

This Site Uses Cookies and Your Privacy Choice Is Important to Us. Choose *Customize My Settings* to make your privacy choices. Choose *Accept All Cookies* to accept third-party cookies. [See our Privacy Policy](#).

[Customize My Settings](#)[Accept All Cookies](#)

HOW DOES KEYTRUDA WORK?



Related topics

[> Results from clinical trials](#)[> Side effects](#)[> Starting KEYTRUDA](#)

On this page:

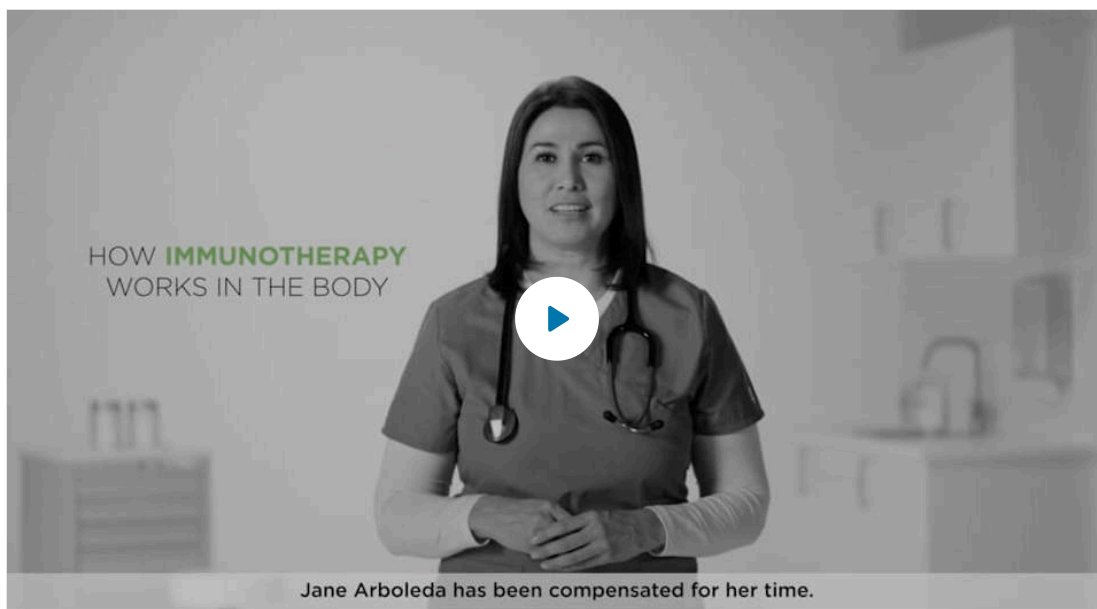
[How KEYTRUDA works](#) ✓[How KEYTRUDA and chemotherapy work](#) ✓

KEYTRUDA works with your immune system to help fight cancer cells

KEYTRUDA is not chemotherapy or radiation therapy—it is an immunotherapy and it works with your immune system to help fight certain cancers.

KEYTRUDA can cause your immune system to attack normal organs and tissues in any area of your body and can affect the way they work. These problems can sometimes become severe or life-threatening and can lead to death. You can have more than one of these problems at the same time. These problems may happen anytime during treatment or even after your treatment has ended.

How KEYTRUDA works



<https://www.keytruda.com/how-does-keytruda-work/#how-keytruda-works>



Cancer cells may use the **PD-1 pathway** to hide from T cells

The immune system is your body's natural defense against disease. The immune system sends certain types of cells called T cells throughout your body to detect and fight infections and diseases—including cancer.

Cancer cells may use the **PD-1 pathway** to hide from T cells. This stops T cells from attacking cancer cells and allows cancer cells to grow and spread.

PD-1 = programmed death receptor-1.



KEYTRUDA blocks the **PD-1 pathway** to help prevent cancer cells from hiding

KEYTRUDA is a type of immunotherapy that works by blocking the **PD-1 pathway** to help prevent cancer cells from hiding. KEYTRUDA helps the immune system do what it was meant to do: detect and fight cancer cells.

KEYTRUDA can cause your immune system to attack normal organs and tissues in any area of your body and can affect the way they work. **These problems** can sometimes become severe or life-threatening and can lead to death. You can have more than one of these problems at the same time. These problems may happen anytime during treatment or even after your treatment has ended.



