

## 10.1 Foodborne illness

المصادر	Complications	كثيريا	Bacterium	مخص	abdominal cramps
اعتماداً على	depending on	ملوثة	Contaminated	تحتوي	containing
إضافي	further	فطريات	Fungi	سهال	Diarrhoea
مثالي	Ideal	حصاد	harvesting	التعامل معها بشكل صحيح	Handled properly
رطوبة	Moisture	الكتانات الدقيقة	microorganisms	يشمل	Include
طفيليات	Parasites	غذان	Nausea	الأكثر انتشاراً	most common
نيء	raw	دواجن	Poultry	تسنم	poisoning
مخزن	stored	نباع	Slaughter	مياه المجاري	Sewage
قيء	Vomiting	علاج	treatment	السموم	Toxins

What are foodborne illnesses (food poisoning) ?

**foodborne** : when something is carried through food.

A foodborne illness happens because of eating foods containing microorganisms.

**Most common disease-causing microorganisms found in food are bacteria**, but can also include viruses, fungi, parasites, or chemicals.

Signs and symptoms of foodborne illnesses
depending on the cause and type of infection.
include nausea, vomiting, abdominal cramps and diarrhoea.

 **Most foodborne illnesses happen suddenly and last a short time. It can happen from 6–72 hours after eating contaminated food.**

**Most people recover on their own without treatment. Sometimes, foodborne illnesses may cause more dangerous complications.**

**contaminated** : when food becomes dangerous because a harmful or unwanted substance, such as bacteria, gets into it.

**Did you know?** 1 in 10 people become (ill) after eating contaminated food.

Each year 420,000 people in the world die from foodborne illnesses. From this number, 125,000 are children younger than 5 years of age.



## Bacteria

Harmful bacteria may already be in foods when you buy them.

**Raw (not cooked) foods may be contaminated with bacteria that cause foodborne illness.**

Contamination can happen very easily; it can happen during:

growth	harvesting	slaughter (when animals are killed to be eaten)	
processing	storage	transportation	preparation in the kitchen

### Bacterial growth

**Bacteria grow by multiplying and they can do this very quickly.**

Bacteria need certain conditions to grow. These conditions are:

**Time** Bacteria double every 15 minutes.

This means that within 6 hours, 1 bacterium can multiply to over 16 million.

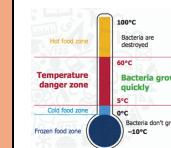


**Warmth** Bacteria need warmth to multiply.

The ideal temperature is 37 °C. They can multiply in temperatures between 5 °C & 60 °C.

When food is not stored properly, it gives bacteria the chance to grow.

حفظ الطعام في الثلاجة يمكن أن يقلل من نمو البكتيريا. يمكن أن يؤدي تجميد الطعام إلى إبطاء هذا النمو أو حتى إيقافه. إن البكتيريا الموجودة في الأطعمة المبردة أو المجمدة ستصبح نشطة مرة أخرى عند إحضارها إلى درجة حرارة الغرفة. يجب طهي هذه الأطعمة لقتل أي بكتيريا ضارة.



**Food** bacteria need nutrients to grow.

Meat, seafood, cooked rice, cooked pasta, milk, cheese, and eggs are all foods that provide very good growing conditions for bacteria.



**Water** Bacteria need moisture to grow.

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

Campylobacter

Escherichia coli (E. coli)

Salmonella

Listeria

Food containing harmful bacteria and other harmful substances such as viruses, parasites or chemicals can cause more than 200 diseases ranging from diarrhoea disease to cancer.



**High-risk foods** Some foods are more likely to make you sick because these foods are more at risk of bacterial growth. If they are not cooked to a safe temperature, or stored or handled properly, there is a higher chance it will make you sick.

**Most foodborne illnesses develop quickly.** However, some can take days to develop, so it can be difficult to find the exact cause of the illness. Knowing which foods to be extra careful with when storing, handling, and cooking is helpful.



**Poultry الدواجن** Raw and undercooked poultry can be dangerous.

Small amounts of bacteria can make people very sick. Cooking to a safe temperature normally kills dangerous bacteria. **Avoid washing raw chicken, this will spread the bacteria around the kitchen.** Wash and sanitise anything that raw poultry has touched.



