

General Science and Ability

Definition, Symptoms, Causal agent,
General causes, treatment and
Preventive measures of :

Malaria, typhoid, Dengue
Hepatitis and Polio.

Malaria:-

Malaria is an acute febrile illness. In a non-immune individual, symptoms appear 7 days or more (usually between 10-15 days) after the infective mosquito bite. Malaria is a serious illness that can get worse very quickly and can be fatal.

Symptoms:-

The first symptoms - fever, headache, chills and vomiting - may be mild and difficult to recognize as malaria. If not treated within 24 hours, P. falciparum malaria, which is caused by P. falciparum parasite can progress to severe illness, often leading to death.

Causal agent:-

Malaria is caused by Plasmodium parasites. There are

5 Parasite species that cause malaria in humans, and two of these species *P. falciparum* and *P. vivax* - pose the greatest threat.

* *P. falciparum* is the most prevalent malaria parasite on the Africa continent. It is responsible for most malaria-related deaths globally.

* *P. vivax* is the dominant malaria parasite in most countries outside of sub-Saharan Africa.

General causes:-

Malaria is caused by Plasmodium parasites. The parasite spread to people through the bites of infected female Anopheles mosquitoes called "Malaria vectors".

Treatment :-

Early diagnosis and treatment of malaria reduce disease and prevent deaths.

⇒ The best available treatment, particularly for *P. falciparum* malaria is artemisinin-based combination therapy (ACT).

⇒ Anti-malarial medications is used both to treat and prevent malaria.

⇒ There are currently no licensed vaccines against malaria or any other human parasite.

Preventive Measures:-

⇒ Vector control is the main way to prevent and reduce malaria transmission.

⇒ Two forms of vector control.

1- Insecticide-treated mosquito nets.

2- Indoor residual spraying

These two ways are effective in a wide range of circumstances.

⇒ Anti-malarial medicines can also be used to prevent malaria. For travellers, malaria can be prevented through chemoprophylaxis, which suppresses the blood stage of malaria infections, thereby preventing malaria disease.

⇒ WHO recommends protection for all people at risk of malaria with effective malaria vector control.

"Dengue"

⇒ Dengue is a mosquito-borne viral disease that has rapidly spread in all regions in recent years.

⇒ Dengue fever is a severe, flu-like illness that affects infants, young children and adults, but seldom

cause death.

Symptoms:-

High fever ($40^{\circ}\text{C}/104^{\circ}\text{F}$) is accompanied by 2 of the following symptoms:-

- ⇒ Severe headache, Pain behind the eyes, Muscle and joint pains, Nausea, Vomiting Swollen glands or rash.
- ⇒ Symptoms usually last for 2-7 days, after an incubation period of 4-10 days after the bite from an infected mosquito.
- ⇒ Severe dengue is a potentially deadly complication due to plasma leaking, fluid accumulation, respiratory distress, severe bleeding or organ impairment.
- ⇒ Warning signs occur 3-7 days after the first symptoms in conjunction with a decrease in temperature (below $38^{\circ}\text{C}/100^{\circ}\text{F}$) and include: severe abdominal pain, persistent vomiting, rapid breathing, bleeding gums, fatigue, restlessness and blood in vomit. The next 24-48 hours of the critical stage can be lethal; proper medical care is needed to avoid complications and risk of death.

Causal Agent:-

Dengue virus is transmitted by female mosquitoes mainly of species *Aedes aegypti* and to least extent, *Ae. albopictus*.

General Causes:-

There are 4 distinct, but closely related, serotypes of the virus that cause dengue (DEN-1, DEN-2, DEN-3 and DEN-4). Recovery from infection by one provides lifelong immunity against that particular serotype. However, cross-immunity to the other serotypes after the recovery is only particular and temporary. Subsequent infections by other serotypes increase the risk of developing severe dengue.

Treatment:-

There is no specific treatment and medicine to treat dengue infection. The focus is on treating pain symptoms. Most cases of dengue fever can be treated at home with pain medicine. Acetaminophen (Paracetamol) is often used to control pain.

Preventing mosquito bites is the best way to avoid getting dengue.

Prevention and Control:- At present the main method to control or prevent the transmission

of dengue virus^{is} to combat vector mosquitoes through:

- ⇒ Preventing mosquitoes from accessing egg-laying habitats by environmental management and modifications.
- ⇒ Disposing of solid waste properly and removing artificial man-made habitats.
- ⇒ Covering, emptying and cleaning of domestic water storage containers on a weekly basis.
- ⇒ Applying appropriate insecticides to water storage outdoor containers.
- ⇒ Using of personal household protection such as window screens, long sleeved clothes, insecticide treated materials, coils and vaporizers.
- ⇒ Improving community participation and mobilization for sustained vector control.
- ⇒ Applying insecticides as space spraying during outbreaks as one of emergency vector control measure.
- ⇒ Active monitoring and surveillance of vectors should be carried out to determine effectiveness of control interventions.

Polio

Poliomyelitis (Polio) is a highly infectious viral disease, which mainly affects young children. As long as a single child

remains infected, children in all countries are at risk of contracting polio.

Symptoms :-

Polio is a highly infectious disease caused by a virus.

