
FLAG-Ida for Acute Myeloid Leukaemia (AML)

**A Guide for
Patients**

Leukaemia Care
YOUR Blood Cancer Charity

Introduction

FLAG-Ida is a combination regimen of Fludarabine, Idarubicin, GCSF (Granulocyte-colony stimulating factor) and high dose Cytarabine used in the treatment of Acute myeloid leukaemia (AML).

This booklet has been compiled by one of our medical writers Saloua Najjam, PhD. (Haematology) and peer reviewed by one of our medical professionals, Nurse Advisor Fiona Heath. We are also grateful to Julie Quigley, AML patient reviewer, for her valuable contribution.

If you would like any information on the sources used for this booklet, please email communications@leukaemiacare.org.uk for a list of references.

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About Leukaemia Care

Leukaemia Care is a national charity dedicated to ensuring that people affected by blood cancer have access to the right information, advice and support.

Our services

Helpline

Our helpline is available 9.00am - 10.00pm on weekdays and 9.00am - 12.30pm on Saturdays. If you need someone to talk to, call **08088 010 444**

Nurse service

We have two trained nurses on hand to answer your questions and offer advice and support, whether it be through emailing **nurse@leukaemicare.org.uk**, over the phone on **08088 010 444** or via LiveChat.

Patient Information Booklets

We have a number of patient information booklets like this available to anyone who has been affected by a blood cancer. A full list of titles – both disease specific and general information titles – can be found on our

website at **www.leukaemicare.org.uk/resources/filter-by-resource-type/information-booklets**

Support Groups

Our nationwide support groups are a chance to meet and talk to other people who are going through a similar experience. For more information about a support group local to your area, go to **www.leukaemicare.org.uk/our-support-groups**

Buddy Support

We offer one-to-one phone support with volunteers who have had blood cancer themselves or been affected by it in some way. You can speak to someone who knows what you are going through. For more information on how to get a buddy call **08088 010 444** or email **care@leukaemicare.org.uk**

Online Forum

Our online forum, www.healthunlocked.com/leukaemia-care, is a place for people to ask questions anonymously or to join in the discussion with other people in a similar situation.

Patient and carer conferences

Our nationwide conferences provide an opportunity to ask questions and listen to patient speakers and medical professionals who can provide valuable information and support.

Website

You can access up-to-date information on our website, www.leukaemiacare.org.uk, as well as speak to one of our care advisers on our online support service, LiveChat (9am-5pm weekdays).

Campaigning and Advocacy

Leukaemia Care is involved in campaigning for patient well-being, NHS funding and drug and treatment availability. If you would like an update on any of the work we are currently doing or want to know how to get involved, email advocacy@leukaemiacare.org.uk

Patient magazine

Our free quarterly magazine includes inspirational patient and carer stories as well as informative articles by medical professionals. To subscribe go to www.leukaemiacare.org.uk/resources/subscribe-to-journey-magazine

What is FLAG-Ida?

FLAG-ida is the name given for a group of licensed drugs used mainly as induction treatment for acute myeloid leukaemia. This group consists of Fludarabine, Idarubicin, GCSF (Granulocyte-colony stimulating factor) and high dose Cytarabine.

Fludarabine

This drug is known under the trade name of Fludara. Like Cytarabine, Fludarabine, is a cytotoxic agent that belongs to the group of drugs called antimetabolites (effective chemotherapeutic drugs, which interfere with metabolism processes). Fludara for injection contains fludarabine phosphate, the active ingredient of this drug.

Fludarabine is supplied under the form of film coated tablets and concentrate solution for injection or infusion and it is indicated for the treatment of B-cell chronic lymphocytic leukaemia (CLL).

High dose Cytarabine

Cytarabine (Ara C, Cytosine arabinoside) is a drug indicated in the treatment of some types of Leukaemia and it is supplied in three different doses: high,

intermediate and low dose. High dose of Cytarabine is Cytarabine drug with high concentration of the active ingredient.

