OncoLink
Abramson Cancer Center of the University of Pennsylvania

Gemcitabine (Gemzar®)

Pronounced: jem-SYE-ta-been
Classification: Antimetabolite

About Gemcitabine

Gemcitabine kills cancer cells undergoing DNA synthesis. It appears to act through inhibition of DNA polymerase (an important enzyme in DNA synthesis). Because cells cannot copy their DNA, they cannot properly divide, and thus die.

How to Take Gemcitabine

Gemcitabine is given by intravenous (into a vein) infusion, over a period of 30 minutes. The dosage and schedule is determined by the person's size, type of cancer, and mode of administration. It can be given alone or with other drugs or therapies, such as radiation.

Possible Side Effects of Gemcitabine

There are a number of things you can do to manage the side effects of Gemcitabine. Talk to your doctor or nurse about these recommendations. They can help you decide what will work best for you. These are some of the most common side effects:

Low White Blood Cell Count (Leukopenia or Neutropenia)

White blood cells (WBC) are important for fighting infection. While receiving treatment, your WBC count can drop, putting you at a higher risk of getting an infection. You should let your doctor or nurse know right away if you have a fever (temperature greater than 100.4 F), sore throat or cold, shortness of breath, cough, burning with urination, or a sore that doesn't heal.

Tips to preventing infection:

- Washing hands, both yours and your visitors, is the best way to prevent the spread of infection.
- Avoid large crowds and people who are sick (i.e.: those who have a cold, fever or cough or live with someone with these symptoms).
- When working in your yard, wear protective clothing including long pants and gloves.
- Do not handle pet waste.
- Keep all cuts or scratches clean.

- Shower or bath daily and perform frequent mouth care.
- Do not cut cuticles or ingrown nails. You may wear nail polish, but not fake nails.
- Ask your doctor or nurse before scheduling dental appointments or procedures.
- Ask your doctor or nurse before you, or someone you live with, has any vaccinations.

For more suggestions, read the Neutropenia Tip Sheet.

Low Red Blood Cell Count (Anemia)

Your red blood cells are responsible for carrying oxygen to the tissues in your body. When the red cell count is low, you may feel tired or weak. You should let your doctor or nurse know if you experience any shortness of breath, difficulty breathing or pain in your chest. If the count gets too low, you may receive a blood transfusion. Read the anemia tip sheet for more information.

Low Platelet Count (Thrombocytopenia)

Platelets help your blood clot, so when the count is low you are at a higher risk of bleeding. Let your doctor or nurse know if you have any excess bruising or bleeding, including nosebleeds, bleeding gums or blood in your urine or stool. If your platelet count becomes too low, you may receive a transfusion of platelets.

- Do not use a razor to shave (an electric razor is fine).
- Avoid contact sports and activities that can result in injury or bleeding.
- Do not take aspirin (salicylic acid), non-steroidal, anti-inflammatory medications (NSAIDs) such as Motrin®, Aleve®, Advil®, etc. as these can all increase the risk of bleeding. Unless your healthcare team tells you otherwise, you may take acetaminophen (Tylenol).
- Do not floss or use toothpicks and use a soft-bristle toothbrush to brush your teeth.

Read the thrombocytopenia tip sheet for more information.

Nausea and/or Vomiting

Take anti-nausea medications as prescribed. If you continue to have nausea or vomiting, notify your doctor or nurse so they can help you manage this side effect. In addition, dietary changes may help. Avoid things that may worsen the symptoms, such as heavy or greasy/fatty, spicy or acidic foods (lemons, tomatoes, oranges). Try antacids, (e.g. milk of magnesia, calcium tablets such as Tums), saltines, or ginger ale to lessen symptoms. Read the Nausea & Vomiting Tip Sheet for more suggestions.

Call your doctor or nurse if you are unable to keep fluids down for more than 12 hours or if you feel lightheaded or dizzy at any time.

Diarrhea

Your oncology team can recommend medications to relieve diarrhea. Also, try eating low-fiber, bland foods, such as white rice and boiled or baked chicken. Avoid raw fruits, vegetables, whole grain breads, cereals and seeds. Soluble fiber is found in

some foods that absorbs fluid and can help relieve diarrhea. Foods high in soluble fiber include: applesauce, bananas (ripe), canned fruit, orange and grapefruit sections, boiled potatoes, white rice and products made with white flour, oatmeal, cream of rice, cream of wheat, and farina. Drink 8-10 glasses on non-alcoholic, un-caffeinated fluid a day to prevent dehydration. Read Low Fiber Diet for Diarrhea for more tips.

