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VIRUSES AS HIJACKERS

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ABSTRACT: Viruses are like hijackers. They invade living, normal cells, and replicate and create other viruses like themselves using those cells. This can destroy, harm, or change the cells and cause sickness. Various viruses in the human body invade other cells, such as the liver, respiratory system, or blood. Viruses are too small germs. Inside a protein matrix, they are made of genetic material inside of a protein coating. Different viruses can infect almost every type of body tissue from the brain to the skin depending on the virus and the state of health of the individuals. Viral infections cannot be treated with conventional antibiotics (antibacterial-antibiotics); in fact, the use of antibacterial-antibiotics can cause serious side effects that worsen the viral infection in some cases. With a little help in the form of proper diet, hydration, relaxation, and rest, the overwhelming majority of human viral infections can be efficiently tackled by the body's own immune system. As for the rest, treatment depends on the type and position of the virus infection and may include anti-viral antibiotics or other medications. In this article, we can focus on types, transmission, symptoms, diagnosis, treatment, and prevention of some common viral diseases.

INTRODUCTION: A Virus causes viral infections. Viruses are infectious agents that are very small. These consist of a fragment of a piece of genetic material, such as DNA or RNA, which is covered in a protein shell. Viruses invade the body cells and use those cells components to replicate them further. Infected cells are often damaged or destroyed by this process. Not all viral diseases are airborne, indicating that they are not transmitted from individual to individual. But there are a number of them. Including measles, common cold, aids, and herpes are common examples of contagious viral diseases. It is known that there are millions of virus varieties, but only 5,000 forms have been reported.

Various kinds of viral diseases transmitted through other ways, for example, the bite of an infected insect. Some common viral diseases are respiratory, gastrointestinal, exanthematous, hepatic, cutaneous, hemorrhagic, and neurologic viral diseases.

Types of Viral Diseases: The various types of virus diseases are as follows:

- Gastrointestinal viral diseases
- Respiratory viral diseases
- Exanthematous viral diseases
- Hepatic viral diseases
- Hemorrhagic viral diseases and
- Neurological viral diseases

Gastrointestinal Viral Diseases: Viral gastroenteritis is an intestinal illness with watery diarrhea, pain in the abdomen, nauseated or vomiting, and often fatigue. Viruses that cause it are infectious and usually cause gastroenteritis, also called stomach flu. Examples of GI-virus are as follows:

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- Norovirus
- Rotavirus
- Some adenovirus and
- Astrovirus infection

Rotavirus Infection: Rotavirus is highly contagious, and it is a double-stranded ribonucleic acid virus gene in the Reoviridae family. Rotavirus resulting in over 215,000 deaths annually, is the most frequent cause of diarrhea in babies and children all over the world. Most of the kids in the U.S. have been affected by the virus at least once by age five, before the development of a vaccine.

Symptoms: Symptoms of retrovirus tend to be most distinguished in children. A rotavirus contagion usually begins within two days¹ of exposure to the virus. The early symptoms were cough, fever, nausea, and vomiting accompanied by extreme watery diarrhea lasting three to eight days. Infection can also induce abdominal cramps. Kids can experience black or tarry stools along with blood or pus, extreme tiredness, pyrexia, irritability, dehydration, and colic.

Dehydration of children is the biggest concern. That age group is more susceptible to vomiting and diarrhea of electrolyte depletion. Children need to screen children closely for dehydration signs, such as xerostomia, cool skin, absence of tears when crying, decreased urination rate, and sunken eyes.

Transmission: Viruses are spread through the fecal-oral route *via* contact with contaminated hands, surfaces, and things² and likely through the respiratory passage³. This can be the commonest form without washing hands after using the bathroom or changing nappies.

Children and infants below three years of age are more prone to rotavirus infection for infants and children under age three. Being in child daycare also raises their risk. Additional safeguards during winter and spring months, because a lot of infections occur this period.

Diagnosis: It is commonly diagnosed based upon signs and physical examination. Diagnosis might be done by early identification of virus antigen in the faecal sample. Strains can be further characterized by enzyme immunoassay, but such analysis is not usually performed.