Idarubicin

Idarubicin, known under the trade name of Zavedos, is a cytotoxic drug that belongs to the same group called anthracyclines. This drug is supplied as capsules and powder for solution for injection in the treatment of acute leukaemia and advanced breast cancer after failure of first line chemotherapy.

GCSF (Granulocyte-colony stimulating factor)

Also known as colony-stimulating factor 3, GCSF is a glycoprotein important for stimulating the bone marrow to produce granulocytes. Granulocytes are

white blood cells (leukocytes) with different forms of nucleus. There are different types of G-CSF on the market that can be used along with chemotherapy to help in the production of white blood cells and after a stem cell transplant.

The purpose of choosing this panel of drugs is to make an efficient combination regimen for treating AML that is based on the results gathered from years and years of clinical trials run with these different drugs. A huge consideration is given to varied parameters, such as drug tolerance when choosing the best combination of these drugs, consequently this will minimise possible side effects while optimising the overall quality and time of survival for AML patients.

Who receives FLAG-Ida?

Patients who may benefit from receiving FLA-ida combination therapy are those with acute myeloid leukaemia (AML) as an induction of remission. AML is a blood cancer that affects myeloid cells in the bone marrow. The myeloid cells divide into three specialised types of blood cells, granulocytes, platelets and red blood cells (erythrocytes).

Patients with promyelocytic leukaemia (APL), which is a subtype of AML should not be treated by FLA-ida. More specifically, FLAG-ida could be given to patients induction if chemotherapy with DA (Daunorubicin and Cytarabine) or ADE (Cytarabine, Daunorubicin and Etoposide) did not work.

If you wish to have further information on AML or APL, please view our collection of patient information booklets that are available on our website at www.leukaemiacare.org.uk



How is FLAG-ida administered?

Before starting FLAG-ida treatment, your doctor will do a few clinical pre-assessments such as:

- To confirm with your diagnosis
A bone marrow aspirate to confirm your diagnosis.
- To record your weight and height.
- To run a full blood count (FBC), liver function tests (LFTs) and a measure of kidney function (U&Es).
- For female patients, a pregnancy test will be carried out to rule out any childbearing potential before each new chemotherapy course.
- To record your heart's rhythm, using an electrocardiogram (ECG) test to check that your heart is working normally.
- MUGA scan - a heart scan to measure cardiac function.

- To explain the availability of facilities for management of complications.

You will then need to read and sign a consent form regarding the receipt of verbal and written information in relation to your disease, treatment and potential side effects.

As part of the induction therapy for AML patients, you will be treated in the hospital for a period of around four weeks, but this may vary from person to person. Your stay in the hospital is separated by a short period of stay at home, to rest between the two given courses of FLAG-ida.

The two cycles of FLAG-ida are the same and include:

- The injection of G-CSF (white blood cell growth factor) is given under the skin in the abdomen or leg for seven consecutive days (days one to seven).

- Fludarabine given via an infusion (drip) over 30 minutes once a day for five consecutive days (days two to six).
- Ara-C (Cytarabine) given via a drip over four hours once a day (four hours after the fludarabine) for five days (days two to six).
- Idarubicin given via an infusion (drip) over one hour, once a day for three days.

The infusion time is not the same for these three given drugs.

Any renal (Kidneys) and/or hepatic (liver) impairment you have before or during the treatment with FLAG-ida will be taken in consideration by your doctor and the dose of Fludarabine, Cytarabine and Idarubicin will be lowered to half. Renal impairment is measured and confirmed by the level of creatinine in the blood or urine. The hepatic impairment is

measured and confirmed by the level of bilirubin in the blood.

If any cumulative cardiac toxicity (poisoning of the heart) or poor cardiac function (your heart doesn't work properly) is detected, because you cannot tolerate Idarubicin, your consultant will take this drug out of the combination regimen.

What are the side effects of FLAG-Ida?

