GRADE 12 2021

Consumer studies

FOOD & NUTRITION
SELF STUDY GUIDE
BOOKLET 1

basic education
Department: Basic Education
REPUBLIC OF SOUTH AFRICA

Second Chance Matric Support Programme

2030 NDP

NATIONAL EDUCATION COLLABORATION TRUST

ETDP SETA

WOZA MATRICS 2022 CATCH UP

STAY SAFE

INTRODUCTION

The declaration of COVID-19 as a global pandemic by the World Health Organisation in 2020, led to the disruption of effective teaching and learning in all schools across South Africa.

Many learners, across all grades, spent less time in class due to the phased-in reopening of schools, as well as rotational attendance and alternative timetables that were implemented across provinces, to comply with social distancing rules. This led to severe teaching and learning time losses. Consequently, the majority of schools were not able to complete all the relevant content prescribed in Grade 10-12 in accordance with the Curriculum and Assessment Policy Statement.

In order to mitigate and intervene against the negative impact of COVID-19, as part of the Recovery Learning Plan for Grades 10-12, the Department of Basic Education (DBE) worked in collaboration with Subject Specialists from various Provincial Education Departments (PEDs) to develop this Self-Study Guide for learners in Grade 12.

The content in this study guide is critical towards laying a strong foundation to improve your performance in this subject.

The main aims of this study guide is to:

- *Assist learners to improve their performance, by revising and consolidating their understanding of the topic;*
- *Close existing content gaps in this topic; and*
- *Improve and strengthen understanding of the content prescribed for this topic.*

This study-guide is meant as a self-study guide for learners and therefore should be used as a revision resource to consolidate learning at the end of a particular topic taught in class.

Learners are encouraged to complete the exercises and activities to test their understanding and to expose themselves to high quality assessment.

This study guide can also be used by study groups and peer learning groups, to prepare for the final NSC examination in this subject.

2. How to use the icons in this study guide

	**Key concepts** This icon will draw your attention to the key concepts we are using in this study guide
	**Notes/ Summaries** This icon will draw your attention to the notes & summaries which you need to study
	**Activities** This icon refers to the activities that you must complete to test your understanding of the content you studied
	**Tips** This icon refers to tips we are sharing with you to better understand the content or activities
	**Answers** This icon refers to the section with possible answers for the activities and how best to have answered the activities.
	**Exam practise questions** This icon refers to questions from past examination papers you can additionally use to prepare for the topic.
	**Terminology (see glossary for description)** The meaning of these terms is provided in the glossary
	**Advantages** This is good/positive qualities
	**Disadvantages** This is bad/negative qualities
	**GR 10 CONTENT TO BE COVERED**
	**GR 11 CONTENT TO BE COVERED**
	**GR 12 CONTENT TO BE COVERED**

3. Food and Nutrition

3.1 Combined/ Comprehensive Summary of Gr 10-12

3.1.1 Nutritional Health Related Health Conditions

GR 10

Energy and nutritional requirements of consumers

***

The nutrients and their functions in the food guide pyramid

***

Food spoilage, hygiene safety and storage

GR 11

Functions and sources

***

Food fortification

***

Food contamination

GR 12

Nutritional and food-related health conditions

***

Foodborne diseases

***

Food additives

***

Food labelling

***

Food-related consumer issues Impacting on the natural and economic environment, including public health

GRADE 12

With the Recovery ATP the Nutritional and food-related health conditions was divided over THREE years, ONLY STUDY the illnesses given the current year.

NUTRITIONAL AND FOOD-RELATED HEALTH CONDITIONS

Content organised as follows in book

2022 2023	**ADDENDUM 8.1 2021**	**ADDENDUM 8.2**
Coronary heart disease High blood cholesterol High blood pressure Anemia	Food allergies Dairy and gluten intolerance Eating disorders: Anorexia, Bulimia, Obesity	High & Low blood glucose levels Diabetes Osteoporosis


FOOD
&
NUTRITION
1.
Energy and nutritional requirements of consumers
2.
The nutrients and their functions in the human body
3.
Food spoilage, hygiene, safety, and storage
4.
Nutritional functions and sources
5.
Food fortification
6.
Food contamination
7.
Nutritional and food-related health conditions
8.
Food borne diseases
9.
Food additives
10.
Food labelling
11.
Food-related consumer issues impacting on the natural and economic environment, including public health

GRADE 10

Food energy and nutritional requirements of consumers SA dietary guidelines

RED

SALT - Use salt sparingly

FATTY FOODS - Use fats sparingly

SUGAR - Use sparingly ONLY in meals no sugar intake between meals

ALCOHOL – Limit use of alcohol, drink sensibly

ORANGE

STARCHY FOODS - Make starchy foods the basis of most meals

GREEN

ACTIVE/ACTIVITY - Be active

WATER - Drink 6 to 8 glasses of clean, safe water daily

FRUIT AND VEGETABLES - Eat plenty of vegetables and fruit daily

VARIETY OF FOOD - Enjoy a variety of foods

LEGUMES - Eat dry beans, peas, lentils and soya regularly

CHICKEN, FISH, MILK, EGGS - Chicken, fish, meat, milk or egg could be eaten daily

Starchy Carbohydrates (Bread, rice, potatoes, pasta)

Fruit and vegetables (fresh, frozen, tinned dried)

Protein (Eggs, beans, meat, fish, vegetarian options like soya and Quorn)

Food & drink high in fat/& sugar (Crisps, chocolates, sweets, pastries, pies)

Dairy (milk, yoghurts, cheese)

PROTEIN

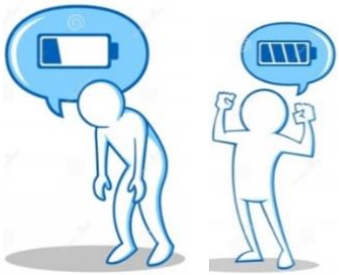
FUNCTIONS OF PROTEIN

Building

- Proteins form the base of all body cells
- Build new body muscle cells
- Excess stored as fat

Maintaining & regulating

- Repair and maintain tissue cells
- Maintain body functions
- Build haemoglobin
- Assist in the formation of antibodies
- **Enzymes** speed up chemical reactions in the body

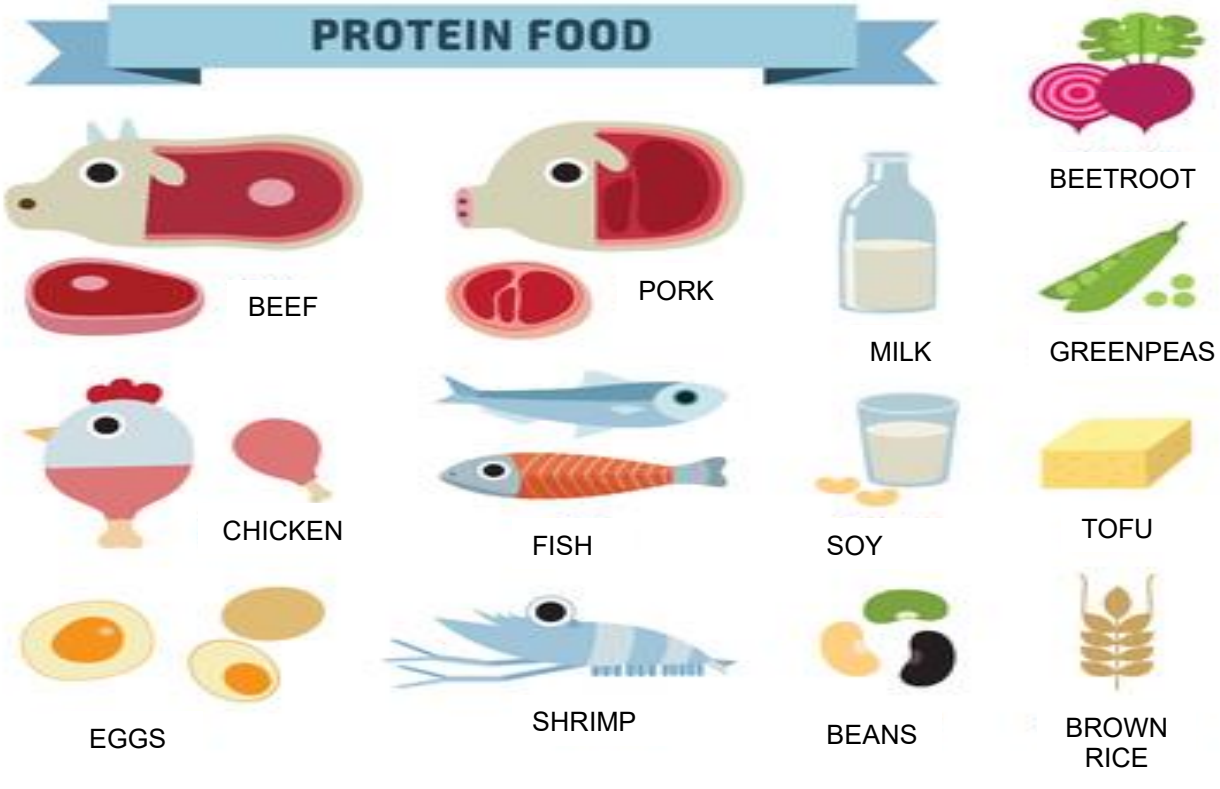


Energy

- Provide energy
- Excess stored as fat

PROTEIN SOURCES

- Animal sources: Meat, fish, poultry, eggs, milk & milk products
- Plant sources: Legumes, beans, nuts, soya



Carbohydrates – Energy Nutrients

FUNCTIONS OF CARBOHYDRATES

STARCH

SUGAR

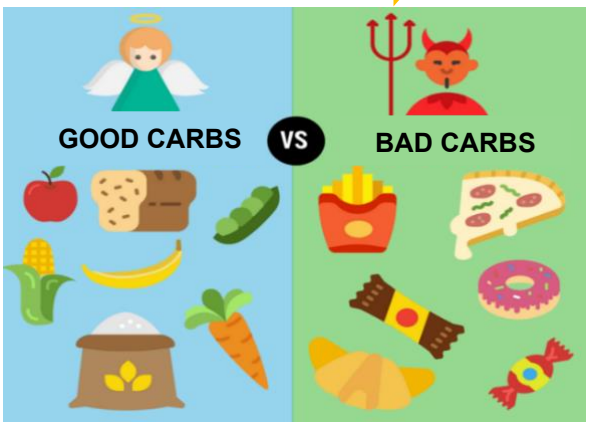
- Provide energy
- Saves protein - if there is enough carbohydrates in body little protein is used for energy
- Provide heat

CELLULOSE/ (FIBRE)

- Fill you up / give bulk to your diet
- Cellulose ensure your digestive system works properly (**Stimulates Peristaltic Movement)**

SOURCES OF CARBOHYDRATES:

- Grains & grain products (rice; pasta; baked goods; porridge; breakfast cereal; etc.)
- Starchy vegetables (potatoes; sweet potatoes; etc.)
- Skin of fruit e.g. apple provides cellulose and fibre



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FATS & LIPIDS

CLASSIFICATION OF FATS / OILS

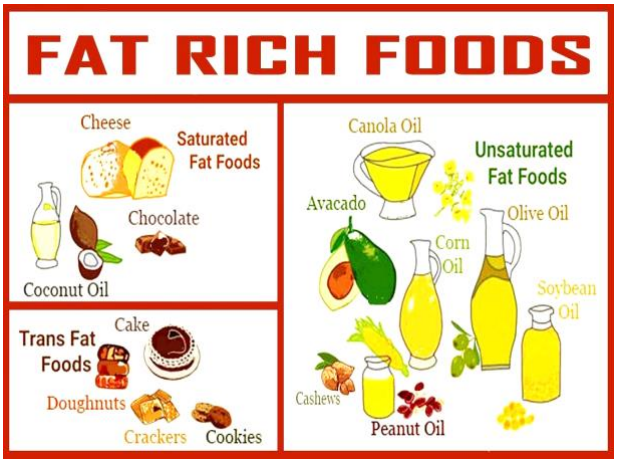
Saturated fats	Polyunsaturated fats	Trans fats
Fats that are solid at room temperature e.g. • Butter • Fat from meat	Fats that are liquid at room temperature e.g. • Sunflower oil, oily fish • Olive Oil	Fats formed by hydrogeneration, usually found in: • Fried food • Doughnuts • Hard margarine

FUNCTIONS OF FATS

- Provide energy to the body
- Protect the internal organs
- Contain the fat-soluble vitamins – Vitamin A,D, E and K
- Provide essential fatty acids
- Help to regulate body temperature

SOURCES OF FAT

- Butter; cream; fatty bacon
- Plant oils (canola; sunflower; olive; peanut)
- Margarine; mayonnaise; salad dressings
- Nuts



Google.com.dreamstime.in

WATER

Water is classified as a **nutrient** because it is essential for human survival. It does not provide energy, and it does not build or repair body tissue.

FUNCTIONS OF WATER

- Flushes toxins out of vital organs.
- Provides a moist environment for ear, nose and throat tissues.
- Essential for the body to function properly.
- Transport of blood cells, nutrients and waste products.
- Acts as a lubricant for joints.
- Regulates body temperature.
- Drink 6-8 glasses of water each day to prevent dehydration.

WATER SOURCES

- Clean, safe water.
- Also acceptable: Tea, coffee, juices & soft drinks.
  (little sugar, low kilojoules; no caffeine, etc)

GRADE 11

Minerals: Classification of Mineral

MINERALS

MACRO
- Calcium
- Phosphorus
- Magnesium

MICRO
- Iron
- Zinc
- Fluoride

CALCIUM

FUNCTIONS
- **Builds strong bones and teeth**
- Helps with muscle functioning
- Regulates heartbeat
- Normal functioning of nerves and muscles

MAIN SOURCES

Milk, legumes, canned fish, cheese, green leafy vegetables




PHOSPHORUS

FUNCTIONS
- Helps with the strengthening of bones and teeth
- Needed for different metabolic processes
- Helps with energy release
- Regulates the pH level of the body

MAIN SOURCES

Milk, nuts, fish, poultry, eggs, cheese, meat




MAGNESIUM

FUNCTIONS
- Involved in enzyme activity
- Necessary for synthesis of proteins
- Involved in the functions of muscles and nerves

MAIN SOURCES

Green leafy vegetables, cocoa, chocolate, nuts


IRON

FUNCTIONS

- Essential for the formation of red blood cells
- Carries oxygen in the blood
- Involved with energy metabolism and release

MAIN SOURCES

Liver, kidneys/ heart, eggs, potatoes, beetroot





Dried fruit, soya products, green leafy vegetables


FLUORIDE

FUNCTIONS

- Helps with the hardening of tooth enamel
- Prevents tooth decay

MAIN SOURCES

Tea

Added to drinking water

ZINC

FUNCTIONS

- Involved with the functioning of enzymes in the body
- Involved with different metabolic processes

MAIN SOURCES

Green leafy vegetables, legumes, nuts



VITAMINS

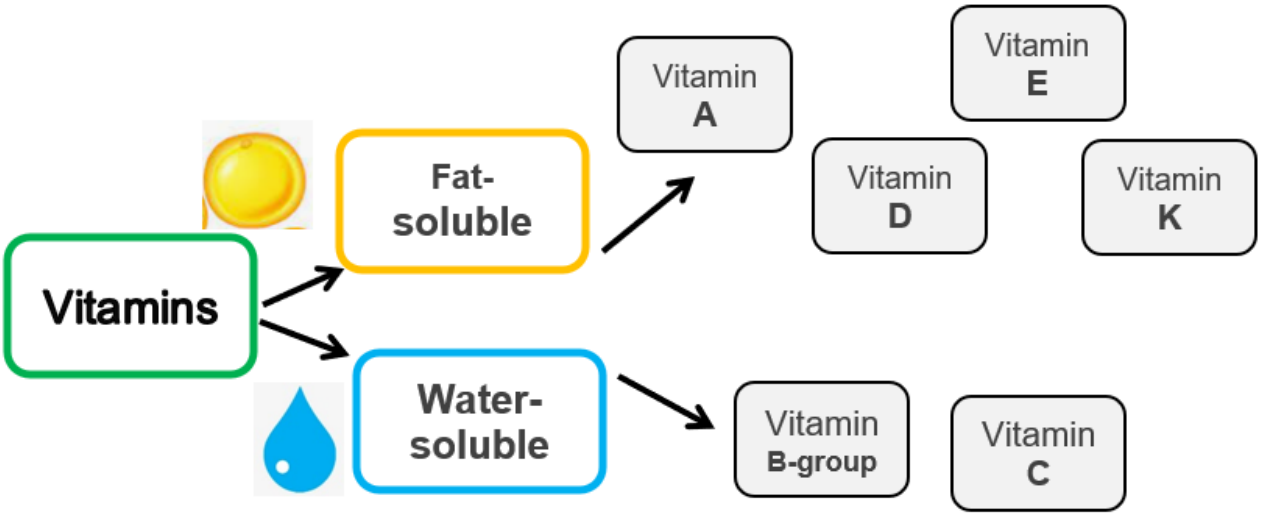
Vitamins are small organic compounds that the body needs for normal growth, development and maintenance of life.

CLASSIFICATION OF VITAMINS

Vitamins are divided into two groups.

Fat-soluble vitamins are stored in body fat.

Water-soluble vitamins need to be eaten every day because an excess of these is excreted in the urine.



FAT-SOLUBLE VITAMINS

VITAMIN A *(Retinol)*	• Healthy eyes, mucus membranes and skin	Yellow and orange vegetables, liver, full cream milk, cheese
VITAMIN D *(Calciferol)*	• Helps with absorption of calcium • Builds strong bones & teeth	Fortified margarine; liver; full-cream milk; sunshine produces Vit D in the skin
VITAMIN E	• Powerful antioxidant • Healthy cell membranes	Vegetable oils, margarine, nuts, seeds, leafy greens
VITAMIN K	• Helps with blood clotting	Green vegetables and dark red berries

WATER-SOLUBLE VITAMINS

VITAMIN B (*Vit B 1 – Thiamine)* *(Vit B 2 – Riboflavin)* *(Vit B 3 – Niacin)* *(Vit B 12 – Cobalamin*)	• Important in metabolism (Releasing energy from food) • Important in cell growth • Supports nervous and digestive systems • Needed for healthy skin	Fish, poultry, meat, eggs, dairy products. Leafy green vegetables, beans, peas; Fortified cereals and fortified breads
VITAMIN C *(Ascorbic acid)*	• Powerful antioxidant • Protects the body against disease • Helps in healing of wounds • Important in connective tissue	Fruit & vegetables: citrus, red, green peppers, tomatoes, broccoli, greens; fortified juices

GRADE 12

With the Recovery ATP the Nutritional and food-related health conditions were divided in THREE years, ONLY STUDY the illnesses given the current year.

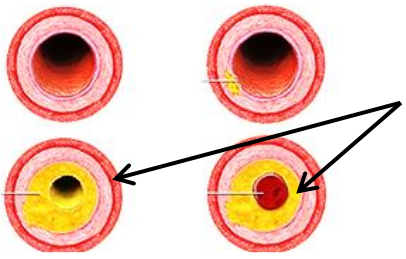
NUTRITIONAL AND FOOD-RELATED HEALTH CONDITIONS
Content organised as follows in book

2022	ADDENDUM 8.1	ADDENDUM 8.2
• Coronary heart disease • High blood cholesterol • High blood pressure • Anemia	• Food allergies • Dairy and gluten intolerance • Eating disorders Anorexia, Bulimia, Obesity	• High & Low blood • glucose levels • Diabetes • Osteoporosis

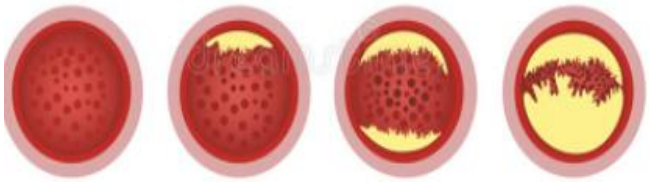
CONTENT FOR 2022
Coronary heart disease, including high blood cholesterol, leading to atherosclerosis

Coronary Heart Disease

Definition of Coronary Heart Disease:
Coronary heart disease is because of the build–up of plaque in the arteries that supply “food” to the heart. The coronary heart disease develops when the arteries are blocked or damaged or when the arteries are dysfunctional.



Plaque build-up along the inner part of the artery wall.

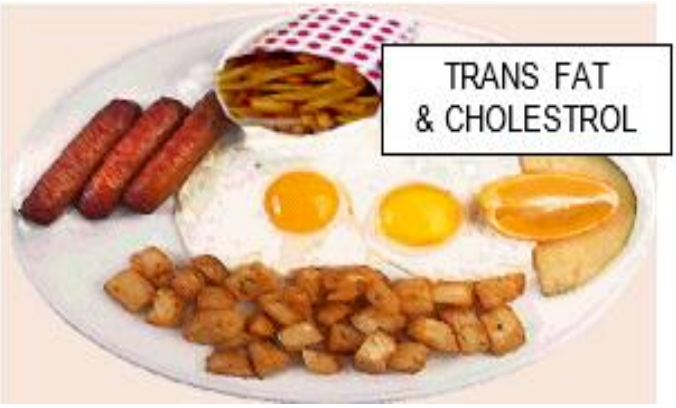


Causes of high cholesterol

- An unhealthy diet (especially fatty foods)
- Family history (genetic inheritance)
- Not exercising
- Stress
- Alcohol
- Too much salt

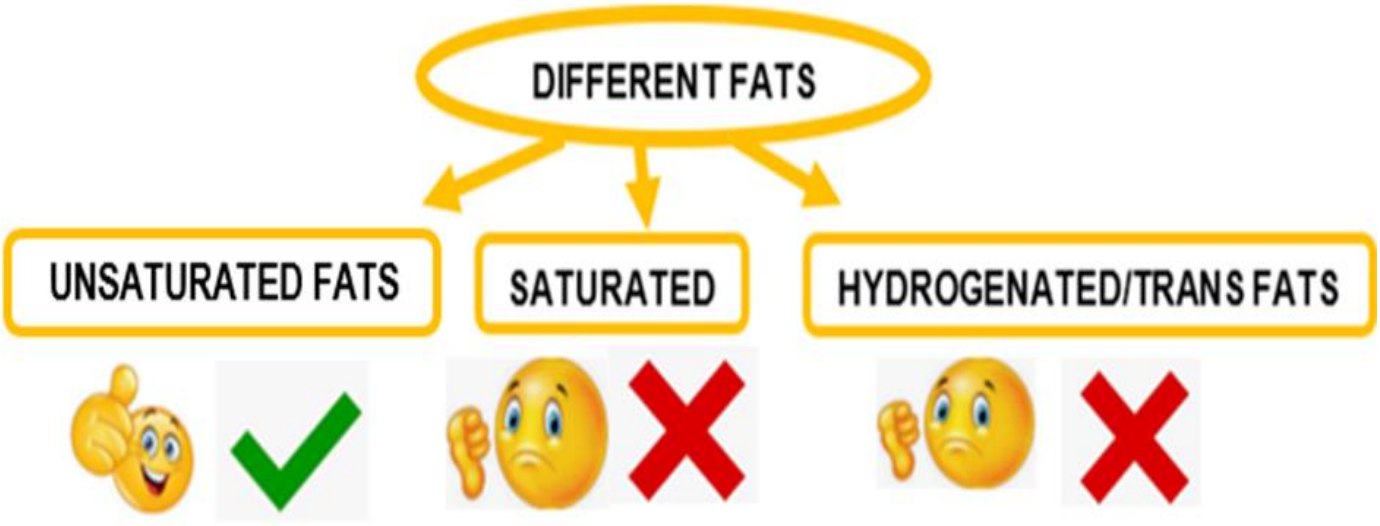
Foods to prevent cholesterol

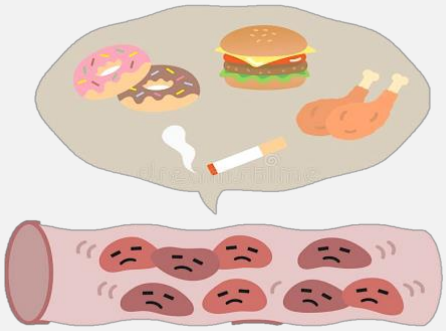
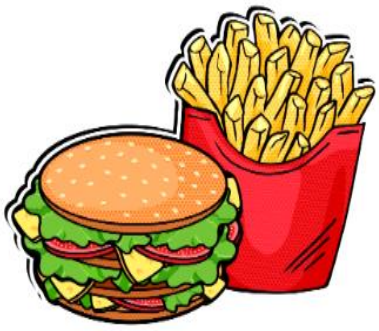
- High-fiber foods
- Fish
- Nuts
- Whole wheat bread
- Grilled meat
- Avocado
- Seeds
- Olive oil
- Beans, vegetables

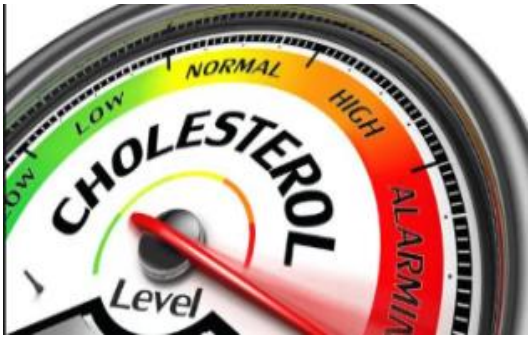


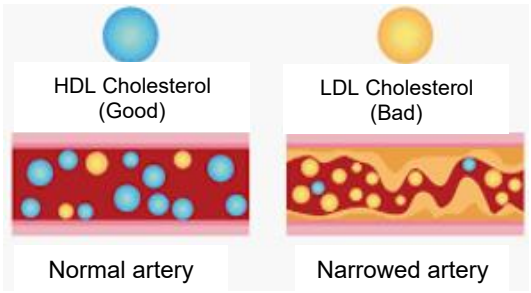
Prevention and management

- Eat less red meat (small portions, 2-3 per week).
- Increase the intake of oily fish as it contains omega-3 fatty acids that help to lower the blood cholesterol levels.
- Limit the intake of saturated fats, use margarine instead off butter.
- Limit the use of fats when cooking, use unsaturated fatty acids, e.g., Olive oil and canola oil.
- Eat at least 5 portions of fruit and vegetables that contains antioxidants, minerals, fibre.
- Increase the intake of legumes – they are low in fat.
- Be aware of hidden fats e.g., Muffins, biscuits.



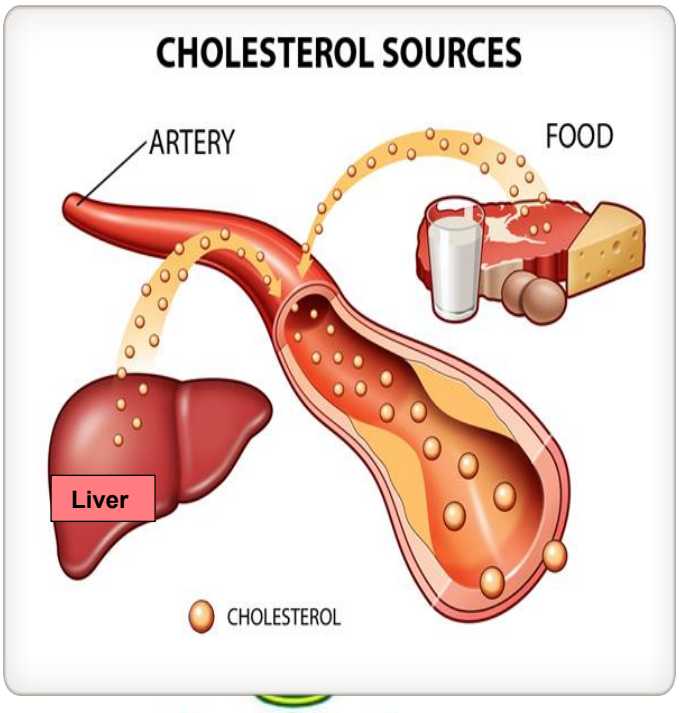
DIFFERENT FATS	HELPS WITH	SOURCES
UNSATURATED FATS Fats found mainly in plants and is a liquid at room temperature	Help reduce/ lower the LDL cholesterol	Fats of plant origin: olive, peanut, canola oil, oily fish e.g. salmon, mackerel, trout, nuts avocado pears, Omega-3 acids 
SATURATED FATS Fats found mainly in animals and is solid at room temperature	Increase the blood cholesterol levels and the LDL cholesterol	Animal fats: fatty meat, egg yolks, butter, coconut and palm oil  Blocked arteries
HYDROGENATED TRANS FATS Worst for your health. Trans fats are made when food makers turn liquid oils into solid fats, like shortening or margarine.	Extremely unhealthy and increases LDL-cholesterol and lower the HDL - cholesterol	Found in many fried, "fast" packaged, or processed foods, including anything fried and battered. 





