



University of Jordan  
Faculty of Medicine



Medical Committee  
The University of Jordan



# Community Medicine



Lecture Title:	Water related diseases .....				
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## Water diseases

We will talk about the major groups of water diseases which are connected to the biological contamination.

Yesterday, we talked about:

### 1. Water borne diseases.

### 2. Water washed diseases.

We motioned: diarrhea, skin and eye infection.

As an example for eye diseases is (**Trachoma**)

\*trachoma causes blindness.

\*Taha Hussien is an example.

His doctor gave him silver nitrate eye drops.

Silver nitrate is used for children that their mother has urinary tract infection because the doctors afraid that during delivery that some of the secretions get into the baby's eyes. So they give them silver nitrate as an antibiotic to prevent this.

So it seems that taha hussien's doctor increased the dose.

Now we will continue these diseases.

### 3. Water based diseases:

The causative agent –pathogen- of such diseases spends part of it's life cycle in an aquatic animal or a marine animal.

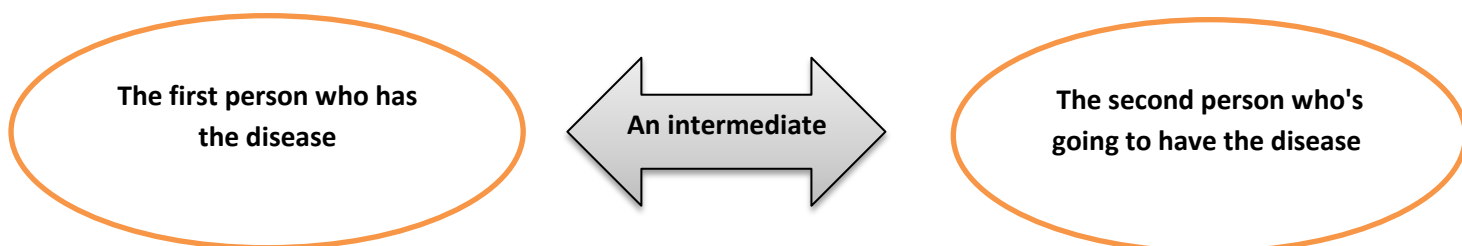
So for these creatures to cause the disease they need an intermediate host to complete their life cycle.

Examples:

#### 1. **Bilharzia** (Schistosomiasis):

For Bilharzia to be able to be transmitted from one person to another, it's pathogen needs something in between (an intermediate host).

\*Role of water: to accommodate the intermediate host.



\*In case of bilharzia the intermediate host is the (Bulinus) snails –aquatic

animal-.

\*these snails act as intermediate hosts, so if somebody has bilharzia, he will excrete the ova of those creatures outside his body by urine or feces, then they will reach the water & hatch, at this point there is no danger by the new hatched creatures.

After hatching, these creatures look for intermediate host (Bulinus), they get inside the bulinus, still no problem at this point.

When they come out of the bullins, they start to look for a new host, so if someone was there, they will penetrate his skin and cause him the disease. At this point there is a problem.

\*IF we don't have these snails in the first place, the cycle won't be completed- we won't have the disease.

\*Around 200 million people (from the third world countries mainly) have bilharzia.

\*It's a very common disease related to water as water based disease & can be detected in Egypt, parts of Yemen & Iraq & in Far East.

\*This disease can affect the spleen and the liver and cause **hepatosplenomegaly with ascites** and at the latest period of this disease there will be a problem in transportation of blood to the liver through the portal veins and there will be a shunned of that blood from the portal vein to the esophagus.

The esophagus can't tolerate the large amount of blood in its blood vessels so the person will start to bleed, and he might bleed to death.

Those who survive it may end up having urinary bladder cancer.

**Q:** do we have bilharzia in Jordan?

In 1990, 13 children in the southern part of the country ended up have bilharzias because of an Egyptian teacher lived in that area and used spring water.

So "YES", we had bilharzia locally at that time.

Nobody believed it at the beginning because there were reports by experts said that Jordan is free from bullins (snails).

\*Some theories were given to detect the reasons beyond having this disease and to know where these snails were coming from, such as:

1. The snails came from wheels of the big cars that were coming from the southern part of Iraq –where snails can be found-.
2. Carried birds that emigrate from one place to another.

\*Wherever there is irrigation/flooded agriculture, people are exposed to those creatures & have this disease.

That's why in Jordan we have a place to fight bilharzia, Malaria and Leishmania (skin leishmania/ ulcer in skin/ caused by sand fly... & ... another type of leishmania which attack GI tract). They examine the Egyptian for these diseases to have a certification that they're free of illnesses. If they suspect a case they take from him a blood sample and examine him and be sure that he doesn't have Bilharzia.

