

Etoposide, Methotrexate, Dactinomycin, Cyclophosphamide, and Vincristine (EMACO)

Care Team Contact Information: _____

Pharmacy Contact Information: _____

Diagnosis: _____

- This treatment is used for a rare type of cancer related to pregnancy called gestational trophoblastic neoplasia (GTN).
- It may also be used for other reasons.

Goal of Treatment: _____

- Treatment may continue for a certain time period, until it no longer works, or until side effects are no longer controlled.

Treatment Regimen

This treatment regimen is often called EMACO or EMA-CO:

- **E:** Etoposide
- **M:** Methotrexate
- **A:** Actinomycin D (Dactinomycin)
- **C:** Cyclophosphamide
- **O:** Oncovin (Vincristine)

Treatment Name	How the Treatment Works	How the Treatment is Given
Etoposide (ee-toh-POH-side): VePesid (Vah-PEH-sid)	Slows down or stops the growth of cancer cells by blocking the process that allows cancer cells to grow.	Infusion into a vein (intravenous (IV) infusion).
Methotrexate (MEH-thoh-TREK-sayt)	Stops cancer cells from making the instructions they need to grow and multiply, causing the cells to die.	Infusion into a vein (intravenous (IV) infusion).
Dactinomycin (DAK-tih-noh-MY-sin): Cosmegen (KOS-muh-jin), Actinomycin D (AK-tih-noh-MY-sin ... D)	Slows down or stops the growth of cancer cells by damaging the genetic material that cancer cells need to grow.	Infusion into a vein (intravenous (IV) infusion).
Cyclophosphamide (SY-kloh-FOS-fuh-mide): Cytoxan (sai-TAAK-sn)	Slows down or stops the growth of cancer cells by damaging the genetic material that cancer cells need to multiply. It can also be used to dull the immune response.	Infusion into a vein (intravenous (IV) infusion).
Vincristine (vin-KRIS-teen): Oncovin (ON-koh-vin)	Slows down or stops the growth of cancer cells by preventing cancer cells from properly dividing and creating new cells.	Infusion into a vein (intravenous (IV) infusion).

Treatment Administration and Schedule

Treatment is typically repeated every 14 days. This length of time is called a “cycle.” Your care team will tell you how many treatment cycles you will receive.

- Etoposide is given on Days 1 and 2.
- Methotrexate is given on Day 1.
 - You will get a medicine called leucovorin. It helps protect healthy cells from the strong effects of methotrexate, but it does not make the methotrexate less effective against cancer. You will receive leucovorin every 6 to 12 hours starting 24 to 32 hours after the start of the methotrexate infusion. This will continue for 4 to 6 doses (2 to 3 days).
- Dactinomycin is given on Days 1 and 2.
- Cyclophosphamide is given on Day 8.
- Vincristine is given on Day 8.

Treatment Name	Cycle 1														Next Cycle
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day 11	Day 12	Day 13	Day 14	Day 1
Etoposide	✓	✓													✓
Methotrexate	✓														✓
Dactinomycin	✓	✓													✓
Cyclophosphamide								✓							
Vincristine								✓							

Appointments

Appointments may include regular check-ups with your care team, treatment appointments, lab visits, and imaging tests. It's important to keep your appointments whenever you can. If you miss an appointment, call your care team as soon as possible to reschedule it.

Supportive Care to Prevent and Treat Side Effects

Description	Supportive Care Given at the Clinic or Hospital	Supportive Care Taken at Home
To help prevent or treat nausea and vomiting		
To help prevent tumor lysis syndrome (TLS)		
Other		

