalassaemia Screening Programme.  
Create a leaflet for people at risk of sickle cell disease, outlining the purpose of the programme and how it can benefit them.

**Patterns of inheritance in other conditions**

<p><b>Type 1 diabetes</b></p>	<ul style="list-style-type: none"> <li>• While not other family members also have type 1 diabetes, it is more likely an individual is to develop type 1 diabetes than type 2.</li> <li>• If a man has type 1 diabetes, there's an 8% chance of his children developing it.</li> <li>• If one identical twin has type 1 diabetes, there's a 40% chance of the other developing it.</li> <li>• It can also be linked with other autoimmune disorders, such as celiac disease and thyroid disease.</li> </ul>
<p><b>Type 2 diabetes</b></p>	<ul style="list-style-type: none"> <li>• If either parent has type 2 diabetes, their child (as an adult) is more likely to develop the disorder.</li> <li>• If one identical twin has type 2 diabetes, there's a 90% chance of the other developing it.</li> <li>• People of South Asian or Afro-Caribbean origin living in the UK are more likely to develop type 2 diabetes.</li> </ul>

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<b>Hypothyroidism</b>	<ul style="list-style-type: none"> <li>• Hashimoto's disease, the most common cause of hypothyroidism.</li> <li>• It's also more likely to occur in people with type 1 diabetes.</li> </ul>
<b>Parkinson's disease</b>	<ul style="list-style-type: none"> <li>• This is known to run in families, although the reason why is unknown.</li> <li>• There do appear to be gene mutations which make Parkinson's disease these are rare.</li> </ul>
<b>Alzheimer's disease</b>	<ul style="list-style-type: none"> <li>• People are more likely to develop Alzheimer's if they have a family history of the disorder.</li> <li>• If they have more than one close relative with Alzheimer's disease, their risk is higher.</li> </ul>
<b>Rheumatoid arthritis</b>	<ul style="list-style-type: none"> <li>• There appears to be a genetic link in rheumatoid arthritis. People with a family history of the disease are more at risk, although the reason why is not clear at the present time.</li> </ul>
<b>Osteoporosis</b>	<ul style="list-style-type: none"> <li>• Osteoporosis does run in families, probably because both parents can pass on the gene for it.</li> </ul>
<b>Asthma</b>	<ul style="list-style-type: none"> <li>• If both parents have asthma, their child is more likely to have it.</li> </ul>
<b>Coronary disease (CHD)</b>	<ul style="list-style-type: none"> <li>• A family history of CHD is more likely if: <ul style="list-style-type: none"> <li>• The individual's father or brother was diagnosed with CHD.</li> <li>• The individual's mother or sister was diagnosed with CHD.</li> </ul> </li> </ul>
<b>Leukaemia</b>	<ul style="list-style-type: none"> <li>• Children with Down's syndrome are genetically more likely to develop leukaemia.</li> </ul>
<b>Bowel cancer</b>	<p>Bowel cancer may be genetic if:</p> <ul style="list-style-type: none"> <li>• A number of people in the same family develop the disease.</li> <li>• Family members were young when it was diagnosed.</li> <li>• The family members who developed bowel cancer were closely related.</li> </ul>
<b>Prostate Cancer</b>	<p>Prostate cancer may be genetic if:</p> <ul style="list-style-type: none"> <li>• A number of men in the same family develop the disease.</li> <li>• Family members were young when it was diagnosed.</li> <li>• The men who developed prostate cancer were closely related.</li> </ul>

### Inherited traits as a cause of physiological disorders – Topic questions

1. Give an example of an inherited disorder.
2. Which ethnic group is most likely to have sickle cell disease?
3. What's the difference between sickle cell trait and sickle cell disease?
4. How does sickle cell disease get its name?
5. What is a sickle cell crisis?
6. If both parents have sickle cell trait, what are the chances in every pregnancy that a child will have sickle cell disease?

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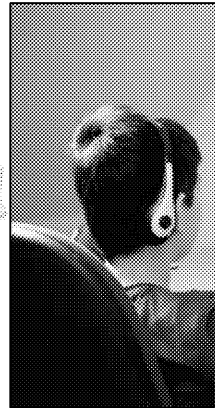
## Lifestyle as a cause of physiological disorders

The habits and lifestyle that individuals choose to adopt will have an impact on the health of the body. Lack of exercise, smoking cigarettes and misuse of drugs are all examples of lifestyle choices that can have a negative effect in both the short and the long term. Exercise is important for cardiovascular health and helps to build muscle and bone strength. It helps reduce the chances of developing the physical disorders including coronary heart disease, Alzheimer's disease, osteoporosis and cancers.

However, many people fail to adopt a lifestyle that enables them to exercise. This could be from choice or because their current lifestyle and responsibilities make exercise less of a priority. For example, opportunities may be limited for those with young children who are also working.

Gym memberships are often expensive and free exercise, such as going to a park, is likely to be difficult for someone living in an apartment block in urban environments. The amount of traffic on rural roads and lanes, where there are no pavements, is also likely to be dangerous for an older person who may walk more slowly or a parent with children and pushchairs.

Much of modern life tends to be sedentary. Many jobs require hours spent at a computer or desk and many people drive rather than walk or cycle, especially when they have to commute to work. Computer games can take up a considerable amount of time, reducing time for physical activity or games outside.

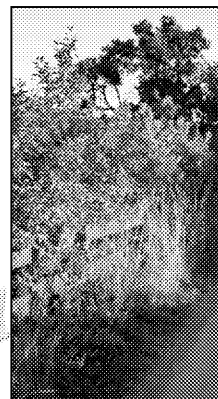


Many people choose to spend hours at computers and other electronic devices, which can lead to some health problems.

**Make a list** of exercise activities available in your area. Are there any that you can do? What would stop you from doing them?



For those living in urban environments, such as these high-rise apartments, finding affordable or free places to exercise can be difficult.



Vehicles can come from both directions, making a country lane a dangerous place to walk or cycle.

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## Smoking

Smoking cigarettes is another lifestyle choice that will have a negative impact on health. A single cigarette can give off over 5,000 different chemicals, many of which are extremely toxic to both adults and children. Children and infants are especially vulnerable to the chemicals in cigarette smoke, which can be the cause of a number of respiratory disorders, including asthma.

Smoking:

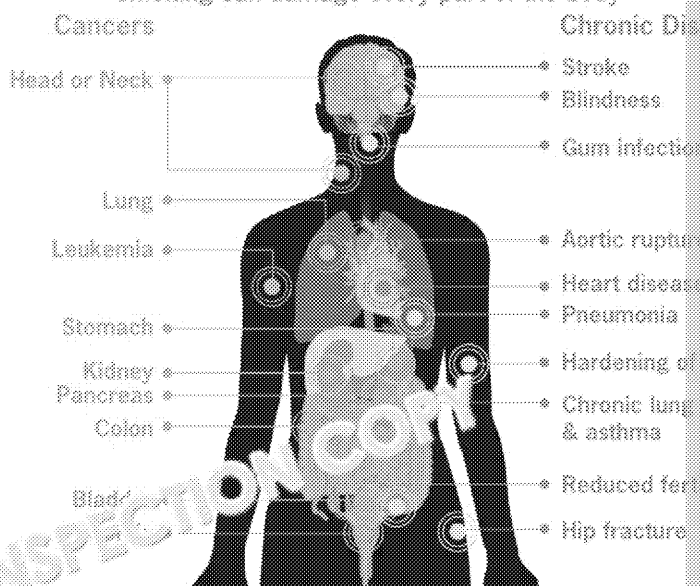
- It accounts for more than 80,000 deaths per year in the UK.
- 1 smoker in 2 dies from a smoking-related disease.
- It affects most body systems and organs, including the brain, the lungs, the heart, the bones and reproductive systems.
- Most complications of disorders are made far more severe if the individual smokes.
- It is a direct cause of coronary heart disease and COPD.
- It is strongly linked to cancer.
- It is linked to type 2 diabetes.

However, if an individual gives up smoking, the harmful effects can be halted and, after some years, the smoker's body can be as good as if they had never smoked. Unfortunately, the nicotine found in tobacco is highly addictive, which means that if somebody doesn't have a cigarette for a while they will experience withdrawal symptoms and cravings that can only be satisfied with another cigarette.

Many people find it almost impossible to give up on their own, which is why there are programmes available, such as the NHS Smokefree campaign.

## Risks from Smoking

Smoking can damage every part of the body



Risks associated with smoking

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## Drug misuse

Drug misuse means taking illegal substances, such as cannabis or cocaine, or taking a drug not recommended by the GP or manufacturer.

Apart from tobacco, other examples of drugs that are commonly misused are:

- alcohol
- illegal drugs
- prescribed medicines such as painkillers, sleeping tablets and cold remedies
- khat – a leaf that is chewed over several hours
- glues, aerosols, gases and solvents

**Find out** how illegal drugs are used. Which drugs fall into each category?

An illegal drug means that it's against the law to have, use it or pass it on to others. Some drugs, such as heroin, have not been prescribed by a doctor, for example, morphine. An illegal drug may be taken without the user's knowledge and the user will have no idea of what they may actually be taking. This is obvious because the user's body would be affected and possibly permanently damaged by the drug it takes. Drug misuse could lead to addiction and be fatal.

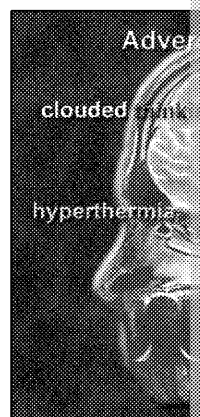


Another problem with misusing drugs is the potential for drug interactions. When an individual takes different drugs, the different chemicals that make up each drug may combine in the body, creating a new chemical. All of these chemicals can damage body systems temporarily or permanently. It is likely to add to existing damage.

If prescription drugs are used incorrectly, they can have serious effects on physical health. For example, a drug that is available to buy over the counter, such as paracetamol or ibuprofen, can be taken incorrectly. Overuse can damage the stomach lining, causing ulcers and bleeds as well as liver damage.

### Effects on the body are likely to include:

- lung disease and cancer
- respiratory problems, such as asthma and bronchitis
- infertility
- high blood pressure
- burst blood vessels, leading to a possible stroke or paralysis
- seizures
- coronary heart disease, especially when tobacco is mixed with cannabis, or from cocaine use
- severe dehydration and overheating, especially from ecstasy use
- depression, **paranoia** and **schizophrenia**



Effects of ecstasy

**Paranoia:** when somebody believes that others are intending to harm them in some way, without there being any truth in the thought

**Schizophrenia:** a mental illness where somebody is unable to make sense of reality and will not be able to cope with normal social situations. Some individuals may hear voices or have false beliefs.

**Hyperthermia:** when the body's internal temperature becomes abnormally high, upsetting homeostasis

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## Lifestyle as a cause of physiological disorders – Topic questions

1. How many people die each year from smoking-related deaths?
2. Identify two disorders caused by smoking.
3. What is passive smoking?
4. What is meant by drug misuse?
5. Identify three possible effects from drug misuse.
6. Identify two possible effects of misusing paracetamol or ibuprofen.



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## Diet as a cause of physiological disorders

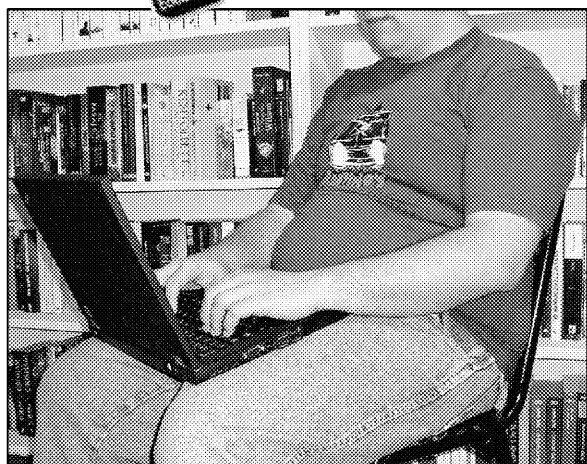
What people eat and drink (non-alcoholic) has a massive impact on their health and is responsible for growth and development, from the developing unborn baby right through to old age. All depend on food and drink to nourish and maintain our bodies. However, when diet is that's unbalanced in some way, they put themselves at risk of developing health problems that contribute to a range of physiological disorders.

### Obesity

In the twenty-first century, food and non-alcoholic drinks are relatively cheap and form a lower percentage of the family budget than it did in the 1970s, for example.

Global transport means that previously seasonal foods, such as strawberries, are available all year round and factory production means that there's an enormous range of ready-prepared foods in the shops that can be easily reheated in the microwave and stored in the freezer.

**Did you know?**  
**In 2015** 10% of the population spent more on food and drink than in 1970.  
**In 1970** 10% of the population spent more on food and drink than in 1970.



Cheaper, processed food that combined with sedentary lifestyles are among the reasons for the increase in levels of obesity in the UK. The use of laptops for work and leisure are also contributing to people being less active. Increased use of cars and short journeys that could easily be walked.

**Sedentary:** where someone spends a lot of time sitting or is inactive for long periods.

Whatever the cause, an individual will become overweight or obese if they take in more energy than they use. The excess energy is stored as fat.

- The average adult man requires 2,500 calories per day.
- The average adult woman requires 2,000 calories per day.

According to Public Health England:

- In 2015, 58% of women and 68% of men were overweight or obese.
- Obesity increased from 14.9% in 1993 to 27% in 2015.
- In 2015–2016, over 1 in 5 children in Reception and over 1 in 3 children in Year 6 were measured as obese or overweight.

**Find out more**  
 Visit the website for child health reception. If you want to know what your child's obesity risk is, visit the website.

There are different ways of deciding if an individual is obese. One of these is through body mass index (BMI).

#### Adult BMI:

BMI	Weight
18.5–24.9	Healthy weight
25–29.9	Overweight
30–39.9	Obese
40 or above	Severely obese

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The table above is mainly for adults of white ethnic origin, while people of different ethnicities may have a lower BMI ratio. Very muscular individuals may also show as having a high BMI.

Another method of assessing whether somebody is obese is to go by their waist measurement, the more likely the person is to develop health problems related to obesity. A decision as to whether somebody is obese or overweight will be made on an individual basis.

<b>Men</b>	If a man's waist measures 37 inches or more (94 cm or more), he is more likely to have related health problems.
<b>Women</b>	If a woman's waist measures 31.5 inches or more (80 cm or more), she is more likely to have related health problems.

**Effects on the body**

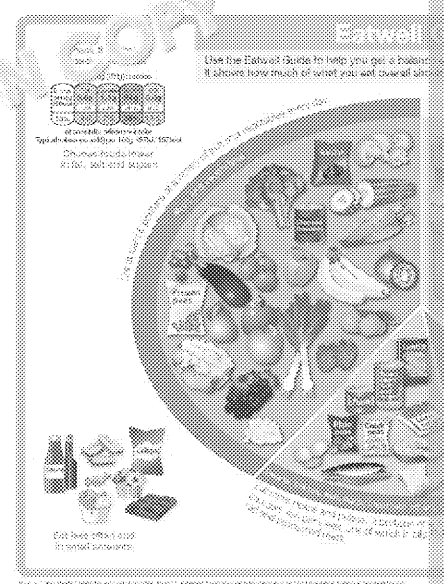
Obesity leads to a range of potential health issues. These include:

- type 2 diabetes
- bowel disease
- stroke
- high blood pressure
- coronary heart disease
- arthritis

**Dietary Deficiency**

In their diet, individuals need a combination of five nutritional groups:

- protein
- fat
- carbohydrates
- vitamins
- minerals



The Eatwell Plate shows how much of each food group you should be eating every day for a balanced diet. If you eat too much of any one food group or more leads to an unbalanced diet.

These can all be found in the different food groups:

- meat, fish, eggs and beans
- fruit and vegetables
- bread, rice, potatoes and pasta
- dairy
- fatty and sugary foods

**Macronutrients** are relatively large amounts, such as protein, fats and carbohydrates.

**Micronutrients** are small amounts, such as vitamins and minerals.

If somebody either doesn't eat sufficient of each one of these or their body can't digest and absorb the nutrients, they may have a deficiency and may develop disorders as a result. A deficiency of vitamins and minerals is a micronutrient deficiency, while a deficiency of fat or carbohydrate, as these **macronutrients** tend to form the bulk of most meals. A deficiency of tiny amounts of vitamins and minerals, or **micronutrients**, a deficiency can have a significant impact on health.

Another problem of dietary deficiency is that the individual may become underweight. A BMI below 18.5, which is below the normal range, may fall into this category.

There are a number of reasons why a person might be underweight. For example:

- an underlying physiological disorder, such as hyperthyroidism
- a weight-reducing diet and loss of too much weight
- loss of appetite and, therefore, not eating enough
- being busy, stressed or anxious and not having enough time for regular meals
- an eating disorder, such as anorexia nervosa or bulimia

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## Effects on the body

The effects of a dietary deficiency are obviously going to depend on what nutrient is missing. Some of the more common ones are:

Nutrient	Possible sources	Role in body
Iron	Dark leafy greens, egg yolks, red meat	Essential for haemoglobin in red blood cells
Vitamin A	Milk, eggs, green vegetables, orange fruit and vegetables	Eye health, reproductive health, immune system
Calcium	Milk, yoghurt, cheese, dark leafy greens	Needed for strong bones and healthful functioning of nerves and muscles
Vitamin D	Yoghurt, oily fish such as salmon, trout, tuna, mackerel, sardines	Essential for strong bones

The effects are likely to include vitamin and mineral deficiencies, such as those mentioned above, as well as lowered immunity to infection. Women and girls who are underweight may find their periods stop.

**Rickets:** a child's bones become weak by lack of vitamin D. This can lead to the bones, the child's weight and height being affected.



A balanced diet, such as the one shown here, will help to avoid deficiencies.

### Did you know?

Because children are drinking more sugary drinks, more children are deficient in calcium. This can lead to rickets, a condition that weakens the bones, the child's weight and height.

In pairs, **create** a balanced diet for the following individuals:

- A 17-year-old boy who is a professional athlete
- A 30-year-old vegetarian who is pregnant with her partner's baby
- A 14-year-old girl who is a professional ballerina
- A 56-year-old man who has been diagnosed with coronary artery disease

## Diet as a cause of physiological disorders – Topic questions

1. How does somebody become obese?
2. Identify three ways of assessing if somebody is overweight.
3. Identify three possible effects of obesity.
4. What is a micronutrient?
5. What physiological disorder could develop as a result of a lack of vitamin D?
6. What is the official definition of being underweight?

## Environment as a cause of physiological disorders

The environment in which somebody lives and works or studies may have a serious effect on their well-being. People living in built-up, urban areas may find they have to live with air pollution, while those living in rural areas may find they're at risk from crop spray and pesticides, as well as the social and emotional effects of isolation. The use of insecticides is regulated and only certain chemicals are permitted, but concerns are raised from the use of these substances on human, animal and environmental health. The loss of fertilisers is a concern, as these tend to be washed into the water supply.

### Camelford Water Disaster

In July 1988, 20 tonnes of aluminium sulphate was accidentally added to the water supply in Cornwall. As the aluminium broke down, it turned into sulphuric acid, which affected a wide range of short- and long-term health problems, and inquests into deaths. The cause was abnormally high levels of aluminium in the brain.

## Housing Conditions

There are many different aspects about housing that will contribute to or cause physiological disorders, such as:

- damp and mould
- overcrowding
- type of housing, i.e. house, bungalow, apartment
- locality, i.e. which part of the UK, rural or urban
- situation, i.e. on or near a main road, estate, farm

### Damp and mould

Damp and mould, caused by ill-fitting or rotten windows and doors, poor ventilation or leaking pipes, are a major cause of respiratory illnesses, such as bronchitis and asthma. The very young and the elderly are especially at risk, as well as those with skin conditions, such as eczema, and with reduced immunity to infection.

### Overcrowding

Overcrowding is another contributory factor in respiratory conditions and also has an effect on relationships, and emotional and mental health, including stress. It becomes very difficult to have a quiet space in which to study, and repeated attacks of asthma lead to children who are stressed. That overcrowding places on relationships can lead to a breakdown in family relationships.

'Chance of a Lifetime', a report by Shelter, the UK housing charity, states that children in overcrowded housing, or with shared facilities, are ten times more likely to contract meningitis. The report has shown that six-month-old babies are 26% more likely to have wheezing conditions. A link between poor growth and overcrowding has also been recognised.

The report argues this could be due to:

- Overcrowding is a good indicator of poor housing and poverty.
- Children in overcrowded homes show higher levels of intestinal and respiratory infections.
- Sleep disturbance leading to lack of deep sleep. Children's bodies tend to require longer periods of deep sleep.

The World Health Organisation (WHO) states that a concentrated number of people in a household increases the number of bacteria and viruses being present.

There are specific guidelines by which a housing authority can assess the degree of overcrowding in a household, based on either the number of rooms or the amount of floor space available per person, or the number of people sleeping there.

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## Type of housing

The type of housing will influence health. For example, people with reduced mobility, such as an elderly person or a disabled individual, would probably be best living in a ground floor apartment or a bungalow. Living in a high-rise apartment block may make access to the ground difficult, especially if the lift isn't working, for families with young children or individuals with respiratory or heart problems. If somebody feels they are unable to get out, they may end up feeling isolated and lonely, which may develop into depression, as well as finding it much harder to exercise.

Investigate  
poverty  
individuals  
Read  
Lifetime  
information  
housing



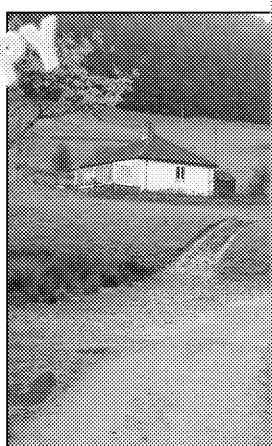
Living in blocks of flats can be difficult and unhealthy. Imagine you have to use a long staircase with a broken stick. Or being a long way from the ground and having to use a lift that doesn't work anywhere.

## Locality

The North West has some of the most deprived neighbourhoods in the UK, and research shows that people living in deprived localities have higher levels of disease and die earlier than those in affluent areas.

Where somebody's home is situated may also have an impact on their health. The main road, at risk from both air pollution and noise, which may affect respiratory health. If the street or nearby green space is used by drug dealers and users, with needles lying around that put others at risk of blood-borne diseases such as HIV or hepatitis.

Others live in far more isolated communities, where they have to rely on a car in order to get to places such as GP surgeries, shops, schools, hospitals and leisure centres. Public transport is often limited. For example, there may be two or three buses a day stopping some distance from where they live, so they may have to walk or drive to the bus stop. For older people, the disabled or those with young children, there may be a strong sense of isolation and lack of human contact.



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In pairs or group, **make a list** of the advantages and disadvantages of the two shown above. Which would you prefer, if you could choose?

## Air pollution

Air pollution means contamination of the air with different substances, such as gas, which can cause harm to health if it carries on for long enough or occurs in sufficient concentration. It contributes to 40,000 deaths annually in the UK and been linked to cancer, heart disease, diabetes and asthma. In the UK, there are a number of substances that contribute to air pollution: particulate matter and nitrogen dioxide.

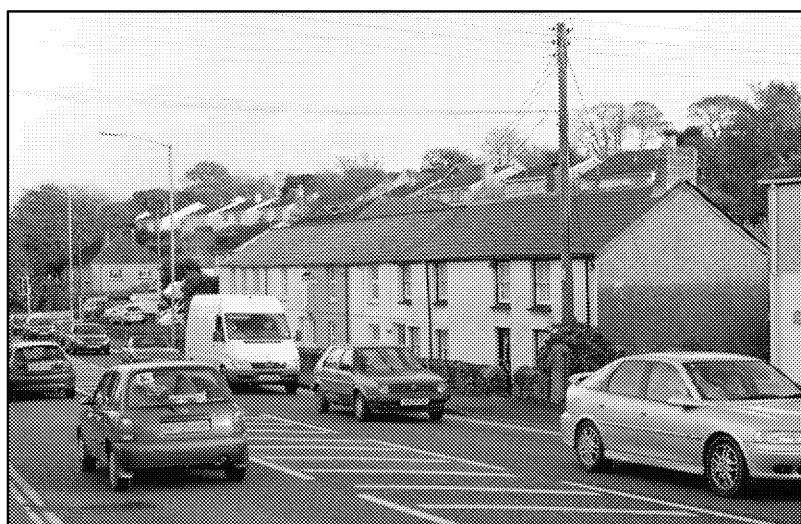
Particulate matter is made up of a wide range of different solids, such as dust, pollen, soot and smoke. The particles themselves are varying sizes, which decides how far into somebody's lungs they can reach. The smaller the particle, the further into the lungs it can penetrate.

Investigate how air pollution affects human health.

Particulate matter happens either when a fuel has been burnt or gases turn into particles in the air. Nitrogen dioxide is a product of road traffic and the burning of fossil fuels. Like particulate matter, it contributes to respiratory disorders especially, such as asthma and bronchitis, and is also a greenhouse gas.

Air pollution can also occur indoors, from sources such as gas cookers, smoking, and the use of products that release carbon monoxide.

Rented properties are required by law to provide carbon monoxide alarms and gas appliances and cookers serviced annually.



Living in an area with heavy traffic passing close to your home can expose you to exhaust fumes and there at risk of respiratory disorders.

Parts of the government have introduced measures to reduce nitrogen dioxide levels from traffic. Find out what these are and what you can do to help.

1. Find out what measures are in place to reduce nitrogen dioxide levels from traffic.
2. What can you do to help reduce nitrogen dioxide levels from traffic?

### Environment as a cause of physiological disorders – Topic questions

1. Identify three people who are most at risk from damp and mould in a house.
2. How can overcrowding be assessed?
3. Identify the type of physiological disorder that is likely to occur in overcrowded conditions.
4. How many deaths per year are linked to air pollution in the UK?
5. Identify two disorders linked to air pollution.
6. Identify one source of air pollution.

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## A3: Signs and symptoms of physiological disorders

Signs and symptoms mean the way in which a disorder makes itself noticeable.

- **Signs** means what another person would notice when they look at the individual. It is objective, meaning they will look the same to anyone examining the individual.
- **Symptoms** means what the person themselves would notice. They are subjective to interpretation. For example, just because one person finds a symptom distressing, somebody else will feel the same.

It's the signs and symptoms that will make a person first notice that something's not working and will make them go to their GP.

### Signs of physiological disorders

#### Rashes

The appearance of a rash may give clear indications as to what the underlying problem is. Colour, the extent of the rash on the body, whether it has spots or blisters or feels rough to the touch are all features that give clues about the underlying problem.

#### Are there spots or blisters? What colour is it?

The colour of a rash may be anything from pale pink to a deep, dark red. Some rashes may have patches of white in among the redness, while **ringworm** (right) has a typical silver colour inside red circles.

Some disorders have very characteristic spots or blisters that may immediately indicate a cause. Ringworm has red circles while **chicken pox** spots (right) are usually red spots or blisters with clear fluid inside. As the infection progresses, the spots break open and form a crust before eventually healing.

#### Does it itch?

Many rashes itch, as part of the body's inflammatory response. A chicken pox rash caused by **contact dermatitis** may also feel as if the affected area is stinging or burning.

#### Is it dry or weeping?

**Eczema**, or **dermatitis**, will often form a scaly rash that may also be itchy and dry. It may weep fluid, become crusty and bleed. The disorder is often associated with asthma.

#### How far does the rash extend on the body?

The extent of a rash's spread and whereabouts it's situated on the body will indicate possible causes. Some rashes will show across different parts of the body; for example, **meningitis** (right) may show on the legs, the trunk, the eyes, the palms of the hands and the soles of the feet. A nettle rash is likely to be limited to a small area, where the body brushed against or touched the leaves. The photo right shows a meningitis rash which doesn't disappear when pressed with a finger or glass.

#### Is it scaly, peeling or rough?

Some rashes cause the skin to become scaly, to peel or feel rough to the touch. **Contact dermatitis** is one example, where the skin can become cracked and thickened as a result of an irritating substance.

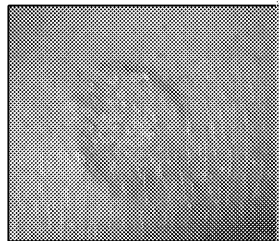
**Meningitis:** an extreme inflammation of the membranes around the brain and spinal cord.

**Ringworm:** a fungal infection that looks like a worm.

**Chicken pox:** a viral infection.

**Contact dermatitis:** a skin reaction to a substance that irritates the skin.

**Weeping:** where a skin lesion seeps fluid from the top.



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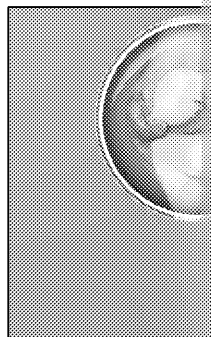




## Swelling

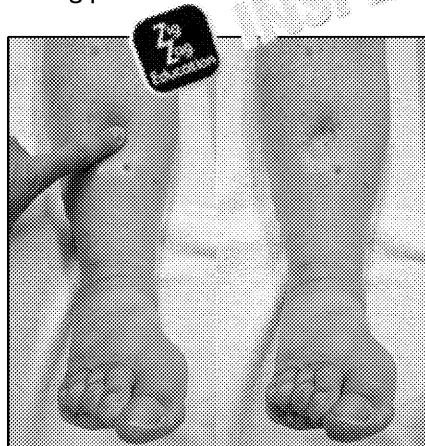
Swelling occurs as a result of inflammation, or when fluid collects in the body. It can develop in organs, the skin, joints or other parts of the body and it's a clear sign that there's a problem.

