

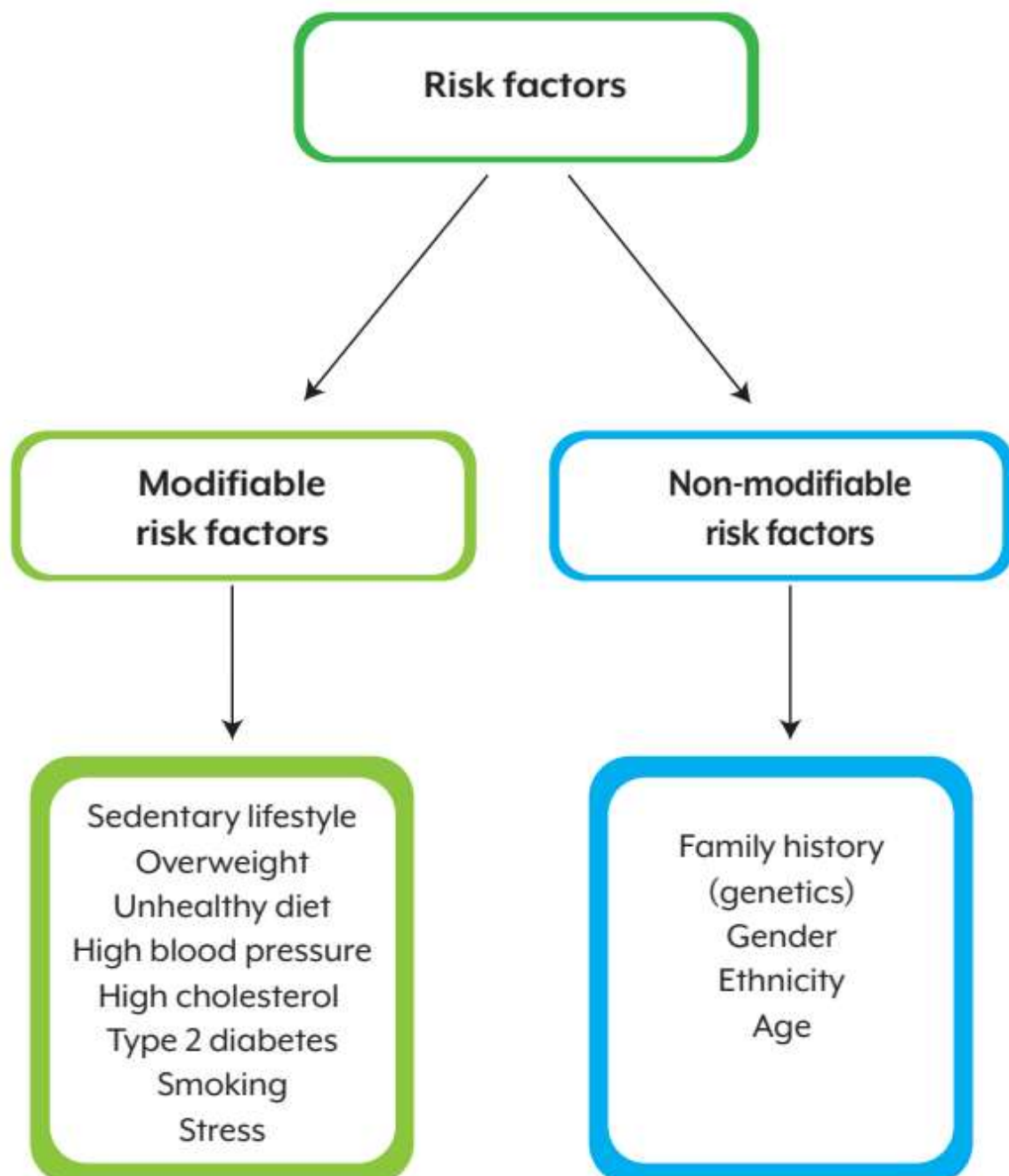
Health Science Coverage (Boys)

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There are two types of risk factors:

- ⦿ **Modifiable** risk factors are risk factors that you can change.
- ⦿ **Non-modifiable** risk factors are ones that you cannot change.



Screening

Screenings are medical tests that doctors use to check for diseases and health conditions in people before there are any signs and symptoms. Most often, screening is done on healthy people.

Medical screening for diseases can be done in many ways, for example, blood tests, scans, and physical examinations.



Regular health checks and screenings are extremely important in disease prevention. They can:

- ⦿ diagnose diseases or health issues before they start to affect you.
- ⦿ allow you to get treatment early. This increases your chance of recovering from certain life-threatening diseases, for example cancer.
- ⦿ allow you to keep track of your health, such as weight and blood pressure.
- ⦿ help you to have a healthier, longer life.
- ⦿ give you peace of mind. Knowing that you have been screened for certain conditions can help you to stop worrying.

