

Viruses That Can Lead to Cancer

Viral infections rank 3rd overall with respect to causes of cancer, behind smoking and a poor diet. They cause about 15% of all cancers. Keep in mind that even if you're infected with a virus that's linked to cancer, it doesn't mean you'll get the disease for sure. And there are things you can do, from vaccines to lifestyle changes, to prevent yourself from catching the virus in the first place. Other lifestyle factors like diet and exercise can also alter a virus's potential for causing cancer. For example, hepatitis C can cause liver cancer, but the risks are substantially greater if the person also has a fatty liver from a poor diet or drinks a lot of alcohol.

Here is a short list of some of the more common viruses associated with cancer:

Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV)
Kaposi Sarcoma-Associated Herpesvirus (KSHV)
Merkel Cell Polyomavirus (MCV)
Human Papillomavirus (HPV)
Human Immunodeficiency Virus Type 1 (HIV-1, or HIV)
Bovine Leukemia Virus

Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV)

HBV and HCV can cause a liver infection that can sometimes lead to liver cancer. Both varieties spread several ways, including:

- From mother to child during birth or through breastfeeding
- Sharing needles with infected people
- Organ transplant
- Blood transfusions
- Unprotected sex

You pick up these viruses if you share needles used to inject drugs, have unprotected sex, or get a transfusion with contaminated blood.

Although there is no way to get rid of HBV, you can often get rid of HCV after a few months of treatment.

There's a vaccine to prevent HBV, but not HCV. Those with higher chances of getting HBV, like healthcare workers, should get vaccinated. That also includes people who have HIV or those who inject drugs. These viruses originated in horses. It's thought that once we started domesticating horses and eating horsemeat, the virus jumped to humans.

Kaposi Sarcoma-Associated Herpesvirus (KSHV)

KSHV is a herpes virus that can cause Kaposi sarcoma, a cancer of the blood vessels, as well as two types of lymphoma, a blood cancer of lymph cells. You're more likely to get cancer from KSHV if you have a weakened immune system, which can occur not only by having an HIV infection, the classic association, but are also taking any kind of medication for arthritis, chemotherapy or even have a poor, pro-inflammatory diet. Herpes viruses originated in apes.

Merkel Cell Polyomavirus (MCV)

MCV is a common virus that infects the skin. It usually doesn't cause symptoms or lead to cancer but in some people, MCV causes a rare skin cancer called Merkel cell carcinoma. To help prevent Merkel cell carcinoma and other skin cancers, it is important to use sunscreen with an SPF of at least 30 when you go outside for more than 20 minutes of direct sunlight exposure

Human Papillomavirus (HPV)

HPV is a group of more than 200 viruses, and at least a dozen of them can cause cancer. HPV can spread during vaginal or anal intercourse and oral sex. HPV often goes away on its own and doesn't cause any health problems. Some people stay infected permanently though. If they have the HPV that causes cancer, it can lead

to cancers of the cervix, vulva, vagina, penis, anus, tonsils, or tongue. HPV vaccines are available for anyone over 9 years of age (basically the age kids start to be sexually active) and can keep you from getting infected with the virus.

Human Immunodeficiency Virus Type 1 (HIV-1, or HIV)

HIV spreads through unprotected sex and infected needles or through exposure to blood products in healthcare. An unborn baby can also catch it during pregnancy, and a mother with HIV can spread it to a baby if they breastfeed. People with HIV have a weakened immune system and have a greater chance of getting cancers such as:

- Kaposi sarcoma
- Non-Hodgkin's lymphoma
- Cervical cancer

You can help prevent HIV if you practice safe sex and don't share needles used to inject drugs. You can also use HIV prevention medicines such as pre-exposure prophylaxis (PrEP) and post-exposure prophylaxis (PEP). While there's no cure, you can control HIV with treatment and many people with HIV live normal lives.

Human T-Cell Lymphotropic Virus Type 1 (HTLV-1)

HTLV-1 infects T cells, which are a type of white blood cell. It can cause leukemia and lymphoma. HTLV-1 spreads several ways, including:

- From mother to child during birth or through breastfeeding
- Sharing needles with infected people
- Organ transplant
- Blood transfusions
- Unprotected sex

About 2% to 5% of people who have the virus get adult T-cell leukemia or other health conditions. Symptoms and how it develops are different for each person. There isn't a cure or treatment for HTLV-1. It's a lifelong condition.

Epstein-Barr Virus (EBV)

EBV is a common virus. Most people get infected with it at some point in their lives. Most of the time, people with EBV stay healthy and don't have symptoms. Most commonly, EBV causes mononucleosis (MONO). The virus causes a very dramatic swelling and inflammation of lymph tissues and causes both the spleen and liver to swell. Mono rarely kills people, but the ruptured spleen or liver caused by abdominal injury can be lethal which is why contact sports are prohibited for a few months after a bout of mono. Other more serious conditions can also occur, from viral meningitis to pneumonia. Several cancers are linked with EBV as well:

- Burkitt's lymphoma
- Nasopharyngeal carcinoma (cancer of the upper throat)
- Hodgkin's and non-Hodgkin's lymphoma
- T-cell lymphomas
- Post-transplant lymphoproliferative disorder (too many white blood cells)
- Leiomyosarcoma (cancer in the soft tissue)

You can help protect yourself from EBV by not kissing or sharing drinks, food, or personal items with someone who has the virus. It is easily transmitted through saliva. There's no specific treatment if you have EBV, but you can ease symptoms if you drink plenty of fluids, get rest, and take medicines for pain and fever.

Bovine Leukemia Virus (BLV)

Bovine leukemia virus (BLV) is a retrovirus which causes a disease called enzootic bovine leukosis in cattle. It is closely related to the human T-lymphotropic virus type 1 (HTLV-1). In cattle, most infected animals are asymptomatic. Leukemia is rare (about 5% of infected animals), but lymphoproliferation is more frequent (30%).

BLV DNA is generally found at higher rates in humans who have or will develop breast cancer, according to research done with subjects from several countries. These findings have led to a hypothesis that BLV

transmission plays a role in breast cancer oncogenesis in humans. Although it is transmitted from cow to cow through contaminated, reused needles when they inject steroids and growth hormones, humans can get infected by eating contaminated meat.