Apart from the location, the appearance and feel of a swelling can give clues about the underlying problem. Sometimes the swollen area will also feel hot, appear red and be painful, suggesting that there could be an underlying infection or severe inflammation. Rheumatoid arthritis flare-ups can cause this response in affected joints.



This shows a swollen joint in someone with rheumatoid arthritis. What's likely to be the cause of this swelling?

The medical term for swelling is 'oedema'. On occasion, the swelling will be what's known as 'pitting oedema'. This is when the swollen skin will hold a finger imprint for a short while, and may be a sign of heart, kidney or lung problems.



Pitting oedema.

When pressed with a finger, the skin indents and leaves an impression.

In groups, one person writes the name of a symptom as 'scaly rash', 'red spots', 'swollen ankles'. They then sticks it to the forehead of another group member. That person then asks questions to find out what the symptom is. When they've guessed correctly, they sign on a Post-it and stick to another group member's forehead.

If somebody has to stand or sit for long periods, their legs and feet to be swollen a little by the end of the day. Prolonged periods of immobility are the two most common reasons for this.

However, swelling is also an indication of other conditions or disorders, such as:

- pregnancy
- thyroid problems
- kidney disease
- malnutrition
- the contraceptive pill
- a response to medication
- a blood clot in a blood vessel
- varicose veins
- following leg surgery or an injury
- as part of the body's response to an infection

**Lymphoedema** is a type of swelling caused by a blockage in the lymphatic system. It can be managed with a range of treatments, but a lack of treatment can lead to serious complications. Lymphoedema can also be caused by other factors such as:

### Signs of physiological disorders – Topic questions

1. What is the difference between a sign and a symptom?
2. Give two features a care professional would observe about a person with a swollen joint.
3. What physiological disorders are often linked to eczema?
4. Give one feature a care professional would observe about a person with a swollen joint.
5. What is the medical term for swelling?
6. Give two causes of swelling.

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## Symptoms of physiological disorders

### Pain

One of the most noticeable indications that there's something wrong with the body is pain. There are many different ways of describing pain, such as:

- position in the body
- when it occurs and how often
- is it sharp, stabbing or dull?

One way of defining pain and beginning to assess an individual's pain, is to decide if it is nociceptive or neuropathic.

Description of pain	How long it lasts
Acute	Lasting less than 12 weeks, such as a sprained ankle
Chronic	Pain that is long-term pain that lasts more than 12 weeks or pain that is expected to recover following an accident or surgery. Examples of disorders that are likely to cause chronic pain include osteoarthritis and rheumatoid arthritis.
Neuropathic	Pain that occurs as a result of a primary lesion or a problem in the nervous system. Pain that is associated with a problem in the nervous system is called neuropathic pain. Pain that's associated with a problem in the nervous system is called neuropathic pain.
Recurrent	Pain that comes and goes, such as tooth pain. It's also known as episodic pain.

Pain is a symptom that may have a major impact on the individual, influencing many aspects of their life. According to a recent review by the British Medical Journal (BMJ), 28 million people in the UK have chronic pain. This figure is expected to rise as the number of older people increases.

The effect can be devastating on people's lives, leading to disability, time off work and significant effects on mental, emotional and social health. The severity of the impact may be related to the individual's pain and look into ways of managing it, so that the impact is reduced. Women are more likely than men to experience chronic pain.

The only person who can really say how severe their pain is will be the individual. There are many pain-scoring systems, many of which are visual, that enable somebody to give an indication of how severe their pain is, and these are especially useful for children, people with learning difficulties and people who are unable to communicate.



*This pain scoring chart for children is easy to use.*

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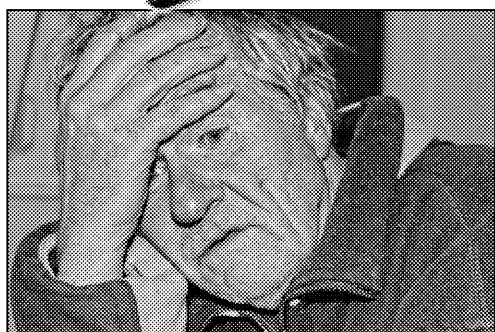
## Disorientation

This is when an individual experiences an altered mental state. There is a range of

- not knowing where they are
- not knowing their identity
- not knowing the time or date
- being confused, meaning that the person can't think clearly
- delirium, meaning that the person will lose attention very quickly or be confused
- delusional, meaning that they may believe something to be true even though it is not
- agitation, being restless or aggressive
- hallucinating
- wandering around

Two common causes of disorientation are delirium and dementia.

Delirium may be caused by an infection, medication or an accident, such as a fracture, which puts the person into a state that lasts a fairly short time. Changing surroundings can be enough to cause delirium, especially in elderly people when the move is combined with surgery.



*Elderly people are more at risk of disorientation and confusion.*

**Find out** which prescribed drugs can cause disorientation. How can this be avoided?

The different forms of dementia can be confused, although in this case the disorientation gets worse over time.

A further cause of disorientation can be withdrawal from certain prescribed drugs, as well as withdrawing from certain prescribed drugs to treat different forms of mental illness.

There are other causes of disorientation, such as:

- dehydration
- epilepsy
- thyroid disorders
- hypoglycaemia

**Dehydration:** when the body does not take in enough fluids

**Epilepsy:** a disorder of the brain caused by seizures

**Hypoglycaemia:** very low blood sugar levels, which can occur in people with diabetes

## Symptoms of physiological disorders - Top 6 questions

1. What is meant by chronic pain?
2. What is meant by intermittent pain? Give an example.
3. How many people are estimated to be living with chronic pain in the UK?
4. What is meant by disorientation?
5. Give two common causes of disorientation.
6. What is delirium and what can cause it?

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## Chapter 2: Examine the Investigation and Physiological Disorders

### B1: Investigative procedures for physiological disorders

Whenever a service user approaches their GP or practice nurse, they will have signs and symptoms that immediately give a clue as to what their problem might be. Often, however, the symptoms are caused by a number of similar disorders. The health care professional has to begin a process of investigation that should lead to some disorders being excluded and a final disorder being diagnosed so that treatment can begin.

It's worth remembering that for many individuals, this period of investigations and diagnosis can be a stressful and anxious time. If the person is likely to be feeling unwell, they'll have signs and symptoms that are often linked with daily life stressors. If the person is feeling unwell, they won't know the exact cause until the test results are in. Sometimes, the process of investigations can take weeks, with repeated trips to the GP or practice nurse, before a decision is reached.

The National Institute for Health and Care Excellence (NICE) has guidelines about how long a wait should be seen in certain circumstances. For example, if somebody has a suspected bowel cancer, they should be seen by a hospital consultant within two weeks. This is to ensure people are diagnosed and treatment can begin and also to try and reduce their fear and anxiety as far as possible.



Usually, a visit to a GP starts with the service user describing their concerns, including signs and symptoms. The doctor or nurse will ask further questions and carry out some investigations.

At this stage, they're often quite simple, such as taking some measurements of vital signs. These could include blood pressure, temperature, depending on the signs and symptoms the doctor or nurse describes.

The doctor or specialist nurse will spend time asking questions and listening to the answers. If the visit is a repeat, the care professional and service user are likely to spend time discussing the results of any tests that have been carried out.

It's so important that the service user understands what tests are needed and why, as well as understanding what the results are. This way, the service user will trust their care professional and be open and honest and is more likely to follow any advice they're given.



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# General physiological measurements

## Blood pressure

### What blood pressure measures

When the left **ventricle** of the heart pumps freshly oxygenated, bright scarlet blood into the arteries, the artery walls will show a certain amount of resistance. The amount of resistance varies, depending on factors such as a person's:

- age
- their level of physical fitness
- any lifestyle habits, such as smoking or alcohol use
- the presence of any physiological disorders, such as atherosclerosis
- their emotional state at the time

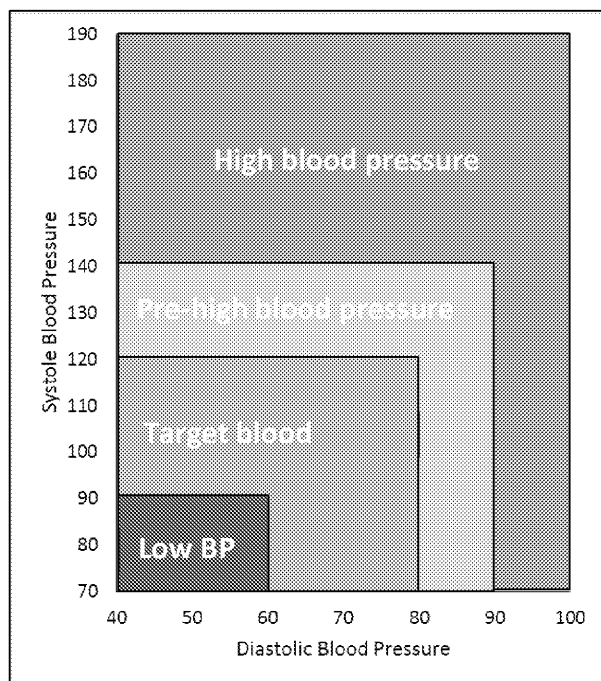
Blood pressure readings produce two figures: an upper number (**systole**) and a lower number (**diastole**). It's measured in millimetres of mercury (mmHg). The systolic reading shows how stiff the artery walls are when blood is pumped throughout the circulation during a heartbeat. The diastolic reading shows how relaxed the artery walls are between heartbeats.

**Ventricles:** part of the heart. The right ventricle pumps blood to the lungs for oxygenation. The left ventricle pumps blood around the body.

**Systole:** the pressure is measured when the resistance to the heartbeat.

**Diastole:** the pressure is measured when the heart is relaxed between heartbeats.

**Sphygmomanometer:** a device used for measuring blood pressure.



A typical or 'normal' blood pressure is 120/80 mmHg.

The systolic reading is 120.

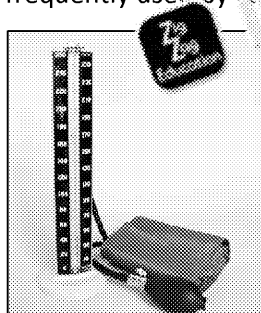
The diastolic reading is 80.

The graph on the left shows the range of blood pressure from low to high. The section of the graph showing the range of ideal blood pressure is 120/80.

In pairs, **practise** using a sphygmomanometer to measure each other's blood pressure.

### How is it taken?

Traditionally, a **sphygmomanometer** is used, either with a stethoscope, or a digital device, which is frequently used by care professionals.



In the image on the left, you can see the sphygmomanometer cuff placed around the service user's arm.

The black bladder is used to pump up the cuff, so that it compresses the artery in the arm.

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By placing a stethoscope on the inside of the service user's elbow, over the brachial artery, the care professional will first hear the pulse (systole) and when the sound of the pulse vanishes, the diastole.

Alternatively, a digital sphygmomanometer may be used. As the cuff is gradually deflated, the care professional will be given the two readings on a digital monitor, as shown in the photograph below.



**Brachial** arteries supply blood to the arms.  
**Hypotension** is a reading of 90/60 mmHg or below.  
**Hypertension** is a reading of 140/90 mmHg or above.  
**Vascular damage** to the arteries can lead to heart disease.

**Why blood pressure is important**

Blood pressure is an extremely important measurement of an individual's physical health. The systolic reading is considered to be of greater concern than the diastolic reading, as this is the level at which blood is pushed into the arteries from the ventricles. It gives an indication of the risk of stroke or heart attack and rises with age.

**Hypotension**

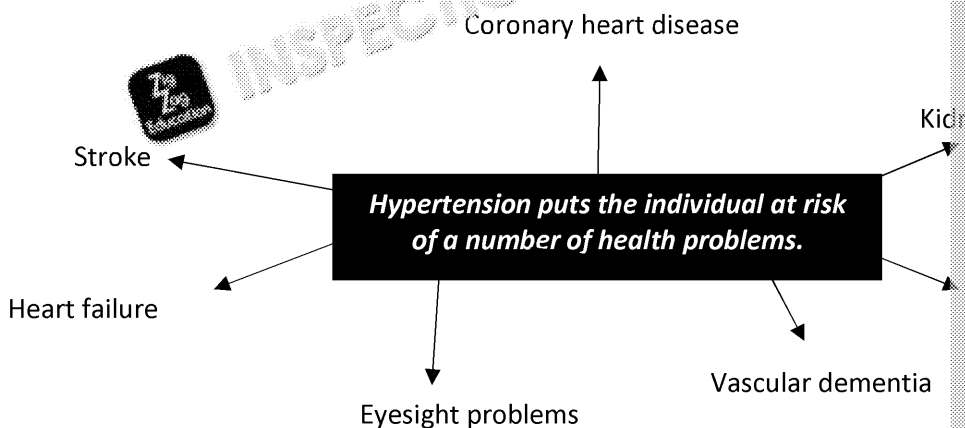
**Hypotension** is when the blood pressure is too low. It can lead to the person feeling dizzy or faint when they stand up after lying down, such as when they first get out of bed in the morning. It can also be caused by fluid loss, which can occur as a result of blood loss, either from an injury or surgery. It is a serious situation and needs urgent medical attention.

Blood pressures of below 90/60 mmHg are considered hypotensive.

**Hypertension**

**Hypertension**, or high blood pressure, is a reading of 140/90 mmHg or above.

Although most people don't realise they have high blood pressure, according to the NHS, about 1 in 4 people in the UK have a raised blood pressure and is at risk of a number of serious health problems. It is important for care professionals to take a blood pressure reading regularly of their care when appropriate. For example, when consulting a GP or a practice nurse for another matter entirely.



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## Investigative procedures for physiological disorders, blood pressure –

1. What are the names given to the two readings obtained in a blood pressure measurement?
2. What does the upper reading in a blood pressure result measure?
3. What does the lower reading in a blood pressure result measure?
4. What is the normal blood pressure for an adult?
5. Identify three risks from hypertension.
6. What blood pressure is considered hypertensive?



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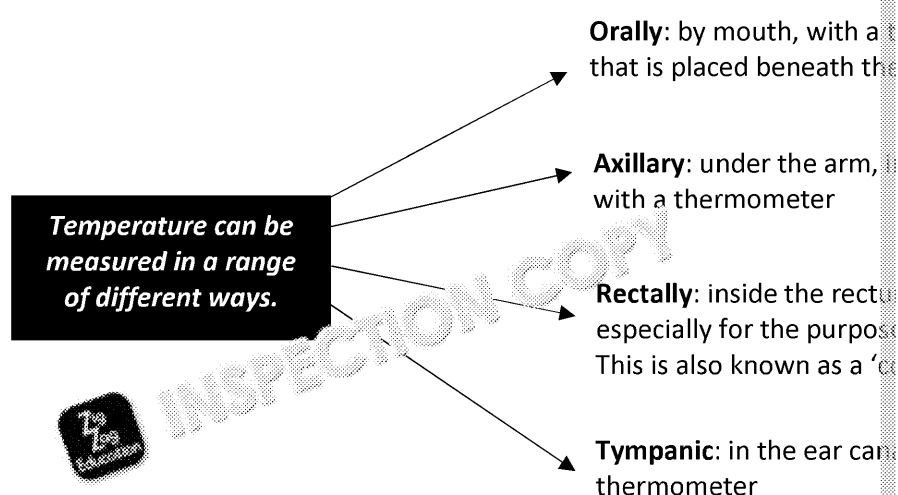
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## Temperature

The body's internal temperature is another indication of somebody's health and of chemical processes, such as enzyme reactions during digestion and cellular respiration. Normal body temperature measures between 36.5°C and 37.5°C.



The most accurate method is to take the temperature rectally. However, this must be done by a professional because of the risk of damage to the rectal area. It's the most accurate measurement of temperature inside the body, whereas the other methods are all mainly outside the body.

## Hypothermia

Hypothermia is a body temperature at or below 35°C. It is most likely to be seen in people who are exposed to cold for a period of time, depending on the outside temperature, and when the individual can't control their body temperature very well.

There are certain groups of people especially at risk of hypothermia, including:

- elderly
- babies and young children
- as a result of exposure to cold water or cold weather, such as a homeless person or someone who has fallen into a body of water
- after consumption of alcohol and/or certain drugs

**Hypothermia**  
temperature

Because the body doesn't function so well when the body becomes too cold, this can lead to a dangerous situation.

Signs of hypothermia:

- shivering
- tiredness
- confusion
- pale skin
- breathing becomes shallow
- becoming unconscious

An elderly person who doesn't move around very much is at risk of hypothermia, especially if they're trying to save money by not putting the heating on during cold and wet weather.

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## High body temperature

A high body temperature is one that's above 37.5°C–38.3°C.

It can be caused in two different ways:

- if the individual has been exposed to high external temperatures, such as on a very hot day. It may also be known as **heatstroke** and **hyperthermia**, where the body's normal temperature controls haven't worked.
- if the individual has an infection, leading to a **fever**

**Heatstroke:** when exposed to a very high temperature, such as on an extremely hot day.

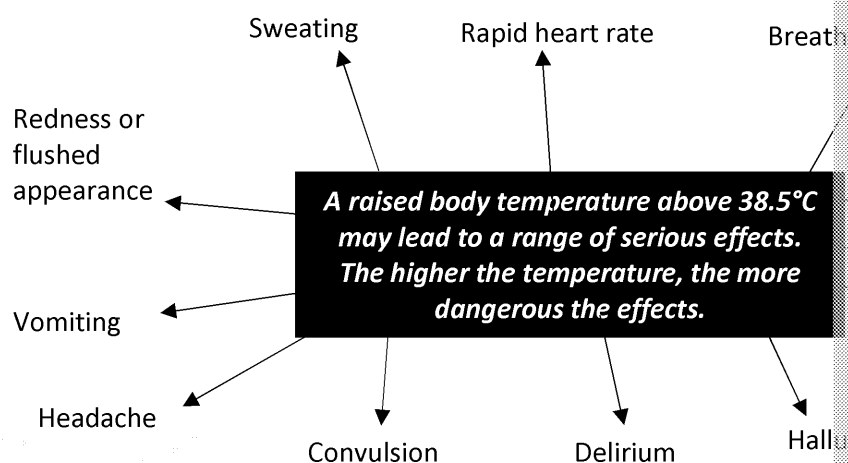
**Fever:** body's reaction to a rise in body temperature.

**Peripheral circulation:** the blood supply supplying the limbs, fingers and toes.

**Hyperthermia:** a condition where body temperature rises above 37.5°C–38.3°C, where the body's normal temperature controls haven't worked.

When somebody develops an infection, their body responds by 'resetting' the temperature controls to return to homeostasis. This is because the natural defence mechanisms, such as producing more white blood cells to fight the invading viruses or bacteria, lead to a rise in temperature. Once the infection has been cleared, the body's internal temperature gauge will once again return to normal.

A high body temperature may also be a very serious and potentially life-threatening condition. A body temperature rises above 38.5°C–39°C. A body temperature of 41°C or above is likely to require medical treatment.



An individual with a fever may complain of sweating, feeling lethargic and drowsy as well as showing a high temperature with the thermometer.

Febrile convulsions in babies and very young children are a common condition.

1. **Find out** the advice given to parents if their child has a fever.
2. In threes, **role play** a scenario where you are a parent bringing their ill child to the A and E department of a hospital. The main character is the nurse. (This activity should challenge communication skills as well as knowledge.)

### Sepsis

Sometimes, when an individual has a serious infection, the body's response to fight the infection can lead to inflammation throughout the body. It can lead to failure of several body organs. Sepsis is a life-threatening condition that needs to be treated urgently. People with a weakened immune system, such as those with chest, abdominal or urinary infections are at a higher risk of developing sepsis.

Occasionally, the **peripheral circulation** will be damaged as a result of sepsis, meaning that an individual may lose a limb or part of a limb.

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## Investigative procedures for physiological disorders, temperature – To

1. What is the ideal temperature for many of the body's chemical processes?
2. What does 'hypothermia' mean?
3. Give two groups especially at risk of hypothermia.
4. Give two symptoms of hypothermia.
5. Give two causes of a high temperature.
6. Give two possible effects of a high temperature.



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## Investigations that may be undertaken for the individual

### Medical history

Trust between the care professional and the service user is vital. Without trust, the service user may be less likely to fully discuss their signs and symptoms or discuss more deeply and truthfully other factors that may impact on their physical health and well-being. This is more likely if the service user feels embarrassed or ashamed. It may, for example, be one reason why half of bowel cancer cases are not diagnosed until the disease has reached a more advanced stage.

At the same time, the care professional needs to be able to trust what the service user tells them, especially when it comes to the medication a service user is already taking and use of legal and illegal drugs. For example, if a service user regularly takes paracetamol on a daily basis, the doctor needs to know that so he or she can avoid prescribing a medication that will react with the paracetamol, such as liver or kidney damage.



*In this photograph, the doctor. All care practitioners follow a code of practice to ensure the best possible care.*

Use of alcohol, illegal substances, smoking and sexual behaviour are other areas where service users are likely to avoid telling the truth. This may be because they know it's illegal or because the care professional will judge them and then not give them the best possible care.

When a doctor or nurse practitioner asks about a service user's medical history, they will want to know:

- if there's anything in the service user's lifestyle that could influence their health, such as alcohol or illegal substances.
- if anybody in the service user's family has had similar problems or has any health conditions, such as coronary heart disease, that may run in families.
- if the service user already uses any prescribed medicines. Some medicines can cause harm to the service user if they are, so it's really important the doctor knows what they are.
- if the service user has had any illnesses or operations in the past that could influence their current signs and symptoms. For example, a broken ankle as a result of a sport's injury could lead to joint problems in later life. Other conditions, such as diabetes, can cause complications with medication the doctor might choose for the service user.
- if the service user has any allergies, for example to an antibiotic, bee stings or latex. It's important to know if the service user needs treatment or tests. It may also be important to know if the service user has asthma. Some allergies, such as pollen or dust mites, can trigger asthmatic attacks.
- how long the service user has been experiencing their signs and symptoms. For example, if the service user has been experiencing memory loss or unusual behaviour for several weeks or months.

**Role play** Service user visiting a GP.

The service user has a story they're reluctant to share, even though doing so will help to provide the help that's needed.

The doctor must try and find out the truth.

How successful the doctor is and what the true story is, is up to you!

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## Investigative procedures for physiological disorders, medical history -

1. Give one reason why somebody might not visit their GP about a bad habit.
2. Explain why it's important the service user is honest about any medical substances they may use.
3. Explain why a service user may be asked about any allergies they may have.
4. Explain why the service user may be asked about their family medical history.
5. Give one damaging lifestyle habit that a doctor or nurse would want to know about.
6. Explain why a doctor or nurse would want to know about any pre-existing conditions such as diabetes.



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## Blood tests

When a service user approaches the doctor with signs and symptoms, the doctor tests to see what information can be learnt from them. Nobody likes having their blood taken. The tools that can help indicate how well an individual's body is functioning. The tests take a few minutes and are often carried out by nursing staff or a **phlebotomist**.

Most blood tests don't need any special preparation, but some tests need more. For example, if an individual is to have their blood sugars tested, they may be asked to eat nothing for 12 hours or so before the test. Others may be asked not to take certain medications.



*Blood is usually collected in bottles like those shown on the left. The different coloured cap indicates which test the blood is for.*

### How the blood is taken

The service user will be asked to sit down and pull their arm out of their sleeve. Inside the elbow is a common place from which blood may be taken for testing, as the vein is close to the surface and usually easy to feel.

The care professional will put a **tourniquet** around the service user's arm, which will be tight, as it squeezes the arm and makes the vein swell. The blood is then taken. The care professional will pull on a pair of gloves to avoid any cross-contamination. They will then clean the skin above the blood vessel with a sterile wipe.

Next, they will push a sterile needle into the vein and attach the bottle, which will collect the blood. If more than one test will be done, so more bottles may be used.

After the test, the care professional will release the tourniquet and put pressure on the wound with a dry dressing.

Local anaesthetics, such as a gel, are available for service users if they want them. Children, especially, might be very glad of the gel and the care professional often has stickers for the child to wear afterwards to show how brave they've been. In a small child, the doctor may take the blood from the back of the hand with a very tiny needle. Less blood is needed from babies and children than adults.

**Phlebotomist:** a person who is trained to take blood samples.

**Tourniquet:** a device designed to restrict blood flow, used when taking blood samples.

**Antigen:** a molecule that can induce an immune response.

**Cholesterol:** a waxy substance essential for good health, but can lead to it being atherosclerosis.

**Lipid:** an overall term for a group of substances found in plants and animals. Fats are lipids.

**Chromosome:** a thread-like material. For each pair of chromosomes determine if the individual is male or female.

**Prostate-specific antigen (PSA):** a molecule only found in the prostate gland. It's not always a sign of prostate cancer, but it's investigated.

**Rhesus factor:** a protein on the surface of red blood cells. It's used for blood grouping, known as Rh positive or Rh negative. People with Rh negative blood must not have Rh positive blood, as this can cause their blood vessels to narrow.

Many people feel faint after blood taken.

**Find out** the first aid for someone who has fainted. Practise in pairs.

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Common blood tests are:

Test	Purpose
<b>Cholesterol</b>	<b>Cholesterol</b> levels may be raised in disorders such as coronary heart disease. High cholesterol can build up down inside the arteries in atherosclerosis.
<b>Blood culture</b>	This will be taken if the individual has a very high temperature. The test will look for bacteria or fungi in the blood.
<b>Blood gases</b>	Checking for levels of oxygen and carbon dioxide in the blood, especially in people with respiratory system, such as asthma or COPD. Diabetes may also affect blood gas readings.
<b>Blood sugars</b>	Assessing how much sugar is in the bloodstream. This is especially important when investigating to see if somebody has diabetes.
<b>Blood type</b>	This test is to see what blood group somebody is and whether they are compatible. Different blood groups and rhesus factors are not compatible, so a person may need surgery, have an accident or is pregnant.
<b>Cancer blood tests</b>	Different cancers cause certain <b>antigens</b> and proteins to be raised in the blood. Each cancer has its own specific antigen or protein, making this test useful for diagnosing a possible cancer. For example, prostate problems cause <b>prostate-specific antigen</b> to be raised.
<b>Chromosome testing</b>	People's <b>chromosomes</b> can be tested when: <ul style="list-style-type: none"> <li>investigating the reasons why a woman has repeated miscarriages</li> <li>if the individual has a chromosome-linked disorder, such as Down's syndrome</li> </ul>
<b>Coagulation tests</b>	These blood tests are to see how long the blood takes to clot. Individuals may be given anticoagulants to increase their clotting time before surgery such as a hip replacement. The test would be checking that the blood is within safe limits.
<b>C-reactive Protein (CRP) test</b>	C-reactive protein is produced by the liver when part of the body is inflamed. High levels indicate how much inflammation there is. It can be used, for example, when somebody has rheumatoid arthritis to see how active their disorder is at that time.
<b>Electrolytes</b>	Electrolytes include substances such as sodium, potassium and calcium. They are essential for the body's cells to function properly; for example, maintaining a healthy heart. Some disorders, such as heart failure and diabetes, may show abnormal levels.
<b>Erythrocyte sedimentation rate (ESR)</b>	This test measures how quickly red blood cells fall to the bottom of a test tube. The more quickly they fall, the higher the level of inflammation in the body. ESR is a useful test when somebody has an inflammatory disorder. It can indicate how active their disorder is. If somebody is being investigated for a possible infection, ESR may be raised if they do.
<b>Full blood count (FBC)</b>	One of the most common blood tests. This test is to assess: <ul style="list-style-type: none"> <li>the level of haemoglobin (Hb) in the blood, to see if somebody has anaemia could be caused by a lack of iron or vitamin B12</li> <li>the number of white blood cells, which could indicate an infection</li> <li>the number of platelets, which cause the blood to clot. The test is used if somebody has a problem with their blood taking too long to clot.</li> </ul>
<b>Genetic screening</b>	Depending on the individual's signs and symptoms, medical and genetic tests can be used to analyse somebody's DNA to see if they have a genetic disorder.
<b>Liver function tests</b>	These tests examine how well an individual's liver is functioning. Liver function may be impaired if the individual consumes too much alcohol. It can also be impaired as a result of some medication, for example, statins. Although the medication may be of great benefit to the individual, doctors will often test their blood to see how well their liver is functioning.
<b>Thyroid function test</b>	If the doctor thinks the individual's signs and symptoms suggest a thyroid problem, as it should, he or she may ask for a blood test. The results will indicate if the gland is performing normally; if it's not, they will prescribe enough thyroxine.

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## Investigative procedures for physiological disorders, blood tests – Top

1. What is a phlebotomist?
2. Why might somebody have blood cultures taken?
3. What is an antigen?
4. Why could a man's prostate-specific antigen be raised?
5. Why might a person with rheumatoid arthritis have regular liver function tests (LFTs)?
6. Name one factor tested for in a full blood count (FBC).