Decrease in Appetite

Visit OncoLink's section on Nutrition for tips on dealing with this side effect. Ask your nurse about nutritional counseling services.

- Try to eat five or six small meals or snacks throughout the day, instead of 3 larger meals.
- If you are not eating enough, nutritional supplements may help.
- You may experience a metallic taste or dislike foods or beverages that you liked before receiving chemotherapy. These symptoms can last up to several months.
- Avoid any food that you think smells or tastes bad. If red meat is a problem, eat chicken, turkey, eggs, dairy products and fish without a strong smell.
- Flavor meat or fish by marinating it in sweet juices, sweet and sour sauce or dressings. Use seasonings like basil, oregano or rosemary. Bacon, ham and onion can also add flavor to vegetables.

Skin Changes

These include dryness, itching, and rash. You should use a moisturizer on your skin and lips, but avoid moisturizers with perfumes or scents. Your doctor or nurse can recommend medication if itching is bothersome. If your skin does crack or bleed, be sure to keep the area clean to avoid infection. For more suggestions, read the Nail and Skin Care Tip Sheet.

Fever& Flu-Like Symptoms

Fever can be a side effect of this medication and typically occurs in the first 6-12 hours after your first dose. However, fever can be a sign of infection. If you develop a fever (temperature above 100.4), you should notify your doctor right away.

Patients may experience "flu-like" symptoms, which can include body aches, weakness, poor appetite and headache. Unless your healthcare team tells you otherwise, you may take acetaminophen (Tylenol) to help with some of these symptoms.

Fatigue

While on cancer treatment you may need to adjust your schedule to manage fatigue. Plan times to rest during the day and conserve energy for more important activities. Exercise can help combat fatigue; a simple daily walk with a friend can help. Talk to your healthcare team and see OncoLink's section on fatigue for helpful tips on dealing with this side effect.

Other Side Effects

Some less common side effects that have been reported include: mouth ulcers,

alopecia (loss or thinning of the scalp and body hair), temporary increase in liver function tests and sexual/reproductive changes.

Cisplatin (Platinol®)

Pronounced: SIS-plat-in
Classification: Platinum Coordination Complex

About Cisplatin

Cisplatin is a heavy metal compound that inhibits synthesis of RNA, DNA, and protein in cells. All of these compounds are vital for cells to divide and grow. By preventing them from dividing, the medication can stop the cancer from growing.

How to Take Cisplatin

Cisplatin is given through intravenous (into a vein) infusion. The dose and schedule is determined by the person's size and type of cancer. It can be given alone or with other drugs.

Possible Side Effects of Cisplatin

There are a number of things you can do to manage the side effects of Cisplatin. Talk to your doctor or nurse about these recommendations. They can help you decide what will work best for you. These are some of the most common side effects:

Low White Blood Cell Count (Leukopenia or Neutropenia)

White blood cells (WBC) are important for fighting infection. While receiving treatment, your WBC count can drop, putting you at a higher risk of getting an infection. You should let your doctor or nurse know right away if you have a fever (temperature greater than 100.4 F), sore throat or cold, shortness of breath, cough, burning with urination, or a sore that doesn't heal.

Tips to preventing infection:

- Washing hands, both yours and your visitors, is the best way to prevent the spread of infection.
- Avoid large crowds and people who are sick (i.e.: those who have a cold, fever or cough or live with someone with these symptoms).
- When working in your yard, wear protective clothing including long pants and gloves.
- Do not handle pet waste.
- Keep all cuts or scratches clean.
- Shower or bath daily and perform frequent mouth care.
- Do not cut cuticles or ingrown nails. You may wear nail polish, but not fake nails.

- Ask your doctor or nurse before scheduling dental appointments or procedures.
- Ask your doctor or nurse before you, or someone you live with, has any vaccinations.

For more suggestions, read the Neutropenia Tip Sheet.