**Eggs البيض** Raw and undercooked eggs

**Bacteria** can live in the **yolk (yellow part)**, the white part of the egg and **on the eggshell**. Normally the egg will not look, smell or taste any different.



**Seafood مأكولات بحرية**

From the moment a fish is caught until it is eaten, it must be stored correctly. Many different bacteria and toxins can cause foodborne illness in fish. Fish can become contaminated through sewage in the water where they live. **Even cooking to at high temperatures cannot kill some of the toxins found in seafood.**



**Rice أرز** Sometimes bacteria can live in uncooked rice. Cooked rice provides heat, moisture and food which are perfect conditions for bacteria to multiply.



**Vegetables خضروات**

a common source of foodborne illness, especially when eaten raw. It can become contaminated at many stages from growth to storage to preparation.

Leafy green vegetables are especially dangerous as they are usually eaten raw.

**It's important to wash vegetables before eating them.**

## 10.2 Cross-contamination

allergy	حساسية	Chopping board	لوح التقطيع	Contact	اتصال
dangerous	خطير	Drips onto	يقطر على	either	أيضاً
Equipment	معدات	Handled	التعامل معها	object	شيء
Poisoning	تسمم	preparation	التحضير	Production	إنتاج
Properly	على وجه صحيح	recognised	معترف بها	Regularly	بانتظام
result	نتيجة	Shopping trolley	عربة التسوق	Spread	الانتشار
to identify	الانتشار	Transfer	نقل	unwanted	غير مرغوب فيه

What is cross-contamination ?

Contamination is when food becomes dangerous because it contains harmful or unwanted substances like **bacteria**.

Cross-contamination التلوث المتبادل : how bacteria can spread in food, it can result in food poisoning.

**happens when :**

- **bacteria from another object** or **piece** of food touches '**clean**' food
- **raw food touches cooked food.**
- **allergy-containing food comes into contact with other foods.** لم يعد آمناً لمن يعاني من الحساسية.

**Cross-contamination can result in food poisoning.**

food travels a long distance from its origin (where it is grown or made) to your plate.

It may be handled by a lot of different people and exposed to many different conditions.

As a result, there are many points where food can become contaminated.



ينتقل الطعام مسافة طويلة من مصدره (مكان زراعته أو تصنيعه) إلى طبقك.

قد يتم التعامل معه من قبل الكثير من الأشخاص المختلفين ويعرض للعديد من الظروف المختلفة.

ونتيجة لذلك، هناك العديد من النقاط التي يمكن أن يتلوث فيها الطعام.

### Main types of cross-contamination:

Food-to-food

Equipment-to-food

People-to-food

### Food-to-food

When **contaminated food** comes into contact with '**clean**' food.

Raw, undercooked, or unclean food can contain **large amounts of bacteria** which can spread to other foods.

This can happen if you let raw food touch clean food, or if the juices (liquid) from raw food drips onto other food, either in the fridge, shopping trolley or while preparing food.



**bacteria** : group of very small living things that cause disease.

**High-risk foods that could cause contamination:** leafy green vegetables, leftover rice, raw eggs, poultry, and seafood.

مثال : إضافة الخس غير المغسول والملوث إلى السلطة الطازجة يمكن أن يلوث المكونات الأخرى في السلطة.



## Equipment to food

1 of the most common types of cross-contamination.

Bacteria can live for a long time on surfaces like countertops, cutting boards, utensils (knives and forks), storage containers and factory equipment. Therefore, **it's very important to wash all surfaces and equipment properly using soap and hot water.**

If equipment isn't washed properly, it can transfer many harmful bacteria to food. This can happen at any point during **production or preparation**.

مثال: استخدام نفس لوح التقطيع والسكين لقطيع اللحوم النية واللحوم المطبوخة أو الخضار يمكن أن يكون ضاراً للغذاء.

**There are globally recognised colour codes which are used to identify which chopping board to use depending on the food that is being prepared.**



## People-to-food

It's easy for humans to transfer bacteria from their body or clothes to food during food preparation.

**Not washing hands regularly when handling food can cause contamination.**

مثال: إذا سعل شخص ما في يده أو لمس دجاجاً نيئة، فإن لمس طعامنا "نظيفاً" دون غسل يديه يمكن أن يسبب التلوث.

