

تم تحميل هذا الملف من موقع المناهج الإماراتية



حل مراجعة نهائية وفق الهيكل الوزاري المسار المتقدم

موقع المناهج ← المناهج الإماراتية ← الصف الثاني عشر ← علوم صحية ← الفصل الثالث ← الملف

تاريخ إضافة الملف على موقع المناهج: 20:17:17 2024-05-29

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التواصل الاجتماعي بحسب الصف الثاني عشر



اضغط هنا للحصول على جميع روابط "الصف الثاني عشر"

روابط مواد الصف الثاني عشر على تلغرام

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المزيد من الملفات بحسب الصف الثاني عشر والمادة علوم صحية في الفصل الثالث

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Health Science

End of term revision

G12 Advance

Ms. Alyazia Almarashda

2023-2024

Term 3

1	HSC.3.9.01.006 Demonstrate an understanding of the history of systems of medicine, medicines, and pharmacy.	Textbook	12-15
		PDF / Workbook	12-14

In the past, pharmacy used to be part of medicine. **It became a separate and independent science during the Islamic Golden Age** (8th century until 14th century)

In the past many diseases used to cause death to people, **nowadays those disease can be managed and treated thanks to the science of pharmacy.**

The development of pharmacy has:

- helped cure disease
- improve quality of life
- saved lives

Pharmacy started existing a very long time ago as part of medicine. It started in ancient (old) Greece, Rome, Middle East, Egypt, India and China

In history, the first time it was discovered that a person was treated using a drug, was in ancient (old) Greece by **Asclepius and Hygeia.**

It is said that they used a plant to treat a wound (injury). They were considered the masters of medicine, health and hygiene.

Answer the following questions regarding pharmacy.

1. What is pharmacy?

Pharmacy is the study of drug action and the effects that those drugs have on our body.

2. What was pharmacy part of in the past?

Medicine

3. What are herbs? Explain what they were used for in the past?

Plants , treat wounds (injury)

4. How did the separation of pharmacy happen in the past?

It became a separate and independent science during the Islamic Golden Age

2	HSC.3.9.01.006 Demonstrate an understanding of the history of systems of medicine, medicines, and pharmacy.	Textbook	12-15
		PDF / Workbook	12-14

Pharmacy is the clinical science that combines which three sciences?

Pharmacy is the science of **collecting, preparing and dispensing drugs.**

It is the clinical health science that combines medical science, chemistry and biology.

Pharmacy is the study of drug action and the effects that those drugs have on our body.

	True	False
Pharmacy is the science of collecting, preparing and dispensing drugs.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Pharmacy is a very modern and new science. It didn't exist since a very long time ago.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Ancient (old) Greeks were the first ones to treat a person using a drug.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
During the Islamic Golden Age, the separation between pharmacy and medicine happened.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Pharmacists are healthcare professionals specialised in preparing, using, storing and providing medicines.	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3	HSC.3.9.01.008 Identify the evolving roles of the pharmacists in different disciplines.	Textbook	16
		PDF / Workbook	14

What are the four types of pharmacy you have studied in this unit?

Types of Pharmacy



Community pharmacist – pharmacists who work in a pharmacy where you would go to buy medicines.



Home care pharmacist – pharmacists who are responsible for preparing and sending medication to people who are home as they are very sick or old.



Clinical pharmacist – pharmacists who work in hospitals with doctors and nurses. They decide and advice which treatment each patient needs to



Research pharmacist – pharmacists who develop new drugs.

The first table below has four different types of pharmacy. Read the sentences in the second table and decide which one describes each type of pharmacy.

community	clinical	home care	research
These pharmacists develop new drugs.			research
These pharmacists work in a pharmacy where you would go to buy medicines.			community
These pharmacists work in hospitals with doctors and nurses.			clinical
These pharmacists are responsible for preparing and sending medication to people who are at home.			home care

4	HSC.3.9.01.001 Define pharmacology, pharmacokinetics, and pharmacodynamics; and discriminate between drugs, medicines, and excipients.	Textbook	18-22
		PDF / Workbook	16-19

In the space below, explain what pharmacology is.

What is the suffix in the word pharmacology? What does it mean?

What is the prefix in the word pharmacology? What does it mean?

Pharmacology

Prefix: pharma – drugs
Suffix: logy – study of

Is the science that studies everything related to drugs. What drugs are made of, how those work in the body, their effects and interactions.

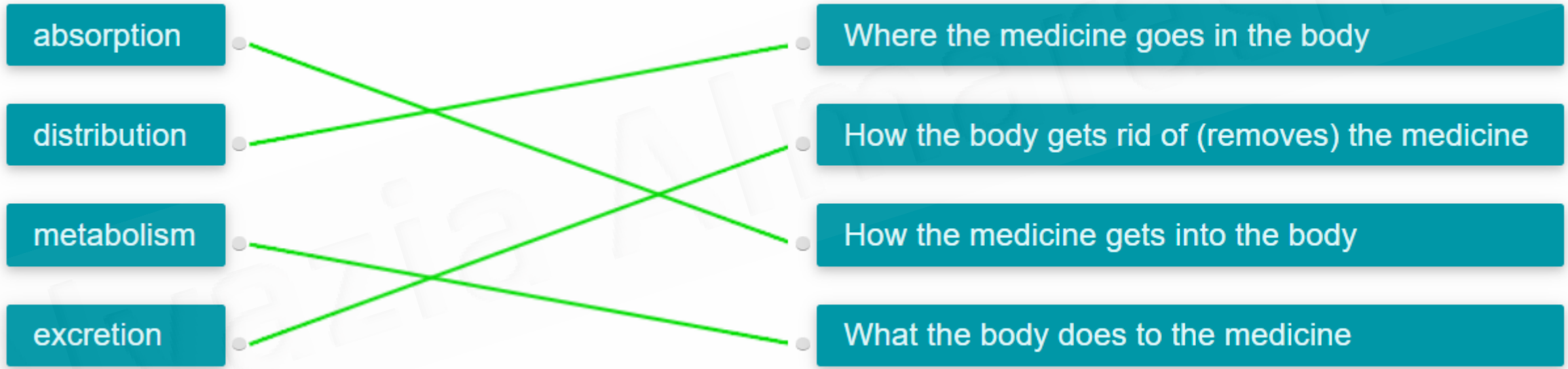
focuses on:

1. studying drugs
2. selling, distributing or handling drugs.

divided into two different areas of study
pharmacokinetics and **pharmacodynamics**.



5	HSC.3.9.01.001 Define pharmacology, pharmacokinetics, and pharmacodynamics; and discriminate between drugs, medicines, and excipients.	Textbook	18-22
		PDF / Workbook	16-19



6	HSC.3.9.01.001 Define pharmacology, pharmacokinetics, and pharmacodynamics; and discriminate between drugs, medicines, and excipients.	Textbook	18-22
		PDF / Workbook	16-19

Explain the meaning of pharmacodynamics.

Is the study of what the drug does to the body.
The most important are:

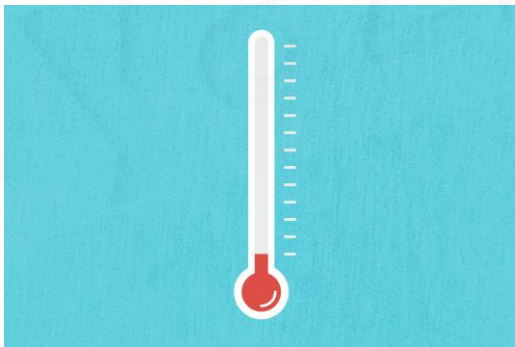
- What does the drug do to the body?
- What receptors are activated?
- What other effects does the drug have?