High blood cholesterol

- Cholesterol is a **waxy substance** produced by the liver.
- Body needs cholesterol as it is used to build healthy cells.
- If **cholesterol levels in the blood are too high**.
- It causes a build-up of fatty plaque in the arteries.
- This **narrows the arteries** and obstructs blood flow.
- If the heart does not receive oxygen-rich blood, risk of heart attack is increased.
- Decrease blood to the brain causes a stroke.
- Decrease flow of blood to the limbs causes gangrene.



Factors influencing high cholesterol

- People with higher income often buy food with higher fat content such as fast foods.
- People with lower incomes often grow their own food and eat less fast foods.
- Social- and peer pressure may cause teenagers to smoke and drink.
- Some cultures traditionally consume a lot of salty, spicy, meaty or fatty foods.

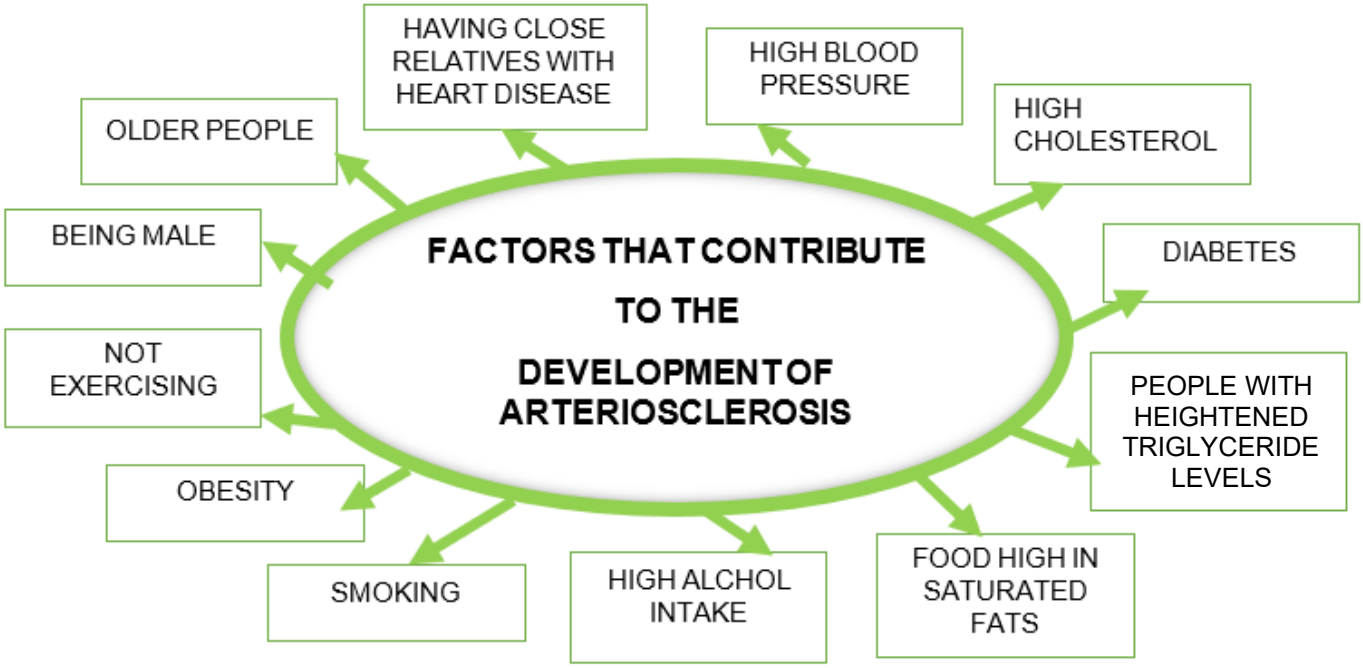
"GOOD" Cholesterol (HDL)

- scrapes away necessary LDL from artery walls.
- preventing the formation of plaque.
- That is why it is called "good"

"BAD" CHOLESTEROL (LDL)

- LDL on the contrary deposits excess cholesterol on the artery walls.
- Plaque is formed on the inner walls of arteries.
- Hardens and narrows arteries

Arteriosclerosis 2022

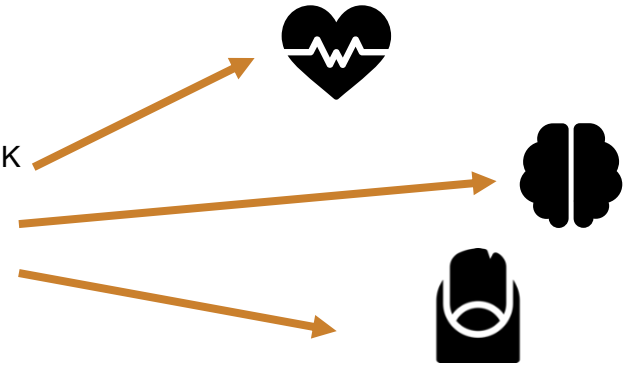


Description of arteriosclerosis

- Arteriosclerosis is a build-up of plaque (fatty deposits).
- This occurs in the inside of the arteries walls.
- Blood vessels that transport oxygen to the heart, brain, and numerous other body parts.

Part of body affected

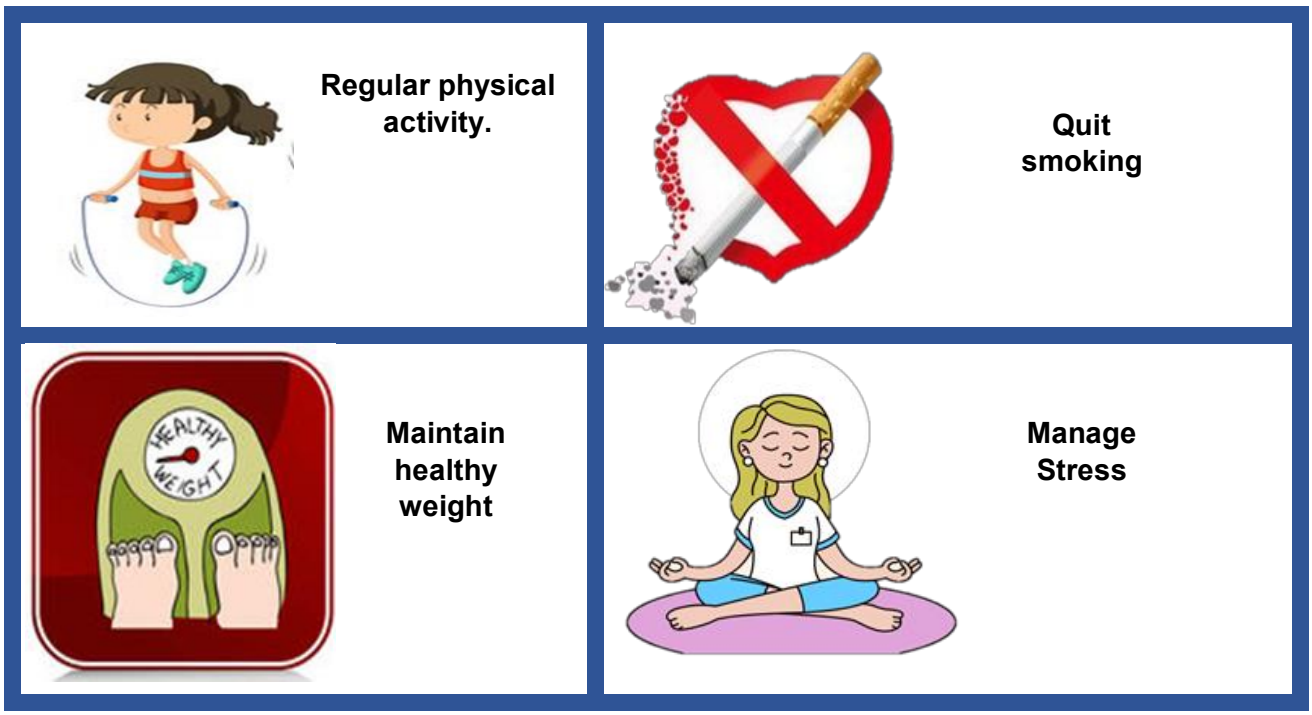
1 Less blood to heart = HEART ATTACK
2. Less blood to brain = STROKE
3. Less blood to limbs = GANGRENE



Prevention and management to dietary guidelines

- An unhealthy diet can increase your risks of developing arteriosclerosis.
- Foods high in saturated and trans fats, cholesterol, sodium (salt), sugar raise your risks.
- Limit the amount of sodium (salt) that you consume.
- Limit the amount of alcohol that you drink. Too much alcohol will raise your blood pressure.
- Eat balanced meals, rich in fibre and vitamins. (5 portions of fruit and vegetables)
- Eat lean protein e.g., fish, chicken.
- Eat foods containing vitamin A, C and E as they are antioxidants.
- Include mono-unsaturated fat into your diet as they keep your blood circulating smoothly.

Lifestyle



Images source:https://bit.ly/3hSVJgc

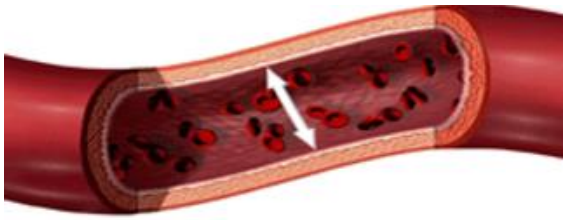
High blood pressure (2022)

https://medicaldialogues.in/cardiology-ctvs/news/consumption-of-ultra-processed-food-linked-to-greater-hypertension-risk-in-blacks-study-78267

High blood pressure = hypertension = silent killer

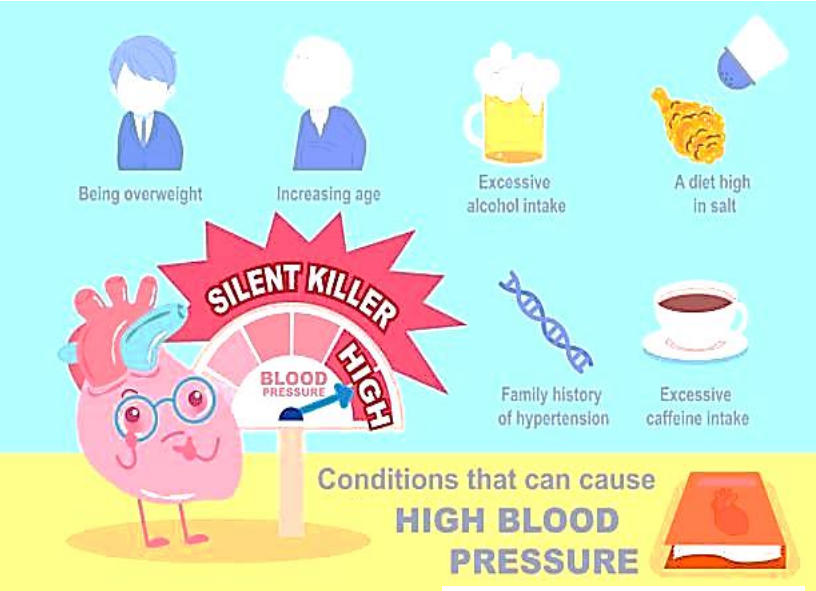
Description of hypertension

High blood pressure (hypertension) is **a common condition in which the long-term force of the blood against your artery walls is high enough that it may eventually cause health problems, such as heart disease**.



Causes of hypertension

- Not exercising
- High intake of salt (sodium)
- Smoking
- Alcohol
- Genetic factors (family history)
- Obesity
- Stress
- High cholesterol



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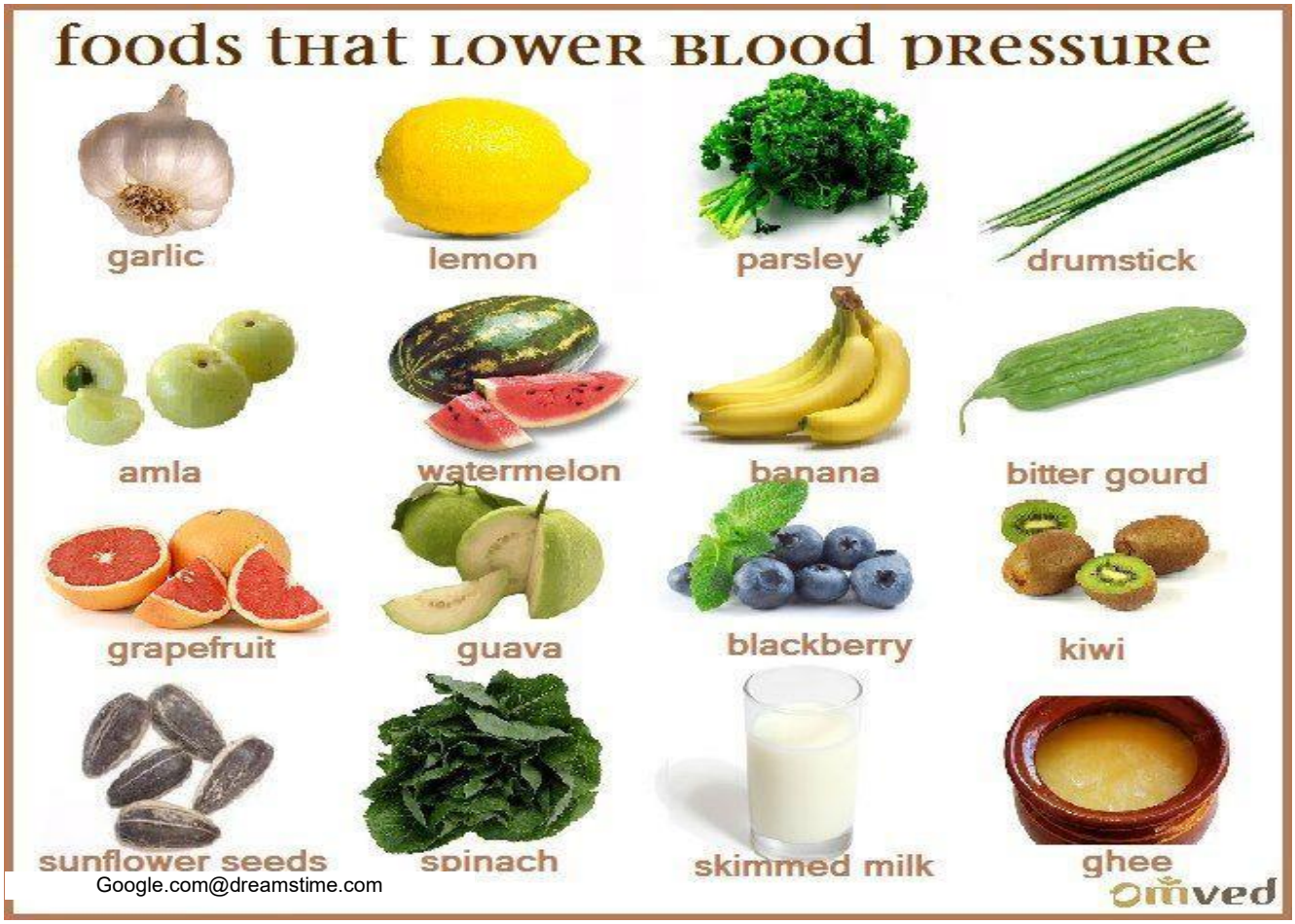
Dietary prevention and management

Dietary changes – eat healthy or follow a healthy diet:

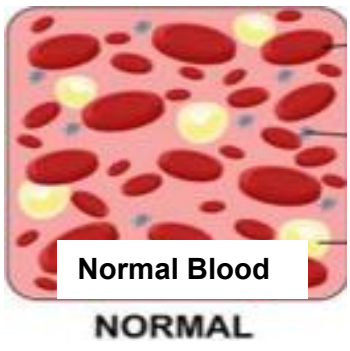
- Less salt intake – limit your intake.
- Avoid processed food – biltong, potato chips, salted nuts, nuts, popcorn.
- Replace salt with herbs and spices.
- Eat wholegrain products containing high fibre.
- Eat low fat dairy products.
- Eat foods – rich in potassium, calcium and magnesium – these minerals lower bold pressure.
- Eat less saturated fats.

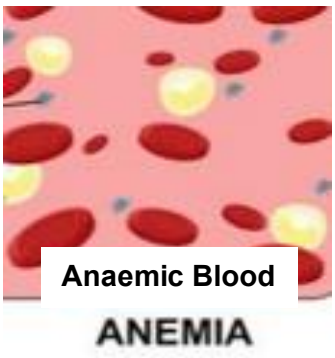
Lifestyle changes to prevent hypertension

- Exercise frequently.
- Eat healthy.
- Have regular sleeping patterns.
- Do not smoke.
- Do not consume alcohol.
- Sometimes medication is important.
- Maintain a healthy body weight.



Anaemia (2022)

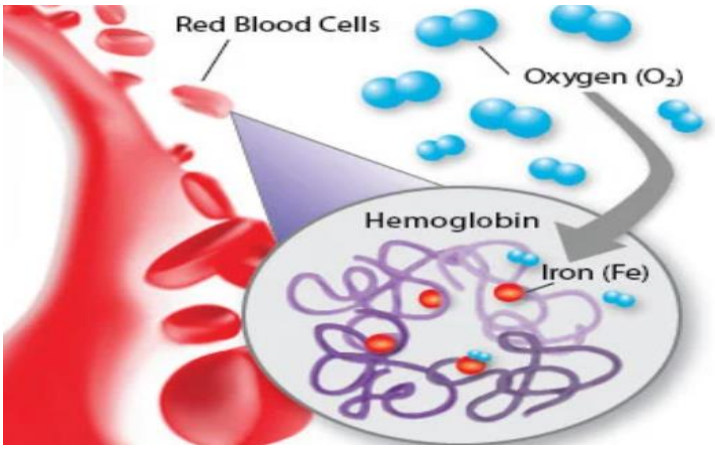




- Condition can occur in which the number of red blood cells or the haemoglobin concentration within the blood cells is lower than normal.
- Insufficient red blood cells or a lack of haemoglobin usually due to a shortage of iron, Vit C, Vit B12 and folic acid.
- It can be temporary or long-term or it can be mild or severe.
- This results in symptoms such as fatigue, weakness, dizziness and shortness of breath.

Causes

- Most common cause - blood loss.
- Menstrual bleeding.
- Bleeding in digestive or urinary tracts.
- Surgery – ulcer.
- Cancer.



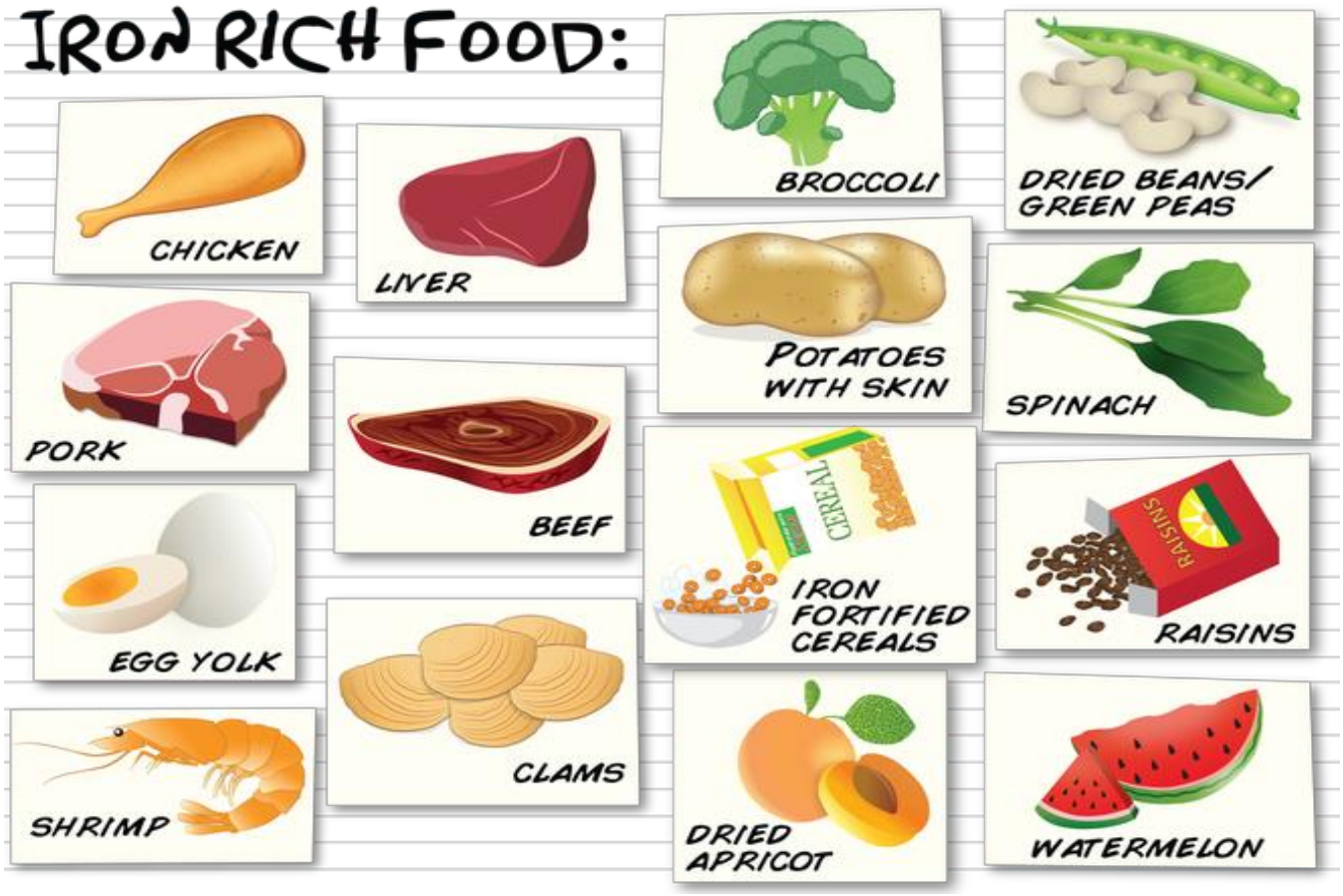
Risk factors for anaemia

These factors place you at increased risk of anaemia:

- **A diet** low in iron, vitamin B-12 and folic acid.
- **Menstruation:** loss of red blood cells.
- **Pregnancy:** lack of multivitamins with folic acid and iron.
- **Chronic conditions:** cancer, kidney failure, diabetes, or another chronic condition.
- **Family history:** if your family has a history of anaemia.
- **Menopause** in women gives greater risk of iron deficiency anaemia than in men.
- **Age:** people over age 65 are at increased risk of anaemia.

Prevention and management

- Increasing the intake of foods that are rich in iron, folacin, vitamin B-12 and vitamin C:
    - **Iron:** Iron-rich foods include beef and other meats, beans, lentils, iron-fortified cereals, dark green leafy vegetables and dried fruit.
    - **Folic acid:** This nutrient, and its synthetic form folic acid, can be found in fruits and fruit juices, dark green leafy vegetables, green peas, kidney beans, peanuts, and enriched grain products, such as bread, cereal, pasta and rice.
    - **Vitamin B-12:** Food rich in vitamin B-12 include meat, dairy products, and fortified cereal and soy products.
    - **Vitamin C:** Foods rich in vitamin C include citrus fruits and juices, peppers, broccoli, tomatoes, melons, strawberries. These also help increase iron absorption.
- Treatment includes increasing water intake.
- Reducing the intake of caffeine drastically.



Google.com.printerest.com

Terminology (See glossary for description)

Nutritional and food-related health conditions

Macronutrients	Saturated fats
Micronutrients	Unsaturated fats
Cholesterol	Trans fats

A. Nutritional and health related diseases

Coronary heart disease, cholesterol, hypertension and anaemia

1.1 Identify the meal that would be the best for a person with high blood cholesterol levels.

A Thai chicken curry, prepared with coconut milk and served with noodles.

B Chicken and lentil stew served with brown rice.

C Roasted chicken served with pumpkin fritters.

D Creamy chicken pasta served with salad. (1)

1.2 Identify the food which is high in cholesterol and should only be eaten in limited quantities.

A Liver, eggs, meat.

B Potatoes, liver, spinach.

C Dried beans, cheese, eggs.

D White fish, dried beans, whole-wheat bread. (1)

1.3 Indicate the combination of statements that is correct with regards to cholesterol.

1. Mono-unsaturated fatty acids increase blood cholesterol levels.
2. Avocado pear is low in cholesterol.
3. Coconut oil and palm kernel oil are low in saturated fats.
4. Cholesterol intake should not exceed 300 mg per day.
5. Include organ meat e. g. liver in the diet daily.
6. A high blood cholesterol level is associated with coronary heart disease.

A 1, 3 and 5.

B 2, 4 and 6.

C 1, 4 and 5.

D 1, 4 and 5. (1)

1.4 Select the food that will contribute to lower cholesterol levels:

A Coffee creamer.

B Sausages.

C Sardines.

D Vanilla cupcakes. (1)

1.5 The milk that may contribute to high cholesterol levels:

A Soya milk.
B Skimmed milk.
C Full-cream milk.
D Low-fat milk. (1)

1.6 Select FIVE CORRECT statements regarding a pasta salad below. Write only the letters (A–J) next to the question number (1.6) in the ANSWER BOOK.

A The salad has a high-fat content.
B The salad has a high mono-unsaturated fat content.
C It is not suitable for a person with high blood cholesterol.
D It may not help to prevent and manage osteoporosis.
E The bacon/Macon may contain an additive that could cause cancer.
F The salad may help to prevent and manage Anaemia.
G The salad is suitable for a person with a milk allergy.
H It is not suitable for a person with gluten intolerance.
I A person with lactose intolerance can eat the salad.
J The cucumber will assist with the strengthening of the immune system. (5)

2. Answer the following questions on cholesterol.
   2.1 Name TWO types of cholesterol. (2)
   2.2 Explain the difference between the two types of cholesterol. (2 x 2)

3. Explain why spinach and broccoli are helpful in reducing the cholesterol level in the blood. (2)

4. Study the list below, that gives various options for breakfast, and then answer the question that follows:
   - Egg, roasted cherry tomatoes and bacon.
   - Egg, mushrooms, fresh tomato, bacon and beef sausage.
   - Fresh fruit and oats with honey.
   - Omelettes rolled with melted cheddar and ham.
   - Scrambled egg and cheese on toast.
   - Yoghurt mixed with fresh fruit and muesli.

   Select the most suitable breakfast choice for a person with high cholesterol levels. Motivate your choice. (4)

5. Write a paragraph to explain how cholesterol leads to coronary heart disease. (4)

6. Answer the following questions on high blood pressure:
   6.1 Name THREE diet-related causes of high blood pressure. (3)
   6.2 The Heart and Stroke Foundation recommends regular testing of blood pressure. Write a paragraph to give reasons for this recommendation. (3)

7. Give FIVE nutritional guidelines to manage hypertension. (5)

8. Read the scenario below and answer the questions that follow.

> Saul is a 36-year-old bachelor who very seldomly cooks and regularly eats a lot of junk food. He always sprinkles extra salt on his food.