The side effects of FLAG-ida could be generated from each of the three cytotoxic drugs:

Common side effects

- **Bruising or bleeding** - This treatment can reduce the production of platelets which help the blood clot. You may need a platelet infusion.
- **Anaemia (low number of red blood cells)** - You may become anaemic, which can make you feel tired and breathless. You will have a routine blood test every day you are in hospital to monitor your full blood count and you may require a blood transfusion.
- **Increased risk of serious infection** - You are vulnerable to infection while you are having chemotherapy, minor infections can become life threatening in a matter of hours if left untreated. Symptoms of infection include fever, shivering, sweats, sore throat and diarrhoea.
- **Nausea and vomiting** - The severity of this varies person to person. Anti-sickness medication will be given along with your chemotherapy to prevent this.
- **Eye Irritation** - This is a known side effect of Ara-C. You will be given eye drops to try and prevent this.
- **Hair Loss** - Your hair will gradually fall out 10 - 14 days following your first course of treatment. The time scale varies person to person. This is a temporary side effect and your hair will grow back when your treatment is completed.
- **Discolouration of urine** - Idarubicin, because of its red colour, may discolour your urine red or pink for the first few times following treatment
- **Fatigue** - You may feel tired and lacking in energy, especially when your blood counts are low.



What are the side effects of FLAG-Ida? (cont.)

Uncommon side effects

- G-CSF can sometimes cause pain or an achy sensation in your bones.
- Ara-C can sometimes cause a syndrome whilst it is being infused. This can result in fever, a rash, aching in your muscles and bones and pain in the chest. It will disappear soon after the Ara-C infusion stops.
- **Diarrhoea** - If this becomes a problem anti-diarrhoea tablets can be prescribed.
- **Mucositis (sore mouth)** - Your mouth may become sore or dry and you may develop mouth ulcers. Drinking plenty of fluids and cleaning your teeth regularly and gently with a soft toothbrush can help reduce the risk of this happening. Occasionally during treatment you may experience a strange metallic or bitter taste. A strong flavoured sweet or mint may help with this.

Rare side effects

- **Irregular heart beats** - Occasionally this can happen as a result of the idarubicin. It is quite rare and usually reversible.
- **Transfusion-Associate graft-versus-host disease (TA-GvHD)** - Fludarabine causes a deficiency in the immune system, so when you have a transfusion of blood products you are at a higher risk of developing TA-GvHD. TA-GvHD can cause a severe rejection reaction. This can be prevented by giving irradiated blood products. Any blood products given to you after having FLAG-Ida will need to be irradiated.
- **Skin changes** - Sometimes after having Flag-Ida, your skin may appear darker in colour or lightly tanned, especially around the joints. This is called hyperpigmentation. Your skin will return to normal after the treatment has been completed.

- **Protecting your partner and contraception** - It is recommended that you or your partner use a condom during sexual intercourse while you are having the course of chemotherapy. Chemotherapy is dangerous to unborn babies and this will also protect you and your partner from any chemotherapy drugs that may be present in semen and in the vagina.
- **Fertility** - This chemotherapy may affect your ability to have children. You should discuss this with your doctor or nurse before you start treatment.

Very rare

- Serious allergic reaction
- Minor ulceration of the gastric mucosa (the mucus layer of the stomach)
- Hand foot syndrome (redness, swelling, and pain on the palms of the hands and/or the soles of the feet)
- Blockage of a blood vessel by a blood clot that has become

moved from another site in the circulation (thromboembolism)

The addition of Idarubicin to the FLAG schedule will be decided carefully by your consultant as this drug is contra-indicated to patients:

- With severe myocardial insufficiency, who have had a recent heart attack (myocardial infarction).
- With severe arrhythmia (a condition in which the heart beats with an irregular or abnormal rhythm).
- Who have unstable angina (a condition marked by severe pain in the chest, often also spreading to the shoulders, arms, and neck).
- Who suffer from cardiomyopathy (also called cardiomyopathy and which is a disorder of the heart muscle).
- If you had previous treatment with cumulative doses of Idarubicin or other anthracyclines.