### 10.3 Preventing foodborne illness

advice	نصيحة	Below	تحت	Boil	طهي
careful	حذر	Fur	الفراء	harmful	ضار
Leftover	باقي	Oven	فرن	piping hot	حار جداً
Reheat	إعادة التسخين	rotten	فاسد	Rubbish bins	صناديق القمامة
Slice / pieces	شرائح / قطع	soil	تربيه	Spots	بقع
stews	بطبخ	Survive	يشو	Thaw	ذوبان
through	خلال	Unevenly	بشكل غير متساوٍ	within	داخل

#### خمسة مفاتيح لغذاء أكثر أماناً

a global health message that everyone all over the world should know.

helps prevent foodborne illnesses and improve health.



#### 1. Keep clean something looks clean it doesn't mean that it's.

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

**Why is it important?** Dangerous germs are widely found in soil, water, animals, and people. These germs are carried by hands, clothes, and kitchen equipment.

The slightest contact can transfer germs to food and cause foodborne diseases.

أدنى اتصال يمكن أن ينقل الجراثيم إلى الطعام ويسبب الأمراض المنقلة بالغذاء.

#### Handwashing

germs transfer from place to another, so handwashing is very important.

You should wash your hands:	before eating.	after going to the toilet.
before, during and after handling food.	after handling rubbish.	after handling cleaning products.
after blowing your nose.	after touching animals or playing with pets.	

#### Cleaning plates and kitchen equipment تنظيف الأطباق ومعدات المطبخ

**Some general advice from the WHO:** نصائح عامة من منظمة الصحة العالمية :

Clean while preparing food عشان ما تترك البكتيريا فرصة أنها تنمو

Give a lot of attention to equipment that may touch both raw food and cooked foods and anything that will touch someone's mouth.

Sanitise cutting boards & equipment after it contact with raw meat or seafood.

**Don't forget to clean and dry the cleaning equipment as bacteria grow fast in damp (slightly wet) places.**



**Cleaning :** process of physically removing dirt and crumbs of food.

**Sanitising :** التهوية process of killing germs or disinfecting.

### حماية الطعام من الآفات

**Pests include** cockroaches, mice, rats, flies, and insects. **They can pass harmful germs onto food and kitchen surfaces.**

Pets carry pests in their fur or their feet. تحمل الحيوانات الآليفة الآفات في فرائصها أو في أقدامها

#### To keep food safe from pests:

Food should be covered or in closed containers. تغطية أو وضع الأطعمة بأوعية مغلقة

Rubbish bins should be covered, and rubbish should be removed regularly.

Food preparation areas should be in good condition (repair cracks or holes). (اصلاح الشقوق أو الثقوب

Keep house pets away from food preparation areas.

## 2. Separate raw & cooked food



فصل الأطعمة النيئة عن المطبخة prevent from cross-contamination.

**Why is it important?** Raw food, especially meat, poultry, and seafood (and their juices) contain dangerous bacteria which can move onto other foods during food preparation and storage.

#### How to keep raw food and prepared foods separate ?

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

## 3. Cook thoroughly

**thoroughly** دقة : being careful about doing something in the correct way.

**Why is it important?** Proper cooking can kill all dangerous bacteria. **Cooking food to 70 ° C can kill large groups of bacteria within 30 seconds & safe to eat.**

#### How to cook food thoroughly ?

- Use a thermometer to check that foods reach 70 ° C.
- Make sure the thermometer is cleaned and sanitised after each use. This will avoid cross-contamination between raw and cooked foods.

**thermometer not always available.**



### **Ways to check that food is properly cooked :**

Cook meat and poultry until the juices are clear and the inside is not pink.

Cook eggs and seafood until piping hot the whole way through.

Boil liquid-based foods like soups and stews. Allow them to remain boiling for at least 1 minute.

### **Using an oven microwave**

It can cook and reheat foods unevenly. sometimes can leave cold spots where dangerous bacteria can survive.

من المهم جداً التأكد من أن الطعام المطبوخ أو المعد تسخينه في الميكروويف لا يقل عن 70 درجة مئوية طوال الطريق إلى المركز.