What factors affect the pharmacodynamics of a drug?

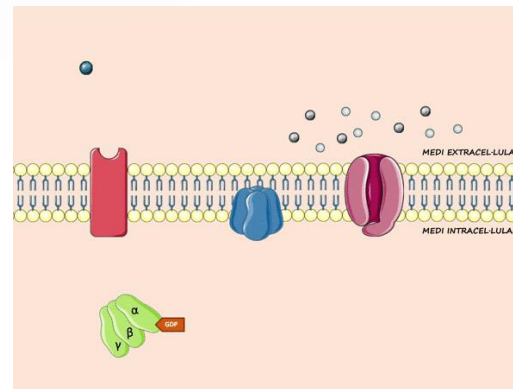
There are factors that influence pharmacodynamics, these are:

- Patient age
- Disease type
- Pregnancy
- Other drugs in the body

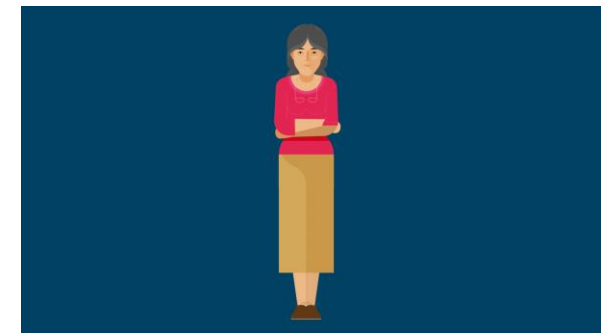
Lower the temperature of the body ..!



Hi Receptor I'm here to relief pain



Cause gases..!



7	HSC.3.9.01.001 Define pharmacology, pharmacokinetics, and pharmacodynamics; and discriminate between drugs, medicines, and excipients.	Textbook	18-22
		PDF / Workbook	16-19

	Pharmacokinetics	Pharmacodynamics
Metabolism is what the body does to a drug.	<input type="radio"/>	<input checked="" type="radio"/>
This is the study of what happens to drugs once they enter the body.	<input checked="" type="radio"/>	<input type="radio"/>
Patient age or pregnancy are factors that influence what the drug does to the body.	<input type="radio"/>	<input checked="" type="radio"/>
This is the study of the effect that drugs have on the body.	<input type="radio"/>	<input checked="" type="radio"/>

8	HSC.3.9.01.002 Identify how different dose forms, routes of administration and dose adjustment impact upon the clinical outcome of drug administration.	Textbook	21
		PDF / Workbook	20-23

Drug, medicine and excipient

The words “drug” and “medicine” can be used to describe the same thing, however, in pharmacy those two words have different meanings



Drugs are chemical substances that are taken from plants, animals, microorganisms or minerals. not used directly as a treatment.



Medicines

- used directly as a treatment
- can treat a pain or cure an infection.
- result of a drug or drugs being mixed, sometimes with an excipient or without it



An excipient is a **substance, such as sugar or gum, used to prepare a drug so it is suitable to administer**. Excipients - additives used in forming tablets and capsules - bind the active ingredients together. The excipients used in these formulations should not interfere with the active ingredients.

Excipients



- used when making medicines,
- helps formulating, protecting or supporting a medicine
- make medicines safer for us to use
- Most medicines have excipients added to them.

Sentence	Drug	medicine	excipient
Can be directly used as a treatment.		●	
Helps formulate, protect and support a medicine.			●
Can directly treat a pain or cure an infection.		●	
Chemical substances that are taken from plants, animals, microorganisms or minerals.	●		
Most medicines contain them in order to be safer for us to use.			●
Are considered ingredients and are not used directly as a treatment.	●		
Are the result of a drug or drugs being mixed.		●	

9	HSC.3.9.01.002 Identify how different dose forms, routes of administration and dose adjustment impact upon the clinical outcome of drug administration.	Textbook	24-29
		PDF / Workbook	20-23

Route of administration	Time until effect
Oral	20 minutes – 1 hour
Sublingual and buccal	3-5 minutes
Topical	Variable (minutes to hours)
Subcutaneous	15-30 minutes
Intravenous	30-60 seconds
intramuscular	10-20 minutes

Oral medication	Sublingual and buccal medication	Topical medication	Parenteral medication
Capsules	Small tablets	Creams	Injections
Liquids	Films	Lotions	Infusion
Drops	Wafers	Gels	
Pastilles	Sprays	Ointments	
Powder		Sprays	
		Inhalers	
		Liquids	

Form of medication	Route of administration
 OINTMENTS, CREAMS, GELS	Topical administration
 INJECTIONS	Parenteral administration
 TABLETS, PILLS	Oral administration Sublingual administration: Buccal administration:
 SPRAY	Sublingual administration: Buccal administration: Topical administration
 CAPSULES	Oral administration
 INFUSION	Parenteral administration

10	HSC.3.9.01.002 Identify how different dose forms, routes of administration and dose adjustment impact upon the clinical outcome of drug administration.	Textbook	29
		PDF / Workbook	20-23

Oral administration

- The patient takes medication **through the mouth**.
- Generally, medication is consumed in a **form of pill or capsule**.
- The pill or capsule is broken apart along the way to the intestines and then dissolved and transported into the bloodstream.
- Once it is in the bloodstream, it can act on many organs of the body including the brain.



Advantages ✓

1. It is the easiest, safest and most cost-effective route
2. provide a very accurate dose for the patient.
3. There are “slow-release” forms available. This means that the drug releases slowly over a period of time, like twelve or twenty-four hours.

Disadvantages ✗

1. The unpredictable absorption of a drug - If there is food in any part of the digestive system, this will change the rate of absorption. Because of this, the drug will not have the expected (wanted) effect.
2. Slow absorption - Drugs taken orally are absorbed into the body slower than other routes. It takes a while for the drug to start showing any effects.

10	HSC.3.9.01.002 Identify how different dose forms, routes of administration and dose adjustment impact upon the clinical outcome of drug administration.	Textbook	29
		PDF / Workbook	20-23

Advantages ✓

1. Lower doses can be given because the drug goes straight into the bloodstream.
2. If a patient is unable to swallow tablets, this route is a good alternative.
3. If oral tablets cause the patient to suffer from side effects such as nausea, using the sublingual route is an easier alternative (way).

Disadvantages ✗

1. It can be uncomfortable for a patient to hold a small tablet in their mouth for a long time.
2. A patient can accidentally swallow the drug. This will take longer to have the desired (wanted) effects. Another dose cannot be given as this can lead to an overdose.
3. If the patient eats or drinks while the tablet is in their mouth, it can affect how the drug is absorbed and how well it works



Sublingual administration:

The drug is placed **(put) under the tongue**. It will dissolve and absorb into the blood through the tissue under the tongue.

Buccal administration:

The drug is placed **(put) between the gum and cheek**. Here it will be dissolved and absorbed into the blood.

10	HSC.3.9.01.002 Identify how different dose forms, routes of administration and dose adjustment impact upon the clinical outcome of drug administration.	Textbook	24-29
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Topical administration

The drug is administered in the **form of a cream or gel applied directly to the area that needs treatment.**

This is used when the area needed to be treated is easy to reach.