- ⇒ It invades the nervous system and can cause total paralysis in a matter of hours.
- ⇒ Initial symptoms are fever, fatigue, headache, vomiting and stiffness in the neck and pain in limbs.

Causal agent :-

Causal agent of polio is poliovirus. There are 3 strains of wild poliovirus, none of which can survive for long periods outside of the human body. If the virus can not find an unvaccinated person to infect, it will die out.

General Cause :-

The polio virus spreads in human faeces. People become infected with the virus through contaminated food and water, especially in areas where sanitation and hygiene are poor. Improper sewage disposal for example can contaminate a water supply.

Treatment :- There is no cure for

Polio. It can only be prevented.
Immunization with polio vaccine is
the best way to prevent polio.

Preventions:-

Polio can be prevented by polio vaccine. There are two types of vaccines that protect against polio. Inactivated polio vaccine (IPV) and oral polio vaccine (OPV). IPV is given as an injection in the leg or arm, depending on age. OPV is taken by mouth.

Most people should get vaccine when they are children. Children should be vaccinated with four doses of inactivated polio vaccine (IPV) at following ages:

- * A dose at 2 months.
- * A dose at 4 months.
- * A dose at 6-18 months.
- * A booster dose at 4-6 years.

Typhoid

Typhoid fever is a life-threatening infection caused by the bacterium *Salmonella typhi*. It is usually spread through contaminated food or water. Once *Salmonella typhi* bacteria are ingested, they multiply and spread

into blood stream.

Symptoms:-

Early symptoms of typhoid include fever, general ill-feeling and abdominal pain.

⇒ High fever (103°F or 39.5°C) or higher and severe diarrhea occur as the disease gets worse.

⇒ Some people develop a rash called "rose spots", which are small red spots on the abdomen and chest.

Causal agent:-

Causal agent of typhoid is *Salmonella typhi* bacterium.

General causes:-

Typhoid fever infects small intestines (gut) and causes high fever, stomach pain and other symptoms.

⇒ It is usually spread through contaminated food or water.

Treatment:-

The only effective treatment for typhoid is antibiotics.

⇒ Fluoroquinolones ⇒ these antibiotics, including ciprofloxacin (Cipro), may be a first choice.

⇒ Cephalosporins and Macrolides ^{antibiotics} and are used for treatment of typhoid.

Preventive measures:-

- Choosing foods and drinks carefully and washing hands are the best ways to avoid getting typhoid. Getting vaccinated, providing clean drinking water and good sanitation are also the preventive measures of typhoid fever.

Hepatitis

- Hepatitis refers to an inflammatory condition of the liver.
- Viral infections of the liver that are classified as hepatitis include:
 - ⇒ Hepatitis A, B, C, D, and E.
- Hepatitis A is a milder version of the disease and Hepatitis C and D are more severe.

Symptoms:-

Initial symptoms of hepatitis caused by infection are similar to flu and include:

- Muscle and joint pain.
- A high temperature (fever of 38°C or 100.4°F or above)
- Feeling sick,
- Being sick,
- Headache and occasionally, yellowing

of the eyes and skin. (jaundice)

Symptoms of chronic hepatitis can include:

- ⇒ Feeling unusually tired all the time.
- ⇒ Depression
- ⇒ Jaundice
- ⇒ A general sense of feeling unwell.

In many cases hepatitis cause no noticeable symptoms, so when hepatitis is caused by a virus, many people are unaware they are infected.

General Causes:-

It is commonly caused by a viral infection, but there are other possible causes of hepatitis. These include autoimmune hepatitis and hepatitis that occurs as a secondary result of medications, drugs, toxins and alcohol.

Autoimmune hepatitis is a disease that occurs when body makes antibodies against liver tissue.

Treatment:-

Treatment options are determined by which type of hepatitis a person has and whether the infection is acute or chronic:

Hepatitis A :- Hepatitis A is not

Usually treated. Bed rest may be recommended if symptoms cause a great deal of discomfort.

⇒ If a person experiences vomiting or diarrhea, he^{she} will be put on a special diet created by a doctor to prevent malnutrition or dehydration.

Hepatitis B :-

Acute hepatitis B does not require specific treatment. Chronic hepatitis B is treated with antiviral medications.

⇒ Treatment for chronic hepatitis B also requires regular medical evaluations and monitoring to determine if the virus is progressing.

Hepatitis C :-

Antiviral medications are used to treat both acute and chronic forms of hepatitis C. People who develop chronic hepatitis C are typically treated with a combination of antiviral drug therapies. They may also need further testing to determine the best form of treatment. People who develop cirrhosis (scarring of liver) or liver disease as a result of chronic hepatitis C may be candidates for a liver transplant.

Preventing Hepatitis :- Hepatitis B and C

Infections are transmitted through contaminated blood as well as through contaminated needles and syringes in health care setting and among people who inject drugs. The virus can also be transmitted through unsafe sex and from an infected mother to her newborn child.

- ⇒ Implementing blood safety strategies, including quality-assured screening of all donated blood and blood components used for transfusion, can help prevent transmission of hepatitis B and C.
 - ⇒ Safe injection practices, eliminating unnecessary and unsafe injections can be effective strategies to protect against transmission. Safer sex practices, including minimizing the number of partners and using barrier protective measures, also protect against transmission.
-
- 