Common Side Effects

Side Effect	Important Information
Low White Blood Cell (WBC) Count (Neutropenia) and Increased Risk of Infection (Boxed Warning)	Description: WBCs help protect your body from infections. A low WBC count increases your risk of infection. Recommendations: - Wash your hands often and bathe regularly. - Avoid crowded places and close contact with people who are sick. - Follow food safety and wound care advice from your care team. - Your care team may prescribe medicine to help your WBCs recover. Talk to your care team if you have: - Fever of 100.4°F (38°C) or higher - Chills - New or worsening cough or sore throat - Painful urination or signs of a urinary infection - Feeling much more tired than usual - Red, swollen, warm, or painful areas on the skin
Low Platelet Count (Thrombocytopenia) (Boxed Warning)	Description: Platelets help your blood clot and wounds heal. A low platelet count increases your risk of bruising and bleeding. Recommendations: - Blow your nose gently and avoid picking it. - Brush your teeth gently with a soft toothbrush and keep good oral hygiene. - Use an electric razor for shaving and a nail file instead of nail clippers. - Avoid over-the-counter medicines that can increase bleeding risk (for example, nonsteroidal anti-inflammatory drugs (NSAIDs) like ibuprofen). - Talk with your care team or dentist before medical or dental procedures — you may need to pause treatment. Talk to your care team if you have: - A nosebleed lasting more than 5 minutes despite pressure - A cut that continues to bleed - Heavy gum bleeding when brushing or flossing - Sudden or severe headache - Blood in your urine or stool - Blood in your spit after coughing
Low Red Blood Cell (RBC) Count and Hemoglobin (Hgb) (Anemia) (Boxed Warning)	Description: Red blood cells carry oxygen throughout your body. Low levels can make you feel tired, weak, dizzy, or short of breath Recommendations: - Aim for 7 to 8 hours of sleep each night. - Do not drive, operate heavy machinery, or do other dangerous activities if you are very tired. - Balance activity and rest — stay as active as you can, but rest when needed. - Eat a balanced diet and follow any nutrition or supplement advice from your care team. Talk to your care team if you have: - Shortness of breath - Dizziness or fainting - Fast or irregular heartbeats - Sudden or severe headache

Mouth Sores or Irritation (Mucositis or Stomatitis) (Boxed Warning)	Description: Treatment can irritate the lining of the mouth. In some cases, this can cause redness, sores, pain, and swelling. Recommendations: • Rinse your mouth after meals and at bedtime; rinse more often if sores develop. • Brush your teeth gently with a soft toothbrush or use a cotton swab after meals. • Use a mild, non-alcohol mouth rinse at least 4 times daily (after meals and at bedtime). Example: 1/8 teaspoon salt + 1/4 teaspoon baking soda in 8 oz warm water. • Avoid acidic, hot, spicy, rough, or crunchy foods and drinks that can irritate your mouth. • Avoid tobacco, alcohol, and alcohol-based mouthwash. • Your care team may prescribe medicines or mouth treatments to help with pain and healing. Talk to your care team if you have: • Painful mouth sores or throat pain • Trouble eating or significant weight loss
Nausea and Vomiting	Description: Nausea is an uncomfortable feeling in your stomach or the need to throw up. You may or may not vomit. Recommendations: • Eat smaller, more frequent meals. • Avoid fatty, fried, spicy, or highly sweet foods. • Eat bland foods at room temperature and drink clear liquids. • If you vomit, start with small sips of water, broth, or other clear liquids. If these stay down, try soft foods (such as gelatin, plain cornstarch pudding, yogurt, strained soup, or strained cooked cereal) and gradually return to solid foods. • Your care team may prescribe medicine for these symptoms. Talk to your care team if you have: • Vomiting for more than 24 hours • Nonstop vomiting • Signs of dehydration (very thirsty, dry mouth, dizziness, or dark urine) • Blood in your vomit or vomit that looks like coffee grounds • Severe stomach pain that does not go away after vomiting

Hair Loss (Alopecia)	Description: Hair loss or thinning may begin days to weeks after treatment starts and usually grows back later. New growth can be a different color or texture and may not look the same as before. Recommendations: - Consider a short haircut before treatment and use scarves, hats, or wigs for comfort and confidence. - Keep your head covered outdoors to protect it from the sun and cold; apply sunscreen to your exposed scalp. - Use gentle haircare: mild shampoo, soft brush, and avoid heat styling and harsh treatments. - Ask your care team about wig prescriptions or resources for head coverings. Talk to your care team if you have: - No hair regrowth months after treatment ends - Concern about hair changes or need help finding a wig or support resources
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Select Rare Side Effects