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## B2: Diagnostic procedures for physiological disorders

As well as assessing a service user's signs and symptoms, taking their medical history, the doctor may decide that further investigation is necessary. This decision may be based on the signs and symptoms, to either rule out or confirm a diagnosis. On the other hand, the signs and symptoms may be very general or confusing, which can make diagnosis difficult.

### Procedures based on specific signs and symptoms

Signs and symptoms give the doctor valuable clues as to what the service user's body systems are affected by the disorder. Diagnostic procedures are further investigations of one specific body system. They may involve entering the service user's body, often known as 'invasive' procedures, such as a lumbar puncture or biopsy. Other procedures include X-rays or an ultrasound scan.

### Lumbar puncture

A lumbar puncture is a procedure during which a thin needle is inserted between the vertebrae. The needle passes into the space around the spinal cord, which contains cerebrospinal fluid.

#### Reasons for performing a lumbar puncture

A lumbar puncture is carried out for a range of reasons, including:

- to diagnose a condition, such as meningitis
- to inject medicines, such as painkillers, antibiotics or **chemotherapy**
- to inject a spinal anaesthetic (epidural), for surgery or during labour
- to remove extra cerebrospinal fluid to reduce pressure in the nervous system

**Cerebrospinal fluid:** fluid that surrounds the brain and spinal cord.

**Chemotherapy:** treatment of cancer with drugs.

**Lumbar:** the lower part of the back.

**Ventricles:** spaces in the brain. Part of them contain cerebrospinal fluid.

Although lumbar punctures are performed commonly in hospitals across the UK, they are often performed under general anaesthesia, and the effects and it's treated as if the service user is going to have an operation. This means that when performing the procedure will explain it thoroughly beforehand, including the possible risks. In most hospitals in the UK, lumbar punctures are carried out by anaesthetists. These are doctors who have received further professional training in giving anaesthetics. Often, a scan will be carried out before the procedure to make it clear as to what's causing the service user's signs and symptoms. The service user will be given a consent form, which states that they understand the procedure and the possible risks.

#### Did you know?

Cerebrospinal fluid is made by the **ventricles** in the brain. They produce approximately 500 ml every day, at a rate of about 15 ml per hour.

The body constantly reabsorbs cerebrospinal fluid, so there is usually only about 125–150 ml present at any one time.

Cerebrospinal fluid helps protect the brain from injury, distributes substances and clears waste products from the nervous system.

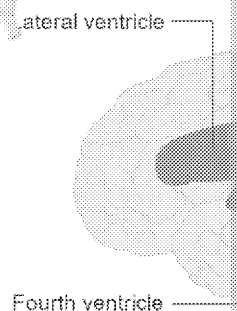


Diagram showing the ventricles of the brain.

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**Performing a lumbar puncture**

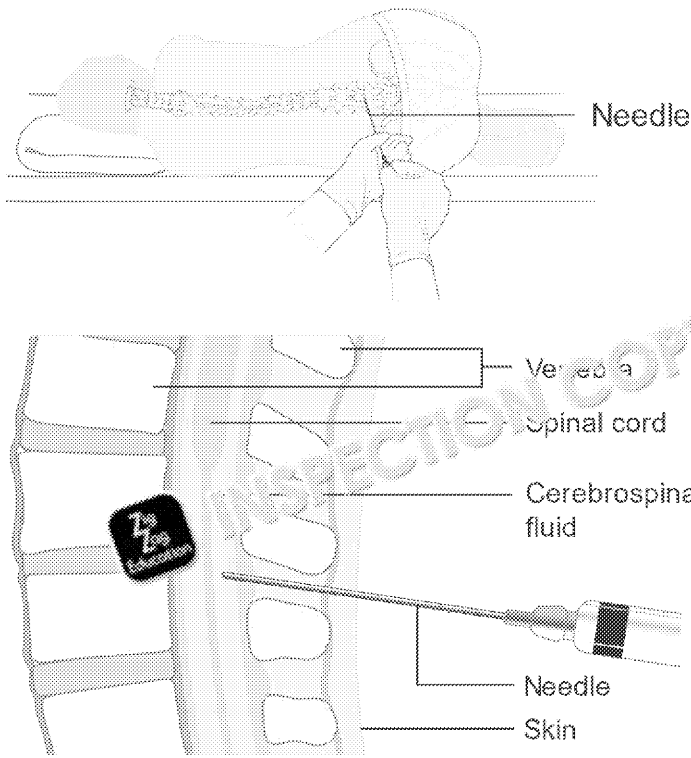


Diagram showing how a lumbar puncture is carried out.

The service user has their knees tucked up to make it easier for the needle. Sometimes the service user is asked to sit up and lean forward, which opens up the lumbar space.

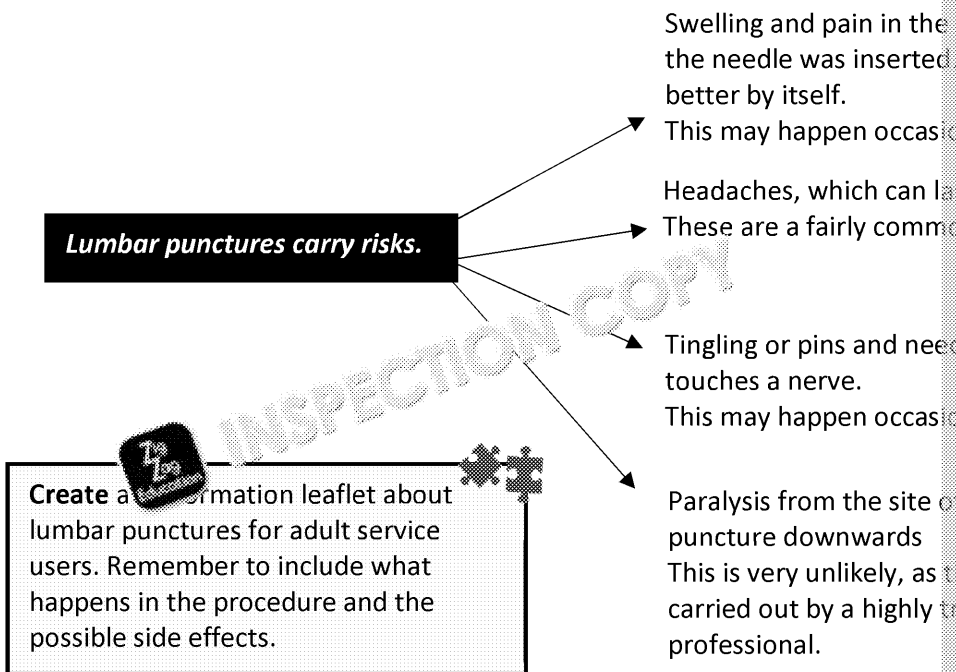
If the procedure is performed by a nurse or midwife, the service user lies on their side, bending forward so that the spine is curved.

Adults are fully conscious during the procedure. However, a child or young person may be sedated or anaesthetised a little bit before the procedure. The skin at the site of the needle is cleaned with a sterile wipe and the needle is inserted into the space between the vertebrae. A few drops of cerebrospinal fluid can be collected in a test tube for analysis. Next, the needle is withdrawn and the site is covered with a dressing.

**Afterwards**

After the lumbar puncture, the service user will rest lying down for one to two hours. The healthcare professional will monitor their blood pressure, pulse rate and temperature. Usually, people go home after the procedure. They shouldn't drive themselves. Of course, whether somebody goes home or not depends on why the lumbar puncture was being done. If it's to check for an infection, the individual may be taken to hospital.

**Possible side effects of a lumbar puncture**



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## Investigative procedures for physiological disorders, lumbar puncture

1. Where in the body is the lumbar region?
2. What is cerebrospinal fluid?
3. Give one reason to perform a lumbar puncture.
4. Where is cerebrospinal fluid made?
5. Approximately how much cerebrospinal fluid does the body produce?
6. Give one risk of a lumbar puncture.



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## Biopsy

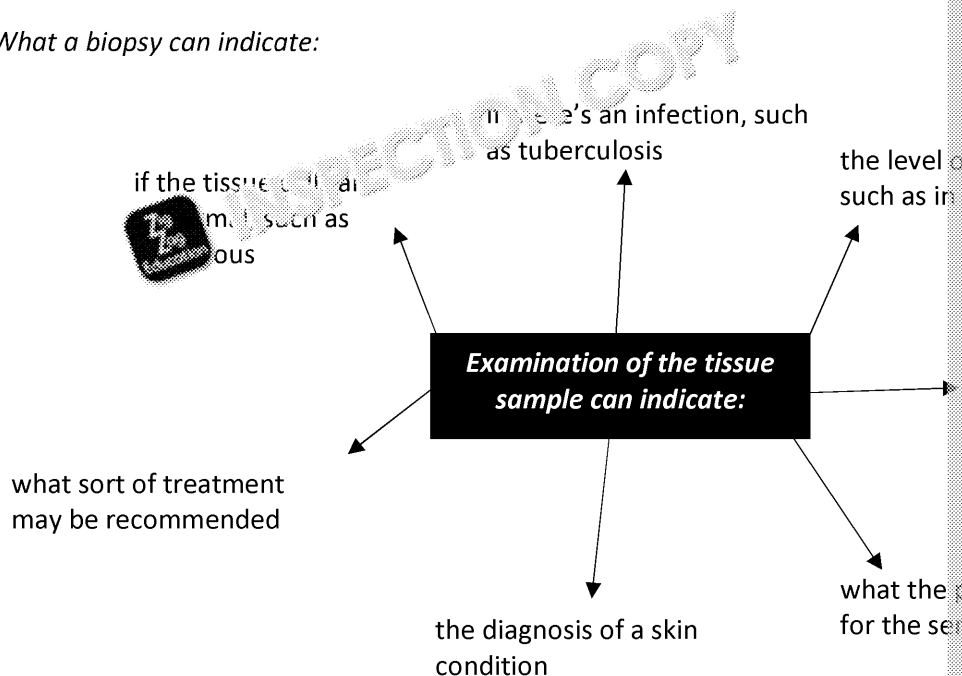
A biopsy is when a doctor takes a small amount of tissue from anywhere inside of the body. The word 'biopsy' means:

- the procedure by which the tissue sample is taken
- the tissue sample itself

Biopsies are usually carried out for two reasons:

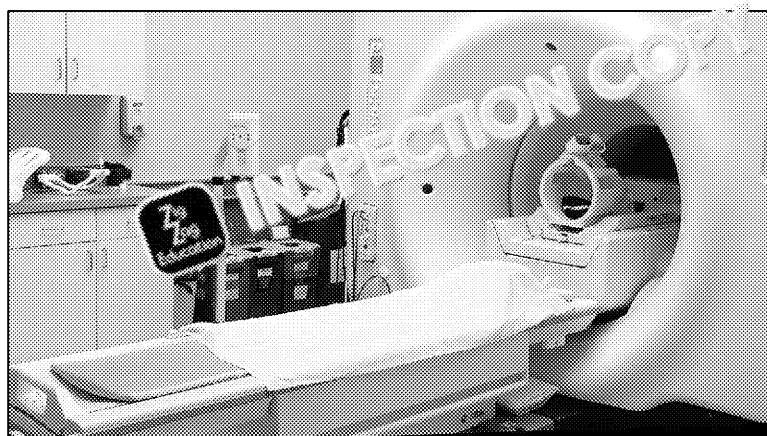
- if the organ is swollen
- if the organ isn't functioning properly

What a biopsy can indicate:



Before a biopsy is taken, the doctor may ask for a scan to be performed. This is to help the doctors decide how the biopsy should be taken, which will vary depending on which organ or body system is being investigated.

Usually a **CT** or an **MRI** scan is carried out, as these provide very detailed images. After the sample is taken it will be examined under a microscope so that a definite diagnosis can be reached.



An MRI scanner

**CT:** computerized tomography. Often also called a CAT scan. Provides detailed images of internal structures.

**MRI:** magnetic resonance imaging. Uses a magnetic field and radio waves to produce detailed images of internal structures.

**Prognosis:** the likely course and outcome of a disease or condition.

**Tuberculosis:** a bacterial infection that can affect many parts of the body, most commonly the lungs. It is resistant to many antibiotics.

The service user is moved inside the scanner and the scan is carried out. It is important to have an investigation carried out as it can be an alarm for the service user.

Care professionals should be treated with respect, kindness and empathy.

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## Different types of biopsy

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**Harold, aged 76, is to have an endoscopy and biopsy following severe stomach pain and bleeding.**  
 What questions do you think he would have about the procedure, the risks and the possible diagnosis?  
 How could a care professional support Harold's needs during this time?

The type of biopsy will depend on where the sample is being taken from.

**Anaesthetic:** a way of preventing somebody feeling pain during a procedure. It can be local, such as a gel or injection to the immediate area. It can also be general, which means somebody is 'put to sleep' until the procedure is complete.

**Anus:** the very end of the digestive tract, through which faeces is excreted

**Punch biopsy**  
 This is when an instrument punches a small hole through the skin and organ beneath. It could be performed to biopsy or diagnose different types of cancer.

**Needle biopsy**  
 This means a hollow needle is used under guidance from an ultrasound or CT scan to take a sample through the skin and into the organ beneath. Biopsies from breast cancer are often taken this way.

**Endoscopic biopsy**  
 An endoscope is a flexible tube with a light at one end, which can be passed through the mouth or anus. A sample of tissue can be taken through the endoscope. Endoscopic biopsies can be used to diagnose stomach problems or colorectal cancer.

**Excision biopsy**  
 An excisional biopsy means the whole piece of tissue will be cut away and sent to the laboratory.

**Perioperative biopsy**  
 This means that during a surgical operation, the surgeon may take a small section of tissue to be tested.

Obviously, some of these procedures are very uncomfortable and can be painful and alarming. An **anaesthetic** will be given, which will be either local or general. If it's a local anaesthetic, the service user will probably be able to go home that day. If it's a general anaesthetic, they may need to stay overnight.

Bone marrow biopsies (right) may be taken to investigate disorders such as leukaemia, or to assess how well treatment is working. The sample is often taken from the hip or the pelvic bone, just below the waist.



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## Investigative procedures for physiological disorders, biopsy – Topic qu

1. What is a biopsy?
2. Give two pieces of information a biopsy can indicate.
3. Give the name of a scan often carried out before a biopsy.
4. What does MRI stand for?
5. Give one type of biopsy.
6. What type of biopsy is usually taken if a person has a lump in their b



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## The importance of recognising non-specific or confusing symptoms

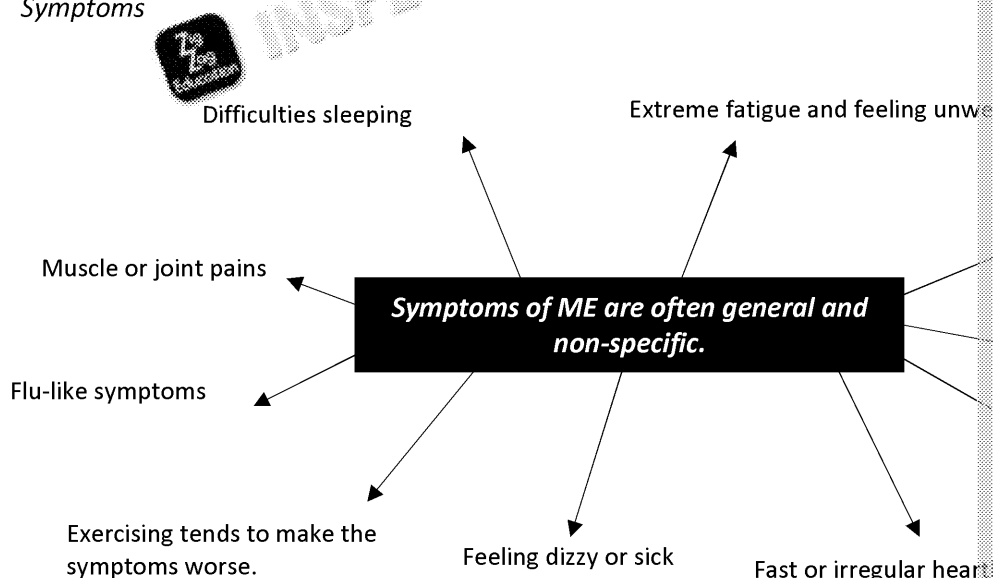
Unfortunately, not all symptoms are easy to explain and diagnose. For example, a person may be constantly tired, have a sore throat, headache and experience general aches all over their body. However, when the doctor examines them, listens to their medical history and does blood checks or blood tests, there can be very little to suggest what could be wrong with them.

From the service user's point of view, this is confusing and they may begin to feel that their symptoms are not real. Some family members believe they're imagining the problem or making it up. This may especially be true if the individual is unable to carry out their usual daily tasks, putting pressure on them. In turn, this could lead to difficulties and conflict in family, intimate, social and work relationships.

## Myalgic encephalomyelitis (ME)

ME is also known as chronic fatigue syndrome. It's most likely to occur in women in their twenties to forties, although it can affect anyone, including children.

### Symptoms



ME is graded into three levels, according to how severe the individual's symptoms are. The individual's symptoms may be better or worse than usual at any time.

Level	Symptoms
Mild	The individual is mobile and can continue to work, study or do housework. They may have to give up some activities so they can get enough rest.
Moderate	The person may have difficulties sleeping and with moving around. They may have to give up work or study, may have to be given up.
Severe	The person may only be able to do very basic tasks, such as brushing their teeth. They may use a wheelchair to get around. They may also be housebound or bedbound. The individual may also find it hard to concentrate or be very sensitive to light or sound.

**Jasmine**, 15, has been diagnosed with moderate ME after many months of symptoms. In pairs, create a care plan for her that will meet all of her health and social needs. You may want to include a contingency plan if her ME becomes severe.

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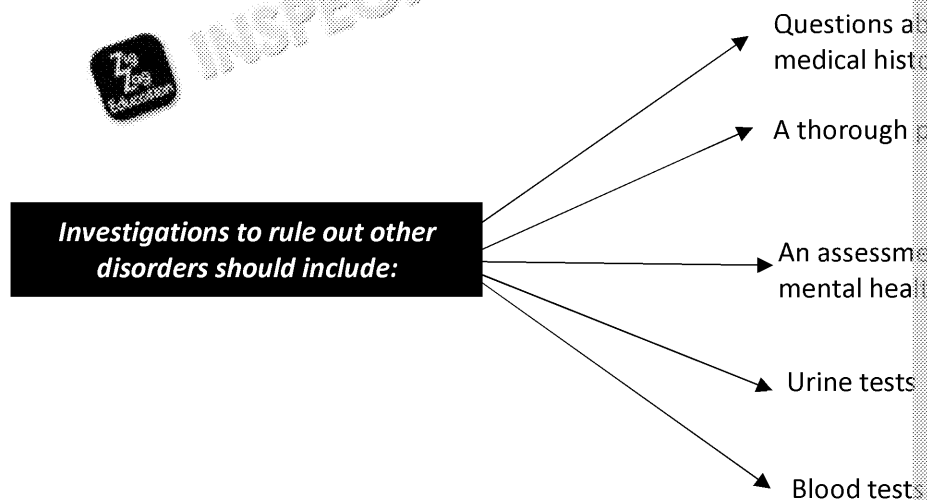


**Diagnosis**

Because there is no specific test for ME and the symptoms are similar to many disorders themselves, ME will not usually be considered until everything else has been ruled out. The National Institute for Health and Care Excellence (NICE) has guidelines for diagnosing ME and states that the individual experiences fatigue that:

- started suddenly or is new
- lasts a long time
- keeps coming back
- gets worse after gentle exercise, such as a short walk
- if the person can't do the things they used to do

The individual should also have some of the other symptoms identified above, such as sore glands that aren't swollen.



There are, however, some symptoms that the doctor would take extra notice of as other possible disorders that also produce these symptoms.

Symptom	Alternative disorders
Double vision or blackouts	A problem with the nervous system
Painful and swollen joints	Arthritis
Chest or heart problems	Heart disease or a problem with the respiratory system
Weight loss	Unexplained weight loss may be a sign of a thyroid problem
Stopping breathing while asleep for short periods (sleep apnoea)	May be linked with nasal congestion, allergies, or alcohol use
Persistently swollen glands	Can appear with a wide number of disorders including, but not limited to, influenza, mumps, rubella or ear infections

**Final diagnosis of ME is made when:**

- In an adult, the symptoms have lasted for four months and all other possible disorders have been ruled out.
- In a child or young adult, the symptoms have lasted for three months and all possibilities have been excluded. In this case, the diagnosis will be made only after consulting a **paediatrician**.

**Mumps:** a viral infection that affects the glands under the ears.  
**Paediatrician:** a doctor who provides care and treatment for children.  
**Rubella:** a viral infection also known as 'German measles'.

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## Investigative procedures for physiological disorders, non-specific or common symptoms, such as myalgic encephalomyelitis (ME) – Topic questions

1. Give another term for ME.
2. Give three general and non-specific symptoms of ME.
3. What does NICE stand for?
4. When should a final diagnosis of ME be made in an adult?
5. What alternative diagnosis could be suggested by painful, swollen joints?
6. Give two investigations that a doctor will carry out to exclude other conditions.



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## Chapter 3: Examine Treatment and Support with Physiological Disorders

### C1: Provision of treatment and support

Treatment and support of individuals with a physiological disorder will cover a number of areas. When somebody thinks of treatment, they often think straightaway about medication. The healing process may also include a period when an individual has to regain their health through a rehabilitation programme, such as physiotherapy.

Many individuals also like to use complementary therapies, such as aromatherapy, which can offer them an invaluable support alongside their orthodox treatment. Others may prefer to use natural remedies. They should make changes to their lifestyle, for example, giving up smoking, and the period of recovery from a diagnosis can be an ideal time for them to make these changes.

#### Medication

Medication is available in many different forms and can enter the body in a variety of ways, such as injection.

Common methods of administration	Examples
Oral – by mouth	Antibiotics may be taken as capsules or as a liquid
Topical – applied directly to the skin	Anti-fungal cream for athlete's foot
Inhaled – breathed in	Salbutamol (Ventolin) inhaler for asthma
Subcutaneous injection – an injection with a tiny needle just below the skin	Insulin is usually given this way.
Intramuscular injection – an injection into the muscle, usually of the upper arm or thigh	Antibiotics and many painkillers may be given this way. The circulatory system more quickly than taking them orally.
Intravenous injection – directly into the vein	Anaesthetics and antibiotics are two examples. The direct route to the vein and the circulatory system means the drug reaches the site of action more quickly.
Injection into the joint	Some anti-inflammatory drugs for arthritis may be given this way.
Rectally – as a suppository, inserted into the anus	Some anti-inflammatory drugs for arthritis may be given this way.

#### Different types of medication

There are many different medicines available, some of which can be bought over the counter, while others can only be obtained with a doctor's prescription. The drugs themselves fall into specific categories based on their purpose and the way they are administered.

Below are a few of the different types of medicines available:

- antibiotics – to fight infection
- analgesics – to relieve pain, including anti-inflammatory drugs
- antihistamines – to relieve allergy symptoms, such as hay fever
- anticoagulants – to prevent blood clotting after a stroke or heart attack, for example
- cytotoxic medicines – to treat cancer
- diuretics – to get rid of extra fluid in the body
- hormones – such as hormone replacement therapy, steroids, contraceptives
- laxatives – to treat constipation
- psychotropic medicines – to treat depression and other mental illnesses

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## Anti-inflammatory drugs

Inflammation is a natural response by the body to injury. By increasing the blood supply to the area, the body can bring extra white blood cells, hormones for tissue repair and additional fluid to help 'wash away' any viruses or bacteria that are causing the inflammation.

These responses explain why any part of the body that's inflamed becomes:

- red – due to the increased blood supply
- hot – due to the increased blood supply
- swollen – due to the extra fluid in the immediate area
- painful – because some of the hormones that repair tissues can irritate the nerves in the immediate area
- and lose of function – The combination of the four points above mean that the individual is more likely to rest the inflamed area, resulting in the body being more able to do its own repairs.

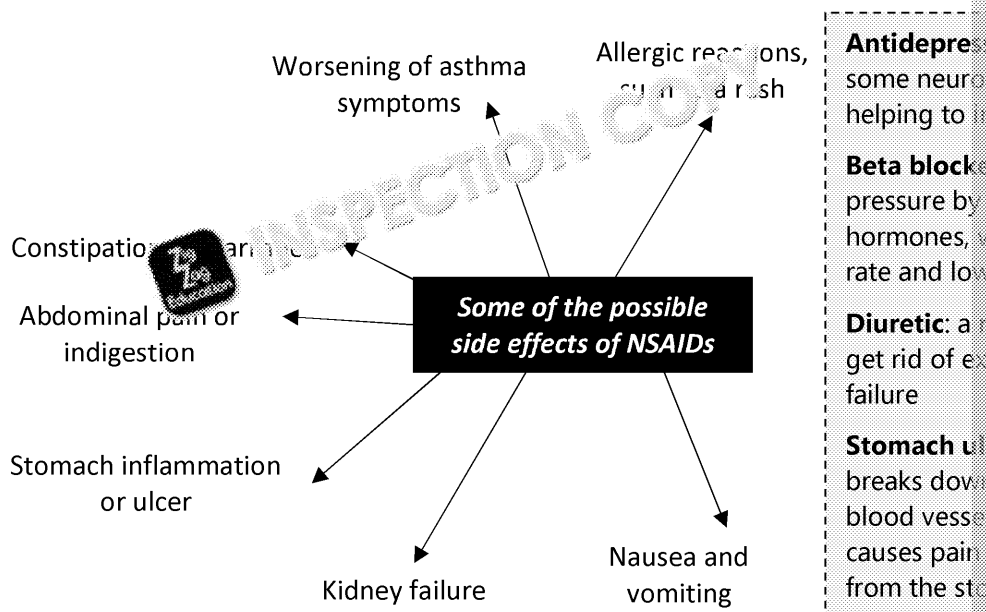
However, not all of these symptoms appear when inflammation is taking place, and some can develop a long-term or chronic inflammation as part of a physiological disorder, such as arthritis.

Anti-inflammatory medicines are intended to reduce the body's inflammatory response. In this way, they help to relieve pain and improve the function of the damaged part of the body. There are two main types of anti-inflammatory medicines: non-steroidal anti-inflammatory drugs (NSAIDs) and steroids.

## Non-steroidal anti-inflammatory drugs (NSAIDs)

NSAIDs are commonly used to relieve pain and inflammation in a range of conditions such as sprains, arthritis, flu and colds. They can also bring down a high temperature. They come in many forms, such as tablets, capsules, suppositories, creams, gels and injections. Ibuprofen is the most widely used NSAID and there are several others. A more recent type of NSAID is called COX-2 inhibitors (coxibs). These have been developed to reduce the potential damage to the stomach.

Although medicines such as Ibuprofen are easily available, there are certain groups of people who should not take them altogether. These include people with liver or heart failure and those with certain other conditions. Some medicines, for example, **diuretics**, some **antidepressants** and **beta blockers**, interact with NSAIDs and cause other problems.



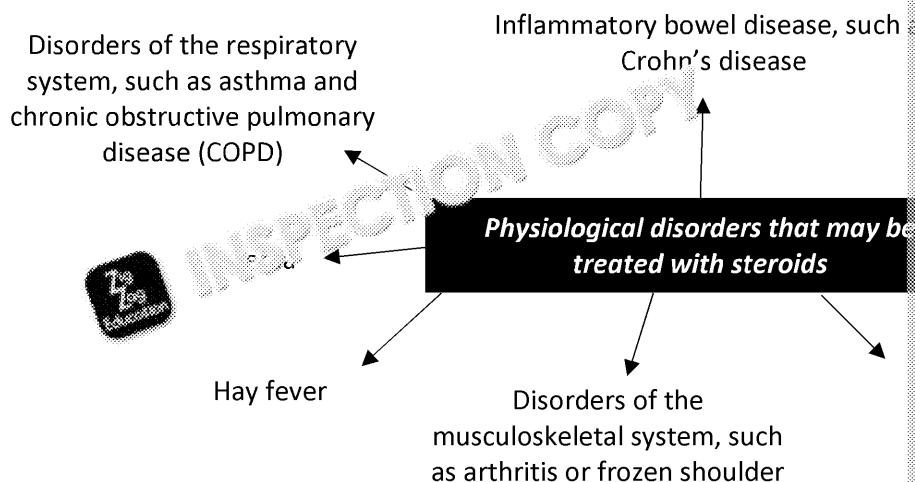
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## Steroids

Another commonly used type of anti-inflammatory medicine is steroids, also known as corticosteroids. The body naturally produces steroids in the adrenal glands, which are situated just above the kidneys. The medicines are a man-made version. Those taken as a medicine are different to those taken by some athletes, intended to build up muscle bulk.

Corticosteroids help to reduce inflammation throughout the body, so they are used to treat a range of physiological disorders. They come in many different forms, such as tablets, inhalers and injections.



