FLAG-Ida

FLAG-Ida is a combination of the following medicines: fludarabine, cytarabine, granulocyte colony-stimulating factor and idarubicin. FLAG-Ida can be used to treat some people with myelodysplastic syndrome (MDS) or acute myeloid leukaemia (AML).

Summary

- FLAG-Ida is a combination of four medicines used to treat some adults with acute myeloid leukaemia (AML) or myelodysplastic syndrome (MDS).
- You have treatment in cycles, with different medicines on different days.
    - Fludarabine is a chemotherapy medicine. You usually have it through a drip into a vein, on day 2 to day 6.
    - Cytarabine is also a chemotherapy medicine. You usually have it through a drip into a vein, on day 2 to day 6.
    - Granulocyte colony-stimulating factor (G-CSF) is a medicine that helps your bone marrow recover from chemotherapy. You usually have it as an injection under the skin of your tummy or leg, on day 1 to day 7.
    - Idarubicin is a chemotherapy medicine. You will usually have it through a drip into a vein, on day 4 to day 6.
- You will have regular blood tests to check how well the treatment is working and how your body is coping with it.
- You may get some side effects while you are having FLAG-Ida. Some people have very few side effects, whereas other people experience more serious side effects.
- If you experience any side effects, contact your haematology team. They may be able to offer medicine or adjust your treatment to help.

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About FLAG-Ida

FLAG-Ida is a combination of four different medicines: fludarabine, cytarabine, granulocyte colony-stimulating factor and idarubicin.

Your haematology team might recommend it for you if:

- You have AML that did not respond to your first treatment or came back after treatment
- You have AML that developed after another type of blood cancer
- You have newly-diagnosed AML with genetic changes in the leukaemia cells that mean it may not respond well to other treatments
- You have MDS with features that mean it may not respond well to other treatments

Fludarabine

Fludarabine is a chemotherapy medicine that stops cells from making DNA and proteins. This can stop cancer cells from growing and dividing. The brand name for fludarabine is Fludara.

Cytarabine

Cytarabine is also a chemotherapy medicine that stops cells from making and repairing DNA. This can stop cancer cells from growing and dividing. Cytarabine does not have a brand name. You might hear some people call it Ara-C.

G-CSF

G-CSF is a medicine that helps your bone marrow make more blood cells. This can help your blood counts recover from chemotherapy. Brand names for G-CSF include:

- Granocyte
- Neupogen
- Nivestim
- Zarzio
- Lonquex
- Neulasta
- Pelmeg

Idarubicin

Idarubicin is a chemotherapy medicine that blocks an enzyme cancer cells need to divide and grow. Blocking it can help stop cancer cells from growing and dividing. The brand name for idarubicin is Zavedos.

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Before having FLAG-Ida

Before starting FLAG-Ida, your haematology team will carry out checks to make sure it's suitable for you. These might include:

- Blood tests to measure your blood counts
- Blood tests to check your liver and kidney function
- Bone marrow test
- Tests and scans to check your heart function
- A pregnancy test

Things to tell your haematology team

Before starting treatment, you should let your haematology team know if you:

- Have or ever had kidney or liver disease
- Have or ever had tummy problems, or any problems with your bowels
- Have sickle cell disease or sickle cell trait
- Are due to have any vaccines
- Are or think you may be pregnant

Some medicines or drugs may interact with FLAG-Ida. It is important to tell your haematology team about any medicines or supplements you are taking. This includes prescribed medicines and medicines you have bought yourself without a prescription. Examples include:

- Medicines that are used to reduce your risk of blood clots
- Pentostatin, a medicine used to treat hairy cell leukaemia
- Methotrexate, a medicine used to treat some cancers and some inflammatory conditions
- Medicines that can affect your heart
- Certain antibiotics or antifungals
- Medicines that can affect your immune system
- Any herbal remedies you take

> **FLAG-Ida may affect your fertility. If you may want to have children in the future, ask your haematology team for advice on sperm or egg storage before starting treatment.**

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Having FLAG-Ida

FLAG-Ida is an intensive treatment. You will need to stay in hospital while you have treatment and until your blood counts recover.

You have fludarabine, cytarabine and idarubicin through a drip into a vein (or a central line, if you have one). You have G-CSF as an injection under your skin, usually in your tummy, leg or arm.

You have FLAG-Ida in cycles with different treatments on different days.

A typical treatment cycle

- Day 1: G-CSF
- Day 2: Fludarabine + cytarabine + G-CSF
- Day 3: Fludarabine + cytarabine + G-CSF
- Day 4: Fludarabine + cytarabine + G-CSF + idarubicin
- Day 5: Fludarabine + cytarabine + G-CSF + idarubicin
- Day 6: Fludarabine + cytarabine + G-CSF + idarubicin
- Day 7: G-CSF

You might have G-CSF for longer than 7 days if you have a low white blood cell count. This helps prevent infections.

You will need to stay in hospital while you are having treatment, and until your blood counts recover. This usually takes around 4 to 6 weeks.

If you need a second cycle of treatment you will have the same treatment, but your haematology team might change your idarubicin dose or leave it out altogether (FLAG).

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Your haematology team will also give you treatment or suggest things to help prevent and manage side effects. This may include:

- Allopurinol or rasburicase, to protect your kidneys and prevent a problem known as tumour lysis syndrome.
- Staying hydrated, by drinking water and having fluid through a drip. This helps prevent gout and tumour lysis syndrome.
- Medicines to prevent infections.
- Medicines to help reduce the amount of stomach acid made by the glands in the lining of your stomach (tummy).
- Steroid eye drops.
- Mouthwashes.