Treatment: There is no medicines or therapies that will allow the rotavirus to leave. The aim is to keep hydrated and manage diet such as intake a lot of fluids, consume broth-based soups, alternative electrolyte fluids (particularly vital for kids), eat a diet of bland foods, like white toasted bread and saltines crackers and avoiding sweet or fat contain foods as they can cause diarrhea severe. Hospital management is necessary for infections that have caused severe loss of body water. This is often particularly the case in children. Administration of intravenous medications aids in preventing life-threatening problems. Probiotics have been shown to reduce the duration of rotavirus diarrhea⁴.

Rotavirus Vaccines: Vaccines prevent rotavirus and its complications. The vaccine comes in two forms:

- **Rota Teq:** This vaccine is given by oral in 3 doses, often at ages two months, four months, and six months and the vaccine is not approved for use in older children or adults.
- **Rotarix:** This vaccine is a liquid given in 2 doses to infants at ages two months and four months.

Both of these vaccines are oral, not with an injection.

Prevention: Severe dehydration may be a serious complication of rotavirus. It is the most common reason for rotavirus-related deaths worldwide. Children are the most susceptible. Contact the pediatrician if the child exhibits any symptoms of rotavirus to assist in preventing complications. Vaccinations are the best way to prevent rotavirus, particularly in young children, and help to stop spreading the infection by washing hands frequently and significantly before eating.

Respiratory Viral Diseases: Respiratory viral diseases are contagious and commonly affect the breathing passages and cause respiratory illnesses. Examples of respiratory viral diseases are as follows:

- Flu
- Common cold
- Respiratory syncytial virus infection
- Adenovirus infection

- Parainfluenza virus infection
- Severe acute respiratory syndrome

Parainfluenza Virus Infection: Human parainfluenza viruses (HPIVs) are single-stranded, enveloped RNA viruses of the Paramyoviridae family. Parainfluenza viruses⁵ include several closely related viruses that cause many respiratory illnesses. Parainfluenza refers to a bunch of viruses referred to as human parainfluenza viruses (HPIVs). There are four viruses in this group.

Each group causes totally different symptoms and illnesses. All kinds of HPIV cause an infection in either the upper or lower respiratory area of a person's body. HPIV can cause repeated illness, but reinfection can cause mild infections. Thus, in immunocompetent adults, most infections are asymptomatic or mild.

Transmission: Human parainfluenza viruses (HPIVs) usually spread from an infected person to others through The air by coughing and sneezing, close personal contact, such as touching or shaking hands, and touching objects or surfaces that have HPIVs on them then touching your mouth, nose, or eyes.

People usually get HPIV infections in the spring, summer, and fall. There are four types of HPIVs and two subtypes that circulate at different times of the year.

- HPIV-1 infections often cause croup in children. There are usually more cases in the fall of odd-numbered years.
- HPIV-2 infections can also cause croup. Human parainfluenza virus-2 infections occur most commonly in the fall every year. It is less frequently detected than HPIV-1 and HPIV-3.
- HPIV-3 infections usually occur in the spring and early summer months each year. However, HPIV-3 infections can occur throughout the year, particularly when HPIV-1 and HPIV-2 are not in season.
- HPIV-4 (subtypes 4a and 4b) seasonal patterns are not as well characterized.

Symptoms: Common symptoms of the four forms of HPIV (HPIV-1 to HPIV-4) are very similar to

those of the common cold. They include Fever, cough, runny and stuffy nose, chest pain, sore throat, shortness of breath, wheezing, and dyspnea. Most often, the symptoms of HPIVs aren't severe enough to cause concern in healthy adults. But they can be life-threatening in an infant, older adult, or anyone with a compromised or weakened immune system.

Diagnosis: (HPIVs) can be confirmed by Direct detection of viral genome by polymerase chain reaction (PCR) assay, direct identification of viral antigens in airway discharges (collected within 1 week of symptom onset) using immunofluorescence or enzyme immunoassay, isolation and detection of the virus in cell culture, or indication of a marked increase in HPIV-specific IgG antibodies between appropriately collected coupled blood serum samples or specified IgM antibodies in an individual serum sample.