تطلق بعض الحاويات البلاستيكية مواد كيميائية سامة عند تسخينها. لا ينبغي استخدامها في الميكروويف لإعادة تسخين الطعام. تأكّد دائمًا من أن المعدات التي تستخدمها آمنة للاستخدام في الميكروويف.

### **4. Keep food at safe temperatures حفظ الطعام في درجات حرارة آمنة**

What are the safe temperatures for food?

The **danger zone is the temperature range between 5 °C-60 °C** This is where **bacteria multiply very quickly**. **Bacteria cannot grow if it is too hot or too cold**. Therefore, **storing food at a temperature below 5 degrees is advised**.

#### **How to keep food at safe temperatures ?**

Cool and store all leftover food quickly.

Slice large pieces of meat into smaller pieces and place food in a clean, cool container.

Leftover food shouldn't be stored in the fridge for more than 3 days and shouldn't be reheated more than once.

This is because food enters the danger zone once it is reheated, and bacteria can grow quickly.

Thaw frozen food in the fridge.

Cool hot food until the steam no longer rises from it. You should not leave hot food to cool for more than two hours.

### **5. Use safe water and raw materials**

'Safe' means that water and food don't contain dangerous bacteria and chemicals that could cause illness.

**Why is it important?** Raw materials (including water) may be contaminated with dangerous bacteria and chemicals. You should be careful when buying raw materials and take precautions.

مثال: يجب عليك غسل وتنقشير الفواكه والخضروات لتقليل خطر تناول البكتيريا الخطيرة.



Take a look  
on figure 2  
  
in the next page

## Is tap water safe in the UAE?

هل مياه الصنبور آمنة في دولة الإمارات؟

In the **UAE**, **seawater** is treated in a process that removes salt, **dirt**, and **germs** before it flows through the taps.

The **water** is **completely safe to drink** when it leaves the water treatment plant, **but it must pass through tanks from the treatment plant to the homes of residents**.

**In this journey, there may be contamination by bacteria & chemicals**, or chlorine may be added which can give it an **unpleasant taste**.

Therefore, a lot of UAE residents choose not to drink tap water unless it has been filtered at home.

في دولة الإمارات، تتم معالجة مياه البحر من خلال عملية إزالة الملح والأوساخ والجراثيم قبل أن تتدفق عبر الصنابير. تعتبر المياه صالحة للشرب تماماً عند خروجها من محطة معالجة المياه، ولكن يجب أن تمر عذراً من محطة المعالجة إلى منازل السكان.

في هذه الرحلة، قد يكون هناك تلوث بـ **البكتيريا** و **المواد الكيميائية**، أو قد يتم إضافة الكلور الذي يمكن أن يعطي طعمًا كريهًا. لذلك، يختار الكثير من سكان الإمارات عدم شرب مياه الصنبور إلا بعد تصفيتها في المنزل.

## Safe water is needed to :

wash fruit and vegetables. | add to food and drinks. | make ice. | wash hands. | clean cooking equipment.

## Selecting safe raw materials :

Select fresh foods. | Avoid rotten food. | Choose dairy products that have been pasteurised.

If you are buying ready-to-eat cooked foods, make sure they are stored correctly (not in danger zone).

## Five keys to safer food

### Keep clean

- ✓ Wash your hands before handling food and often during food preparation.
- ✓ Wash your hands after going to the toilet.
- ✓ Wash and sanitise all surfaces and equipment used for food preparation.
- ✓ Protect kitchen area and food from insects, pests and other animals.

#### Why?

While most microorganisms don't cause disease, dangerous microorganisms are widely found in soil, water, animals and people. These microorganisms are carried on hands, clothes, surfaces and utensils. When cutting boards and the dirtiest contact can transfer them to food and cause foodborne disease.

### Separate raw and cooked

- ✓ Separate raw meat, poultry and seafood from other foods.
- ✓ Use separate equipment and utensils such as knives and cutting boards for handling raw foods.
- ✓ Store food in containers to avoid contact between raw and prepared foods.

#### Why?

Raw food, especially meat, poultry and seafood, and their juices, can contain dangerous microorganisms which may be transferred onto other foods during food preparation and storage.

