

INTRAVENOUS CANCER TREATMENT EDUCATION



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PEMBROLIZUMAB, PEMETREXED, CARBOPLATIN

Name of the regimen and cancer drugs

- Pembrolizumab (pem-broh-LIH-zoo-mab): Keytruda
- Pemetrexed Disodium (peh-meh-TTREK-sed dy-SOH-dee-um): Alimta
- Carboplatin (KAR-boh-pla-tin): Paraplatin

Common uses

This regimen is mostly commonly used for non-small cell lung (NSCLC) cancer but may be used for other diagnoses.

Treatment schedule

Your treatment will be given into your vein through an intravenous (IV) line. This may be into a short, flexible temporary catheter in your arm, or through a central venous catheter. A central venous catheter, or central line is a long, flexible IV tube that empties into a very large vein next to the heart. Talk with your care team to see which will be best for you and your treatment.

Each pembrolizumab, pemetrexed, and carboplatin treatment is repeated every 21 days. This is known as one cycle. Your treatment may be given for 4 to 6 cycles. Your doctor may continue pembrolizumab, pemetrexed or both until the drug or drugs stop working or you have side effects which stop you from continuing treatment.

- Pembrolizumab IV given on Day 1
- Pemetrexed IV given on Day 1
- Carboplatin IV given on Day 1

Drug	Cycle 1	Day 1	2	3	4	5	6	7	8	9	...	21	Cycle 2 Day 1
Pembrolizumab													
Pemetrexed													
Carboplatin													

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Other medications

Other medications may be ordered for you to prevent or treat certain side effects. These include:

	Instructions:
Anti-nausea and other medications	<p>You will receive medications to prevent nausea and other side effects just before your cancer treatment. You may get prescriptions for other medications to take at home, as below:</p> <hr/> <hr/> <hr/> <hr/>
Medications to prevent side effects	<p>You will receive medications to prevent side effects before your cancer treatment. You may get prescriptions for other medications to take at home, as below:</p> <hr/> <hr/> <hr/> <hr/> <p>Dexamethasone:</p> <hr/> <p>Folic acid:</p> <hr/> <p>Vitamin B 12:</p> <hr/>

Possible drug interactions

- Pembrolizumab, pemetrexed, and carboplatin may interact with other drugs you are taking. Please inform your care providers of all prescription medicine, over-the-counter medications, vitamins, and herbal products that you take.
- Talk with your care provider or pharmacist before taking new medications, supplements, or receiving any vaccines.

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Common Side Effects

Common side effects that have been known to happen in patients pembrolizumab, pemetrexed, and carboplatin are listed in the left side of this table. In some instances, the side effects may be reported less often but are still important to discuss. This table does not list all the known side effects for this therapy, only the ones that are experienced most often. Not every patient experiences every known side effect of a drug; even if you are taking the same drug as another patient, you may experience different side effects. Options to help manage any side effects that do occur are included on the right side of this table. These should be discussed with your care provider. If you experience any side effect you cannot manage or that is not listed here, contact your care provider.

Possible Side Effect	Management
<p>Decreased white blood cells (WBCs) and increased risk for infection</p>	<p>Your WBCs should be monitored by a simple blood test. When your WBCs are low, you are at a greater risk of having an infection. Take the following precautions to protect yourself from infection.</p> <ul style="list-style-type: none"> • Wash your hands often, especially before eating and after using the bathroom. • Avoid crowds and people with fevers, flu, or other infection. • Bathe often for good personal hygiene. <p>Contact your care team if you experience any signs or symptoms of an infection such as:</p> <ul style="list-style-type: none"> • Fever (temperature more than 100.4°F or 38°C) • Chills • Sore throat • Burning when peeing • Tiredness that is worse than normal • A sore that becomes red, is draining, or does not heal. <p>Check with your care team before taking any medicine for a fever or chills.</p>
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Possible Side Effect	Management
<p>Decreased platelet count and increased risk of bleeding</p>	<p>Your platelets should be monitored by a simple blood test. When they are low, you may bruise or bleed more easily than usual.</p> <ul style="list-style-type: none"> • Use caution to avoid bruises, cuts, or burns. • Blow your nose gently and do not pick your nose • Brush your teeth gently with a soft toothbrush and maintain good oral hygiene • When shaving use an electric razor instead of razor blades • Use a nail file instead of nail clippers <p>Call your care team if you have bleeding that won't stop. Examples include:</p> <ul style="list-style-type: none"> • A bloody nose that bleeds for more than 5 minutes despite pressure • A cut that continues to ooze despite pressure • Gums that bleed a lot when you floss or brush <p>Seek medical help right away if you have any severe headaches, blood in your urine or stool, coughing up blood, or bleeding that you cannot stop or lasts a long time.</p> <p>You may need to take a break or “hold” your medication for medical or dental procedures.</p> <p>Talk to your care team or dentist before any scheduled procedures.</p>
<p>Decreased hemoglobin, part of the red blood cells that carry iron and oxygen</p>	<p>Your hemoglobin should be checked by a simple blood test. When your hemoglobin is low, you may notice that you get tired or fatigued more easily.</p> <ul style="list-style-type: none"> • Try to get 7 to 8 hours of sleep per night • Avoid operating heavy machinery if you feel too tired • Find a balance between “work” and “rest” • Stay as active as possible, but know that it is okay to rest as needed, too • You might notice that you are more pale than usual <p>Let your care team know right away if you have:</p> <ul style="list-style-type: none"> • Shortness of breath • Dizziness • Fast or abnormal heartbeat