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Body mass index (BMI)

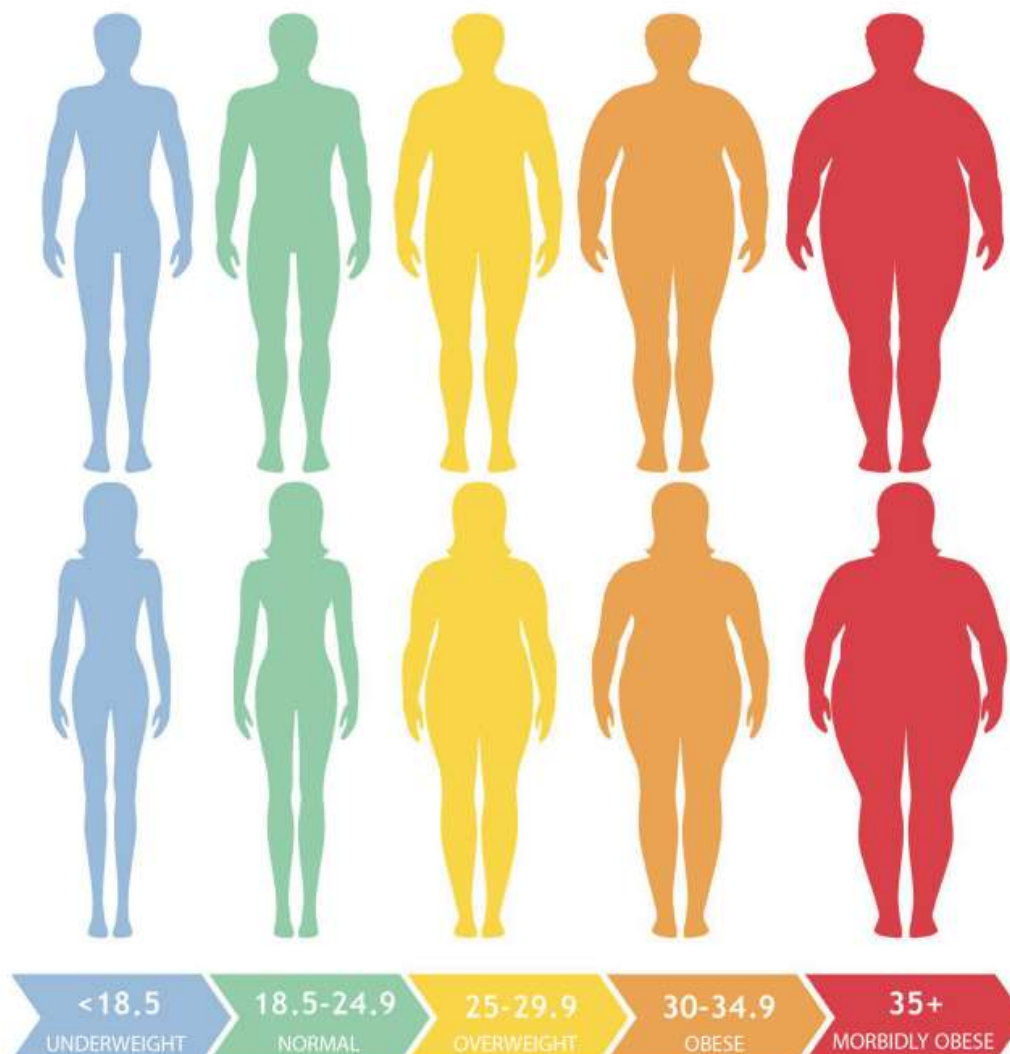
Body mass index (BMI) is a measurement of a person's weight for their height which is used to identify weight status. So, to calculate BMI, you need to know the person's weight and height.

Calculating BMI

BMI is calculated using the following equation:

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

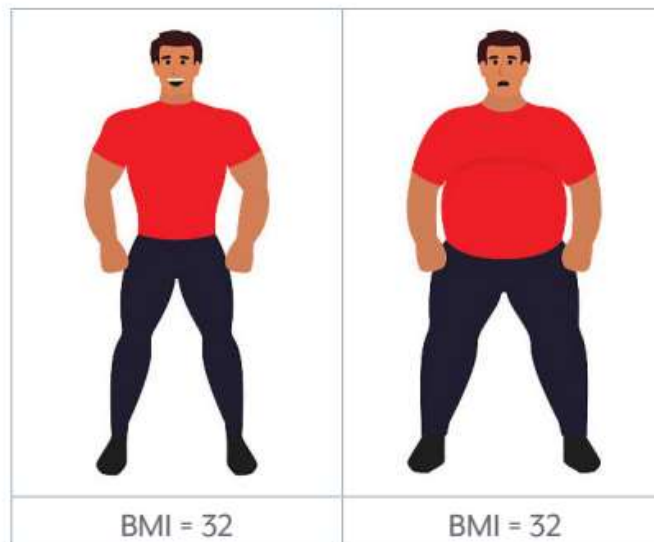
After calculating BMI, the next step is to understand the results. The BMI number will fall into one of four categories; underweight, normal weight, overweight or obese (there are different classes of obesity).