\*The good news is that since then we don't have any case of these diseases.

## 2. **Liver fluke** (non-common disease): as in China

Certain worms that can cause liver problems; they can get in your body to the liver & affect it.

\*It affects the liver when raw fish is eaten; a lot of Chinese and Japanese foods include eating this kind of fish that has fluke in it. This fluke gets in the body then goes to the liver and causes liver infection.

## 4. **Water related disease:**

actually this name isn't accurate because all diseases we're talking about here are water related diseases, so it should be **insect vector water related diseases**.

\*The role of water:

The water is needed for the insects not for the disease to accommodate the insects that transfer this disease.

\*We have mosquitos that need water for laying their eggs, and after hatching, there will be a larva that lives just under the surface of water (just below the top of the water), this is important for controlling the actions of mosquitos, after the larvae leave water they never come back to it unless they want to lay eggs.

\*Water isn't needed in large amounts for this process

Examples:

### 1. **Malaria:**

Malaria actually is a wrong name (there's nothing called Malaria).

Before the discovery of microbes, people noticed that if you live near by a swamp the bad smell of air will cause u a fever. So they called it

**Mal air = Malaria.**

Symptoms of Malaria (Arabs knew it long time ago):

1. It comes at night (not at every night ... it has a frequency).
2. it's very painful that the patients feel like they almost have a broken bone.

\*There are 4 types of Malaria that classified according to how frequent they come/ each country might accommodate 1 or 2 types.

\*Malaria is very common, and it's back as one of the major killer in the world.

\*Plasmodium is the causative agent for Malaria & needs the mosquitoes to complete its asexual life cycle & then to be ready to be transferred.

**Q:** How a mosquito can transfer Malaria from somebody infected to another?

1. This mosquito takes the blood which has plasmodium, from the first person/ so at first it TAKES blood.
2. The mosquito stings the second person and it injects the saliva which is full with plasmodium & also contains anticoagulant to prevent the blood from clotting inside.

\*Note: This mosquito always sucks blood not injects it, so it gives the saliva to prevent blood clotting before sucking the blood & in case there was plasmodium in the saliva... then the second person will be infected with Malaria.

**2. Dengue fever:** in Jeddah there is a big program to fight this disease, sometimes it was close to Jordan.

**3. Yellow fever:** it's in Africa.

**4. Japanese encephalitis:** the brain is affected.

**5. Rift valley fever.**

**6. West Nile fever:** in Africa, Yemen and Saudi Arabia.

Five years ago, we thought it was close to get in Jordan.

It reached Saudi Arabia from Sudan & Africa.

**7. River blindness (onchocerciasis)** mainly in Africa and warm places... it's one of the major causes of blindness in the world.

\*Black fly does the same thing that Malaria mosquito does.

They (black flies) lay their eggs inside the water and this parasite can cause river blindness.

When it stings somebody's cell, their saliva that contains this plasmodium will get in his body and makes it warmer, then it will move creepy under his skin and keep going until they reach the optic nerve and damage it.

\* 10 million people are affected and they're blind due to this disease.

\*why river?

Because rivers slowdown in some flat areas so it becomes available and nearby. So, people use it for irrigation and this is a good media for Black fly.

\*So, different kind of mosquitos can transfer different kinds of illnesses.

**\*other creatures don't live in water. They live nearby water/ need humidity.**

Example: **Tsetse**... It causes **African sleeping sickness**

we should say **African** because there's American sleeping sickness which is not related to Tsetse.

\*actually it's not sleeping, it's a sort of losing conscious and the person is always drowsy.

**5. Water-dispersed diseases.**

1) The pathogen, ex. Bacteria, of this disease can be transmitted within water droplets.

\*The pathogens can be dispersed in the atmosphere, then we breathe it, get in our bodies... and finally cause a problem.

They start encephalitis

This disease was discovered in former Yugoslavia, when children were swimming in warm pools they started to suffer from a severe encephalitis and they died.

Later, it's been appeared that these children had previously a basal skull fracture, and when they started swimming these microbes were inside the water and they breathed these droplets and it went from their nose to their brains' membrane through the fracture.

2) Legionella (it's more common)

\* this bacteria live inside air conditions.

\*as we know water always is coming out from conditions.

**Q:** how does ac work?

It takes the humid air and converts it to dry air by taking water out.

\*This water makes humidity inside the ac, and this humidity with some warm is good enough for Legionella to live there,,, and then they start to come out from ac in droplets within the dry air so you will be unlucky to breath this air and having **pneumonia** ( affect the respiratory system )

\*Nowadays this legionella is considered as a nosocomial infection which means hospital acquired, because air conditions are available in those hospitals and it might have legionella from somebody in the hospital and it may be transferred.

" **Don't forget to smile 😊** "