[What are PD-1 and PD-L1?](#)

How **KEYTRUDA** and chemotherapy work

For certain types of cancer, KEYTRUDA is approved to be used along with chemotherapy. See the [list of indications for KEYTRUDA](#) below, and ask your doctor if KEYTRUDA and chemotherapy is right for you.



You also might be interested in:

Patient Support
[> Starting KEYTRUDA](#)

About KEYTRUDA
[> Side effects](#)

Results with KEYTRUDA
[> Results from clinical trials](#)

KEYTRUDA
 (pembrolizumab) injection 100 mg

FDA-Approved Indications

KEYTRUDA is a prescription medicine used to treat:



- a kind of lung cancer called [non–small cell lung cancer \(NSCLC\)](#).
 - It may be used in combination with chemotherapy that contains platinum and another chemotherapy medicine before surgery when you have early-stage NSCLC, which can be removed by surgery, **and** then continued alone after surgery to help prevent your lung cancer from coming back.
 - It may be used with the chemotherapy medicines pemetrexed and a platinum as your first treatment when your lung cancer has spread ([advanced NSCLC](#)) **and** is a type called “[nonsquamous](#)” **and** your tumor does not have an abnormal “EGFR” or “ALK” gene.
 - It may be used with the chemotherapy medicines carboplatin and either paclitaxel or paclitaxel protein-bound as your first treatment when your lung cancer has spread ([advanced NSCLC](#)) **and** is a type called “[squamous](#).”
 - It may be used alone as your first treatment when your lung cancer has not spread outside your chest (stage III) and you cannot have surgery or chemotherapy with radiation, **or** your NSCLC has spread to other areas of your body ([advanced NSCLC](#)), **and** your tumor tests positive for “PD-L1” **and** does not have an abnormal “EGFR” or “ALK” gene.
 - It may also be used alone for [advanced NSCLC](#) if you have tried chemotherapy that contains platinum and it did not work or is no longer working **and**, your tumor tests positive for “PD-L1” **and** if your tumor has an abnormal “EGFR” or “ALK” gene, you have also received an “EGFR” or “ALK” inhibitor medicine that did not work or is no longer

- It may be used alone as a treatment in adults for your lung cancer to help prevent your lung cancer from coming back after your tumor(s) has been removed by surgery and you have received platinum-based chemotherapy, **and** you have stage IB and your tumor(s) is 4 cm or greater in size, stage II, or stage IIIA NSCLC.
- a kind of skin cancer called [melanoma](#).
 - It may be used when your melanoma has spread or cannot be removed by surgery (advanced melanoma), **or**
 - It may be used in adults and children 12 years of age and older with stage IIB, stage IIC, or stage III melanoma, to help prevent melanoma from coming back after it and lymph nodes that contain cancer have been removed by surgery.
- a kind of cancer called [head and neck squamous cell cancer \(HNSCC\)](#).
 - It may be used with the chemotherapy medicines fluorouracil and a platinum as your first treatment when your head and neck cancer has spread or returned and cannot be removed by surgery.
 - It may be used alone as your first treatment when your head and neck cancer has spread or returned and cannot be removed by surgery, **and** your tumor tests positive for "PD-L1."
 - It may be used alone when your head and neck cancer has spread or returned, **and** you have received chemotherapy that contains platinum and it did not work or is no longer working.
- a kind of bladder and urinary tract cancer called urothelial cancer.
 - It may be used with the medicine enfortumab vedotin in adults when your bladder or urinary tract cancer has spread or cannot be removed by surgery ([advanced urothelial cancer](#)).
 - It may be used alone when your bladder or urinary tract cancer has spread or cannot be removed by surgery ([advanced urothelial cancer](#)), **and** you are not able to receive chemotherapy that contains platinum (medicines called either cisplatin or carboplatin).
 - It may be used alone when your bladder or urinary tract cancer has spread or cannot be removed by surgery ([advanced urothelial cancer](#)), **and** you have received chemotherapy that contains platinum, and it did not work or is no longer working.
 - It may be used alone when your cancer has not spread to nearby tissue in the bladder, but is at high-risk for spreading ([high-risk, non-muscle invasive bladder cancer \[NMIBC\]](#)) and when your tumor is a type called "carcinoma in situ" (CIS), **and** you have tried treatment with Bacillus Calmette-Guerin (BCG) and it did not work, **and** you are not able to or have decided not to have surgery to remove your bladder.
- a kind of cancer that is shown by a laboratory test to be a [microsatellite instability-high \(MSI-H\)](#) or a mismatch repair deficient (dMMR) solid tumor. It may be used in adults and children to treat:
 - cancer that has spread or cannot be removed by surgery (advanced cancer), **and**
 - has progressed following treatment, and you have no satisfactory treatment options.
- a kind of cancer called colon or rectal cancer. It may be used when your cancer:
 - has spread or cannot be removed by surgery ([advanced colon or rectal cancer](#)), **and**
 - has been shown by a laboratory test to be microsatellite instability-high (MSI-H) or mismatch repair deficient (dMMR).
- a kind of stomach cancer called [gastric or gastroesophageal junction \(GEJ\) adenocarcinoma](#).
 - It may be used in adults in combination with fluoropyrimidine and platinum chemotherapy as your first treatment when your stomach cancer:
 - is HER2-negative, **and**
 - has spread or cannot be removed by surgery (advanced gastric cancer).
- a kind of cancer called [esophageal or certain gastroesophageal junction \(GEJ\) carcinomas](#) that

