



BC Cancer Agency

For the Patient: CEF

Other names: BRAJCEF, BRINFCEF, BRLACEF

C Cyclophosphamide
E Epirubicin
F Fluorouracil

Uses:

- CEF is a drug treatment given after breast cancer surgery (called adjuvant chemotherapy) in the hope of destroying breast cancer cells that may have spread to other parts of your body. This treatment may reduce the chance of your breast cancer coming back and may improve your overall survival or chance of a cure.
- CEF is offered to women who have operable breast cancer with spread to one node or inoperable breast cancer (known as "locally advanced / inflammatory") up to age 60 years. CEF is not used for women with serious heart problems.

Treatment Plan:

- Your treatment plan consists of 6 chemotherapy cycles. Each cycle lasts 4 weeks (=28 days). For each cycle, you will have two injections in the vein (IV) one week apart (on days 1 and 8) and start pills for two weeks, then have two weeks off.
- The IV treatment takes about 30-60 minutes. However, on day 1 of each cycle, plan to spend part of that day at your treatment centre for a doctor's appointment and a blood test.
- Drugs:
 - Two drugs (epirubicin and fluorouracil) are given as an IV injection in your arm on day 1 and day 8 of each cycle.
 - You take the third drug (cyclophosphamide) as pills daily for 14 days starting on day 1 of each cycle. Your treatment centre provides the cyclophosphamide pills.
 - You take antibiotic pills daily to reduce the chance of an infection. The antibiotic prescription is filled at your drugstore.
 - You take anti-nausea pills to help prevent nausea and vomiting. The anti-nausea prescription is filled at your drugstore.
- A blood test is done on day 1 and day 8 of each cycle and once a week during the 6 cycles of chemotherapy. The dose and timing of your chemotherapy may be changed based on your blood counts and/or other side effects.
- If needed, radiation therapy and/or tamoxifen start after your last chemotherapy cycle is finished.

Instructions:

- Bring your anti-nausea drugs with you to take before each IV treatment on day 1 and day 8. You also need to take your anti-nausea drugs at home. It is easier to prevent nausea than treat it once it has occurred, so follow directions closely especially while taking the cyclophosphamide pills.
- Take your cyclophosphamide pills at breakfast time (with or without food) with a glass of water or juice.
- Drink lots of fluids if possible (8-12 cups a day) especially while taking cyclophosphamide. Try to empty your bladder (pass urine) as frequently as possible while awake and at bedtime on the days that you take cyclophosphamide to help prevent bladder problems.
- Call your cancer doctor immediately (day or night) at the first sign of any infection but especially if you have a fever over 38°C or 100°F.
- Check with your doctor or pharmacist before you start taking any new drugs. Other drugs such as cimetidine (TAGAMET®), phenobarbital, phenytoin (DILANTIN®), warfarin (COUMADIN®), metronidazole (FLAGYL®) and thiazide diuretics (“water pills”) may interact with CEF.
- You may drink small amounts of alcohol, as it will not affect the safety or usefulness of your treatment.
- Tell other doctors or dentists that you are being treated with CEF before you receive any treatment from them.
- Use birth control (but not birth control pills) if you could become pregnant. Do not breast feed.

Serious Side Effects:

Unexpected and unlikely side effects can occur with any drug treatment. The ones listed below are particularly important as they are directly related to the common actions of the drugs in your treatment plan. Leukemia and heart failure are more likely to occur after treatment is finished.

- **Infection:** The number of white blood cells that help fight infections will be lowered by the treatment. Your blood count is expected to return to normal by day 1 of the next cycle. If your white blood cell count becomes very low you could get a serious infection. The chance of a serious infection is almost 9% with CEF. **If you have a fever over 38°C or 100°F, call your cancer doctor immediately (24 hours a day) or go immediately to your nearest Hospital Emergency and tell the doctor you are on chemotherapy.**
- **Tissue injury:** Epirubicin can cause tissue injury if it leaks out of the vein while it is being given. Report any sensation of burning or pain to your nurse immediately.
- **Early menopause:** If you are still having menstrual periods, CEF may cause your ovaries to stop working, resulting in menopausal symptoms (such as hot flashes) and infertility. Your periods may stop. This may be permanent, especially if you are 40 years of age or older.
- **Leukemia:** In the large Canadian study of 351 women given CEF, five developed acute leukemia (blood cancer). Four of these leukemias are likely related to the epirubicin in CEF. Although there is a small risk of leukemia, the overall benefit in terms of reducing breast cancer recurrence and improving survival are thought to outweigh this risk.
- **Heart Failure:** Rarely, epirubicin can have an effect on the heart in some patients causing failure of the heart’s pumping action which results in shortness of breath, fatigue and leg swelling. The heart failure rate is less than 2% in the large Canadian study.

