

14 ways you can help prevent cancer



Recommendation 12 for Individuals on Cancer-causing infections

- **Vaccinate girls and boys against hepatitis B virus and human papilloma virus (HPV) at the age recommended in your country.**
- **Take part in testing and treatment for hepatitis B and C viruses, human immunodeficiency virus (HIV) and *Helicobacter pylori*, as recommended in your country.**

Key summary

- HPV causes most of the cases of cervical cancer in women and high proportions of the cases of throat cancer and cancer of the anogenital tract in both men and women.
- Hepatitis B virus and HPV vaccines are safe and highly effective in preventing infection and progression to cancer.
- After hepatitis B and C viruses or HIV infections have been treated, the risk of infecting other people is eliminated or drastically reduced.
- HIV does not directly cause cancer, but, because it causes immune deficiency, it increases the risk of cancers caused by other viruses, including Kaposi sarcoma, lymphomas, and cancers of the liver, cervix, and anus.
- If *H. pylori* gastritis is treated before it has caused severe gastric damage, treatment can prevent the onset of gastric cancer.
- The earlier an infection is found and treated the more the risk of cancer is reduced.

Can infections, such as human papillomavirus (HPV), hepatitis B virus (HBV), hepatitis C virus (HCV), human immunodeficiency virus (HIV), and *Helicobacter pylori* (*H. pylori*) cause cancer? Yes, several infections can cause cancer if they persist over time. In particular, four viruses (HBV, HCV, HPV and HIV) and a bacterium (*H. pylori*) are responsible for at least 5% of cancers in the European Union (EU), and these infections have other adverse health effects. In 2022 in the EU, about 55 000 cases of cancer were caused by HPV (2% of all cancer cases).

What types of cancer do HPV, HBV, HCV, HIV, and *H. pylori* cause? HPV, mainly type 16 and type 18, causes nearly all cases of cervical cancer and anal cancer. HPV also causes cancers of the vulva, vagina, penis, and throat. For the other infections (HBV, HCV and *H. pylori*), the most common cancers caused by these infections are liver and stomach. For people with an infection, the increased risk of cancer can be very high, and similar to the risk of cancer from tobacco smoking or heavy alcohol consumption. HIV does not directly cause cancer, but, because it causes immune deficiency, it increases the risk of cancers caused by other viruses, including Kaposi sarcoma, lymphomas, and cancers of the liver, cervix, and anus.

It takes many years or decades, for an infection to cause a cancer. Therefore, there is an opportunity to detect and treat these chronic infections before they can cause severe damage, and ultimately cancer. Early detection and treatment of these infections can prevent premature deaths from cancer and other related conditions caused by these infections.

How do I prevent infections that can cause cancer? Ensuring that young girls and boys receive the HPV vaccine prevents cancers that are related to HPV infection. The vaccine works best when given before becoming infected with HPV. HBV-related liver diseases can be prevented by ensuring that newborns, children, and individuals who are at high risk of HBV infection receive the HBV vaccine according to the vaccination schedule in your country.

How do I get tested for infections that can cause cancer? At your next visit to a health-care professional, ask whether you could get tested and treated for cancer-related infections, namely HBV, HCV, HIV, and *H. pylori*. If the test reveals that you have one of these infections, you will be offered further tests and, if necessary, appropriate treatment or follow-up. In most cases, an infection that is detected early can be cured or managed effectively.

Check out the **Organized cancer screening programmes (Annex 3: Cervical cancer screening) Fact Sheet** to learn more about cervical cancer

Annex 1: Vaccinating against HBV and HPV

Key summary

HBV

- Infection with HBV is a leading cause of chronic liver disease, cirrhosis, and liver cancer.
- HBV vaccines are safe and highly effective in preventing infection with HBV and its complications, including liver cancer.
- HBV-related liver diseases can be prevented by ensuring that newborns, children, and individuals who are at high risk of HBV infection are vaccinated according to the vaccination schedule in your country.

HPV

- Infection with HPV causes most of the cases of cervical cancer in women and high proportions of the cases of throat cancer and cancer of the anogenital tract in both men and women.
- Ensuring that young girls and boys receive the safe and highly effective HPV vaccine prevents cancers that are related to HPV infection. The vaccine is most effective at younger ages.

HBV, HPV, and cancer

Can HBV and HPV infections cause cancer?

Yes, both these infections can cause cancer if they persist over time. Highly effective vaccines are available to prevent the cancers caused by these two viruses.

HBV

HBV is a major cause of chronic hepatitis (infection of the liver), which can lead to cirrhosis and liver cancer over time. An infection contracted during childhood is more likely to develop into a long-lasting HBV infection (chronic infection). In 2022 in the European Union (EU), about 8000 cases of liver cancer were caused by HBV.

HPV

HPV, mainly type 16 and type 18, causes nearly all cases of cervical cancer and anal cancer. HPV also causes cancers of the vulva, vagina, penis, and throat. In 2022 in the EU, about 55 000 cases of cancer were caused by HPV (2% of all cancer cases).