   8.1 Give a brief description of the cause of hypertension. (2)
   8.2 Explain how Saul could reduce the amount of salt in his diet to prevent hypertension. (5)

9. Read the information below and answer the question that follow.

> A poor micronutrient status is known to be associated with food insecurity. In South Africa, anaemia is a serious health concern. A survey found that almost double the number of females have anaemia when compared with males.
> *[Adapted from: The Human Sciences Research Council Review. Volume 11, number 4)*

   9.1 Explain the link between food insecurity and anaemia. (2)
   9.2 Explain the difference in the occurrence of Anaemia between males and females. (2)

10. Answer the following questions with reference to anaemia.
   10.1 Give THREE specific dietary guidelines to prevent and manage iron-deficiency anaemia. (3)
   10.2 Provide a good reason for each suggestion. (3)

10.1 DIETARY GUIDELINES TO PREVENT IRON-DEFICIENCY ANAEMIA	**10.2. REASONS**

11. A business runs a food and beverage canteen for employees. A popular light snack is sandwiches with a choice of fillings. From the list below select a suitable combination for an employee suffering from coronary heart disease and motivate your choice.

ONE TYPE OF BREAD AND MOTIVATION	ONE SPREAD AND MOTIVATION	ONE PROTEIN FILLING AND MOTIVIATION	TWO ACCOMPANIMENS AND MOTIVATION
• White • Brown • Wholewheat	• Butter • Margarine • 'Lite' margarine	• Garlic polony • Smoked chicken • Tuna mayonnaise	• Tomato • Cucumber • Low-fat cheese • Lettuce

(2x5=10)

12. Read the information below and answer the questions that follow.

LOOK AFTER YOUR HEART WITH THESE HEART-HEALTHY FOOD EXCHANGES …

Potato crisps → popcorn

Butter → canola oil for food preparation

White, refined flour → brown, wholewheat flour

[Source: Pick-n-Pay *Fresh living magazine*, October 2016]

Explain reasons for the exchange of the foods above:

12.1 Potato crisps exchanged with popcorn (2)

12.2 Butter exchanged with canola oil for food preparation (4)

12.3 White, refined flour exchanged with brown, wholewheat flour (2)

13 Read the extract below and answer the question that follows. (3)

Ed's mother commented, 'I'm really worried about Ed. Just look at him, he is so skinny. He loses weight constantly because he restricts his food intake, and he exercises excessively. He possibly does not eat correctly at university.' Most parents worry that their child at university is not eating properly. Usually this concern is unfounded, but sometimes it is not.

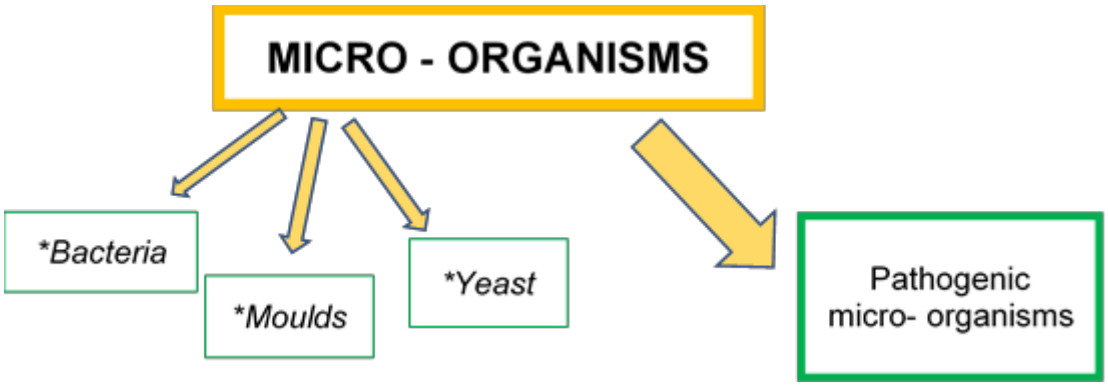
[Adapted from The Guardian, 18 April 2014]

Discuss the disorder that Ed's mother is concerned about. (3)

GR 11

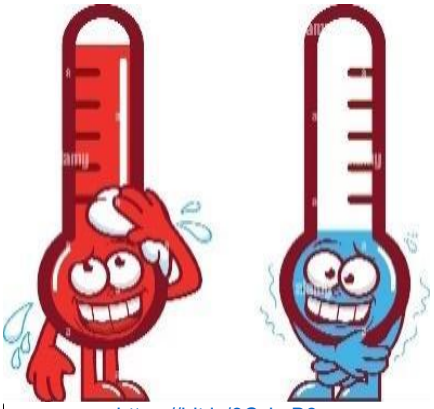
3.1.2 foodborne diseases

Foodborne diseases 2022 – 2023 - Summary of food spoilage



Factors influencing growth of micro-organisms

- Food- bacteria grow best and faster in protein rich food.
- Mould and yeast grow best on carbohydrates.
- Meat, poultry, seafood, milk and milk products, rice and eggs are most likely to carry **pathogenic bacteria.**
- Temperature: micro-organisms grow faster at 5ºC to 60ºC, known as the danger zone.
- Time: micro-organisms double every 20 minutes under ideal conditions.
- Moisture: pathogens need moisture to grow on.
- Oxygen: **aerobic organisms** need oxygen to grow.



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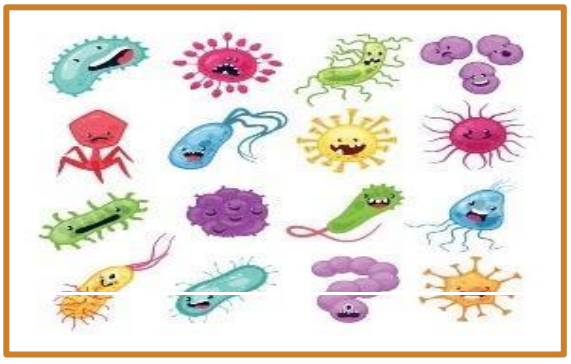

FOOD STORAGE

The correct storing of food is important because:

- Nutritional value is preserved
- Quality is assured
- Appearance, texture and flavour stay the same
- Saves money- prevents food spoilage
- Prevents food-borne illnesses caused by harmful micro-organisms
- Always apply the first in first out (FIFO) principle

STORAGE TEMPERATURES:

Store raw materials and all ingredients in correct conditions to:

- prevent harmful deterioration.
- protect them from contamination.
- prevent multiplication of bacteria.
- prevent cross-contamination

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GR 12

FOOD BORNE DISEASE

Hepatitis
Tuberculosis (TB)
E-Coli
Gastroenteritis

- Explanation
- Transmission
- Incubation Period

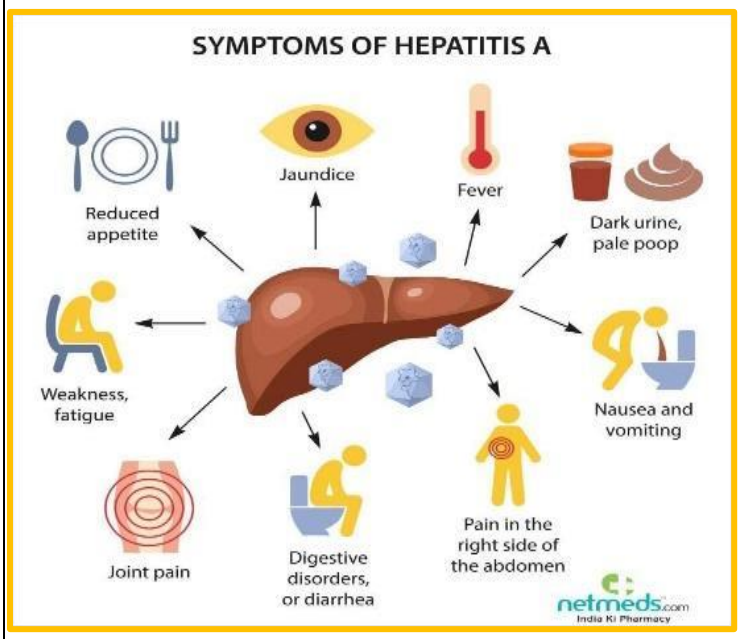
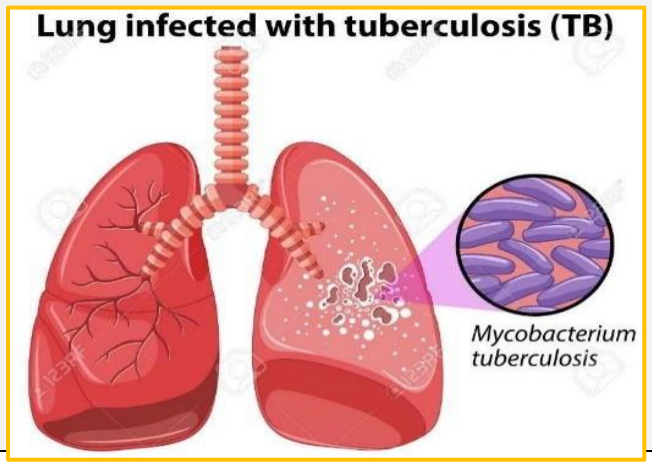
Hepatitis

Foodborne diseases

are infectious.

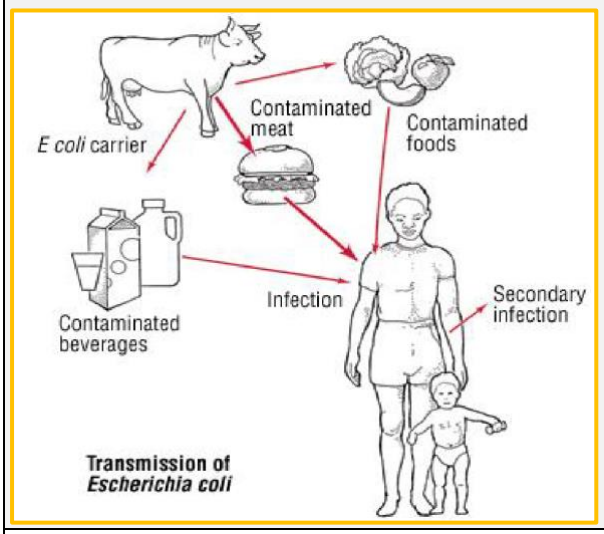
Irritate or poison the digestive system after consumption of contaminated foods or drinks.

Develop very quickly and last for a short time.

Foodborne disease explanation	Transmission	Incubation period
HEPATITIS A * Is contagious Liver disease caused by the hepatitis virus. * Associated with poor sanitation and lack of personal hygiene. **How do I know I have hepatitis A** 	Being in contact with: • Contaminated food or drinks. • Infected person does not wash hands after using toilet, and touches food.	Develop 15-50 days after initial infection. 28 days (4 weeks)
Tuberculosis (TB) * Caused by a bacterium that usually affect the lungs. * Opportunistic infection. * Weakens the immune system.  	• Inhale of the bacterium that causes it. • Transmitted through the air. • Not transmitted through food.	Develop in 2 – 12 weeks after infection.

E-coli

The bacterium normally lives in the intestines of healthy people and animals.



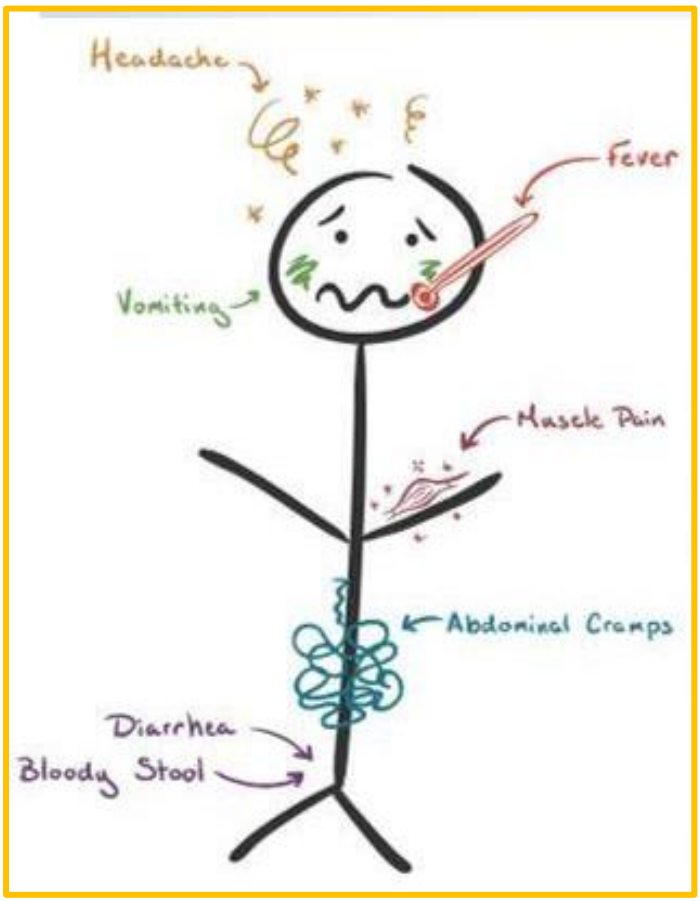
- Drinking contaminated water.
- Swimming in contaminated water.
- Eating contaminated food, faeces of wild or domestic animals.
- Come into contact with raw fruit or vegetables.
- In undercooked beef.
- In unpasteurized milk.

Develop in 2 - 7 days after exposure

Gastroenteritis

Explanation

Inflammation that irritates the stomach and /or the intestine



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Transmission

- Poor hygiene.
- People with diarrhoea do not wash hands thoroughly after using the toilet.
- Touching your mouth after contaminated item e.g., toy or diaper.
- In contact with or the consuming of contaminated foods and/or drinks.
- Food not properly handled.
- Swimming or playing in infected water.

Incubation period Develop a few hours to a few days after infection

Terminology (see glossary for description)

Nutritional and food-related health conditions

e-Coli	Saturated Fats	Cholesterol	Trans fatty acids
Gastroenteritis	Unsaturated Fats	Hepatitis A	Tuberculosis

Activities grade 12
Activity 2: foodborne diseases

1.1.1 Highly contagious viral disease that attacks the liver

A gastro- enteritis
B Tuberculosis
C HIV/AIDS
D Hepatitis A (1)

1.1.2 A bacterial infection which is not foodborne but airborne disease

A Dysentery
B Tuberculosis
C Gastro-enteritis
D Hepatitis A (1)

1.1.3 A food-borne disease which takes its name after the bacteria that live actively in the intestine of animals

A E-coli
B Hepatitis A
C Tuberculosis
D Gastro-enteritis (1)

1.1.4 Thato returned from the matric camp. He had diarrhoea and told his mother that he had swam in a dam. The dam water in which they swam, was very dirty

A Hepatitis A
B Tuberculosis
C Food poisoning
D Gastro-enteritis (1)

1.1.5 Gastro-enteritis is/will …

A Inflammation of the bones
B Infection of the liver
C Affect the digestive system
D Affect the heart (1)

2. Choose the correct answer in Column B to match the foodborne diseases in Column A and the incubation period of Column C. Write only the corresponding letter next to the question number:

	COLUMN A Foodborne Disease	COLUMN B Organs affected	COLUMN C Incubation
2.2.1.	Tuberculosis	A Intestines	i 17-20 days
2.2.2	Gastro-enteritis	B Liver	ii 28 days
2.2.3	E-coli	C Stomach and intestine	iii 2-12 weeks
2.2.4.	Hepatitis	D Heart	iv 5-10 days
		E Lungs	v 2-7 days

(4 x 2) (8)

3. Answer the following questions with regards to hepatitis A.

3.1 Define the term hepatitis A. (2)

3.2 Explain why hepatitis A is closely linked to poor sanitation and lack of personal hygiene. (2)

4. Answer the following questions with regards to foodborne diseases.

4.1 State the foodborne disease that is also referred to as stomach flu. (1)

4.2 Outline the transmission possibilities of the above foodborne disease. (4)

5. Read the scenario below and answer the questions that follow:

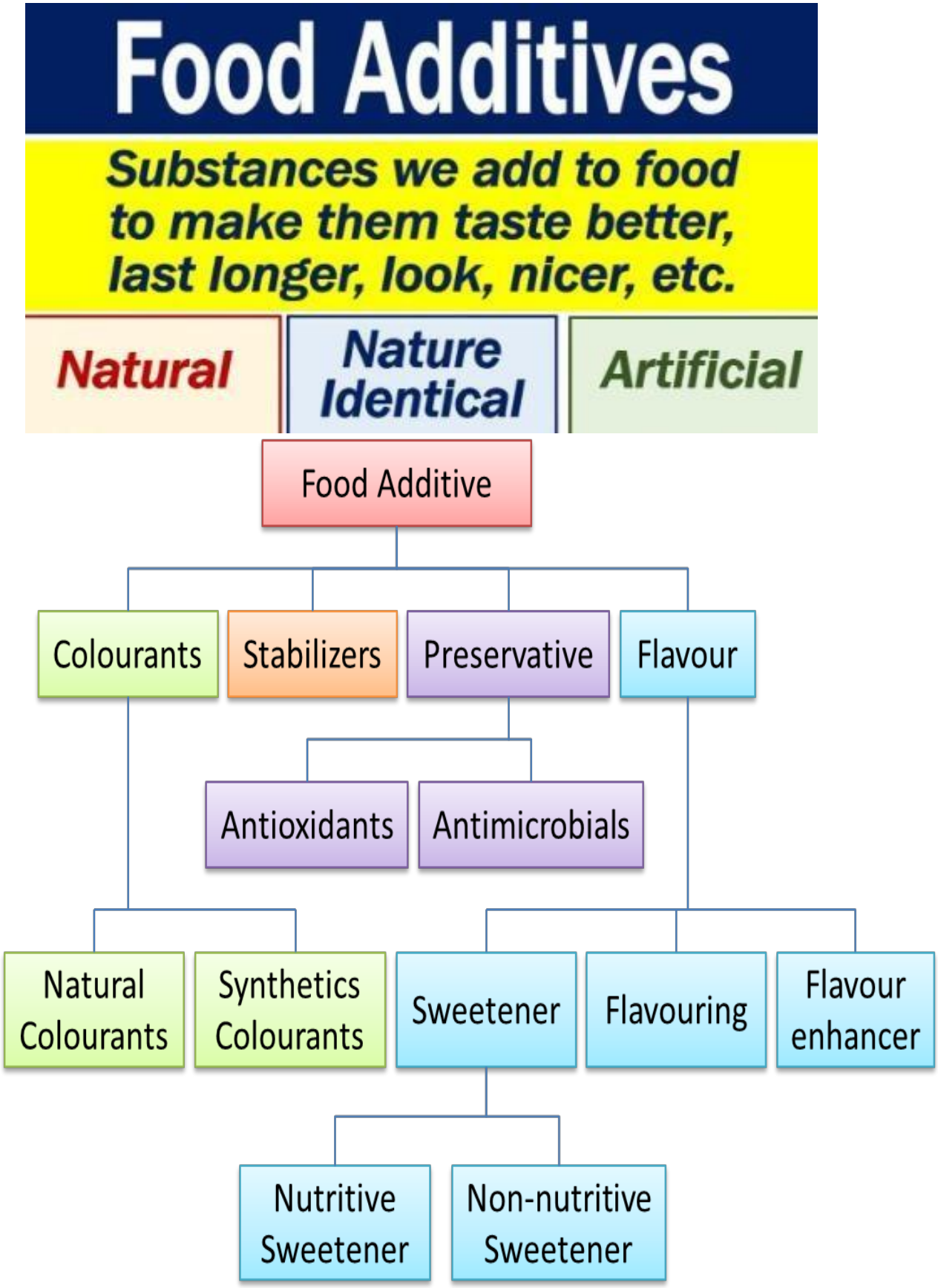
A boarding school had to be closed after 45 learners were diagnosed with tuberculosis.

Write a paragraph to explain why so many learners could have been infected by the disease. (5)

6. Foodborne diseases have many transmission possibilities". Discuss this statement. (6)

GR 12

3.1.3 Food additives, food labelling



Food additives are substances added to food to preserve flavour or enhance taste, appearance, or other sensory qualities.

Vit A and Iron fortified | **Iron fortified** | **Vit A fortified** | **Vit A fortified**

Food fortification is defined as **the practice of adding vitamins and minerals to commonly consumed foods during processing to increase their nutritional value**.

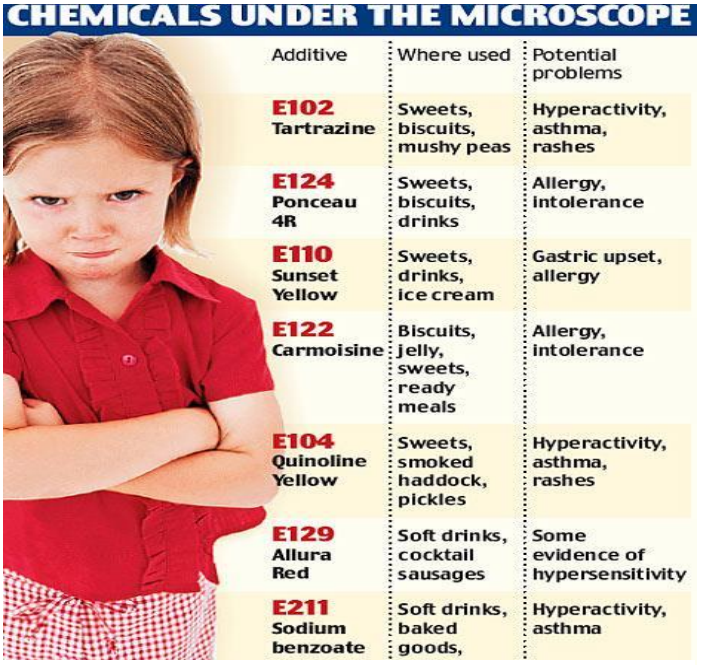
What are food additives

Additives can be natural or synthetic drugs, examples of natural preservatives

- Salt added to fish and meat.
- Sugar added to fruit.
- Herbs and spices in a variety of foods

Functions / Purpose of additives

- Extend shelf life / Maintain freshness
- Change / retain colour / appearance and texture (sponginess).
- Improve flavour, taste, nutritional value
- Prevent becoming bad (preserve / preserve)
- Part of food processing
- Preserve / preserve food



E-numbers are used to identify various additives.
Important: different numbers **NOT** for study purposes

Types of additives

- Natural - is found in nature e.g., beet juice extracts which used as colorants.
- Artificial - synthetically made products that are not found in nature, e.g., Niacin, used for preserving dairy products, semolina and tapioca puddings.

Possible reactions

- Usually do not cause problems but some people are sensitive to additives such as - colours, sulphites and benzoates

- Type of reaction (Difference from individual to individual)
  - Skin rash
  - Asthma

Safety of additives

1. Often seen as harmful chemicals
2. Some such as salt, vinegar, Vit C, etc. is harmless
3. Use of additives are controlled by law:
   - *3.1* Must be indicated on the label
   - *3.2* Must be used responsibly
   - *3.3* New additives must undergo biological testing before being released
   - *3.4* May only be used in limited quantities
4. Great concerns about the safety of some additives exist
5. Artificial dye and sodium benzoate have a negative effect on children's behaviour and may cause hyperactivity
6. Sodium nitrite / nitrate used in bacon - can lead to the formation of cancer cells

Rules for labelling additives

- Tartrazine must be identified
- Mono-sodium glutamate must be indicated as MSG flavour enhancer
- Antioxidant's must be indicated by chemical name / approved abbreviation as applicable

Effect of additives on food

1. To give food a smoother texture with better consistency
   - 1.1 ***Emulsifiers*** *prevent ingredients from separating*
   - 1.2 ***Stabilisers*** *and* ***thickeners*** *give a smoother texture*

2 **Anti-caking** agents ensure that substances flow freely (prevent lumps) to enhance the shelf life of foods/ make them last longer

- 2.1 ***Preservatives*** *reduce the risk of waste due to air, mould, bacteria or yeast*
- 2.2 **Antioxidants** retain the flavour of products as it prevent fats and oils from spoiling
- 2.3 Additives prevent the flesh of fresh fruit from turning brown (**oxidation)**

3 To help with the processing/ preparation of food

- 3.1 ***Raising agents*** *contain baking soda*

4 To enhance the taste/flavour of foods

- 4.1 *Herbs and spices bring out the taste of food, change a flavour or create a new colour*
- 4.2 *To enhance the appearance/ colour of food to look more appetising*

Emulsifiers

- Make it possible for oil to mix with other liquids as they prevent separation of water and oil.
- Used in margarine, mayonnaise, ice cream, low-fat spreads, salad dressing.
- Lecithin from soy and egg yolk is use as emulsifier.

www.google.hqdefault.com

Nutrients

- Enrichment – restore/replace lost nutrients.
- **Fortification** - increases nutritional value of food / strengthen the food.
- Ensure daily intake is achieved.
- Vitamins, minerals, amino acids are added to certain foods.
- Some nutrients like Vit C also have other functions like preservation or antioxidant.

www.google.study.com

Bleach and colours

- Dyes retain / improve appearance in the following ways:
  - delay colour loss
  - enhance natural colour
  - make the food look better
- Small percentage of people are sensitive to the colouring agent (Tartrazine).
- Most colour additives do not have to be declared by name on a label but may simply be listed as ‘colouring’ or ‘colour added’.

www.google.imaheb.com

Stabilizers

- Affects the physical quality of food as they give even texture to food.
- Gelatine and pectin are mostly used.

Preservatives

Extends shelf life by protecting food against deterioration.

- Inhibits or slows down the growth of micro-organisms spoiling food or causes food poisoning.
- Shelf life of food is extended.
- Extends safe-use period of food.

www.google.marketresearch.bit

Frequently used preservatives

- Sulphur dioxide - prevent the colour change in dried fruit.
- Sulphites
  - inhibit the growth of bacteria in wine and fermented foods.
  - can act as antioxidants.
- Calcium propionate acid prevents moulds growth in bread and baked goods.
- Nitrate and nitrite - preserve cold meat, such as ham.
- Benzoates - used in fruit juices.

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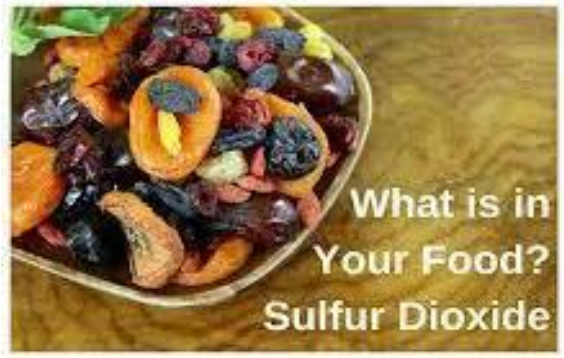

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Additives to improve taste

- Spices, natural and artificial colours and sweeteners are added to foods to enhance flavour.
- Monosodium glutamate (MSG) - most controversial ingredient as some people show a negative reaction.
- Citric acid - natural preservative, also give sour taste to soft drinks.
- Chemically concentrates of flavours are used to boost flavour, like strawberry.

www.google.istock.com

Anti-oxidants:

- When fruit juices, fats and oils get expose to air and reacts to oxygen the food turn rancid.
- Antioxidants prevent oxidation of fat and the browning of fruit.

https://bit.ly/3vLoDqO

https://bit.ly/3tHqPwP

GR 12

3.1.4 Food Labelling

FOOD LABELLING

Main purposes of food labelling

- To give information about ingredients
- To protect the consumer
- To help with healthy food choices

"She read the ingredients listed on the label!"

Format of information on food labels

- Must be in English and another official language if possible
- Must be clearly visible and legible
- Must not easily be removed or washed away
- The font size for different types of information on the food label are prescribed

Interpretation of information on food labels

1. **Product name**

   1.1 Must be clearly legible with lettering at least 4mm in height.

   1.2 A description must be included if the name/image does not describe it.

2. **Image**

   2.1 May not be misleading.

3. **List of ingredients**

   3.1 Ingredients must be listed.

   3.2 Must be in decreasing order, the main ingredient must be listed first.

   3.4 Food additives must be listed according to requirements.

   3.5 *Common allergens must be included e.g., eggs, cow's milk, goat's milk, shellfish, nuts, peanuts.*

INGREDIENTS:
Cake Mix: Cake Wheat Flour (Wheat Gluten, Wheat), Sugar, Corn Starch, Raising Agents, Emulsifier, Whey Powder (Cow's Milk), Modified Maize Starch, Skimmed Milk Powder (Cow's Milk), Salt, Flavouring, Stabilisers. **White Icing Mix:** Icing Sugar Compound (Sugar, Anticaking Agent), Flavouring, Colourant (E171). **Colour Mixes:** Sugar, Colourants (E171, E122, E127, E133, E104, E110).

