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.

Carboplatin (Paraplatin®)

Pronounced: car-boe-PLATT-in
Classification: Platinum Coordination Complex

About Carboplatin

Carboplatin 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 Carboplatin

Carboplatin is given by intravenous (IV, into a vein) injection. The schedule and dosage is based on the person's size and the cancer type being treated. It can be given alone or with other drugs.

Possible Side Effects of Carboplatin

There are a number of things you can do to manage the side effects of Carboplatin. 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.

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.

Kidney Changes

Your doctor may order blood tests to check your kidney function. Intravenous fluids are given with the chemotherapy to flush your kidneys and increase your urine output. Try to drink at least 6-8 glasses of uncaffienated fluids a day. Call your doctor or nurse if you do not urinate for more than 12 hours.

Hearing Loss

Carboplatin can affect your hearing. Call your doctor or nurse if you have ringing in your ears or if you notice a decrease in your hearing.

Mouth Ulcers (Sores)

Certain cancer treatments can cause sores or soreness in your mouth and/or throat. Notify your doctor or nurse if your mouth, tongue, inside of your cheek or throat becomes white, ulcerated or painful. Performing regular mouth care can help prevent or manage mouth sores. If mouth sores become painful, your doctor or nurse can recommend a pain reliever.

- Brush with a soft-bristle toothbrush or cotton swab twice a day.
- Avoid mouthwashes that contain alcohol. A baking soda and/or salt warm water mouth rinse (2 level teaspoons of baking soda or 1 level teaspoon salt in an eight ounce glass of warm water) is recommended 4 times daily.
- If your mouth becomes dry, eat moist foods, drink plenty of fluids (6-8 glasses), and suck on sugarless hard candy.
- Avoid smoking and chewing tobacco, drinking alcoholic beverages and citrus juices.

Read the mouth ulcer tip sheet for more information.

Nail and Skin Changes

Your fingernails/toenails may become dark, brittle or fall off. You may notice dry skin or changes in the color or tone of your skin. Your skin will be more sensitive to the sun, which can result in severe sunburn or rash. Sun sensitivity can last even after chemotherapy is completed. Avoid the sun between 10-2pm, when it is strongest. Wear sunscreen (at least SPF 15) everyday; wear sunglasses and long sleeves/pants to protect your skin. Keep your fingernails and toenails clean and dry. You may use nail polish, but do not wear fake nails. Notify your doctor or nurse if any nails fall off. For more suggestions, read theNail and Skin Care Tip Sheet.

Loss or Thinning of Scalp and Body Hair (Alopecia)

Your hair may become thin, brittle, or may fall out. This typically begins two to three weeks after treatment starts. This hair loss can be all body hair, including pubic, underarm, legs/arms, eyelashes, and nose hairs. The use of scarves, wigs, hats and hairpieces may help. Hair generally starts to regrow soon after treatment is completed. Remember your hair helps keep you warm in cold weather, so a hat is particularly

important in cold weather or to protect you from the sun. Read more on alopecia.

Liver changes

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

Cetuximab (Erbitux®)

Pronounced: se-TUX-i-mab
Classification: Monoclonal Antibody

About Cetuximab

Cetuximab is a man-made version of a naturally occurring human/mouse antibody that inhibits the epidermal growth factor receptor (EGFR). The EGFR is a protein that is abnormally over expressed in many cancers, and the inhibition of EGFR results in a decrease in tumor cell growth and decreased production of other factors responsible for metastasis (spreading of cancer).

How to Take Cetuximab

Cetuximab is given through intravenous (into a vein) infusion. The first dose will be given over a period of about two hours. Subsequent doses will be given once a week, over about an hour. Medications are given prior to the administration of cetuximab to prevent a reaction to the infusion.

Possible Side Effects of Cetuximab

There are a number of things you can do to manage the side effects of Cetuximab. 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:

Infusion Reaction

Some patients develop a reaction to the infusion. This most commonly occurs with the first dose they receive. Reactions can cause chills, fever, shortness of breath, difficulty breathing, itching, or low blood pressure. Tell your nurse right away if you experience any of these. You will be given a medication prior to the infusion to help prevent this reaction.

Nail and Skin Changes

Cetuximab has some unique nail and skin side effects that you may develop. Patients may develop a rash. While this rash may look like acne, it is not, and should not be treated with acne medications. The rash may appear red, swollen, crusty and dry and feel sore. You may also develop very dry skin, which may crack, be itchy or become

flaky or scaly. The rash my be the worst during the first few weeks of treatment, but may continue until treatment is stopped. Tips for managing your skin include:

- Use a thick, alcohol-free emollient lotion or cream on your skin at least twice a day, including right after bathing.
- Sun exposure can worsen the rash. Use a sunscreen with an SPF of 30 or higher and wear a hat and sunglasses to protect your head and face from the sun.
- Bathe in cool or lukewarm water and pat your skin dry.
- Use soaps, lotions and laundry detergents without alcohol, perfumes or dyes.
- Wear gloves to wash dishes or do housework or gardening.
- Drink plenty of water and try not to scratch or rub your skin.
- Notify your healthcare team if you develop a rash as they may have management suggestions and/or prescribe a topical medication to apply to the rash or an oral medication.

While receiving cetuximab, you may develop an inflammation of the skin around the nail bed/cuticle areas of toes or fingers, which is called paronychia. It can appear red, swollen or pus filled. Nails may develop "ridges" in them or fall off. You may also develop cuts or cracks that look like small paper cuts in the skin on your toes, fingers or knuckles. These side effects may appear several months after starting treatment, but can last for many months after treatment stops.

- Follow the same recommendations for your skin (above).
- Don't bite your nails or cuticles or cut the cuticles.
- Keep your fingernails and toenails clean and dry.
- You may use nail polish, but do not wear fake nails.
- Notify your doctor or nurse if any nails fall off or you develop any of these side effects or other skin abnormalities.

For more suggestions, read the Nail and Skin Care Tip Sheet.

Hair Changes

While receiving cetuximab, your eyelashes may grow very fast, become very long and bother your eyes. The hair on your head may become curly, fine or brittle. These tend to resolve once treatment is stopped.

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.

Reproductive Concerns

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 or for 6 months following therapy. Effective birth control is necessary during treatment, even if your menstrual cycle stops or you believe your sperm is affected. Cetuximab can also be passed through breast milk, therefore women should not breast feed while using this medication. See OncoLink's section on sexuality for helpful tips for dealing with these side effects.

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.

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.

Lung Problems

In a few cases, patients developed lung problems while receiving cetuximab. Notify your healthcare team right away if you develop shortness of breath or any difficulty breathing.

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