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Body fat percentage

Sometimes it is useful to use BMI alongside body fat percentage to assess health. A person could be overweight or obese according to their BMI, but their body fat percentage could be quite low. This happens a lot with sports players and athletes who have a lot of muscle.



Everyone has fat on their body. We need fat to protect our organs, provide energy, and help our bodies stay warm. Too much fat on the body can increase the risk of developing non-communicable diseases such as heart disease and cancer.

Measuring body fat

Before you can calculate body fat percentage, you must first measure the amount of fat on the body.

The most accurate way to measure body fat is by using a **DEXA scanner**. This is an X-ray that shows an exact breakdown of fat mass, bone density and muscle mass.

Another method for calculating body fat is to measure **skinfold thickness**. Skinfolks are areas of skin that can fold when pinched. Skinfolks are measured using a tool called callipers which grip the fat through the skin at various parts of the body.

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Bioelectrical impedance analysis (BIA) is another method of measuring body fat. It sends a weak electrical current through the body. The person does not feel the electrical current. The machine can tell when the electrical current is travelling through fat as opposed to muscle.

Calculating body fat percentage

Once you have measured body fat, you can then calculate the body fat percentage. You need three things for this:

- ⦿ Total body weight (TBW) in kilograms (kg)
- ⦿ Body fat in kilograms (kg)
- ⦿ Age

The formula for calculating body fat percentage:

$$\frac{\text{Body fat}}{\text{TBW}} \times 100$$



Example

Hamad's body fat is 30kg and his TBW (total body weight) is 100kg. He is 30 years old.

$$30 \div 100 = 0.3$$

$$0.3 \times 100 = 30\%$$

Hamad's body fat percentage is 30%.

Maha's body fat is 14kg and her total body weight (TBW) is 58kg. She is 22 years old.

$$14 \div 58 = 0.24$$

$$0.24 \times 100 = 24\%$$

Maha's body fat percentage is 24%.

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Understand the results

Once you calculate the results of the body fat percentage, you need to interpret the results. Body fat levels change as people get older. This is why it is important to know the person's age so you can accurately identify which range they fit into.

There are four possible ranges that a person can fit into:

Blue

This category shows that the person has too little body fat for their age.

Green

This category shows that the person has a healthy amount of body fat for their age.

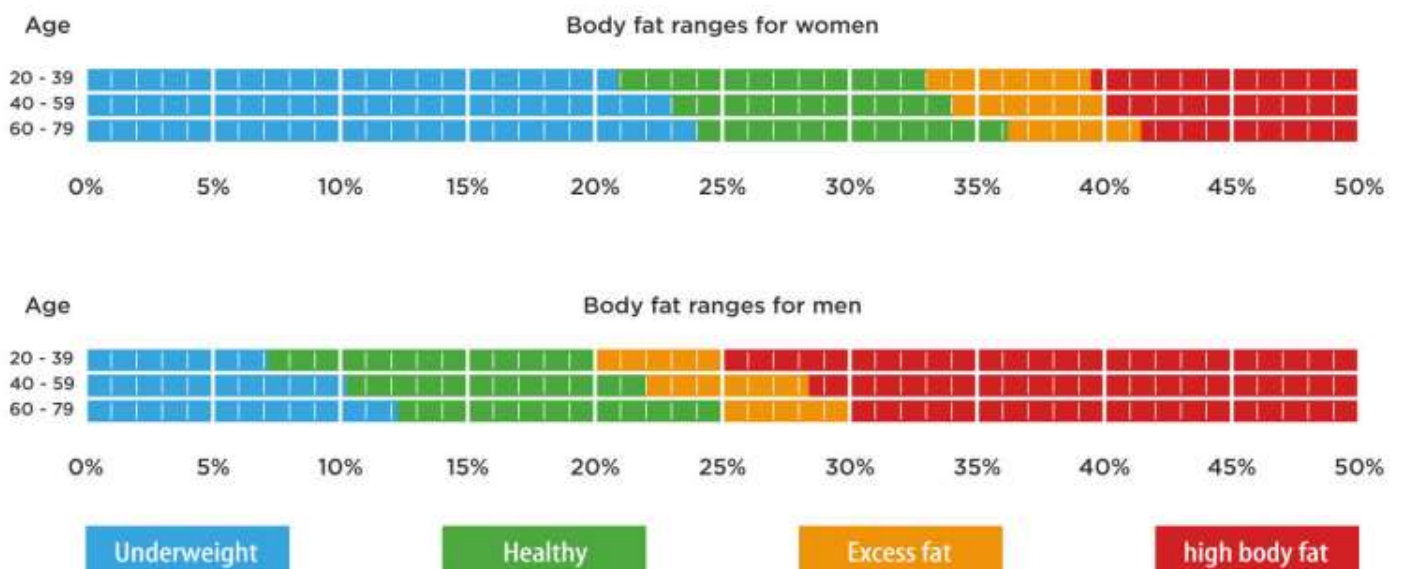
Amber

This category shows that the person has gone above the healthy body fat for their age and they should try to reduce it.