Contains Allergens: Wheat Gluten, Wheat, Cow's Milk.
May Contain: Soya.

4. **Instruction for use on preparation** – cooking methods**.**
5. **Storage instruction** - to ensure the product's quality before and after opening.

6. **Net/actual content** – mass, volume or serving size.

7. **Nutritional information**
   - Prescribed tabular format.
   - Appropriate units e.g., energy value in kilojoules.
   - Mass or volume of a single serving.
   - Total fat, protein, carbohydrate, and fibre content.
   - Logo of the organization that endorse the product e.g., Heart Foundation or SABS.

Nutrition Facts	
8 servings per container	
Serving size	**2/3 cup (55g)**
Amount per serving	
Calories	**230**
	% Daily Value*
Total Fat 8g	**10%**
Saturated Fat 1g	**5%**
Trans Fat 0g	
Cholesterol 0mg	**0%**
Sodium 160mg	**7%**
Total Carbohydrate 37g	**13%**
Dietary Fiber 4g	**14%**
Total Sugars 12g	
Includes 10g Added Sugars	**20%**
Protein 3g	
Vitamin D 2mcg	10%
Calcium 260mg	20%
Iron 8mg	45%
Potassium 235mg	6%

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

8. **Nutritional claims** – must be done in compliance with the Regulations

9. **Mandatory warning**
   9.1 If the content is under pressure / do not prick or expose container to heat.

10. **The name and address of the manufacturer**
    10.1 If necessary, also the importer, distributor, seller.

11. **Date stamps –** in format day – month – year
    11.1 **Date of manufacturer/packaging:** to see how old the product is.
    11.2 **Best-before:** indicates the length of time a product will keep its quality.
    11.3 **Sell-by-date:** last date on which a product should be offered for sale.
    11.4 **Use-by-date**: the last date it may be offered for sale and last day it should be used.
    Found on perishable foods e.g., milk. May not be safe to eat after this date.

12. **Client service or helpline**

13. **Bar code or price of the product**

14. **Country of origin**

15. Batch identification number.

- To ensure traceability during production, processing and distribution.

www.quora.com/How-do-I-get-a-batch-number-in-my-food-products

Misleading claims about nutrient content on food labels

The purpose of the legislation from the Department of Health is to:

- Prevent misleading claims.
- Provide facts only.
- Avoid confusing the consumer through words or by implication.
- Provide information for the consumer.

'/bit.ly/3MRuOjl

5 Mistakes of reading food labels

5. Package sounds healthier than the facts (organic, made with grains, no cholesterol)

Nutrition Facts

Serving Size 1/4 cup (36g)
Servings Per Container: 9

Amount per serving	
Calories 60	Calories from Fat 0
	% Daily Value
Total Fat 0g	0%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 15mg	1%
Total Carbohydrate 22g	7%
Dietary Fiber 14g	56%
Sugars 1g	
Protein 7g	

Vitamin A	0%	Vitamin C	0%
Calcium	4%	Iron	15%

1. Ignore the label

2. More than one serving in a single size (beverage bottle, candy bar, snack pack of cookies)

4. Sugar-free or fat-free is NOT calorie free (ice cream or cookies)

3. Too high in sodium (frozen dinners, boxed dinners, canned goods)

GR 12

3.2 Food related consumer issues

FOOD- RELATED CONSUMER ISSUES

1. **ORGANICALLY FOODS**

4. FOOD SECURITY

3. IRRADIATION

2. GENETIC MODIFIED ORGANISM

1. **Organic Foods**

ORGANIC PRODUCED FOOD

Refer to the way farmers grow and process agricultural products.

FOOD ARE MANUFACTURED:

- without the use of artificial and toxic contaminants, pesticides, herbicides.
- without the use of growth hormones and antibiotics.
- use farming techniques such as crop rotation that will ensure optimal functioning of soil, plants, animals and people in the eco-system.

EXAMPLES:

Any kind of fruit, vegetables, meat, milk products and wine.

www.google.com.newsmarket

Certified Organic Means

1. That toxic chemicals (herbicides and pesticides) are excluded from the production process
2. Nothing artificial ("not natural") is included in the production process
3. Fossil fuel-based fertilizers are not used
4. Farmers use the following sustainable practices:
   - 4.1 Fertilising soil naturally (compost).
   - 4.2 Plant crops suited to the climate and soil type.
   - 4.3 Animals receive no medication, hormones or antibiotics.
   - 4.4 Animals can graze freely.
   - 4.5 Biological pest and weed control are used.

Foods grown by organic methods are more expensive because of:

- Lower yield
- Labour intensive
- High start-up costs
- Mechanical methods used lead to greater energy consumption

ADVANTAGES OF ORGANIC FOODS	DISADVANTAGES / ISSUES REGARDING ORGANIC FOODS
• Fewer pesticides less harmful to environment • No artificial herbicides, pesticides, fertilizers hormones • Conserves fossil energy used on farms therefore, less pollution • Promotes biodiversity on and around farms • Food taste better • Creates more jobs, as it is labour intensive	• Increased risk of diseases like E-coli due to use of organic fertilisers such as manure • Lower crop yields per hectare • Labour intensive – more wages • Usually more expensive • High start-up costs • Shorter shelf life • Appearance of products not perfect

2. Genetic Modified Foods

Manipulation of the genes in the DNA molecule. This word is by identifying / taking the best features / characteristics of one organism and transferring them to another organism.

Examples of gm food:

Soybean, corn, cotton, canola, milk eggs, chicken, meat, fruits, vegetables.

Advantages - Consumers:

- Give food security - more people can be fed.
- Cheaper to buy.
- Seasonal products available throughout the year.
- Longer shelf life.
- Improved nutritional value, flavour, colour, size.

https://bit.ly/3tGWqPl

Farmers and Manufacturers:

- Longer shelf life.
- More yield per hectare results in:
  - Cheaper to produce.
  - Sustainable production.
  - Higher turnover ensures greater profits.
- Increased insect resistance therefore requires less insecticides and labour.
- Crops can be grown in environments with low agricultural potential / unfavourable conditions.

www.google.glogster.com

Disadvantages:

- Harms the environment and disturbs food chain.
- GM crops can pollinate with wild plants to form “super weed”.
- Herbicide resistance can create super uncontrollable weeds.
- Can be considered unethical as GM animals can grow faster than normal growth, then slaughtered at a younger age.

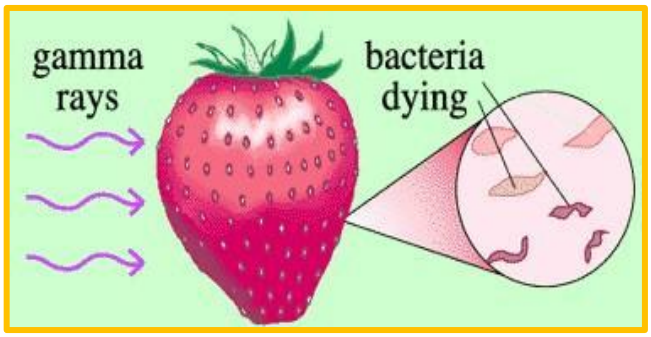
Labelling of GM foods

- By law GM MUST be indicated on labels.
- It may state claims such as improved nutrient content, but may not make misleading or false statements.

https://english.fastnews.lk/14713

3. Irradiated Foods

Food is irradiated / treated with very short light and radio waves. The waves penetrate the food and kill harmful organisms and insects without making the food radioactive.



The International Food Irradiation Symbol – The Radura

Treated with Radiation
Treated by Irradiation

https://slidetodoc.com/benefit-or-risk-what-is-food-irradiation-process/

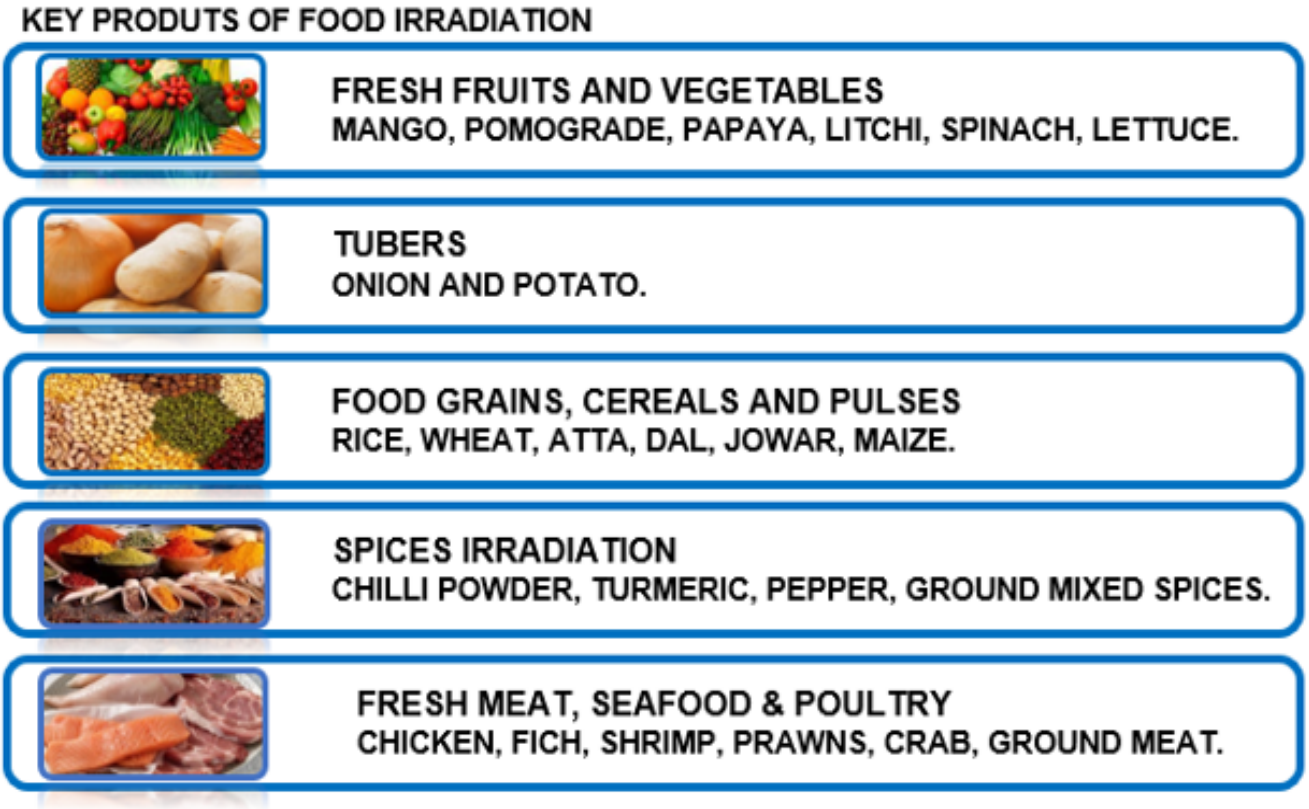
Advantages:

1. Make food safer - reduce bacteria and harmful organisms.
2. Longer shelf life - prevent spoilage and waste.
3. Destroy bacteria in herbs and spices and honey.
4. Prevent foodborne diseases.
5. It slows down ripening of fruits and vegetables and sprouting (potatoes).

Disadvantages/ effect of irradiation on food and consumers:

1. Loss of nutritional value. (Vitamins C and E).
2. May cause harmful micro-organisms to become resistant.
3. Does not destroy all harmful micro-organisms e.g., viruses.
4. Products can be more expensive.
5. The safety and effect of irradiation not yet clear.

EXAMPLES:



4. Food Security

When all people, have daily access to enough safe and nutritious food to lead an active and healthy life.

Depends on three main principles

1. Availability of food.

1.1 Always enough food.

1.2 Needs to be safe and nutritious.

2. Accessibility of food.

2.1 Must be able to get food.

2.2 Affordable food for what people want.

2.3 Food should be distributed to where it is needed.

3. Utilization of food.

3.1 Use knowledge of nutrition to safely use food and water.

3.2 Make responsible decisions to maintain a healthy life.

3.3 Sustainable use of products and water. (do not waste).

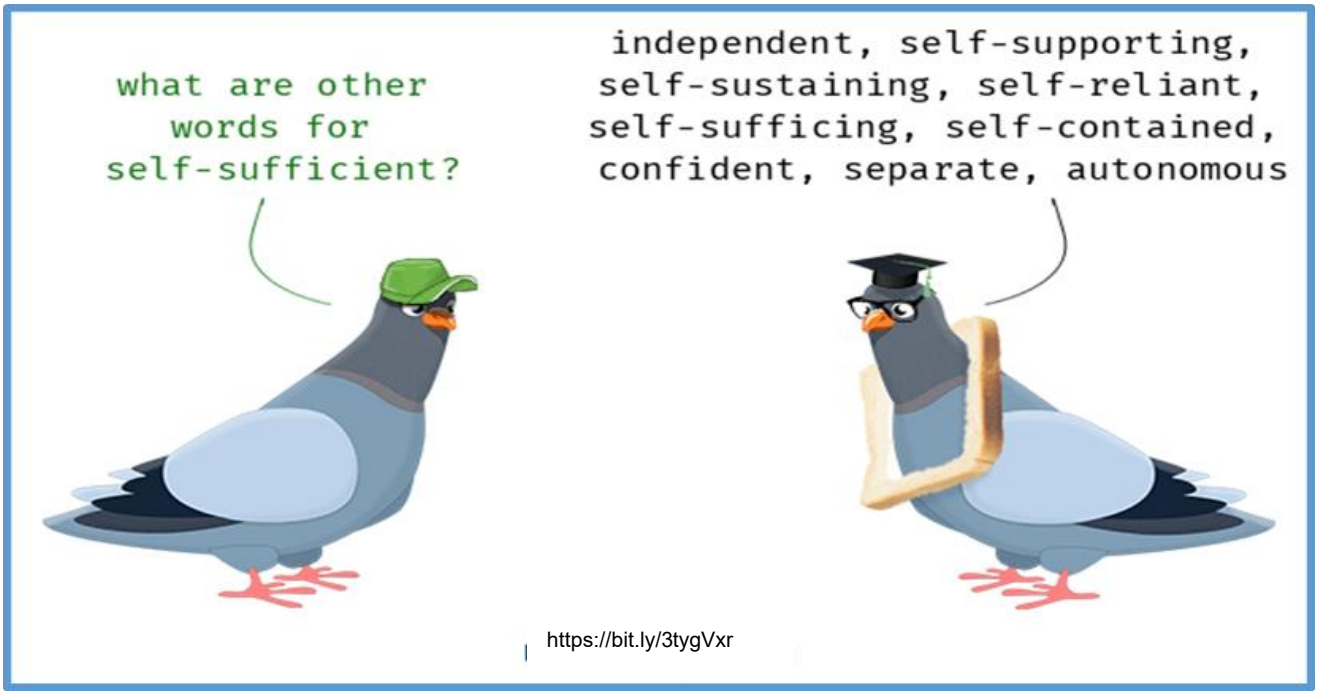
3.4 Supply should be sustainable for now and the future.

http://bit.ly/3pIGcnD

https://bit.ly/3vOZFXB

Factors Contributing to Food Security

REASON FOR POOR FOOD SECURITY	SOLUTIONS FOR FOOD SECURITY
• Unemployment and poverty lead to insufficient money to buy food. • Inflation and rising food costs. • Irresponsible use of money and products. • Political unrest/strikes. • Drought / climate change.	• Locally produce own food (vegetable garden). • Ensure basic food is affordable. • Do not add taxes on basic food. • To be self-sufficient – to be able to provide for yourself and not depend on government grants.



ACTIVITIES 3
On food additives, food labelling, consumer related-isssues

1.1 The type of additive that gives food an even or consistent texture:

A Anti-oxidants
B Emulsifiers
C Preservatives
D Stabilisers (1)

1.2 The use of antioxidants as an additive prevents…

A allergies and separation.
B discolouration and rancidity.
C rancidity and allergies.
D separation and discolouration. (1)

1.3 The picture below shows:

[Source: www.newportnaturalhealth.com]

A Food irradiation
B Food security
C Genetic manipulation
D Organic food (1)

1.4 Identify the group of food additives that prevents rancidity and discoloration of food.

A Stabilizers
B Bleaches
C Chemical preservatives
D Antioxidants (1)

1.5 A/An … is the food additive that prevents the ingredients in ice cream from separating.

A emulsifier
B bleaching agent
C gelatinization agent
D preservative (1)

1.6 A disadvantage of organic farming

A Crops cannot be grown in winter.
B Less land is required for growing.
C Weeds are difficult to control.
D Yields of crops are higher. (1)

1.7 Identify the following symbols indicates to a consumer that the product was Irradiated. (1)

A	B	C	D
			

1.8 Indicate the type of food additive that is used in each of the descriptions below. Write down only the word/term next to the question number (1.8.1–1.8.3) in the ANSWER BOOK.

1.8.1 Additives added to margarine to mix oil and water permanently (1)

1.8.2 Additives used in frozen yoghurt to prevent large crystals (1)

1.8.3 Additives added to freshly milled flour to change the yellowish tint (1)

1.9 A person with high blood pressure is also at risk of developing …

A high blood glucose levels, Aids and kidney failure.
B stroke, osteoporosis and anorexia.
C heart attack, stroke and kidney failure.
D heart attack, anorexia and Aids. (1)

1.10 A stabilizer is added to instant pudding to …

A give it an even, smooth consistency.
B prevent the fat from becoming rancid.
C create a lighter colour.
D retard the growth of micro-organisms. (1)

1.11 Food irradiation is a technology that …

A use agricultural methods to sustain the productivity of the eco-system.
B introduces characteristics from one species to another.
C improves the safety of food and extends their shelf life.
D enables a country to be self-sufficient. (1)

1.12 Food security means that …

A South African farmers produce their own food.
B South African goods are sent for sale or exchange to other countries.
C people eat enough safe food for an active healthy life.
D. everyone can afford to buy food.

(1)

2. Study the following label and then answer the questions (2.1 – 2.1.3). (3)

Ingredients:
Water,
sugar,
orange juice,
tartrazine,
potassium nitrate

2.1 Identify the misleading and false claim on the above product. Motivate your answer. (2)

2.2 Answer question 2.2.1 and 2.2.2 in a table as shown below.

2.2.1. Identify TWO ingredients used in the product that might cause allergic conditions. (2)

2.2.2. Determine the purpose of these ingredients in the product. (2)

Tabulate as follows:

2.2.1 TWO Ingredients	**2.2.2 Purpose**

3. Give THREE reasons why antioxidants are used as food additives. (3)

4. Name the THREE allergic reactions to the food additive tartrazine. (3)

5. Explain what organic farming is. (2)

6. Name THREE benefits that organically grown foods may have for the natural Environment. (3)

7. State which foods are most irradiated. (2)

8. Study the label below and answer the questions that follow.

UNCOOKED TUNA FISH CAKES

Cooking instructions
- Preheat oven to 200 °C.
- Bake fish cakes on a rack for 15–20 minutes.

Ingredients
Tuna (34%), milk, potato, crumbs (contains wheat flour, salt, sunflower oil, water, canola oil), crème fraiche (contains cream, starter cultures, preservative: potassium sorbate), batter (contains potato starch, wheat starch, palm kernel oil, raising agent, emulsifier), thickener, butter (contains butter fat, colorant), lemon juice, parsley (radiused), onion powder (radiused), garlic powder (radiused), pepper (radiused)

Allergens
Fish, wheat, gluten, cow's milk, sulphur dioxide.

High in omega 3

Typical nutritional information

Average Values	**Per 100 g**	**Per 80 g serving**
Energy	**839 kJ**	**671 kJ**
Protein	**10,2 g**	**8,2 g**
Carbohydrate of which sugar	**18 g 0 g**	**14 g 0 g**
Total fat of which: Saturated fat	**10,5 g. 2,5 g**	**8,4 g 2 g**
Trans fatty acids	**0,1 g.**	**0,1 g**
Monounsaturated fat	**5,8 g.**	**4,6 g**
Polyunsaturated fat	**2,2 g**	**1,8 g**
Omega 3	**578 mg**	**462 mg**
Cholesterol	**36 mg**	**29 mg**
Dietary fibre	**2,9 g**	**2,3 g**
Total sodium	**338 mg**	**270 mg**

8.1 Discuss the possible economic consequences of food radiation could have on the international trade (import and export) of fresh produce for countries such as South Africa and Mauritius. (4)

9 Study the label below and answer the questions which follow:

9.1 Identify the ingredient that matches the following:

9.1.1 Found in the largest quantity

9.1.2 Name one preservative added

9.1.3 The allergen found in the food

9.1.4 Weight of product (4)

10. The following information appeared on the label for rusks. Study the information and answer the questions that follow:

DIABETIC RUSKS: xylitol, seed and bran		
List of ingredients: Stone-ground wheat flour, buttermilk, xylitol (13,2%), canola oil, butter, sunflower seeds (8,4%), rolled oats, wheat bran (3,2%), eggs, linseed, baking powder, salt		
NUTRITIONAL INFORMATION		
Average values	**Per 100 g**	**Per 25 g**
Energy (kJ)	1 933	483
Protein (g)	12	3
Carbohydrates (g)	52,9	13,2
of which total sugar (g)	1,6	0,4
Total fat (g)	21,2	5,3
of which saturated fat (g)	7,1	1,8
Fibre (g)	9,8	2,5
Sodium (mg)	487	122

[Source: www.beasrusks.co.za]

10.1 A product is considered high in salt when containing more than ___mg per 100g of food. (1)

10.2 State whether the product is high or low in salt. (1)

10.3 The product states that this product is suitable for a Diabetic. Identify the ingredient on the label substantiating this claim. (1)

10.4 Identify ONE common allergen that are present in the rusks. (1)

10.5 List TWO products from the ingredients which are high in fibre. (2)

11. Read the following case study and answer the questions which follow:

Poor households access their food from the market, subsistence production and transfers from public programmes or other households. In the past rural households produced most of their own food, but recent studies have shown an increase in dependence on market purchases by both urban and rural households, in some cases reaching 90% of the food supplies.

Food expenditures can account for as much as 60-80% of total household income for low-income households in some parts of sub- Saharan Africa. Subsistence/smallholder agriculture can play an important role in reducing the vulnerability of rural and urban food-insecure households, improving livelihoods, and helping to mitigate high food price inflation.

There is a need to significantly increase the productivity of subsistence/smallholder agriculture and ensure long-term food security. This can be achieved by encouraging farmers to pursue sustainable intensification of production using improved inputs.

This will require a dramatic increase in the use of fertiliser, organic inputs, and conservation investments, combined with the development of well-functioning input and output markets to help farmers acquire and use improved inputs, market their (surplus) output and reduce transaction costs and risks.Increased productivity will reduce pressure on marginal lands, as the intensification of cultivated land will reduce pressure to crop fragile marginal lands.

There is a need to determine methods of identifying cost-effective ways to improve access to inputs by, among other things, improving delivery, and assisting farmers to earn cash to purchase inputs and invest in infrastructure, thereby improving food security.

11.1. Explain the concept of food security. (2)

11.2 Food insecurity is becoming a major worry in South Africa. Using examples from the case study, explain how increasing the productivity will help solve this problem. (2)

11.3 Discuss the important role that subsistence agriculture can play in food in security. (2)

12. Explain the meaning of the following words:

12.1 Arable land (2)

12.2 Infrastructure (2)

12.3 Subsistence farmers (2)

3.2 Answers for activities

Nutritional and Food Related Health Conditions

Activity: coronary heart diseases, cholesterol, hypertension and anaemia

1.1 B✓ (1)

1.2 A✓ (1)

1.3 B✓ (1)

1.4 C✓

(1)

1.5 C✓ (1)

1.6 A✓C✓E✓H✓I✓ (Any order) (5)

2.1 Name the TWO types of cholesterol.

Low density lipoprotein (cholesterol) ✓

High density lipoprotein (cholesterol) ✓ (2)

2.2 Explain the difference between the two types of cholesterol.

- Low-density lipoprotein is the dangerous/ bad ✓cholesterol. High- density lipoprotein is the good ✓cholesterol.
- Low-density lipoprotein builds up in the arteries/found in the fat deposits. ✓High-density lipoprotein gathers up excess cholesterol and transports it to the liver.✓
- Low-density lipoprotein causes the gradual narrowing of the blood vessels. ✓ High-density lipoprotein is broken down and excreted. ✓
- Low-density lipoprotein contributes to heart disease, ✓while high density lipoprotein lowers the risk of coronary heart disease. ✓ (4x2) (4)

3. Explain why spinach and broccoli are helpful in reducing the cholesterol level in the blood.

Dark green, leafy vegetables such as spinach and broccoli contain large amounts of phytochemicals ✓that help to reduce the build-up of cholesterol in the arteries and reduce the risk of atherosclerosis✓ (2)

4. Most suitable breakfast choice for a person with high cholesterol levels. Motivate

- Yoghurt mixed with fresh fruit and muesli is the best option for the person to eat✓
- Yoghurt –low fat product ✓
- Fresh fruit for vitamins, minerals, fibre, and antioxidants ✓
- Fruit no cholesterol ✓
- Muesli high in fibre no cholesterol ✓ (4)

5. Write a paragraph to explain how cholesterol leads to coronary heart disease

Cholesterol is found in blood and can build up inside the coronary arteries✓ if the level becomes

too high in the blood. ✓The deposits, called plaque, ✓cause the arteries to narrow✓, thicken✓ and harden✓. This condition is known as atherosclerosis. ✓ This blocks the flow of blood and oxygen to the heart. ✓ This causes heart failure/heart attack. ✓ (Any 4) (4)

6.1. Name THREE diet-related causes of high blood pressure.

- Excessive/too much salt intake✓
- Consuming too much fat/refined carbohydrates/overindulgence leads to overweight or obesity✓
- Excessive/too much alcohol✓
- Too less intake of fruit and vegetables (3)

6.2. The Heart and Stroke Foundation recommends regular testing of blood pressure. Write a paragraph to give reasons for this recommendation

High blood pressure is known as the silent killer ✓as there are no warning signs or symptoms.✓ Uncontrolled high blood pressure can lead to a heart attack/ stroke/kidney failure/damage to the eyesight.✓ If people do not test their blood pressure; they will not know that they have the condition and may suffer the consequences. If people test their blood pressure; they will know if they have high blood pressure and can then make lifestyle changes/exercise more/stop smoking/make dietary changes (Any 3) (3)

NOTE: If a paragraph format is not used, ONE mark will be deducted.