Treatment: Currently, there is no licensed vaccine for the prevention of parainfluenza infection. Antibody to the two surface glycoproteins, F and HN are neutralizing, and serum and nasal antibody to either protein protects against HPIV infection and ameliorates disease⁶⁻⁸. Thus, vaccines to boost serum and or mucosal antibody may offer benefits, yet several challenges to successful vaccine development remain. Symptoms can be treated with over-the-counter medications like saline nose drops and analgesics like aspirin or acetaminophen (Tylenol).

However, it's vital to note that children and teenagers have a fever and a virus infection must not use aspirin, as a result of aspirin is connected to Reye's syndrome, a severe disorder, when it is used to treat viral infections. Cool mist humidifiers will facilitate children with croup breathe better.

Prevention: Wash hands regularly and disinfect surfaces that can harbor viruses. Avoiding close contact with infected individuals may also lower the risk of becoming infected. There's presently no vaccine that prevents HPIV infection.

Exanthematous Viral Disease: Exanthematous viruses cause skin rashes. Several of them cause further symptoms additionally. Exanthem is a skin eruption rash that may be associate with pyrexia or other systemic manifestations.

Causes include infectious pathogens, medication reactions, and, occasionally, a combination of both. In children, exanthems are more frequently associated with infection, and of these, viral infections are the most common. Many of the viruses during this class, such as the measles virus, are extremely contagious. Examples of exanthematous viral diseases are as follows:

- Measles
- Rubella
- Chickenpox / shingles
- Roseola
- Smallpox
- Fifth disease
- Chikungunya virus infection

Fifth Disease: Fifth disease⁹ is a viral disease that often results in a red rash on the arms, legs, and cheeks. For this reason, it's also called as "slapped cheek disease." Erythema infectiosum which is also popularly called as the Fifth disease is a contagious disease caused by parvovirus B19^{10, 11} and fairly common and mild in most children ages 5 to 15, however it is additional severe for pregnant women or anyone with a compromised immune system.

Transmission: B19V is a single-stranded Deoxyribonucleic acid virus that aims the red blood corpuscles in the bone- marrow. B19V spreads between humans through the salivary secretions, air, or as a result of close communication. The most common form of transmission is through sneezing or coughing, and sometimes hand-to-hand contact. It can spread rapidly in places where many people congregate, such as schools, kindergartens, and nurseries. Uncommonly, transmission can arise through blood and blood-related products. Parvovirus B19 only infects humans. Fifth disease cannot transmit from humans to animal and animal to human. Once the symptoms appears, the individual is no longer contagious. They can be spending more time with other individuals, and they do not transmit the disease, and although parvovirus more commonly infected elementary school-aged children throughout the wintertime and springtime months, people of any age may be affected.

Symptoms: The initial symptoms are general. They may resemble symptoms of the flu.

Symptoms typically include headache, fatigue, low-grade fever, sore throat, nausea, runny, and stuffy nose. Symptoms will appear 4 to 14 days later exposure to the virus. After a few days of having these symptoms, most young people develop a red rash that first appears on the cheeks and spreads to the arms, trunk, and legs within a couple of days. The rash may last for weeks. The red rash is more likely to appear in children than in adults. The rash is mildly painful and usually does not produce itching. Joint pain is the main symptom for adults, and it will last for many weeks and is sometimes most distinguished within the wrists, ankles, and knees¹².

Diagnosis: Health professionals can often use fifth diagnosis disease by seeing "slapped cheek" rash on a patient face and also detect a blood test to find out susceptible or immune to parvovirus B19 infection or if infected recently. This is not a regular examination but can be carried out in special conditions. The blood sample test might be specifically helpful for a pregnant lady who has been exposed to parvovirus B19 and is suspected of having the fifth disease.

Treatment: The fifth disease can't be treated with antibiotics, because it is a virus. No medicine is needed for most cases; this is a mild illness that clears up on its own. For most healthy individuals, no treatment is necessary. Acetaminophen (Tylenol) as required to alleviate these symptoms like headache or fever. Aspirin drug do not give to child, as it became linked to a rare but critical illness called Reye syndrome.