### Side effects of corticosteroids

Like all medicines, steroids produce side effects, especially when taken as the tablet prednisone. These can include:

- difficulty sleeping
- increased appetite
- mood changes
- raised blood pressure
- raised blood sugars
- loss of bone density, causing weak bones
- papery skin that tears easily
- 'moon' face, as the face becomes more round

The doctor will often prescribe corticosteroids so that the service user has to gradually wean themselves off, meaning that over a number of days, the individual gradually takes less and less until there are none left.

This is because when the individual is taking additional corticosteroids the body automatically decreases the amount produced by the adrenal glands. This is more likely if an individual has been taking them for a few weeks, such as for a disorder like Crohn's disease, where it may take a long time for the inflammation to reduce.

If the service user stops them without 'warning' to the body, they may experience some unpleasant symptoms, such as:

- weakness
- aches and joint pains
- severe fatigue
- nausea
- loss of appetite
- feeling faint

**Crohn's disease:** the digestive system, causing ulcers, inflammation and pain.

**Frozen shoulder:** the shoulder becomes stiff, causing difficulty with movement.

**Lupus:** an autoimmune disease where the body's immune system attacks its own organs.

**Multiplex:** a condition affecting the nervous system, causing pain and numbness along the nerves.

**Sciatica:** a condition where the sciatic nerve becomes inflamed, causing pain, numbness and weakness in the lower back and legs.

Service users with arthritis may be advised to modify their diet (Dietary Modification for Arthritis - DMA). Find out more about them with your dietitian. What are the symptoms of arthritis?

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## Provision of treatment and support for service users with physiological medication – Topic questions

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1. Give an example of a medicine that's used to treat athlete's foot and
2. What do psychotropic medicines treat?
3. What are analgesics?
4. Give three possible side effects of NSAIDs.
5. Give two disorders that may be treated with steroids.
6. Give two possible side effects of using diuretics.



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# Provision of treatment and support

## Surgery

Surgery is performed on individuals for a large number of reasons. It can be done

- remove something from the body that's causing a problem, such as an infection
- deliver a baby when vaginal delivery is unsafe, known as a caesarean section
- correct a problem in the body, such as releasing a tight tendon in the hand to improve movement
- inserting a **stent** to widen a narrowed coronary artery
- replace a worn out and damaged joint, such as a hip replacement
- improve an individual's personal appearance, such as cosmetic surgery or a facelift
- improve function, for example, correcting a **cleft palate** in a newborn baby

Depending on what part of the body is being operated on and the surgery being done, a service user may be able to choose what sort of anaesthetic they want.

Anaesthetics carry risks, especially if the service user

- smokes
- uses or misuses alcohol
- misuses legal or illegal substances
- is obese.

**Local**, where the operation is made under a local anaesthetic.

**General**, where the patient is 'put to sleep' for the duration of the operation. They are often do not wake up after it's over.

**Epidural**, where the anaesthetic is injected into the lumbar puncture space. It is used for Caesarean sections and pain relief under an epidural.

**Cleft** lip and palate is a condition where the mouth and face do not develop properly. It's often the result of a genetic mutation.

**Stent** is a small mesh tube that is inserted into a blood vessel to keep it open. It's often used to treat atherosclerosis and narrow arteries.



Operating theatres are a well-known image from the media. To reduce chances of infection, all staff wear sterile gowns and gloves and only use sterilised instruments.

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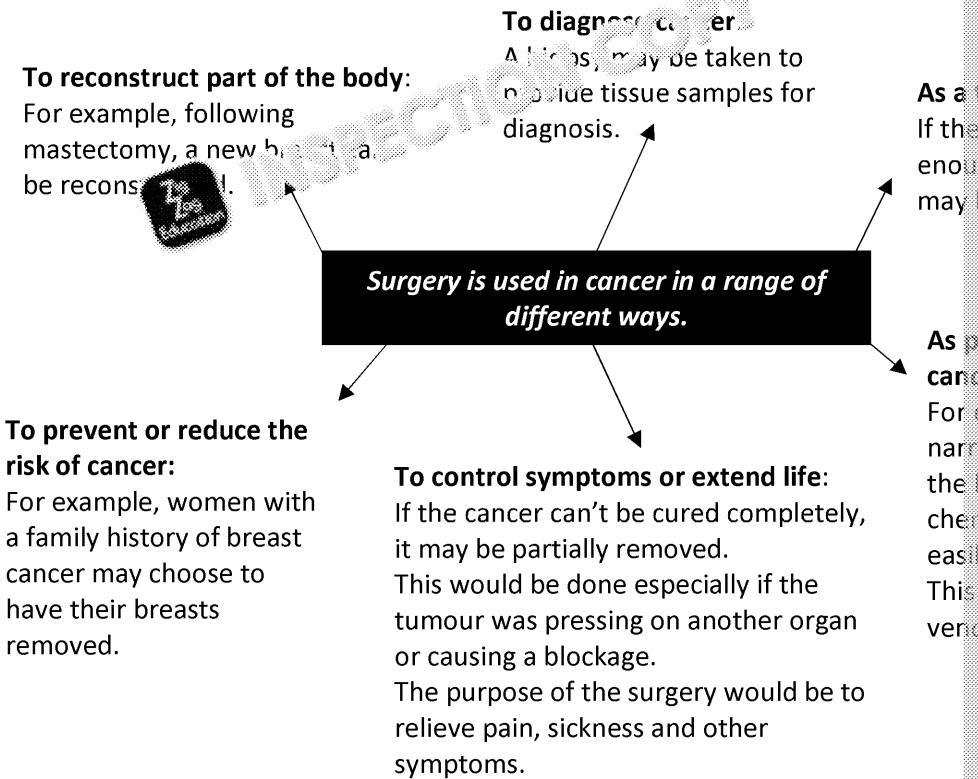


## Surgical treatment for cancer

Surgery is a common way of treating cancer. Its use depends on the size of some spread, their general health and whereabouts it is in the body.

Some cancers are not suitable for surgery. Leukaemia, for example, isn't suitable for surgery as it affects blood cells and their production in the bone marrow. Neither are some cancers of the brain as these tend to be widespread throughout the body.

Occasionally, the tumour may be in a place where surgery would be highly dangerous, such as near a major blood vessel, making it too difficult to remove without causing more harm to the service.



In 2013, Angelina Jolie had a double mastectomy.

She chose to have the operations performed to prevent breast cancer. However, she said that her mother had an 87% chance of developing breast cancer and her mother's brother had cancer and died.

**Discuss** Angelina Jolie's decision. Would you do the same?

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## Provision of treatment and support for service users with physiological surgery – Topic questions

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1. Explain what is meant by a local anaesthetic and give an example of one.
2. Give three lifestyle factors that make anaesthetics more risky.
3. Give two factors that influence whether a cancer can be treated by surgery.
4. Give one example of a form of cancer that isn't suitable for surgery.
5. Give two ways in which surgery is used in cancer.
6. What name is given to the narrow tube that can be surgically inserted into the lungs?



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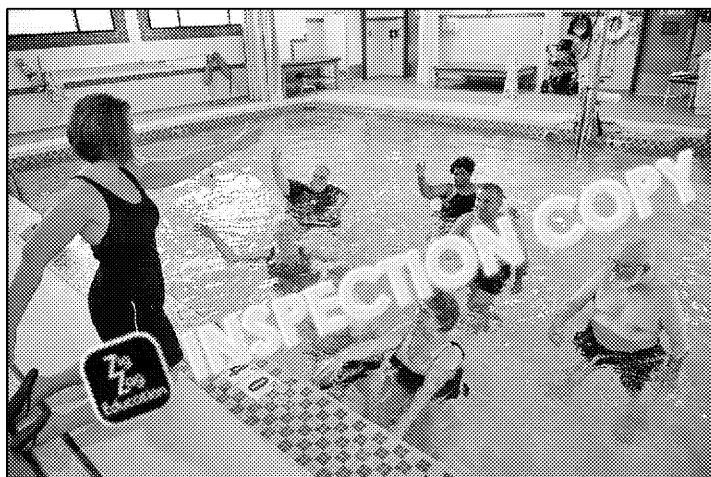
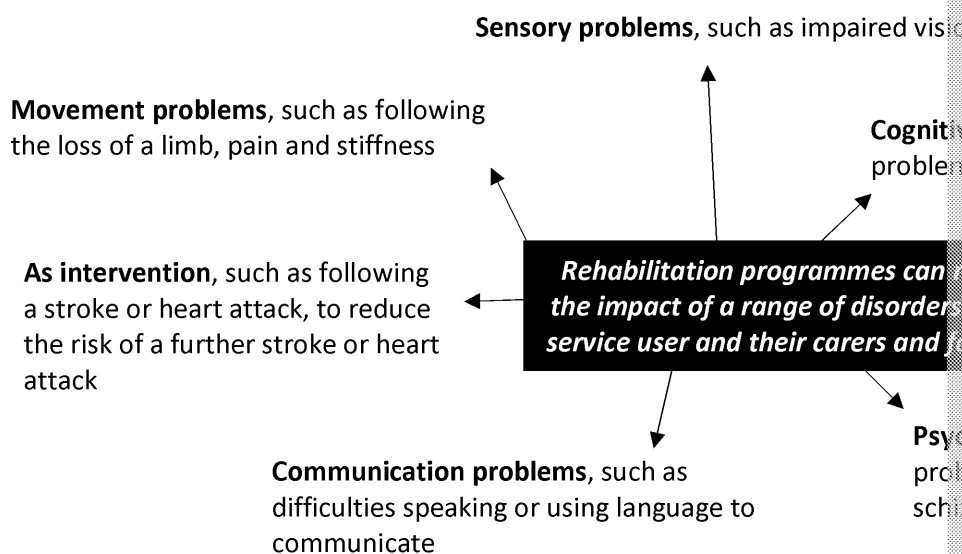


## Provision of treatment and support

### Rehabilitation programmes

NHS England recognises the importance of rehabilitation for service users. In their 'Rehabilitation', published in 2016, they identified the following groups of individuals who use rehabilitation services:

- children in need of support to overcome developmental difficulties
- people recovering from an unexpected illness, such as depression or stroke
- people with a long-term disorder who have are recovering from a flare-up and need to maintain their independence
- people with long-term disorders who need to manage their own health and deal with complications
- helping people who have had severe trauma, such as losing a limb in a motor vehicle accident, to regain independence and get back to work
- people with disorders that are likely to progressively get worse, such as cancer, to help them maintain their independence and skills for as long as possible
- vulnerable groups, such as those with impaired **cognitive** function, who may need support to speak on their behalf (**advocacy**)



*Rehabilitation takes place in a range of settings, including hospitals, GP surgeries and the community. This hydrotherapy session is taking place in a community swimming pool.*

**Advocacy:** In simple terms, this means a professional acting on behalf of someone who cannot speak for themselves. This can be for a person with a physical or mental health condition, an English speaker helping a non-English speaker, or a young person helping an older person.

**Cognitive:** This refers to the brain, such as memory, problem-solving, and decision-making.

**Hydrotherapy:** This is a type of therapy that takes place in water.

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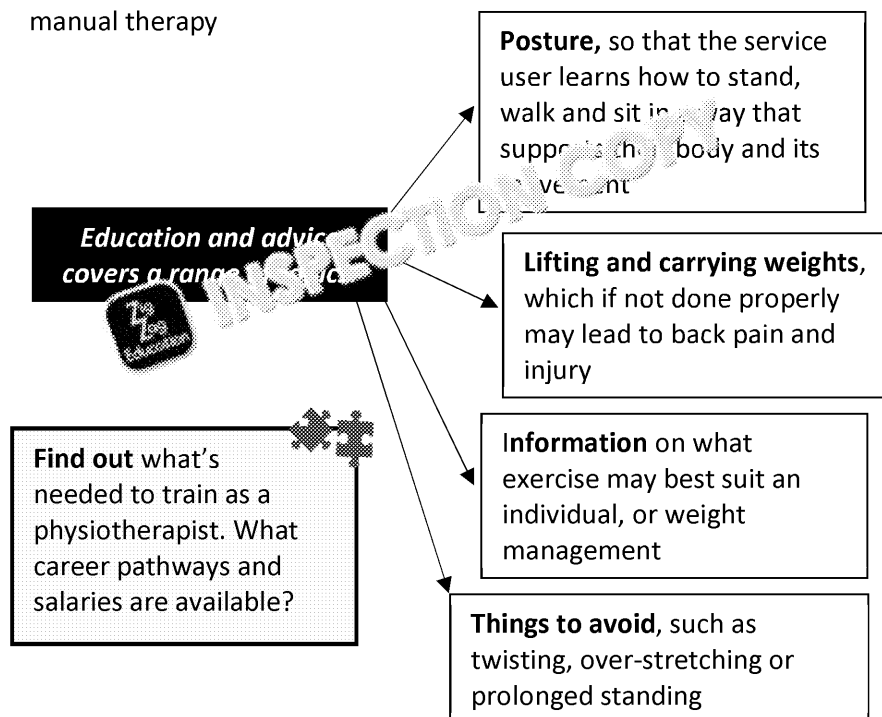


## Physiotherapy

Physiotherapy is literally 'physical therapy'. It is a highly skilled and trained professional who treats a wide range of disorders. Physiotherapists work in a wide variety of settings, both including hospitals, GP surgeries, community leisure centres, sports clubs and in the home.

There are three main approaches that physiotherapists use:

- education and advice
- movement and exercise
- manual therapy



**Manual therapy** means the physiotherapist uses their hands to manipulate, mobilise or massage the part of the body they're working on.

This helps to:

- improve blood circulation
- drain fluid, such as when a physiotherapist performs chest physio on an individual with **cystic fibrosis**
- reduce pain and stiffness
- promote relaxation, reduce anxiety and improve sleep, which is especially important in a serious, long-term disorder, for example, cancer

**Cystic fibrosis** is a genetic condition that causes the production of sticky mucus that blocks the respiratory and digestive systems.

**Movement and exercise includes information and advice intended to improve the individual's strength and mobility.**

- Physiotherapists may suggest exercises for a specific part of the body that have to be done for a period of time. They may also give exercises that the individual can do by themselves. For example, they may give exercises to strengthen the thigh that have to be done daily for six weeks.
- Physiotherapists may suggest whole-body exercise such as swimming or walking for someone recovering from surgery or an injury that has affected their mobility.
- Physiotherapists may give aids to help an individual become more mobile, such as a walking stick.

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## Provision of treatment and support for service users with physiological rehabilitation programmes – Topic questions

1. Give one group of individuals who may need rehabilitation services
2. Give one example when a rehabilitation programme could reduce the impact of a condition
3. What is hydrotherapy?
4. What are the three main approaches physiotherapists use?
5. Give one example of a whole body exercise a physiotherapist may use to help a patient recovering from an injury that's affected their mobility.
6. What technique could a physiotherapist use to promote relaxation and pain management in a patient with cancer?



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## Provision of treatment and support

### Complementary therapies

Complementary therapies are a group of therapies outside the mainstream of medicine. They may be called 'alternative' or '**holistic**' therapies or complementary and alternative medicine. Some people use them and find them extremely beneficial, while others find they achieve little or no benefit from using them.

The term 'complementary' is often used because it implies that the therapy is used alongside and at the same time as medical therapies. They are not intended to replace the treatment prescribed or recommended by a doctor or a nurse.

There are many complementary therapies available, including acupuncture and aromatherapy.

**Endorphins:** chemicals in the brain and spinal cord that produce pain relief and a sense of well-being.

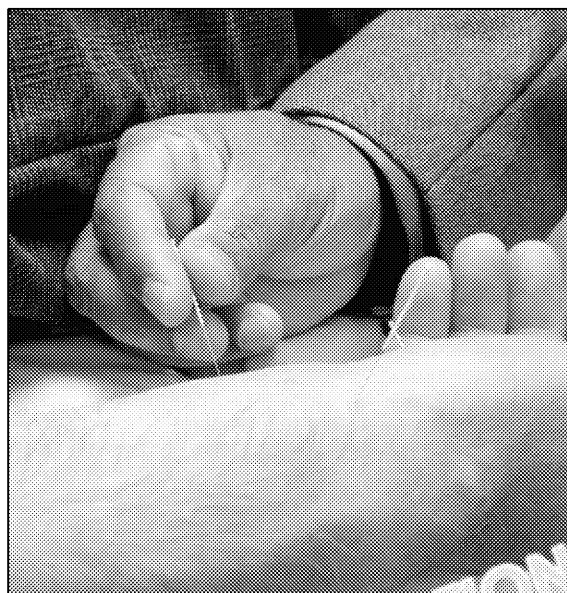
**Holistic:** medicine that considers the whole person, including the body, mind, and intelligence.

### Acupuncture

Acupuncture is widely known and used. Some doctors, nurses and physiotherapists are qualified to use acupuncture and the therapy is available on the NHS in some areas.

According to traditional Chinese acupuncture, qi, the energy or life force, travels through channels known as 'meridians'. If qi can't travel freely, the individual will become ill. Acupuncture aims to restore the flow of qi by inserting the needles at different points on the body, which in turn restores the balance of qi.

Western medical acupuncture uses acupuncture after a medical diagnosis. Research shows that acupuncture stimulates sensory nerves just under the skin and in the muscles. As a result, the body releases chemicals such as pain-relieving **endorphins**, which boosts the sense of well-being.



Acupuncture needles being inserted into the skin

The needles are a few centimetres long. Most people should feel no pain when they're inserted. Some people may feel a tingling or a dull ache.

The most commonly used sites are on the lower arms and legs. However, needles can be inserted at any point on the entire body, so the acupuncturist will choose the sites based on the service user's symptoms.

Chronic tension-type headaches  
NICE approves of acupuncture

Acupuncture  
a wide range of  
conditions

Dental pain and pain  
following surgery

### Side effects and problems with acupuncture

One argument against acupuncture is that there isn't a great deal of evidence to prove that it works. Treatment of headaches is the only area where a benefit has been proven, which is why NICE has approved its use for that purpose. There's also a risk that the service user may feel dizzy, faint or even experience a temporary worsening of their symptoms.

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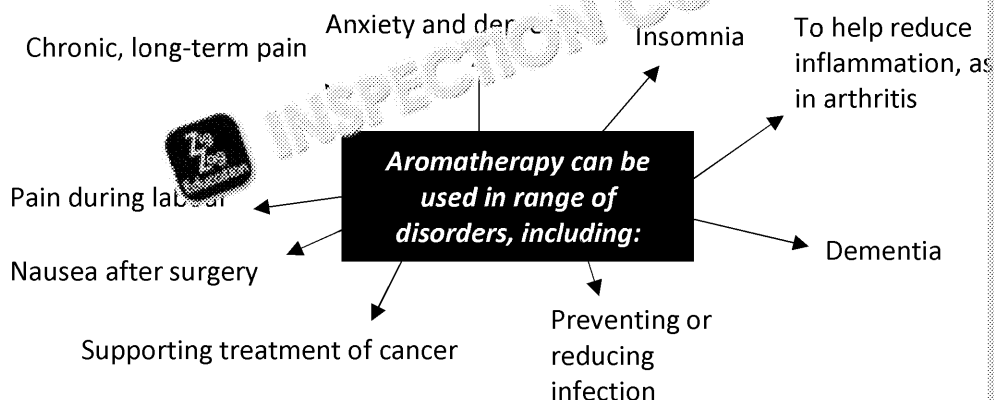


## Aromatherapy

Aromatherapy is a complementary therapy that's based on the use of essential oils from the peel, seeds, bark and other parts of plants.

It's thought to work by stimulating the brain's olfactory system, which is the part of the brain responsible for the sense of smell. Essential oils have also been linked to mood, causing the individual to feel better. Because the essential oils are often applied to the skin through massage, it's likely to be helpful in helping the individual to relax. The oils may also be inhaled or added to bath water, swallowed or applied to the skin undiluted.

Many of the claims for aromatherapy have not been backed up by research. However, if it helps them, there's no reason why they shouldn't, provided they use it safely.



The essential oil, such as lavender, tea tree or neroli, is added in tiny drops to a carrier oil. The carrier oil is always a plant-based oil, such as almond, which is easily absorbed by the skin and enters the body through massage.

The oils may be used by the individual themselves or they may decide to use a qualified aromatherapist.

### Side effects

Aromatherapy may cause unwanted side effects in some people:

- Nausea may be a side effect.
- It may cause a headache.
- An allergic reaction, such as a rash, may occur.
- Some oils react with ultraviolet light, causing the skin to burn more easily in the sun. Citrus oils, such as orange or lemon, are more likely to cause this effect.
- Some essential oils may reduce or strengthen the effects of conventional medication. A doctor or aromatherapist should be taken.

### Aromatherapy and cancer

Some people with cancer like to use aromatherapy, partly because they feel as if they're helping themselves.

Some of the benefits they report include helping with:

- anxiety
- depression
- pain
- stress
- tiredness

Find out more about aromatherapy as a complementary therapy pathway available at Zig Zag Education.

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## Provision of treatment and support for service users with physiological complementary therapies – Topic questions

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1. Give another term for complementary therapies.
2. What are endorphins?
3. Give two disorders that may be treated with acupuncture.
4. Explain how acupuncture works.
5. Which body system is stimulated by aromatherapy?
6. Give two disorders when aromatherapy may be used.



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## Provision of treatment and support

### Advice on lifestyle changes

When life is running smoothly, we're all inclined not to worry too much about the choices we know we shouldn't be making. This might include eating too many sweet and fatty doughnuts, at the expense of fresh fruit and vegetables, or choosing not to walk. It may also include smoking, use of alcohol and misuse of legal drugs or use of illegal

However, over time, all of these choices build up to a negative impact on health and an unbalanced diet will lead to weight gain and risk of type 2 diabetes, coronary heart disease. Smoking puts the individual at risk of chronic obstructive airways disease (COPD), emphysema, and various types of cancer, while alcohol and substance misuse increase the risk of liver disease.

It may only be when an individual finds out they have developed a physiological disorder that they really think about the impact their lifestyle choices are having. Discovering a family member or friend has developed a disease can have the same effect.

The health professionals involved in the care, treatment and support of these individuals are in a position to offer advice and support about how these lifestyle changes can be made for long-term benefits.

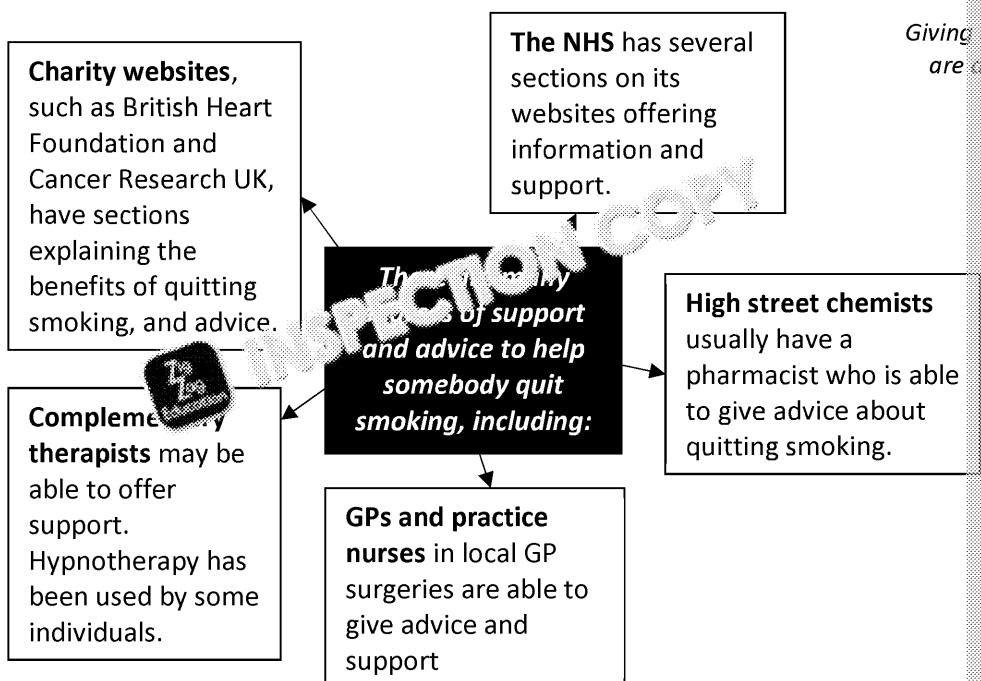
### Giving up smoking

For people who have never smoked, giving up smoking can seem an easy thing to do. For those who have developed an addiction to smoking, giving up can feel an almost impossible task.

The cost of smoking, both to individuals and then NHS, is massive. It's been estimated that smoking costs the NHS:

- More than £5.7 billion every year is the total cost.
- Cardiovascular disease as a result of smoking costs £205.8 million every year.
- Almost one in five deaths are due to a smoking-related disorder

The need to reduce smoking is both a financial need and a personal one, as each individual who develops a smoking-related disorder will experience the impact throughout all aspects of their lives.



**Stop smoking services**

NHS England states that smoking is the single biggest preventable cause of health problems. Cigarettes and tobacco forms a higher proportion of spending among poorer households, causing damage to their health, but also contributing to trapping people in poverty.

To help reverse this situation, the NHS has developed stop smoking services, which have made a significant contribution in reducing smoking among poorer groups of the population.

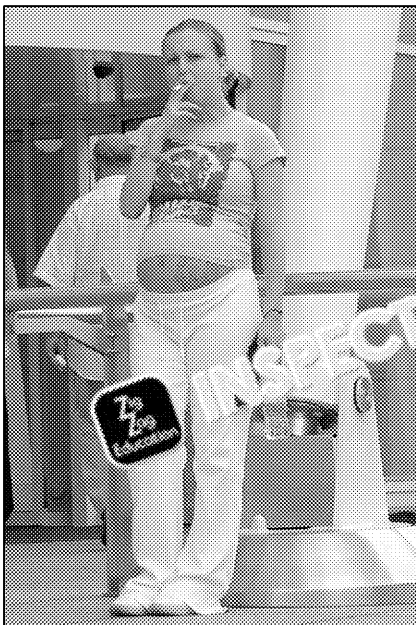
Research by NHS England has shown:

- If somebody quits smoking aged 30, they can expect to live 10 years longer.
- If somebody quits smoking after a heart attack, they can reduce their chance of dying by 50%.



**Stop Smoking Services are available throughout the UK and are free at the point of use.**

**They have a range of support services available.**



*NICE guidelines are that everyone who smokes should be advised to quit, unless there are exceptional circumstances.*

**Chloe, left, is pregnant.** Research why she should give up. Apart from nicotine addiction, discuss other reasons why it is hard to do so. What support would you suggest to help her?

The stop smoking services help individuals to change their life circumstances for the better. These may include:

The stop smoking services provide information and support to help somebody to quit. They can provide a range of support services, including a cheaper alternative to cigarettes.

The stop smoking services help with changing their habits, making it easier to quit.

The stop smoking services meet the needs of different groups. For example, Caribbean people may need to be supported to quit in Wales.

There is also support available, as well as online resources and advice for further support.

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## Provision of treatment and support for service users with physiological advice on lifestyle changes – Topic questions

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1. How many deaths are estimated to be due to smoking every year?
2. Give one source of advice and support with stopping smoking.
3. What is the single biggest preventable cause of health inequalities?
4. If somebody gives up smoking following a heart attack, what is their risk reduced by?
5. Give two ways in which stop smoking services can help an individual.
6. If somebody quits smoking aged 40, how much longer can they expect to live?



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## C2: Types of carers and care services

The diagnosis, treatment and rehabilitation that goes with a physiological disorder is the care for the service user. This care will take place in a variety of places, such as a hospital or a community care setting.

### Professional carers

Professional carers have undergone training and achieved a professional qualification, such as nurses, physiotherapists and care assistants. They are paid for the work they do, and are often members of a professional organisation, such as the British Medical Association, and are expected to follow a code of ethics.

### General practitioners (GPs)

A GP is a doctor who has undergone further specialist training in primary healthcare. This means they are able to diagnose and treat a wide range of conditions.

- They work from surgeries in the local community.
- They are usually the first doctor a service user will speak to about a health problem.
- Although service users are registered with a GP at their local surgery, they may see other GPs in that practice, as the doctors tend to work a duty rota and may not be available when the service user wants an appointment.
- The GP may know the service user from previous visits, so should know them well.
- They may treat other members of the same family, although they have a duty of confidentiality to each individual. This means that if a woman, for example, speaks to her GP, the doctor is expected to keep her information private from other members of her family, such as her husband.



A GP will know the service user well and be able to form a relationship with them.

**Research** the qualifications and training to become a GP, and the typical salary and career progression.

This system has its benefits, because ideally, the GPs will be aware of issues affecting the service user, such as poverty, pollution and housing, and will also know their service users well. This understanding and knowledge can help the GP to prescribe treatments that are suitable for the service user's circumstances.

When a service user first sees their GP, the doctor will examine them, take a medical history and carry out some investigations, such as blood tests or scans.

Depending on the results of these tests, examination and medical history, the GP may refer the service user to a consultant doctor at the local hospital and ask them to see the service user. This is often done through a referral letter. The GP may also decide to refer the service user to other services, such as the Physiotherapy or Occupational Health Team.

The hospital consultant will then take over the service user's diagnosis and treatment, and the service user every time a procedure is carried out, so that the GP and the consultant can discuss the service user's progress.