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Your red blood cells are responsible for carrying oxygen to the tissues in your body. When the red cell count is low, you may feel tired or weak. You should let your doctor or nurse know if you experience any shortness of breath, difficulty breathing or pain in your chest. If the count gets too low, you may receive a blood transfusion. Read the anemia tip sheet for more information.

Low Platelet Count (Thrombocytopenia)

Platelets help your blood clot, so when the count is low you are at a higher risk of bleeding. Let your doctor or nurse know if you have any excess bruising or bleeding, including nosebleeds, bleeding gums or blood in your urine or stool. If your platelet count becomes too low, you may receive a transfusion of platelets.

- Do not use a razor to shave (an electric razor is fine).
- Avoid contact sports and activities that can result in injury or bleeding.
- Do not take aspirin (salicylic acid), non-steroidal, anti-inflammatory medications (NSAIDs) such as Motrin®, Aleve®, Advil®, etc. as these can all increase the risk of bleeding. Unless your healthcare team tells you otherwise, you may take acetaminophen (Tylenol).
- Do not floss or use toothpicks and use a soft-bristle toothbrush to brush your teeth.

Read the thrombocytopenia tip sheet for more information.

Nausea and/or Vomiting

Take anti-nausea medications as prescribed. If you continue to have nausea or vomiting, notify your doctor or nurse so they can help you manage this side effect. In addition, dietary changes may help. Avoid things that may worsen the symptoms, such as heavy or greasy/fatty, spicy or acidic foods (lemons, tomatoes, oranges). Try antacids, (e.g. milk of magnesia, calcium tablets such as Tums), saltines, or ginger ale to lessen symptoms. Read the Nausea & Vomiting Tip Sheet for more suggestions.

Call your doctor or nurse if you are unable to keep fluids down for more than 12 hours or if you feel lightheaded or dizzy at any time.

Decrease in Appetite

Visit OncoLink's section on Nutrition for tips on dealing with this side effect. Ask your nurse about nutritional counseling services.

- Try to eat five or six small meals or snacks throughout the day, instead of 3 larger meals.
- If you are not eating enough, nutritional supplements may help.
- You may experience a metallic taste or dislike foods or beverages that you liked

before receiving chemotherapy. These symptoms can last up to several months.

- Avoid any food that you think smells or tastes bad. If red meat is a problem, eat chicken, turkey, eggs, dairy products and fish without a strong smell.
- Flavor meat or fish by marinating it in sweet juices, sweet and sour sauce or dressings. Use seasonings like basil, oregano or rosemary. Bacon, ham and onion can also add flavor to vegetables.

Sexual and Reproductive Changes

This drug can affect your reproductive system, resulting in the menstrual cycle or sperm production becoming irregular or stopping permanently. Women may experience menopausal effects including hot flashes and vaginal dryness – read more about coping with vaginal dryness. In addition, the desire for sex may decrease during treatment.

Exposure of an unborn child to this medication could cause birth defects, so you should not become pregnant or father a child while on this medication. Effective birth control is necessary during treatment, even if your menstrual cycle stops or you believe your sperm is affected. You may want to consider sperm banking or egg harvesting if you may wish to have a child in the future. Discuss these options with your oncology team. See OncoLink's section on sexuality for helpful tips for dealing with these side effects.

Kidney and Liver Function Changes

Your doctor may order some blood tests to check your liver and kidney function, as these can be affected by cisplatin. Call your doctor or nurse immediately if you have abdominal pain, if your urine becomes dark, or if your skin or the whites of your eyes become jaundiced (yellow in color).

Peripheral Neuropathy (Numbness or Tingling in the Hands and/or Feet)

Peripheral neuropathy is a toxicity that affects the nerves. It causes a numbness or tingling feeling in the hands and feet, often in the pattern of a stocking or glove. This can get progressively worse with additional doses of the drug. In some people, the symptoms slowly resolve after the drug is stopped, but for some it never goes away completely. You should let your healthcare provider know if you experience numbness or tingling in the hands and feet, as they may need to change the doses of your medication. See OncoLink's section on peripheral neuropathy for tips on dealing with this side effect.

Electrolyte Changes

Your doctor may order blood tests to check your electrolytes. If needed, the doctor may prescribe supplements such as magnesium or potassium.