Drink plenty of fluids and taking excess rest. No specific therapy is recommended. In rare instances, intravenous immunoglobulin (IVIG) is administered. It's reserved for serious cases.

Prevention: There is no vaccine to prevent the fifth disease. The fifth disease typically spreads from one person to different through airborne secretions, attempts to minimize contact with people who are sneezing, coughing, or blowing their noses. Washing hands repeatedly and regularly will help to reduce the risk of contracting the fifth disease. Once an individual with an intact immune system has contracted this disease, they're considered immune for life.

Hepatic Viral Diseases: The viruses cause inflammation of the liver cells is known as viral hepatitis. The most common Source types of viral hepatitis are hepatitis A, B, C, D, and E. It is worth noting that diseases caused by other viruses, such as cytomegalovirus and the yellow fever virus, may also affect the liver. Examples of hepatic viral diseases are as follows:

- Hepatitis A
- Hepatitis B
- Hepatitis C
- Hepatitis D
- Hepatitis E

Hepatitis A: Hepatitis A¹³ is a highly contagious liver infection caused by the hepatitis A virus. Hepatitis refers to inflammation of the liver caused by exposure to toxic substances, intake of alcohol, overdosage of drugs, immune diseases, or infection. Viruses cause the majority of cases of hepatitis. Hepatitis A results from infection by the hepatitis A virus (HAV).

This is often an acute (short-term) type of hepatitis, which usually requires no treatment. According to the World Health Organization (WHO) Trusted Source, 1.4 million cases of hepatitis A occur around the world each year¹⁴. This extremely contagious form of hepatitis can be spread through contaminated food or water.

Transmission: The virus is passed between people through the "fecal-oral route," which can occur: When an infected person touches objects or food after going to the bathroom and failing to wash his or her hands properly and when someone doesn't wash properly after handling diapers or cleaning up the stool of an infected person.

During sex with an infected person, direct or indirect anal-oral contact¹⁵ or anal sex in which hygienic steps aren't taken afterward, ingesting food substances or water polluted with fecal matter containing hepatitis A virus. Common sources of HAV transmission include fruits, vegetables, shellfish, ice, and water. This mode of transmission is far less common in the United States and other developed countries, which have better sanitation measures in place, such as treating the water supply with chlorine or chloramines. HAV cannot be transmitted through casual contact with an infected

person, such as through hugging or even being coughed or sneezed on and babies cannot get HAV from breast milk.

Symptoms: No symptoms will be shown in children under the age of six when they contract the virus. Older children, teens, and adults usually develop mild symptoms, which may include: fever, fatigue and body aches, abdominal pain or discomfort, especially on the upper right side beneath your lower ribs (liver), clay-colored stool, dark urine, loss of appetite. unexplained weight loss, joint pain, intense itching, and yellowing of the skin and the whites of your eyes (jaundice).

Diagnosis: Hepatitis A can be analyzed with blood tests. The blood test looks for two different kinds of antibodies to the infection. First, immunoglobulin M (IgM) antibodies produced by the immune system produces 5 to 10 days before symptoms appear and usually disappear within six months. Second, IgG antibodies that replace IgM antibodies and protect against future HAV infections.

- Blood test is negative for both IgM and IgG antibodies, you have likely never been infected with the virus, and you should consider getting the hepatitis A vaccine.
- Blood test indicates positive for IgM antibodies and negative for IgG antibodies, hepatitis A infection most probable to have occurred within the last six months and is either in the process of being removed by the immune mechanism or in the process becoming worse.
- Blood test shows negative for IgM antibodies and positive for IgG antibodies, either have infected with HAV at some time in the past or have been immunized against hepatitis A; in either case, you are now immune to the virus.

Treatment: There is no formal treatment for hepatitis A; as a result of it's a short-term viral infection that goes away on its own, treatment is usually targeted on reducing the symptoms. After a couple of weeks of rest, the signs and symptoms of hepatitis A usually initiate to improve. To ease your symptoms, should avoid alcohol, maintain a healthy diet, and drink plenty of water.