What happens if FLAG-Ida doesn't work for me?

From clinical trials studies, there are two other combination therapies that AML patients could receive instead:

- Daunorubicin, Cytarabine and Etoposide (ADE) combination therapy.
- Daunorubicin and Cytarabine (DE) combination therapy.

Overall, following the outcome of your treatment with FLAG-Ida, your consultant is the best person to discuss your options with and to decide on the next step to take.

Leukaemia Care offers nationwide support groups for people affected by a diagnosis of a blood or lymphatic cancer. Visit www.leukaemiacare.org.uk, or call **08088 010 444**, to find out more and to find a group near you.



Glossary

Acute

Disease or condition that arrives suddenly and progress quickly.

Antibiotics

Drugs that destroy harmful bacteria.

Antineoplastic drug

A drug that inhibits or prevents the growth and spread of tumours or malignant cells.

Coagulation cascade

The chain reaction of chemical reactions that involves a number of proteins in the formation of a blood clot.

Chemotherapy

Type of therapy that uses chemical substances, especially in the treatment of cancer and that have cytotoxic activity (toxic to cancer cells).

Corticosteroids

Medicines used to treat inflammation. In APL they are used in the treatment of differentiation syndrome.

DNA

Deoxyribonucleic acid, a self-replicating material within each cell that carries the genetic information.

Erythema

Superficial reddening of the skin, usually in patches.

Intravenous Infusion

Administration of fluids into a vein using a steel needle or plastic catheter.

Leukaemia

A cancer of the blood with many different subtypes. Some forms are acute (develop quickly) and others are chronic (develop slowly). Leukaemia is an excess number of abnormal cells in the blood, usually white blood cells, which stop the bone marrow working properly.

Pruritus

Itching

Promyelocytes

There are cells in the bone marrow at an intermediate stage of development between myeloblasts and mature granulocytes (neutrophils) of the blood.

Remission

When no leukaemia cells are found in the blood or bone marrow and the bone marrow is working normally after the treatment is finished.

Useful contacts and further support

There are a number of helpful sources to support you during your diagnosis, treatment and beyond, including:

- Your haematologist and healthcare team
- Your family and friends
- Your psychologist (ask your haematologist or CNS for a referral)
- Reliable online sources, such as Leukaemia Care
- Charitable organisations

There are a number of organisations, including ourselves, who provide expert advice and information.

Leukaemia Care

We are a charity dedicated to supporting anyone affected by the diagnosis of any blood cancer.

We provide emotional support through a range of support services including a helpline, patient and carer conferences, support group, informative website, one-to-one buddy service and high-quality patient information. We also have a nurse on our help line for any medical queries relating to your diagnosis.

Helpline: **08088 010 444**
www.leukaemiacare.org.uk
care@leukaemiacare.org.uk

Bloodwise

Bloodwise is the leading charity into the research of blood cancers. They offer support to patients, their family and friends through patient services.

020 7504 2200
www.bloodwise.org.uk

Cancer Research UK

Cancer Research UK is a leading charity dedicated to cancer research.

0808 800 4040
www.cancerresearchuk.org

Macmillan

Macmillan provides free practical, medical and financial support for people facing cancer.

0808 808 0000
www.macmillan.org.uk

Maggie's Centres

Maggie's offers free practical, emotional and social support to people with cancer and their families and friends.

0300 123 1801
www.maggiescentres.org

Citizens Advice Bureau (CAB)

Offers advice on benefits and financial assistance.

08444 111 444
www.adviceguide.org.uk

Leukaemia Care is a national charity dedicated to providing information, advice and support to anyone affected by a blood cancer.

Around 34,000 new cases of blood cancer are diagnosed in the UK each year. We are here to support you, whether you're a patient, carer or family member.

Want to talk?

Helpline: **08088 010 444**

(free from landlines and all major mobile networks)

Office Line: **01905 755977**

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