Hearing Loss

Cisplatin can cause hearing loss. Call your doctor or nurse if you have ringing in your ears or if you notice a decrease in your hearing.

Bevacizumab (Avastin™)

Pronounced: BEV-a-SIZ-oo-mab
Classification: Monoclonal Antibody

About Bevacizumab

Bevacizumab is a monoclonal antibody that binds to and inhibits the activity of vascular endothelial growth factor (VEGF). This prevents the VEGF from interacting with its receptor on endothelial cells (lining of blood vessel). This, in turn, inhibits the formation of new blood vessels, which slows down the growth of the particular tissue. In essence, it kills tumors by cutting off their blood supply.

How to Take Bevacizumab

Bevacizumab is given by intravenous (into a vein) infusion. The treatment is delivered over 90 minutes for the first infusion. If that dose is well tolerated, the second infusion can be administered over 60 minutes. If this is well tolerated, subsequent infusions can be given over 30 minutes. Dosage depends on the person and type of cancer being treated.

Bevacizumab is usually given at the same time as other chemotherapy medications. Therefore, this should be kept in mind as the side effects are reviewed.

Possible Side Effects of Bevacizumab

Bevacizumab has the potential to cause several serious side effects. There are some things you can do to manage the more common side effects of Bevacizumab. Talk to your doctor or nurse about these recommendations. They can help you decide what will work best for you.

Hemorrhage (Bleeding)

Patients may experience minor bleeding, such as a nosebleed. Serious bleeding has also occurred in patients treated with this medication, including coughing up blood, bleeding into the stomach, vomiting blood, bleeding in the brain (stroke), nosebleeds and vaginal bleeding. People who have had serious bleeding should not take this medication. These events are uncommon, though if they occur, bevacizumab should be discontinued. While a nosebleed may not seem like much of a concern, you should notify your healthcare team right away if you develop bleeding of any sort.

Hypertension (High Blood Pressure)

Patients receiving bevacizumab can develop high blood pressure. Your blood pressure should be monitored at every clinic visit or every 2-3 weeks. If your blood pressure is elevated, you will be treated with a medication to reduce your pressure. If severe hypertension develops, bevacizumab should be discontinued immediately. In both cases, your blood pressure should continue to be monitored, even if bevacizumab is

stopped. Signs of hypertension to report to your team include: blurry vision, nosebleed, headache and fatigue.

Gastrointestinal Perforation

Bevacizumab can result in a serious, sometimes fatal, problem called gastrointestinal perforation, which is the development of a hole in the stomach or small or large intestine. If you develop abdominal pain, nausea, vomiting, constipation or fever, you should notify your healthcare team immediately.

Poor Wound Healing

Bevacizumab can lead to slower or incomplete wound healing, such as a surgical wound not healing or staying closed. Therefore, it is recommended that bevacizumab not be given within at least 28 days before or after surgery. In addition, any surgical incision should be fully healed prior to starting bevacizumab. If you notice that your surgical wound has not healed or begins to have signs of infection (redness, swelling, warmth), report this to your healthcare team.

Kidney Damage

Kidney damage can occur while receiving bevacizumab. Your healthcare team will monitor this by periodically checking the amount of protein in your urine. If the protein levels become elevated, you may require further urine tests to evaluate your kidney function. If your kidneys become damaged, you may need to stop receiving this medication.

Additional Rare, But Serious, Side Effects

Stroke or heart problems, including blood clots, heart attack and chest pain, can occur. Bevacizumab should be stopped if these occur. A possible, but rare, side effect is the development of a fistula, which is an abnormal passage between two body parts (for instance, a hole between the lung and esophagus).

Diarrhea

Your oncology team can recommend medications to relieve diarrhea. Also, try eating low-fiber, bland foods, such as white rice and boiled or baked chicken. Avoid raw fruits, vegetables, whole grain breads, cereals and seeds. Soluble fiber is found in some foods that absorbs fluid and can help relieve diarrhea. Foods high in soluble fiber include: applesauce, bananas (ripe), canned fruit, orange and grapefruit sections, boiled potatoes, white rice and products made with white flour, oatmeal, cream of rice, cream of wheat, and farina. Drink 8-10 glasses on non-alcoholic, un-caffeinated fluid a day to prevent dehydration. Read Low Fiber Diet for Diarrhea for more tips.

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