7 Give FIVE nutritional guidelines to manage hypertension.

- Use salt sparingly/reduce the amount of salt in your diet/no more than one teaspoon of salt should be consumed per day/herbs and spices can be used to flavour food instead of salt. ✓
- Cut down on the consumption of processed foods/salty foods/smoked meat/bacon/macon/biltong/potato crisps/salted nuts/salted popcorn. ✓
- Watch your weight/lose weight✓ if overweight/limit saturated fat/carbohydrate intake to prevent weight gain.
- Consume enough calcium/potassium/magnesium. ✓
- Limit the consumption of alcohol. ✓
- Cut down on the intake of coffee and tea. ✓
- Eat a healthy diet low in saturated fats and cholesterol. ✓
- Eat plenty of fresh fruit and vegetables. ✓
- Choose high-fibre whole-grain cereals rather than refined cereal products. ✓
- Use low-fat or skimmed dairy products. ✓ (5)

8.1. Give a brief description of the cause of hypertension

- Hypertension is caused when the blood pressure against the walls of the arteries remains ✓ high for a long time. ✓

OR

- Hypertension develops if the walls of the larger arteries lose their natural elasticity✓ and become rigid, ✓ and the smaller blood vessels become narrower due to blood pressure that remains high for a long time. ✓

OR

- The pressure of blood that flows in the arteries✓ is measured at a high and a low point✓If blood pressure is too high/hypertension puts you at risk ✓ of a heart attack/stroke/kidney damage/eye damage. (Any 2) (2)

8.2 Explain how Saul could reduce the amount of salt in his diet to prevent hypertension

- Saul must use herbs/spices to flavour his food✓ instead of salt.
- Reduce the intake of processed foods/snacks/smoked meat/bacon/biltong/potato chips/junk foods/salted nuts/peanuts/salted popcorn/salty cracks/pizza as it contains hidden salt. ✓
- Avoid/limit food that has salt/sodium/sodium chloride/mono- sodium glutamate (MSG) on the list of ingredients. ✓
- Avoid/limit salty food products/products high in salt which is more than 600 mg/1,5 g salt per 100 g✓.
- Do not consume more than 5 g/1 teaspoon salt per day✓.
- Eat food products low in salt/less than 120 mg/0,3 g salt per 100 g. ✓
- Limit the amount of salt when cooking. ✓ (5)

9.1 Explain the link between food insecurity and anaemia.

- Food insecure people do not eat enough food✓ and therefore lack certain nutrients✓ in their diets.
- Anaemia develops because of a lack of folic acid✓, vitamin B12✓ or iron✓. (2)

9.2 Explain the difference in the occurrence of anaemia between males and females.

- More females have / suffer from anaemia than males✓.
- The main reason for this is that females lose blood during menstruation✓.
- A loss of blood may lead to / cause anaemia✓.
- Avoid sprinkling extra salt on cooked food.✓ (Any 4)

10. Provide a good reason for each: Use the table format

10.1.1 Dietary guidelines to prevent iron-deficiency anaemia (3)

10.2.1 Reasons (3)

10.1.1 Dietary guidelines to prevent iron - deficiency anaemia	10.2.1 Reasons
• **Eat liver/ red meat/ fish/ poultry✓** **OR** • **Eat food rich in iron, such as liver and red meat✓**	• Iron from animal sources/ haem iron is absorbed better/ more easily than iron from plant sources.✓
• **Eat foods that are rich in vitamin C with iron-rich foods.✓**	• Vitamin C promotes/ enhances the absorption of iron.✓
• **Avoid taking coffee/ tea with meals.✓**	• Coffee/ tea can reduce iron absorption/ The tannin in tea and coffee forms insoluble compounds with iron, which inhibits the body's absorption of iron✓

11. Complete the table:

ONE BREAD TYPE	ONE SPREAD	ONE PROTEIN FILLING	TWO ACCOMPANIMENTS
Wholewheat/ brown bread ✓ Reason: • High in fibre✓ • Low GI✓ • Will reduce the blood cholesterol level✓	'Lite' margarine✓ Reason: • Will lower the total fat content. ✓ • Protects the heart as most contains the heart and stroke foundation logo✓	Smoked chicken/ Tuna mayonnaise ✓ Reason: • High in protein✓ • Chicken without the skin has a lower fat content. ✓ • Tuna is rich in omega-3 fatty acids that protect the heart and blood vessels. ✓	Tomato/ Cucumber/ Low fat Cheese/ Lettuce ✓ Reason: • Tomatoes/ cucumber/ lettuce is rich in vitamins/ minerals/ fibre/low in fat ✓ that reduces the risk of coronary heart disease. ✓ • Low-fat cheese has a reduced fat content which reduces the risk of coronary heart disease. ✓

NOTE: ONE mark for each choice and ONE mark for a reason. (2x5=10)

12.1 Potato crisps exchanged with popcorn

- Crisps are high in fat and trans fatty acids. ✓ Popcorn is lower in fat and does not

contain trans fatty acids.✓ therefore it has a lower impact/deposit less fat in the arteries/ lessens blockage of arteries✓and contributes to a healthier heart. ✓

- Total fat and trans fatty acids increase cholesterol levels. ✓ (Any 2) (2)

12.2 Butter exchanged with canola oil for food preparation

- Saturated fat increases low density lipoprotein levels (LDL) which carry cholesterol to the arteries where it is deposited. ✓
- This increases cholesterol levels which may lead to atherosclerosis (is a risk factor for coronary heart disease). ✓
- Canola oil is high in (mono) unsaturated fat. ✓
- This increases high density lipoprotein levels (HDL) which carry cholesterol to the liver where it is excreted from the body. ✓
- This decreases cholesterol levels, which is beneficial for heart health. ✓ (Any 4)(4)

12.3 White, refined flour exchanged with brown, whole-wheat flour

- Whole wheat flour contains more fibre.✓ Fibre has a cholesterol-lowering effect. ✓ and thus less cholesterol deposits in the arteries thus a healthier heart. (2)

13. Discuss the disorder that Ed's mother is concerned about

- Anorexia✓
- She thinks her son is starving✓
- He has become thin/comes home so thin/constantly lose weight✓ OR
- Starving✓and being very thin✓ are characteristics of the disorder (3)

(NOTE: ONE mark must be allocated for anorexia and TWO marks for reasons.)

Answers: Food Borne Disease

Question 1:

1.1.1. D✓

1.1.2. B✓

1.1.3. A✓

1.1.4. D✓

1.1.5. C✓ (5)

Question 2:

2.1 E ✓ **(iii)** ✓

2.2 C ✓ **(iv)** ✓

2.3 A ✓ **(v)** ✓

2.4 B ✓ **(ii)** ✓ (8)

3.1 Describe the term hepatitis A.

Hepatitis: is a highly contagious liver infection✓ that is caused by hepatitis A virus, and it is excreted in faeces. ✓ (2)

3.2 Explain why hepatitis A is closely linked to poor sanitation and lack of personal hygiene.

Hepatitis A spreads in the food environment when an uninfected or unvaccinated person eats or drinks something that was contaminated by the faeces of an infected person foods ✓or drinks may become contaminated when an infected person does not wash his/her hands after going to the toilet and then touches them. ✓ (2)

4.1 State the food borne disease that is also referred to as stomach flu.

Gastro enteritis ✓ (1)

4.2 Outline the transmission possibilities of the above food borne disease.

Eating ✓or drinking contaminated food ✓or water, or if you share utensils ✓towels or food with someone who's infected. ✓ (4)

5. Reasons why learners where infected with TB

Learners could have been infected with TB when an infected person coughed/ sneezed on their hands without covering their mouths. ✓ Tiny droplets of mucus and saliva could have spread in the air. ✓ and these droplets transmitted the disease to others who inhaled them. Learners at the boarding school live close to each other. ✓ and they breathe the same air for prolonged periods of time and therefore they could have infected each other, due to little/ no ventilation. ✓ The learners could have eaten food on which tiny droplets of mucus/ saliva had landed. ✓ and

the disease could have spread. ✓ Staff preparing the food could have been infected and spread the disease to the food. ✓ (5)

(Answer be in paragraph form, minus 1 for not if not in paragraph)

6. **'Food borne diseases have many transmission possibilities' Discuss this statement**.

Food-borne diseases like hepatitis A, E-coli and viral enteritis ✓can easily spread by the person who handles the food✓ if they do not wash their hands after using the bathroom. ✓Vectors like flies and cockroaches take germs directly from faeces to food. ✓ Water sources may be directly contaminated, for example by poorly maintained sewerage systems or foreign substances dumped into rivers and streams. ✓ Humans get infected when they drink contaminated water or use it to wash clothes or dishes or to prepare food. ✓ Bacteria can also be spread from animals to humans, so you need to wash your hands well after touching animals. ✓ (6)

Consumer Related Issues

Answers: food additives, food labelling and consumer related issues

1.1. D✓

1.2. B✓

1.3. C✓

1.4. D✓

1.5. A✓

1.6. A✓

1.7. B✓

1.8.1 Emulsifiers✓

1.8.2 Stabilizers✓

1.8.3 Bleaches✓

1.9. **C**✓

1.10 **D**✓

1.11 **A**✓

1.12 **C**✓

2.1 **Misleading and false claim on product:**

100% or original orange juice ✓according to ingredients the product has water✓ (2)

2.2 **Two ingredients**

2.3 **Purpose**

2.2 Ingredients	2.3 Purpose
Tartrazine✓	Serves as a colorant✓
Potassium nitrate ✓ **(2)**	Acts as a preservative ✓ (2)

(4)

3. Give THREE reasons why antioxidants are used as food additives.

- Antioxidants preserve the quality of food/lengthen the shelf life of✓ food.
- Prevent rancidity✓and unpleasant taste and smell ✓ in margarine/cooking oil/biscuits/potato chips/soup mixtures.
- Preserve the colour of fresh cut fruit and vegetables/delay enzymatic browning/discoloration in fruit and vegetables/fruit juice/soft drinks/ canned vegetables/frozen fruit. ✓ (Any 3)(3)

4. Name THREE allergic reactions to the food additive tartrazine.

- Asthma ✓
- Skin rashes ✓
- Swelling ✓
- Itching/running nose ✓
- It can possibly cause hyperactivity in some children. ✓ (3)

5. Organic farming

- Use traditional, non-intensive methods without artificial ones ✓
- Free from insecticides and pesticides ✓
- No hormone, stimulant of growth accelerators is used on ✓ livestock to accelerate their growth rate ✓ (2)

6. Name THREE benefits that organically grown foods may have for the natural environment .

- Chemicals/Fertilizers/Pesticides/Herbicides which could harm the natural environment is not used. ✓
- Water is cleaner/Pollution is limited/less. ✓
- Organic farming improves soil quality. ✓ (3)

7. State which foods are most irradiated.

- Herbs and spices – because of the high bacterial levels✓
- Imported garlic and honey✓Potatoes and garlic - to prevent them from sprouting and growing (2)

8. Possible economic consequences on international trade

- A longer shelf life of food will help during transported to other countries; without radiation this would not have been possible. ✓
- Radiation enables products such as fresh vegetables and fruits to comply with quarantine requirements, thus allowing for / no restrictions / increase in trade with

other countries. ✓

- Product quality is enhanced - South Africa / Mauritius has a reputation for good quality products, which leads to increased trade. ✓
- An increase in international trade means economic growth for the exporting country - more foreign investment, thus an increase in the international flow of capital - ensures a good balance in the local economy. ✓
- Without methods to preserve the quality of food, such as radiation, food spoilage can lead to insufficient food for their population. They will have to import. That would mean more imports, less exports that would be costly to the country. Job losses - negative impact. ✓
- Job creation✓ (4)

9. Food labelling:

9.1 Cheese✓

9.2 Potassium sorbate, nisin✓

9.3 Cow's milk✓

9.4 200g✓ (4)

10. 10.1 120✓

10.2 High ✓

10.3 Xylitol (sugar replacement)✓

10.4 Gluten / Milk ✓

10.5 Rolled oats✓

Wheat bran✓

Sunflower seeds✓ (6)

11.1 Explain the concept of food security.

Food security is the ability of individuals to obtain sufficient food✓ on a day-to-day basis for an active and healthy lifestyle. ✓ (2)

11.2 How increase the productivity will help this problem.

- Will reduce pressure on marginal lands✓
- Crops will be rotated and less pressure on fragile lands✓
- Improved delivery✓
- Farmers earn more cash and can invest in infrastructure. ✓ (2)

11.3 Discuss the important role that subsistence agriculture can play in food security:

- smallholder agriculture can play an important role in reducing the vulnerability of rural and urban food-insecure households✓

- improving livelihoods✓
- helping to mitigate high food price inflation. ✓ (2)

12 Explain the meaning of the following words:

12.1 Arable land: Soil suitable✓ for planting crops. ✓

12.2 Infrastructure: Large-scale public systems, services✓, and facilities of a country of region required for economic activities, including power and water supply✓

12.3 Subsistence farmers: Succeed at staying alive ✓as there is only enough food of money survival✓ (3)

3.3 Examination Guidance - How to answer Food and Nutrition

Remember this is the question that has the biggest changes, as the health-related diseases was divided into three years. The factors focused on is description, causes, prevention and management.

IN 2022 THE FOCUS IS ONLY ON:

* Coronary heart disease
* High blood pressure
* High blood cholesterol
* Anaemia

How to prepare or study for the examination on this topic

- Back to the basic concepts of nutrients, food groups and dietary guidelines of gr 10. Apply this knowledge in your answering of questions about the health diseases.

- Generic answers like healthy, good, is NOT accepted. Please refer to the nutrient in the food and clearly state the function of the nutrient

- In case studies ensure that the answer refers to specifics given in scenario first before addressing additional information.

- Highlight or underline the key concepts in the question. Ensure to follow the direction of the instruction with regards to the topic. Consider all details given as sometimes there is more than one factor to consider, look at this example:

2.5.2 Discuss the transmission possibilities of Hepatitis A in the food environment. *(10)*

Action Verb Discuss (encircled)

Topic Hepatitis A (underlined)

SPECIFIC DETAILS transmission possibilities **AND** required in the food environment

* **In answering the question refer back to facts given IN THE SCENARIO**

Typical examination questions / what to expect in the examination

- *Learners will be expected to apply their knowledge to various given scenarios and to make recommendations. Mostly solutions must be provided on how to manage or prevent the different health related diseases. For example:*

EXAMPLE 1

3.4 Evaluate the suitability of the fast foods above for the prevention and management of coronary heart disease.

ACTION VERB Evaluate (encircled) *you must give the* ***good and the bad points*** *of fast foods and then* ***come to a conclusion. Indicate whether it is suitable or not.***

TOPIC coronary heart disease. (underlined)

SPECIFIC DETAILS suitability of fast foods AND prevention and management

* **In answering the question look at all the different nutrients and explain why it is good or bad and then make a conclusion on the suitability.**

EXAMPLE 2

3.5 Read the following cartoon and answer Questions 2.5 – 2.9 that follow.

[Adapted from <http://www.cartoonstock.com>]

2.8 Debate whether the cartoon characters are correct, in their suggestion that genetically modified foods are safe to eat and pose no risks to the consumer. (6)

ACTION VERB Debate (encircled) *you must give the* ***good and the bad points*** *of genetically modified foods and* ***come to a conclusion. Indicate whether you think it is safe or not and support with a reason.***

(Debate is more or less the same as evaluate)

TOPIC genetically modified foods (underlined)

SPECIFIC DETAILS safe to eat and pose no risks

* **In answering the question relate to the health of the consumer and not general points.**

4 marks for the debate safe or unsafe and 1 mark for agree or disagree and 1 mark for a sound reason.

Examples of Examination Questions

In the final NCS Question paper, the content from this booklet will be covered in Question 3. The total mark allocation for this question will always be 40 marks. Following are TWO question 3's as you could expect to find, named Exemplar 1 and exemplar 2

Exemplar 1
Examination question & answers: food and nutrition

1.1 Match the description from COLUMN B to match the terms in COLUMN A. Write only the letter (A – G) next to the question number (1.1 – 1.5) on your answer sheet.

COLUMN A TERM		COLUMN B DESCRIPTION	
1.1	Allergen	A	A protein that speeds up chemical reaction
1.2	Enzyme	B	Sugar found in milk
1.3	Lactose	C	Protein found in grains
1.4	Allergies	D	An adverse reaction to food or an ingredient in food that can lead to symptoms
1.5	Food intolerance	E	A substance that causes an allergic reaction
		F	Abnormal reaction of immune system to substances that are normally harmless
		G	Charged with or caused to combine with hydrogen

(5)

1.2 ONE-WORD ITEMS

Give ONE word/term for each of the following descriptions of **Foodborne diseases**.

Write only the word/term next to the question number (1.2.1 – 1.2.3) on the folio paper.

1.2.1 Spreads from person to person through infected faeces which attacks the liver.

1.2.2 Caused by breathing in the vapour coughed out by infected person.

1.2.3 Caused by bacillus cereus bacteria and often called stomach flu. (3)

1.3 SELECTION

Select combination of three food items for a person suffering from high blood pressure. Write the letters (A–D) next to the question number (1.3)

A Sweet biscuits
B Potato chips
C Pickled onions
D Fish
E Biltong (3)
F Milk

1.4 **Selection**
From the list below choose **FOUR** basic information that must appear on a food.
Write only the letters (A–F) next to the question number (1.4) on the answer sheets

A List of ingredients listed from the smallest to the biggest amounts.
B The nett content of the product.
C When a product only contains a flavour enhancer but not the ingredient itself, it does not have to be indicated.
D Allergens must be indicated in the ingredients list.
E Fresh fruit and vegetables must have an ingredient list.
F Colourants must be listed with their E-numbers. (4)

Long questions
Question 3 food and nutrition

3.1. Atherosclerosis is an illness related to nutrition and lifestyle

3.1.1. Define the term Atherosclerosis. (2)

3.1.2. State **THREE** possible causes of the illness. (3)

3.2. Study the case study and answer questions that follow.

Portia is a director at a big financial institution. She often attends business lunches where they serve lots of fried food and meat dishes. She is always busy and does not have time to cook. Portia often eats out and orders a lot of ready-made food for lunch at work. She likes adding salt to his food, drinks an excessive amount of alcohol and does not exercise regularly. She suffers from high blood pressure. Portia believes that smoking will help her lose weight.

3.2.1. Describe what high blood pressure is. (2)

3.2.2. Suggest and explain dietary changes Portia could adopt to reduce risk of high blood pressure. (3)

3.2.3. Eating meat products will help Portia not to develop anaemia. Give a detailed description of anaemia. (2)

3.2.4. Summarise the causes of Portia's health problems. (2)

3.3. Read the scenario below and answer the question that follows:

The local supermarket sells a variety organic fruit and vegetables, milk, processed food and organically produced meat products as well mass-produced products. The organic vegetables are not as well shaped as the regular products and both the organic vegetables, and the meat are much more expensive.

3.3.1 Give **THREE** reasons why you would still choose the organic products rather than the mass-produced products. (3)

3.4

3.4.1. Explain why genetic modification of food creates so much controversy. (2)

3.4.2. Write down **THREE** ways where the genetic modification of food can be used to develop food that will offer benefits to the health of the consumer. (3)

3.5. Study the list of ingredients as given on the label of a packet biscuits

INGREDIENTS			
Wheat flour	Stabiliser	Maltodextrin	Creamer
Palm oil	Emulsifier	Beef extract	Casein
Salt	Tartrazine	Flavour enhancer	Milk solids
Monosodium glutamate	Xanthan gum	Anti-caking agent	Whey powder

3.5.1. Define the term 'food additives' (2)

3.5.2. Identify from the list the ingredients that are responsible for:

A. Improving the natural taste of the product
B. Bringing out the flavour in the product
C. Improving the texture as it absorbs water, swells, and thickens
D. Improving the colour of the product (4)

3.5.3. An emulsifier was used in the product to form a stable emulsion when mixed with water. Give one example of:

A. An emulsifier
B. A food product where this example named in (A) can be found in. (2)

3.6. **Read the scenario below and answer questions that follow.**
Chef Gali works in a well-known Restaurant in town. She recently suffered from Hepatitis A. She felt tired and constant nausea, even her eyes became yellow.

3.6.1. Give another name for Chef Gali's illness. (1)

3.6.2. Discuss transmission possibilities of Hepatitis A in the food environment. (2)

3.7 Study the picture below and answer the questions that follow.

www.bing.com

3.7.1 Identify the type of fat abundant in the dishes above. (1)

3.7.2 Evaluate the suitability of the fast foods above for the prevention and management of coronary heart disease. (6)

TOTAL [40]

Exemplar 2
Examination Question & Answers: Food and Nutrition

QUESTION 1

1.1. Identify FIVE CORRECT statements in the list below regarding hypertension. Write only the letters (A–J) next to the question number (1.6) in the ANSWER BOOK.

A. Avoid processed food. Consume enough potassium, magnesium and calcium.
B. Eat enough chicken and fish. It is caused by consuming too much sodium.
C. Include vitamin C in the diet to help with the absorption of sodium.
D. It increases the workload of the heart.
E. Normal blood pressure is 140/90. People that are anaemic are more likely to suffer from hypertension.
F. Reduce the consumption of eggs.
G. The walls of the larger arteries lose their natural elasticity. (5)

QUESTION 3

3.1 List THREE types of information that must appear on a food label. (3)

3.2 Identify the additives that have been used in these biscuits and describe the functions of each additive in the product. (4)

Chocolate fruit-cookies Ingredients:

Cake flour (gluten), sugar, non-hydrogenated vegetable fat, cocoa, currants, cranberries, sultanas, salt, vitamin B, preservative sodium benzoate E211, antioxidant TBHQ, flavour improver (e233), stabiliser.

3.3 Gastro enteritis is a common food borne disease that could be caused by a bacteria or virus and is very contagious. Discuss how the transmission of Gastro enteritis can be limited in a food preparation area. (4)

3.4.1 Give a brief description of the food-related health condition, high cholesterol. (3)

3.4.2 Explain how regular checking of blood cholesterol levels can benefit a person suffering from high cholesterol. (2)

3.4.3 State FIVE dietary guidelines to manage high cholesterol. (5)

3.5 Explain the difference between *food allergies* and *food intolerance* by redrawing and completing the table below in the ANSWER BOOK.

CRITERIA	FOOD ALLERGIES	FOOD INTOLERANCE
Type of response in the body	(1)	(1)
The immune system's involvement	(1)	(1)

(4)

3.6 Explain how food irradiation can help South African households to be food secured. (4)

3.7 **Study the meal plan below and answer the questions that follow.**

BREAKFAST

125 ml muesli
250 ml low-fat unsweetened, plain yoghurt
50 ml fresh blueberries
1 banana
1 cup of coffee with full-cream milk
1 slice of buttered-whole-wheat bread with cheddar cheese

3.7.1. Evaluate the suitability of the meal plan for a person suffering from anaemia. (5)

3.8. **Study the menu below, which is for one day and answer the questions that follow.**

Breakfast: Muesli with skimmed milk and a banana, a glass of unsweetened orange juice

Lunch: Cheese made of reduced-fat cheese and salad sandwich, wholegrain bread and unsaturated fat spread. Salad ingredients: lettuce, tomato, cucumber

Supper: Jacket potato with baked salmon and broccoli Snacks: Handful of unsalted peanuts, 3 oat cakes with low-fat cottage cheese.

3.8.1. Study the following statement and answer the question that follows:
'*The menu is suitable for a person with heart disease'*.

Analyse the types of fat present in the menu, their sources and discuss how the inclusion of this choice of fat would benefit a person with heart disease. (6)

ANSWERS FOR EXEMPLAR 1: FOOD AND NUTRITION

MARKING GUIDELINE

3.1.1 Atherosclerosis: when the inner wall of the coronary artery is damaged, ✓plaque (containing cholesterol) tends to accumulate in layers. As the plaque builds up the coronary artery hardens and becomes narrower so that blood flow to the heart decreases. ✓ **(2)**

3.1.2. **State THREE possible causes of the illness.**

- Smoking ✓
- High cholesterol✓
- Inactive lifestyle✓
- Stress ✓
- Family history✓
- Heredity ✓ (Any 3) **(3)**

3.2.1. **Describe what high blood pressure is.**

High blood pressure/ Hypertension is a disease characterised by an increase of the workload of the heart, ✓causing muscles to thicken and arteries to stretch. It is a condition when the heart is pumping blood into the vessels at a pressure higher than normal. ✓ **(2)**

3.2.2. **Suggest and explain dietary changes Portia could adopt to reduce risk of high blood pressure.**

Reduce the intake of salt as it leads to high blood pressure. ✓Use herbs and spices to flavour your food. ✓Limit the intake of alcohol and smoking. ✓Eat less readymade food as it contains a lot of salt. ✓Limit the intake of fatty food (fried food) to lose weight. ✓Increase physical activity. ✓ **(2)**

3.2.3. **Eating meat products will help Portia not to develop anaemia. Give a detailed description of anaemia.**

Anaemia is a condition that lowers the blood 's ability to carry oxygen ✓and it is caused by lack of iron, vitamin B12 and folic acid. ✓ **(2)**

3.2.4 **Summarise the causes of Portia's health problems.**

- Meat and fried food can lead to high blood cholesterol levels. ✓
- Excessive intake of alcohol leads to high blood pressure. ✓
- High salt intake leads to high blood pressure✓
- Lack of exercising leads to high blood pressure. ✓
- Excluding dairy products will lead to calcium deficiency and osteoporosis at a later stage. ✓ **(3)**

3.3. **Give FIVE reasons why you would still choose the organic products rather than the mass - produced products.**

1. Organic foods will not be genetically modified. ✓
2. Organic meat and milk are free from growth hormones and antibiotics. ✓
3. Processed organic foods are free from artificial additives. ✓
4. Organic farmers are more concerned about animal welfare. ✓
5. Organic food can taste better. ✓
6. Less fuel is used in the production of organic foods/less pollution ✓
7. Organic animals are fed a natural diet therefore can taste better. ✓
8. Creates more jobs as more farm workers are needed on organic farms. ✓

(5)

3.4.1. **Explain why genetic modification of food creates so much controversy.**

We are not sure that genetic modification is not harmful to humans. ✓
We do not know what the long-term consequences of genetically modified food are. ✓ **(2)**

3.4.2. **Write down THREE ways where the genetic modification of food can be used to develop food that will offer benefits to the health of the consumer.**

1. Food can be developed with an increased vitamin or protein content.
2. Allergy-causing properties can be removed from foods. ✓
3. Properties that can prevent chronic diseases such as cancer and heart disease can be included in the food. ✓
4. Fewer chemicals can be used during the production food and that will also benefit the health of the consumer. ✓ (Any 3)

(3)

3.5.1 **Define the term 'food additives'**

Food additives are natural or chemical substances added to food to ✓preserve or improve their flavour, texture, or appearance. ✓This happens during the processing or production processes. ✓Natural additives are lecithin from Soybeans. Some colourants are man-made.

(2)

3.5.2. **Identify from the list the ingredients that are responsible for:**

A. Improving the natural taste of the product: Salt and monosodium glutamate (MSG) ✓
B. Bringing out the flavour in the product. Flavour enhancer ✓
C. Improving the texture as it absorbs water, swells and thickens, stabiliser and emulsifier ✓
D. Improving the colour of the product: Tartrazine ✓

(4)

3.5.3. A. **An emulsifier** Lecithin, egg yolk, soy ✓ **(1)**

B. **Food product** Mayonnaise, salad dressing, butter, ice cream ✓ **(1)**

3.6.

3.6.1. Jaundice ✓ **(1)**

3.6.2. A person eats or drinks something that was contaminated by the faeces of an infected person. Infected person did not wash her hands after using toilet. ✓Poor sanitation and lack of personal hygiene. ✓ **(2)**

3.7.1 Saturated / animal fats/ trans fatty acids ✓ **(1)**

3.7.2 Evaluate the suitability of the fast foods above for the prevention and management of coronary heart disease.

- Patties/ cheese/ fries/ milk shake is all high in saturated fats/ animal fat/ lots of fat ✓and trans-fat ✓which causes the cholesterol/ low-density lipoprotein (LDL) to build up in the arteries/ increase the risk of coronary heart disease. ✓
- This causes the gradual narrowing of the blood vessels, ✓ the cholesterol eventually forms plaque which causes the arteries to narrow, thicken and harden leading to atherosclerosis. ✓
- The single burger is more suitable ✓than the other burgers as it contains less cheese and fewer patties.
- White bread rolls contain little fibre, ✓fibre is necessary to lower cholesterol levels. ✓
- The takeaway dishes contain too much salt that increases the blood pressure ✓which is a risk factor of coronary heart disease. **(6)**
- Coke/ soda/ candy/ sweets/ milks shakes increase the kilojoule/ sugar intake that will contribute to obesity, ✓increasing the risk of coronary heart disease. ✓

(Any 5)

Conclusion: The foods are not suitable for the prevention and management of coronary heart disease. (✓1)

Answers to example
2 Exam Food and Nutrition

3.1 Nutritional information, product name ✓, barcode, ingredients, allergens ✓ (3)

3.2. Identify the additives that have been used in these biscuits and describe the functions of each additive in the product.