Once the disorder has been diagnosed and treatment arranged, the consultant will refer the service user back to the GP for follow-up checks and repeat medicine prescriptions. The consultant may want to see the service user again, perhaps every year or six months to check on their progress.

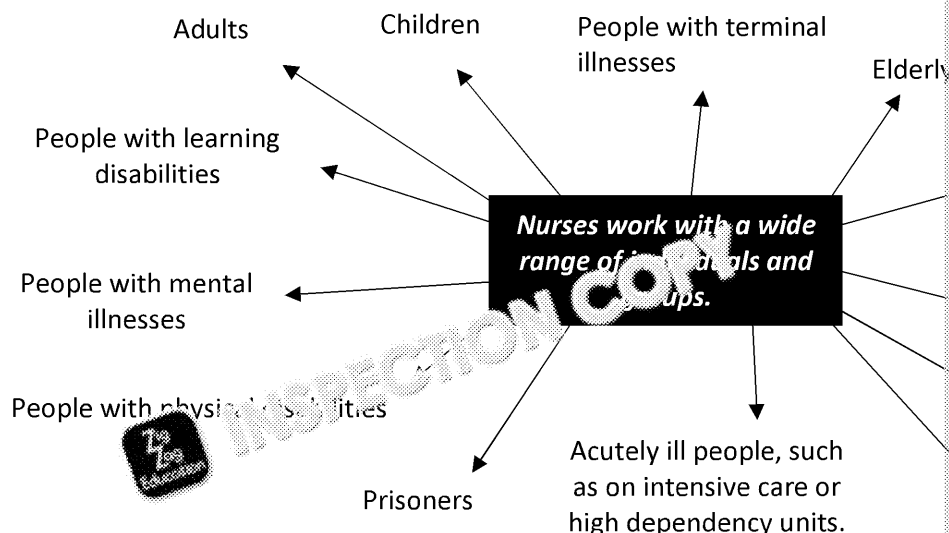
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## Nurses

Nurses are qualified, trained health care professionals who work with all age groups in the population. They are regulated by the Nursing and Midwifery Council.



Some nurses become specialist practitioners in their own field and will have their own list of service users that they see on a regular basis. For example, individuals with Parkinson's disease are likely to visit the specialist nurse regularly and nurses play a large role in supporting individuals with cancer, as well as their families and friends. Others will work as practice nurses in their GP surgery or health centre, where they will carry out regular checks on people with a wide variety of disorders, such as asthma.

**Research**  
 needed  
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Part of the nurse's role is record keeping, making accurate notes at the end of a shift or recording any incident in the service user's day. This could include a visit by the consultant, ward doctor or a chat with the service user's family about arrangements for going home.

### **Benefits to the service user of seeing a nurse regularly**

- The nurse will know the service user's specific circumstances, such as factors that might make it difficult for them to access care; for example, transport difficulties to hospital appointments.
- The nurse will also realise if the service user's condition is getting worse or better and can provide care accordingly or refer them to the GP.
- Seeing the same nurse enables a service user to feel confident and to build trust in the care.
- Because nurses know the service users well, they're in a very good position to provide advice.

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## Provision of treatment and support for service users with physiological disorders – Topic questions

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1. What is meant by a 'professional' carer?
2. What is a GP?
3. Explain one benefit of the GP system.
4. Give two examples of groups of service users a nurse may choose to work with.
5. Give one example of a service user group a practice nurse may see.
6. Explain one benefit to the service user of seeing the same nurse regularly.



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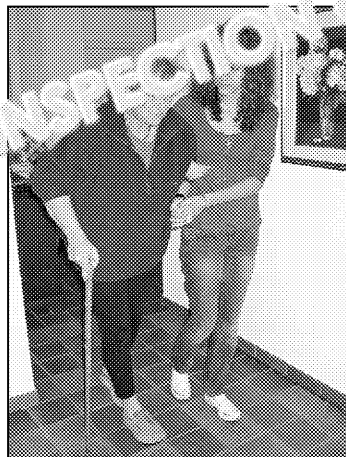


## Informal carers

While service users are ill or immobile, they also need other people around to help with everyday tasks, such as the shopping and laundry. These are often family, friends or informal carers. They're unlikely to be professionally trained or qualified and don't have a salary.

The support they offer and give can be invaluable to the service user in all aspects of their life. However, it's important that informal carers give care in line with the individual's needs. They are not bound by codes of conduct or likely to have had safeguarding training, which can be a way that causes problems for the service user.

**Family members and friends can give support with many different aspects of care.**



The informal carer may drive and accompany the service user on trips to the hospital or GP

Informal carers, such as family members or friends, may help them with:

- hygiene, hair washing, getting dressed or getting to the toilet
- preparing food and drinks
- practising exercises set by the physiotherapist
- housework chores such as cleaning and laundry

The informal carer may be able to take the service user out for a while.

A trip to the supermarket with a cup of coffee included can help break the monotony for the service user and help put them back in touch with their normal, everyday life.

The service user may have a condition that requires medication or have a strict diet, such as for diabetes.

The informal carer could ensure the correct medication is given at the right time or make sure the service user has a healthy and nutritious diet.

Informal carers, such as family, are likely to be able to help with the service user has chronic pain, for example, or mental health issues. They can feel especially down if the service user has a mental health disorder, progress and recovery.

Listening, putting an ear to the service user or just being there can help them know that the carer is there. A relative is there is a vital part of the role of the informal carer.

The role of the informal carer becomes even more important if the service user is an elderly person with a condition like memory, such as having Alzheimer's disease.

In this case, the care plan is likely to include the informal carer in discussion about the service user's treatment.

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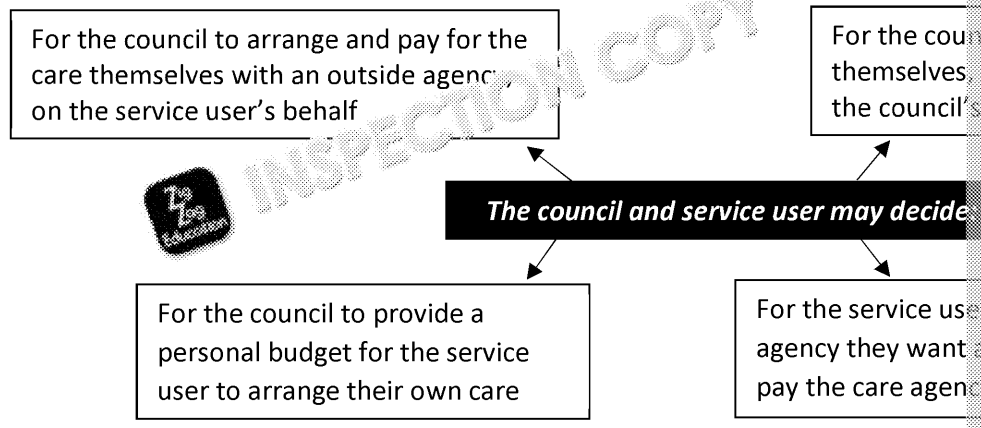
## Private and Voluntary Carers

Not everyone has family and friends close by who are able and willing to provide care. Their relatives and friends may be working or live some distance away and some people prefer not to place too much demand on those relationships.

### Choosing care and paying for care

Many service users will have limited income. They can contact their local council for a **care needs assessment**. The social care team will assess the service user's needs and their financial support and how much money the service user is entitled to. If the service user is eligible for care and the service user can decide how best to provide the care needs.

**Care needs assessment** made by a local council looks at the service user's needs and their financial circumstances.



If the service user decides they want to arrange their own care, they have a number of choices:

- They can use a private agency.
- They can employ a personal assistant.
- They can use care provided by a charity, such as Age UK.

**Care Quality Commission** regulating private care agencies ensuring care agencies do this by being registered with the CQC. **Disclosure and Barring Service (DBS)** replaces the Criminal Record Bureau and helps to protect vulnerable people. No record of convictions for certain offences.

## Private Care Agencies

Private care agencies are regulated by the **Care Quality Commission**. For the service user, using an agency has some benefits over employing a personal assistant, because many of the administrative aspects of employment are done by the agency. For example, the agency will:

- provide and take care of the care assistant's pay, national insurance and income tax
- Ensure all the staff are fully referenced and have a clear **Disclosure and Barring Service (DBS)** check
- take care of insurance, training and disciplinary issues for their employees
- Should provide an out-of-hours emergency contact
- Will provide a replacement care assistant when a care assistant is ill, on holiday or on sick leave
- Want to work with the service user and the main informal carer to understand their needs

In pairs, imagine you are a private care agency. What costs are involved in providing care? What does the service user need? Which one would you choose?

However, there are some potential problems for the service user.

For example:

- The agency won't be able to guarantee the same care assistant will always be available at their best.
- It is expensive, as the agency's fee includes the care assistant's pay plus additional costs and profit.

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## Employing a personal assistant

There are advantages to a service user employing their own personal assistant rather than an agency.

These include:

- Continuity of care will be provided, as the same person will be taking care of the service user.
- The service user and the care assistant will get to know each other well, making it easier for the assistant to have their needs and wants met.
- They will build a relationship, which will meet the service user's emotional and psychological needs, and develop trust.

However, there are a number of issues that have to be dealt with. The service user's own employment law is complex, placing a lot of responsibility on the employer. Although the purpose is to provide legal protection for both the service user, as employer, and the personal assistant, as employee.



**The service user will have to take on the responsibilities of being an employer. For example, they will:**

Have to arrange for their own holidays

Pay their assistant a minimum of the national minimum wage. They may have to pay more depending on their own earning.

Carry out their own duties and to ensure that their assistant is allowed to do their own work.

Ensure that the assistant is aware of the aspects of handling people with dementia.

Provide a job description and a contract of employment.



**Mohammed, 54, and Ghazal, 52, provide care for Mohan and Sabeen. Mohan had a stroke six months ago and is paralysed down one side and has lost his speech. Both Mohammed and Ghazal work full time in their restaurant for financial reasons. How do you ensure that Sabeen has the care she needs to ensure that she should stay at home. In groups or pairs, design a care plan that will best meet all their needs. See if you can work out a budget for the care.**

Although a personal assistant is employed to provide care the service user needs, the responsibilities of employment are carried by the service user and the personal assistant.

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## Care provided by a charity: Age UK

Age UK was formed in 2009 by a merger between two other charities, 'Age Concern' and 'Age Action'. This merger allowed the new charity to provide a nationwide network of support for elderly people. Because their charges are likely to be cheaper than a private care agency, the charity provides a valuable support. This might apply especially if the individual isn't entitled to social care support or can't afford the fees of a private care agency or want to employ a personal assistant.

Age UK provides many different care and support services, for example:

- an advice line
- local advice support
- mobility aids
- exercise classes
- social activities
- day care centres
- dementia support



Age UK shops are a free service. However, the charity also provides a paid service.

**Bunion:** a bony bump that forms on the joint at the base of the big toe. It may be painful, red and swollen.

Although not all services are available throughout the UK, Age UK is also able to provide services in the service user's home. Like other providers, the charity has to ensure their staff are subject to security checks carried out, including DBS checks.

**Age UK provides a range of services in the service user's home. Usually, the services are provided on an hourly rate. Unfortunately, not all services are available in all areas.**

**Foot care services**  
Many elderly people will find it hard to bend down enough to cut their toenails or care for other foot problems, such as **bunions**. If their feet can be kept in good condition, their mobility and activity levels are easier to maintain. In turn, this will help maintain independence.

**A 'handyperson'** to carry out small repairs in the service user's home, such as repairing a leaky tap. Such services are often provided on an hourly rate and the elderly person's needs are being taken advantage of.

**Personal care**  
A personal assistant will help with personal care, such as:  

- washing and dressing
- going to the toilet
- getting in and out of bed

**Home helps**  
A home help will carry out tasks to help the service user, such as:  

- shopping
- laundry
- housework
- companionship

**Research charities** that provide care services in your local area. See if you can find some for different groups, such as children or young adults with disabilities.

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## Provision of treatment and support for service users with physiological disorders in informal carers, private and voluntary services – Topic questions

1. What is meant by 'informal care'?
2. What is a 'care needs assessment'?
3. Explain one benefit of using a private care agency.
4. Explain one benefit of employing a personal assistant.
5. Give one obligation the service user has if they employ a personal assistant.
6. Give one service Age UK may be able to provide in an individual's home in the UK.



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Nurse

## Care Settings

There are many places where care takes place, including:

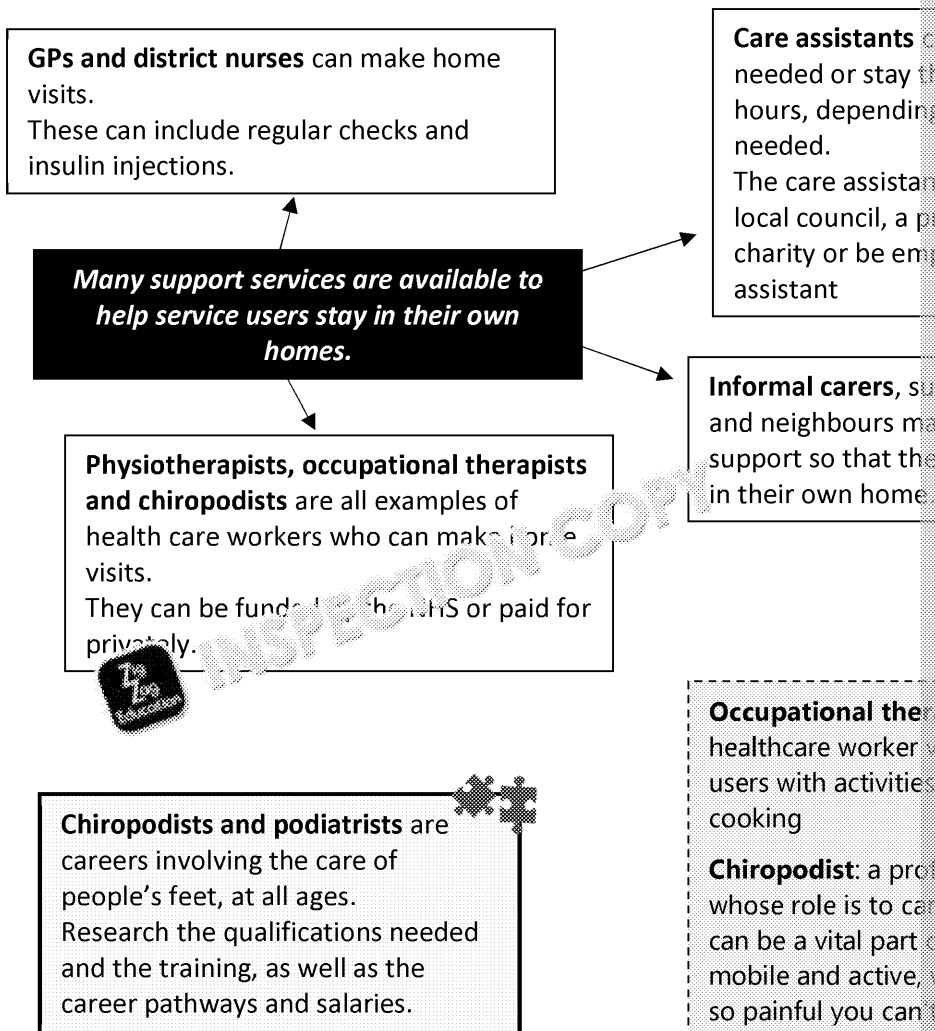
- the service user's own home, known as domiciliary
- a residential care home
- a GP surgery or health centre
- in hospital
- in a rehabilitation setting, such as following a stroke

## Service user's own home

People usually like to stay in their own homes for as long as possible, unless they become so ill or immobile they're unable to care for themselves. It may also be that their informal carers, such as their husband or wife, can no longer care for them and then the service user has to move into another form of long-term care. Support is available to help service users stay in their own homes. Usually, these workers are responsible for keeping somebody in residential care, for example, or hospital and most people are relaxed in familiar surroundings.

Because there aren't so many people around, the risk from infection is less in the home. Basic hygiene rules are followed. This is one reason people are discharged home if it is safe to do so.

Another benefit of service users staying in their own homes is that the continuity of care is maintained. They stay in touch with the people and possessions that are important to them. This can give a sense of identity, which may enable them to maintain independence and activities such as gardening or walking their dog. All of these are important to a service user's mental health.

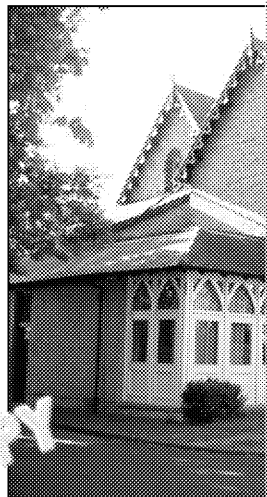


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## Residential care home

At times, it becomes impossible for somebody to stay in their own home. This can be because their disorder deteriorates to the point where they can no longer look after themselves or their informal carer is no longer able to care for them. Long-term, residential care then becomes necessary. Many residential homes are also nursing homes, so that should a service user's disorder get worse, they can stay in the same place but receive the care they need.

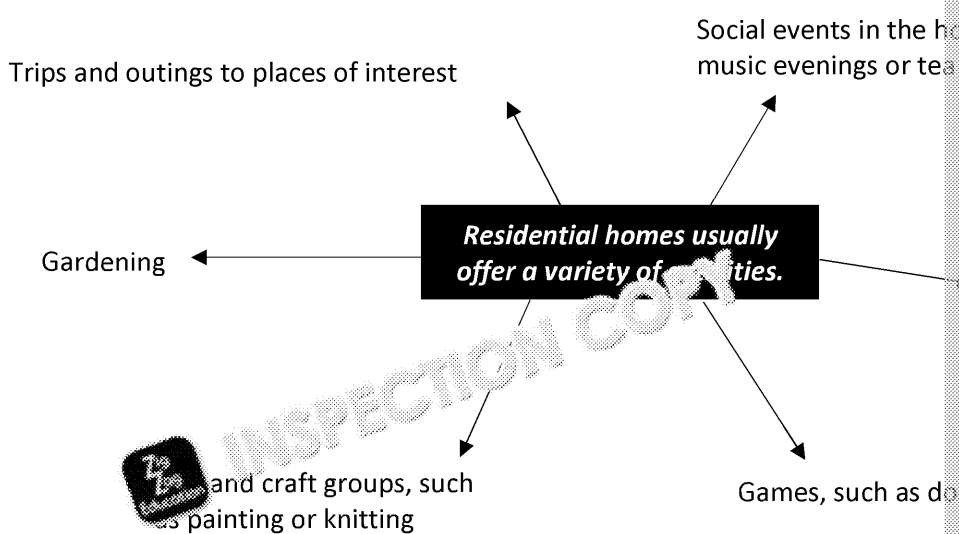


Many residential care homes are older buildings in towns and villages. Some prefer to stay in the surroundings for services.

**Investigate** the cost of residential and nursing homes in your local area. What funding is available from your local council for those with limited financial resources?

Residential care is different to nursing care. If an individual needs residential care with personal care, such as washing, dressing and going to the toilet. They may also be able to give their usual informal carers a break, which is known as respite care. For those with a medical condition or illness, who may need specialist care and support, such as dementia.

Most residential homes will offer en-suite accommodation, with meals taken in the dining room. Some allow residents to bring their own furniture. Some homes will be regulated by the Care Quality Commission (CQC) and previous reports can be found on the CQC website and on the residential home website. Their staff will be trained and vetted, such as DBS checks. Many residential homes have an activities organiser and will offer a range of activities. Personal care from professionals such as GPs, district nurses, religious leaders and



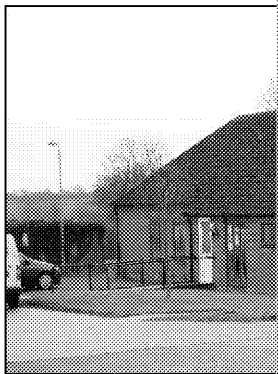
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## GP surgery or health centre

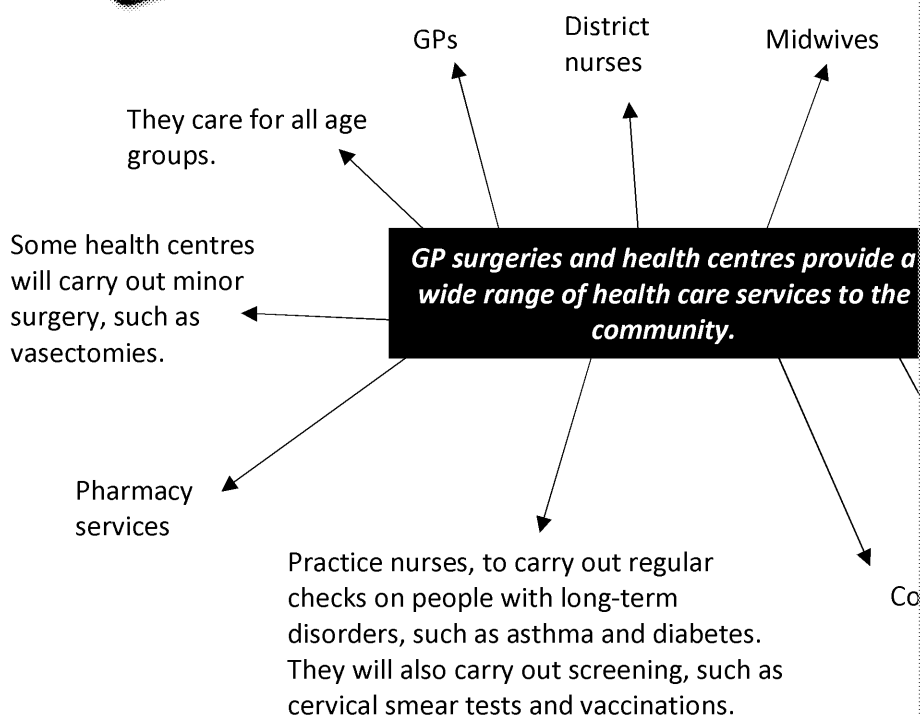
GP surgeries and health centres are an important point of contact between health care providers and the community they serve. They provide a wide range of services, some of which vary between surgeries, and because they're funded through the NHS, they're free at the point of use.

Prescriptions are an exception to this rule, although each prescription is at a standard charge, no matter what the cost of the individual medicine to the NHS. Some groups, such as children and people over 65 years old, are entitled to free prescriptions.



GP surgeries and health centres in rural villages

GP surgeries and health centres are regulated by the Care Quality Commission (CQC). You can read on the CQC website and on the GP surgery or health centre website.



**Research** the services offered by two or three different GP surgeries in your local area. Where would you go if you needed minor surgery such as the removal of an ingrowing toenail? What provision is there for mental health care in your local area? Or sexual health services?

**Health visitor:** a professional who is a nurse or midwife with further training in health nursing for children aged 0–5 and their families.

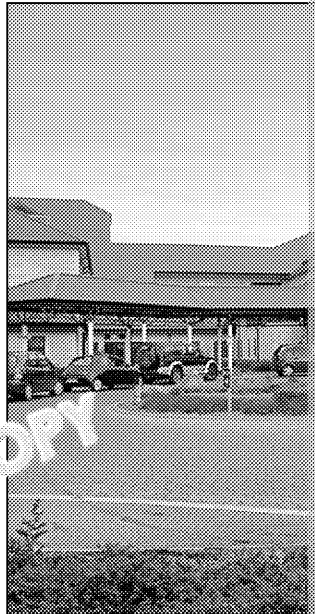
**Vasectomy:** a minor operation to cut the tubes that carry a man's semen.

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## Hospital care

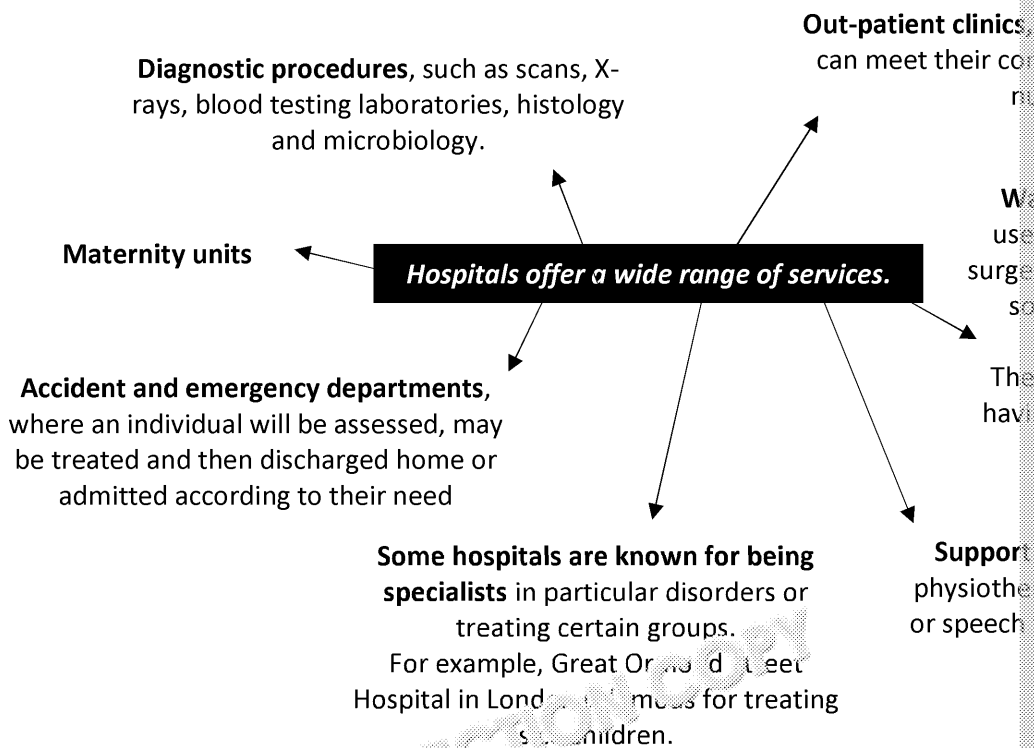
Most major towns will have a local hospital. They provide a wide range of care and services depending on the location and the size of the community they're serving. As hospitals are part of the NHS, for most people their services are free at the point of use. For people from outside the UK, charges may apply.



Hospitals vary in size and offer highly specialised treatments, often requiring long travel distances.

For all people, however, the following services are free to all:

- accident and emergency treatment, but not further emergency treatment after admission
- family planning, excluding infertility treatment and termination of pregnancy
- most infectious diseases, including sexually transmitted infections (STIs)
- treatment of a physical or mental disorder caused by torture, female genital mutilation (FGM), domestic or sexual violence. This treatment is not free if the individual has come to the UK especially for treatment.



**Case Study:** **Catriona**, 24, lives on the island of Iona off the Scottish coast. She has sickle cell disease (SCD) and is expecting her first baby. Because of her SCD she has been advised to have her baby in hospital. Which hospital might be her nearest and how long would it take her to get there? How could this impact on her emotional, mental and social well-being?

**Dialysis:** When an individual's kidneys are not working properly, their blood will be cleaned of waste substances by the dialysis process, which is carried out two or three times a week.

**Histology:** the science of studying cells under a microscope.

**Microbiology:** the study of bacteria and viruses.

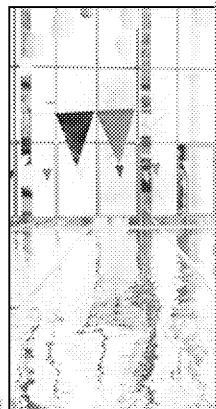
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## Rehabilitation settings

Rehabilitation takes place in a wide variety of settings, depending on the service user's disorder and needs, as well as what stage they're reaching in their rehabilitation programme. The settings range from hospitals, to specialist units, health centres and community centres to play areas and local cycle paths.

Healthcare workers such as physiotherapists, occupational therapists, counsellors, psychologists, doctors and nurses are just a few of the care providers who may be involved in a service user's rehabilitation programme.



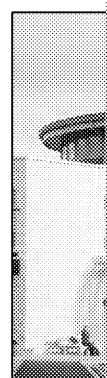
Depending on the stage reached in their rehabilitation, service users may be placed in a variety of settings.

Stage of rehabilitation	Type of setting
Acute	This means when the service user has been ill and is now getting better, so the rehabilitation will be most likely to be in a hospital.
Specialist	These include settings such as a spinal injury unit, such as in Aylesbury, a limb-fitting centre or the local hospital. They may also be in health centres, learning disability rehabilitation units and can involve mental health services.
Non-specialist but with trained staff	These settings include local health centres, gyms, community centres, school and online tools.
Structured peer support	At this point, the service user's rehabilitation is moving from hospital care providers and they are looking for support among other people. These may include walking groups, dance clubs, inclusive sports and online forums.
Community	Now the service user is self-directed and motivated, they may use local cycle paths, swimming pools and other leisure facilities in their area.

**Chen, 29**, is in the army. Following an accident while training, he's now paralysed below the waist. He's made good progress while in hospital and is eager to maintain his progress at home.

Research the rehabilitation services that could be put in place for him, so that he's able to regain his independence and live a normal life.

Remember to include all aspects of his health and well-being.