KEYTRUDA

[Indication](#)
[Important Safety Information](#)
[Medication Guide](#)
[Prescribing Information](#)
[View Health Care Professionals Site](#)

- It may be used alone when:
 - you have received one or more types of treatment, and it did not work or it is no longer working, **and**
 - your tumor is a type called "squamous," **and**
 - your tumor tests positive for "PD-L1."

How KEYTRUDA® (pembrolizumab) Works

- a kind of cancer called [cervical cancer](#).
 - It may be used with chemotherapy and radiation therapy when your cervical cancer has spread to nearby tissue or organs or has affected your kidneys (Stage III to IVA cervical cancer based on FIGO 2014 classification).
 - It may be used with chemotherapy medicines, with or without the medicine bevacizumab, when:
 - your cervical cancer does not go away (persistent), has returned, or has spread (advanced cervical cancer), **and**
 - your tumor tests positive for “PD-L1.”
 - It may be used alone when your cervical cancer:
 - has returned, or has spread (advanced cervical cancer), **and**
 - you have received chemotherapy, and it did not work or is no longer working, **and**
 - your tumor tests positive for “PD-L1.”
- a kind of kidney cancer called [renal cell carcinoma \(RCC\)](#).
 - It may be used with the medicine axitinib as your first treatment when your kidney cancer has spread or cannot be removed by surgery (advanced RCC).
 - It may be used alone if you are at intermediate-high or high risk of your kidney cancer (RCC) coming back after surgery to:
 - remove all or part of your kidney, **or**
 - remove all or part of your kidney and also surgery to remove cancer that has spread to other parts of the body (metastatic lesions).
- a kind of uterine cancer called [advanced endometrial carcinoma](#).
 - It may be used with the chemotherapy medicines carboplatin and paclitaxel, and then may be used alone, in adults:
 - when your cancer has spread (advanced), **or**
 - if your cancer has returned.
 - It may be used alone in adults:
 - if your cancer is shown by a laboratory test to be microsatellite instability-high (MSI-H) or mismatch repair deficient (dMMR), **and**
 - you have received anti-cancer treatment and it is no longer working, **and**
 - your cancer cannot be cured by surgery or radiation.
- a kind of skin cancer called [cutaneous squamous cell carcinoma \(cSCC\)](#). It may be used when your skin cancer has returned or spread, **and** cannot be cured by surgery or radiation.
- a kind of cancer called triple-negative breast cancer (TNBC).
 - It may be used with chemotherapy medicines as treatment before surgery and then continued alone after surgery when you have early-stage breast cancer, **and** are at high risk of your breast cancer coming back ([high-risk early-stage triple-negative breast cancer \[TNBC\]](#)).
 - It may be used with chemotherapy medicines when your breast cancer has returned and cannot be removed by surgery or has spread ([advanced TNBC](#)), **and** tests positive for “PD-L1.”

