High Dose Interleukin-2 (IL-2) Drug Information
Patient Education

Generic Name: Aldesleukin (al-des-LOO-kin)
US Brand Name: Proleukin
Therapeutic Category: Biotherapy

What is this medicine used for?
Interleukin-2 (aldesleukin) is a form of immunotherapy that uses the body's natural immune system to fight cancer. It is an FDA-approved treatment for adults with metastatic melanoma and metastatic kidney cancer.

How does it work?
IL-2 is a protein called a cytokine that occurs naturally in your body. IL-2 does not kill tumor cells directly. Instead, IL-2 works by stimulating certain cells in your immune system to fight your cancer. The immune system is a complex network of cells and organs that work together to defend your body against attacks by "foreign" or "non-self" invaders, such as bacteria or viruses that may cause infection. The immune system also helps eliminate "worn-out" cells, abnormal cells, or cancerous cells that may develop in our bodies. However, the immune system does not always recognize cancer cells as abnormal or dangerous. Therefore, IL-2 is given to boost the immune system to fight your cancer.

How will I receive intravenous (I.V.) IL-2?
You will receive your interleukin-2 (IL-2) treatment in the hospital. One treatment course consists of two cycles. Each cycle consists of 5 treatment days in the hospital with one week of rest at home in between each 5-day cycle. Usually, you will be admitted to the hospital on a Monday and you will be able to go home on Saturday. The first dose of IL-2 usually starts at 6 pm on Monday. IL-2 is given every eight hours for a maximum of 14 doses. Each dose infuses over 15 minutes. The health care team will check you before each dose and if you are having a lot of side effects, a dose may be skipped. Most patients do not receive all 14 doses. Most patients receive 7 to 12 doses in the first cycle and fewer in later cycles.

The IL-2 is given intravenously through a Peripherally Inserted Central Catheter (PICC). A PICC is a soft flexible tube inserted into your arm. The PICC allows us to give intravenous (through a vein) medications like IL-2, or take blood samples through the catheter without sticking needles in your arm. The catheter is placed into a large vein in the arm near the bend of the elbow or upper arm. The tip of the catheter lies in a large vein above the heart. The catheter may be placed before you arrive at the hospital or while you are in the hospital. You can go home with this catheter, but the dressing must be changed and the tubes must be flushed every week. It is important to avoid getting the PICC wet, so you will be given a plastic sleeve to cover it during your shower. This catheter will be removed when you complete your IL-2 treatment.

What are the side effects?
IL-2 causes many side effects. Most people have flu-like symptoms such as fever, chills, and joint and muscle aches. Other side effects include weight gain from fluids, rapid heart rate, low urine output, low blood pressure, nausea, vomiting, diarrhea, skin flushing, itching, vivid dreams, and confusion.

We will monitor you closely for all side effects. Your vital signs will be taken often. We will measure your urine output. We will check your labs every day. The health care team will listen to your lungs, heart, and abdomen, and ask how you are feeling. They will monitor you closely and help you manage side effects.

Chills
Some patients feel a chill a few hours after receiving IL-2.

- If you begin to feel cold, your nurse will give you blankets.
- If you develop a severe or shaking chill, your nurse will give you meperidine (Demerol) through your I.V. to make the chill go away.

Heart and blood vessel side effects
IL-2 can cause side effects that affect your heart and blood vessels. These side effects include low blood pressure (hypotension), rapid heartbeat (tachycardia), and swelling (edema). You will be on a heart monitor while you are in the hospital.

Low blood pressure (hypotension)
Low blood pressure may make you feel lightheaded or dizzy. If you feel this way, stay in bed and use the call light to call your nurse.

- Your nurse will take your blood pressure and may lower the head of your bed.
- Your nurse may give you extra fluids (saline) through your I.V.
- You may receive other medications to raise your blood pressure.

Rapid heartbeat (tachycardia)
Some patients develop a heartbeat greater than 120 beats per minute.

- If you have rapid heartbeat, you may be given extra fluid to help your heart slow down.
- Your nurse will check your vital signs closely if rapid heartbeat occurs.

Swelling (Edema)
Most patients have swelling (edema) of the hands, feet, and face. This is caused by fluid leaking into the body tissues. You may gain 10 to 20 pounds during your therapy. Since your hands may swell, you should take off all rings before beginning therapy.

- To help reduce swelling once your treatment has ended, you will be given a diuretic such as furosemide (Lasix). This medication helps rid your body of extra fluid by making you urinate more. Most of the extra fluid weight will go away within 48 to 72 hours after treatment stops.

Respiratory side effects
IL-2 therapy may affect your lungs and your ability to breathe because fluid may leak around the lungs. If you have any trouble breathing, call your nurse. You will be asked to stay in bed with the head of the bed raised.