It includes areas such as the **skin, eyes, ears and nose.**



Advantages ✓

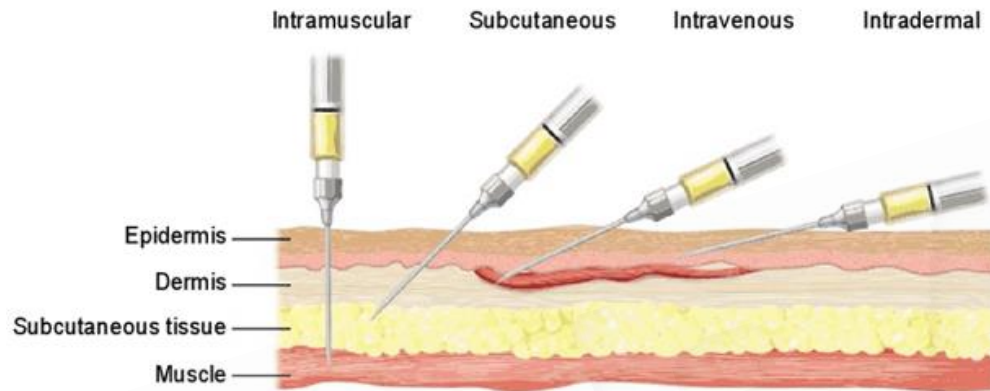
1. Easy to apply for any age.
2. Good if treatment is only needed in the specific area.
3. Low risk of side effects and affecting other drugs.

Disadvantages ✗

1. Not well absorbed into deeper layers of the skin.
2. Absorption can be slow.
3. Creams and ointments applied to the skin can stain clothes.

10	HSC.3.9.01.002 Identify how different dose forms, routes of administration and dose adjustment impact upon the clinical outcome of drug administration.	Textbook	24-29
		PDF / Workbook	20-22

Parenteral administration



There four different types of injection, these are:

1. **Intradermal** – the drug is injected **into layers of skin** e.g. vaccinations
2. **Intravenous** – the drug is injected into the bloodstream through a **vein** e.g. morphine
3. **Subcutaneous** – the drug is injected into the **fat layer under the skin** e.g. insulin
4. **Intramuscular** – the drug is injected into the **muscle** e.g. paracetamol

Advantages ✓

1. The drug action is faster, so it is suitable for use in an emergency.
2. It is useful in unconscious patients.
3. It is suitable when orally administered drugs do not work.

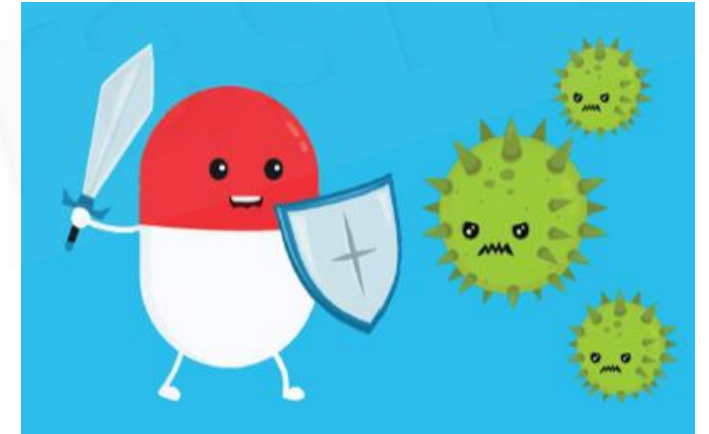
Disadvantages ✗

1. They require aseptic (disease-free) conditions and preparation should be sterile.
2. The equipment is expensive.
3. The technique can be uncomfortable or painful for the patient.
4. Most injections cannot be self-administered as they require a trained medical professional.
5. They can be dangerous if administered incorrectly.

11	HSC.3.9.01.002 Identify the appropriate use of antibiotics.	Textbook	30-33
		PDF / Workbook	24-26

What is an antibiotic?

- Antibiotics are medicines that destroy or slow down the growth of bacteria.
- They include a range of strong drugs that treat diseases caused by bacteria.
- Normally when bacteria multiply in the body, the immune system can kill them and fight the infection.
- Sometimes the body's immune system cannot fight them by itself, and this is when antibiotics are used.
- When antibiotics are used properly, they can cure infections and they can save lives.



NOTE: Antibiotics cannot fight viral infections, like the common cold or COVID-19!

12	HSC.3.9.01.002 Identify the appropriate use of antibiotics.	Textbook	30
		PDF / Workbook	24-26

- People usually take antibiotics orally.
- They can also be administered via an injection or directly applied to the part of the body that is infected.
- Most antibiotics begin fighting the bacteria within a few hours.
- It is important to complete the whole course of medication even after symptoms of the infection have improved.
- It reduces the risk that the bacteria will become resistant to the antibiotic.

Infection	Yes	No
Tuberculosis	★	
COVID-19		★
Chickenpox	★	
Tonsillitis	★	
Cholera	★	
The flu		★

13	HSC.3.9.01.002 Identify the appropriate use of antibiotics.	Textbook	30-33
		PDF / Workbook	24-26

Answer the following questions about antibiotic resistance.

What is antibiotic resistance?

antibiotics can become useless against the bacteria as the
bacteria have improved their defenses.

What causes antibiotic resistance?

Overuse of antibiotics
Not completing the course of antibiotic

How can the risk of antibiotic resistance be reduced?

Not using antibiotic for virus disease
Completing the course of antibiotics

Do you believe antibiotic resistance is a problem in the world today?

yes

What does it mean to "complete the course" of antibiotics?




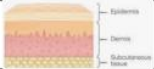


Completing the days prescribed and the exact timings.

14	HSC.3.9.01.007 Interpret basic Latin prescription abbreviations.	Textbook	24-39
		PDF / Workbook	28-33

Sentence	True	False
Abbreviations are not used in healthcare.		False
Abbreviations are only used by doctors.		False
Healthcare professionals use abbreviations when writing and communicating.	True	
Not interpreting abbreviations correctly can be dangerous for patients.	True	
Interpreting abbreviations correctly is very important as it guarantees patients' safety.	True	

15	HSC.3.9.01.007 Interpret basic Latin prescription abbreviations.	Textbook	24-39
		PDF / Workbook	28-33

Measurements	
Abbreviation	Meaning
kg	kilogram
g	gram
mg	milligram
mcg	microgram
ml	millilitre
tsp	Teaspoon (5ml)

Routes of administration	
Abbreviation	Meaning
IM	 Intramuscular
IV	Intravenous 
PO	 By mouth
SC	Subcutaneous 
SL	 Sublingual
TOP	Topical 

Prescriptions		
Abbreviation	Latin	Meaning
Rx	praescriptus	prescription
ac	ante cibum	before meals
pc	post cibum	after meals
hs	hora somni	at bedtime
prn	pro re nata	as needed
stat	statim	give now
ad	ad libitum	as desired/wanted
bid	bis in die	twice a day
tid	ter in die	three times a day
qid	quarter die sumendus	four times a day

Other abbreviations	
Abbreviation	Meaning
Dr.	doctor
XR	X-ray
Dx	diagnosis
Sx	symptom
Tx	treatment
FBC	full blood count
BP	blood pressure

Imagine you are a pharmacist or a nurse, you are going to read now the medical records of a patient who was admitted to hospital yesterday. After you finish reading the medical record, answer the questions on the next page.