Dose

Your haematology team will work out the best dose of medicines for you based on your height, weight and how well you respond to treatment. They will tell you what dose they recommend for you.

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Precautions

FLAG-Ida can make you feel tired, weak, confused. Take care if you are driving or using tools or machinery.

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Pregnancy, breastfeeding and fertility

FLAG-Ida may harm unborn babies.

- If you could get pregnant, it is important to use effective contraception. You need to do this while you are having FLAG-Ida and for 26 weeks after you stop.
- If you could make someone pregnant, it is important to use effective contraception. You need to do this while you are having FLAG-Ida and for 14 weeks after you stop.

- If you think you might be pregnant, tell your haematology team as soon as possible. They may recommend stopping FLAG-Ida for a while. They could also recommend switching to a different treatment.
- If you are planning to get pregnant, or make someone pregnant, tell your haematology team. They can discuss your treatment options with you.

Breastfeeding

Scientists are not sure if FLAG-Ida passes into breast milk. If it does, it could be a risk for breastfed babies or children. You should not breastfeed when having FLAG-Ida and for 14 days after you stop.

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Monitoring during FLAG-Ida treatment

During your treatment with FLAG-Ida you will have regular blood tests. You will also have bone marrow tests and you may have heart tracings and heart scans. Your haematology team will let you know what tests you need and how often.

Your haematology team will use the results of these tests to:

- Check how well FLAG-Ida is working for you
- Make sure your blood counts have not dropped too low
- Check how well your liver and kidneys are working

Tumour lysis syndrome

Chemotherapy kills cancer cells. When lots of cancer cells breakdown quickly, they can release a large amount of chemicals into your blood. This is known as tumour lysis syndrome. It can affect how well your kidneys work, as well as causing changes to your heartbeat and sometimes fits (seizures).

If you have a very high cancer cell count before treatment, your haematology team might give you medicine to help prevent tumour lysis syndrome. They will monitor you closely so they can treat it quickly if it happens.

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How long to have FLAG-Ida

The number of cycles you have depends on how you respond to treatment and how well your body is coping with it. You have a maximum of two induction cycles.

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Side effects

Like all medicines, FLAG-Ida can cause side effects. Some of these may be serious. Side effects are different for everyone, and we cannot predict what side effects you may or may not get.

> **Tell your haematology team about any side effects that you have. They may be able to suggest things you can do or give you medicines to help.**

Side effects that you may get include:

- Infections. Signs of infection include:
    - A high temperature (37.5°C to 38°C or higher)
    - Sore throat, sneezing, blocked or runny nose or cough
    - Itchy nose, throat and eyes
    - Headache or pain around your eyes, nose and forehead
    - Shortness of breath
    - Burning or stinging when you pee, or peeing more than usual
    - Painful, hot, red swollen area of skin, blisters or peeling skin (this may look different on black or brown skin)
    - Coldsores around your lips, mouth or tongue
    - Red patches, ulcers, loss of taste or pain, burning or swelling in your mouth
- Fever
- Feeling sick or being sick
- Unexpected bleeding, such as nosebleeds, bleeding gums, blood spots or rashes
- Diarrhoea, constipation, tummy pain or bloating

- Mouth ulcers, sore mouth or pain when swallowing
- Changes in your liver function, found on blood tests
- Problems with your kidneys, which might cause symptoms like weight loss, swelling of your legs, feet and ankles, shortness of breath and peeing more often
- Skin rash, red spots, itching or dryness (this may look different on black and brown skin)
- Shortness of breath, fatigue and a dry cough (these all may be worse when you are lying on your back)
- Headaches, trouble speaking, confusion, weakness or loss of movement, fits (seizures) and fainting

This is not a full list of side effects you might get. Your haematology team can give you more information on what to expect from your treatment.

Cytarabine syndrome

This is a type of allergic reaction that can occur, usually 6 to 12 hours after you have had a cytarabine injection. You may get symptoms like:

- Fever
- Muscle aches and pains
- Bone pain
- Chest pain
- Reddish skin covered in bumps (this may look different on black and brown skin)
- Red and sore eyes
- Feeling sick
- Feeling generally unwell

If you experience these symptoms, tell your haematology team. They may give you treatment, such as steroids, to help.

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What to do if you get side effects

Tell your haematology team if you get any side effects. They may be able to suggest things to help. This could include:

- Medicines like antibiotics, antifungals or antivirals to treat and prevent infections

- Medicine to prevent and treat gout or tumour lysis syndrome
- Creams or ointments to help with itchy or dry skin
- Medicines to reduce your stomach acid levels
- Blood or platelet transfusions if you have low levels of blood cells
- Mouthwashes, rinses and gels to help with sore mouth
- Eye drops to help with irritated, itchy or dry eyes
- Medicines to prevent and treat sickness and diarrhoea
- A drip if you're not getting enough fluid

You may need to stay in hospital to manage some of these side effects.

Blood Cancer UK and Macmillan have more information on coping with side effects and treatment.

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If FLAG-Ida does not work

If FLAG-Ida is not working well, your haematology team will talk to you about your treatment options.

If your AML does not respond to treatment, this is known as refractory AML. We have more information about relapsed and refractory AML.

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Need support?

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