Common Side Effects and Management:

SIDE EFFECT	MANAGEMENT
<p><u>Nausea and vomiting</u> can occur with this treatment and you will need to take anti-nausea drugs at the time of the injections and on days 1-14 when you are taking the cyclophosphamide pills.</p>	<p>You will be given a prescription for anti-nausea drugs to take before your IV treatment and afterwards at home.</p> <ul style="list-style-type: none"> • It is easier to prevent nausea than treat it once it has occurred, so follow directions closely. • Refer to the following pamphlets: <i>For the Patient: Managing Nausea; Chemotherapy & You; Food choices to help control nausea*</i>.
<p><u>Weight gain</u> may occur during treatment.</p>	<p>Do not try to lose weight during treatment.</p> <ul style="list-style-type: none"> • If you are feeling well, eat a varied and balanced diet and keep active. • Choose lower fat foods if you are eating frequently to relieve nausea. • Ask to see a nutritionist or refer to <i>A nutrition guide for women with breast cancer*</i>.
<p><u>Hair loss.</u> Your hair will fall out 2-4 weeks after treatment begins. Your scalp may feel tender. You may lose hair on your face and body. Your hair will grow back once your treatments are over and sometimes between treatments. The colour and texture of the new hair growth may be different.</p>	<ul style="list-style-type: none"> • Shaving the head may be more comfortable. • Avoid hair spray, bleaches, dyes and perms. • Apply mineral oil to your scalp to reduce itching. • If you lose your eyelashes and eyebrows, protect your eyes from dust and grit with a broad-rimmed hat and glasses. • Consider cutting your hair short before it falls out • Ask your nurse about information on wigs and head coverings.
<p><u>Mouth sores</u> may occur a few days after treatment. Mouth sores can occur on the tongue, gums, the sides of the mouth or in the throat.</p>	<ul style="list-style-type: none"> • Brush your teeth gently after eating and at bedtime with a very soft toothbrush. If your gums bleed, use gauze instead of a brush. Use baking soda instead of toothpaste. • Try baking soda mouth rinses (using 1/4 tsp baking soda in 1 cup warm water) and rinse several times a day. Try ideas in <i>Easy to chew, easy to swallow food ideas*</i>. • Tell your doctor about a sore mouth, as your chemotherapy doses may need to be decreased if mouth sores are severe.
<p><u>Fatigue</u> is common especially in the first week after your treatment. As the number of treatment cycles increase fatigue may get worse.</p>	<ul style="list-style-type: none"> • Your energy level will improve with time after treatment is completed. • Refer to pamphlet “<i>Yes I can: How people with cancer can handle fatigue</i>”***.

SIDE EFFECT	MANAGEMENT
<u>Injection site pain</u> or tenderness may occur where the needle was placed and it may extend up the arm.	<ul style="list-style-type: none"> Apply cool or warm compresses or soak in cool or warm water for 15-20 minutes several times a day.
<u>Irritated and watery eyes</u> can occur.	<ul style="list-style-type: none"> Use of artificial tears may help your eyes.
You may notice a <u>metallic taste</u> in your mouth.	<ul style="list-style-type: none"> Chew gum, suck on a candy or have a strong flavoured drink if the taste is bothersome. Try baking soda mouth rinses (using 1/4 tsp baking soda in 1 cup water) before or between meals Refer to “<i>Coping with taste changes</i>”*.
<u>Burning on urination.</u> The drugs can cause an irritation of the bladder that results in burning on urination and/or frequency of urination.	<ul style="list-style-type: none"> Drink more fluids to keep the urine dilute and empty your bladder often.
<u>Pain affecting joints</u> of the hands, knees and feet can occur following chemotherapy.	<ul style="list-style-type: none"> Your family doctor can help you to manage symptoms of joint pain.
Your <u>skin may sunburn</u> easily during treatment with fluorouracil.	<p>To help prevent sunburn:</p> <ul style="list-style-type: none"> Avoid direct sunlight. Wear a hat, long sleeves and long pants or skirt outside on sunny days. Apply a sun block lotion with a SPF (sun protection factor) of at least 15.

*available through your nurse or nutritionist

** available through your nurse

If you experience symptoms or changes in your body that have not been described above but worry you, or if any symptoms are severe, contact

_____ at telephone number _____