♂ 72 y.o. admitted to A&E due to SOB, F/C/S, cough

h/o: COPD
DM type 2
HTN

BP 132/77
T 39.5
O2 82%
HR 132
RR 31

NKDA
Chest XR, FBC, MCS, ABG
Pn / Sputum sample
Dx: pneumonia
Tx: antibiotic therapy, antipyretic
O2 aim SaO2 88-90%

- Rx:
1. Augmentin 1.2g, IV, qid, pneumonia
 2. Clindamycin 300mg, PO, tid, ac, 7 days, pneumonia
 3. Paracetamol 1g, IV, tid, fever

1. What is the diagnosis of the patient?

Dx: pneumonia

2. What type of X-Ray did the patient have?

Chest XR

3. What are the names of the three medicines that the patient has been prescribed?

Rx:

1. Augmentin 1.2g, IV, qid, pneumonia
2. Clindamycin 300mg, PO, tid, ac, 7 days, pneumonia
3. Paracetamol 1g, IV, tid, fever

4. What is the indicated route of administration of Augmentin 1.2g and Clindamycin 300mg?

IV, intravenous

PO, By mouth

5. How many times is Paracetamol 1g prescribed?

tid, Three times

6. How many times is Augmentin 1.2g prescribed?

qid, Four times

7. When should the patient take Clindamycin 300mg? Before, with or after food?

ac, Before food

16	HSC.3.9.01.004 Demonstrate competence in a broad range of basic, scientific, and pharmaceutical calculations.	Textbook	40-44
		PDF / Workbook	34-37

<p>15g to mg</p> <p>15000 </p> <p>.....</p>	<p>3kg to g</p> <p>3000 </p> <p>.....</p>
<p>7L to ml</p> <p>7000 </p> <p>.....</p>	<p>8L to ml</p> <p>8000 </p> <p>.....</p>
<p>2 hours to min</p> <p>120 </p> <p>.....</p>	<p>4 min to sec</p> <p>240 </p> <p>.....</p>

17	HSC.3.9.01.004 Demonstrate competence in a broad range of basic, scientific, and pharmaceutical calculations.	Textbook	40-44
		PDF / Workbook	34-37

Tablet dosage

الى موجود في الصيدلية الى طالبه الدكتور

$$\text{Prescribed dose} \div \text{stock strength} = \text{number of tablets needed}$$

The doctor prescribed 200mg of a drug. The drug is only available in 40mg tablets. How many tablets should be given to the patient?

Answer

Prescribed dose	Equation	Stock strength	Equals	Tablets to take
200 mg	÷	40 mg	=	5



Scenario 1

There is 5mg of prednisolone in one tablet. The doctor wants the patient to take 40mg once daily at 7am. How many tablets should the patient take at 7am?

Desired dose	Equation	Stock strength	Equals	No. of tablets
40	÷	5	=	8

Scenario 2

The doctor has prescribed 400mg of Ibuprofen three times a day for a patient. The tablets come in 200mg tablets. How many tablets need to be dispensed per day?

Desired dose	Equation	Stock strength	Equals	No. of tablets
400	÷	200	=	2

Tablets per day = $2 \times 3 = 6$

Scenario 3

There is 250mg of penicillin in one tablet. The doctor wants the patient to take 500mg twice daily. How many tablets should the patient take in the morning?

Desired dose	Equation	Stock strength	Equals	No. of tablets
$500 \div 2 = 250$	÷	250	=	1

17	HSC.3.9.01.004 Demonstrate competence in a broad range of basic, scientific, and pharmaceutical calculations.	Textbook	40-44
		PDF / Workbook	34-37

Mixtures and solution

الى طالبينه الدكتور
الى موجود في الصيدلية
Desired dose ÷ stock strength x stock volume = amount of solution

The doctor prescribed 120mg paracetamol liquid four times a day. The drug is available in 250mg/5ml. How much liquid is needed per dose?

Answer:

Desired dosage	Equation	Stock strength	Equation	Stock volume	Equals	Amount of solution required
120mg	÷	250mg	X	5ml	=	2.4ml per dose

Scenario 1

A child has a temperature of 39.0°C. The doctor has ordered a 500mg paracetamol suspension, four times a day. Paracetamol suspension comes in 250mg/5ml. How much paracetamol suspension needs to be dispensed per day?

Desired dosage	Equation	Stock strength	Equation	Stock volume (ml)	Equals	Amount of solution required (ml)
500	÷	250	X	5	=	10

الي مطلوب
اهنه للمره
الوحده في
اليوم

Total per day = $10 \times 4 = 40$ ml

الي مطلوب اهنه لليوم كامل كم حبه

Scenario 2

The doctor has ordered a 250mg paracetamol suspension, two times a day. Paracetamol suspension comes in 250mg/5ml. How much paracetamol suspension needs to be dispensed per day?

Desired dosage	Equation	Stock strength	Equation	Stock volume (ml)	Equals	Amount of solution required (ml)
250	÷	250	X	5	=	5

Total per day = $5 \times 2 = 10$ ml

17	HSC.3.9.01.004 Demonstrate competence in a broad range of basic, scientific, and pharmaceutical calculations.	Textbook	40-44
		PDF / Workbook	34-37

Calculate IV rate

Total IV volume ÷ time (hours or minutes) = ml administered per hour or minute

The doctor wants to administer a drug intravenously. 120ml of liquid X needs to be administered by IV over a period of six hours. How much liquid is administered per hour?

Answer:

Total IV Volume	Equation	Time (Hours)	Equals	mls administered
120ml	÷	6	=	20ml per hour

Scenario 1

The doctor has prescribed 300ml of normal saline solution over six hours. What is the rate in ml per hour?

Total IV volume (ml)	Equation	Time (Hours)	Equals	ml administered
300	÷	6	=	50 ml / 1h

Scenario 2

A patient needs to be given two litres of saline over 16 hours. What is the rate in ml per hour?

Total IV volume (ml)	Equation	Time (Hours)	Equals	ml administered
2 L X 1000 = 2000 ml	÷	16	=	125 ml

Scenario 3

A patient needs to be given 50ml of saline over 90 minutes. What is the rate in ml per hour?

Total IV volume (ml)	Equation	Time (Hours)	Equals	ml administered
50	÷	90 ÷ 60 = 1.5	=	33.3 ml

18	HSC.3.9.01.009 Demonstrate an understanding of essential communication skills applied to pharmacy.	Textbook	46-50
		PDF / Workbook	38-41

What are “the six rights of drug administration”?

Six rights of drug administration

1. **Right drug:** have the correct drug
2. **Right patient:** given to the right patient
3. **Right dosage:** give the correct amount of dose to the patient
4. **Right route of administration:** get the correct route as sometimes patient got confused
5. **Right time:** taken at the right time example before or after meals or by hours such as every 6 hours
6. **Right documentation:** recording and double checking when, what and side effect.

18	HSC.3.9.01.009 Demonstrate an understanding of essential communication skills applied to pharmacy.	Textbook	46-50
		PDF / Workbook	38-41

List the 5 C's of effective communication.

1. Clear

What exactly do I want to communicate?

2. Cohesive

Does all the information make sense?

3. Complete

Have I communicated all the information?

4. Concrete

Am I being as specific as possible?

5. Concise

Am I being direct and brief? Or am I using words that are not needed?

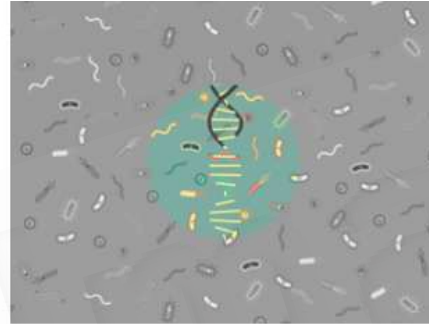
19	HS.4.2.01.001 List the causes of foodborne illness.	Textbook	56-63
		PDF / Workbook	50-57

What are foodborne illnesses?

- known as food poisoning, are caused by eating food that are contaminated.

- Most common** disease-causing microorganisms found in food are **bacteria**

- Can also include viruses, fungi, parasites, or chemicals



Signs and symptoms are different depending on the cause and type of infection.