Red

This category shows that the person has so much body fat for their age that it could have a negative impact on their health by putting them at a higher risk of certain conditions. They need to reduce it.

Healthy body fat ranges for adults



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In 2016, there were 725 deaths and 6,681 people injured in road accidents in the United Arab Emirates. After heart-related issues, traffic-related accidents cause the most deaths in the UAE.

According to government statistics, the top 7 causes of road accidents in the UAE are:

1. Sudden swerving/lane changing

This is the top cause of accidents in the UAE. It happens when a car moves into another lane without making a signal or checking that the lane is clear.

2. Driving without keeping a safe distance (tailgating)

Tailgating is when a car is driving too close to the car in front. If a car is following another too closely, there is not enough time to stop if the driver in front brakes suddenly.

3. Dangerous driving

There are many types of driving that this covers, for example speeding, running red lights, cutting people off or passing illegally.

4. Entering a road without checking that it is clear

This can include joining the highway without checking for traffic, or turning into a street when there are other cars coming.

5. Lack of attention or judgement

This can include using a mobile phone or being distracted while driving.

6. Not following the road lanes

This means driving between two lanes or driving on the wrong side of the road.

7. Reversing in a dangerous way

Reversing without checking what is behind the car.

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How to practise safe driving

Earlier in this unit you learned about some of the main causes of accidents on the roads in the UAE. But there are things that you can do to ensure that you, your passengers, and other road users stay safe and avoid accidents.

These include:

- ⦿ being aware of speed limits.
- ⦿ leaving a safe distance between your car and the car in front.
- ⦿ using your mirror and indicator when changing lanes.
- ⦿ being aware of weather conditions that can affect driving.

Speed awareness

The speed of a vehicle greatly affects road safety. Speed limits are in place to make sure safe driving speeds are followed on the roads.

Fast-moving vehicles are more dangerous to all road users. Speeding increases the number of crashes and how severe they are. Speeding also reduces the time you have to make a decision and increases the braking distance required.



Speed and survival rates

Look at the percentages below. These relate to speed and how it affects pedestrian survival rates if they are hit by a car.

32kph (20mph)

10% chance of the person dying

48kph (30mph)

20% chance of the person dying

64kph (40mph)

80% chance of the person dying

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Stopping distances at different speeds and conditions

Stopping distance is the time it takes to bring a moving car to a complete stop.

A stopping distance depends on three factors:

- ⊙ Reaction time
- ⊙ Braking distance
- ⊙ True stopping distance

Reaction time

This is the time it takes between your brain registering the events in front of you and you pressing the brakes. The distance increases the faster you are travelling.

Braking distance

This is time it takes for the car's braking system to bring the car to a complete stop.

True stopping distance

This is the reaction time plus the braking distance.

The formula is:

$$\text{Reaction time} + \text{Braking distance} = \text{True stopping distance}$$

Things to remember when practising safe driving

There are many other things that can be done to make driving safe for you and other road users.

You should:

- ⊙ Avoid driving aggressively, be patient with other road users.
- ⊙ Do not use your mobile phone while driving, wait until you stop.
- ⊙ Plan your journey and leave enough time so you don't need to drive too fast.
- ⊙ Be aware of motorbikes and cyclists on the roads.
- ⊙ Make sure that your car is well maintained and check your tyre pressures regularly.

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Changing lanes safely

You have already learned that sudden lane changes are the biggest cause of road traffic accidents in the UAE.

To make a safe lane change while you are driving, follow these three steps:

1. Mirror

Check your mirror and blind spots.

2. Signal

Always make a signal when you are going to change lanes.

3. Move

When it is safe to do so, change lanes.



Weather conditions

Weather conditions are the state of the atmosphere, for example hot, cold, windy or raining.

At certain times of the year, the United Arab Emirates experiences extreme weather such as heavy rainfall or fog. When this happens, it makes driving more dangerous as there can be flooding on the roads or low visibility.

When driving in heavy rain or fog, you should:

Slow down. Driving at normal speeds is dangerous as you cannot see what is in front of you.

Turn on your lights. Use your headlights or fog lights so that other road users can see your car.