Side Effect	Talk to Your Care Team if You Have Any of These Signs or Symptoms
Allergic Reactions, Including Anaphylaxis (Boxed Warning)	Get emergency medical help right away if you develop any of the following signs or symptoms: - Swelling of your lips, mouth, tongue, or throat - Trouble breathing or swallowing - Raised red areas on your skin (hives) - A very fast heartbeat - You feel dizzy or faint
Liver Problems (Boxed Warning)	- Yellowing of your skin or the white part of your eyes (jaundice) - Severe nausea or vomiting - Pain on the right side of your stomach area (abdomen) - Dark, tea-colored urine - Bleeding or bruising more easily than normal
Diarrhea (Boxed Warning)	- An increase of 3 or more bowel movements than usual in one day - Dizziness or lightheadedness while you have diarrhea - Diarrhea with stomach-area (abdominal) pain or cramps - Signs of dehydration, such as feeling very thirsty, dizzy, or having dark urine - Blood in your stool - Diarrhea with fever
Lung Problems (Boxed Warning)	Treatment can cause lung problems that may be serious, life-threatening, or fatal. Lung problems can include inflammation or scarring in the lungs called interstitial lung disease (ILD) or pneumonitis. If you develop lung problems, your care team may treat you with corticosteroid medicines. Call your care team right away if you develop: - Cough - Trouble breathing or shortness of breath - Fever - Other new or worsening breathing symptoms such as chest tightness or wheezing

Severe Skin Reactions (Boxed Warning)	• A red, itchy, skin rash • Peeling of your skin or blisters	• Severe itching • Fever of 100.4°F (38°C) or higher
Tumor Lysis Syndrome (TLS) (Boxed Warning)	Tumor lysis happens when cancer cells break apart and release large amounts of substances into your bloodstream faster than your body can handle. TLS is a group of conditions that affect your heart, kidneys, and muscles. • Severe nausea, vomiting, or diarrhea • Urinating smaller amounts or having dark-colored urine • Muscle cramps or twitching • Rapid heartbeats or chest pain • Confusion or weakness • Seizures	
Risk of New Cancers (Boxed Warning)	There is a risk of developing one or more new cancers during or after treatment. Talk with your care team about this risk, and ask about the signs and symptoms to watch for.	
Heart Problems	• Fast or irregular heartbeats • Swelling of your stomach area (abdomen), legs, hands, feet, or ankles • Shortness of breath • Nausea or vomiting • New or worsening chest discomfort, including pain or pressure	• Weight gain • Pain or discomfort in your arms, back, neck, or jaw • Protruding neck veins • Breaking out in a cold sweat • Feeling lightheaded or dizzy
Kidney Problems	• Decrease in your amount of urine • Blood in your urine	• Swelling of your ankles • Loss of appetite
Bladder Irritation (Hemorrhagic Cystitis)	Cyclophosphamide can cause irritation and damage to your bladder. To reduce this risk, drink plenty of fluids and urinate frequently for a few days after each dose of cyclophosphamide. • Blood in the urine • Painful urination • Urinating more frequently • Stomach (abdominal) or pelvic pain • Fever of 100.4°F (38°C) or higher	
Extravasation	Extravasation happens when medicine that is supposed to go into a vein leaks out into the tissues around it. This can cause pain, swelling, and damage to the skin and tissues. Dactinomycin may cause extravasation. • Pain, burning, or stinging at the infusion site • Swelling, redness, or blistering around the site • Coolness or numbness in the area • Decreased blood flow or tissue damage, potentially leading to ulcers or tissue death in severe cases	

Low Sodium Levels in Your Blood (Hyponatremia)	• New or worsening confusion, drowsiness, or trouble thinking • Severe headache or nausea/vomiting • Seizures or fainting • Sudden weakness, unsteadiness, or trouble walking • Difficulty breathing
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Before starting treatment, ask your care team when to call 9-1-1 or seek emergency help.
If you experience any new, worsening, or uncontrolled side effects, contact your care team immediately.