[PD-L1](#) = programmed death ligand 1;

EGFR = epidermal growth factor receptor;

ALK = anaplastic lymphoma kinase;

FIGO = International Federation of Gynecology and Obstetrics;

HER2 = human epidermal growth factor receptor 2.

Important Safety Information

KEYTRUDA is a medicine that may treat certain cancers by working with your immune system. KEYTRUDA can cause your immune system to attack normal organs and tissues in any area of your body and can affect the way they work. These problems can sometimes become severe or life-threatening and can lead to death. You can have more than one of these problems at the same time. These problems may happen any time during treatment or even after your treatment has ended.

Call or see your health care provider right away if you develop any signs or symptoms of the following problems or if they get worse. These are not all of the signs and symptoms of immune system problems that can happen with KEYTRUDA:

Lung problems: cough, shortness of breath, or chest pain

Lung problems: cough, shortness of breath, or chest pain.

Intestinal problems: diarrhea (loose stools) or more frequent bowel movements than usual; stools that are black, tarry, sticky, or have blood or mucus; or severe stomach-area (abdomen) pain or tenderness.

Liver problems: yellowing of your skin or the whites of your eyes; severe nausea or vomiting; pain on the right side of your stomach area (abdomen); dark urine (tea colored); or bleeding or bruising more easily than normal.

Hormone gland problems: headaches that will not go away or unusual headaches; eye sensitivity to light; eye problems; rapid heartbeat; increased sweating; extreme tiredness; weight gain or weight loss; feeling more hungry or thirsty than usual; urinating more often than usual; hair loss; feeling cold; constipation; your voice gets deeper; dizziness or fainting; changes in mood or behavior, such as decreased sex drive, irritability, or forgetfulness.

Kidney problems: decrease in the amount of your urine; blood in your urine; swelling of your ankles; loss of appetite.

Skin problems: rash; itching; skin blistering or peeling; painful sores or ulcers in your mouth or in your nose, throat, or genital area; fever or flu-like symptoms; swollen lymph nodes.

Problems can also happen in other organs and tissues. Signs and symptoms of these problems may include: chest pain; irregular heartbeat; shortness of breath; swelling of ankles; confusion; sleepiness; memory problems; changes in mood or behavior; stiff neck; balance problems; tingling or numbness of the arms or legs; double vision; blurry vision; sensitivity to light; eye pain; changes in eyesight; persistent or severe muscle pain or weakness; muscle cramps; low red blood cells; bruising.

Infusion reactions that can sometimes be severe or life-threatening. Signs and symptoms of infusion reactions may include chills or shaking, itching or rash, flushing, shortness of breath or wheezing, dizziness, feeling like passing out, fever, and back pain.

Rejection of a transplanted organ or tissue. Your health care provider should tell you what signs and symptoms you should report and they will monitor you, depending on the type of organ or tissue transplant that you have had.

Complications, including graft-versus-host disease (GVHD), in people who have received a bone marrow (stem cell) transplant that uses donor stem cells (allogeneic). These complications can be serious and can lead to death. These complications may happen if you underwent transplantation either before or after being treated with KEYTRUDA. Your health care provider will monitor you for these complications.

Getting medical treatment right away may help keep these problems from becoming more serious. Your health care provider will check you for these problems during treatment with KEYTRUDA. They may treat you with corticosteroid or hormone replacement medicines. They may also need to delay or completely stop treatment with KEYTRUDA if you have severe side effects.

Before you receive KEYTRUDA, tell your health care provider if you have immune system problems such as Crohn's disease, ulcerative colitis, or lupus; have had an organ or tissue transplant, including corneal transplant, or have had or plan to have a bone marrow (stem cell) transplant that uses donor stem cells (allogeneic); have had radiation treatment in your chest area; have a condition that affects your nervous system, such as myasthenia gravis or Guillain-Barré syndrome.

If you are pregnant or plan to become pregnant, tell your health care provider. KEYTRUDA can harm your unborn baby. If you are able to become pregnant, you will be given a pregnancy test before you start treatment. Use effective birth control during treatment with KEYTRUDA and for 4 months after your last dose of KEYTRUDA. Tell them right away if you think you may be pregnant or you become pregnant during treatment with KEYTRUDA.

Tell your health care provider if you are breastfeeding or plan to breastfeed. It is not known if KEYTRUDA passes into your breast milk. Do not breastfeed during treatment with KEYTRUDA and for 4 months after your last dose of KEYTRUDA.

