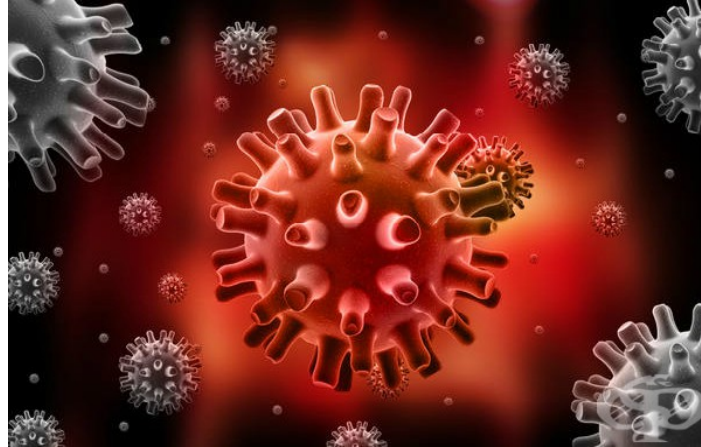


Epstein-Barr virus (EBV)



The **Epstein-Barr virus (EBV)**, also called **human herpesvirus 4 (HHV-4)**, is one of eight known human herpesvirus types in the herpes family, and is one of the most common viruses in humans.

Epstein-Barr is the virus that causes mononucleosis. You might know this disease better by its nickname, "mono." It's also called the "kissing disease" because of one way you can spread it to someone else.

Even though Epstein-Barr virus (EBV) isn't a household name, you've probably been infected without knowing it. Lots of people carry the virus but don't get sick.

Prevalence and Age Groups

About half of all children have been infected by EBV before age 5, often with no symptoms or only a mild illness. Infection most often causes symptoms and illness in teenagers and young adults. If you are a teenager who is infected with the virus without having had it at a younger age, you may develop mononucleosis illness about 25 percent of the time.

How Mono Spreads

EBV is commonly spread through saliva. Close contact and activities like sharing a cup, straw, or eating utensil can spread EBV. It can also be spread by other bodily fluids including mucus, blood, semen, and vaginal fluids. The spread is usually from someone who is shedding the virus but has no symptoms of it.

Babies under 1 year old rarely get mononucleosis because they receive antibodies against EBV from their mother that protect them during several months of life. A mother with an active or reactivated EBV infection can pass the virus to her baby, but this often does not result in symptoms or illness in the baby.

Symptoms

Symptoms usually develop four to six weeks after you are exposed to the virus, making it difficult to identify how you acquired the infection. During the

acute primary infection, the virus multiplies in number. This is followed by a decrease in viral numbers and resolution of symptoms, but the virus never completely goes away. Latent EBV remains in the person's body for the rest of that person's life and may reactivate but usually causes few problems unless the person's immune system is significantly weakened.

Once you're infected with EBV, symptoms can take 4 to 6 weeks to show up. When they do, they're often mild, especially in young children. Kids' symptoms may be more like those of a cold or flu. Teens often have more obvious symptoms of mono.

If you do get **symptoms**, most likely you'll have:

- A severe sore throat;
- Red, swollen tonsils covered in pus;
- Swollen lymph glands (lymphadenopathy) in the neck and armpits, but also possible in the groin;
- Fever as high as 39 degrees to 40 degrees that may last one to two weeks, and often peaks in the afternoon or early evening;
- Continued malaise and fatigue, which can be extreme;
- Achy muscles and headache;
- A rash that is pink and measles-like, more frequently seen after taking antibiotics;
- Nausea;
- Abdominal pain;

Although you should start feeling better in 2 to 4 weeks, the fatigue can stick around much longer. You may still feel tired a couple of months later.

Why Get Tested?

- To help diagnose infectious mononucleosis (mono);
- To distinguish between an Epstein-Barr virus (EBV) infection and another illness with similar symptoms. During pregnancy testing can help to distinguish a primary EBV infection, which has not been shown to affect a developing baby, from a CMV, HSV1/2, or toxoplasmosis infection, as these illnesses can cause complications during the pregnancy and may harm the fetus;
- To help evaluate susceptibility to EBV;

Diagnosis

It's hard to tell whether you have infection with EBV just by your symptoms. Fever, fatigue, and sore throat could also be signs of other illnesses, like the flu or a cold.

Some blood tests are needed.

- Serological test: looks for antibodies, substances your immune system makes in response to the EBV virus.
- Real-time **PCR test**: rapid qualitative detection of Epstein-Barr virus (EBV) DNA in specimens (including **blood**) for laboratory diagnosis of disease due to this virus. Secretions from **saliva, vagina** and **semen fluid** could be samples for testing as well.

Complications

Epstein-Barr virus (EBV) is the causative agent of:

- Infectious mononucleosis;
- Burkitt lymphoma;
- In Southern China, nasopharyngeal carcinoma (Recently, researchers have been investigating EBV DNA as a potential biomarker in the blood for nasopharyngeal cancer detection, monitoring, and prognosis);
- EBV-associated central nervous system (CNS) disease is most commonly associated with primary CNS lymphoma in patients with AIDS. In addition, CNS infection associated with the detection of EBV DNA can be seen in immunocompetent patients;
- Certain autoimmune diseases: dermatomyositis, systemic lupus erythematosus, rheumatoid arthritis, Sjögren's syndrome and multiple sclerosis.

Complications of mononucleosis can develop and can be quite serious. They include the following.

- Anemia;
- Hepatitis with jaundice;
- Ruptured spleen;
- Nervous system complications: Guillain-Barre syndrome, seizures, meningitis, and Bell's palsy;
- Fulminant EBV infection;
- Heart inflammation: pericarditis / myocarditis.

There are also specific **complications** to be aware of for **particular groups of individuals**:

Children

Airway obstruction from enlarged tonsils is possible in young children and it can require hospitalization. Your pediatrician might mistake the symptoms of mononucleosis for a bacterial infection (such as strep throat) and prescribe an antibiotic, such as ampicillin, amoxicillin, or related penicillin-like antibiotics. These antibiotics won't work because mono is a viral infection. Moreover, children sometimes develop a bad rash as a result of these medications.

Pregnant and Breastfeeding Women

Infectious mononucleosis caused by Epstein-Barr virus appears to have little to no effect on pregnancy outcomes, although there is some possible correlation with early delivery and lower birth weight. An expectant mother

with mono should take care to stay well-hydrated. A high fever could increase the risk to the fetus, and acetaminophen is preferred for reducing fever.

Some women have reactivation of EBV during pregnancy. It is possible for Epstein-Barr to be passed to a newborn during birth. However, babies often have no symptoms when they have an EBV infection, so this is not a health concern. Breast milk can contain the virus, but it isn't clear whether this can produce an infection in a child.

Prevention

No vaccine can protect you against the EBV virus. The best way to avoid catching it is to stay away from anyone who has mono.

Don't share any items, including glasses, silverware, and toothbrushes, with someone who is infected. Also avoid kissing or having sex with an infected person.