Prevention: The way to avoid getting hepatitis A is by getting the hepatitis A vaccine. This vaccine is given in a series of two injections, six to twelve months apart. To limit your chance of contracting hepatitis A, you should also: Thoroughly wash hands with soap and warm water before eating or drinking, and after using the restroom, use to drink bottled mineral water rather than municipal water, better to avoid outside food and avoid eating peeled or raw fruit and vegetables in an area with low sanitation or hygienic standards.

Hemorrhagic Viral Diseases: Viral diseases are severe conditions that involve damaging the circulatory system. Examples of Hemorrhagic viral diseases are as follows:

- Ebola
- Lassa fever
- Dengue fever
- Yellow fever
- Marburg hemorrhagic fever
- Crimean-Congo hemorrhagic fever

Ebola: The Ebola viruses are negative-stranded RNA viruses that belong to the viral family Filoviridae¹⁶. Ebola may be a serious and deadly virus transmitted by animals and humans. It was initially detected in 1976 in Sudan and also the Democratic Republic of Congo. Researchers named the disease after the Ebola River. Until recently, Ebola appeared in Africa only. Although the Ebola virus has been present for more than 35 years, the largest outbreak began in West Africa in March 2014. This outbreak has proven more deadly, severe, and widespread than previous outbreaks.

Transmission: Ebola virus is introduced into the number of people as a result of close contact with the blood, secretions, organs, or other bodily fluids of infected animals. In Africa, virus infection has been noted through the management of infected primates, fruit bats¹⁷, antelopes, and porcupine found sick or dead or in the tropical forest.

Ebola spreads in the communities through human-to-human transmission, with infection resulting from direct contact through ruptured skin or mucosal lining with the blood, body secretions, organs, or other body fluids of infected people and indirect contact with environmental surroundings contaminated with such type of fluids.

Funeral services in which mourners have direct contact with the body of the dead person can also playing a role in the transmission of Ebola. Health-care personnel has been repeatedly infected while treating subjects with suspected or confirmed Ebola Virus. This has occurred through close contact with patients when infection control precautionary measures are not strictly practiced. Among workers in contact with monkeys or pigs infected with Reston ebolavirus, certain infections have been noted in people who were clinically asymptomatic. Thus, RESTV (Reston virus) appears less capable of causing disease in humans than other Ebola species.

Symptoms: Ebola symptoms generally appear within 8 to 10 days after exposure, but symptoms will appear as early as two days after exposure or take as long as three weeks to appear. Extreme fatigue is the primary and most prominent symptom. Other symptoms include Diarrhoea, fever, headache, muscle pain, stomach pain, unexplained haemorrhage or bruising, and vomiting.

Diagnosis: Diagnosis of Ebola Virus Disease (EVD) shortly after infection can be difficult. Early symptoms of EVD such as fever, headache, and weakness are not specific to Ebola virus infection and are often seen in patients with other more prevalent illnesses, like malaria and typhoid fever. To determine whether an Ebola virus infection is a feasible diagnosis, there must be a combination of symptoms suggestive of EVD and a possible exposure to EVD within 21 days of the onset of symptoms. An exposure may involve contact with:

- Blood or body fluids from an individual with or who died from EVD.
- Blood or body fluid contaminated objects with from an individual with or who died from EVD.
- Infected fruit bats and primates (apes or monkeys).
- Semen from an individual recovering from EVD.

If an individual demonstrates early indications of EVD and has had a potential exposure, they should

be isolated (separated from other individuals) and informed by public health officials. The patient's blood samples should be collected and tested for infection confirmation. After the onset of symptoms, particularly fever, the Ebola virus can be identified in the blood. It may take up to three days for the virus to reach detectable levels after symptoms begin. Positive laboratory testing implies confirmation of Ebola infection. Public health officials will perform an inquiry into public health, including tracing of all possibly exposed contacts.

Treatment: The Ebola virus doesn't have a cure or vaccine¹⁸ at this time. Instead, measures are taken to stay the person as comfortable as possible. Supportive care measures¹⁹ may include: Giving medications to take care of maintaining blood pressure, managing electrolyte balances, providing additional oxygen, if needed, providing intravenous and/or oral fluids to prevent dehydration, treating coexisting infections, preventing alternative infections from occurring and administering blood products if indicated.