### Cook thoroughly

- ✓ Cook food thoroughly, especially meat, poultry, eggs and seafood.
- ✓ Bring foods like soups and stews to boiling to make sure that they have reached 70°C. For meat and poultry, make sure that juices are clear, not pink. Ideally, use a thermometer.
- ✓ Reheat cooked food thoroughly.

#### Why?

Proper cooking kills almost all dangerous microorganisms. Studies have shown that heating food to a temperature of 70°C can help ensure it is safe for consumption. Foods that require more attention include sausages, rolled roasts, large joints of meat and whole poultry.

### Keep food at safe temperatures

- ✓ Do not leave cooked food at room temperature for more than 2 hours.
- ✓ Refrigerate promptly all cooked and perishable food (preferably below 5°C).
- ✓ Keep cooked food piping hot (more than 60°C) prior to serving.
- ✓ Do not store food too long even in the refrigerator.
- ✓ Do not thaw frozen food at room temperature.

#### Why?

Microorganisms can multiply very quickly if food is stored at room temperature. By holding at temperatures below 5°C or above 60°C, the growth of microorganisms is slowed down or stopped. Some dangerous microorganisms still grow below 5°C.

### Use safe water and raw materials

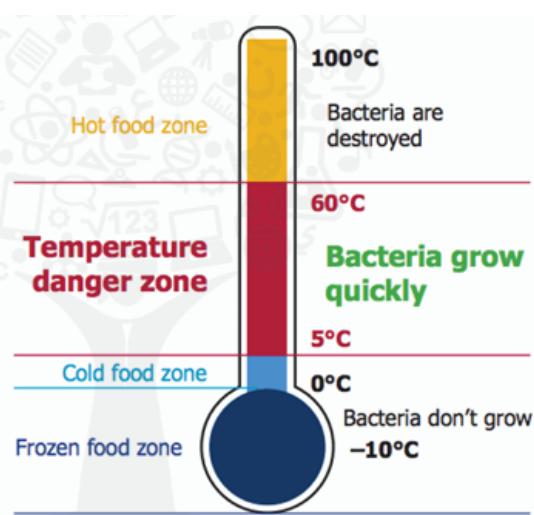
- ✓ Use safe water or treat it to make it safe.
- ✓ Select fresh and wholesome foods.
- ✓ Choose foods processed for safety, such as pasteurised milk.
- ✓ Wash fruits and vegetables, especially if eaten raw.
- ✓ Do not use food beyond its expiry date.

#### Why?

Raw materials, including water and ice, may be contaminated with dangerous microorganisms and chemicals. Such chemicals may be present in damaged food and water. Care in selection of raw materials and simple measures such as washing and peeling may reduce the risk.

figure 2

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



## 10.4 Food allergies and intolerances

artificial sweeteners	المحليات الصناعية	Dairy	اللبن	Digest	هضم
flavours	نكهات	Involved	متضمن	irritable bowel disease	مرض القولون العصبي
Irritable bowel Syndrome	متلازمة القولون المتهيج	Mushrooms	الفطر	mustard	خردل
Particular	معين / محدد	peanuts	الفول السوداني	Pickles	مخلات
Rapid	سرع	respondus	يستجيب	Sesame	سمسم
shellfish	محار	Swollen	توتر	Tongue	سان

	Allergies	Intolerances		
Which system of the body is involved? how it's reacts?	immune system, handle harmless substances & responds unusually to certain foods. body reacts to the food and tries to fight against it & release chemicals which cause an allergic reaction.	digestive system, cannot properly digest the food that's eaten. It can also happen when a particular food irritates the digestive system.		
Some common foods that cause reaction	allergens مسببات الحساسية	Peanuts & other nuts	Milk & dairy foods	lactose caffeine
	Eggs	Fish	Gluten	Histamine in mushrooms & pickles
	Gluten	Mustard	Additives e.g. artificial sweeteners, colouring or flavours	
	Shellfish	Sesame seeds		

Food allergy can develop at any stage in life.

For example, shellfish allergies are more likely to develop in adulthood.

Foods that commonly cause allergies are called allergens.

Did you know? More than 170 foods have been reported to cause allergic reactions.



The number of people with food allergies has risen a lot over the past few decades.