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Possible Side Effect	Management
<p>Changes in electrolyte levels and other laboratory values:</p> <ul style="list-style-type: none"> • Low calcium levels • Low sodium levels • High or low potassium levels • High glucose levels 	<p>Changes in some lab values may occur and will be monitored by a simple blood test.</p> <ul style="list-style-type: none"> • You may not feel any symptoms if the changes are mild and they usually are not a sign of a serious problem. • More severe changes may occur, which can be a sign of a serious problem. <p>Notify your care team if you have any of the following:</p> <ul style="list-style-type: none"> • Shortness of breath • Chest discomfort • Weakness or fatigue • New aches and pains • Headaches • Dizziness • Swelling of your legs or feet • Red or brown colored urine
<p>Nausea or vomiting</p>	<ul style="list-style-type: none"> • Take all medications as prescribed to help prevent and lessen symptoms of nausea and vomiting • Eat and drink slowly • Drink 8-10 (8-ounce) glasses of water and/or fluid (soup or broth) each day unless your care team has instructed you to limit your fluid intake • Eat small, frequent meals throughout the day rather than a few large meals • Eat bland foods; avoid spicy, fried, and greasy foods • Avoid intense exercise immediately after eating • Don't lay down right away after eating • Wear loose fitting clothing for comfort • Avoid strong odors. Consider getting fresh air and try deep breathing. <p>Let your care team know if you have nausea or vomiting.</p> <p>Your care team may prescribe medication to help with the symptoms.</p>

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Possible Side Effect	Management
<p>Diarrhea (loose and/or urgent bowel movements)</p>	<p>Monitor how many bowel movements you have each day.</p> <ul style="list-style-type: none"> • Drink 8-10 (8-ounce) glasses of water or fluid each day unless your care team has asked you to limit your fluid intake. • Eat small, frequent meals throughout the day rather than a few large meals. • Eat bland, low-fiber foods (such as bananas, applesauce, potatoes, chicken, rice, and toast). • Avoid high fiber foods, such as raw vegetables and fruits and whole grains. • Avoid foods that cause gas, such as broccoli and beans. • Avoid foods with lactose, such as yogurt and milk. • Avoid spicy, fried, and greasy foods. <p>Contact your care team if:</p> <ul style="list-style-type: none"> • The number of bowel movements you have in a day increases by 4 or more • You feel dizzy or lightheaded <p>Talk with your care team if you believe you have diarrhea. They may recommend an over-the-counter medication or prescribe something to help keep it under control.</p>
<p>Constipation</p>	<p>Keep track of how many bowel movements you have each day.</p> <ul style="list-style-type: none"> • Drink 8-10 (8-ounce) glasses of water or fluid each day unless your care team has asked you to limit your fluid intake. • Stay active and exercise, if possible. • Eat foods high in fiber like raw fruits and vegetables. <p>Contact your care team if you have not had a bowel movement in 3 or more days.</p> <p>Your care team may recommend over-the-counter medications to help with constipation. A daily stool softener such as docusate (Colace®) and/or laxative such as senna (Senakot®) may be helpful. If these do not help within 48 hours, tell your care team.</p>
<p>Fatigue</p>	<ul style="list-style-type: none"> • You may be more tired than usual or have less energy • Stay as active as possible, but know it is okay to rest as needed • Try to do some type of moderate activity every day • Conserve your energy. Plan your activities and do them at a time of day when you feel a bit more energetic • Follow a healthy diet and stay hydrated • Accept help from family and friends • Find healthy ways to manage stress, such as meditation, journaling, yoga, and guided imagery • Develop good sleeping habits, limit napping during the day to help you sleep better at night • Avoid operating heavy machinery if you feel too tired • Contact your care team if you experience extreme fatigue that prevents you from doing your normal daily activities