Safety, effectiveness, and acceptability of the HBV and HPV vaccines

HBV vaccine: A safe and effective vaccine has been available since the early 1980s. Several EU Member States have high levels of acceptance and coverage of vaccination, meaning that trust in vaccination is generally high. Vaccination campaigns have been implemented for decades, and vaccine uptake in children is high.

HPV vaccine: The HPV vaccine, first licenced in 2006, is safe and highly effective in preventing HPV infection and HPV-related pre-cancerous lesions and cancers. HPV vaccines are included in national immunization programmes and are accessible at no cost to the individual. Since 2023, all EU Member States have offered HPV vaccination to both girls and boys.

Actions to reduce your cancer risk

Vaccinate your newborn child or infant against HBV.

Getting your child vaccinated against HBV is important to protect your child and others from this virus. The HBV vaccination consists of three doses. Follow the vaccination schedule recommended in your country.

Get your HBV vaccine at an older age. If you were not vaccinated against HBV as a child, you may benefit from an HBV vaccine when you are older, for example if:

- you are a migrant from a country where HBV is common and HBV vaccination is not available
- if you are at increased risk of being exposed to HBV through sex with someone who currently has an HBV infection.

You can ask your healthcare professional where you can get an HBV vaccine.

Vaccinate girls and boys against HPV at the youngest possible age recommended in your country.

Getting your girls and boys vaccinated against HPV is important to protect them from cancers related to HPV infection. HPV vaccines work best when given at a young age, ideally before individuals become sexually active. The best age to get vaccinated is 9–14 years, and 11 years is recommended in the EU. Vaccinating most girls and boys in a population creates herd protection, which means that vaccinations protect vaccinated individuals and also help to stop the virus spreading in people who are not vaccinated. Vaccinating both girls and boys increases this protection.

Get your HPV vaccine at an older age. Although the vaccine is most effective at younger ages, getting the vaccine when you are older, especially before 20 years of age, can provide additional individual protection and increase herd protection in the population.

Co-benefits for the prevention of noncommunicable diseases (NCDs) with similar risk factors and opportunities for health promotion

HBV: Other risk factors also cause liver cancer. Hepatitis C virus, excess alcohol consumption, tobacco smoking, excess body weight, or other NCDs, such as diabetes, may further increase the risk of liver cancer in people who also have an HBV infection.

HPV: Tobacco smoking and HIV infection increase the risk of cervical cancer. A weakened immune system, caused by HIV infection, cancer treatment, or organ transplantation, can increase the risk of developing cancers related to HPV infection.

Preventing these infections may avoid the joint effects with other risk factors on some of the above diseases.



Learn about policies that support reducing the risk of HBV and HPV infections

Almost all European Union (EU) Member States have implemented a national policy for universal HBV vaccination, including antenatal screening combined with newborn vaccination. By 2024, all 27 EU Member States had introduced HPV vaccination for girls and boys. Policy actions that support the continued uptake of these vaccinations include:

- Ensuring vaccination services and efforts meet the needs of diverse population groups, including offering vaccines in local settings where people are at an increased risk.
- Strengthen vaccination programs, including by increasing staffing and training for healthcare professionals.
- Using public health campaigns to increase awareness of the importance of safe and effective HBV and HPV vaccination.
- Monitor the uptake of vaccination against HPV and HBV in the targeted population.

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Annex 2: Testing and treating for HBV, HCV HIV and *H. pylori*

Key summary

- HBV and HCV are the most important causes of liver disease in the EU.
- The earlier an HCV or HIV infection is found and treated (that is, before liver damage or profound immunodeficiency has developed), the more the risk of cancer is reduced.
- After HBV, HCV, or HIV infections have been treated, the risk of infecting other people is eliminated or drastically reduced.
- *H. pylori* is the most important cause of gastric cancer in the EU. If *H. pylori* gastritis is treated before it has caused severe gastric damage, treatment can prevent the onset of gastric cancer.
- Infections caused by HBV, HCV HIV and *H. pylori* can be detected using inexpensive, non-invasive tests and can be treated with treatments that are widely available.

HBV, HCV, HIV and *H. pylori*, and cancer

HBV and HCV

HBV and HCV are major causes of chronic hepatitis (inflammation of the liver), a progressive disorder that can lead to cirrhosis (permanent scarring that damages the liver and its functioning) and liver cancer. HBV and HCV infections often have no symptoms. Therefore, most individuals do not know they are infected, and they are not aware of the infection becoming chronic. Symptoms may become visible only after many years and once the liver is severely damaged.

For most people, acute HBV infection lasts less than 6 months, and most adults with recent HBV infection recover fully, even if their symptoms were severe. However, an HBV infection can become chronic, and this is especially true for infants and children. HCV infection starts with an acute phase, which typically causes no symptoms but often progresses to a chronic condition; the symptoms usually taking decades to appear. In 5–10% of people who have had a chronic HBV or HCV infection for more than 20 years, the infection may progress to cirrhosis and then, possibly, to liver cancer.