- When you need to get out of bed, ask your nurse for help.
- You may be given oxygen to help you breathe more easily.
- Your nurse will monitor your respiratory rate and check whether you are having trouble breathing.
- Your nurse will measure the amount of oxygen in your blood with a finger probe called a “pulse oximeter.”

Urinary side effects
Because IL-2 causes fluid to leak into the body tissues, you will not urinate as much as you normally would. The amount of fluid you drink and the urine you pass will be measured.

- Your nurse may give you extra fluids (saline) through your I.V.
- You may receive other medications to increase the urine output.

Gastrointestinal side effects
IL-2 may cause a poor appetite, nausea, vomiting, or diarrhea. These side effects will be uncomfortable, and the nursing staff will provide you with medications to help control them. Please let your nurse know if a medication does not help you. There are other medications that may work.

- If your stools become loose or watery, your nurse can give you medications to decrease diarrhea.
- If you pass many loose stools at once and find it hard to get to the bathroom quickly, then you will be given a bedside commode chair.
- Do not try to walk to the bathroom if you are not feeling well. Just ask for help by pressing the call button.
- If you have nausea, your nurse can give you medications for nausea.
- If you have a poor appetite, it is ok if you don’t eat very much. When you go home, your appetite will get better and you will be able to eat more.

Mucositis (mouth irritation)
IL-2 therapy may cause mucositis. Your mouth may become dry, swollen, sore, red, make less saliva, and feel like its burning. Your lips may be dry, become chapped, and you may experience changes in taste.

- Use a soft nylon-bristled toothbrush when you brush your teeth. Rinse your toothbrush well after each use and store it in a dry place. Brush your teeth within 30 minutes after eating and rinse your mouth with saline (salt-water) solution at least five times a day (in the morning, after each meal, and at bedtime).
- Do not use over-the-counter mouthwashes that contain alcohol.
- You may be prescribed a medication if you develop thrush (yeast infection in the mouth).

Skin effects
Almost everyone receiving IL-2 treatment will have some degree of dry skin or rash. This can range from dry, red skin with itching, to flaking or peeling skin. Dry, peeling skin can occur anywhere on your body and may last for several weeks.

- Use a mild, moisturizing cream such as Cetaphil cream twice a day. Aveeno baths and/or Sarna lotion may help ease itchiness. Use a mild soap for bathing. It is important to continue careful skin care until all dryness goes away.
- It is important to protect yourself from direct sun. Use a sun block with a sun protection factor (SPF) of 15 or greater. Ultraviolet rays can go through clouds, so use sun block even on cloudy days. Reapply sun block if you sweat or swim. Wear a hat and loose-fitting cotton clothes.
- Show all over-the-counter skin products you use to your nurse. Many contain steroids, which prevent IL-2 from working. Do not use any product containing steroids.

Fatigue
Fatigue is a common side effect that lasts for a few days or a week after discharge.

- Balancing periods of rest and activity may help improve fatigue and give you more energy. Gradually increase your exercise, work, and sexual activity.
- Some of the medications that ease the side effects of therapy, such as lorazepam (Ativan) and diphenhydramine (Benadryl), may make you drowsy. If you take these medications, do not operate machinery or drive a car.

Psychological side effects
During IL-2 therapy, you may have changes in your emotions and thinking. You may become moody, irritable,
sad, agitated, forgetful, or lethargic. It is also possible to feel confused, have nightmares, or have hallucinations (seeing or hearing things that are not there). These side effects will go away when treatment is over. Some patients continue to have vivid dreams for 1 to 2 weeks after IL-2 therapy ends. These side effects do not happen to everyone, and they vary greatly from one person to another.

- Many patients appreciate having a family member or friend stay with them at the hospital for support and company.
- Your health care team will help support you.
- Your nurse may give you medication for anxiety or to help you sleep.

**What should my doctor or nurse know before I take this medication?**

- If you are allergic to any medicines.
- If you are taking other over the counter or prescription medicines, including vitamins and herbal remedies.
- If you are, or may be pregnant.
- If you are breast feeding.

**Danger signals to report immediately to your doctor or nurse:**

- Signs or symptoms of infection. This includes a fever of 100.5° F (38° C) or greater, chills, severe sore throat, ear or sinus pain, cough, increased sputum or change in color, painful urination, mouth sores, wound that will not heal, or anal itching or pain.
- Chest pain or tightness, rapid or irregular heart beat.
- Difficulty catching your breath.
- Changes in urination or urinating small amounts.
- Swelling in your hands or feet.
- Severe nausea, vomiting, or diarrhea, which is not controlled by medication or lasting more than one day.
- Not able to eat or drink.
- Headache unrelieved by prescribed medication.
- Painful mouth or sore throat that makes it difficult to eat or drink.
- Bleeding from your nose, mouth, gums, or in your urine or bowel movements. Bruising that does not heal.
- Feeling extremely tired, weak dizzy, light headed, agitated or confused.
- Yellowing of the skin or eyes.

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