Tell your health care provider about all the medicines you take, including prescription and over-the-counter medicines, vitamins, and herbal supplements.

Common side effects of KEYTRUDA when used alone include feeling tired; pain, including pain in muscles; rash; diarrhea; fever; cough; decreased appetite; itching; shortness of breath;

constipation; bones or joints and stomach-area (abdominal) pain; nausea; and low levels of thyroid hormone.

In children, when KEYTRUDA is used alone, fever, vomiting, headache, stomach area (abdominal) pain, and low levels of white blood cells and red blood cells (anemia) are more common than in adults.

Common side effects of KEYTRUDA when given with certain chemotherapy medicines include feeling tired or weak; nausea; constipation; diarrhea; decreased appetite; rash; vomiting; cough; trouble breathing; fever; hair loss; inflammation of the nerves that may cause pain, weakness, and paralysis in the arms and legs; swelling of the lining of the mouth, nose, eyes, throat, intestines, or vagina; mouth sores; headache; weight loss; stomach-area (abdominal) pain; joint and muscle pain; trouble sleeping; bleeding, blisters, or rash on the palms of your hands and soles of your feet; urinary tract infection; and low levels of thyroid hormone.

Common side effects of KEYTRUDA when given with chemotherapy with radiation therapy medicines include feeling tired or weak; nausea; constipation; diarrhea; decreased appetite; rash; vomiting; cough; trouble breathing; fever; hair loss; inflammation of the nerves that may cause pain, weakness, and paralysis in the arms and legs; swelling of the lining of the mouth, nose, eyes, throat, intestines, or vagina; mouth sores; headache; weight loss; stomach-area (abdominal) pain; joint and muscle pain; trouble sleeping; bleeding, blisters, or rash on the palms of your hands and soles of your feet; urinary tract infection; and low levels of thyroid hormone.

Common side effects of KEYTRUDA when given with enfortumab vedotin include rash; tingling or numbness of the arms or legs; feeling tired; itching; diarrhea; hair loss; weight loss; decreased appetite; dry eye; nausea; constipation; changes in sense of taste; and urinary tract infection.

Common side effects of KEYTRUDA when given with chemotherapy and bevacizumab include tingling or numbness of the arms or legs; hair loss; low red blood cell count; feeling tired or weak; nausea; low white blood cell count; diarrhea; high blood pressure; decreased platelet count; constipation; joint aches; vomiting; urinary tract infection; rash; low levels of thyroid hormone; and decreased appetite.

Common side effects of KEYTRUDA when given with axitinib include diarrhea; feeling tired or weak; high blood pressure; liver problems; low levels of thyroid hormone; decreased appetite; blisters or rash on the palms of your hands and soles of your feet; nausea; mouth sores or swelling of the lining of the mouth, nose, eyes, throat, intestines, or vagina; hoarseness; rash; cough; and constipation.

These are not all the possible side effects of KEYTRUDA. Talk to your health care provider for medical advice about side effects.

You are encouraged to report negative side effects of prescription drugs to the FDA.

Visit www.fda.gov/medwatch or call 1-800-FDA-1088.

Please read the accompanying **Medication Guide** for KEYTRUDA and discuss it with your doctor. The physician **Prescribing Information** also is available.

KEYTRUDA
(pembrolizumab) injection 100 mg

About KEYTRUDA

- > [How does KEYTRUDA work?](#)
- > [Side effects](#)
- > [How KEYTRUDA is given](#)
- > [Frequently asked questions](#)

Results From Clinical Trials

- > [Results from clinical trials](#)

Patient Support

- > [What to know about treatment with KEYTRUDA](#)

Cost Info & Financial Help

- > [Cost info & financial help](#)

Indications & Safety

- > [Indications](#)
- > [Important safety information](#)

[Privacy Policy](#) • [Terms of Use](#) • [Cookie Preferences](#) • [Accessibility](#)

 [View Health Care Professionals Site](#)

Copyright © 2024 Merck & Co., Inc., Rahway, NJ, USA and its affiliates. All rights reserved.
This site is intended only for residents of the United States, its territories, and Puerto Rico.
US-KEY-07986 05/24



[Need Help?](#)