Stoke Newington is one of the units. It may be part of a programme of rehabilitation.

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## Provision of treatment and support for service users with physiological care settings – Topic questions

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1. Explain one benefit to the service user of staying in their own home.
2. Which organisation is responsible for inspecting and regulating residential care settings?
3. Give two services or health care professionals that can be accessed in a residential care centre.
4. Give one hospital service that's free to all, including people from overseas.
5. What is dialysis?
6. Give two examples of specialist rehabilitation settings.



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## Chapter 4: Develop a Treatment Plan for Secondary Physiological Disorders to Meet The

Person-centred care is one of the core principles of health and social care. It means meeting the needs of the individual service user, taking account of their personal circumstances and remembering that financial and staffing resources are limited. Each physiological disorder has its own treatments. These are based on detailed, careful research, which has enabled health professionals to develop an overall plan of treatment for each disorder. However, each service user responds differently to standard treatments, which is why each treatment plan has to be tailored to their specific circumstances.

### D1: Care methods and strategies

A care strategy is the way in which care services are organised, so that care may be delivered to service users.

A care method, or pathway, means the steps that the whole process of diagnosis and treatment of a specific disorder will follow.

#### Assessment of care needs

Before any treatment can begin, there will have to be an assessment of what the individual needs. For example, whether an individual has become acutely ill, for example, following a stroke or how long someone with Alzheimer's disease has reached the point where they are no longer able to look after themselves.

*The NHS is divided into three different categories of care need: primary, secondary and tertiary.*

**Primary care** means services that are the first point of contact for most people with health-care professionals. It includes GPs, dentists, nurse practitioners and pharmacists.

**Secondary care** means both hospital and community care that includes treatment for a brief but serious health condition. It includes emergency treatment, such as for a fractured femur, and planned treatment, such as cataract removal.

**Tertiary care** means specialist care provided by a small number of highly specialised hospitals. For example, treatment for a rare disease. This service is often provided by a specialist hospital.

**Cataract:** when the lens in the eye becomes cloudy, so that vision is blurred. It's often seen in older people and the lens can be removed and replaced with an artificial one.

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**Reviewing care needs**

A service user's care needs will change over time. For example, when somebody is first diagnosed with diabetes, the health professionals' priority is likely to be making sure their blood sugar levels are stable, within a safe range. Then the service user will need to learn how to manage their own blood sugar levels, through medication, home blood testing and diet management.

A few months after the initial diagnosis, the service user's needs are likely to be more about maintaining a healthy blood sugar that fits their lifestyle, and regular check-ups with their primary health care team, such as the diabetic practice nurse at their local GP surgery. In this way, the service user's care needs have changed and the care they receive has altered to meet them.



Primary service user specialist GP in a clinic



When somebody is first diagnosed with diabetes, they have a lot to learn. This will take time and adjustment by the service user, but the outcome should be that the service user has the responsibility for their own diabetes and manages it themselves.

In this photograph (left), the girl with diabetes is testing her blood samples and test her blood sugar levels.

In other circumstances, when a service user is extremely ill, their care needs may need reviewing hourly or even more frequently if necessary.

For example, the condition of the newborn baby in the photograph (right) may improve or worsen very quickly and the nursing and medical teams caring for the baby will have to act quickly in response.



**There are many factors that are likely to influence when a service user's care needs change.**

There may be a change in their personal circumstances. This could be bereavement, pregnancy, illness of another family member, unemployment or a house move.

A service user's disorder may become progressively worse, such as Alzheimer's disease is likely to do. Or their disorder may improve, such as full recovery from prostate cancer.

The service user's condition may change. For example, a person with a broken leg may be able to walk again.

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## Validity and reliability of the source of information on possible

Part of the trusting relationship between service users and health-care providers is that the treatments prescribed are as safe and reliable as they can be. Service users expect health-care professionals to be up-to-date about every sort of treatment, including medication and medical equipment such as scans. For example, if a doctor or nurse prescribes a medicine, we expect them to be aware of its potential side effects, when the medicine should not be used and to prescribe the medicine to meet the individual's needs.

In 2017–2018, the Medical Research Council (MRC) spent £814.1 million on funding research, much of it taking place through universities. This was an increase from 2016–2017.

The National Institute for Health Research is another example of a national organisation involved in research.

The purpose of research includes:

- establishing more effective treatments and care
- ensuring current treatments and care are as safe as they can be



Continuing medical education that both new and experienced healthcare professionals can benefit from.

An important aspect of research is that the results could be repeated by another individual under similar conditions. In this way, information is shown to be correct and not just a fluke. Repeated similar results help to prove the validity and reliability of the research.

Not all sources of information, however, are reliable and valid. Some articles in magazines and newspapers may be promoting a particular product in a way that appears unbiased. For example, they use statistics and customer quotes. However, if a service user is thinking about trying one of these products, it's sensible to check the product on the Internet or by speaking to a health practitioner, such as a GP or practice nurse. A product may appear effective as it first appears or it may even work against some of the medication they are taking. At the very least, the service user could end up spending money on an expensive product with no difference to their health and well-being. At worst, the product could cause them harm.

Many charities that support specific disorders publish research on different treatments. This research is easily accessible by the service user and are written so that anyone, not just a professional, can understand it. Diabetes UK and Arthritis Research UK are just two examples. The NHS and UK government are also reliable sources of information.

**St John's wort** is a popular remedy for depression. Research the product further, looking for:

- cost
- its effectiveness
- side effects
- whether there are occasions when individuals should avoid it

In groups, compare and evaluate the different information you find about the product. Do you recommend it? Justify your response.

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## Provision of treatment and support for service users with physical care methods and strategies – Topic questions

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1. Explain what is meant by a care strategy and a care pathway.
2. Give the three categories of need.
3. Give one factor that may influence when a service user's care needs change.
4. Give one purpose of health research.
5. Give one way in which research may be validated.
6. Give one way in which a service user could check the reliability of a source of information.



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## D2: Treatment planning pro

Specific disorders present with their own signs and symptoms and treatments, w for any individual. Their care is, therefore, likely to follow a broadly similar patter services to ensure that they are able to meet the needs of a large number of pec organisation such as the NHS, where money is always short and has to be account for an individual will fit into a care framework that's already been set up and has different processes.

### Cycle of planning

The cycle of planning takes place on two levels:

- the overall planning for services and care in the H
- the planning of treatment for an individual

### Overall planning of services and care

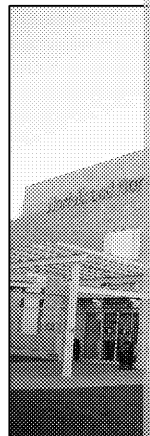
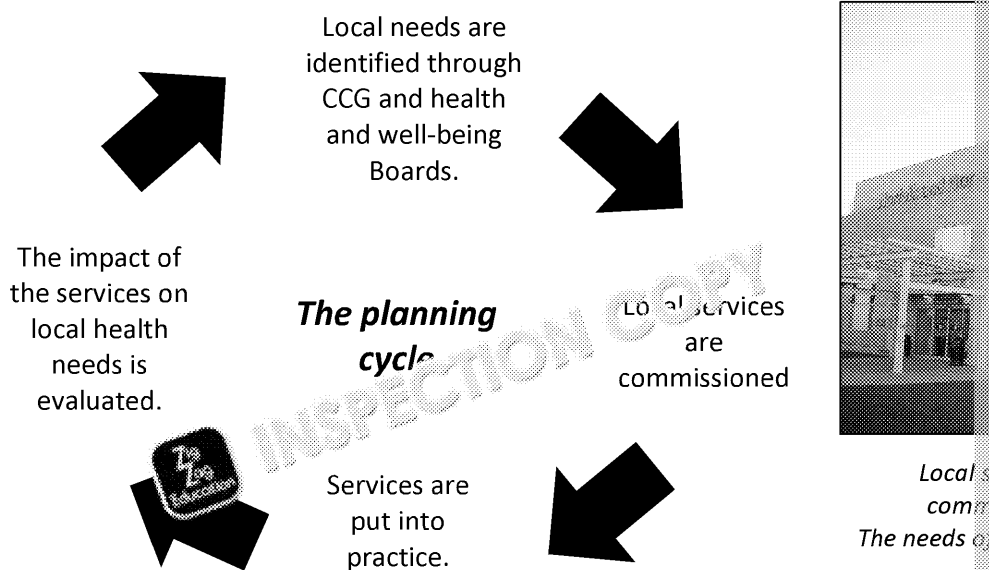
The most r reorganisation of the NHS came into force on 1<sup>st</sup> April 2013. Par the establish of various groups that work together in an attempt to identify and well-being needs on a local basis.

**Clinical commissioning groups are made up of doctors, nurses and other health professionals.**

Aim to meet lo services from standards and These provide voluntary, su

**Health and Well-being Boards**

Purpose is to together to m and priorities Local people, and other lead health needs



Local s com The needs of

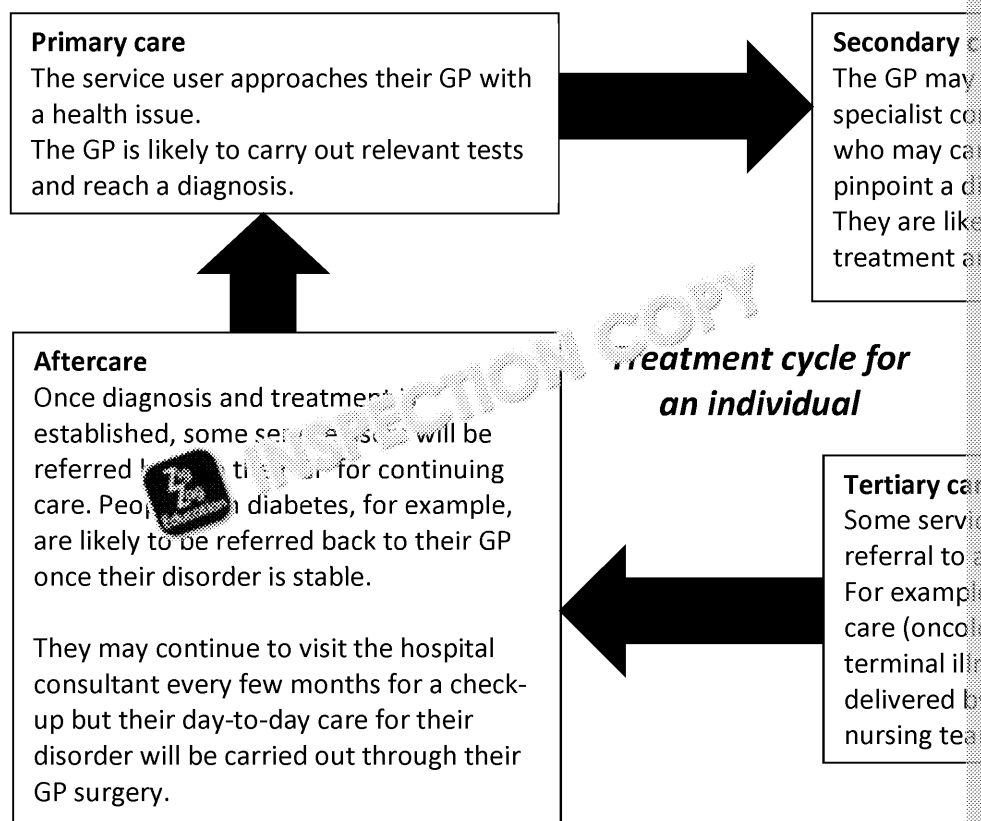
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## Treatment cycle for an individual

With the overall service structures in place, GPs and service users are able to begin diagnosis, treatment and aftercare.



The National Institute for Health and Care Excellence (NICE) provides care pathways to follow, which cover a very large number of topics and disorders. Because these are available for anyone to look up and read.

Their purpose is to inform, through providing a visual flow chart of the possible steps in diagnosis and treatment.

Treatment for cancer may involve a referral to a specialist oncology team within the hospital, where the nursing and medical staff have the knowledge and skills to deliver the best care they can.

**Oncology:** the branch of medicine to do with cancer care

**Palliative care:** care of an individual with a terminal illness such as cancer or motor neurone disease

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## Individual needs

Although the cycles of diagnosis and treatment for a disorder may be broadly similar for many people, each person will have needs that are specific to them.

There are many factors that may influence and shape individual needs, including:

- culture
- age
- gender
- religion
- disability

## Culture

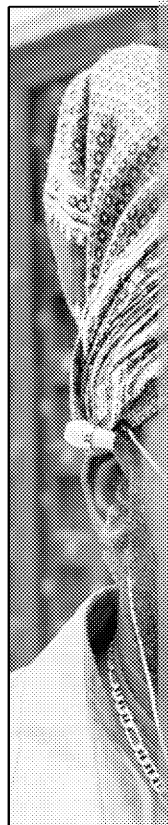
Culture means the attitudes and beliefs of a group of people who all have something in common. For example, they may share a workplace or come from the same town or country.

Culture may influence food choices, clothing and music, as well as ideas and behaviour about society, health, illness and behaviour.

Every health professional and provider has a duty to respect diversity and provide care that meets individual needs and choice.

Sometimes, this can feel quite difficult to do. Some cultures show respect by avoiding direct eye contact. In Western culture this can appear rude, but the health professional must understand and accept the service user's different approach.

However, not all cultural practices are acceptable. Female genital mutilation (FGM), a cultural practice originating in parts of Africa, is illegal in the UK.



Rastafarians need a vegetarian diet. The hospital must provide a correct diet.

## Age

Some age groups have additional needs that may influence how their care is carried out. Children, infants and elderly people will need a different approach and care to an adult.

**Research FGM** and the impact it has on women. Joe is a student nurse who overhears a conversation between hospital members that suggests FGM is a cultural practice. What should he do?

## Children

When a child is admitted to hospital, the parent or other informal carer may choose to stay so that the child feels more secure. If an operation is planned, the child's parents may visit the hospital beforehand, so that they can see the ward, meet the staff and play with some of the equipment, such as stethoscopes. The idea is that family support may reduce anxiety and speed up recovery.

It's important that informal carers understand the disorder and treatment, as these are the individuals who will carry out the child's day-to-day care at home, such as physiotherapy exercises for a child with cystic fibrosis. Occasionally, the informal carers will struggle to understand and cope. When this happens, additional support may be needed for the family, such as a health visitor, district nurse or social worker.



Children's needs, including family support, are important.

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### Older people

Older people may have more than one disorder and impaired hearing and sight, vulnerable to infection and to be affected by extremes of temperature. Balance is a person more vulnerable to falls, so that they may need mobility aids, such as a walking stick.

The health professional and provider must take additional care to ensure that they need, retains the right to make choices and to be as independent as possible.



*Older people should be empowered by offering choice and respecting their wishes.*

In pairs, **make a list** of choices you make throughout the day. What time to get up, what to eat, etc. Discuss how you might have things taken away from you. What difficulties might you face when trying to balance the needs of several levels? How could they overcome these?

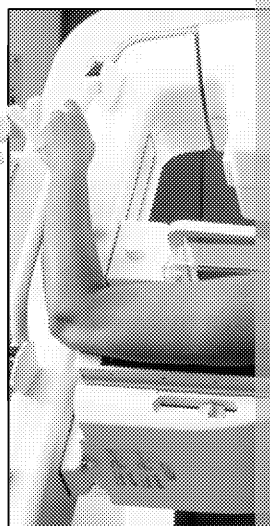
### Gender

Although it's against the law to discriminate against a person on the basis of their gender, when a service user's gender must be considered. For example, some cultures require a person to be treated by a member of the same sex, while some individuals would prefer this to be a different gender.

**Look up** the NHS Choice Framework. Create a poster to put in the entrance of your local hospital, informing people of their rights and choices.

This may especially be the case for intimate parts of the body or a **mammogram**. As most mammograms are done on women, they're usually carried out in a woman-only department. In this way, the service provider is more likely to be of the same gender.

**Mammogram:** scan of the breast, to identify disorders such as cancer



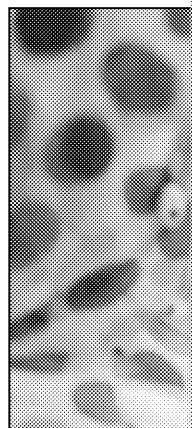
*Woman in a chair*

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### Religion

Some individuals have religious beliefs that require them to pray at certain times, to dress in a certain way or to observe certain rules, such as eating only halal or kosher food and fasting. The care providers have a duty to enable individuals to meet their religious needs as far as possible. This includes providing a diet that meets their religious needs, opportunities to pray and a religious leader, such a rabbi or priest.



This mother practice and...  
cud...

### Disability

Disability arises when an individual has an impairment that prevents them fully taking part in society. This include physical impairment, such as being paralysed and unable to walk, and mental impairments, such as learning difficulties or mental illness.

An individual be disabled as well as having a physiological disorder and care providers will need to take the individual's disability into account when planning and providing care. For example, information about a disorder may be available in an 'easyread' version for people with learning difficulties, or in an extra-large font for an individual with sight impairment.



This lift is clearly marked  
provider has a duty to  
different



In pairs or groups...  
points of the Ed...  
**Peter**, 29, has...  
wheelchair. He...  
the housing be...  
council.  
What are his ri...

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### Purpose and aim of care for the individual

The individual service user is at the centre of all care. They have to know and understand what action is being carried out and it needs to be explained in a way that makes sense. A service user with severe learning difficulties may need the explanations using straightforward illustrations, while a service user with poor memory or Alzheimer's disease may need explanations several times.

For many people, the health care environment can feel strange and overwhelming. It is harder for individuals to understand and remember what has been said to them. Explanations may well need repeating several times and time should be allowed for this.

*The purpose and aim of care is likely to vary from one service user to another, depending on their individual circumstances and disorder.*

For some, the aim is to reduce pain and return to normal following a fracture.

For others, the aim is to reduce pain and improve independence.

For a person with a mental health problem, the purpose of care is to keep them free from pain and distress as far as possible, while also taking into account their finances and other needs.



What are the aims of health care?  
**Create** a wall, with an example.

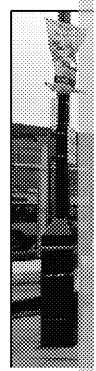
*Health professionals will spend time with the service user, ensuring they understand what care is needed and why.*

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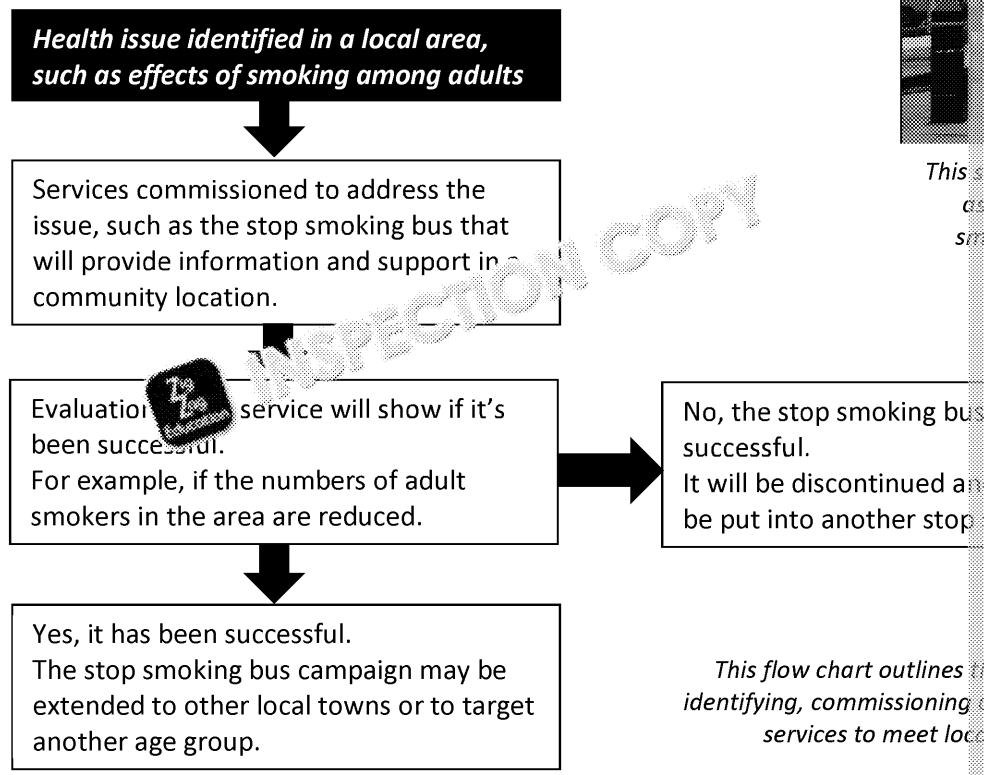


This is a stop smoking bus.

## Outcomes to be achieved

Outcomes to be achieved can be considered in terms of the wider structure and organisation of care and also in terms of individual care.

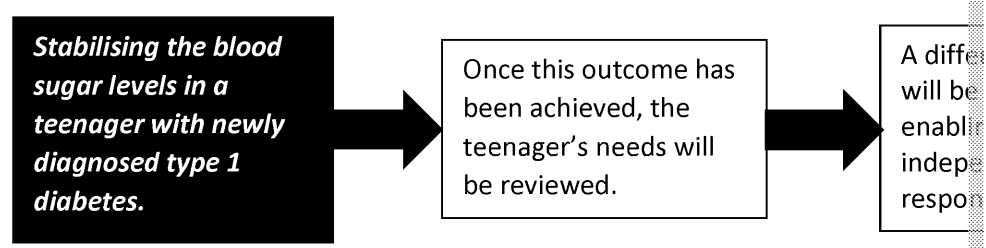
### Wider structure and organisation



This flow chart outlines the process of identifying, commissioning and evaluating services to meet local needs.

### Individual care

In terms of individual care, part of the cycle of care will involve achieving a planned outcome. For example:



Achieving an outcome of independence and responsibility for a teenager's diabetes may involve finding a diabetes app for their mobile phone.

**Deanne** is 14 and has recently been diagnosed with type 1 diabetes. In pairs or groups, use your knowledge of type 1 diabetes and further research to identify the needs to be met and be able to do so that she can learn to take responsibility for her own care.

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## Actions to be taken

Any overall outcome is going to be achieved through a series of different actions to reach the goal.



For example, to help a teenage person become independent and responsible for their health, there are certain routines that need to be followed. These will involve actions such as monitoring sugar levels at home and attending appointments.

An individual care plan will detail the actions to be taken to achieve the goals of the care plan. The care plan will be reviewed regularly and actions will be updated as needed.

## Overcoming potential barriers

Each individual will have their own specific circumstances that may act as a barrier to the care they need and achieving the best outcome. The health professionals involved will help the individual overcome each barrier, but at times it can be costly and difficult to do so.

*Barriers to care will be different for each individual.*

Some barriers will be physical, such as finding that a medicine gives them side effects so that an alternative has to be found.

The individual may struggle to manage their disorder or to learn to live with it, as adjusting to a health condition. Health professionals will offer advice and support, such as an exercise programme, to provide information.

Lack of money can make it very hard for service users to afford transport to and from services or buy healthy food. Prescription charges are also expensive, especially when the service user needs more than one item regularly and isn't entitled to any benefits.

Circumstances such as waiting for an appointment can lead to operations and other treatments being cancelled due to lack of availability. This can be upsetting and frustrating for the individual and their families, especially if it happens once or at the last minute. Although hospitals try to avoid this, it is an eventuality, it doesn't always happen as they hope.

Some barriers are related to geographical location. The individual may live a long way from the nearest services, such as physiotherapy or scanning services, and may have to rely on others for transport. Many areas have voluntary hospital car drivers, who charge a small fee to cover their costs.

**Christina**, 83, has bowel cancer and needs regular trips to her nearest hospital. She doesn't drive and needs help. Discuss what barriers she has and how they could be overcome.

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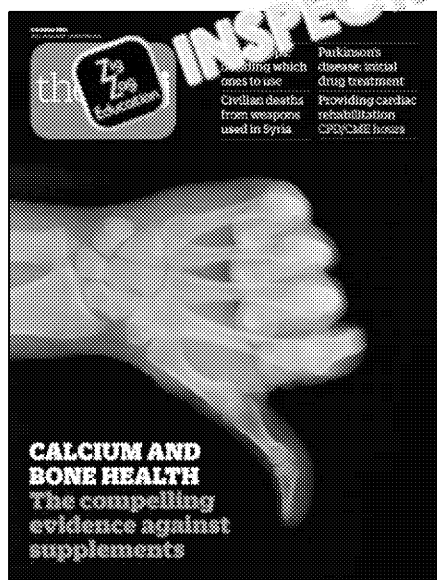


## Professional responsibilities

Health professionals have a number of responsibilities, including keeping themselves up-to-date with the latest developments and practices and also to act in a professional manner.

**Professional practitioners have a responsibility to keep themselves up-to-date with the latest developments in care and treatment. The practitioner will do this through a range of different methods.**

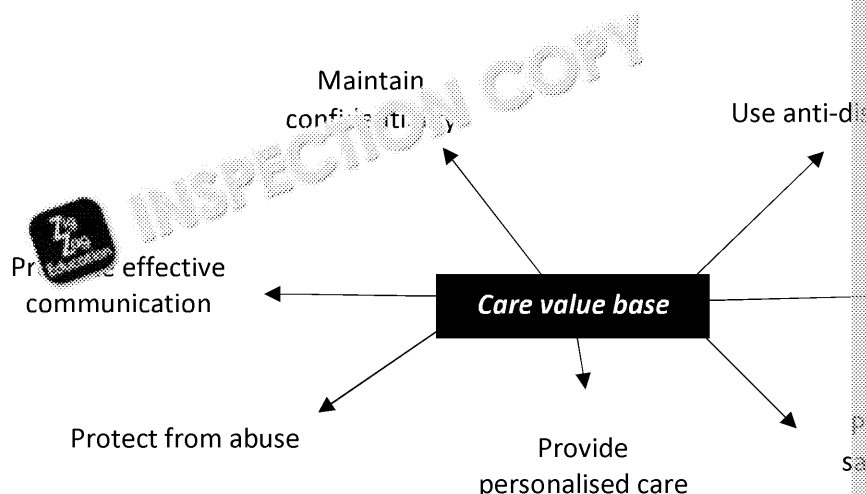
- Care professionals may attend conferences, where they hear the latest research and can ask other professionals to share ideas and knowledge.
- By studying the information set by the National Institute for Health and Care Excellence (NICE) recommendations of care pathways and treatments based on research.
- By studying professional journals and websites, which are important sources of information. The Medical Journal (BMJ) is one example. The material that is published is read and checked before printing, helping to ensure that the information remains a valid and reliable source.



In pairs or groups, discuss your views on the care professionals you meet as a service user. Do your expectations vary from those of a professional you're meeting as a service user?

*Professional journals are a reliable and valid source of information.*

Health care professionals, such as doctors, midwives and health care assistants, are bound by a professional code of conduct. Although each code of conduct will have variations in what it's applied to, the principles are broadly similar and can be summarised in the care value base.



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## Advantages and disadvantages of different types of treatment

There's a vast range of advanced treatments available to service users in the UK and the NHS has the money to provide.

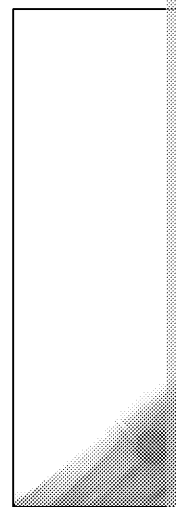
Part of the role of organisations such as the National Institute for Health and Care Excellence is to weigh up the cost of a particular treatment against the benefit to the service user. For treatments available through the NHS, occasionally a particular treatment is deemed to be worth the cost over the possible benefits. When this happens, it can make headlines, especially if a condition is common.

### Joint replacement surgery

In recent years, joint replacement surgery has become more advanced and ankle joint replacements are becoming more common. Older types are less expensive and are specifically designed to be suitable for older people, who aren't likely to be very active. However, they wear out after a few years and need replacing again, making them less suitable for younger individuals, such as those in military or manual jobs.

More advanced ankle replacements have been developed, but they are considerably more expensive than the older types and it's cheaper for the hospital to insist the surgeons only use the older types.

These sorts of decisions are typical of many that have to be made by hospitals and community care services throughout the NHS, where the needs of the individual service user have to be balanced against the financial and other resources available.



Ankle joint replacement surgery is common because it can provide long-term relief.

Advantages of an older-style ankle joint replacement	Disadvantages of the newer-style ankle joint replacement
<ul style="list-style-type: none"> <li>• cheaper for the NHS in the short term</li> <li>• increased mobility and independence</li> <li>• helps the older person to remain in their own home and be independent for much longer, so costing less to the NHS</li> </ul>	<ul style="list-style-type: none"> <li>• The older-style ankle joint replacement doesn't last, making it need to be replaced after a few years.</li> <li>• Having to repeat surgery is expensive in the long term.</li> <li>• They may spend more time in hospital, immobile and possibly in pain than with the older-style replacement.</li> </ul>

Some people argue that individuals who smoke or are obese should be refused treatment on the NHS unless they change their lifestyle. This is because these two factors are responsible for many disorders or make disorders worse.

In groups, **discuss** your own opinions about this idea. Do you agree or disagree?