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Possible Side Effect	Management
<p>Rash or itchy skin</p>	<ul style="list-style-type: none"> • Keep your skin moisturized with fragrance-free creams and moisturizing lotions to decrease the risk of rash or itchiness and wear loose fitting clothing. • Avoid using perfumes and cologne as these products may increase rash symptoms. • Avoid being in the heat for long periods of time. • Your provider may recommend an over-the-counter antihistamine or a topical cream. • Sunlight can make symptoms worse: <ul style="list-style-type: none"> • Avoid sun exposure as much as possible to decrease the risk of sunburn. The highest exposure to UV (ultra-violet) radiation occurs between the hours of 10am and 4pm. • Wear long-sleeved clothing, with UV protection if possible. • Wear broad-brimmed hats. • Apply broad-spectrum sunscreen (UVA/UVB) with at least SPF 30 as often as directed on the bottle. • Use lip balm with at least SPF 30 • Avoid tanning beds <p>If your rash or itching continues to worsen, contact your care team.</p>
<p>Cough or shortness of breath</p>	<p>A cough that does not produce any mucous or (dry cough) may occur while taking this medication. If you experience any breathing problems or shortness of breath, notify your care team right away. This may be a serious side effect of the medication.</p>
<p>Changes in kidney function</p>	<p>Your kidney function will be checked routinely by a simple blood test. Contact your care team if you notice any of the following:</p> <ul style="list-style-type: none"> • Decreased amount of urination • Unusual swelling in your legs and feet
<p>Changes in liver function</p>	<p>Your liver function will be checked regularly by a simple blood test. Contact your care team if you notice any of the following.</p> <ul style="list-style-type: none"> • Yellowing of the skin or whites of your eyes • Dark or brown urine • Bleeding or bruising
<p>Taste changes</p>	<p>Some people may have a metallic or bitter taste in their mouth. To help with taste changes:</p> <ul style="list-style-type: none"> • Choose and prepare foods that look and smell good to you. • Use plastic spoons, forks, or knives if food tastes like metal. • Flavor foods with spices or juices to change taste. • Suck on mints or chew gum to mask taste. • Brush teeth before and after eating with a soft bristle toothbrush. • Avoid smoking. <p>Notify your doctor if you are having trouble eating or are losing weight.</p>

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Rare but serious side effects

Tell your care provider if you experience any symptoms of these problems:

- Pemetrexed may result in toxicity to the skin. Please notify your healthcare provider if you have any signs of acne-like rashes (skin that is scaly, dry, cracking, or inflamed skin infections, and or eye infections/loss of vision).
- You may have diarrhea, nausea, vomiting, or abdominal pain while you are taking pemetrexed and carboplatin. Tell your doctor right away if these side effects continue for more than a day.
- Pembrolizumab may cause inflammation in your colon. If symptoms of diarrhea or severe abdominal pain are present, please contact your health care team right away.
- Pembrolizumab can alter your hormone levels. Symptoms may include weight and mood changes, headaches, fatigue. Contact your doctor if you are experiencing any of these symptoms.
- Pembrolizumab may be harmful to your eyes. Be sure to inform your care team of any issue you have with your vision or pain in your eyes.
- Severe allergic reactions are a rare but serious side effect of pemetrexed and carboplatin. Seek medical attention right away if you notice difficulty breathing, swelling of the mouth or tongue, or a serious rash.
- Pembrolizumab can rarely cause an infusion reaction. During your treatment, let the nurse know right away if any of these symptoms happen: chills or shaking, dizziness, fever, itchiness or rash, flushing, difficulty breathing, wheezing, sudden back pain, or feeling faint.
- Pembrolizumab and pemetrexed can cause lung and breathing problems. Tell your care team right away if you have new or worse cough, shortness of breath, chest pain, or difficulty breathing or wheezing.
- Pemetrexed may increase your sensitivity to radiation therapy or cause skin rash in places previously treated with radiation. Tell your doctor about your medication and radiation history and let your doctor know if you develop a skin rash.
- Carboplatin may cause damage to the ear resulting in hearing loss, ringing in the ears, or balance disorders. Periodic monitoring of hearing may be performed. Report any changes in hearing to your care team.
- Pembrolizumab, pemetrexed and carboplatin can cause inflammation in your kidneys. If you are experiencing any problems urinating, pelvic pain, or any blood in your urine, you should contact your doctor.
- Carboplatin may cause numbness, pain, or burning in your hands or feet. Talk to your care team about ways to resolve this side effect.

