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NCFE Level 2 Certificate in Understanding the Safe Handling of Medication in Health and Social Care

Unit 1

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These learning resources and assessment questions have been approved and endorsed by ncfe as meeting the requirements of the Level 2 Certificate in Understanding the Safe Handling of Medication in Health and Social Care.

Disclaimer:
This resource uses real life case studies where specifically stated and referenced. All other references to individuals, groups and companies contained within these resources are fictitious.

Unit 1: Understand medication and prescriptions

Welcome to unit one.

This unit is split into **five** sections. These are:

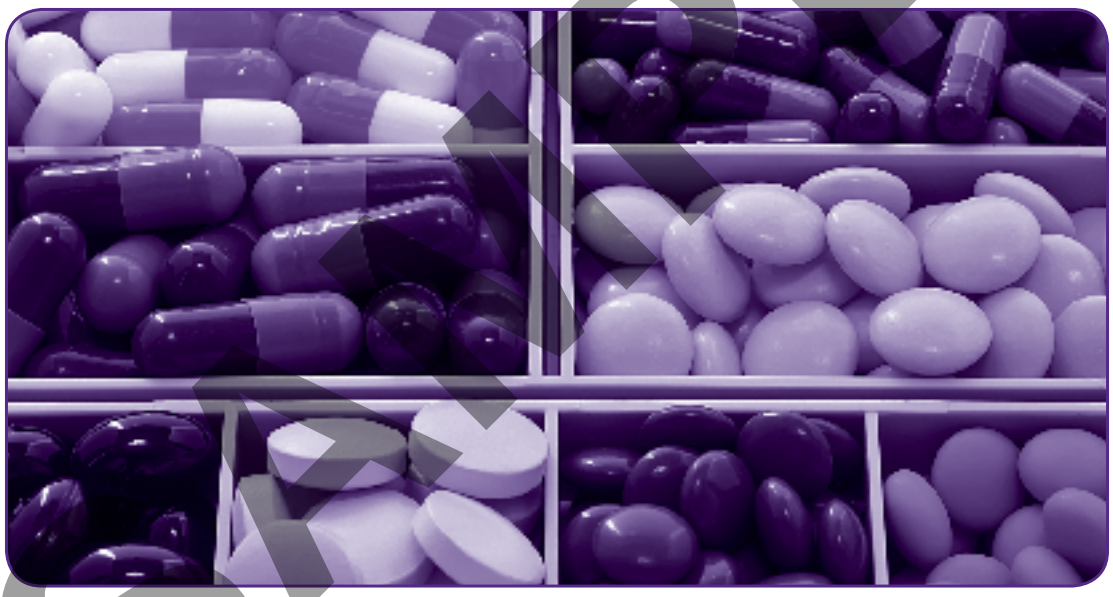
Section 1: Using different medications

Section 2: The classification of medication

Section 3: Legislation and guidelines related to medication

Section 4: Roles of self and others in the medication process

Section 5: Accessing information about medication



As you start to read through each page you will be able to make notes and comments on things you have learnt or may want to revisit at a later stage.

At the end of each section, you will be asked to go to your assessment booklet and answer the relevant questions. Once you have answered the questions go to the next section and continue studying until all of the assessments have been completed.

Please make sure that you set aside enough time to read each section carefully, making notes and completing all of the activities. This will allow you to gain a better understanding of the subject content and will help you to answer all of the assessment questions accurately.

Good luck with your study. Now let's begin!

Section 1: Using different medications

This section will explore the following:

- Different types of medicines
- Routes of administration.

Different types of medicines

Medicines are widely used throughout the world and if taken as prescribed can be used to:

- **Prevent illness** – for example, vaccinations are administered to prevent the effects of some infections
- **Restore or maintain bodily functions** – for example, insulin can be administered to regulate blood glucose levels
- **Relieve symptoms associated with illness** – for example, antacids can be administered to relieve symptoms associated with heartburn and indigestion
- **Treat or manage illness** – for example, antibiotics can be administered to treat bacterial infections.