Prevention: Individuals will take many precautions to safeguard against Ebola. These steps include: Avoiding contact with blood and body fluids, practicing active careful hand hygiene, together with washing hands with soap and water or an alcohol-based hand sanitizer, refraining from participating in burial rituals of someone who died from Ebola virus, wearing protective clothing around wildlife and refraining from handling things someone with Ebola has handled includes clothing, bedding, needles or medical equipments.

Health-care workers and lab technicians also must practice and follow precautions. This includes isolating people with Ebola and wearing protective gowns, gloves, masks and eye shields when coming in contact with the infected person or their belongings.

Careful protocol and disposal of those protective materials is also important for infection prevention. Cleaning crews should use a bleach solution to scrub floors and surfaces that may have come in contact with the Ebola virus.

Neurologic Viral diseases: Viruses can infect the brain and surrounding tissues, causing neurologic viral diseases. Neurological syndromes caused by

viruses. Examples of neurologic viral diseases include:

- ✓ Polio
- ✓ Viral meningitis
- ✓ Viral encephalitis
- ✓ Rabies

The involvement of the brain is one of the most serious consequences of a viral infection. This type of virus which infects the brain and reach the CNS either by the bloodstream or by spread along peripheral nerves. Asymptomatic infection of the brain is common.

Polio: Polio (also known as poliomyelitis) is a highly contagious disease caused by a virus that attacks the nervous system. Polio²⁰ is caused by the poliovirus. Poliovirus is a member of the enterovirus subgroup, family Picornaviridae. Polio is a viral disease that may affect the spinal cord, causing muscle weakness and paralysis. The poliovirus enters the body through the mouth, usually from hands contaminated with the stool of an infected person. Polio is more common in infants and young children and occurs under conditions of poor hygiene. Paralysis is more common and more severe when infection occurs in older individuals. Children younger than 5 years old are more likely to contract the virus than any other group.

According to the World Health Organization (WHO), 1 in 200 polio infections will result in permanent paralysis. However, thanks to the global polio eradication initiative in 1988, the following regions are now certified polio-free: Americas, Europe, Western Pacific, and Southeast Asia.

Transmission: Poliovirus only infects humans. It is very contagious and spreads through person-to-person contact. The virus lives in an infected person's throat and intestines. It enters the body through the mouth and spreads through contact with the feces (poop) of an infected person and, though less common, through droplets from a sneeze or cough. You can get infected with poliovirus if you have feces on your hands and you touch your mouth. Also, you can get infected if you put in your mouth objects like toys that are contaminated with feces (poop).

An infected person may spread the virus to others immediately before and about 1 to 2 weeks after symptoms appear. The virus can live in an infected person's feces for many weeks. It can contaminate food and water in unsanitary conditions.

Symptoms: It's estimated that 95 to 99 percent of people who contract poliovirus are asymptomatic. This is known as subclinical polio. Even without symptoms, people infected with poliovirus can still spread the virus and cause infection in others.

Non-paralytic Polio: Non-paralytic polio is also known as abortive polio. Signs and symptoms of non-paralytic polio can last from one to 10 days. These signs and symptoms can be flu-like and can include: fever, sore throat, headache, vomiting, fatigue, and meningitis

Paralytic Polio: About 1 percent of polio cases can develop into paralytic polio. Paralytic polio leads to paralysis in the spinal cord (spinal polio), brainstem (bulbar polio) or both (bulbospinal polio). Initial symptoms are similar to non-paralytic polio. But after a week, more severe symptoms will appear. These symptoms include loss of reflexes, severe spasms and muscle pain, loose and floppy limbs, sometimes on just one side of the body, sudden paralysis, temporary or permanent and deformed limbs, especially the hips, ankles, and feet.

Post-polio Syndrome: It's possible for polio to return even after you've recovered. This can occur after 15 to 40 years. Common symptoms of post-polio syndrome (PPS) are: continuing muscle and joint weakness, muscle pain that gets worse, becoming easily exhausted or fatigued, muscle wasting, also called muscle atrophy, trouble breathing and swallowing, sleep apnea, or sleep-related breathing problems, low tolerance of cold temperatures, new onset of weakness in previously uninvolved muscles depression and trouble with concentration and memory.