They may cause:

- Nausea
- Vomiting
- Abdominal cramps
- Diarrhoea

Usually, they happen suddenly and last a short time. They can occur from 6-72 hours after eating **contaminated food.**

For every ten people who eat contaminated food, one person will become ill.

Foodborne illness can cause death, particularly in young children and older adults.



20	HS.4.2.01.002 Explore the concept of cross-contamination.	Textbook	64-67
		PDF / Workbook	58-61

Explain the following types of cross-contamination: In your own words, explain what contamination is.

What other types of cross-contamination are there?

Food-to-food

- process of adding contaminated food to non-contaminated food
- Harmful **bacteria** spread and multiply
- **Raw, undercooked or unclean food** can contain large amounts of bacteria
- Example – adding unwashed, contaminated lettuce to a fresh salad can contaminate the other ingredients

Equipment-to-food

Bacteria can live for a long time on surfaces like:

- Countertops
- cutting boards
- utensils
- storage containers
- factory equipment

It is very important to wash all surfaces and equipment properly using soap and hot water



People-to-food

- It is easy for humans to transfer bacteria from their bodies or clothes to food
- This includes using dirty tea towels
- A person could cough into their hand and continue to prepare a meal without washing their hands

20	HS.4.2.01.002 Explore the concept of cross-contamination.	Textbook	64-67
		PDF / Workbook	58-61

List the points that contamination by bacteria can happen.



Processing



Slaughter



Harvesting



Growth



Food Storage
Containers

Storage



Transportation



Preparation
in a kitchen

Read the following scenarios and decide which type of cross-contamination is being described.

Huda made dinner for the family. When she finished, she rinsed the utensils in cold water and left them to dry. The next day Huda's mother used the same utensils to prepare breakfast. During the day, the whole family became unwell.

Equipment-to-food

Mohammed works in a fast-food restaurant. He emptied the bins in the restaurant and did not wash his hands. Then he prepared some burgers. Customers reported feeling sick a few days after this happened.

People-to-food

Hind used a brown chopping board to prepare some sushi for her friends. Hind and her friends thought the sushi was delicious, but they could not understand why everyone was sick the next day.

Equipment-to-food + Food-to-food

Saeed made a chicken shawarma for dinner. He did not realise that the chicken he made was not fully cooked. It made him so unwell that he had to go to the hospital for a few days.

Food-to-food

What are the five keys to safer food?

Match each of the five keys to safer food with their correct description.

Keep clean.	Store food in containers to avoid contact between raw and cooked foods.
Separate raw and cooked food.	Use clean water to cook and clean with.
Cook thoroughly.	Allow food to defrost in the fridge.
Keep food at safe temperatures.	Wash your hands before handling food and during preparation.
Use safe water and raw materials.	For meat and poultry, make sure the juices are clear and not pink.

What are the five keys to safer food?

1. Keep clean

Why it is important

- It takes over 2.5 billion bacteria to make 250ml of water look cloudy
- In some cases, it only takes 20 harmful bacteria to make a person sick

Example

- Handwashing
- Cleaning plates and kitchen equipment
- Protect food from pests



Why it is important

- Can transmit bacteria

Example

- While shopping, keep raw meat, poultry and seafood separate from other foods
- In the fridge, store raw meat seafood and poultry on shelves or sections below cooked foods
- Store food in containers with lids to stop raw and cooked foods from touching
- Wash plates that have been in contact with raw foods, and always use a clean plate for cooked foods

2. Separate raw and cooked food

3. Cook **thoroughly**

Why it is important

- kill almost all dangerous bacteria

Example

- Cooking food to 70 degrees celcius can ensure it is safe to eat
- Cook meat and poultry until the juices are clear and the inside is not pink
- Cook eggs and seafood until piping hot the whole way through
- Boil liquid-based foods like soups and stews. Allow them to remain boiling for at least one minute





4. Keep food at safe temperatures

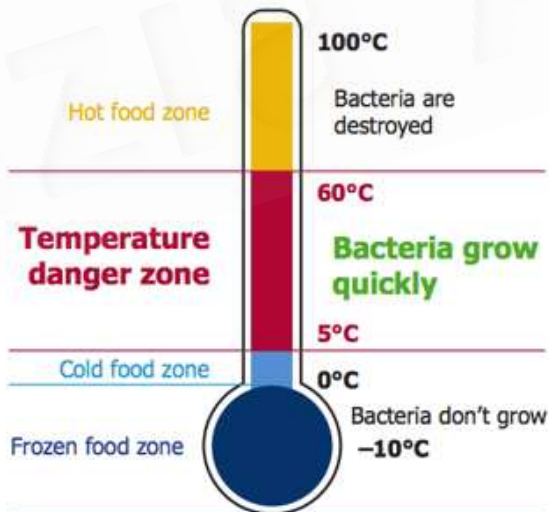
Why it is important

- The danger zone is the temperature range between 5-60 degrees Celsius
- This is where bacteria multiply very quickly
- Bacteria cannot grow if it is too hot or too cold

Example

- Cool food and store all leftover food quickly. Slice larger pieces of meat into smaller pieces and place food in a clean, cool container
- Leftover food should not be stored in the fridge for more than three days and should not be reheated more than once
- Thaw frozen food in the fridge

- The temperature danger zone is between 5°C and 60°C, when it is easiest for harmful bacteria to grow in food
- Minimise the time that food spends at these temperatures in order to keep food safe
- Refrigerated food needs to be kept at 5°C or below
- Hot food needs to be kept at 60°C or above



What are the five keys to safer food?

	Why it is important	Example
5. Use safe water and raw materials	<ul style="list-style-type: none">• water is free from dangerous bacteria and chemicals that could cause illness	<ul style="list-style-type: none">• Wash and peel fruits and vegetables to reduce the risk of eating dangerous bacteria

Safe water is needed to:

- Wash fruit and vegetables
- Add to food and drinks
- Make ice
- Clean cooking equipment
- Wash hands

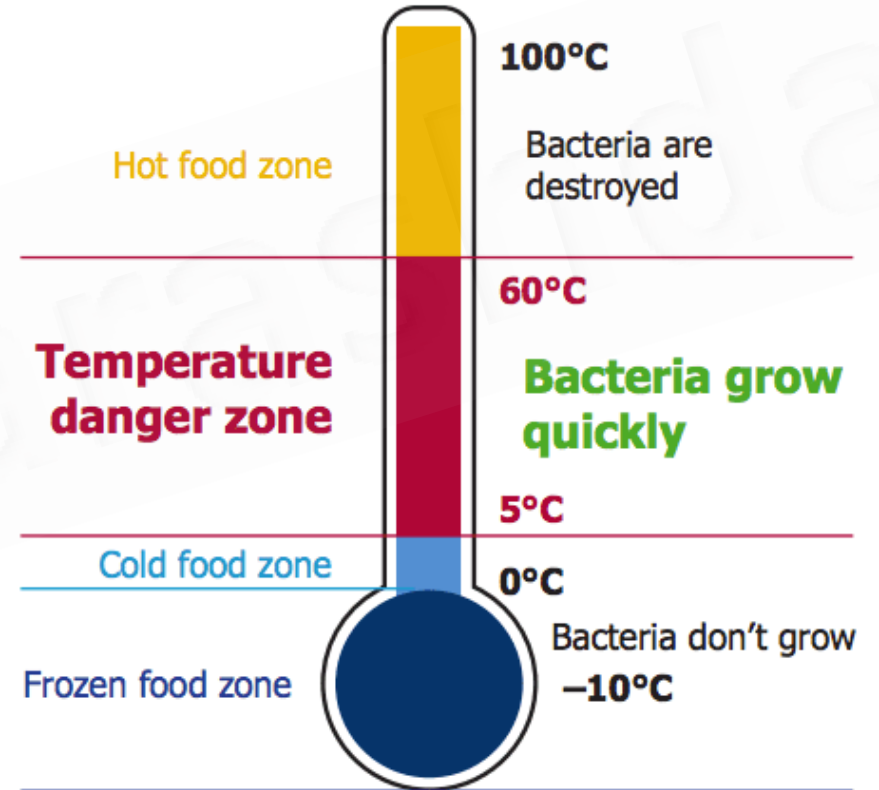
Selecting safe raw materials:

- Select fresh foods
- Avoid rotten food
- Choose dairy products that have been pasteurised
- If you are buying ready-to-eat cooked foods, make sure they are stored correctly (not in danger zone)



21	HS.4.2.01.004 Identify the importance of proper hygiene practices.	Textbook	64-67
		PDF / Workbook	58-61

- The temperature danger zone is between 5°C and 60°C, when it is easiest for harmful bacteria to grow in food
- Minimise the time that food spends at these temperatures in order to keep food safe
- Refrigerated food needs to be kept at 5°C or below
- Hot food needs to be kept at 60°C or above



In the space below, write what the temperature danger zone for food is.



Temperature danger zone:
Temperature danger zone

Why is it called the danger zone?

Bacteria grow quickly

22	HS.4.2.01.005 Compare and contrast food allergies and food intolerances.	Textbook	76-81
		PDF / Workbook	70-75

Explain the difference between an allergy and an intolerance.

B EMIRATES
EDUCATION

Food allergy	Food intolerance
<ul style="list-style-type: none"> • It usually comes on suddenly • Small amounts of food can trigger a reaction • A reaction happens every time the food is eaten • It can be life-threatening 	<ul style="list-style-type: none"> • It usually comes on gradually • A reaction may only happen when a lot of the food is eaten • A reaction may only happen is the food is eaten often • Is not life-threatening

Symptoms of allergic reactions	Symptoms of food intolerances
<ul style="list-style-type: none"> • Rashes or hives • Itchy mouth • Swelling of face, tongue and lips • Trouble breathing 	<ul style="list-style-type: none"> • Gas • Stomach cramps/bloating • Heartburn • Headaches
Symptoms of both	
<ul style="list-style-type: none"> • Nausea • Abdominal pain • Diarrhoea • Vomiting 	

Complete the table below to compare food allergies and intolerances.

23	HS.4.2.01.005 Compare and contrast food allergies and food intolerances.	Textbook	76-81	Allergies	Intolerances
		PDF / Workbook	70-75		
Which system of the body is involved?				Immune system	Digestive system
How dangerous is a reaction?				Can be life threatening	Not life threatening
Does eating a small amount cause a reaction?				yes	No
List some common foods that cause reactions.				Peanuts (and other nuts) Eggs Gluten Shellfish Fish Milk and dairy foods Sesame seeds	Lactose Caffeine Gluten Histamine present in mushrooms and pickles Additives, e.g. artificial sweeteners, colouring or flavours

24	HSC.4.3.01.002 Outline the purpose of therapeutic diets.	Textbook	86-91
		PDF / Workbook	82-85

Define therapeutic diet.

List diseases that require a therapeutic diet to help with disease management and the system of the body affected.

- Therapeutic relates to **healing of disease**
- Diet relates to the foods and drinks that you regularly eat
- Therapeutic diet is a special diet **plan given by a healthcare professional**
- It controls the intake of certain foods or nutrients based on the nutritional needs and health status of a person
- Can be altered for **nutrients, texture, food allergies or food intolerances**

Individuals with health conditions such as:

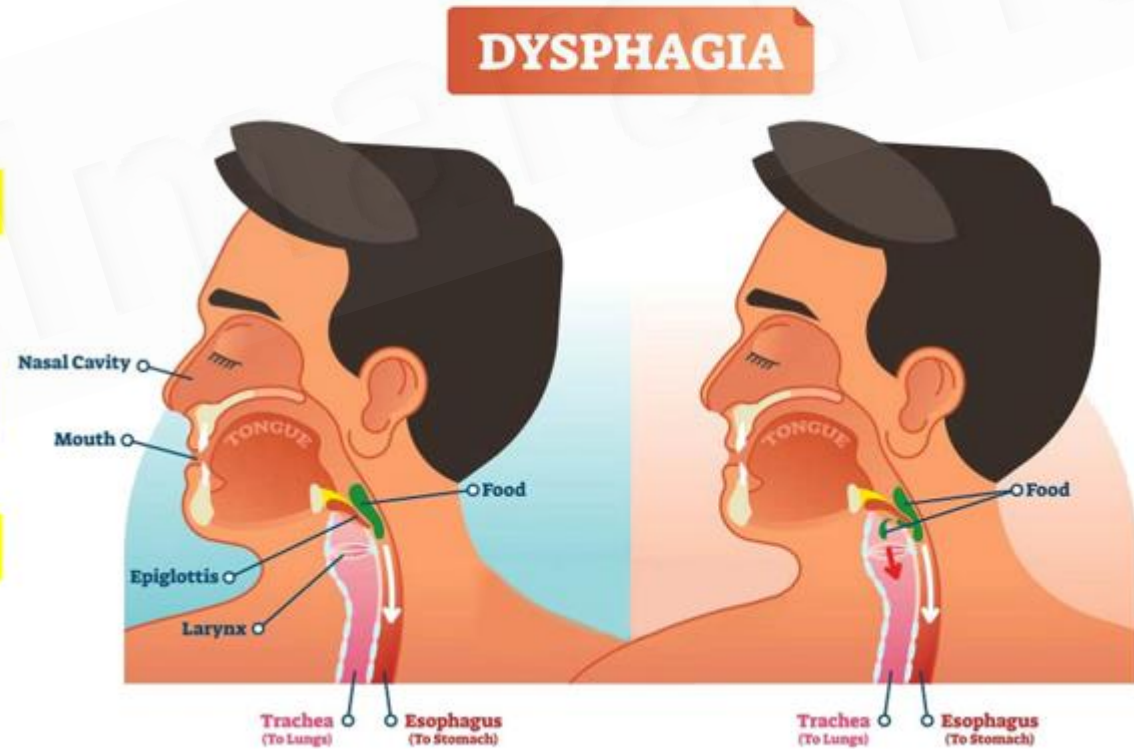
- **Cardiovascular disease**
- **Obesity**
- **Diabetes**
- **Food allergies**
- **Digestive diseases**
- **Eating disorders**
- Therapeutic diets play a very important role in the **management of disease**
- They can **reduce the amount of medication that is needed**
- **Increase quality of life**
- **Increase life expectancy**
- **In some cases, they can cure some conditions**

Types of therapeutic diets - nutrient modifications

- Where one or more nutrients are added or removed from the diet
- Normally used to help fight diseases such as osteoporosis, hypertension, or diabetes
- Common nutrient modified diets include:
 - *Low sugar diet*
 - *Low sodium diet (salt)*
 - *Low fat diet*
 - *High fibre diet*
 - *Renal diet (low sodium, potassium and phosphorus)*

