

GSA Assignment.

Answer the question given
for Malaria, typhoid, dengue
and Polio.

Q: Write the definition,
causal agents, symptoms,
general causes, and
treatment and preventive
measures for _____.

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General Science & Ability Assignment 2.

Topic: Diseases.

1. Malaria

Definition:

Malaria is a potentially life-threatening disease caused by parasites that are transmitted to people through the bites of infected Anopheles mosquitoes. The disease is primarily found in tropical countries. It is not contagious.

Causal agents:

There are five plasmodium parasites species that cause malaria in humans:

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1. Plasmodium ovale
2. Plasmodium malariae
3. Plasmodium knowlesi
4. Plasmodium falciparum
5. Plasmodium vivax

2 of these, P. falciparum and P. vivax, pose the greatest threat.

Symptoms:

Common symptoms of malaria include:

- High fever
- Chills and sweats
- Headache
- Nausea and vomiting
- Muscle and joint pain
- Fatigue
- Anemia
- Jaundice

Incubation period: 7-30 day

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General causes:

Malaria is transmitted by blood, so it can also be transmitted through:

- Blood transfusions or organ transplant from an infected donor.
- Sharing needles.
- From an infected mother to her baby during birth (congenital malaria).

Treatment:

Malaria can be treated using antimalarial medications. Common drugs include chloroquine, mefloquine and quinine.

Preventive measures:

The following

measures can be taken to prevent malaria:

- Using insecticide-treated bed nets (ITNs) and indoor residual spraying (IRS) with insecticides.
- Taking anti-malarial drugs before, during and after travel to malaria endemic areas.
- Wearing protective clothing like pants, long sleeves, and socks to reduce mosquito bites.
- Using insect repellents on exposed skin and clothing.
- Eliminating stagnant water

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where mosquitoes breed.

- The vaccine Mosquirix (RTS,S) also help protect against malaria.

2. Typhoid

Definition:

Typhoid fever is a life-threatening bacterial infection usually spread through contaminated food or water. It primarily affects the intestinal tract and occasionally the bloodstream. This disease is contagious.

Causal agents:

Typhoid fever is caused by a bacteria strain called *Salmonella enterica*.

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serotype typhi. Other strains of salmonella bacteria cause a similar disease called paratyphoid fever. These are collectively known as "enteric fever."

Symptoms

The incubation period of typhoid fever is five to fourteen days. Symptoms include:

- Progressive fever
- Headache
- Nausea and vomiting
- Fatigue
- Abdominal pain
- Rash (rose spots)
- Loss of appetite
- Diarrhea or constipation
- Sepsis, in severe cases.

General Causes

- Ingestion of food or water contaminated with the feces of an infected person.
- Using public toilets.
- Poor sanitation and hygiene can also cause and promote the spread of the disease. (for ex. through cross-contamination).

Treatment

Typhoid fever can be cured using antibiotics such as azithromycin, ciprofloxacin. Steroids can also be used in severe case.

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Preventive measures

The following measures can be taken to prevent typhoid

- Taking the TAB vaccine (Typhoid- paratyphoid A and B).
- Drinking boiled or treated water. Avoid raw milk.
- Avoid eating street food and under-cooked food. Eat fresh, hot meals.
- Regularly wash hands after contact with animals and trips to the toilet.
- Thoroughly wash hands with soap before meals.

3. Dengue

Definition:

Dengue is a dangerous blood-borne viral infection that spreads through the bites of infected Aedes species mosquitoes, especially *ae. aegypti*. Dengue, ~~is~~ also known as 'break-bone fever,' is more common in tropical and sub-tropical regions.

Causal agents

Dengue is caused by the dengue virus of which there are four strains: DENV-1, DENV-2, DENV-3, and DENV-4.

Symptoms

Symptoms appear

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within 4-10 days after infection. These may include:

- High fever
- Severe headache
- Pain behind the eyes
- Muscle and joint pain
- Nausea and vomit
- Blood in vomit or stool
- Rash
- Fatigue
- Severe abdominal pain
- Bleeding gums or nose.

The last five symptoms are indicative of a more severe form of disease, i.e. dengue haemorrhagic fever (DHF) or dengue shock syndrome (DSS).