There are a couple of theories that suggest why. One theory is that the typical child's diet has changed a lot over the last 30 to 40 years.

Another theory is that children are growing up in 'germ-free' environments. Their immune systems might not develop properly because they are not exposed to germs.

When they eat certain foods, their bodies mistake harmless substances for bacteria, and they think they are being attacked, causing an allergic reaction.

ارتفاع عدد الأشخاص الذين يعانون من الحساسية الغذائية بشكل كبير خلال العقود القليلة الماضية. إحدى النظريات تقول أن النظام الغذائي عاماً الماضية 40 إلى الـ30 التموجي للطفل قد تغير كثيراً خلاله.

هناك نظرية أخرى تقول بأن الأطفال ينشئون في بيئات "خالية من الجراثيم". قد لا تتطور أجهزتهم المناعية بشكل صحيح لأنهم لا يتعرضون للجراثيم. عندما يتناولون أطعمة معينة، تخطي أجسامهم في اعتبار المواد غير الضارة بكثيراً، ويعتقدون أنهم يتعرضون للهجوم، مما يسبب رد فعل تحسسي.

## Food intolerances

**Lactose intolerance** (digestive problems after eating dairy products)

One of the most common intolerances. Their body cannot digest lactose which is a natural sugar found in milk, yoghurt and soft cheeses.

## Gluten intolerance

Not all digestive problems caused by gluten are gluten intolerant.

**Gluten** : a protein in wheat, barley, and rye.

**It's used in foods** like bread, pasta, cereal, pastries, cookies and doughnuts.

## Signs & symptoms of food allergies

The signs & symptoms of allergies and intolerances are very similar.

They can range from person to person depending on how mild or severe their reaction is.



إذا عانى الشخص من رد فعل خفيف في مناسبة واحدة، فهذا لا يعني أن رد فعله سيكون خفيفاً في المرة القادمة.

hives	itchy mouth	swollen face	swollen tongue	swollen lips
nausea or vomiting	abdominal pain	trouble breathing	dizziness	diarrhoea

comparison between the signs & symptoms	Food allergy	Food intolerance
usually comes on	suddenly	gradually تدريجياً
amounts of food that can trigger a reaction	Even small amounts	when a lot of the food is eaten.
reaction happens	every time the food is eaten.	if the food is eaten often.
Life threatening?	Yes, it can be so severe "anaphylaxis" reaction	Not life-threatening

diarrhoea : illness that causes waste to be passed from the body frequently in liquid rather than solid form

symptom : change felt by the body or mind that suggests there is a disease

Symptoms of allergic reactions		both		Symptoms of food intolerance	
Rashes or hives طفح جلدي أو قشريرة	Itchy mouth حكة في الفم	Nausea غثيان	Abdominal pain وجع بطن	Gas غازات	Stomach cramps/bloating تشنجات معدة/انتفاخ
Swelling of face, tongue and lips	Trouble breathing	Diarrhoea	Vomiting	Heartburn حرقة معدة	Headaches صداع

### Why food intolerances can be hard to diagnose?

because the symptoms that people experience are similar to other conditions, such as irritable bowel syndrome and irritable bowel disease.

The best way to diagnose food intolerance is to monitor symptoms alongside the foods eaten.

Removing suspected foods from the diet and seeing if any changes are noticed is a good method.

أفضل طريقة لتشخيص عدم تحمل الطعام هي مراقبة الأعراض بجانب الأطعمة التي يتم تناولها.

تعد إزالة الأطعمة المشتبه بها من النظام الغذائي ومعرفة ما إذا كانت هناك أي تغييرات ملحوظة طريقة جيدة لكشف الـ food intolerance.

**Anaphylaxis :** a severe allergic reaction to certain foods & it can lead to death.

It needs immediate emergency medical care!!

Symptoms of anaphylaxis :	Difficulty breathing	Rash on the skin	Rapid heart rate	Nausea
<b>severe reaction, may go into an "anaphylactic shock" state.</b>				

sufferer should be treated with an adrenaline injection in the form of an auto-injector & an ambulance should be called immediately.



Most people with severe allergies carry an adrenaline auto-injector with them 



There is little left, and the semester will end.

I wish you success  

Mrs. Zainab Yhya