Leave space. Leave extra space between you and the car in front of you.

Stop. If you feel that it is not safe to continue, pull over and stop driving as soon as you can. Find a gas station or restaurant and wait until the weather improves.

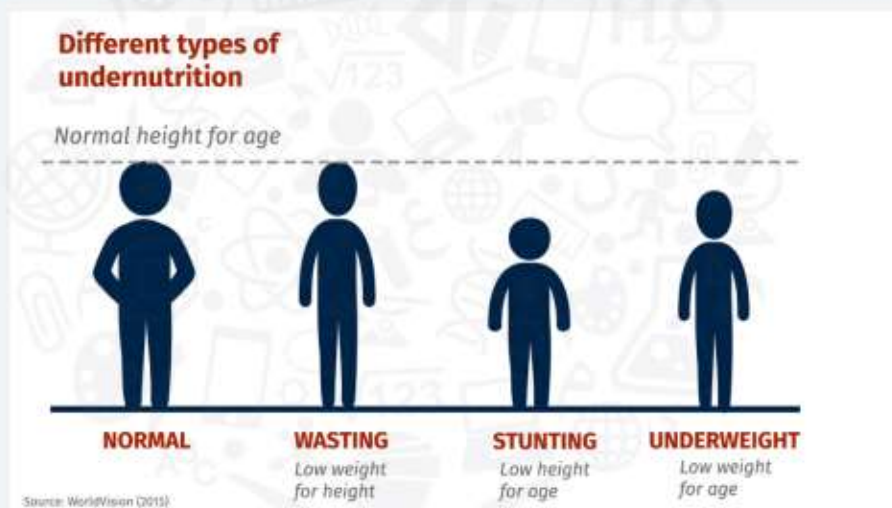
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Nutritional assessment

Nutritional assessment methods allow medical professionals to assess a person's nutritional status.

Medical professionals, such as a dietitian, will often measure the nutritional status of a patient. They interpret the results to understand the patient's health status and advise them on how to improve their diet and overall nutritional status.

There are four main types of undernutrition: wasting, stunting, underweight, and deficiencies. Long term undernutrition can have lots of negative effects on health, especially for children. It increases someone's risk of disease and even death.



Wasting is when someone is a low weight for their height. This is usually due to severe weight loss, through lack of food or they have had an infectious disease, such as diarrhoea, which has caused them to lose weight. A young child who is wasted has an increased risk of death.

Stunting is when a child is a low height for their age. It is the result of undernutrition over time and is more common in low-income countries. It is also linked to poor nutrition of the mother during pregnancy and poor feeding during infancy.

Underweight is when a child is a low weight for their age. A child who is underweight may also be stunted or wasted, or both.

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Fines and penalties for breaking UAE traffic laws

Here are some of the fines that drivers can face for breaking the rules on the UAE's roads.

Rule	Fine	Penalty
Speeding over the speed limit by no more than 20 km/hour	AED 300	-
Speeding over the speed limit by more than 80 km/hour	AED 3,000	23 black points
Dangerous driving	AED 2,000	23 black points
Jumping traffic signals	AED 1,000	12 black points
Using a mobile phone when driving	AED 800	4 black points
Sudden swerving	AED 1,000	4 black points
Not fastening seat belt	AED 400	4 black points

Electrical fire

This is a fire caused by misusing electricity. An example of this is putting too many plugs into a single socket and overloading it.



How to deal with this fire

If it is possible to remove the plug safely, then do so. If not, find the fuse box and switch off the main power. Then extinguish the fire using dry powder or CO₂. If the fire becomes too large, get out of the building and call the Civil Defence.

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Oils and fats

At home, this is a fire normally caused by overheating oil when cooking. When oil gets too hot, it can catch fire on its own (without a spark).



How to deal with this fire

If it is possible to turn the cooker off safely, then do so. Try to cover the pan with the correct lid or use a fire blanket. Do not move the pan as the contents could spill and burn you. If the fire gets out of control, get out of the building and call the Civil Defence.

Refuse fire (solid)

Rubbish or trash in bins is good fuel for a fire. Paper, plastic and wood are all flammable materials. Most bins have these materials inside.



How to deal with this fire

If the bin has a lid, and it is safe to do so, close it which will cut off the oxygen to the fire. Or use water, foam or dry powder to extinguish the fire. Aim at the base of the fire, not the flames. If the fire gets out of control, call the Civil Defence.

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 WOOD, PAPER, FABRICS, ETC.	✓	✓	✗	✓
 FLAMMABLE LIQUIDS	✗	✓	✓	✓
 FLAMMABLE GAS	✗	✓	✗	✗
 ELECTRICAL	✗	✓	✓	✗
 COOKING OIL, FATS	✗	✗	✗	✗

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Replacing negative behaviours with positive ones can help people to:

- ⊙ reduce their risk factors for disease.
- ⊙ increase their life expectancy.
- ⊙ increase their wellbeing.