There are many different types of medicines on the market and most of these are known by two or more names. One is the **generic name**; also known as the approved, non-proprietary or pharmaceutical name. The other is known as the **brand name;** also known as the proprietary name.

The difference between the generic and the brand name

Generic name

Whilst medicines can have many brand names, they only have one generic name. The generic name of a medicine is based on the drug's main ingredient, for example, ibuprofen or paracetamol.

When a doctor prescribes medication they should always use the generic name. The pharmacist however can choose which brand of the medication will be supplied.

Brand name

Many medicines have one or more brand names. This is chosen by the company that makes it. Several companies may make the same medicine, each with their own brand name. For example, ibuprofen is a generic name. However many companies make this medication under their own brand name, such as Brufen, Calprofen and Ibuleve.

The brand name of a medication is usually most clearly **visible** on the packaging and is easily identified by the symbols ® or ™. The medication may vary in its presentation, so a tablet may be a different colour or shape.

A

Activity 1: Generic and brand names

Using any resource available to you (eg. British National Formulary (BNF), UK websites or pharmacies) complete the table to show the UK generic/brand names of the medicines listed.

Generic name	Brand name
Furosemide	
	Calpol
	Ibuleve
Fluoxetine	
	Marevan
Lactulose	
Chlorpheamine	
	Zantac
	Amoxil
Paracetamol	

Check your answer at the end of this workbook.

Groups of medicines

Medicines can be grouped and named according to the body part or body system they affect (such as cardiovascular which treat conditions of the heart and blood vessels) **or** by the type of illness, condition or disease they treat (such as antidepressants or anti-inflammatory medicines).

Below are some of the more common types of medicines you may come across within your workplace. These have been grouped according to the type of illness, condition or disease they treat.

- Antibiotics
- Analgesics
- Antihistamines
- Antacids
- Anticoagulants
- Psychotropic medicines
- Diuretics
- Laxatives
- Hormones
- Cytotoxic medicines.

Antibiotics

Antibiotics are powerful medicines that are used to treat bacterial infections. Some illnesses caused by bacterial infections include:

- Impetigo
- Tonsillitis
- Salmonella
- Urinary tract infection
- Chest infection.

Not all antibiotics work in the same way. Some antibiotics work by killing the bacteria, others work by preventing the bacteria from growing and reproducing.

Some antibiotics can be used to treat a wide range of bacterial infections. These are known as **broad-spectrum** antibiotics. Examples include amoxicillin and cefotaxime. Other antibiotics can only be used to treat specific types of bacteria. These are known as **narrow-spectrum** antibiotics. Examples include vancomycin and teicoplanin.

Antibiotics cannot be used to treat viral infections because the structure of a virus is different to that of bacteria. Some illnesses caused by viral infections include measles, chicken pox, colds and flu.

Antibiotics are prescribed for a specific period of time (this is commonly between seven to ten days) and should be taken at regular intervals, for example every four, six, eight or 12 hours.

Some antibiotics have specific instructions relating to the way they need to be taken. For example, to be taken before, after, or during meals. It is therefore important to read and carefully follow the instructions that come with the medicine.

If antibiotics are not taken according to their instructions, or if the full course is not completed, this could lead to the dose not being sufficiently high for a long enough period to be effective against the bacteria. The bacteria will then continue to thrive. Low doses of antibiotics may also lead to the bacteria becoming resistant to them. This happens because the bacteria develop mutations which can make them resistant to a particular antibiotic or to different types of antibiotic. These bacteria can then become difficult to treat. Resistance can lead to further, and possibly more serious, infections.

Key Fact

One example of resistant bacteria you may be familiar with is MRSA (Methicillin-Resistant Staphylococcus Aureus).

It is therefore essential that instructions are always followed and the course of antibiotics is completed, even if symptoms appear to improve.

Common antibiotics include: **penicillin**, **amoxicillin** and **cefalexin**.