If you experience ANY new, worsening, or uncontrolled side effects, call your care team immediately.

(INSTITUTIONAL CONTACT INFO)

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Handling body fluids and waste

Some of the drugs you receive may be present in urine, stool, sweat, or vomit for many days after treatment. Many cancer drugs are toxic, your bodily waste may also be toxic and can be dangerous to come into contact with. Once you have started pembrolizumab, pemetrexed, and carboplatin, follow the instructions below for at least two days after your treatment. This is to keep you, your loved ones, and the environment as safe as possible.

- Pregnant women should avoid touching anything that may be soiled with body fluids from the patient.
- Toilet and septic systems
 - You may use the same toilet, septic tank, and/or sewer that you usually use. If you have a low-flow toilet, close the lid and flush twice to ensure that all waste has been discarded.
- If the toilet or toilet seat becomes soiled with urine, stool, or vomit, clean the surface after every use before other people use the toilet.
- Wash hands with soap and water after using the toilet for at least 20 seconds.
- If you need a bedpan, be sure your caregiver knows to wear gloves to assist with cleanup and to wash the bedpan with soap and water every day.
- If you do not have good control of bladder or bowels, use a disposable pad with a plastic back, a diaper, or a sheet to absorb body waste.
- Wash any skin that has been exposed to body waste with soap and water.
- Linens or clothing that are soiled with body fluids or body waste should be washed separately from other linens and clothing. If you do not have a washer, place the soiled linens in a plastic bag until they can be washed.
- Wash hands with soap and water after touching linens or clothing that may be soiled with body fluids.

Intimacy, sexual activity, contraception, and fertility

This treatment may cause changes that can affect intimacy and sexuality, including desire and body image. Maintaining physical closeness and/or intimacy with loved ones can be continued during treatment. Holding hands, hugging, and kissing can be done safely. It is recommended that you talk to your care team about any restrictions or questions you may have.

Some treatments can influence the ability to have children, also known as fertility. If you're interested in preserving fertility, talk to your care team before treatment. Ask your healthcare provider to determine when it is safe to become pregnant after your treatment. Patients of reproductive ability should not become pregnant or get their partners pregnant while receiving pembrolizumab, pemetrexed, and carboplatin. Some of the drugs you receive may be present in semen and vaginal secretion for many days after treatment. You should use barrier devices, such as condoms, during sexual activity to limit exposure to body fluids.

- Talk to your care team about birth control. Not all options may be right for your treatment or cancer. Effective contraception could include one or more of the following: barrier methods (e.g. condoms), hormone methods (e.g. birth control pills), or surgery.
- Tell your care team if you become pregnant or plan to breastfeed.

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Additional resources

Prescribing information:

Pembrolizumab: <https://www.keytrudahcp.com/prescribing-information/>

Pemetrexed: https://www.accessdata.fda.gov/drugsatfda_docs/label/2009/021462s021lbl.pdf

Carboplatin: https://www.accessdata.fda.gov/drugsatfda_docs/label/2012/077139Orig1s016lbl.pdf

Additional instructions

Updated – March 1, 2023

Important notice: The Association of Community Cancer Centers (ACCC), Hematology/Oncology Pharmacy Association (HOPA), National Community Oncology Dispensing Association, Inc. (NCODA), and Oncology Nursing Society (ONS) have collaborated in gathering information for and developing this patient education guide. This guide represents a brief summary of the therapy derived from information provided by the drug manufacturer and other resources. This guide does not cover all existing information related to the possible uses, directions, doses, precautions, warnings, interactions, adverse effects, or risks associated with this therapy and should not substitute for the advice of a qualified healthcare professional. Provision of this guide is for informational purposes only and does not constitute or imply endorsement, recommendation, or favoring of this therapy by ACCC, HOPA, NCODA, or ONS, who assume no liability for and cannot ensure the accuracy of the information presented. The collaborators are not making any representations with respect to the medications whatsoever, and any and all decisions, with respect to such medications, are at the sole risk of the individual receiving therapy. All decisions related to receiving this therapy should be made with the guidance and under the direction of a qualified healthcare professional.

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