Intimacy, Fertility, Pregnancy, and Breastfeeding

- Treatment may **change how you feel about intimacy and your body**. However, physical closeness—such as holding hands and hugging—remains safe. It is common to have questions about intimacy. If needed, talk to your care team for guidance.
- Treatment can affect your **ability to have children**. It may damage your reproductive organs or stop them from working. If you are worried about fertility, talk to your care team before starting treatment.
- **Boxed Warning:** Treatment may **harm an unborn baby**.
 - If you are able to become pregnant:
 - Your care team will verify your pregnancy status before treatment.
 - Use an effective method of birth control during treatment with EMACO, for 6 months after your last dose of etoposide, methotrexate, and dactinomycin, and for 1 year after your last dose of cyclophosphamide.
 - If you think you might be pregnant or if you become pregnant, tell your care team right away.
 - If your partner is able to become pregnant, use an effective method of birth control—such as condoms—during treatment with EMACO, for 3 months after your last dose of methotrexate and dactinomycin, and for 4 months after your last dose of etoposide and cyclophosphamide.
- **Do not breastfeed** during treatment with EMACO, for 1 week after your last dose of methotrexate and cyclophosphamide, and for 14 days after your last dose of dactinomycin. It is **not known** if vincristine is present in **breast milk**. Talk with your care team if you are breastfeeding or plan to breastfeed.

Handling Body Fluids and Waste

Some drugs you receive may stay in your urine, stool, sweat, or vomit for many days after treatment. Because many cancer drugs are toxic, your body waste may also be dangerous to touch. To help protect yourself, your loved ones, and the environment, **follow these instructions** for at least **48 hours** after each dose of **etoposide, methotrexate, and cyclophosphamide**, at least **6 days** after each dose of **dactinomycin**, and at least **3 weeks** after each dose of **vincristine**:

- People who are pregnant should avoid touching anything that may be soiled with body fluids from the patient.
- You can use your usual toilet. Always close the lid and flush to discard all waste. If you have a low-flow toilet, flush twice.
- If the toilet or seat is soiled with urine, stool, or vomit, clean the surface after each use before others use it.
- Wash your hands with soap and water for at least 20 seconds after using the toilet.
- If you need a bedpan, inform your caregiver so they can wear gloves and assist with cleanup. Wash the bedpan with soap and water daily.
- If you cannot control your bladder or bowels, use a disposable pad with a plastic back, a diaper, or a sheet to absorb waste.
- Wash any skin exposed to body waste with soap and water.
- Wash soiled linens or clothing separately from other laundry. If you don't have a washer, place them in a plastic bag until they can be washed.
- Wash your hands with soap and water after touching soiled linens or clothing.

Additional Information

- **Tell your care team about all the medicines you take.**
This includes prescriptions, over-the-counter drugs, vitamins, and herbal products. Before starting any new medicine, supplement, or vaccine, ask your care team first.
- **You should not receive a “live vaccine”** before, during, or after treatment, until your care team tells you it is okay. If you are not sure about the type of immunization or vaccine, ask your care team. These vaccines may not be safe or may not work as well during treatment.
- **Worsening side effects from radiation treatment.** Tell your care team if you have had or are planning to receive radiation therapy.
- **Wound healing problems.** Wounds may not heal properly during cyclophosphamide treatment. Tell your care team if you plan to have any surgery before starting or during treatment with cyclophosphamide.
 - Your care team should tell you when you may start receiving cyclophosphamide again after surgery.
- **This Patient Education Sheet may not describe all possible side effects.**
Call your care team for medical advice about side effects. You may report side effects to the FDA at 1-800-FDA-1088.

Notes

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Scan the QR code below to access this education sheet.

**Important Notice:**

The Association of Cancer Care Centers (ACCC), Hematology/Oncology Pharmacy Association (HOPA), Network for Collaborative Oncology Development & Advancement, Inc. (NCODA), and Oncology Nursing Society (ONS) have collaborated to gather information and develop this patient education guide. This guide is a summary of the medication, based on information provided by the drug manufacturer and other sources.

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