

Assignment no. 2

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Q. Define and explain the symptoms, causes, treatment, and prevention for the following diseases:

i. Malaria: It is a mosquito-borne infectious disease, which leads to seizures, jaundice, or even death. This is done via mosquito bites where an infected female mosquito's (*Anopheles*) saliva contains parasites. When that bite occurs, infected saliva is injected to human's blood stream. The parasites of *Plasmodium* group travel to liver, where they are mature and reproduce. Hence, they cause further life-threatening diseases.

ii. Symptoms: The commonly occurring symptoms of Malaria are fever, chills, nausea, vomiting, abdominal and muscle pains along with diarrhea. Malaria may form ~~as~~^{as} a cycle: it starts from with shivering, then a higher fever, and followed by sweating after which it returns

to normality. The symptoms usually are visible few weeks after the mosquito bite.

The symptoms of malaria are categorised into two: severe and general. The general symptoms are caused by paroxysm (the cycle explained above) and individually fever, cold, and etc.

The severe ones are joint pain, jaundice, and even neurological symptoms in form of abnormal posturing and seizures.

ii. Causes: The symptoms of Malaria (and the disease itself) are caused by the parasites belonging to Plasmodium genus. The following six species causes malaria:

(a). *P. falciparum* (b). *P. malarie*

(c). *P. ovale curtisi* (d). *P. ovale walkarie*

(e). *P. vivax* (f). *P. knowlesi*

Falciparum and *vivax* are responsible for the fatalities; whereas, the other four cause milder to serious (non-fatal) diseases. As mentioned before, the parasites enter the bloodstream and invade hepatocyte cells of liver, they are main part of its tissue. By breaking down hepatocytes, it releases merozo-

tes to invade red blood cells (RBCs). Thus, it creates a long cycle of it's life.

iii. Treatment: There are multiple antimalarial drugs including Artesimim-based combination therapies (ACTs). Malarone and Quinine are also used.

iv. Prevention: These are the best preventive measure: covering of skin, use of mosquito repellent, and more importantly, spraying insect repellents in environment/surroundings.

2. Typhoid: It is a bacterial infection spread through contaminated food and water. Inadequate sanitation leads to typhoid occurrence.

i. Symptoms: Typhoid symptoms become visible few days after infection. High fever, headaches, fatigue, and rashes appear initially. These can lead serious complications like pneumonia, bronchitis, and low platelet count.

ii. Cause: The bacterium called *Salmonella enterica* is responsible for infecting the body with Typhoid. The bacterium survives in sewage and contamination. If someone eats food and waters affected by it, there is higher chance of Typhoid infection.

iii. Treatment: The common method is the use of antibiotics. Ampicillin and amoxicillin are used; however, the treatment must be proper^{*} and timely. Hydration and digestible food are advised during sickness.

iv. Prevention: Hygiene and sanitation are primary methods to prevent Typhoid. Proper containment of sewage and cleaning of food ingredient greatly reduces the risk. Typhoid vaccination is done to help body to be immune to the bacteria infecting the disease.

3. Hepatitis: It is an infectious disease where liver inflammation occurs. This disease is further classified into A, B, C, D, and E. This is often serious and fatal for the infected person.

i. Symptoms: Initially, the symptoms are general like flu, poor appetite, nausea, vomiting, and headaches. However, upon progression of the infection, jaundiced eyes occur. Due to liver enlargement, abdominal pain is experienced. In case of enlarged spleen, a mild (unintentional) weight loss is observed.

ii. Causes: Hepatitis A and E are caused by poor sanitation and hygiene in the surroundings. This can spread via soil and water bodies polluted by fecal matter. However, Hepatitis A and E are short-term diseases.

Hepatitis B, C, and D are transmitted via
① infected blood and bodily ~~are~~ fluids. Sharing of needles or reuse of needles can also cause such variants of Hepatitis. Sexual transmission can also cause it.

iii. Treatment: Hepatitis A and E require intravenous hydration (IV) and adequate nutrition. For B, there is no specific treatment, however, chronic B-hepatitis is treated by antiviral medication. Similar methods are used for the Hepatitis C and D.

iv. Prevention: Proper sanitation and hygiene can prevent Hepatitis A and E.

For preventing Hepatitis B and C, elimination of unnecessary and unsafe injections is mandatory. No reuse of syringe shall be obligatory.

Safer sex practices and minimizing partners is also a prevention method.

B4. Dengue: It is a mosquito-borne viral disease where female *Aedes Aegypti* mosquito transmits Zika infection and yellow fever. Four serotypes (DEN-1, -2, -3, -4) causes dengue fever.

i. Symptoms: The symptoms usually lasts for upto 7 days. High fever followed by severe headache, pain behind eyes, vomiting, ~~and~~ ^{or} swollen glands should be considered as dengue's symptoms. In case of severe dengue, persistent vomiting, rapid breathing, and restlessness are observed.

ii. Causes: The common transmission is done via the female *Aedes aegypti* mosquitoes. They prefer to do so at dawn or dusk. Such mosquito can be identified by the white spots on it. Infected mosquitoes often breed in man-made water containers. Those containers must be covered or kept indoors away from windows. High population density, poor sanitation, and standing water in urban areas often contribute in such mosquitoes breeding.

iii. Treatment: Although there is no specific treatment, tylenol and paracetamol can be given to subside mild fever. Supportive

Care like bed rest can also relieve the fever. Intravenous fluids and transfusion with plasma are for severe dengue fever.

- iv. Prevention: As the infected mosquitos breed in water, make sure there are no puddles in our surroundings. If so, clear them. Water containers should be kept covered or indoors. During dawn and dusk, use of repellent and full sleeves clothing are advised.

5. Polio: It is an infectious disease caused by poliovirus. This disease is commonly identified by its effect in the form of paralysis. This disease is near to eradication. It has three strains of polio which can not survive outside a human body.

- i. Symptoms: There are some minor illness, e.g. sore throat and fever, the prominent symptoms are the paralytic diseases. There is

is a range of paralysis: muscles being poorly controlled to complete paralysis.

ii. Causes: Poliovirus spreads via human feces. The surroundings infected by feces can put humans at its risk. Improper sewage disposal is a major contributor. Poliovirus usually enters through mouth; making its way to digestive system.

iii. Prevention: Polio is such a disease that can only be prevented to be safe. Immunization with its vaccine is the best method, especially in young age. Four doses of inactivated polio vaccine (IPV) should be given to children at the ages of 2 months, 4 months, 1 year, and 4 years (booster).