Types of therapeutic diets – texture modification

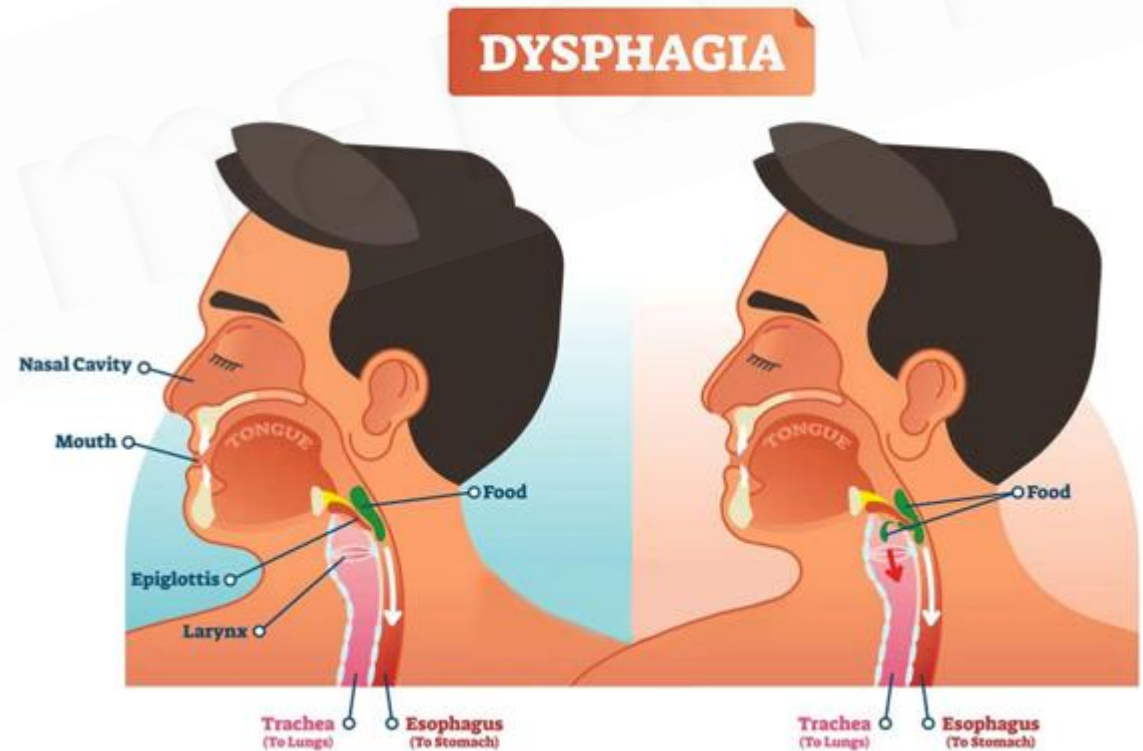
- Swallowing is a complex function
- For some people, the brain does not register when food reaches the swallow reflex
- Some people do not have teeth to properly chew food – making choking a hazard
- Dysphagia = people who have problems with swallowing food



Types of therapeutic diets – texture modification

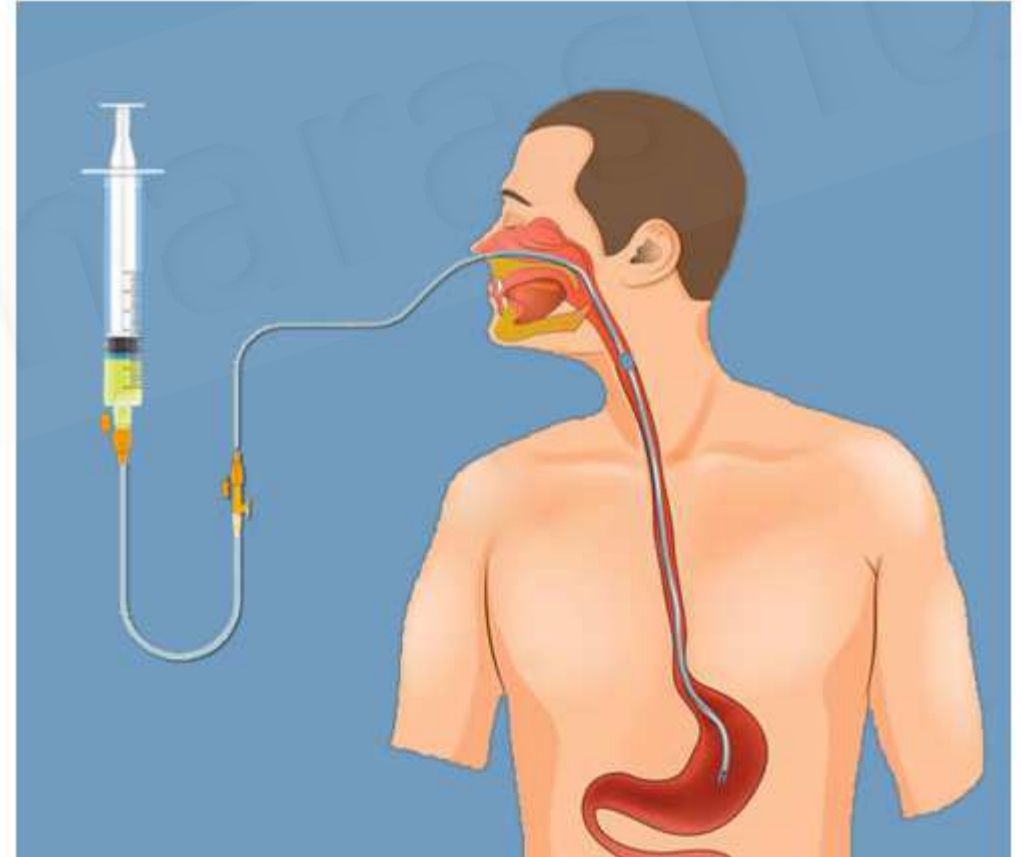
Types of texture modification of foods:

- **Soft**
 - *Food is cooked or cut so it can be easily chewed*
- **Minced and moist**
 - *Food is soft, easily mashed with a fork*
- **Puree diet**
 - *Food is smooth, moist and lump-free*



Types of therapeutic diets – tube feeding

- People may need tube feeding because they cannot get enough nutrients on their own
- They could have problems with their mouths or have difficulty swallowing foods
- Some cases the tubes are inserted through the nose or mouth
- Some are inserted directly into the stomach



What can you remember about BMI? Complete the table below by writing the name of the BMI classification next to each of the scores.

BMI Score	BMI classification
<18.5	underweight
18.5-24.9	Normal weight
25-29.9	obesity
>30	overweight

Can you remember how BMI is calculated? What measurements are needed and how is it worked out? Circle your answers.

Weight by Kg

Height by m²

Circle the measurements that are needed.

<u>weight</u>	<u>age</u>	<u>height</u>	shoe size
---------------	------------	---------------	-----------

Circle the formula that is used.

$\frac{\text{age}}{\text{height}^2}$	$\frac{\text{shoe size}}{\text{weight}}$	$\frac{\text{weight}}{\text{height}^2}$	$\frac{\text{age}}{\text{weight}^2}$
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Write the formula below that is used to work out energy balance.

Energy balance = **energy input** - **energy output**

Name the three things that energy output includes.

1. **Basal metabolic rate (BMR)**
2. **Physical activity**
3. **Thermal effect of food**

Calculate the energy balance for the following people.

Fatima

Energy input: 2167 kcal

BMR: 1285kcal Physical activity: 420kcal TEF: 103kcal

$$2167 - (1285 + 420 + 103) = 359$$

Does Fatima have positive or negative energy balance?

positive

What changes will Fatima see over time if she continues to have this energy balance?