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## Scheduling

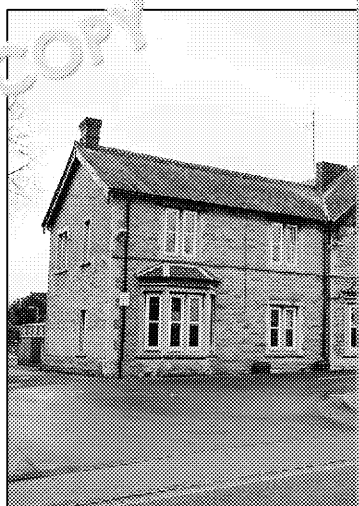
The decision about where various parts of an individual's treatment will take place depends on the nature of the physiological disorder and the service user's specific circumstances.

For example, it may be more sensible for a service user to have an outpatient appointment at the hospital near where they work, as this means they have to travel a shorter distance. If a service user has to schedule a blood test for later in the day, so they can have it done on their way home.

While service providers will do their best to fit in with a service user's wishes, it may not always be possible. Consultant outpatient clinics are likely to run just at certain times, on certain days, and have their own schedule to fit in.

**Lucy** is a primary school teacher who has been diagnosed with hypothyroidism, which means she will need to have her GP surgery and hospital appointments. She was a partner and three children of her own, aged two, four and six years old.

**Discuss** how these health-care appointments could impact on her working and family relationships.



*It may be possible for some service users to have appointments at a small community hospital. This makes it easier for the service user to travel to the appointment.*

## Timescales for achievement

Each service user will have an aim and a purpose of their care, as explained earlier. Some of these care actions will be short term and others longer term.

Depending on the disorder, a short-term goal might be to walk upstairs, go to the toilet, or dress without help. How long this will actually take a service user to achieve will depend on the individual's condition and the help of another person.

A long-term goal for an individual might be to return to work following treatment. This will depend on factors such as how well the individual responds to treatment. For example, if an individual is receiving treatment for cancer, it could take a few months before they are able to return to work.



*For this older woman, a short-term goal might be to become more independent with her walking stick, although this will depend on her condition.*

*Once she's more independent, a long-term goal might be to become more active.*

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## Provision of treatment and support for service users with physiological treatment planning processes – Topic questions

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1. How are local health care needs identified?
2. Give three factors that could influence individual need.
3. Explain what is meant by the purpose and aim of care for the individual.
4. Explain how care outcomes are linked with reviews of individual need.
5. Give two possible barriers to care.
6. Give the seven principles of the care value base.



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## Glossary of Key or Unusual Terms

### Chapter 1: Investigate the Causes and Effects of Physiological Disorders

<b>Acetylcholine</b>	a neurotransmitter
<b>Alveoli</b>	the tiny air sacs at the end of the bronchioles, that give the lungs their spongy appearance
<b>Angina</b>	episodes of <b>ischaemia</b> in the heart, meaning the pain brought on by a lack of blood to the heart. It's often brought on by increased physical activity
<b>Atheroma</b>	the deposits of fatty substances on the artery walls. The deposits are called plaques
<b>Atherosclerosis</b>	the process when fatty substances are laid down in an artery, narrowing it
<b>Autoimmune</b>	where the body 'attacks' itself and produces immune responses to its own cells, such as bacteria and viruses
<b>Autonomic nervous system</b>	nerves that control 'automatic' functions of the body, such as heart rate
<b>Bladder</b>	bag that holds urine until it's convenient to empty it
<b>Bradykinesia</b>	slowness of movement
<b>Bronchi</b>	The trachea divides into two wide passages, one leading to each lung
<b>Bronchiole</b>	Inside each lung, the bronchi divide into smaller and smaller passages
<b>Bronchitis</b>	inflammation and possible infection of the bronchi and bronchioles
<b>Capillaries</b>	tiny blood vessels, often with walls just one cell thick
<b>Central nervous system</b>	the brain and spinal cord
<b>Chicken pox</b>	a viral infection common in children
<b>Cholesterol</b>	a type of <b>lipid</b> . Some is essential for good health, but too much can lead to atherosclerosis
<b>Colon</b>	the large bowel
<b>Congenital</b>	means a disorder or condition present at or before birth
<b>Contact dermatitis</b>	a skin reaction caused by a substance that irritates the skin
<b>Coronary arteries</b>	arteries that supply fresh, oxygenated blood to the heart muscle
<b>Cyanosis</b>	the blue tinge to the skin, lips and nails that occurs when there is a lack of oxygen in the blood
<b>Dehydration</b>	when the body loses more fluid than it takes in
<b>Dopamine</b>	a neurotransmitter
<b>Emphysema</b>	a condition affecting the alveoli
<b>Epilepsy</b>	a disorder of the nervous system characterised by seizures
<b>Faeces</b>	poo or stool
<b>Fine motor</b>	movements using smaller muscle groups, such as in the hand
<b>Gaseous exchange</b>	when oxygen crosses the single cell walls of the alveoli and carbon dioxide goes the other way, leaving the blood stream and is exhaled
<b>Goitre</b>	an enlarged thyroid gland
<b>Gross motor</b>	movements using large muscle groups, such as legs for walking
<b>Hallucinations</b>	seeing, hearing or smelling something that isn't there
<b>Homeostasis</b>	the maintaining of a stable environment inside the body
<b>Hyperinsulinemia</b>	when the body has levels of insulin that are higher than normal
<b>Hyperglycaemia</b>	when blood sugar levels rise too high

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<b>Hyperthermia</b>	when the body's internal temperature becomes abnormal
<b>Hyperthyroidism</b>	when the body produces too much thyroxine
<b>Hypoglycaemia</b>	very low blood sugar levels. It's likely to occur in people with diabetes
<b>Hypothermia</b>	dangerously low temperature
<b>Hypothyroidism</b>	when the body fails to produce enough thyroxine
<b>Insulin resistance</b>	when the body's cells do not respond properly to insulin
<b>Ischaemia</b>	a lack of blood supply to tissues or part of the body. It's especially common in the heart
<b>Ketoacidosis</b>	when the levels of ketones in the bloodstream become dangerously high, leading to unconsciousness and death
<b>Ketones</b>	Acids that build up when the body burns its own fat. Because they can't enter the cells for energy production, they are stored in the bloodstream and then excreted in the urine
<b>Lewy bodies</b>	collections of a specific protein that form in the brain and cause Parkinson's disease
<b>Lipid</b>	In general, or generic, name given to a group of soluble biological molecules. Fats are one group of lipids.
<b>Lymphatic system</b>	part of the body's immune system, made up of nodes and vessels that carry lymph to all tissues and cells in the body. It contains white cells, lymph nodes and lymph vessels
<b>Lymphoedema</b>	a disorder causing swelling in the legs due to blockages in the lymphatic system. It can be an inherited disorder, which can be treated or managed so that the person's mobility are reduced as far as possible. Lymphoedema may also be caused by other factors, such as cancer treatment
<b>Macronutrient</b>	a nutrient needed in relatively large quantities. It includes carbohydrates, proteins and fats
<b>Meningitis</b>	an extremely serious infection of the membranes around the brain and spinal cord
<b>Metabolism</b>	the process by which the body produces energy
<b>Metastasis</b>	when a cancer spreads to different parts of the body and forms secondary tumours through the circulatory or lymphatic system or into bones
<b>Micronutrient</b>	a nutrient needed in tiny amounts. It includes vitamins and minerals
<b>Midbrain</b>	a region of the brain
<b>Motor function</b>	movement
<b>Myocardial infarction</b>	a medical name for a 'heart attack'
<b>Myxoedema</b>	an older name for hypothyroidism
<b>Myxoedema coma</b>	when somebody's thyroxine levels drop to a dangerously low level, leading to unconsciousness
<b>Neurone</b>	another word for nerve cell
<b>Neurotransmitters</b>	chemical compounds that enable a message to cross the synapse
<b>Nodule</b>	a tiny lump under the skin near an affected joint
<b>Oedema</b>	a medical term for swelling, caused by a build-up of fluid in the tissues
<b>Pancreatic islets</b>	the cells in the pancreas that produce insulin
<b>Paranoia</b>	when somebody believes that others are intending to harm them, despite there being any truth in the thought
<b>Passive smoking</b>	breathing in cigarette smoke from other people's smoking
<b>Peripheral nervous system</b>	the nerves that run from the spinal cord throughout the body
<b>Plaques</b>	collections of a specific protein that form in the brain and cause Alzheimer's disease
<b>Primary tumour</b>	the organ or part of the body where a cancer first starts to grow
<b>Prognosis</b>	the likely outcome for a disorder
<b>Pulmonary</b>	the name for any tissue, organ or structure to do with the lungs
<b>Rectum</b>	the back passage

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Rickets	a childhood bone disorder caused by lack of vitamin D. It leads to bones that then bend outwards under the child's weight when they are growing
Ringworm	a fungal skin infection that is <b>not</b> caused by a worm
Schizophrenia	a mental illness where somebody is unable to make sense of things and cope with normal social situations. Some individuals may have hallucinations
Sedentary	where somebody sits down or is inactive for long periods of time
Spatial awareness	being aware of distances and being able to negotiate obstacles
Sputum	the mucus produced by the airways
Squamous cells	flat cells that are often found lining organs such as the bronchus
Substantia nigra	a collection of cells in the midbrain that produces dopamine
Stem cells	cells that can differentiate into different types of cells as they are needed
Synapse	the junction between one nerve cell and another
Synovial membrane	the membrane surrounding the joint
Thyroxine	the main hormone secreted by the thyroid gland
Trachea	the main airway leading from the nasal passages to the lungs
Tremor	shaking of hands and wrists
Trigger	in asthma, the agent responsible for causing the asthmatic attack
Urethra	the tube that allows urine to pass from the bladder. In men it is inside the penis
Urinary incontinence	inability to control the bladder
Weeping	where a skin condition, such as a rash, seeps fluid from the skin

## Chapter 2: Examine the Investigation and Diagnosis of Physiological Disorders

Anaesthetic	a way of preventing somebody feeling pain during a procedure or injection to the immediate area. It can also be general, 'put to sleep' until the procedure is complete.
Antigen	a molecule capable of stimulating an immune response by the body
Anus	the very end of the digestive tract, through which faeces is passed
Brachial artery	one of the main arteries supplying the arm
CT	computerised tomography scan, often also called a CAT scan, which produces a cross-section image of the body.
Cerebrospinal fluid	the clear fluid that surrounds the brain and spinal cord
Chemotherapy	drugs used to treat cancer
Cholesterol	a type of <b>lipid</b> . Some is essential for good health, but too much can lead to heart disease as part of atherosclerosis.
Chromosomes	bundles of genetic material. For example, 'X' and 'Y' chromosomes determine if the future child will be male or female.
Diastole	the lower reading when blood pressure is measured. It should be between 60 and 80 mmHg.
Fever	body's reaction to an infection, causing a rise in body temperature
Heatstroke	when somebody's been exposed to a very high outside temperature on an extremely hot day
Hypertension	high blood pressure, 140/90 mmHg or higher
Hyperthermia	a body temperature that's above 37.5°C–38.3°C, where the body's cooling mechanisms haven't worked, such as in heatstroke
Hypotension	low blood pressure, 90/60 mmHg or below

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<b>Hypothermia</b>	an internal body temperature of 35°C or below
<b>Lipid</b>	an overall, or generic, name given to a group of soluble bio molecules. Fats are one group of lipids.
<b>Lumbar</b>	the lower part of the spine
<b>MRI</b>	magnetic resonance imagery, where magnetic fields and radio waves are used to create an image of inside the body
<b>Mumps</b>	a viral infection that usually affects the glands at the sides of the face
<b>Paediatrician</b>	a doctor specialising in the care and treatment of children
<b>Peripheral circulation</b>	the blood vessels supplying the limbs, such as arms and legs
<b>Phlebotomist</b>	a care professional trained to take blood from individuals
<b>Prognosis</b>	the expected outcome for a service user with a disorder
<b>Prostate-specific antigen (PSA)</b>	a protein molecule normally produced by the prostate gland. It is used to investigate possible prostate cancer.
<b>Rhesus factor</b>	an additional form of blood grouping, known as rhesus positive. Rhesus negative blood must not receive blood that's rhesus positive, or a blood clot in their blood vessels.
<b>Rubella</b>	a viral infection. It's also known as 'German Measles'.
<b>Sphygmomanometer</b>	machine for measuring blood pressure
<b>Systole</b>	the upper reading when blood pressure is measured. It shows the pressure in the artery walls have during a heartbeat.
<b>Tourniquet</b>	a band that fits around a limb, designed to reduce the circulation of blood to that limb for blood tests.
<b>Tuberculosis</b>	an infection that can affect many body systems and organs
<b>Vascular dementia</b>	dementia caused by damage to the blood vessels in the brain
<b>Ventricles</b>	the lower chambers of the heart. The right ventricle pumps blood to the lungs for reoxygenation and the left ventricle pumps freshly oxygenated blood to the rest of the body.
<b>Ventricles</b>	spaces or chambers inside the brain. Part of their role is to produce cerebrospinal fluid.

## Chapter 3: Examine Treatment and Support for Physiological Disorders

<b>Advocacy</b>	In health and social care terms, this means the process of speaking up for and on behalf of an individual who can't easily speak for themselves. This could be a person with learning difficulties or a non-English speaker, or someone who is vulnerable.
<b>Antidepressants</b>	medicines that block some neurotransmitters in the brain to help improve mood
<b>Beta blockers</b>	medicines that lower blood pressure by blocking the release of adrenaline. This reduces the heart rate and lowers the blood pressure
<b>Bunion</b>	a bony lump that forms on the joint at the base of the big toe
<b>Care needs assessment</b>	an assessment made by a local social care team, provided the person is over 18. The assessment looks at the service user's needs and their financial situation
<b>Care Quality Commission (CQC)</b>	the regulating body that is responsible for ensuring care providers meet the required standards. Regular inspections, which are available for the public to request. If a care provider doesn't meet the required standards, it can be closed down
<b>Chiropodist</b>	a professional healthcare worker whose role is to care for the feet. It's a vital part of keeping the service user mobile and active, which is especially important if you're in pain or you can't walk very well.
<b>Cleft palate</b>	a condition where the roof of the mouth hasn't sealed over during the development of the foetus. The newborn baby is likely to have difficulties feeding and speaking

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<b>Cognitive</b>	the intellectual skills of the brain, such as reasoning, logic
<b>Crohn's disease</b>	a disorder of the digestive system that causes ulcers, pain
<b>Cystic fibrosis</b>	an inherited disorder that causes the body to produce a thick mucus in the lungs and digestive system
<b>Dialysis</b>	when an individual has kidney disease, their blood will be filtered by the dialysis machine. This is usually carried out two or three times a week
<b>Disclosure and Barring Service (DBS)</b>	This replaces the Criminal Record Bureau (CRB) and helps to keep a record of abuse or other criminal acts.
<b>Diuretic</b>	a medicine that helps the body get rid of extra fluid; for example, water
<b>Endorphins</b>	substances secreted by the brain and nervous system that help to reduce pain and improve well-being.
<b>Frozen shoulder</b>	a disorder where the shoulder joint becomes inflamed, causing pain and limited movement
<b>Health visitor</b>	a health-care professional who has already qualified as a nurse and must undergo further training in community public health nursing. They visit children aged 0-5 and their families.
<b>Histology</b>	the science of examining tissues and cells under a microscope
<b>Holistic</b>	meaning the whole person, including their physical, mental, emotional, social, health and well-being.
<b>Hydrotherapy</b>	a form of physiotherapy that takes place in water
<b>Hypnotherapy</b>	a complementary therapy that aims to bring about a positive change through suggestion to the subconscious
<b>Insomnia</b>	inability to sleep
<b>Lupus</b>	an autoimmune disorder where the body attacks its own cells
<b>Microbiology</b>	the science of identifying bacteria and viruses
<b>Multiple sclerosis</b>	a disorder of the nervous system, where the coating of the nerve fibres can no longer be passed along the nerves.
<b>Nausea</b>	feeling sick
<b>Occupational therapist</b>	a professional health-care worker whose role is to help people with disabilities to live independently, such as cooking
<b>Olfactory</b>	the part of the brain and nervous system that's concerned with smell
<b>Sciatica</b>	when the sciatic nerve becomes trapped and pinched in the lower back, causing pain, numbness and difficulty walking
<b>Stent</b>	a tiny tube that's inserted into an artery to widen it so that blood can flow more easily. It's often done to treat atherosclerosis in the coronary arteries
<b>Stomach ulcer</b>	where the stomach lining breaks down, exposing the tissue to stomach acid and digestive juices. This causes pain and often leads to bleeding
<b>Vasectomy</b>	male sterilisation, an operation to cut and seal the vas deferens, so that the man's semen contains no sperm.

## Chapter 4: Develop a Treatment Plan for Service Users with Physiological Disorders to Meet Their Needs

<b>Cataract</b>	when the lens in the eye becomes cloudy, so that vision is blurred. In some cases, people and the lens can be removed and replaced with an artificial lens
<b>Mammogram</b>	scan of the breast, to identify disorders such as cancer
<b>Oncology</b>	the branch of medicine to do with cancer care
<b>Palliative care</b>	care of an individual with a terminal illness, such as cancer, to relieve symptoms and improve quality of life

## Chapter 1

### A1: Effects of physiological disorders

#### Effects of endocrine disorders

1. **What is the difference between type 1 diabetes and type 2 diabetes?**

Type 1 diabetes is an autoimmune disorder where the body attacks the insulin-producing cells, so not enough insulin is produced.

Type 2 diabetes occurs when the body becomes resistant to insulin.

2. **Identify three effects of diabetes.**

Any three from:

- eyesight problems
- stroke
- heart disease
- problems with healing and ulcers
- problems with circulation
- problems for the newborn baby of a diabetic mother
- poor circulation
- amputations
- kidney problems
- nerve damage

3. **What is meant by 'hyperglycaemia'?**

Hyperglycaemia occurs when the blood sugar rises above the normal level.

4. **Why do all babies born in the UK have a heel prick test at five days old?**

To identify babies born with congenital hypothyroidism, so that they can be treated.

5. **What is the most common cause of hyperthyroidism?**

Graves' disease

6. **Identify three effects of hyperthyroidism.**

Any three from:

- damage to the eyes, including red, gritty eyes or bulging eyes
- heart failure
- osteoporosis
- difficulty sleeping
- mood swings
- hyperactivity
- nervousness, anxiety and irritability
- diarrhoea

7. i) **What signs and symptoms might have made Mrs M go to her GP in the first place?**

Possible signs and symptoms in Mrs M (also accept suitable alternatives):

- excessive sweating
- red, gritty eyes
- weight loss
- hyperactivity
- nervousness, anxiety and irritability
- trembling
- tired all the time
- palpitations
- weight loss
- diarrhoea
- needing to pass urine frequently
- thirst

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- ii) **What diagnostic tests might be carried out, so that the diagnosis could be confirmed?**  
 Possible diagnostic tests including:
- referral to a specialist consultant
  - blood tests to check thyroid function
  - blood tests to check for anti-thyroid antibodies
  - scan of thyroid gland using radioactive dye to see how much radioactive iodine is taken up

- iii) **What possible treatments might Millie be offered?**  
 Possible treatments and their impact on Millie's life including (also accept suitable alternatives)

Treatment	Benefits	Side effects
<b>Medication:</b> usually <b>thionamides</b> and <b>beta blockers</b> .	<b>Thionamides:</b> reduce symptoms by reducing excess thyroid hormone production <b>Beta blockers:</b> reduce the effect of thyroid hormones on the heart rate	Side effects include nausea, heartburn, stomach pain, blood cell counts vulnerable
<b>Radioiodine treatment:</b> When a diagnosis is made, damage to the thyroid gland so that it produces less hormones Usually given as a capsule or a drink.	Many people only need one treatment.	<ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> <li>•</li> </ul>
<b>Surgery:</b> May remove the whole thyroid	May be used when other treatments are unsuitable or haven't worked. Permanent solution	May have a permanent thyroid hormone deficiency

- iv) **What could their impact be on her life?**  
 Impact of possible treatment on Millie's life:
- Positives:
- Millie may well feel relieved to have her disorder diagnosed and know that she probably resume her normal life. She may have been thinking that she had a heart problem with her increased restlessness and palpitations.
  - She has her mother around, who may be able to help out more during treatment and recover.
  - She has a job that's likely to include sick pay, so there will be less financial worry.
  - If her treatment is effective, Millie's symptoms will be reduced or disappear.
- Negatives:
- Millie may worry about putting additional burdens on her mother. Her mother may have to care for herself.
  - Her relationship with Tim may be put under strain as she's less able to carry out her usual activities during period of illness, diagnosis and treatment.
  - The potential side effects of treatment may make them unsuitable for her, especially if she has children.
  - Her children are likely to have difficulty understanding why their Mum is less active and may lead to emotional problems, tantrums, reduced sleep.
  - Millie may feel guilty and/or angry that she's unable to carry out her usual activities.
  - Her mother may resent having to care more for the children than she already does, especially if it involves housework or shopping, even if it's only for a relatively short timescale.

**Effects of disorders of the nervous system**

- Which organs make up the central nervous system?**  
 The brain and the spinal cord
- What is a neurotransmitter?**  
 A chemical that enables a message to pass from one neurone to another

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**3. Identify three effects of Parkinson's disease.**

Any three from:

- tremor
- bradykinesia (slow, shuffling walk)
- rigid muscles
- loss of balance and dizziness
- loss of sense of smell
- nerve pain
- difficulty swallowing
- difficulty sleeping
- frequently having to urinate
- urinary incontinence
- depression and anxiety
- memory loss
- dementia

**4. What two types of dementia are linked to Parkinson's disease?**

Parkinson's dementia and dementia with Lewy bodies

**5. What are the effects of Alzheimer's disease?**

Protein plaques build up in the brain, interfering with messages passing across the neurones.

**6. Outline the three stages of Alzheimer's disease.**

- Early stage is where the person will have some memory loss but is unlikely to need support for activities of daily life.
- Middle stage is where memory loss becomes more severe and the person will need support for activities.
- Late stage is where the person will need a great deal of care and may develop heart problems and incontinence.

**7. i) Who can Dorothy talk to about her concerns for Harry?**

Any from:

- The nurse or her GP at the surgery is likely to be the first professional she can talk to them during a visit to the surgery or by telephone.
- She can talk to Harry and encourage him to visit the GP.
- She may talk to her sons, although they are both some distance away and busy. If one of her sons is able to visit, he could accompany his dad to the surgery.
- She may have friends and neighbours in the village, who may have noticed changes in Harry. However, Dorothy may well prefer to confide in a close friend whom she trusts.
- Third sector organisations, such as the Alzheimer's Society, could give advice.

**ii) What tests might be organised in order to diagnose Alzheimer's disease for Harry?**

Tests are likely to be carried out by the GP to begin with, who may then decide to refer to a consultant, such as a psychiatrist, geriatrician or neurologist.

Tests could include (also accept suitable alternatives):

Test	Purpose
History	The doctor will talk to Harry about his health and any changes.
Blood tests	To assess general health and well-being, <ul style="list-style-type: none"> <li>• specific tests</li> <li>• vitamin B12 and folates</li> <li>• diabetes checks</li> <li>• liver function</li> <li>• kidney function</li> <li>• thyroid function</li> </ul>
Urine test	To screen for infection
Cognitive assessments	<ul style="list-style-type: none"> <li>• short- and long-term memory</li> <li>• concentration and attention span</li> <li>• language and communication skills</li> <li>• awareness of time and place (orientation)</li> <li>• checking vision (visuospatial abilities)</li> </ul>
MRI scan	To check the health of blood vessels in the brain and other structures.
CT scan	To check for brain tumours or signs of a stroke

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iii) **What other disorders could his symptoms be caused by?**

Alternative diagnoses could be (also accept suitable alternatives):

- diabetes
- liver problems
- kidney problems
- thyroid problems
- urinary tract infection
- depression and/or anxiety
- stress
- sleeping problems
- stroke
- tumour

**Effects of disorders of the musculoskeletal system**

**1. What causes rheumatoid arthritis?**

Rheumatoid arthritis is an autoimmune disorder, where the body attacks itself. Although the response is unknown, both bacteria and viruses have been suggested. However, the disorder more likely

These include:

- smoking
- being female – it's 2–3 times more common in women.
- if somebody else in the family has the disorder
- being overweight
- if an individual eats a lot of red meat
- if an individual doesn't eat many foods with vitamin C

**2. What part of the joint becomes inflamed in rheumatoid arthritis?**

The synovial membrane around the joint

**3. Identify three effects of rheumatoid arthritis on the whole body, not just the muscles.**

Any three from:

- flu-like symptoms
- weight loss
- poor appetite
- tiredness
- loss of energy
- anaemia

Rare effects:

- lung problems, such as persistent cough and shortness of breath caused by the
- inflammation of the lining around the outside of the heart
- inflammation of the eyes, leading to redness or dryness

**4. How many people in the UK are thought to have osteoporosis?**

3 million

**5. How do many people first discover they have osteoporosis?**

When they slip or fall and fracture a bone

**6. Which bones are most commonly affected in osteoporosis?**

Usually the wrist, spine or hip, as these are the ones that take the body's weight

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**Effects of disorders of the respiratory system**

- 1. What is cyanosis?**  
The blue tinge to the lips, skin and nails that occurs when the body is short of oxygen.
- 2. Explain what happens during an asthmatic attack.**  
The airways become swollen and inflamed, which causes them to become narrowed easily. They also produce a lot of mucus.
- 3. Identify three triggers for asthma.**  
Any three from:
  - allergies, such as pollen or dust mites
  - infections, such as colds or flu
  - exercise
  - pollution, cold or smoke
- 4. What does COPD stand for?**  
Chronic obstructive pulmonary disease.
- 5. What is emphysema?**  
Emphysema happens when the alveoli lose their tone and elasticity, causing them to lose a lot of surface area available for gaseous exchange.
- 6. Explain what happens during gaseous exchange.**  
Gaseous exchange takes place in the alveoli, when fresh oxygen crosses from the alveolus into the capillary and carbon dioxide crosses from the capillary into the alveolus.

**Effects of disorders of the circulatory system**

- 1. What is the medical name for a heart attack?**  
Myocardial infarction
- 2. Explain what's meant by atherosclerosis.**  
Atherosclerosis occurs when fatty substances are laid down in the artery walls, causing them to narrow.
- 3. Identify three factors leading to coronary heart disease.**  
Any three from:
  - smoking
  - high blood pressure
  - lack of exercise
  - high levels of **cholesterol** in the blood
  - diabetes
  - being obese or overweight
  - a family history of CHD
- 4. Explain what leukaemia is in one sentence.**  
Leukaemia is when the body produces too many abnormal white blood cells and is a cancer of the blood.
- 5. What is the difference between acute and chronic leukaemia.**  
Acute leukaemia progresses quickly, while chronic leukaemia progresses more slowly.
- 6. Where are white blood cells produced?**  
Mainly in the bone marrow.

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**Effects of cancers****1. What is a 'primary tumour'?**

A primary tumour is where the cancer starts.

**2. What medical name is given to secondary tumours?**

Metastases

**3. Explain one way of grading cancer.**

Either:

TNM:

T: shows the size of the tumour.

N: shows if the cancer has spread to nearby lymph nodes and how many lymph nodes.

M: shows if the cancer has spread to other parts of the body (metastasis).

Or:

Numerical system:

Stage 1	The cancer is still inside the tissue or organ in which it started
Stage 2	The cancer has spread beyond the tissue or organ and may have spread to nearby lymph nodes
Stage 3	The cancer has spread into nearby lymph nodes and maybe to other parts of the body
Stage 4	The cancer has formed metastases and invaded other parts of the body

**4. Where does bowel cancer usually start?**

In the colon or the rectum

**5. Which part of the prostate gland is usually affected by cancer?**

Usually the cells that line the inside of the gland

**6. What is the most common cancer among men in the UK?**

Prostate cancer

**Effects of physiological disorders on the service user's health and well-being****1. Explain three ways in which rheumatoid arthritis could affect a service user's physical health and well-being.**

Any three from:

- Stiffness and pain will reduce mobility, leading to lack of exercise, which will result in weight gain.
- It could make personal hygiene more difficult, leading to a risk of infections.
- Pain, stiffness and possible deformity in the hands will make some activities difficult, such as opening cans, gardening, knitting or crochet, leading to a loss of independence and possibly unable to cook meals so easily.
- Loss of appetite may lead to weight loss and poorer nutrition.
- Inflammation of the lungs could make physical activity difficult, and could lead to respiratory problems.

Accept any other effect relating to physical health and well-being.

**2. Explain three ways in which asthma could impact on the intellectual development of a service user.**

Any three from:

- Possible absences from school could lead to missing out on learning and, therefore, missing GCSEs, which will impact on future career and employment opportunities.
- Possible absences from school may lead to missing out on opportunities to develop skills, which will negatively impact intellectual development.
- The student may be inspired to learn more about the body and their asthma, leading to a better understanding.

Accept any other effect relating to intellectual health and well-being.