- preservative sodium benzoate E211 – preserving prevent spoilage ✓
- antioxidant TBHQ –prevent browning of the flour ✓
- flavour improver (e233) – improve the flavour of the product ✓
- stabiliser- to keep the liquid and oil together, thickening ✓

(4)

3.3 **Gastro enteritis is a common food borne disease that could be caused by a bacteria or virus and is very contagious. Discuss how the transmission of Gastro enteritis can be limited in a food preparation area.**

An infected person can contaminate food served to others. ✓Stop unhygienic practices, e.g., infected person handling food ✓ Wash hands after using toilet, touching face, etc✓ Utensils should be kept clean to prevent cross contamination. ✓Keep food covered ✓

(4)

3.4.1. High cholesterol develops when excessive amounts of cholesterol/low density lipoprotein✓ is deposited in the arteries✓. This will narrow/block the arteries/veins/restrict blood flow✓, cutting off the oxygen supply to the heart/brain✓ increasing ✓the risk of cardio- vascular disease/heart attack/atherosclerosis/ stroke. ✓

(Any 4) (4)

3.4.2. Cholesterol accumulates slowly/largely unnoticed/no symptoms/may be genetic/hereditary✓, therefore regular (blood) checks are necessary to create awareness/may reveal the condition, ✓only then can the condition be managed/take medication/make dietary/lifestyle changes✓.

(2)

3.4.3. State FIVE dietary guidelines to manage high cholesterol.

- Control the amount of fat/saturated fat/some seafood consumed on a daily basis✓
- Grill instead of frying/cut off visible fat✓.
- Eat lots of fibre/soluble fibre/oat bran/legumes. ✓
- Eat lots of fruit and vegetables/onions/garlic/anti-oxidants✓
- Reduce high-fat dairy products/use low-fat dairy products✓
- Avoid hidden fat /trans-fat in your diet e.g., processed foods/junk foods containing fat ✓
- Increase the amount of omega 3 fatty acids/fish✓
- Increase low GI-food ✓
- Cut down on refined carbohydrates/sugar✓
- Limit alcohol intake ✓
- Limit food with high cholesterol levels e.g., egg yolk/organ meat ✓
- Choose more (poly/mono) unsaturated fats e.g., olive oil, canola oil, avocados, margarine if poly-unsaturated
- Increase water intake✓ / Avoid excessive/high salt intake✓

(5)

3.5.

CRITERIA	FOOD ALLERGIES	FOOD INTOLERANCES
Type of response/reaction in the body	Response to immune system/immunological response✓ Body sees a harmless ingredient/protein as harmful/a threat✓ Life threatening/fatal/dangerous/ more severe✓ A fast response ✓ **(Any 1)**	Adverse response to food✓ Body regards a chemical substance in food as harmful/body lacks an enzyme to digest food substance✓ Not life threatening/uncomfortable/ less dangerous/severe✓ A slow response✓ **(Any 1)**
Immune system's involvement Yes or No is acceptable	Body produces anti-bodies/immunoglobin (IgE) to fight/attack the harmful ✓ substance/allergen/protein✓ Involves the immune system✓ **(Any 1)**	Does not involve the immune system/no effect✓ **(Any 1)**

(4)

3.6. **Explain how food irradiation can help South African households to be food secured**.

- Irradiation reduces/destroys micro-organisms therefore food will last longer✓and this reduces wastage ✓
- Delays the ripening of fruit/sprouting of potatoes/onions/garlic/greening of potatoes✓thus the shelf-life/eating quality/freshness of food is lengthened.✓ Households can therefore have food for longer as food spoilage is reduced. ✓
- It destroys pathogenic bacteria✓which prevents food-borne diseases✓ and the food is safe to eat. ✓
- Destroys salmonella bacteria✓so it improves the shelf life of raw meat, fish and chicken. ✓
- Delays the ripening of fruit, ✓making it easier to transport/less damage during transporting. ✓

(4)

3.7. **Evaluate the suitability of the meal plan for a person suffering from anaemia**.
Iron is necessary to form haemoglobin ✓which prevents/manages anaemia. ✓

- Banana/whole wheat bread✓contains folic acid ✓because a shortage of folic acid can also cause anaemia✓
- The coffee✓because it prevents/inhibits the absorption of iron✓
- If the muesli contains raisins✓which are a good source of iron✓haemoglobin will be formed✓
- Raisins contain iron✓which is less easily absorbed by the body✓
- There is no food/meat/liver✓which a good source of iron✓
- No good sources of haem iron✓which are more easily absorbed by the body✓
- The blueberries✓contain Vitamin C✓which improves the absorption of iron✓but the role of the blueberries is minimal in this meal plan.
- Milk/cheese/yoghurt ✓contain Vitamin B12 ✓which manages a certain type of anaemia

(8)

4. General Examination Tips

There is a great amount of content to study, **so do not leave it for the last day.** You think that you have sufficient time, but you do not. The closer you get to the end of the examinations the more tired you become, so do not forget about this subject that **could be scheduled as your last examination paper.**

In preparing for your final exams, work through as many past examination papers as you can. Remember, your success in the final exam will depend on how much extra time you put into preparing. Be careful to NOT only study the past papers and marking guidelines. The topics stay the same, but the approach of the questions change. The same question is hardly ever repeated exactly in the same way.

HOW TO PREPARE/STUDY FOR THE CONSUMER STUDIES EXAMINATION

1. You MUST have a study session every day. STUDY means revising work, NOT doing homework or work assigned for the day by the teacher.
2. Plan and get SPECIFIC times for studying EVERY DAY, preferable one topic per day.
   BE POSITIVE.
   Study times must become a habit - keep reminding yourself why you are studying.
3. Start working on the topic you feel you struggle with most.
4. Set up a STUDY TIMETABLE that includes ALL subjects and STICK to it.
5. Keep your study sessions short but effective then reward yourself with constructive break. Try to study at the same time each day. **DO NOT break your routine.**
6. Do not study on your bed as the brain associates it with sleeping.
   This causes you to easily feel tired.
7. Repetition is important to remember the information that you must learn.
   Keep going – don't give up!
8. Self-discipline is key. Be strict with yourself.
9. Connect with a STUDY BUDDY and encourage each other.
   Don't talk about anything else besides the work at hand during your study sessions.
10. Use weekends wisely - Review your class-work over the weekend and catch up on study time that was lost during the week due to involvement in other school activities.
11. Teach your concepts to anyone who will listen. It might feel strange at first, but it is worth reading your revision notes out aloud.
12. When you make notes, remember your brain learns well with colours when you underline, highlight, and circle key words.
13. Create a mind map on every topic that can be revised quickly.
14. Ensure you are familiar with all the action verbs and Terminology (see glossary for description) commonly used as this will enable you to clearly understand the questions.
15. Work through previous question papers in preparation of the final examination.

WHAT TO EXPECT IN THE CONSUMER STUDIES EXAMINATION

Read this section in conjunction with the Examination Guidelines for Consumer Studies.

THE GRADE 12 CONSUMER STUDIES QUESTION PAPER

- The Consumer Studies examination paper consists of a 3-hour paper of 200 marks.
- There are TWO sections, and SIX questions are COMPULSORY.
- The format of the examination paper is shown in the table below.

SECTION	QUESTION	TOPIC	MARKS
A	1	Short Questions (covering all topics)	40
B	2	The Consumer	40
	3	Food and Nutrition	40
	4	Clothing	20
	5	Housing	20
	6	Entrepreneurship	40
			200

SECTION A

Section A must not be mistaken as the 'easy' part of the question paper. All topics and sub-topics in Grade 12 Recovery ATP may be assessed in this section.

Type of questions you can expect in this section:

Type of Question	Tips how to answer this question
Multiple choice questions	• Read through ALL the possible answers: A to D • Cancel out the ones that are totally incorrect. • Read the other remaining answers again. • Decide which ONE is the MOST correct. • Never change an answer if you are not 200% sure that it is incorrect, first instincts are usually correct. • If you don't know the answer GUESS! • **NEVER LEAVE QUESTIONS UNATTEMPTED.**
Choose the correct word from the options given in brackets or from the list	• Know the Consumer Studies Terminology (see glossary for description); abbreviations and acronyms well. • Read the entire question and then answer it in your mind first. • Eliminate the wrong answers. • Read the question again using your selected answer. • Answer the questions that you know best first.

Matching items	• Match the definition/term/statement of Column B to content given in Column A, write only the corresponding letter next to the question number. • There could also be three columns, always match Columns B and C with Column A. • First read the column on the right that contains the answers. • Then look at the column on the left. • If you don't know the answer GUESS! • NEVER LEAVE QUESTIONS UNATTEMPTED
Identification Items	• Read through ALL the answers given. • Cancel out the ones that are totally incorrect. • If a question asks for a specific number of responses, e.g. THREE, only the first THREE responses will be marked. Read the options carefully to determine which ones are correct. • If you don't know the answer GUESS! • NEVER LEAVE QUESTIONS UNATTEMPTED.
Correct term	• Give the correct term for the description. • Write only the correct term next to the question number. • Read the description carefully to determine the correct term.
Paragraph format	• Write full sentences. • No bullets must be given/ Answers can't be in separate lines. • Start and end the paragraph by referring to the statement / question asked. • If a scenario was given do not use the exact wording from the scenario put answer in your own. • NOTE: marks are lost if instruction is not followed.

SECTION B

Type of questions you can expect:

- Each question will cover a new topic.
- It may require short or long answers and may include paragraph-type questions.
- Source-based questions are based on tables, pictures, case studies and cartoons.
- It will cover different levels of questions ranging from remembering, understanding, application and problem-solving questions.

HOW TO APPROACH THE QUESTION PAPER IN GENERAL

Read through all the questions before attempting to answer any question. Read attentively during the allocated reading time and make quick notes after the reading time.

Decide which questions will be easier to attempt first.

Allocate the time you will spend on a question so that you do not run out of time.

Ensure that your hand writing is clear and legible. Untidy, illegible writing may result in the loss of marks.

SECTION A (Short Questions)

- It is suggested to attempt the short questions (Section A, Question 1) LAST, as it may lead to confusion or stress, which may in turn lead to forgetting what you have studied.
- **DO NOT** leave a line open in between answers to Question 1.
- Write numbers below each other and not next to each other.
- Provide only ONE answer per line.
- Never leave a question un-attempted. GUESS if you must. NEVER leave blank, open spaces.
- Be 100% sure before changing your initial answer. Your first instinct is usually right.
- Be mindful of changing the correct answer to an incorrect one.

SECTION B (Longer Questions)

- Start each question on a NEW page. Leave a line open in-between each of the sub-questions.
- There is adequate paper so do NOT squeeze the last sub-question in at the bottom of a page. That often prevents you from completing your answer.
- Circle the **action verb** in each question. The verb gives the instruction and indicates what is expected in the response.
- Underline or highlight **WHAT** the question is about.
- Take note of the **mark allocation** per question: the mark allocation is an indication of the number of facts required for the full attainment of marks.
- Where a specific number of facts are required e.g., List THREE …, ONLY THE FIRST THREE facts will be marked.
- Follow all instructions: If the question says write a paragraph, you MUST formulate your answer in a paragraph format.
- When a question asks you to tabulate your answer it must be presented in a table format. If you are making a comparison in a table, then the same factors must be opposite one another.
- Where items such as menus, pictures, illustrations, case studies or scenarios are given, keep the given scenario/context in mind when answering the question.
- Number the questions according to the numbering system used in the exam paper.
- If you do not know an answer, move on to the next question. Time saved on questions can be used to revisit those challenging questions.
- All questions always start from easy to the more challenging (difficult) ones.
- Stay focused and work until the end of the examination session to use the time

effectively. If you are finished before the time compare the mark allocation of the questions to your answers. Recheck that action verbs were correctly understood.

- Make sure that **NO** questions have been left out or unanswered.

ACTION VERBS TO HELP YOU ANSWER QUESTIONS

It is important to look for the ACTION VERB (the words that tell you what to do) to correctly answer what the examiner is asking. Use the words in the following table as a guide when answering questions.

QUESTION WORD	WHAT IS REQUIRED OF YOU
Analyse	To study or examine something in detail, especially by separating it into its parts, in order to understand or explain statements made with reasons
Calculate	Work out the amount or number of something by using mathematics
Classify	Arrange in groups according to similar features or qualities
Comment	Write generally about the topic
Compare	Describe the similarities and/or differences between the two
Define	Explain exactly what is meant (give a clear meaning)
Describe	List the main characteristics of something or describe what it looks like
Determine	Find out; work out through observation or consideration
Discuss	Write about the features or qualities of something, giving more than only one opinion
Evaluate	Give an idea of the value of something; assess. Write down positive and negative aspects and make a decision
Explain	Make clear by giving more information (interpret and spell out)
Give/provide/ Name/State	Write down only facts
Identify	Establish or name who or what someone or something is *(e.g., Identify the* **health condition** *described in this paragraph.)* Indicate as something specific, something to be noted *(e.g., Identify the career needs of such a person.)*
Interpret	Give the intended meaning of
Justify	Provide a good reasoning for the given statement, give reason why statement is correct
List	Write a list of items
Match	Pair or put together something with something else to show that there are link(s) between the two
Quote	Copy the exact word or words from a text

Suggest	Offer an explanation or solution
Predict	Say what you think will happen in the future
Study	Look at closely or read it carefully in order to observe or deduce
Tabulate	Arrange the information in the form of a table with columns and rows

5.Glossary of food and nutrition:
Nutritional and Food-related Health Conditions

TERM	DESCRIPTION
Macronutrients	Nutrients that the body needs in large quantities to provide energy when oxidised such as carbohydrates, proteins, and fats
Micronutrients	Nutrients that the body needs in small quantities for growth, maintenance, and reproduction such as minerals and vitamins
Cholesterol	Cholesterol is a soft, white waxy substance produced in the liver and body cells. The liver produces all the cholesterol that the body needs
High Cholesterol	High levels of cholesterol in the blood can cause a build-up of fatty plaque on the inner walls of arteries, obstructing blood flow through the arteries
Atherosclerosis	The clogging, narrowing and closing of arteries due to the build-up of cholesterol and other fatty substances in the walls of the arteries
Saturated Fat	Fats found mainly in animals and solid at room temperature
Unsaturated Fat	Fats found mainly in plants and liquid at room temperature
Trans fat	Hydrogenation is the process of converting vegetable oils into solids(fats)
Anaemia	Is a condition in which the blood contains fewer red blood cells than normal in the blood or lack of haemoglobin in the red blood cells due to shortage of iron, vitamin B12 and folic acid It is due to lack of iron
Hypertension	Is the condition that occurs when the blood in the arteries pump at a higher pressure than usual, is the pressure of the blood against the artery walls is so high as it circulates through the body

Foodborne diseases

TERM	DESCRIPTION
Cross contamination	The contamination that occurs when bacteria are transferred intentionally or unintentionally from one surface to another
Pathogenic organism	Causing disease or illness
Food borne disease	Infections that are transmitted by eating contaminated food or through contact with contaminated water, animals and other environmental sources
Tuberculosis	Is a serious, chronic bacterial infection affecting mostly lungs
Hepatitis	Is a contagious liver disease that is caused by the hepatitis A virus
E-coli	Is a type of bacterium that is found in the digestive track (intestines) of healthy humans and animals and is usually harmless
Gastro-enteritis	It is an inflammation that irritates the inner lining of the stomach in reaction to an infection caused by a virus, bacterium, toxic substances, or medication
Jaundice	A medical condition in which bile pigments in the blood cause yellowing of the whites of the eyes, skin and mucous membranes
Incubation	Time interval between exposure to the organism causing the illness and the first appearance of symptoms

Food additives, food labelling, food-related consumer issues

TERM	DESCRIPTION
Food additives	Are substances (natural or artificial) added to foods during production to preserve or improve their flavour, texture or appearance
Emulsifiers	Allow oil and liquid to mix together to form permanent emulsion
Stabilizers	Are added to foodstuff to achieve an even texture and to improve the appearance
Bleaches	A bleaching agent is added to make flour to make it appear whiter as freshly milled flour has a yellowish tint
Colourants	Natural or synthetic colourants are used to improve the appearance of food to make it more attractive
Chemical Preservatives	Preservatives prevent or slow down spoilage caused by micro-organisms. They inhibit or retard the growth of micro-organisms
Antioxidants	Preservatives prevent or slow down spoilage caused by micro-organisms. They inhibit or retard the growth of micro-organisms
Food security	It is when all people have access at all times to sufficient safe, nutritious food to maintain a healthy and active life

Self sufficiency	Farmers consume some of their own produce, therefore they are self – sufficient People keep vegetable gardens or some poultry in order to produce some of their own foods. The country is able to provide food, through production or imports, to meet the basic needs of its population
Import	To bring something in from another country
Export	To send goods for sale or exchange to other countries
Nutrients	Are substances found in food that performs a specific function in the body. Provide energy, build tissues and maintains basic health

Genetically modified and organic grown foods

Genetically modified food	Genetic material from one organism is implanted into another organism to introduce characteristics from one species into another
Organic foods:	Are grown without artificial fertilisers, pesticides, herbicides, growth regulators and live-stock additives It is produced through agricultural methods that sustain the health and productivity of eco-system
Food irradiation:	Is a technology that reduces or eliminate micro-organisms and insects in food Improve the safety of food and extends their shelf life

Food security

Food security	It is when all people always have access to sufficient safe, nutritious food to maintain a healthy and active life
Self-sufficiency	Farmers consume some of their own produce, therefore they are self –sufficient People keep vegetable gardens or some poultry in order to produce some of their own foods The country is able to provide food, through production or imports, to meet the basic needs of its population

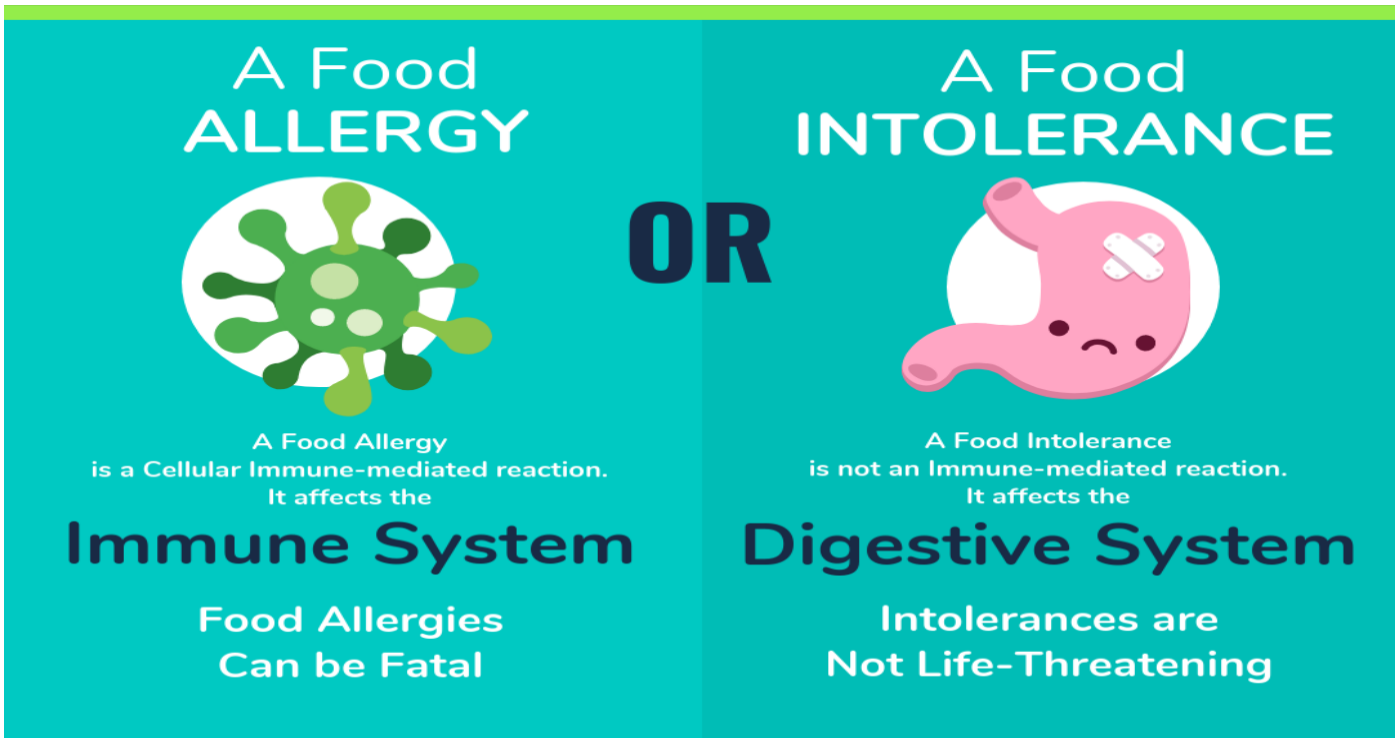
8.1 Annexure

Nutritional Health Related Health Diseases 2023 & 2021

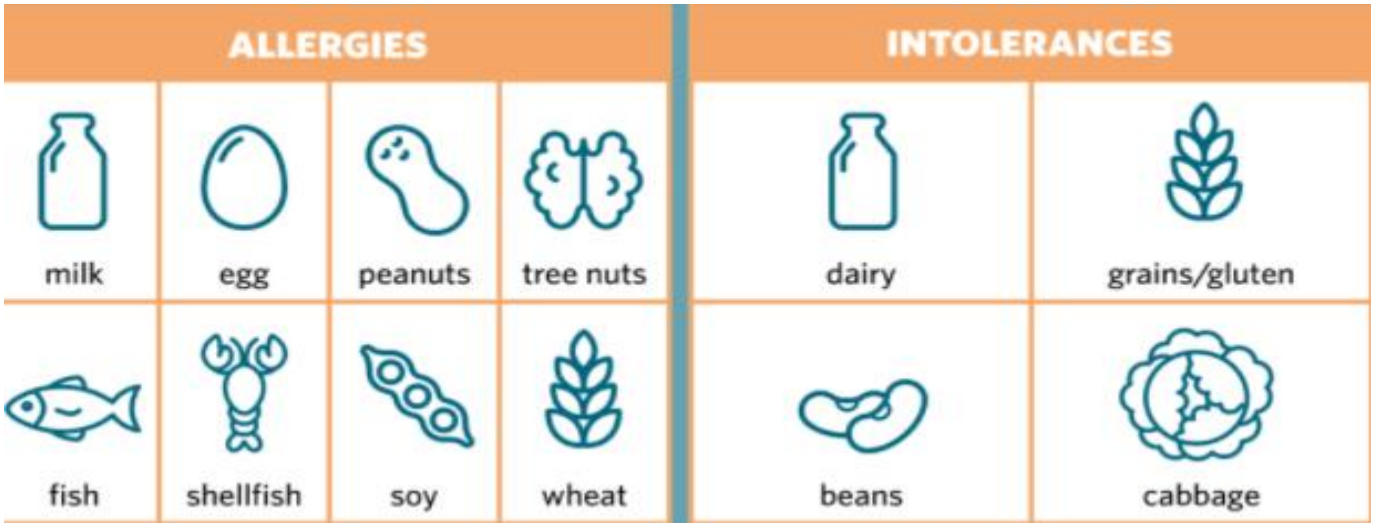
NUTRITIONAL AND FOOD-RELATED HEALTH CONDITIONS
Content organised as follows in book

2022	2023	2021
Coronary heart disease High blood cholesterol High blood pressure Anemia	Food allergies Dairy and gluten intolerance Eating disorders Anorexia - Bulimia Obesity	High & Low blood glucose levels Diabetes Osteoporosis

Content For 2023
Food Allergies



FOOD INTOLERANCE	
FOOD ALLERGIES **Description:** When a person's immune system produces antibodies in response on the intake of certain foods. **OR** It is an immune response to certain foods. It is a reaction to foods you have eaten **OR** Occur when the body's immune system wrongly thinks that a food protein is harmful and acts against it	**FOOD INTOLERANCE** **Description:** When the body does not digest or process food properly, e.g., a lack of one or more enzymes. Do not involve the immune system and are seldom life threatening. **OR** An unpleasant reaction to a specific food or ingredient every time if eaten. **OR** A counter-reaction to food because of a chemical ingredient in food that the body sees as toxic.



https://healthtalk.unchealthcare.org/food-allergy-or-food-intolerance/

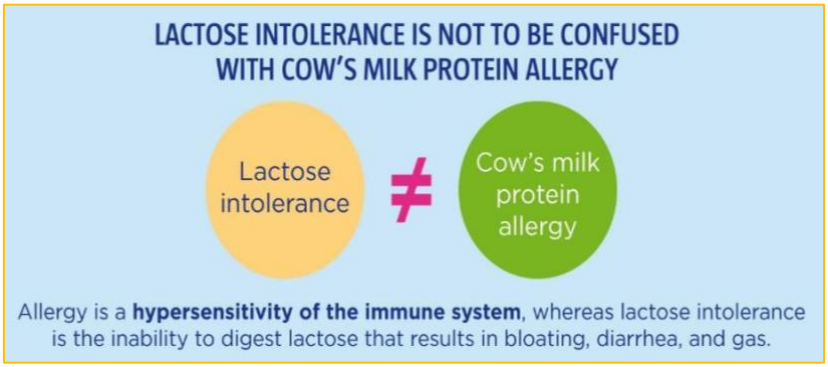
CAUSES:	**REACTIONS:**
• Symptoms of allergies can occur minutes or hours or days after food has been eaten • Food that are responsible for the most allergic response are*:* 1. Cow's milk – avoid dairy products 2. Soya 3. Peanuts 4. Wheat 5. Tree nuts 6. Eggs – avoid the white of the eggs 7. Shellfish 8. Some food colouring – Tartrazine. 9. Flavouring – monosodium glutamate. *10.* Preservatives – benzoates and sulphates.	<u>Skin reactions</u>: itching red rash skin <u>Breathing reactions</u> – wheezing, asthma, difficulty to breath, coughing, sneezing <u>Intestine reactions –</u> stomach cramps, nausea, diarrhoea, vomiting, colic, bloating
Anaphylaxis = is a severe, life-threatening allergic reaction that requires immediate emergency treatment	

Prevention And Management:

- Food that causes the allergic reactions must be avoided
- Read the food labels carefully
- Replace foods causing allergies with similar foods – replace cow's milk with soya milk
- Check the ingredients in the restaurant before you order
- Wear a medical identify alert bracelet or necklace

2023 Milk Allergy And Lactose Intolerance

LACTOSE INTOLERANCE



LACTOSE (DAIRY) INTOLERANCE DESCRIPTION:

When the digestive system cannot digest lactose properly.

This is caused by a shortage of the enzyme lactase.

Lactase: is the enzyme that breaks down lactose (milk sugar) to glucose and galactose in the small intestine.

Too little of an enzyme produced in your small intestine (lactase) is usually responsible for lactose intolerance.

Most people with lactose intolerance can manage the condition without having to give up all dairy foods.

Key differences...

Lactose intolerance	Milk allergy
A sensitivity	An allergy
Occurs in gastrointestinal system	Triggered by immune system
A sensitivity to milk carbohydrate (lactose)	A reaction to milk protein
Rare in young children	Generally impacts young children; may be outgrown*
Can enjoy milk and milk products with simple management strategies	Should avoid milk and milk products (unless allergy is outgrown)

TREATMENT OF LACTOSE INTOLERANCE

- **Lactase enzymes:** these can be bought over-the-counter at pharmacies and are to be taken when consuming milk and milk products to aid digestion.
- **Adaption:** some people find that by slowly introducing different lactose containing products into their diet the reaction to them will lessen due to the way the bacteria in the colon deal with the lactose.
- **Restrictions:** People who are very intolerant to lactose should not consume any produce containing milk or milk products and should read the labels on prepared food and be wary of foods in restaurants.

GLUTEN INTOLERANCE

What is Gluten?

Gluten is a type of protein commonly found in wheat, rye, barley and sometimes oats. Gluten gives these certain types of grains the elasticity / ability to hold together. Gluten / wheat is also an ingredient added to food to extend their shelf life.

CAUSES:

Your genes combined with eating foods with gluten inherited.