Behaviour change interventions

Behaviour change interventions encourage a person, a community, or a whole population to make a positive behaviour change.



Keyword

intervention

action that is taken to change something

These interventions are usually carried out by government health departments or healthcare providers to protect and improve people's health.

The aims of a behaviour change intervention are to:

- ⊙ promote health.
- ⊙ prevent illness and disease.
- ⊙ reduce healthcare costs.

Three types of interventions:

1. **Education and communication** - This is when health advice is given to one or more people.

This could be advice from a doctor given to one person about how to have a healthy diet. It could also be a TV advert about the dangers of smoking which many people would see.

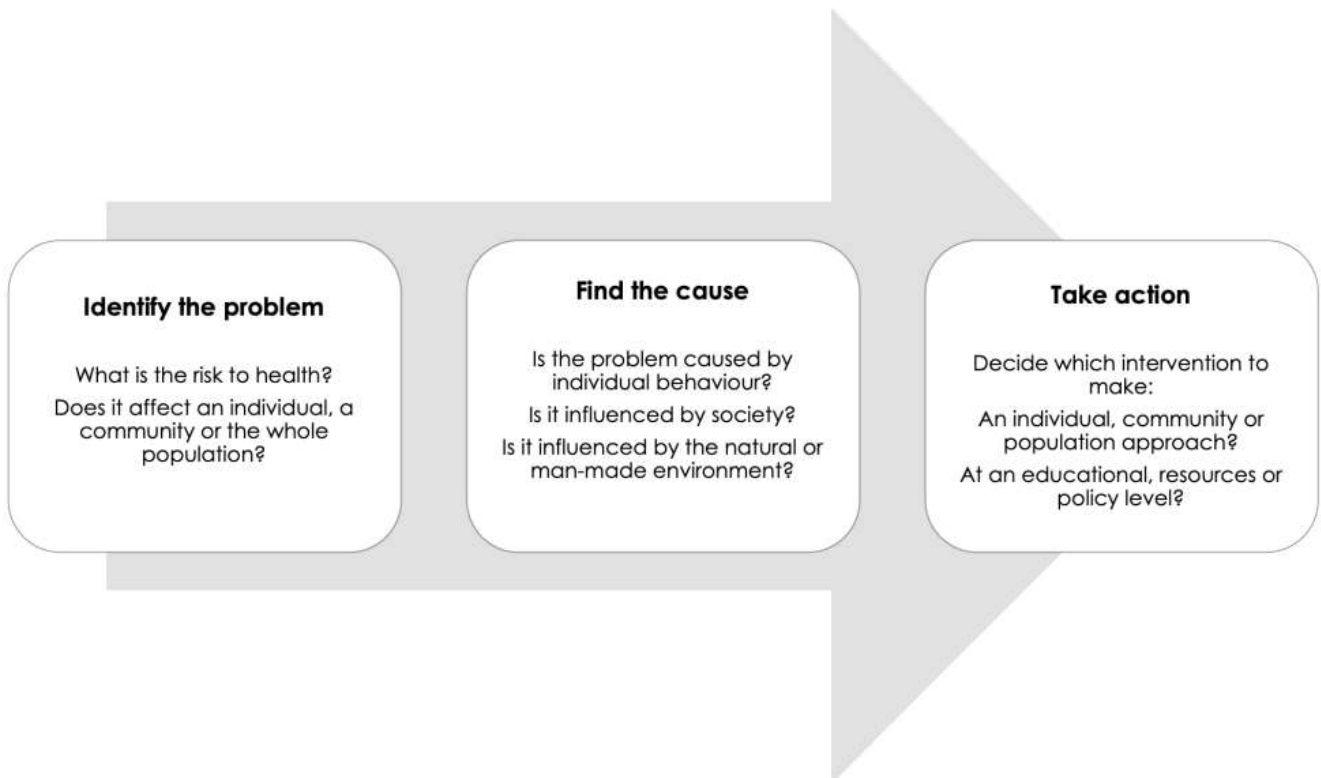
2. **Resources** - This is when things are provided for people to use to help them to make positive health changes.

For example, if people have access to a park or a gym near where they live it makes it easier for them to choose to exercise.

3. **Policy** - This is when governments bring in measures to change something that affects the health of many people.

Planning a behaviour change intervention

Behaviour change interventions can be planned using the steps below.



Following these steps can help to create a targeted behaviour change plan that helps to change a particular health problem in a person or group of people.

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What influences behaviour?

Social Cognitive Theory

There are many things that influence the way that a person behaves. Social Cognitive Theory is a theory that can be used to explain why people behave the way that they do.