**3. Explain three ways in which Parkinson's disease could impact the emotional well-being of a service user.**

Any three from:

- They may feel ashamed of their tremor and slow walking, leading to loss of self-esteem and potential depression.
- They may feel that their disorder emphasises their age, causing them to feel unwell and may reduce their self-esteem and self-image, potentially leading to depression.
- They may feel angry and resentful that they've developed the disorder.
- They may be aware that their memory and organisational skills are not as good, leading to worry, stress, reduced self-esteem or denial that they have a problem.
- They may be a carer for a spouse and worry about the impact on their partner, leading to stress, worry, fear and anxiety.

Accept any other effect relating to emotional health and well-being.

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4. Explain three ways in which COPD could affect a service user's social well-being.

Any three from:

- They may not be able to go to work as they once did; therefore, losing out on a sense of isolation and loneliness.
- They may not be able to meet up with friends so often, due to shortness of breath, leading to loneliness and isolation.
- They may be able to meet up with others in a similar situation and form bonds.
- They may find intimate relationships difficult as the disorder may lead to sex being harder to spend time doing things together.
- They may not be able to travel to meet friends and family or for holidays, leading to a change in lifestyle and activities.

Accept any other effect relating to social health and well-being.

## A2 Causes of physiological disorders

### Inherited traits

1. Give an example of an inherited disorder.

Any one from:

- sickle cell disease
- Huntington's disease
- cystic fibrosis

2. Which ethnic group is most likely to have sickle cell disease?

People of African or Caribbean origin

3. What's the difference between sickle cell trait and sickle cell disease?

Sickle cell trait means that the person is a carrier but doesn't have the disease themselves. Sickle cell inheritance means they have sickle cell disease.

4. How does sickle cell disease get its name?

From the crescent-shaped abnormal red blood cells that their body produces.

5. What is a sickle cell crisis?

This occurs when the abnormally shaped red blood cells block blood vessels in different parts of the body, causing episodes of severe pain. It usually lasts about a week and people with sickle cell disease have about one crisis per year.

6. If both parents carry sickle cell trait, what are the chances in every pregnancy that their child will have sickle cell disease?

25%.

### Lifestyle

1. How many people die each year from smoking-related deaths?

80,000.

2. Identify two disorders caused by smoking.

Any two from:

- asthma
- coronary heart disease
- chronic obstructive pulmonary disease (COPD)
- cancer

3. What is passive smoking?

When somebody is breathing in other people's cigarette smoke. Infants and children are particularly vulnerable to the effects of passive smoking.

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4. **What is meant by drug misuse?**

When somebody either takes an illegal drug or a legal one in a way that's not recommended by a doctor.

5. **Identify three possible effects from drug misuse.**

Any three from:

- lung disease and cancer.
- respiratory problems, such as asthma and bronchitis
- infertility
- high blood pressure
- burst blood vessels, leading to a possible stroke or paralysis
- seizures
- coronary heart disease, especially when tobacco is mixed with cannabis, or from cocaine
- severe dehydration and overheating, especially from ecstasy use
- depression
- paranoia
- schizophrenia

6. **Identify two possible effects of misusing paracetamol or ibuprofen.**

- damage to the stomach lining, causing ulcers and bleeds
- liver damage

### Diet

1. **How does somebody become obese?**

By taking in more calories than they use in energy. The excess calories are stored as fat.

2. **Identify two ways of assessing if somebody is overweight.**

- body mass index (BMI)
- waist measurement.

3. **Identify three possible effects of obesity.**

Any three from:

- type 2 diabetes
- bowel cancer
- stroke
- high blood pressure
- coronary heart disease
- arthritis

4. **What is a micronutrient?**

A nutrient only needed in tiny amounts, such as vitamins and minerals.

5. **What physiological disorder could develop as a result of a lack of vitamin D?**

Either:

- osteoporosis
- rickets

6. **What is the official definition of being overweight?**

When somebody's BMI measurement is over 18.5.

### Environment

1. **Identify two groups most at risk from damp and mould in a house.**

Any three from:

- infants
- children
- elderly
- people with eczema
- people with reduced immunity

2. **How can overcrowding be assessed?**

- by counting the number of rooms in a house and the number of people sleeping in them
- by measuring the amount of floor space and counting the number of people sleeping in it

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3. **Identify the type of physiological disorder that is likely to occur in overcrowded homes.**  
Respiratory disorders, such as asthma and bronchitis. Also meningitis.
4. **How many deaths per year are linked to air pollution in the UK?**  
40,000
5. **Identify two disorders linked to air pollution.**  
Any two from:
  - cancer
  - heart disease
  - dementia
  - type 2 diabetes
  - asthma
6. **Identify one source of air pollution.**  
Any one from:
  - burning fuels
  - vehicles
  - gas cookers
  - cleaning products
  - domestic heating
  - smoking
  - carbon monoxide

### A3 Signs and symptoms of physiological disorders

#### Signs

1. **What is the difference between a sign and a symptom?**  
A sign is something that another person would notice when they examine a service user.  
A symptom is something that the person with the disorder would notice, such as pain.
2. **Give two features a care professional would observe about a rash.**  
Any two from:
  - colour
  - extent or spread on the body
  - if there are spots or blisters
  - if it's scaly, peeling or rough
  - if it's dry or weeping (oozing fluid)
3. **What physiological disorders are often linked to eczema?**  
Asthma and hayfever
4. **Give one feature a care professional would observe about a swelling.**  
Any one from:
  - whereabouts it's located on the body
  - its colour
  - if there's any heat in the swelling
  - if a finger pressed in leaves an imprint
5. **What is the medical term for swelling?**  
Oedema
6. **Give two causes of swelling.**  
Any two from:
  - standing or sitting for long periods
  - being immobile
  - heart disease
  - renal disease
  - pregnancy
  - thyroid problems
  - kidney disease
  - malnutrition
  - the contraceptive pill
  - a response to medication
  - a blood clot in a blood vessel
  - varicose veins
  - following leg surgery or an injury
  - as part of the body's responses to burns

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## Symptoms

- What is meant by chronic pain?**
  - pain that lasts for 12 weeks or more
  - pain that continues after the time when the body could be expected to have recovered from an accident
- What is meant by intermittent pain? Give an example.**  
 Intermittent pain is pain that comes and goes, for example, toothache.
- How many people are estimated to be living with chronic pain in the UK?**  
 28 million
- What is meant by disorientation?**  
 An altered mental state, where the person may not know where they are, the date or time.
- Give two common causes of disorientation.**
  - delirium
  - dementia
- What is delirium and what can cause it?**  
 It's an altered mental state that lasts a fairly short time.  
 It can be caused by:
  - infection
  - medication
  - accident
  - change of surroundings

## Chapter 2

### B1 Investigative procedures for physiological disorders

#### Blood pressure

- What are the names given to the two readings obtained in a blood pressure measurement?**  
 Higher reading: systole  
 Lower reading: diastole
- What does the upper reading in a blood pressure result measure?**  
 It measures the level of resistance in the artery walls during a heartbeat.
- What does the lower reading in a blood pressure result measure?**  
 It measures the level of resistance in the artery walls between heartbeats, when the heart is relaxed.
- What is the normal blood pressure for an adult?**  
 120/80 mmHg
- Identify three risks from hypertension.**  
 Any three from:
  - stroke
  - coronary heart disease
  - heart failure
  - kidney failure
  - eyesight problems
  - vascular dementia
  - circulation problems to arms and legs
- What blood pressure is considered hypertensive?**  
 A blood pressure is hypertensive if it measures 140/90 mmHg or above.

#### Temperature

- What is the ideal temperature for many of the body's chemical processes?**  
 The ideal temperature is between 36.5°C and 37.5°C.

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2. **What does 'hypothermia' mean?**  
Hypothermia means an internal body temperature of 35°C centigrade or lower.
3. **Give two groups especially at risk of hypothermia.**  
Any two from:
  - elderly people
  - babies and young children
  - people exposed to cold water or cold weather
  - after consumption of alcohol and/or certain drugs
4. **Give two symptoms of hypothermia.**  
Any two from:
  - shivering
  - tiredness
  - confusion
  - pale skin
  - breathing quickly
  - becoming unconscious
5. **Give two causes of a high temperature.**
  - from exposure to very high external temperatures, also known as 'heat stroke'
  - from an infection, leading to a fever
6. **Give two possible effects of a high temperature.**  
Any two from:
 

<ul style="list-style-type: none"> <li>• rapid heart rate</li> <li>• dizziness</li> <li>• confusion</li> <li>• delirium</li> <li>• headache</li> <li>• redness / flushed appearance</li> </ul>	<ul style="list-style-type: none"> <li>• breathlessness</li> <li>• fainting</li> <li>• hallucinations</li> <li>• convulsion</li> <li>• vomiting</li> <li>• sweating</li> </ul>
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### Medical history

1. **Give one reason why somebody might not visit their GP about a change in their body.**
  - out of embarrassment
  - because they feel ashamed
2. **Explain why it's important the service user is honest about any medicines and/or illegal drugs they are taking.**  
It's important somebody is honest because their current medication or illegal drugs could interact with their medicines, causing organ harm, such as liver or kidney damage.
3. **Explain why a service user will be asked about any allergies they may have.**  
They will be asked about allergies because they may need treatment or tests. Their allergy may also explain symptoms and disorders, such as asthma.
4. **Explain why the service user may be asked about their family medical history.**  
They may be asked about their family medical history because some disorders tend to be inherited, such as coronary heart disease.
5. **Give one damaging lifestyle habit that a doctor or nurse would want to know about.**  
Any one from:
  - smoking
  - alcohol use
  - substance use and misuse
6. **Explain why a doctor or nurse would want to know about any pre-existing disorders.**  
These are important for the doctor or nurse to know because these disorders can cause complications and could influence what treatment, if any, the individual should have.

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**Blood tests****1. What is a phlebotomist?**

A phlebotomist is a care professional trained to take blood from individuals.

**2. Why might somebody have blood cultures taken?**

Blood cultures are taken when somebody has a very high temperature and the doctor suspects an infection. The test is looking for bacteria or fungi in the blood.

**3. What is an antigen?**

An antigen is a molecule that's capable of stimulating an immune response by the body.

**4. Why could a man's prostate-specific antigen (PSA) be raised?**

His PSA could be raised because he has a health problem with his prostate gland, such as prostate cancer.

**5. Why might a person with rheumatoid arthritis have regular liver function tests?**

The person may be on medication that can damage the liver, so regular blood tests are needed to check if the liver is damaged.

**6. Name one factor that is checked in a full blood count (FBC).**

Any from:

- haemoglobin (Hb) levels
- white blood cell numbers
- platelet numbers

**B2 Diagnostic procedures for physiological disorders****Lumbar puncture****1. Where in the body is the lumbar region?**

The lumbar region is in the lower part of the spine, in the back.

**2. What is cerebrospinal fluid?**

Cerebrospinal fluid is the clear fluid that surrounds the brain and the spinal cord.

**3. Give one reason to perform a lumbar puncture.**

One from:

- to diagnose a condition, such as meningitis
- to inject medicines, such as antibiotics
- to inject a spinal anaesthetic, for example, during labour
- to remove extra cerebrospinal fluid, to reduce pressure within the nervous system

**4. Where is cerebrospinal fluid made?**

Cerebrospinal fluid is made inside the ventricles of the brain.

**5. Approximately how much cerebrospinal fluid does the body produce every day?**

The body produces approximately 500 ml of cerebrospinal fluid every day.

**6. Give one risk of a lumbar puncture.**

One from:

- swelling and pain in the lower back
- headache
- tingling and/or numbness in the legs
- paralysis

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## Biopsy

### 1. What is a biopsy?

A biopsy is when a doctor takes a small piece of tissue from inside or from the surface. It's also the name given to the tissue sample taken.

### 2. Give two pieces of information a biopsy can indicate.

Any two from:

- the presence of infection, such as tuberculosis
- the level of inflammation in an organ, for example, in the liver or kidneys
- what stage a cancer has reached
- what an individual's prognosis might be
- the diagnosis of a skin condition
- what sort of treatment might be recommended
- if tissue cells are abnormal, for example, cancerous

### 3. Give the name of a scan often carried out before a biopsy.

Either:

- CT scan
- MRI

### 4. What does MRI stand for?

MRI stands for magnetic resonance imagery.

### 5. Give one type of biopsy.

Any one from:

- punch biopsy
- needle biopsy
- endoscopic biopsy
- excision biopsy
- perioperative biopsy

### 6. What type of biopsy is usually taken if a person has a lump in their breast tissue?

For breast tissue lumps, a needle biopsy is usually used.

## Non-specific or confusing symptoms, such as myalgic encephalomyelitis (ME)

### 1. Give another term for ME.

ME is also known as chronic fatigue syndrome (CFS)

### 2. Give three general and non-specific symptoms of ME.

Any three from:

- difficulty sleeping
- extreme fatigue and feeling unwell
- sore throat or sore glands that aren't swollen
- headaches
- difficulty concentrating
- fast or irregular heartbeat
- feeling dizzy or sick
- symptoms made worse by exertion
- flu-like symptoms
- muscle or joint aches

### 3. What does NICE stand for?

NICE stands for the National Institute for Health and Care Excellence.

### 4. When should a final diagnosis of ME be made in an adult?

In an adult, a final diagnosis should only be made when:

- The symptoms have lasted for four months.
- All other possible disorders have been ruled out.

### 5. What alternative diagnosis could be suggested by painful, swollen joints?

Painful, swollen joints could also be a form of arthritis.

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**6. Give two investigations that a doctor will carry out to exclude other disorders.**

Any two from:

- medical history
- a thorough physical examination
- an assessment of the individual's mental health
- urine tests
- blood tests

## Chapter 3

### C1: Provision of treatment and support

#### Medication.

1. **Give an example of a medicine that's used to treat Athlete's Foot and say how it's used.**  
Antifungal creams that are applied to the affected area.
2. **What do psychotropic medicines treat?**  
Psychotropic medicines are used to treat mental illnesses, such as depression.
3. **What are analgesics?**  
Analgesics are painkillers.
4. **Give three possible side effects of NSAIDs.**  
Any three from:
  - allergic reactions, such as a rash
  - worsening of asthma symptoms
  - constipation or diarrhoea
  - abdominal pain or indigestion
  - stomach inflammation or ulcer
  - kidney failure
5. **Give two disorders that may be treated with steroids.**  
Any two from:
  - inflammatory bowel disease, such as Crohn's disease
  - trapped nerves, such as sciatica
  - lupus
  - disorders of the musculoskeletal system, such as arthritis or frozen shoulder
  - hay fever
  - eczema
  - disorders of the respiratory system, such as asthma or chronic obstructive pulmonary disease
6. **Give two possible side effects of using steroids.**
  - difficulty sleeping
  - increased appetite
  - mood changes
  - raised blood pressure
  - raised blood sugars
  - loss of bone density, causing weak bones
  - papery skin that thins easily
  - 'moon face' as the face becomes more round

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## Surgery

- 1. Explain what is meant by a local anaesthetic and give an example of when it may be used.**  
A local anaesthetic is one that's given to just the area to be operated on. It may be used for minor surgery.
- 2. Give three lifestyle factors that make anaesthetics more risky.**  
Any three from:
  - smoking
  - use or misuse of alcohol
  - misusing legal or illegal substances
  - obesity
- 3. Give two factors that influence whether a cancer can be treated by surgery.**  
Any two from:
  - size of the cancer
  - how far it's spread
  - the service user's general health
  - whereabouts the cancer is in the body
- 4. Give one example of a form of cancer that isn't suitable for surgery.**  
One from:
  - leukaemia
  - some forms of cancer of the lymphatic system
- 5. Give two ways in which surgery is used in cancer.**  
Any two from:
  - diagnosis
  - cure
  - as part of other treatment
  - to control symptoms or extend life
  - to prevent or reduce risk of cancer
  - to reconstruct part of the body
- 6. What name is given to the narrow tube that can be surgically inserted for chemotherapy?**  
The tube is known as a 'central line' or a 'central venous catheter.'

## Rehabilitation programmes

- 1. Give one group of individuals who may need rehabilitation services.**  
Any one from:
  - children with developmental difficulties
  - somebody who's had an unexpected illness
  - somebody with a long-term disorder who's experienced a flare-up
  - somebody with a long-term disorder who needs to manage their own health
  - somebody who needs to get back to work and a normal life following severe trauma
  - somebody with a progressive disorder, such as cancer, who needs to maintain their quality of life as possible
  - vulnerable people, such as someone with learning difficulties, who may need additional support
- 2. Give one example when a rehabilitation programme could reduce the impact of a condition.**  
Any one from:
  - when somebody has problems with movement
  - when rehabilitation could reduce the risks of a further episode, such as repeated falls
  - when somebody has communication difficulties
  - when somebody has mental and/or emotional difficulties
  - when somebody has cognitive difficulties
- 3. What is hydrotherapy?**  
Hydrotherapy is physiotherapy taking place in warm water.

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**4. What are the three main approaches physiotherapists use?**

The three main approaches are:

- education and advice
- movement and exercise
- manual therapy

**5. Give one example of a whole body exercise a physiotherapist may advise for an individual that's affected their mobility.**

Any one from:

- walking
- swimming

**6. What technique could a physiotherapist use to promote relaxation and sleep in an individual?**

The physiotherapist could use manual therapy, such as massage, manipulation and mobilisation.

**Complementary Therapies.**

**1. Give another term for complementary therapies.**

Complementary therapies may also be known as:

- alternative therapies
- holistic therapies
- complementary and alternative medicine (CAMs)

**2. What are endorphins?**

Endorphins are substances secreted by the brain and nervous system giving pain relief.

**3. Give two disorders that may be treated with acupuncture.**

Any two from:

- chronic, tension headaches
- migraines
- dental pain
- pain following surgery
- neck pain
- joint pain
- nausea and vomiting following surgery or chemotherapy

**4. Explain how acupuncture works.**

Acupuncture works by:

- restoring the free flow of energy, or qi, through the energy channels in the body
- stimulating sensory nerves just under the skin and in the muscles, which leads to pain relief

**5. Which body system is stimulated by aromatherapy?**

The olfactory system in the brain is stimulated by aromatherapy.

**6. Give two disorders when aromatherapy may be used.**

Any two from:

- chronic, long-term pain
- anxiety and depression
- insomnia
- to reduce inflammation, such as in arthritis
- to reduce pain
- to reduce nausea after cancer treatment
- to prevent or reduce infection
- to reduce nausea after surgery
- to reduce pain in labour

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## Advice on Lifestyle Changes

### 1. How many deaths are estimated to be due to smoking every year?

One death in five every year is estimated to be due to smoking.

### 2. Give one source of advice and support with stopping smoking.

Any one from:

- charity websites, such as the British Heart Foundation
- GPs and practice nurses
- NHS stop smoking sections on their website
- pharmacists in high street chemists
- complementary therapists

### 3. What is the single biggest preventable cause of health inequalities?

Smoking is the single biggest preventable cause.

### 4. If somebody gives up smoking following a heart attack, what is their risk of a further heart attack?

If somebody gives up smoking following a heart attack, they are 50% less likely to have a further heart attack.

### 5. Give two ways in which stop smoking services can help an individual trying to stop smoking.

Any two:

- identifying the life circumstance that make it harder for somebody to give up smoking
- giving information about medicines that can help somebody give up, such as nicotine replacement therapy
- giving out the medicines or a prescription for them
- helping somebody change their patterns of behaviour
- meeting the needs of different groups
- a national telephone helpline
- online support

### 6. If somebody quits smoking aged 30, how much longer can they expect to live?

If somebody quits smoking aged 30, they can expect to live an additional 10 years.

## C2: Types of carers and care settings

### Professional carers

#### 1. What is meant by a 'professional' carer?

A professional carer is one who has undergone training and achieved a professional qualification, such as a registered nurse.

#### 2. What is a GP?

A GP is a general practitioner, who is a doctor who has undergone further training in a local GP surgery in the community.

#### 3. Explain one benefit of the GP system.

Any one from:

- They are aware of local issues, such as pollution.
- They know their service users and their specific circumstances.
- Because they know their service users, they can prescribe suitable treatments.

#### 4. Give two examples of groups of service users a nurse may choose to work with.

Any two from:

- adults
- children
- people with mental illnesses
- elderly people
- community-based care, such as a district nurse
- operating department
- newborn babies
- accident and emergency care
- acutely ill people, such as intensive care or in the high dependency unit
- people with long-term, or chronic, illnesses
- people with physical disabilities
- people with mental illnesses
- people with learning disabilities
- prisoners

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5. **Give one example of a service user group a practice nurse may see regularly.**  
People with asthma.
6. **Explain one benefit to the service user of seeing the same nurse regularly.**  
Any one from:
- know the circumstances that may prevent an individual being able to use service hospital appointments
  - know if the service user's condition is improving or getting worse and act accordingly
  - building up trusting relationships between the service user and the care provider
  - able to offer appropriate health education and advice

### Informal carers, private and voluntary carers

1. **What is meant by 'informal care'?**  
Informal care means care provided by family, friends or neighbours.
2. **What is a 'care needs assessment'?**  
A care needs assessment is an assessment carried out by the social care team, to establish needs are and their personal circumstances, in case they're entitled to monetary support.
3. **Explain one benefit of using a private care agency.**  
Any one from:
- The agency will take care of the pay, national insurance and income tax the carer's wages.
  - The agency will organise and carry out the references and security checks on the carer.
  - The agency will organise the employer's liability insurance, staff training and development.
  - The agency will provide an out-of-hours contact and an emergency contact number.
  - The agency will provide replacement care when the regular carer is away for any reason.
  - The agency will want to meet the service user to assess their needs.
4. **Explain one benefit of employing a personal assistant.**  
Any one from:
- Continuity of care will be provided.
  - The service user and personal assistant will build up a relationship, making it easier to meet.
  - The relationship will enable social and emotional needs to be met and for trust to be built.
5. **Give one obligation the service user has if they employ a personal assistant.**  
Any one from:
- arrange cover in case of illness or holiday
  - pay their wages, tax and national insurance
  - may have to provide a pension
  - carry out security checks and take up references
  - ensure the assistant is trained, such as in lifting
  - provide a job description
  - provide a written contract of employment
6. **Give one service Age UK may be able to provide in an individual's home, in some places.**  
Any one from:
- handyperson to carry out minor repairs to the home
  - foot care
  - hearing aids
  - personal care

### Care settings

1. **Explain one benefit to the service user of staying in their own home for as long as possible.**  
Any one from:
- cheaper than residential or hospital care
  - less risk of infection
  - continuity of familiar surroundings and possessions can make service users feel more comfortable
  - continuity of daily routines, people, possessions and pets can support self-confidence and interests

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2. **Which organisation is responsible for inspecting and regulating residential homes?**  
The organisation is the Care Quality Commission (CQC).
3. **Give two services or health care professionals that can be accessed at a GP surgery.**  
Any two from:
- GP
  - district nurses
  - midwives
  - health visitors
  - practice nurses
  - screening, such as mobile mammogram vans or cervical smear tests
  - vaccinations
  - regular check-ups on long-term disorders such as diabetes or asthma
  - pharmacy
  - minor surgery in some GP surgeries or health centres
  - counselling
  - cancer care and support
  - physiotherapy
4. **Give one hospital service that's free to all, including people from outside the UK.**  
Any one from:
- accident and emergency treatment, until the service user is admitted to hospital
  - family planning, excluding infertility treatment and termination of pregnancy
  - infectious diseases, including sexually transmitted diseases (STIs)
  - treatment for a disorder caused by torture, female genital mutilation (FGM), etc.
5. **What is dialysis?**  
Dialysis is carried out on people with kidney failure, who have their blood cleansed on a dialysis machine. It's usually repeated two or three times a week.
6. **Give two examples of specialist rehabilitation settings.**  
Any two from:
- spinal injury unit
  - local hospital
  - learning disability centres
  - stroke rehabilitation units
  - limb-fitting centre
  - health centres
  - cardiac rehabilitation
  - mental health services

## Chapter 4

### D1: Care methods and strategies

1. **Explain what is meant by a care strategy and a care pathway.**  
Care strategy: how care services are organised so that care is made available and delivered.  
Care pathway: the route, or steps, of diagnosis, treatment and aftercare for a disorder.
2. **Give the three categories of need.**  
Primary: where a service user first approaches a health care provider, such as a GP.  
Secondary: where treatment is given for a brief but serious health condition. This can be in a hospital or in the community.  
Tertiary: specialist health care that is usually referred, or asked for, by a primary care provider.
3. **Give one factor that may influence when a service user's care needs may require referral to a specialist.**  
Any one from:
- change in personal circumstances
  - disorder getting worse
  - disorder improving
  - ageing

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**4. Give one purpose of health research.**

Any one from:

- establishing new and more effective treatments and care
- ensuring current care is as safe and effective as possible

**5. Give one way in which research may be validated.**

When another researcher repeats the research and achieves similar results

**6. Give one way in which a service user could check the reliability of a health product.**

Any one from:

- speak to a GP, hospital consultant or practice nurse
- research on the Internet
- check information on the NHS website
- check information on the UK government website
- check information on the website of a relevant charity, such as MIND or Arthritis

**D2: Treatment planning for diabetes**

**1. How are local health care needs identified?**

Local health care needs are identified through:

- clinical commissioning groups (CCGs)
- health and well-being boards

**2. Give three factors that could influence individual need.**

Any three from:

- culture
- age
- gender
- religion
- disability

**3. Explain what is meant by the purpose and aim of care for the individual.**

The purpose and aim of care for the individual is that they should know and understand they're having and why.

**4. Explain how care outcomes are linked with reviews of individual need.**

An individual's care outcome is based on what they need to achieve, such as stabilise a diabetic.

Once this has been achieved, the individual will have further needs identified, such as blood sugar levels at home, so that they can become independent.

**5. Give two possible barriers to care.**

Any two from:

- physical, such as being unable to take a medicine
- emotional, such as being unable to accept they have a disorder
- intellectual, such as not being able to learn how to manage their disorder
- lack of money
- geography or locality
- pressures on the setting, such as limited hospital beds at certain times

**6. Give the seven principles of the care value base.**

The seven principles of the care value base are:

- maintain confidentiality
- carry out anti-discriminatory practice
- promote effective communication
- respect personal belief and diversity
- promote dignity, choice, safety, independence and empowerment
- carry out personalised care
- protect from abuse

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## References

Topic	Website
Alzheimer's disease	<a href="http://www.alzheimers.org.uk">www.alzheimers.org.uk</a>
Arthritis	<a href="http://www.arthritiscare.org.uk">www.arthritiscare.org.uk</a> <a href="http://www.arthritisresearchuk.org">www.arthritisresearchuk.org</a>
Asthma	<a href="http://www.asthma.org.uk">www.asthma.org.uk</a>
British Lung Foundation	<a href="http://www.blf.org.uk">www.blf.org.uk</a>
British Medical Council	<a href="https://www.bma.org.uk/">https://www.bma.org.uk/</a>
BUPA health information	<a href="https://www.bupa.co.uk/health-information">https://www.bupa.co.uk/health-information</a>
Cancer and leukaemia	<a href="http://www.cancerresearchuk.org">www.cancerresearchuk.org</a> <a href="http://www.macmillan.org.uk">www.macmillan.org.uk</a> <a href="http://www.cancer.org">www.cancer.org</a>
Care Quality Commission	<a href="https://cqc.org.uk/">https://cqc.org.uk/</a>
Coronary heart disease	<a href="http://heartuk.org.uk">heartuk.org.uk</a>
British Heart Foundation	<a href="http://www.bhf.org.uk">www.bhf.org.uk</a>
Diabetes	<a href="http://www.diabetes.org.uk">www.diabetes.org.uk</a>
Institute of Health Visiting	<a href="https://ihv.org.uk">https://ihv.org.uk</a>
Mayo Clinic	<a href="https://www.mayoclinic.org">https://www.mayoclinic.org</a>
Medical Research Council	<a href="https://mrc.ukri.org">https://mrc.ukri.org</a>
National Health Service	<a href="http://www.nhs.uk/conditions">www.nhs.uk/conditions</a>
National Osteoporosis Society	<a href="https://nos.org.uk/">https://nos.org.uk/</a>
National Institute for Health and Care Excellence (NICE)	<a href="http://www.nice.org.uk">www.nice.org.uk</a>
NHS England	<a href="https://www.england.nhs.uk">https://www.england.nhs.uk</a>
National Institute for Health Research	<a href="https://www.nihr.ac.uk/">https://www.nihr.ac.uk/</a>
Nursing and Midwifery Council	<a href="https://www.nmc.org.uk/">https://www.nmc.org.uk/</a>
Nursing Times	<a href="http://www.nursingtimes.net">www.nursingtimes.net</a>
Parkinson's disease	<a href="http://www.parkinsons.org.uk">www.parkinsons.org.uk</a>
Sickle cell disease	<a href="http://www.sicklecellsociety.org">www.sicklecellsociety.org</a>
Shelter – Chance of a Lifetime report	<a href="https://england.shelter.org.uk/__data/assets/ce_of_a_Lifetime.pdf">https://england.shelter.org.uk/__data/assets/ce_of_a_Lifetime.pdf</a>
Thyroid disease	<a href="http://thyroiduk.org.uk">thyroiduk.org.uk</a>

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