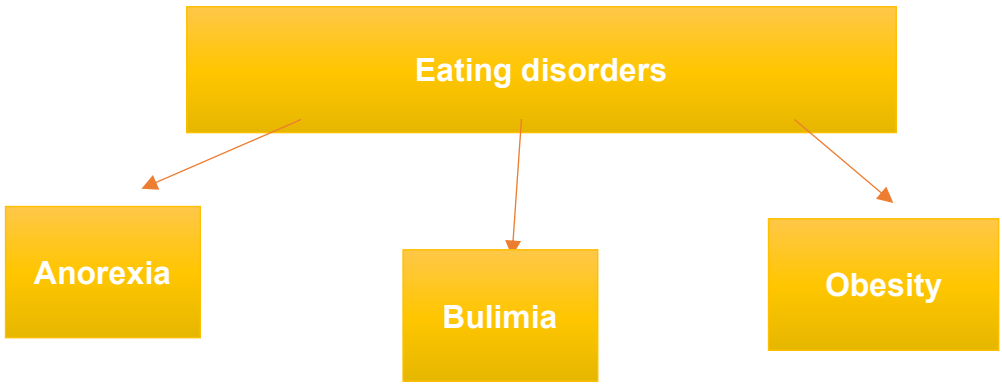
Infant-feeding practices, gastrointestinal infections and gut bacteria might also contribute.

Sometimes **celiac disease** becomes active after surgery, pregnancy, childbirth, viral infection or severe emotional stress.

When the body's immune system overreacts to gluten in food, the reaction damages the tiny, hair like projections (villi) that line the small intestine.

TREATMENT:

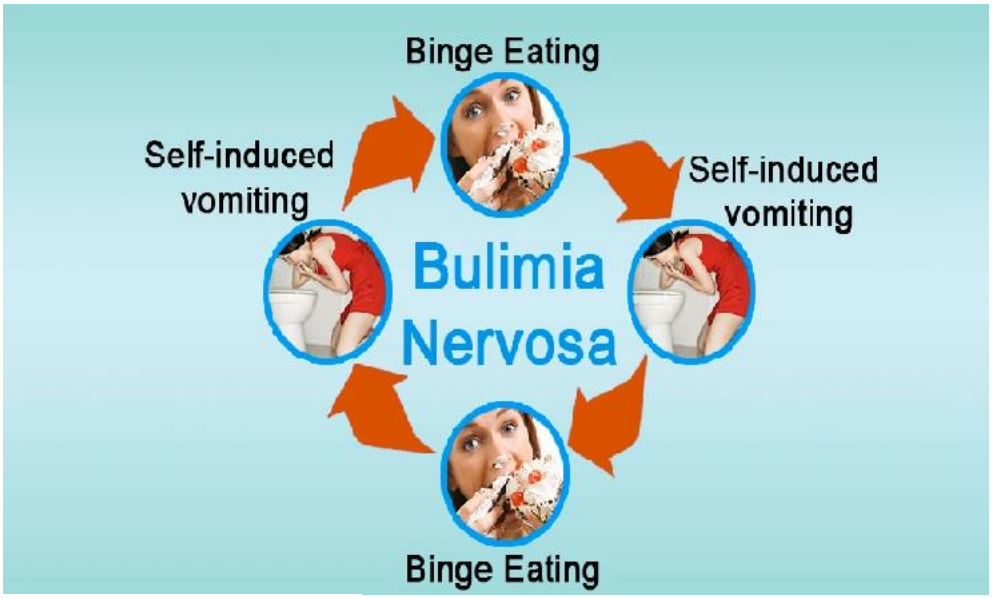
A strict, lifelong gluten-free diet is the only way to manage celiac disease. This condition is not curable.



EATING DISORDERS ANOREXIA, BULIMIA, OBESITY

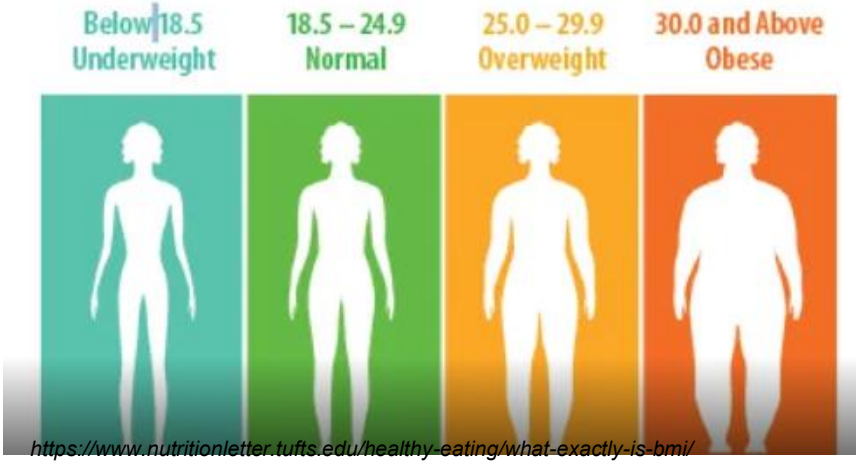
NAME	DESCRIPTION	CAUSES	PREVENTION AND MANAGEMENT
ANOREXIA NERVOSA  *www. google dreamstime.com* **CAUSING FACTORS** • Genetic predisposition • Psychological factors • Poor self-image • Environmental: • Society emphasises the importance of a thin body • Peer pressure	It is a psychological eating disorder. Common among adolescents. Unhealthy way of dealing with emotional problems. Have an intense fear of gaining weight. Will go to extremes to avoid food intake. (Limited kJ intake) Starve themselves to death. Extreme perfectionists.	Affects **hormones** **Slows down growth** Too much weight loss **stops menstruation** **Long-term affect fertility negatively**. Hair loss; Brittle nails **Genetic predisposition-** Anorexia sufferers deal with the genetic characteristics such as the tendency towards perfectionism, sensitivity, and perseverance. **Psychological factors:** Poor self-image.	Professional help Increase the calcium intake to reduce osteoporosis. Drink plenty of water throughout the day. Balanced, high kilojoules diet. Zinc tablets can be beneficial. Stick to the treatment plan and do not deviate from the eating plan. Join a support group. Hospitalisation necessary in serious cases.

BULIMIA NERVOSA  TWO categories of bulimia: 1. Frequently vomit, make use of laxative, diuretic, or enemas after binging 2. Use other ways to get rid of kilojoules to avoid gaining weight like extreme exercise	• An eating disorder where a person consumes large amounts of food (binging) • Then get rid of it by vomiting (throwing up) • Purch to get rid of the food or using laxatives	• Malnutrition • Vitamin & Mineral Deficiency • Dehydration • Teeth erosion • Damage to the vocal cords • Sufferers are unsatisfied with their body image and unsuccessful in weight loss • Emotional health and social expectations can increase the risk	• Get professional help (psychotherapy) • Sufferer needs to lead a healthier lifestyle • Medication to reduce the symptoms of bulimia • Psychotherapy  https://bit.ly/3IXWiRS



https://bit.ly/3CzVujO

Obesity



https://www.nutritionletter.tufts.edu/healthy-eating/what-exactly-is-bmi/

Definition Obesity

Obesity is a condition of excessive fatness/ body fat/ BMI over 30/ to the extent that it has a harmful effect on health. Obesity is when a person weighs more than 20% more than the recommended weight for his/her height/ age.

CAUSES

In most cases of obesity, it is a combination of excessive food (energy) intake and lack of exercise. Other reasons that cause obesity include:

- Genetics
- Medical reasons
- Psychiatric illness
- Stress
- Trauma
- Emotional Factors
- Medicines
- Smoking
- Pregnancy
- Lack of sleep
- Bad food habits (junk food)/ 'Hidden factors'

https://bit.ly/3IW5sOB

CONSEQUENCES

Coronary heart disease

High blood pressure

Stroke

Type 2 diabetes-The body's blood glucose, or blood sugar, level is too high.

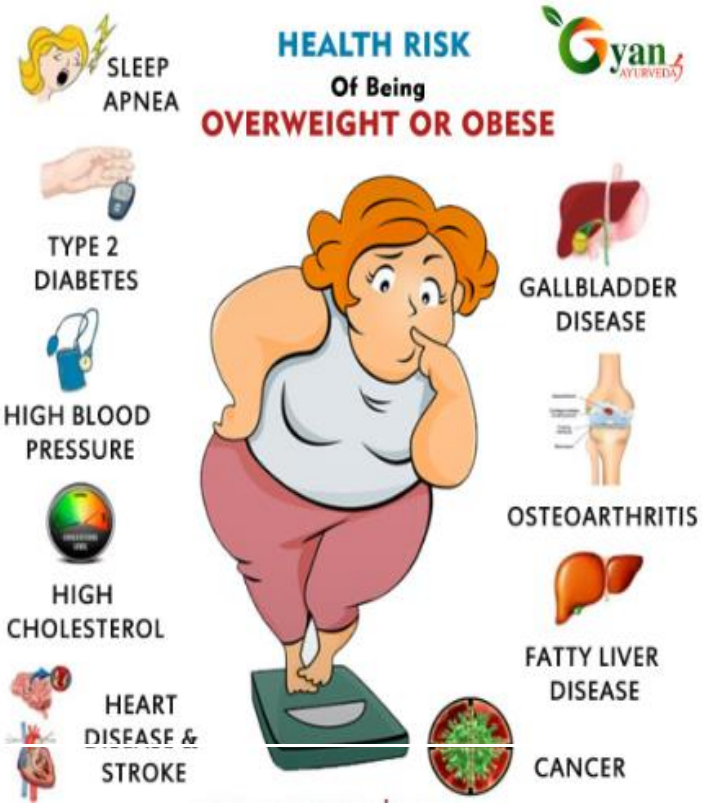
Cancer-raises the risk of colon, breast, endometrial, and gallbladder cancers.

Osteoarthritis-a common joint problem of the knees, hips, and lower back.

Sleep apnoea -common disorder in which you have one or more pauses in breathing or shallow breaths while you sleep.

Reproductive problems-can cause menstrual irregularity and infertility in women.

Gallstones - hard pieces of stone-like material that form in the gallbladder.



for 2023

Food allergies	**Gluten intolerance (Celiac disease)**	**Obesity**
Milk allergy	**Anorexia nervosa**	**Dairy /lactose intolerance**
Food intolerance	**Bulimia nervosa**	

ACTIVITIES 2023:

1. A consumer who wants to prevent osteoporosis but suffers from lactose intolerance, may drink

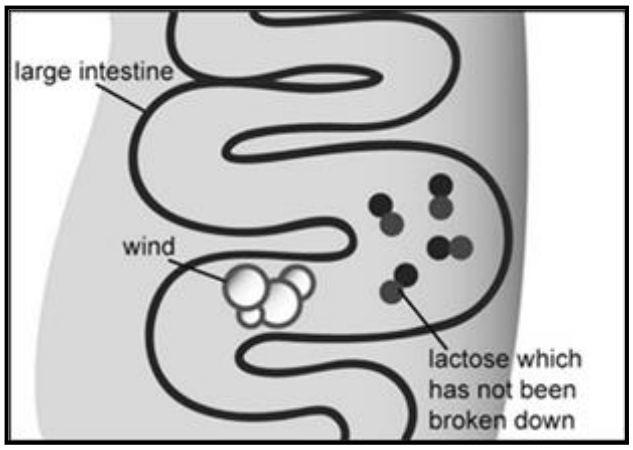
   A strawberry-flavoured milk

   B sour milk/amasi

   C cream soda flavoured milkshake

   D hot chocolate made with milk (1)

2. Identify which nutrition-related condition is depicted in the diagram below



A Dairy intolerance
B Hyperglycaemia
C Hypertension
D Gluten allergy

1.3 Identify THREE statements in the list below that are CORRECT regarding gluten intolerance. Write only the letters (A–F) next to the question number (1.5) in the ANSWER BOOK.

A Allowed to eat rye bread
B May eat maize-meal porridge
C Leads to malabsorption of nutrients
D Do not eat macaroni and cheese
E Not allowed to eat potato salad
F The result of an enzyme deficiency (3)

2. Read the scenario below and answer the questions that follow

Rosemary feels overweight. Often, she cannot help herself eating large amounts of food. She then feels guilty and depressed, so she purges everything she eats. Her worried mother took her to the doctor who suggested treatment.

2.1 Name the disorder Rosemary suffers from. (1)
2.2 Analyse how the following will assist Rosemary in recovering:

2.2.1 Psychological treatment (4)
2.2.2 Nutritional education and treatment (4)

3. Copy the table about the management of obesity below into the ANSWER BOOK and complete it.

CRITERIA	GUIDELINE TO PREVENT OBESITY	HEALTHIER ALTERNATIVE
Cooking methods used	(1)	(1)
Carbohydrate intake	(1)	(1)

(4)

4. Study the information below and answer the questions that follow

	Nolac milk is milk to which an enzyme has been added to make it suitable for lactose intolerant sufferers. The milk is rich in calcium and vitamin D. [Source: www.clover.co.za]

4.1 Identify the enzyme that is added to the milk. (1)

4.2 Explain the advantage of adding the enzyme to the milk for a person suffering from lactose intolerance. (2)

4.3 Explain the reason why Nolac milk is suitable for a person with osteoporosis. (2)

4.4 State if Nolac milk is suitable for a person with milk allergies. Motivate your answer. (3)

5. Recommend, with reasons, FOUR dietary guidelines for the management of obesity. (4x2) (8)

8.2 NUTRITIONAL AND FOOD-RELATED HEALTH CONDITIONS
Content organised as follows in book:

2022	2023	2021
Coronary heart disease High blood cholesterol High blood pressure Anemia	Food allergies Dairy and gluten intolerance Eating disorders Anorexia - Bulimia Obesity	High & Low blood glucose levels Diabetes Osteoporosis

Content of 2021
2021 high & low blood glucose levels

DESCRIPTION OF GLYCEMIC INDEX (GI)

Glycaemic index (GI) of food is the ranking of food that contains carbohydrates on a scale of 1-100, based on how fast and to what extent blood-glucose levels are raised after they have been consumed. Foods with a ranking between 1-40 is classified as low GI.

Glycaemic Index (GI):
Gly- means glucose
aemic – means blood
Index – means indicator
Thus, the Glycaemic Index is a blood glucose indicator

Carbohydrates like starches, fruit, vegetables, dairy products, beans, lentils and sweet things digested in stomach and intestines

→ **Converted** (absorbed into the **bloodstream**)

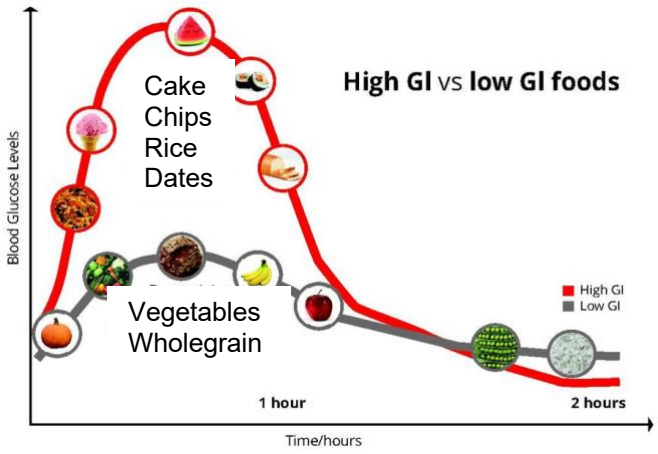
→ **Stimulates** the pancreas to **secrete insulin** (helps body cells to absorb glucose for energy)

THE GLYCAEMIC INDEX OF FOOD

Carbohydrates are broken down to glucose that is absorbed in the bloodstream

- Insulin (from the pancreas) transports glucose from the bloodstream to the body cells
- Glucose is released in the body cells as energy

https://www.mercuryimp.com/2015/07/gi



Gifsa index:
Divides food in four (4) categories

GREEN + (plus)	GREEN	ORANGE	RED

https://bit.ly/3CsGKTx

FOOD CATEGORY	LOW GI	INTERMEDIATE GI	HIGH GI
Breads, cakes and crackers	Low GI breads (e.g., low GI seed loaf or low GI brown bread), Provita	Bran muffin Most rye breads Croissant	White bread Cakes Marie biscuits
Cereals and porridge	Most All Bran flakes	Cooked oats porridge	Maltabella porridge Mealie meal porridge Weetabix, Corn flakes
Dairy and dairy products	Milk (full cream, low fat and fat free); Buttermilk; Yoghurt	Condensed milk Ice cream	
Drinks and juices	Apple juice; Appleltiser; Grapetiser; Peartiser	Iced teas; Mango juice; Orange juice	Energade (sport/ energy drinks) Litchi juice
Flour	Digestive Bran Oat Bran	Rye flour	Bread flour Cake flour Corn flour

REASONS FOR EATING LOW-GI FOODS

- Lowers Cholesterol.
- Lowers specific cancer risks. Lowers heart disease risks.
- Improves type 2 Diabetes as it reduces insulin levels, therefore helps control diabetes and can help reduce the number of people suffering from diabetes.
- High sugar foods attack the immune system, low GI foods will help reduce the risk of colds and flu.
- Increase energy levels.
- Increased endurance.
- Low GI diets lead to happier people as serotonin levels (soothing) increase.
- Even energy levels - improve attention span and memory.

Hypoglycaemia

DESCRIPTION

- When the blood glucose level (blood sugar) in the blood is abnormally low, e.g., the sudden withdrawal of glucose from the bloodstream.
- The normal blood glucose level in a person's blood is 10 ml / litre.
- Hypo = below the normal blood glucose level.

Use the association technique to remember the two different types (hippo is BELOW the water)

FACTORS CAUSES SUDDEN WITHDRAWAL OF GLUCOSE FROM THE BLOODSTREAM

- Eating high GI or fatty foods
- Skipped meals, eating too little or eaten infrequently
- Exercising long and hard without extra food
- Drinking alcohol on an empty stomach
- Diabetic people having too much insulin /diabetic tablets

Google.com.dreamstime.in

PREVENTION AND MANAGEMENT

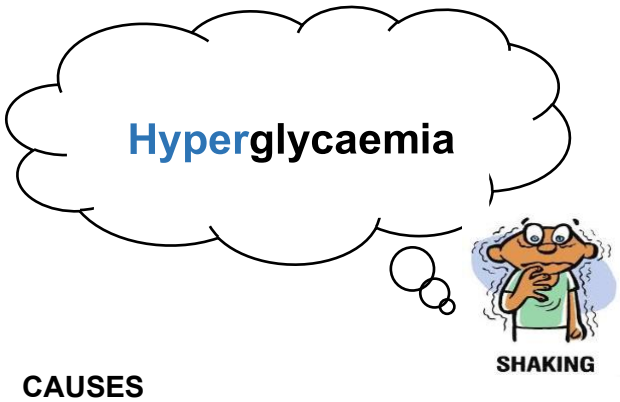
1. Eat mainly low GI foods - meals and snacks
   Glucose is released more gradually into the bloodstream.
   Insulin secretion is controlled
   Have energy for longer
2. Reduce the total GI of a meal - combine Low and High GI
3. Eat small meals regularly and do not skip meals –
   Blood glucose levels remain more constant
4. Eat high GI snacks after exercise to stabilize blood glucose levels
5. Exercise regularly - Insulin action is promoted
6. Increase low blood glucose levels through food intake -Raisins, honey, fruit juices or glucose tablets

https://bit.ly/3vT0Oxq

WAYS TO MAINTAIN CONSTANT BLOOD SUGAR LEVELS:

- Eat low GI foods such as sweet potatoes, canned beans, lentils, chickpeas, whole grain bread, rye bread, whole grain pasta and brown rice.
- Combine low GI foods with high GI foods.
- Eat high in fibre foods.
- Eat lots of fresh fruits, vegetables and salads.
- Study food labels to ensure that foods are low GI and contain little carbohydrate, fat and sugar.
- Do not add extra fat and sugar to foods.
- Eat breakfast cereal made from oatmeal, barley and fibre.
- Reduce potatoes intake (allow potatoes and porridge to cool before eating)
- Eat brown, basmati and brown pasta, noodles or quinoa (seeds rich in amino acids).
- Eat smaller portions to maintain blood glucose levels.
- Eat 5-6 small meals a day / do not skip breakfast.

CONTENT OF 2021



Diabetics can get hyperglycaemia due to:

Intake of foods with high sugar content

Non-insulin injections / other medication use

Not exercising enough

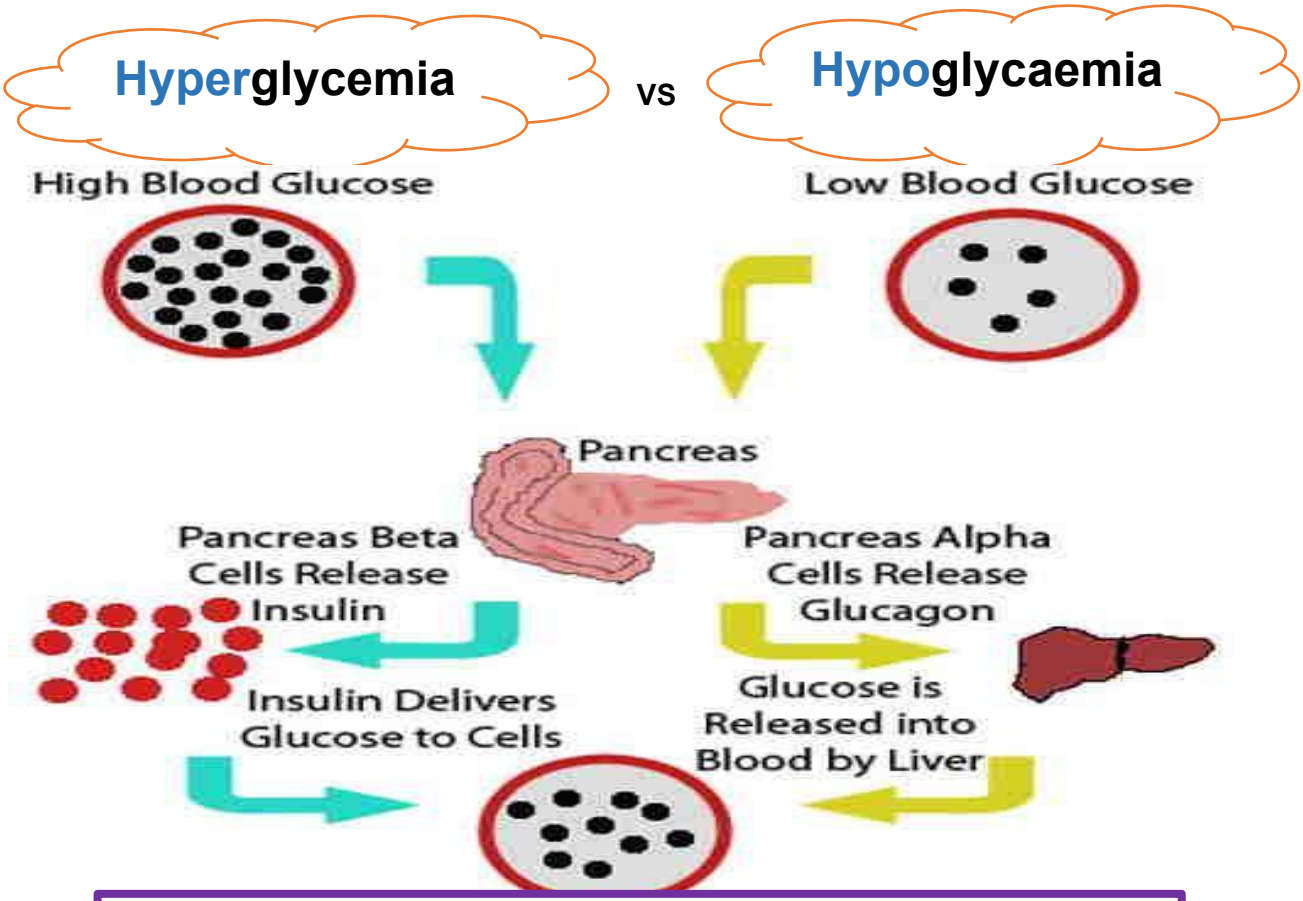
Prolonged stress

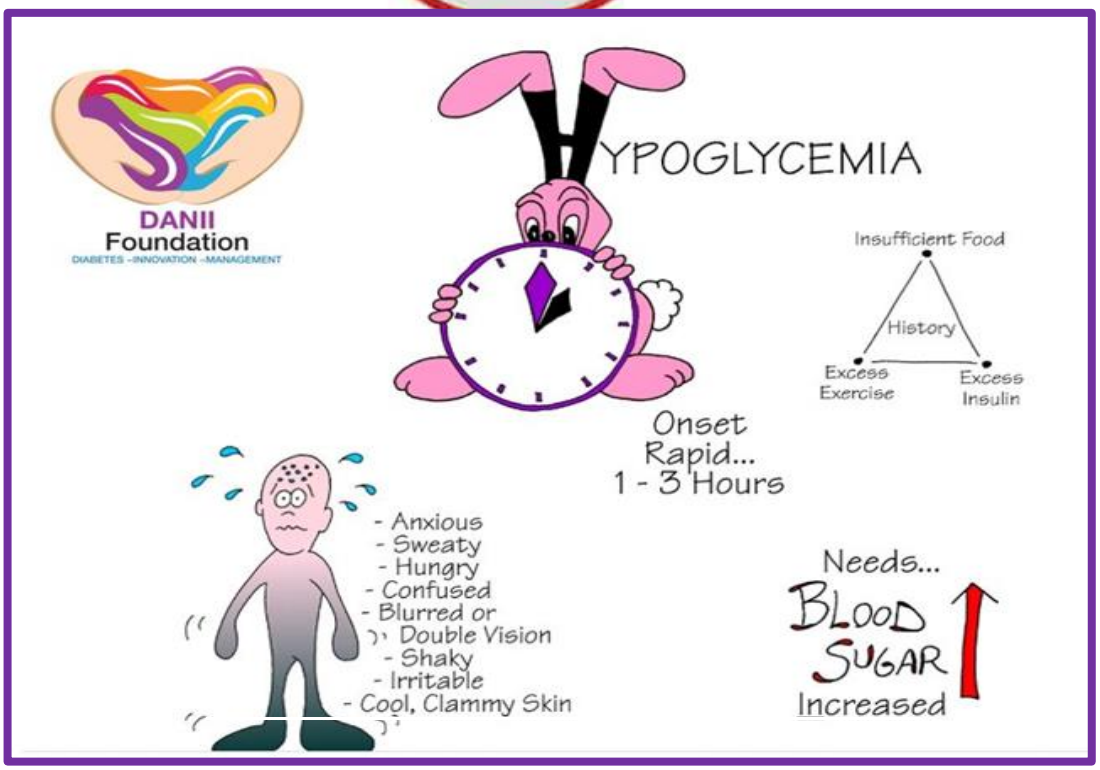
CAUSES

- Occurs if blood glucose levels remain too high for too long
- Too many high GI foods are eaten during a meal, which causes the blood glucose to rise rapidly
- The pancreas of a person with diabetes do not produce enough insulin or the cells do not respond to the insulin which results in elevated blood sugar levels (hyperglycaemia)
- Carbohydrates are broken down to release large amounts of glucose into blood
- Insulin action ensures that the excess glucose is to be absorbed

PREVENTION AND MANAGEMENT

- Avoid high GI foods
- Exercise regularly





CONTENT OF 2021

CAUSES	RARE CAUSES
• Bad eating habits and lifestyle • Aging • Obesity • Physical inactivity	• Certain medication • Pregnancy • Any illness that causes damage to the pancreas

DESCRIPTION

- When blood glucose surges after food intake, and it stays elevated above normal levels, because insulin is ineffective or inadequate.
- Glucose enters the bodies bloodstream and is used for fuel in our body.
- The pancreas makes insulin. The role of insulin is to move glucose from the bloodstream into muscle, fat, liver cells to be used. (Insulin is a hormone produced by the pancreas to control blood sugar).
- Also known as hyperglycaemia.