Diagnosis: Physicians often recognize polio through symptoms, such as stiffness of the throat and back, abnormal reflexes, and difficulty in swallowing and breathing.

Poliovirus can be identified by isolating the virus in cell culture or by identifying the virus through polymerase chain reaction (PCR) in samples from

the throat and feces (stool) and occasionally cerebrospinal fluid (CSF).

CDC laboratories conduct testing for poliovirus including:

- Culture
- Intratypic differentiation
- Genome sequencing
- Serology

Virus Isolation: Virus isolation in culture is the most sensitive technique of diagnosing infection with the poliovirus. The most probable isolation of poliovirus from stool specimens. It can also be isolated from swabs of the pharyngeal. Blood or CSF is less probable to isolated. Collect at least two stool specimens 24 h apart from patients with suspected poliomyelitis to increase the probability of isolating poliovirus. These should be collected as soon as possible (ideally within 14 days after onset) during the course of the disease. Real-time reverse transcription PCR is used as the starting material for differentiating possible wild strains from vaccine-like strains ("intrathymic differentiation"). Partial genome sequencing is used to confirm and determine the probable geographic origin of the poliovirus genotype.

Serologic Testing: Serological tests can help to support the diagnosis of paralytic poliomyelitis, especially if a patient is known or suspected of not being vaccinated. An acute serum sample should be acquired as soon as possible during the course of the disease, and at least three weeks later, a convalescent specimen should be acquired.

CSF Analysis: Poliovirus detection in CSF is rare. CSF generally includes an enhanced number of [10 to 200 cells/mm³ (mainly lymphocytes)] leukocytes and a slightly high protein (40 to 50 mg / dL).

These results are nonspecific and may result from various circumstances of infection and non-infection.

Treatment: Physicians will solely treat the symptoms, whereas the infection runs its course. However, since there's no cure, the best way to treat polio is to prevent it with vaccinations. The most common supportive treatments include bed rest, painkillers, spasmolytic medications to relax

muscles, antibiotics for urinary tract infections, portable ventilators to assist with respiration, physiotherapy or corrective braces to assist with walking, heating pads or warm towels to ease muscle aches and spasms, physiotherapy to treat pain within the affected muscles, physical therapy to address breathing and pulmonary issues, pulmonary rehabilitation to extend the lung endurance and In advanced cases of leg weakness, may need a wheelchair or other mobility device.

Prevention: Polio vaccine protects children by preparing their bodies to fight the poliovirus. Almost all children (99 children out of 100) who get all the recommended doses of vaccine will be protected from polio.

The best way to prevent polio is to urge vaccination. Children should get polio shots according to the vaccination²¹⁻²⁴ schedule presented by the Centers for Disease Control and Prevention Trusted Source (CDC).

CDC Vaccination Schedule:

Age	Dose
2 months	One dose
4 months	One dose
6 to 18 months	One dose
4 to 6 years	Booster dose

CONCLUSION: Infection caused by the presence of a virus in the body. Depending on the virus and the person's state of health, various viruses can infect almost any type of body tissue, from the brain to the skin. There is no single way to prevent all infectious diseases; however, the following tips can reduce the risk of transmission: Wash your hands often, especially before and after preparing food and after using the bathroom. Clean surface areas and avoid leaving room-temperature food exposed when cooking, Receive any suggested vaccinations, and keep them up to date. Only take antibiotics when prescribed and be sure to complete any recommended course even if symptoms improve earlier than anticipated.

Disinfect rooms wherever there may be high concentrations of microorganisms, such as the kitchen and toilet. Practice safe sex by receiving regular STD checks, using condoms or abstaining altogether. Avoid sharing personal things such as toothbrushes, combs, razor blades, drinking

glasses, and kitchen utensils. Follow a Physicians recommendation concerning traveling or working when you are ill, as you could infect others, and a healthy, active lifestyle will facilitate the immune system strong and able to defend the body against different forms of viral infection.

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