Case Study: John has an ear infection

John is 49 years old and has been suffering with a painful ear which feels hot to touch. After waiting for a week, John finally decides that he should make an appointment to see his GP as the pain is getting worse. John has been taking paracetamol for his pain with very little effect.

John's GP examines inside the ear and explains that the ear is painful because he has a bacterial infection. The doctor advises John that he should take ibuprofen for the pain and prescribes a course of antibiotics known as penicillin. Within a few days of taking the medication John's ear feels much better. However, on the fifth day of a seven day course, John stops taking the antibiotics and puts the remaining capsules in his medicine cabinet.

A Activity 2: John

Read the case study about John and his ear infection. Which three of the following consequences have a high chance of happening because John has not completed his course of antibiotics?

- **The bacteria may continue to thrive** ☐
- **John's ear will get 100% better** ☐
- **The bacteria may become resistant to the antibiotic** ☐
- **The bacterial resistance may lead to further, potentially more dangerous infections** ☐
- **John will become allergic to the antibiotics** ☐

Check your answers at the end of this workbook.

Analgesics (painkillers)

Analgesic medication is used to relieve pain.

However, some analgesics also have other effects; for example, paracetamol can also be used to reduce a temperature. Different analgesics work in different ways. Some work by **easing the pain at the site of the injury**. Some work by **blocking the pain signals from the nerve endings to the brain.** Analgesics do not treat the cause of the pain, however, they do provide **temporary relief from pain symptoms.** People commonly take analgesics to relieve pain associated with headache, toothache, back ache, menstrual cramps (period pains) and pain associated with injury or surgery.

Pain can be mild, moderate or severe and the type of analgesic chosen would depend on the type and severity of the pain.

Commonly used analgesics include **ibuprofen** and **paracetamol.** Other analgesics include codeine, tramadol, diamorphine and fentanyl. The strongest analgesics are controlled drugs. Controlled drugs may be used post operatively or within a palliative care setting. Controlled drugs will be discussed in further detail within Section 2.

Antihistamines

Antihistamines are commonly used to treat allergies such as hay fever.

Antihistamines work by blocking the release of a protein called histamine. Antihistamines are also used as ingredients in other types of medication including treatments for migraine, travel sickness and sleep disturbance.

There are **two** main types of antihistamines. One is **sedating** and one is **non-sedating.**

Sedating antihistamines affect the brain as well as the rest of the body. They can cause sleepiness. Examples include promethazine and chlorphenamine.

Non-sedating antihistamines don ot pass into the brain so easily, so they don't make the individual feel sleepy. This also means that they do not relieve symptoms associated with sickness. Examples include cetirizine and desloratadine.

Antacids

Antacids are a group of medicines which work to neutralise the acid content within the stomach. These medicines are therefore used to treat symptoms associated with indigestion or heartburn. Antacids usually contain aluminium, calcium, sodium salts or magnesium. It is these components which work to neutralise stomach acid.

Antacids work in one of two ways. They either **coat the lining of the oesophagus** (food tube) to protect it from stomach acids, or they produce a gel in the stomach which helps to **prevent stomach acid from entering the oesophagus.**

Antacids are readily available without a prescription. Examples include **aluminium hydroxide, magnesium carbonate, magnesium trisilicate**. All of these come under various brand names, for example **Gaviscon, Rennies and Maalox.**

Anticoagulants

Anticoagulants are used to reduce the ability of the blood to clot.

Although blood clots are necessary to aid healing, they can also be dangerous. If an individual develops an internal blood clot, this could break free and travel in the circulatory system. The clot could block a major blood vessel and could block blood flow to vital organs such as the brain, lungs or heart. This could lead to life threatening conditions such as heart attack, stroke, deep vein thrombosis (DVT) and pulmonary embolism (blood clot in the lungs).

Anticoagulants are therefore prescribed for individuals who are at risk of blood clots. For example, individuals who have:

- Artificial heart valves
- Had a heart attack or stroke
- Had, or are at risk of, deep vein thrombosis (DVT)
- Atrial fibrillation (a fast and erratic heart beat)
- Undergone some types of surgery
- Angina.