Social Cognitive Theory explains that our behaviour is influenced by:

- ⊙ the natural and man-made environment.
- ⊙ our social environment.
- ⊙ personal factors.

Environmental influences on behaviour

The natural and man-made environment

The natural environment is everything that makes up the natural world around us such as the air, land, water, and the weather. The man-made environment includes things that people have created such as cars, buildings, and roads.

The environment can have a big influence on the way that people behave. It can direct them to make healthy or unhealthy choices.

Man-made things are usually created to make our lives easier and more comfortable. But these can also affect people's decisions to make healthy choices.

But quite often, people do not even know that their behaviour is being influenced by the man-made things around them.

The social environment

The social environment includes all the social things that surround a person. This includes our relationships with other people, the society we live in and our culture.



Keyword

culture

the beliefs and customs of a group of people

The social environment can affect people's behaviour because many things that people do are influenced by the people that they know such as family and friends.

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We learn many things from the people around us. They could be how we do something, or how we act. For example:

- ⦿ learning communication skills such as talking and listening
- ⦿ learning practical skills such as cooking
- ⦿ learning how to behave in different situations
- ⦿ learning to know right from wrong

This means that the way that we behave could be because we watched our parents behave that way, or that we have been taught a particular behaviour.

Society

It could also be that society influences us to behave or act in a certain way. For example, when you go to a shop to buy something you wait in line to be served. You behave that way because it is what society expects you to do.

Personal factors

Personal factors are individual things that influence a person's behaviour.

Some personal factors that can explain why people behave the way that they do are:

Self-efficacy. This is people's belief in themselves and their ability to do something.

Example: If you believe that you can run for 30 minutes, then you are more likely to be able to do it.

Outcome expectations. This is what people expect to happen if they do something.

Example: If you change to a healthier diet and exercise more you would expect to lose weight.

Goals. These are things that a person wants to do in their life.

Example: If you have a goal that you want to achieve, then you might change your behaviour so that you can reach the goal.

You will learn more about goals and goal setting later in this unit.



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Causes of disease and illness

The cause of diseases can be split into two categories:



- ⊙ Diseases caused by bacteria, viruses and parasites which enter a person's body and make them ill.
- ⊙ Diseases caused by a person's lifestyle choices, the environment they live in, or their family history.

Communicable diseases

Communicable diseases are caused by bacteria, viruses and parasites which can be spread from one person to another. They can be spread through contact with an infected person, through contaminated food or drinks, through insect bites or the air.

You can help to prevent communicable diseases by:

- ⊙ practising good personal hygiene.
- ⊙ cleaning and disinfecting shared areas.
- ⊙ keeping a safe distance from people who are unwell.

Non-communicable diseases

You cannot get non-communicable diseases from another person. They are usually chronic (long-term) diseases.

Four of the most common non-communicable diseases are:

- ⊙ cardiovascular disease
- ⊙ cancer
- ⊙ respiratory disease
- ⊙ diabetes

Non-communicable diseases are usually caused by having an unhealthy lifestyle, living in an unhealthy environment or genetics (family history).

People can lower their risk factors for non-communicable diseases by changing their lifestyle habits, such as losing weight or stopping smoking.

Personal health behaviours are lifestyle habits that can affect a person's health. They can be positive behaviours, which could be good for your health or negative behaviours which could be bad for your health.

Positive health behaviours include:

- ⦿ Having a healthy diet and drinking enough water
- ⦿ Getting enough sleep
- ⦿ Having good personal hygiene
- ⦿ Being physically active
- ⦿ Getting regular medical check-ups

Having good personal health behaviours and a healthy lifestyle could affect your modifiable risk factors for developing a disease.

UAE National Immunisation Programme

In the United Arab Emirates, there is an immunisation schedule to vaccinate children against many different diseases.

The vaccination schedule starts when a child is born and usually continues until the child is in grade 11.

If you miss some injections when you are a child, you can still have them as an adult. There are also other vaccinations you can request as an adult, such as a flu injection, or vaccinations for when you are travelling to different countries which have a high risk of certain diseases.