General Causes

- Standing water and poor sanitation: provide breeding grounds for mosquitoes.
- Can be transmitted from a pregnant woman to her child at the time of birth.
- Blood transfusions or organ donation from an infected person.

Treatment

There is no specific treatment for dengue -

Management focuses on relieving symptoms, such as hydration and pain relievers.

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Preventive measures

- Using insecticide treated nets (ITNs)
- Eliminate standing water where mosquitoes breed.
- Using mosquito repellents on exposed skin and clothing.
- Wearing long-sleeves, pants, and thick socks.
- Using insecticides, coils and vaporizers indoors.
- Taking vaccines like Dengvaxia and Qdenga can prevent dengue of certain strains.

4. Hepatitis

Definition

Hepatitis is an inflammation of the liver, often caused by viral infections but can also result from other factors such as toxic substances, autoimmune diseases, and other infections.

Causal agents

Hepatitis is caused by the hepatitis virus. There are five main strains of the hepatitis virus:

1. Hepatitis A: Hepatitis A virus
2. Hepatitis B: Hepatitis B virus (HBV)
3. Hepatitis C: Hepatitis C virus (HCV)
4. Hepatitis D: Hepatitis D virus (HDV)

which requires HBV

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5. Hepatitis E: Hepatitis E virus (HEV)

Symptoms

General symptoms include:
Fatigue, flu-like symptoms,
dark urine, pale stool,
abdominal pain, and jaundice

Hep A: mild fever and loss of
appetite

Hep B: Can be acute or
chronic; joint pain, liver
enlargement.

Hep C: Often asymptomatic
initially, can lead to
chronic liver disease

Hep D: Similar to HBV but more
severe

Hep E: Usually acute, can be
severe in pregnant
women.

General causes

- Excessive alcohol consumption and non-viral infections that affect the liver.
- HAV is transmitted through ingestion of contaminated food and water.
- HBV can be transmitted through contact with blood or other bodily fluids of an infectious person.
- HCV can be transmitted through sharing needles, and blood transfusions from an infected donor.

- HEV is most commonly transmitted through fecally contaminated food, water, and environment.

Treatment

There is no specific treatment for Hep. A and E, though supportive care is given to manage symptoms. Hep. B and D can be treated using antiviral medications; chronic hep. B is not curable. Hep. C can be cured using direct acting antiviral (DAA) medication.

Preventive measures

- Vaccines are available to help prevent hepatitis A, B, and D.

- Ensuring sanitation and personal hygiene such as washing hands.
- Practicing safe sex.
- Avoid sharing needles, razors, toothbrushes, and touching used bandages.
- Drinking boiled water and thoroughly cooked foods.

5. Polio

Definition:

Poliomyelitis, shortened to polio, is a highly contagious viral infection. It primarily affects young children

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and can cause nerve injury leading to paralysis, difficulty breathing, and sometimes death.

Causal agent

Polio is caused by poliovirus. There are three variations of poliovirus, called wild poliovirus type 1, 2 and 3 (WPV1, WPV2 and WPV3).

Symptoms

Initial symptoms include: fever, fatigue, headache, vomiting, stiffness in the neck, and pain in the limbs.

Severe symptoms include intense pain

extreme sensitivity to touch, and muscle weakness leading to paralysis (most often in the legs) and breathing problems/failure.

General causes

- Polio can be spread/caught through ingestion of fecally contaminated food or water.
- Can be transmitted through close person-to-person contact, e.g. droplets from sneezing or coughing.
- Poor sanitation, hygiene

Treatment

There is no cure for polio. ~~though~~ Treatment focuses on supportive care such as pain relievers, physical ~~theraph~~ therapy to stimulate muscles, and mechanical ventilation in cases of respiratory muscle paralysis.

Preventive measures

- Vaccination is the best way to prevent polio. Two types of vaccines are available: Inactivated Poliovirus Vaccine (IPV), given by injection, and Oral Poliovirus Vaccine (OPV), taken by mouth.

- Regularly washing hands with soap.
- Drinking bottled water or boiled water; avoid tap water.
- Avoid contact with an infected person.
- Discourage young kids from putting their fingers in their mouths if they are not vaccinated yet.

Wild polio types 2 and 3 have been eradicated since 1999 and 2019, respectively. Type 1 exists only in Pakistan and Afghanistan, the most likely type to cause paralysis.