Individuals taking anticoagulants are at increased risk of haemorrhage (uncontrollable bleeding) and these individuals must be very closely monitored to ensure their blood levels are within an ideal range.

The **two** most common types of anticoagulant are **warfarin** and **heparin**. Aspirin is also used to help prevent the blood from clotting. However aspirin works slightly differently and is known as an anti-platelet medication.

Psychotropic medicines

Psychotropic medicines affect an individual's mind and influence behaviour.

They are used to help treat the symptoms of mental conditions, for example schizophrenia, depression, bipolar disorder (sometimes called manic-depressive illness), anxiety and attention deficit hyperactivity disorder (ADHD). Without these medicines individuals may experience worse symptoms and suffering. These medicines do not offer a cure but can offer symptom relief.

Medicines which are used in the treatment of depression include fluoxetine and citalopram. Antipsychotic medicines include **chlorpromazine** and **haloperidol. Diazepam** may be prescribed to support individuals who experience anxiety.

It may take several weeks before the benefits of the medication are noticed when taking these types of medicines. Some of these medicines also have a sedative effect, making the individual feel drowsy. This may put the individual at increased risk of falls.

Diuretics

Diuretics are used to help remove excess fluid from the body by increasing the amount of urine produced by the kidneys.

An individual may be prescribed a diuretic to help in the treatment of:

- High blood pressure
- Oedema (too much fluid in the body tissue) which may result as a consequence of heart failure.

Diuretics must always be administered early in the day so that the need to pass urine does not interfere with the individual's sleep. Examples of diuretics include **furosemide, amiloride** and **bendroflumethiazide.**

Laxatives

Laxatives are medicines used to relieve constipation.

Laxatives can work in one of two ways. Some laxatives work on the bowel muscle to make it contract. This makes it easier to push the stool out. Some laxatives work on the faeces, by making them softer, bulkier or easier to pass. Each type of laxative works in a different way to help prevent or relieve constipation.

Bulk-forming laxatives work by softening and increasing the amount of faeces as the fibre bulks out the stool. This then encourages the bowel to move and push the faeces out as the individual empties his or her bowel. Bulk-forming laxatives come in the forms of powder, granules or tablet and need to be taken with plenty of fluids. Examples include **fybogel**, **isogel**, **ispagel orange** and **regulan**.

Osmotic laxatives work by increasing the amount of water retained by the faeces as they pass through the intestine. This makes them softer and easier to pass. Osmotic laxatives come in the forms of powder, liquid and enema. Examples include **lactulose**, **milk of magnesia**, **movicol**, **carbalax** and **micralax**.

Stimulant laxatives work by speeding up the movement of the intestine. Stimulant laxatives come in the forms of tablet, suppository, capsule, liquid and enema. Examples include **senna, bisacodyl** and **glycerine suppositories**.

Hormones

Hormones are chemicals that are naturally produced within the body.

They are secreted into the blood by endocrine organs. Examples of endocrine organs include the pituitary gland, thyroid and pancreas. Many different hormones are secreted in the body and include hormones such as insulin, testosterone, thyroxine and adrenalin.

Hormones work to maintain the body's natural balance; however, some people can experience hormone imbalances, which can occur when an individual produces too much or too little of a particular hormone. Hormone medication may therefore be administered in order to restore or maintain normal bodily functions.

Examples include:

- **Insulin** – used to restore insulin levels in individuals who have diabetes
- **Hormone replacement therapy** – used to restore oestrogen levels in women who are experiencing menopause
- **Levothyroxine** – used to restore thyroxine levels in individuals who have an underactive thyroid.

Cytotoxic medicines

Cytotoxic medicines are used to treat some forms of cancer, and work by either killing or preventing the division of cancerous cells.

Cytotoxic medication can affect all cells, but they tend to affect cells which divide rapidly, for example, cancerous cells, hair follicle cells, early blood cells in the bone marrow and cells of the gastrointestinal tract. People who take cytotoxic medication can therefore experience unpleasant side effects, such as nausea and vomiting, hair loss and bone marrow suppression. Examples of cytotoxic medicines include **methotrexate** and **procarbazine**.