HIV

HIV does not directly cause cancer, but, because it causes immune deficiency, it is an important risk factor for cancers caused by other viruses, including Kaposi sarcoma, lymphomas, and cancers of the liver, cervix, and anus. People with HIV have also increased a priori probability to have also been exposed to HBV, HCV and HPV, as well as by behavioural risk factors, such as tobacco use and alcohol consumption, and for men who have sex with men.

H. pylori

H. pylori is a bacterium and is the main cause of gastric cancer worldwide.

It is most commonly transmitted via the oral-to-oral and faecal-to-oral routes. Most *H. pylori* infections are acquired during childhood and persist lifelong if they are not treated.

Chronic *H. pylori* infection causes inflammation of the gastric mucosa, which usually persists for decades and which may progress to more severe forms of gastritis, ultimately leading to gastric cancer. However, most people with *H. pylori* infection will never have any signs or symptoms.

When signs or symptoms appear, they present as dyspeptic (indigestion) symptoms, which include an ache or burning pain in the stomach (abdomen) that may worsen when your stomach is empty, along with nausea, burping, or bloating.

Actions to reduce your cancer risk

Take part in testing and treatment for HBV, HCV, HIV and *H. pylori* as recommended in your country. HBV, HCV, or HIV infection can be detected in a standard blood sample, a finger-prick blood sample, or a saliva sample, and these tests are very accurate, and can be done altogether. *H. pylori* infection can be detected using non-invasive, inexpensive tests, such as a urea breath test and/or a stool antigen test.

If you test positive for HBV, HCV, HIV and/or *H. pylori* infection, a doctor can decide the appropriate treatment. Diagnostic tests and anti-viral drugs are available in all EU Member States and should be reimbursed fully or partially by your health-care system.

- For HBV, the treatment is lifelong.
- For HCV, the treatment typically lasts for 8–12 weeks. The efficacy of the treatment for HCV can be confirmed by the same test that was used for the initial diagnosis.
- Depending on the clinical conditions, individuals with HBV or HCV infection can be referred to a liver specialist (hepatologist) or an infectious disease specialist for an evaluation of the liver disease and further management of the infection.
- For HIV, the treatment is lifelong. Anti-viral treatments are very efficacious, are effective, and are well tolerated. HIV positive individuals should be followed up by an HIV specialist.
- Individuals with *H. pylori* infection can be effectively treated using a combination of antimicrobial drugs given orally for 7–14 days. The efficacy of the treatment must be assessed by the same non-invasive test that was used for the initial diagnosis. Depending on age, symptoms, and family history of gastric cancer, individuals with *H. pylori* infection may be referred to a gastroenterologist for a gastric endoscopy.

What are the benefits and harms of testing and treating for cancer-related infections?

The potential benefits are:

- In most cases, an infection that is detected early can be cured or managed effectively.
- Treating these infections early can prevent cancer and other potentially lethal conditions, such as acquired immunodeficiency syndrome (AIDS caused by HIV) or peptic ulcer (caused by *H. pylori*), and/or serious interventions, such as having a liver transplant (due to a HBV or HCV infection).
- Treatment will reduce or eliminate the risk of transmitting the infection to other people.
- Many people are likely to have a negative test result, and therefore being tested can provide this reassurance.

The potential harms are:

- Sometimes a positive test may be a false positive leading to anxiety and discomfort and the need for further tests.
- Some infections that are detected may never progress and cause any health problems, but this is not possible to predict without detecting these infections in the first place.

Co-benefits for the prevention of noncommunicable diseases (NCDs) with similar risk factors and opportunities for health promotion

HCV infection, with or without HBV infection at the same time, heavy alcohol consumption, tobacco smoking, or excess weight, and other NCDs, such as diabetes, may increase the risk of developing liver cancer.

HCV infection is also associated with a rare type of lymphoma and a few other NCDs, such as mixed cryoglobulinemia, type 2 diabetes, cardio-cerebrovascular diseases, and autoimmune diseases.

H. pylori is also associated with a rare type of lymphoma and with peptic ulcer, a potentially life-threatening disease.

Preventing these infections may avoid the joint effects with other risk factors on some of the above diseases.

Learn about policies that support the testing-and-treating of HBV, HCV, HIV and *H. pylori* infections

Policies that focus on sustainable initiatives to improve affordable access to tests of these major infections have a potential to play a significant role in reducing the risk of cancer and improving overall health. Here are some examples:

- Policies should facilitate affordable, ideally free of charge, test for HBV, HCV, HIV using a non-stigmatizing approach.
- Pregnant women should be offered HBV and HIV testing, and consider offering HCV testing based on individual risk assessment.
- Protocols to test-and-treat for *H. pylori* based on individual risk, family history and country of birth should be established; while ensuring such regimens are less expensive and easily available to all EU citizens.
- Individuals with confirmed *H. pylori* infection should be treated as early as possible.
- Public health awareness campaigns related to all infections that cause cancer and interventions that avoid their acquisition or progression to disease should be developed and coordinated.



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