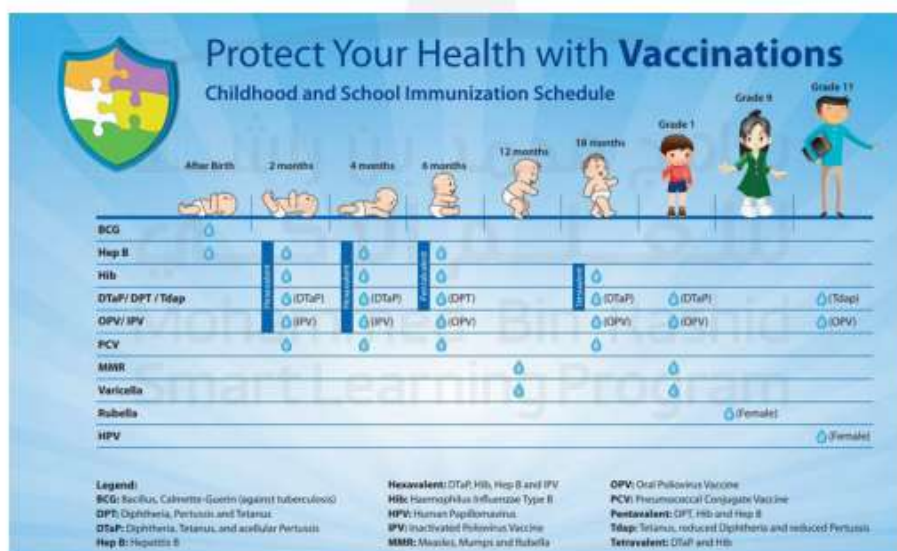


Think

Can you remember having injections in school? The injections that you might have had are part of the UAE Government's programme to protect your health and wellbeing.

The UAE vaccinates children against diseases such as:

Tuberculosis (BCG)	Measles, mumps, rubella (MMR)
Hepatitis B (Hep B)	Varicella (chickenpox)
Polio (OPV/IPV)	Influenza (Hib)



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Educating road users



In the UAE, drivers need to pass a driving test before they can drive on the roads. This is so that people have had instruction on how to drive properly and follow the rules of the road.

The minimum age for a driving licence in the UAE is 18 years for cars and other light vehicles.

To prevent road accidents, different government departments in the UAE have launched awareness campaigns to educate motorists and lessen the impact of traffic fatalities.

Protecting pedestrians and cyclists

Some of the most at risk groups of people who use the roads and footpaths are pedestrians and cyclists. Around 100 pedestrians a year are killed on the UAE's roads.

The United Arab Emirates government has created measures to protect pedestrians including:

- ⦿ reduced speed limits in built-up areas where there are more pedestrians and cyclists.
- ⦿ making more zebra crossings and pedestrian bridges so that people can cross the road safely.
- ⦿ creating school safety zones.



To protect cyclists, the UAE has:

- ⦿ Promised to make the UAE more cycle-friendly by creating safe routes for cyclists. In Dubai, the Road and Transport Authority wants to create almost 650km of cycling tracks by 2025.
- ⦿ Created laws that cyclists must follow, including wearing a protective helmet, having lights fitted on the front and back of their bike, and using cycle tracks where available. Cyclists are not allowed to ride their bike on the pavement.

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Growth charts

The WHO provide growth charts for all children up to nineteen years of age. These charts are used to compare height and weight against people of the same age and gender. They are also used to follow a child's growth and can identify some medical problems at an early age.

Lines or curves on the growth chart show the height of many other children at each age.

The WHO growth charts are divided up into age groups. There are charts for babies aged 0-2 years, 2-5 years, and 5-19 years. In general, people do not grow after nineteen years of age.



World Health Organization

What you will need

To figure out where someone fits on the growth chart there are a few things you need to know.

- ⊙ The person's gender (male or female)
- ⊙ The person's age (usually in years)
- ⊙ The person's height (in centimetres)

How the chart works

The bottom of the chart shows the age of the person. Once you find the age of the person, you then look for their height on the chart. Make a mark on the chart where the age meets the height. The red, yellow, and green lines on the chart are called percentiles.

Healthcare professionals use growth charts to compare the growth of individuals of the same age. They also help to monitor and track the development of boys and girls over time. Growth charts can be used to identify if there is a growth problem that could be related to malnutrition.

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Child safety seats and seatbelts

Here is a guide to the different types of car seats and seat belts, their uses and age ranges.

Rear-facing car seat

- ⦿ Infants up to 2 years of age.
- ⦿ Should be fitted in the back of the car.
- ⦿ Never fitted in the front.



Front-facing car seat

- ⦿ 2 years and above, up to 125cm.
- ⦿ Should be fitted in the back of the car.
- ⦿ Never fitted in the front.



Booster seats

- ⦿ Children between 125cm and 145cm.
- ⦿ Should be fitted in the back of the car.
- ⦿ Never fitted in the front.



Normal seat belts

- ⦿ Children at least 145cm tall.
- ⦿ 10-year olds can travel in the front.



Seat belts

In 2017, the UAE Ministry of Interior announced seat belt laws to protect car drivers and their passengers.

The laws state that:

- ⦿ everyone travelling in the car must wear a seatbelt, regardless of their age and whether they are travelling in the front or the back of the car.
- ⦿ children under 10 years of age are not allowed to sit in the front seat of a car.
- ⦿ car seats must be used for children under 10.



The car driver is responsible for making sure that these rules are followed. There are fines of AED 400 and 4 black licence points for failing to observe the laws.

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