MAIN TYPES

TYPE 1 DIABETES

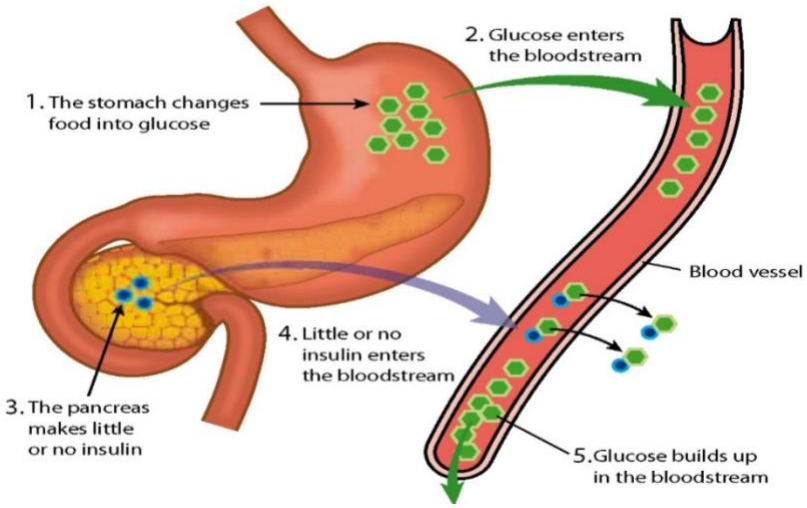
This type is usually diagnosed in childhood.

- Usually genetically transmitted
- The body makes little or no insulin or is resistant to insulin or even both
- The cells in the pancreas are destroyed, causing a severe lack of insulin. This is when the body attacks and destroys its own cells, which causes an autoimmune reaction

TYPE 2 DIABETES

This type is more common. Usually occurred only in adulthood but due to poor eating habits it is nowadays even found in younger children

- Usually due to poor eating habits
- Insufficient insulin is available, or it is available, but body cannot use it

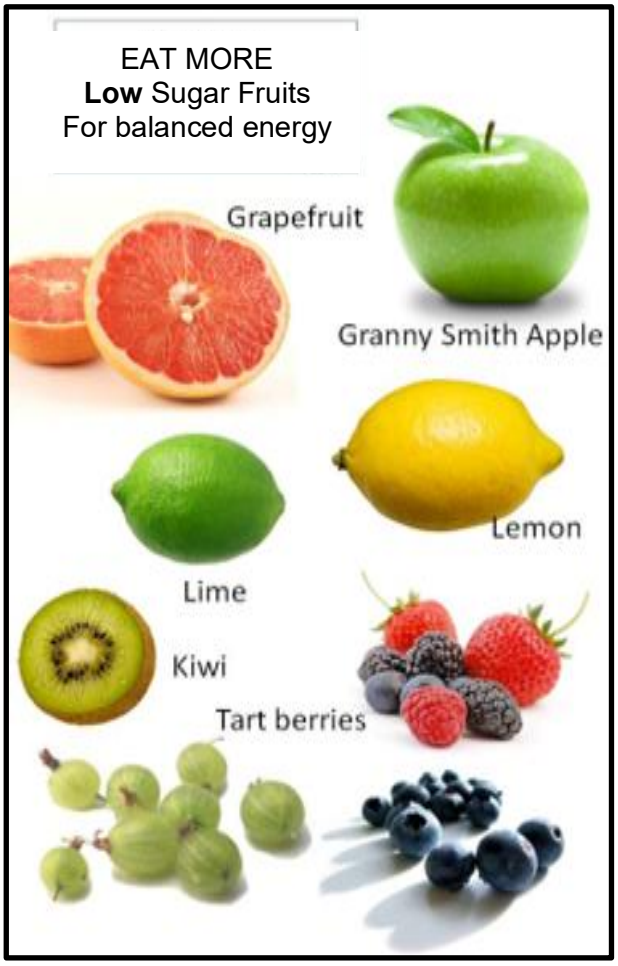


CAUSES

- Infection
- Exposed to foodborne chemical toxins
- Family history

https://www.paramedicpractice.com/other/article/hypoglycaemia

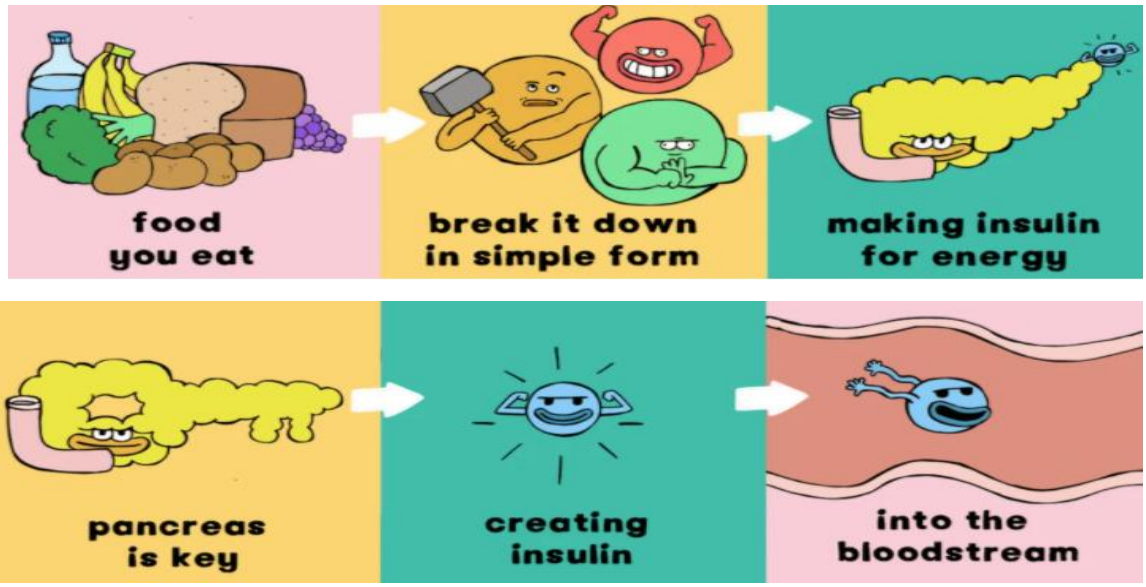

EAT LESS
High Sugar Fruits
Which spike blood sugar
Banana
Melons
Mango
Pineapple
Peach
Plum
Most apples
Orange & juice
Watermelon
Grapes
Raisins, dates, dried fruits


EAT MORE
Low Sugar Fruits
For balanced energy
Grapefruit
Granny Smith Apple
Lemon
Lime
Kiwi
Tart berries

What is Insulin?

Insulin is a hormone produced by the pancreas to control blood sugar.

Diabetes can be caused by too little insulin, or resistance to insulin or even both



Complications

- Eye problems / Blindness cataracts –
  a thickening and clouding of the lens of the eye
  glaucoma – pressure builds up inside the eye
- Kidney failure / problems
- Nerve damage
- Heart and blood vessel disease / Heart attacks
- Pregnancy complications
- Tooth and gum disease/infections
- Toe, foot, leg infections (sometimes even requires amputation)

"Your blood sugar is high, but your salt, pepper, ketchup, mustard and grated cheese levels are fine."

https://bit.ly/3Cs3S4I

LONG TERM COMPLICATIONS:

- Diabetic hyperglycaemic coma
- Atherosclerosis
- Coronary artery disease
- Erection problems
- Hypertension
- Infections
- Stroke
- Vascular disease

PREVENTION AND MANAGEMENT LIFSETYLE HINTS

- Maintain an ideal body weight

- Active lifestyle, exercise regularly
- Eat a balanced diet
- Get plenty of sleep
- Quit smoking if you do smoke
- Manage stress
- To prevent complications of diabetes, visit your health care provider or diabetes educator at least four times a year.

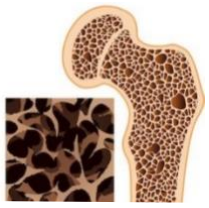
DIETARY HINTS

- People with type 1 diabetes should eat at about the same times each day and be consistent with the food they choose, preventing extremely high or low blood sugar.
- Type 2 diabetics should follow a well-balanced and low-fat diet.
- Carry a supply of suitable food with you
- Drink plenty of fluids

"My diabetic research shows that test subjects are 98% more likely to take their diabetic pills if the pills are covered in chocolate."

OSTEOPOROSIS

Healthy bone



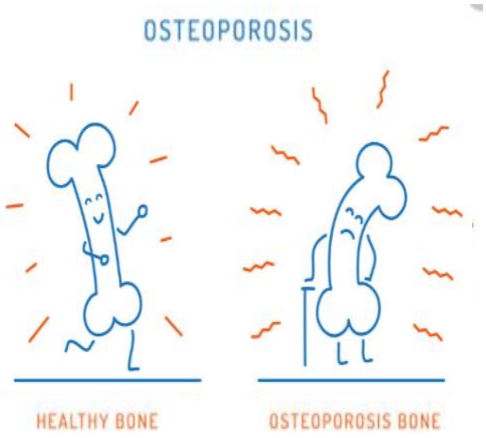
Osteoporosis

GENERAL

- Osteoporosis is a silent thief that robs many women of up to 25% of their skeleton by the age of 50.
- Particularly prevalent in women after menopause.
- It increases the risk of bone fractures.
- Changes in the diet are strongly related.
  - Osteo = bone
  - Porous = "with holes"
  - Osteoporosis = bones with holes

EXPLANATION

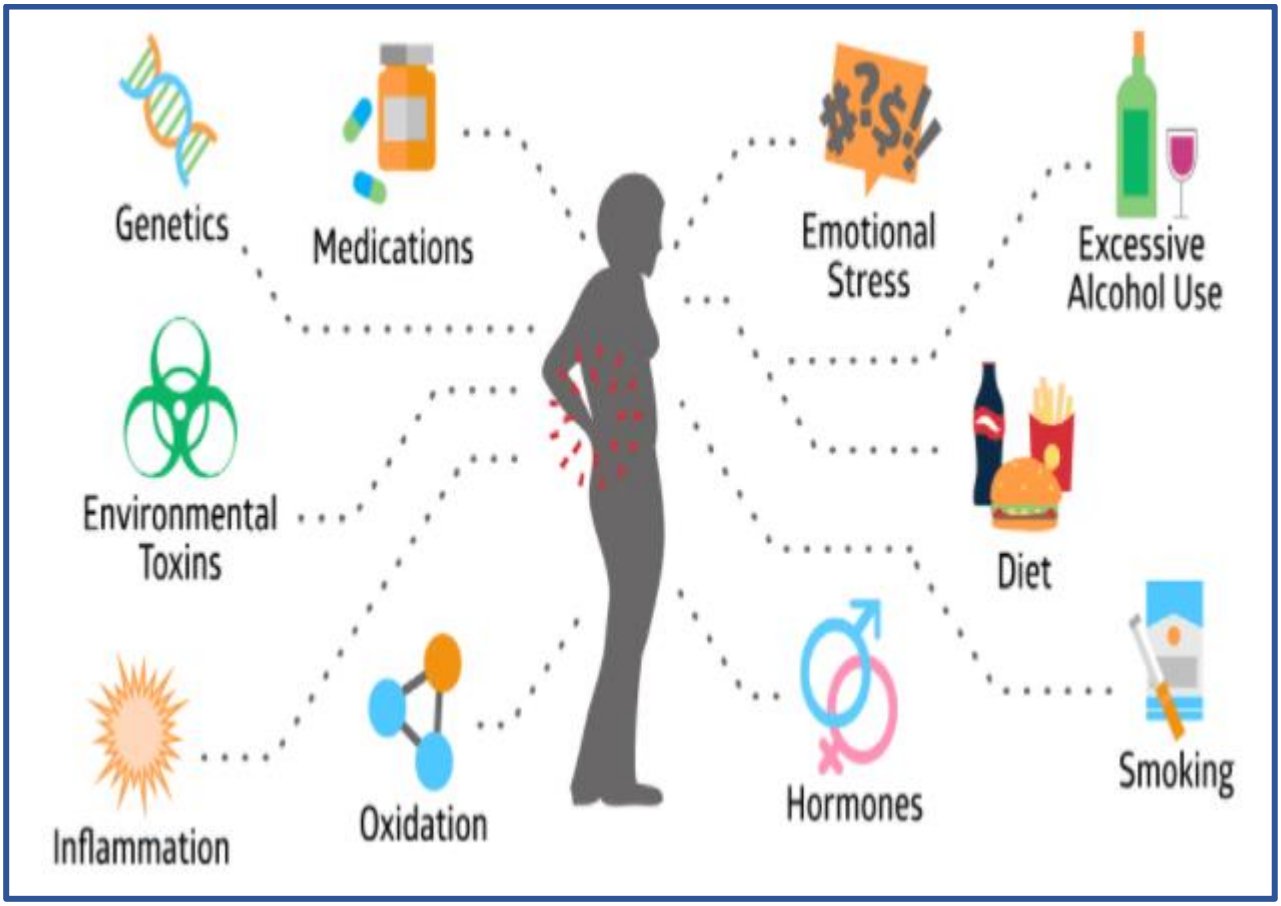
- Osteoporosis causes bones to weaken and become brittle.
- So brittle that a fall or even mild stresses such as bending over, or coughing can cause a fracture.
- Osteoporosis-related fractures most commonly occur in the hip, wrist or spine.
- Bone is living tissue that is constantly being broken down and replaced.
- Osteoporosis occurs when the creation of new bone doesn't keep up with the loss of old bone.



https://www.vectorstock.com/royalty-free-vector/osteoporosis-cartoon-bone-vector-14434122

COMMON CAUSES OF OSTEOPOROSIS

1. Gender – women have lower bone mass than men and more at risk
2. Smoking increases bone loss
3. Excessive alcohol intake – prevents calcium absorption
4. Diet up to 30 years lacking calcium, phosphorous, magnesium and vit D
5. Some medication – such as cortisones
6. Hyperactive thyroid
7. Family history of osteoporosis
8. Body form
9. Excessive weight loss – anorexia
10. Age – menopausal women lose calcium



http://arthroplastyconferences.blogspot.com/2018/10/12-causes-of-osteoporosis-and-bone-loss.html

UNCHANGEABLE RISKS FACTORS

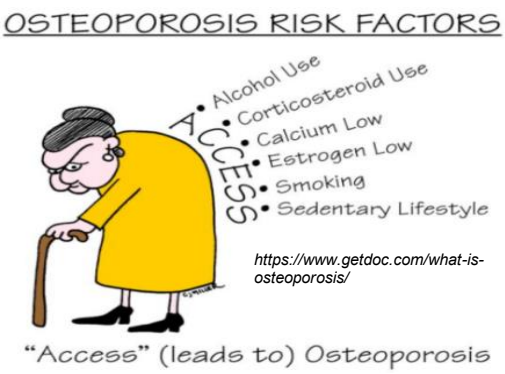
A number of factors can increase the likelihood of osteoporosis develop but some could not be controlled:

Gender: Women are much more likely to develop osteoporosis than men.

Age: The older you get the bigger your risk.

Race: The risk of getting osteoporosis is greater if you are light of skin or from Asian descent.

Family history: Having a parent or sibling with osteoporosis puts you at greater risk.



Body frame size: Men and women who have small body frames tend to have a higher risk because they might have less bone mass to draw from as they age.

Hormone levels: Osteoporosis is more common in people who have too much or too little of certain hormones in their bodies

Medical conditions: The risk of osteoporosis is higher in people who have certain medical problems, including Celiac disease; Inflammatory bowel disease; Kidney or liver disease. Cancer; Lupus; Rheumatoid arthritis.

PREVENTION AND MANAGEMENT:

- Follow a calcium rich diet – includes dairy products and vit D
- Take enough Vit C and phosphorus
- Sufficient intake of fluoride
- Take enough multi vitamins in
- Avoid too much protein intake
- Do not smoke
- Avoid excessive alcohol intake
- Do regular weight – bearing exercises
- Hormone therapy replacement

ACTIVITIES 2021

1.1 This drink may be taken with a meal to prevent osteoporosis:

A black tea

B energy drink

C flavoured Milk

D grape Juice (1)

1.2 The food-related health condition that could be managed by choosing carbohydrate-rich food with a low Glycaemic index:

A Anaemia

B Diabetes

C Hypertension

D Osteoporosis (1)

2. Write a paragraph to explain the effect of high glycaemic index (GI) foods and low glycaemic index (GI) foods on blood glucose levels. (4)

3. Answer the following questions about diabetes

3.1 Give a brief description of the condition diabetes. (3)

3.2 Explain what the consumer can do to prevent type 2 diabetes. (4)

4. Read the scenario below and answer the questions that follow

Wendy and her three sisters live with their grandmother in a one-bedroom, low-cost (RDP) house. Her grandmother has osteoporosis. The grandmother's pension money is too little to provide them with balanced meals. Most of the time they eat porridge with milk. Her grandmother has a small vegetable garden. She grows spinach, onions, green peppers, tomatoes, carrots, strawberries and oranges for household use. When her grandmother can afford it, she serves canned fish or eggs with the porridge for supper. Occasionally they receive food parcels from the Government Feeding Scheme. Wendy's aunt, who coughs a lot and is generally not well, visited them two months ago. Wendy recently started coughing severely and has blood in her sputum. She also has chest pains and is losing a lot of weight.

4.1 Name ONE health-related condition Wendy could be suffering from and explain how the disease could have been transmitted. (2)

4.2 Name TWO ingredients, besides milk and eggs, that Wendy's grandmother can add to the breakfast porridge to fulfil increased protein and energy needs. (2)

4.3 Discuss how their diet contributes positively to the grandmother's management of osteoporosis. (6)

5. Evaluate the impact of the vegetables and fruit on Wendy's health (8)

6. Study the menus for BREAKFAST A and BREAKFAST B below and answer the questions that follow:

BREAKFAST A	**BREAKFAST B**
Strawberry, mango, kiwifruit slices xxx Wholegrain muesli and low-fat yoghurt xxx Stewed liver in onion sauce Poached eggs Wholewheat bread and margarine xxx Coffee with low fat milk	Chocolate croissants with cream xxx Cornflakes with milk xxx Fried beef sausages Fried eggs Brown bread and margarine xxx Coffee with non-dairy whitener

6.1 Identify TWO food items on the menus that must be avoided by a person with lactose intolerance. (2)

2023: ANSWERS TO ALLERGIES & INTOLERANCES, EATING DISORDERS

1.1 B✓

1.2 A✓

1.3 B✓ C✓D✓(in any order)

2.1 Bulimia/bulimia nervosa✓

2.2 Psychological treatment

- Rosemary will need counselling✓ and support from family and friends for depression and feelings of guilt. ✓
- She may need to get medication for depression/ anti-depressants. ✓
- The treatment must address Rosemary's feelings of guilt and psychological needs✓ so that her physical health✓ and normal eating pattern can be restored. ✓ (Any 4)

2.3 Nutritional education and treatment

- Nutritional education/a dietician will guide her on her eating habit and behavioural management.

✓ This will assist her to stop binge eating/eating large amounts of food/purging. ✓ This will result in healthier alternatives to manage/stabilize/control her weight. ✓

- Rosemary will be encouraged to eat a balanced diet ✓with enough carbohydrate ✓and fats✓ to give her energy and proteins to sustain the body. ✓ (Any 4)

3. Copy the table about the management of obesity below into the ANSWER BOOK and complete it.

CRITERIA	GUIDELINES TO PREVENT OBESITY	HEALTHIER ALTERNATIVE
COOKING METHODS USED	● Avoid frying food/use less fat in cooking.✓ (1)	● Grill/bake/steam food✓ (1)
CARBOHYDRATE INTAKE	● Reduce the intake of refined carbohydrates/ starch✓ ● Eat low GI/unrefined carbohydrates.✓ (Any 1)	● Eat wholegrain carbohydrates✓ ● Eat low GI food✓ (Any 1)

(4)

NOTE: One mark must be deducted if not in table format

4.1 Identify the enzyme that is added to the milk.

Lactase✓

4.2 Explain the advantage of adding the enzyme to the milk for a person suffering from lactose intolerance.

The person will not suffer from lactose intolerance side effects anymore✓[1] because lactose (enzyme) lactase will help with the breakdown/ digest✓[2] of glucose/ galactose✓[3] to the lactose which are absorbed into the bloodstream.✓[4]

5.1 Nolac milk increase bone density✓.[1] contains calcium It contains vitamin D which helps with the absorption of calcium. ✓ [2] which strengthens the bones/✓

NOTE: No marks for naming the nutrients as they are stated in the question.

5.2 Nolac milk is not suitable✓. Nolac milk contains protein If consumed, / an allergen in milk. ✓[2] the body will harmful✓[3] and the immune is system will react✓[4] against the protein by building up antibodies

6 Recommend, with reasons, FOUR dietary guidelines for the management of obesity.

1. Eat more foods high in fibre. ✓[1] This will fill you up/ delay the feeling of hunger✓[2] so that you will eat less. ✓[3]
2. Eat at least three meals a day/ do not skip breakfast. ✓[4] Skipping meals can lead to overeating later in the day. ✓[5] Skipping breakfast slows down metabolism.[6]✓

3. Reduce the intake of fat/ eat lean meat/ fish/ chicken✓[7] as this will reduce the total energy intake✓[8] and contribute to weight loss.
4. Grill/ bake/ steam food✓[9] adds more energy/ kilojoules[10]✓ that as frying could be stored as adipose fat.[11]✓
5. Eat low GI food adds more energy/ kilojoules[10] t✓hat[12] as this will help with blood glucose control[1] adds more energy/ kilojoules[10] t✓hat[3] and delay the feeling of hunger.[1] adds more energy/ kilojoules[1]✓
6. Increase the intake of pulses[15]✓ adds more energy/ kilojoules✓[10]as they are filling adds more energy/ kilojoules[10] ✓ and low in fat.[17] adds more energy/ kilojoules[10] ✓ This will reduce overeating.[1] adds more energy/ kilojoules[10]✓
7. Snack on healthy foods/ choosing less junk/ fewer sweets in between meals[19] adds more energy/ kilojoules[10] ✓ this will reduce the total kJ intake. [20]✓
8. Drink lots of (clean) water[21] adds more energy/ kilojoules[10] ✓will make them feel fuller✓[22] adds more energy/ kilojoules[10] ✓**s**o that they will eat less adds more energy/ kilojoules✓[23]
9. Eating at least 5 serving/ plenty of fruit and vegetables per day adds more energy/kilojoules[10]✓ as they are rich in fibre adds more energy/ kilojoules✓[10] and will reduce hunger.[26] adds more energy/ kilojoules[10] ✓Therefore they will eat less. Reduce alcohol intake[28] ✓as it is high in energy/ kilojoule value adds more energy/ kilojoules.[29]✓
10. Eat small amounts/ portions of food[3]✓will reduce *the total energy* intake and contributes to weight loss. (Any 4 x 2) (8)

NOTE: Not exercise or active lifestyle as it is about dietary guidelines.

2021: ANSWERS TO LOW, HIGH GI, DIABETES, OSTEOPOROSIS

1.1 C✓

1.2 B✓

1. Foods with a high GI tend to be digested fast ✓and thus supply a sudden/rapid rise✓ in blood-glucose levels. This provides instant energy. ✓ This triggers the excessive release/over secretion of insulin✓ to stimulate the removal of glucose from the bloodstream. The sudden removal of glucose then causes the blood glucose level to drop quickly✓. This then leaves the blood with too little glucose for immediate energy. ✓ (Any 2)

Low GI food is digested slowly✓ thus the glucose is supplied/released gradually/slowly/steadily ✓into the blood stream. This means there is a steady/continuous supply of glucose for energy ✓for a prolonged time/over a long period✓. The pancreas is not stimulated to produce too much insulin. ✓ (4)

Understanding, moderate (Focus, page 71; Successful, page 77)

NOTE: Learners can get a maximum of 2 marks for the explanation of high GI foods and a maximum of 2 marks for the explanation of low GI foods.

NOTE: One mark must be deducted if the answer is not written in paragraph format.

1.1 Give a brief description of the condition diabetes.

Diabetes is a chronic disease in which the blood-glucose level is abnormally high✓ because the body cannot control it properly. ✓ It occurs when the beta cells in the pancreas do not produce any insulin✓ or do not produce enough insulin, ✓ or when the body does not use insulin effectively. ✓

OR

Diabetes develops when the body does not make enough insulin ✓or is unable to use the insulin ✓it makes. Insulin is needed to turn sugar into energy. ✓ Without insulin sugar builds up in the blood/ high blood sugar levels develops✓ (Any 3)

3.2 Explain what the consumer can do to prevent type 2 diabetes.

- There is a link between type 2 diabetes and lifestyle. ✓
- The onset of type 2 diabetes may be prevented or delayed by following a

healthy diet. ✓

- Maintaining a normal body weight✓ as obesity/overweight increases the risk of coronary heart disease and diabetes. ✓
- Having an active lifestyle/regular exercise ✓helps the body to use insulin more effectively, ✓which controls blood glucose levels. ✓ (Any 5)

4. Name ONE health-related condition Wendy could be suffering from and explain how the disease could have been transmitted

Tuberculosis✓

Inhaling the bacterium through the air✓ when the aunt✓ coughed/ sneezed/spat/spoke or sung. ✓/They lived in a crowded space with the aunt/being in close contact with the aunt/breathing the same air as the aunt for prolonged periods. ✓ (2)

4.2 Sugar/Honey/Syrup✓

Non-fat dairy-milk powder/Amasi✓

Peanut butter✓

Vegetable oil/butter/margarine✓ (Any 2)

4.3

- They use milk✓ that contains calcium✓, phosphorus✓ and vitamin D✓ that strengthens bones. ✓
- The canned fish, if eaten with the bones✓, will provide calcium✓.
- The spinach✓ provides calcium✓.
- They occasionally eat canned fish (oily fish) ✓ that contains Vitamin D ✓that assists in the absorption of calcium✓ and its incorporation into the bones. ✓
- The tomatoes✓, oranges✓ and strawberries✓ contain vitamin C✓ which is necessary for collagen/connective tissue synthesis/building tissues. ✓
- She consumes protein✓ in the fish✓ and milk✓ which assist with connective tissue synthesis/building tissues. ✓
- She does not eat too many protein-rich foods✓ as the body releases acids into the bloodstream ✓when it digests protein and draws calcium from the bones to neutralize the acids. ✓ (Any 6)

NOTE: The foods can only be awarded a mark when linked with the correct nutrient.

Spinach is a source of iron ✓and selenium ✓and plays a role in maintaining a healthy Immune s*ystem.* ✓

- Green peppers/tomatoes/strawberries/oranges are rich in vitamin C✓ that build the immune system and assist people in recovering from infections. ✓ Vitamin C is an antioxidant which✓ protects cells from damage. ✓
- Spinach/Carrots contain beta-carotene/vitamin A✓ and selenium✓ that are antioxidants✓ which protect cells against damage✓ and keep the immune system healthy. ✓ Vitamin A keeps the linings of the lungs intact. ✓
- Fruit and vegetables are colourful✓ and may improve the appetite ✓of a person with tuberculosis. (Any 6)

Conclusion:

The seasonal fruit and vegetables will have a positive impact on ✓Wendy's health as they will meet the increased need for vitamins and minerals/boosts the immune system/protects the cells against damage. ✓ (2)

5. Identify TWO food items on the menus that must be avoided by a person with lactose intolerance.

- Cream✓
- Milk✓
- Low fat milk✓ (2)

2023
EATING DISORDERS

Anorexia nervosa:	Is the restricted food intake to the point of excessive and dangerous weight loss The victim literally starves themselves to death Eating disorder that causes an obsession about body weight and diet with the fear of gaining weight
Bulimia nervosa:	It is when a person eats large amounts of food (binge eating) in a very short space of time and the gets rid of by vomiting or using laxative or drugs.
Obesity:	It is when the weight exceeds a standard based on height Is a condition of excessive fatness to the extent that it has a harmful effect on health

FOOD AND INTOLERANCES

Food allergy	Occurs when the immune system responds to a protein which it regards as harmful and acts against it It is a response to the immune system
Milk allergy:	Is caused when the immune system reacts to the milk proteins and regards it as harmful. This can be life threatening
Food intolerance:	Does not involve the immune system Is a non-allergic hypersensitivity to a certain food, drink, food additives that causes symptoms in the body
Dairy/lactose intolerance:	The body lacks the enzyme lactase in the small intestine that breaks down milk sugars into glucose and galactose so that it can be absorbed into the bloodstream Is the inability to digest the lactose (sugar in milk) found in dairy products due to the lack of enzyme lactase
Gluten intolerance (Celiac disease):	**Is** an intestinal disorder that occurs when the body cannot tolerate gluten causing inflammation and long-term damage to the walls of the small intestine that causes the nutrients to pass through quickly without being absorbed (gluten is the protein found in oats, wheat, rye, barley)

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