Gain weight

Sara

Energy input: 1845kcal

BMR: 1250kcal Physical activity: 687kcal TEF: 94kcal

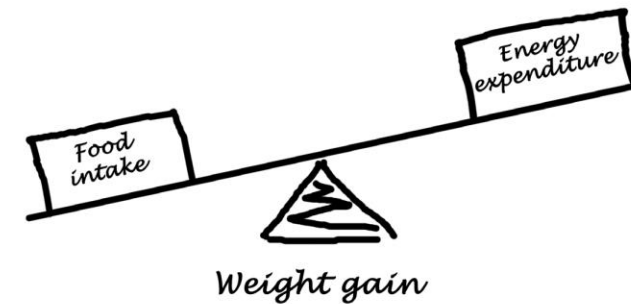
$$1845 - (1250 + 687 + 94) = -186$$

Does Sara have positive or negative energy balance?

negative

What changes will Sara see over time if she continues to have this energy balance?

Lose weight



- **pharmacokinetics** – is the study of what the body does to the drug.



- **Pharmacodynamics** – is the study of what the drug does to the body.



Match the keyword to the correct description.

Chemical

A condition where part of the body becomes red, swollen and painful.

Prescription

Relating to chemistry; any substance consisting of matter.

Inflammation

A change in the body that indicates a disease is present.

Symptoms

A written message from a doctor that officially tells someone to use medicine.

Look at the images and descriptions below. Identify if the route being described is sublingual or buccal. Write your answer in the boxes below the description.



The drug is placed between your gums and cheek.

Buccal



The drug is placed under the tongue.

Sublingual



Activity 15

Prescribing antibiotics



Read the following scenarios and decide if you think the person requires a prescribed antibiotic or not.

Scenario	Is an antibiotic needed?	Why?
Mahmoud has a virus which has given him a chest infection.	No	Caused by virus
Sheikha has a bacterial infection in her eye that spreads easily.	Yes	Caused by Bacteria

Research common side effects that you may feel after taking medication.

Side effects don't always happen. The chances of feeling side effects from medication will depend on the drug.

Antibiotics can cause the following common side effects:

1. Diarrhea
2. Nausea
3. Vomiting
4. Rash
5. Upset stomach

Side effects don't always happen. The chances of feeling side effects from medication will depend on the drug.

Antibiotics can cause the following less common side effects:

1. kidney stones
2. blood clotting
3. blood disorders
4. bowel inflammation.

Explain how effective communication can improve safety in pharmacy.

Communication

Pharmacists usually communicate verbally and in written form with patients.

Good and clear communication between a pharmacist and a patient can help with the following:

1. ensure the patient's safety
2. avoid medication errors
3. guarantee a better treatment for the patient
4. build a good relationship between the pharmacist and the patient



Safe administration and storage of medication are very important. What might happen if medications are not administered or stored (kept) correctly?

Safety measures

- Procedures taken to make sure that drugs are administered or taken in a safe way
- This prevents any harm to the patient
- Drugs can be given to patients in a clinical setting and also at home
- **If safety measures are not followed, there is a chance there will be a medication error:**
 - Patient could take the medication at the wrong time
 - Or take the wrong dose
 - Effects of these errors can range from minor to fatal



In the space below, list the five disease-causing microorganisms that can be found in food.

1. **viruses,**.....
2. **fungi,**.....
3. **parasites,**.....
3. **Bacteria**.....
4.
5.

From the list above, which microorganism is the most common cause of disease?

Bacteria.....



Further information

Some of the illness-causing bacteria that are commonly found in foods are:

- ⦿ Campylobacter
- ⦿ Escherichia coli (E. coli)
- ⦿ Salmonella
- ⦿ Listeria

Colour coded chopping boards chart

There are 6 different colour-coded chopping boards. Our graph below clearly matches each board to the correct food groups that are recommended by the [Food Standards Agency](#) in the UK. This makes the chopping board colour code easy to remember:



- The **WHITE** chopping board is used for bakery and dairy products. This may include, slicing freshly cooked bread or grating cheese.
- The **YELLOW** chopping board is used for cooked meats. This may include carving a Sunday roast joint or freshly cooked chicken.
- The **BROWN** chopping board is used for root vegetables such as potatoes, parsnips or turnips. Remember: brown = any earthy foods.
- The **RED** chopping board is used for raw meats only. This may include preparing pork crackling or deboning a chicken.
- The **BLUE** chopping board is used for raw fish only. Sometimes called a 'fish chopping board', blue boards can be used for descaling a salmon or removing small bones in a fish fillet.
- The **GREEN** chopping board is used for salad, fruit and fresh vegetables. This may include preparing salad, slicing tomatoes or dicing fruit. Remember: green = anything fresh and fruity.

Remember, you need a yellow meat chopping board for cooked meats and the raw meat chopping board colour is red.

Prevent cross-contamination

Use the correct colour coded chopping boards and knives

Raw meats and poultry only

Raw fish and shellfish only

Raw unwashed vegetables, salads and fruits only

Ready to eat and cooked foods only

Washed vegetables, salads and fruits only

Bakery and dairy products only

Food Hygiene Act 1995

Can you remember the steps for proper handwashing? Number the steps below from one to four.

4	Dry hands with a clean dry towel.
1	Wet hands under running water.
2	Rub hands together for at least twenty seconds with soap.
3	Rinse the soap from hands under running water.

Complete the table below by writing the names of three high-risk foods and explain why they are high risk.

Name of food	Why it is high risk
Poultry	avoid washing raw chicken as this will spread the bacteria around the kitchen.
Eggs	Bacteria can live in the yolk, the white part of the egg and the eggshell
Seafood	Fish can become contaminated through sewage in the water where they live.

List as many food allergies and intolerances as you can think of.

Peanuts (and other nuts)	Shellfish
Eggs	Fish
Gluten	Milk and dairy foods
Mustard	Sesame seeds

Lactose	Caffeine
Gluten	Histamine in mushrooms and pickles
Additives e.g. artificial sweeteners, colouring or flavours	





Lactose

Gluten

List foods that contain lactose.

List foods that contain gluten.

Match the type of texture modification with the correct description.

Soft
Minced and moist
Puree

Foods are blended until smooth and lump free.
Food is can easily form into a ball, there may be soft lumps.
Food is naturally soft or boiled until soft.



Read the information about the following patients and decide which type of texture modification is appropriate for each.

1. Zainab has dementia and sometimes she forgets to fully chew her food. She tries to swallow large chunks of food which causes her to choke. Zainab has all of her teeth but sometimes she forgets to chew the harder chunks of food.

Texture modification required: **Minced or Moist**

2. Ibrahim recently had a stroke. He cannot fully open his mouth or move it in a chewing motion. Ibrahim's brain does not always register when there is food in his mouth in order to open his oesophagus to allow food to pass to his stomach.

Texture modification required: **puree**

3. Mariam has multiple sclerosis. She has had a few choking incidents recently. Most of the time her mouth works fine, but sometimes she struggles with chewing food. Sometimes she does not experience dysphagia but it is very unpredictable.

Texture modification required: **Minced or Moist**

4. Zayed has cancer of the mouth. He is undergoing treatment which has had many side effects. They include pain in the mouth, lack of saliva being produced and severe stiffness of the muscles in his mouth.

Texture modification required: **Puree**

Which of the following types of therapeutic diets do you think is the most useful for someone who is overweight? Tick the correct answer.

Type of therapeutic diet	Tick
Additional feeding	<input type="checkbox"/>
Nutrient modification	<input checked="" type="checkbox"/>
Texture modification	<input checked="" type="checkbox"/>
Tube feeding	<input checked="" type="checkbox"/>
Food allergy/intolerance modification	<input type="checkbox"/>

I wish for you a
happy endings.