STOP AND THINK!

Take a look at the medicines which are commonly used within your workplace. Make a list of the most commonly used medicines and state which 'medicine group' each medicines belongs to.

Routes of administration

Medicines can be administered through a variety of different routes. **The route by which a medicine is administered refers to the way in which the medication is introduced into the body.**

The route of administration must be suitable for the condition being treated and will depend upon the form in which the medication can be produced. **Medicines can come in a variety of forms and this refers to the way in which the medication is presented, for example, whether it is a liquid, capsule, tablet, cream or suppository.** The purpose of these various 'forms' is to ensure the active ingredient of the medication is carried to the area where it is needed and in doing so minimising any unwanted effects on other areas of the body.

The table below and on the next page shows the different routes through which medication can be administered:

Route	What this involves
Oral route	The oral route of administration involves administering medication by mouth. Medications commonly administered by the oral route include tablets, capsules and liquids.
Buccal route	The buccal route of administration involves administering medication which is placed between the top gum and cheek. The medication is then left to dissolve. Medication administered by this route is quickly absorbed into the blood stream and carries the advantage that the gastrointestinal tract can be bypassed. Medications commonly administered by the buccal route usually come in the forms of: • Tablet – for example prochlorperazine which is used to relieve nausea and sickness • Liquid – for example midazolam, which is used as an emergency response for prolonged seizures.
Sublingual route	The sublingual route of administration involves administering medication under the tongue. The medication is left to dissolve and, like the buccal route, the medication is quickly absorbed into the blood stream. As it is not swallowed, medication administered in this way carries the advantage that the gastrointestinal tract is bypassed. Preparations that are administered by the sublingual route usually come in the form of tablets and sprays.
Intranasal route	The intranasal route of administration involves administering medication into the nose. Preparations for nasal administration usually come in the form of drops, sprays, aerosols, vapours or creams.
Intraocular route	The intraocular route of administration involves administering medication into the eyes. Preparations for the eyes usually come in the form of drops or ointments.
Intra-aural route	The intra-aural route of administration involves administering medication into the ears. Preparations are usually presented in an applicator type bottle and come in the form of drops.
Inhaled route	The inhaled route of administration allows medication to be administered directly into the lungs. Administration can be through an inhaler or nebuliser.
Vaginal route	The vaginal route of administration involves administering medication into the vagina. Vaginal preparations are useful when a localised effect is required, for example, when an individual has an infection. Preparations for vaginal administration include pessaries, ointments, creams and gels.
Rectal route	The rectal route of administration involves administering medication into the rectum. Medication is absorbed through the lining of the rectum. Preparations which are administered by the rectal route include suppositories, enemas, ointments and creams.

Route	What this involves
Topical route	The topical route of administration involves administering medication to the outer surface of the skin. There are many forms of medication that can be administered in this way, including creams, gels, shampoos, soaps, ointments, suspensions and solutions.
Transdermal route	The transdermal route of administration involves administering medication (usually in the form of a patch) to the outer surface of the skin. A controlled dose of the medication is then absorbed through the skin and into the blood stream.
Percutaneous endoscopic gastrostomy (PEG route)	A PEG tube is a tube which is surgically inserted through the abdominal wall into the stomach. The PEG tube provides a long-term solution for ensuring nutritional needs are met when an individual cannot swallow. Medication is also administered down the tube as the individual cannot take medication by the oral route. Medication administered by this route will always be in liquid form.
Subcutaneous route	The subcutaneous route of administration involves injecting medication into the fatty layer of tissue just below the surface of the skin. Medications commonly administered by this route include insulin and heparin.
Intramuscular route	The intramuscular route of administration involves injecting medication into a large muscle, for example the buttock, thigh or upper arm muscle. **Care workers are not permitted to administer medication via this route.**
Intravenous route	The intravenous route of administration involves injecting medication directly into a vein. **Care workers are not permitted to administer medication via this route.**