Doxorubicin and Cyclophosphamide

Patient Education Sheets
Understanding Your Cancer Treatment

Care Team Contact Information: _____

Pharmacy Contact Information: _____

Diagnosis: _____

- This treatment is used for breast cancer.
- 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 is called by its acronym: "AC"

- **A**: Doxorubicin (**A**driamycin)
- **C**: **C**yclophosphamide

Treatment Name	How the Treatment Works	How the Treatment is Given
Doxorubicin (DOK-soh-ROO-bih-sin): Adriamycin (AY-dree-uh-MY-sin)	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 grow.	Infusion into a vein (intravenous (IV) infusion).

Treatment Administration and Schedule

Treatment is typically repeated every 2 or 3 weeks. This length of time is called a "cycle."

☐ **Option #1: 2-Week Cycle ("Dose-Dense AC")**

- Doxorubicin and cyclophosphamide are given on Day 1.

	Cycle 1								Next Cycle
Treatment Name	**Day 1**	**Day 2**	**Day 3**	**Day 4**	**Day 5**	**Day 6**	**…**	**Day 14**	**Day 1**
Doxorubicin	✓								✓
Cyclophosphamide	✓								✓

Brought to you by: ACCC Association of Cancer Care Centers™ · HOPA Hematology/Oncology Pharmacy Association · NCODA Network for Collaborative Oncology Development & Advancement · ONS Oncology Nursing Society

Treatment Administration and Schedule (Continued)

☐ **Option #2: 3-Week Cycle (AC)**

- Doxorubicin and cyclophosphamide are given on Day 1.

Treatment Name	Cycle 1								Next Cycle
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	…	Day 21	Day 1
Doxorubicin	✓								✓
Cyclophosphamide	✓								✓

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		
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 (possible skin infection)
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: RBCs and Hgb carry oxygen to your body's tissues and remove carbon dioxide. Low RBC or Hgb (anemia) can make you feel weak or very tired, or may make you look pale. 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

<table>
<tr>
<td>Fatigue</td>
<td>Description: Fatigue is a constant and sometimes strong feeling of tiredness.
Recommendations:
Routine exercise can help reduce fatigue. Talk with your care team to find the right type and amount of activity for you.
Ask family and friends for help with daily tasks and for emotional support.
Try healthy ways to feel better, such as meditation, journaling, yoga, or guided imagery, to reduce anxiety and improve well-being.
Aim for 7 to 8 hours of sleep each night. Limit daytime naps to help you sleep better at night.
Do not drive, operate heavy machinery, or do other potentially dangerous activities if you are very tired.
Talk to your care team if you have:
Tiredness that affects your daily life or prevents you from doing normal activities
Tiredness that does not get better with rest
Dizziness or weakness along with severe tiredness</td>
</tr>
<tr>
<td>Mouth Sores or Irritation (Mucositis or Stomatitis)</td>
<td>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</td>
</tr>
</table>

<table>
<tr><td>Nausea and Vomiting</td><td>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</td></tr>
<tr><td>Hair Loss (Alopecia)</td><td>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</td></tr>
<tr><td>Change in the Color of Your Urine</td><td>Description: You may have red or orange colored urine for 1 to 2 days after your infusion of doxorubicin. This is normal.
Talk to your care team if:
Your urine does not return to its normal color in a few days
You see what looks like blood or blood clots in your urine</td></tr>
</table>

Select Rare Side Effects

Side Effect	Talk to Your Care Team if You Have Any of These Signs or Symptoms
Heart Problems (Boxed Warning)	Treatment may cause heart problems that may lead to death. These problems can happen during your treatment or months to years after stopping treatment. In some cases, heart problems are irreversible. There is a cumulative total lifetime dose of doxorubicin. Your care team will track the amount of doxorubicin you receive. Talk with your care team if you have received anti-cancer medicines before. Your care team will perform tests to check your heart before, during, and after your treatment with doxorubicin. • 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
Risk of New Cancers (Boxed Warning)	There is a risk of developing new cancers during or after treatment. Talk with your care team about this risk, and ask about the signs and symptoms of new cancers.
Extravasation (Boxed Warning)	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. Doxorubicin 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 •
Liver Problems	• 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
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
Lung Problems	• Cough • Shortness of breath	• Chest pain or tightness

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 may 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.
- 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, for 6 months after your last dose of doxorubicin, 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, for 4 months after your last dose of cyclophosphamide, and for 3 to 6 months after your last dose of doxorubicin.
    - If you have a pregnant partner, you should use condoms during treatment with doxorubicin and for at least 10 days after the final dose.
- **Do not breastfeed** during treatment, for 1 week after your last dose of cyclophosphamide, and for 10 days after your last dose of doxorubicin.

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 **7 days** after each dose of **doxorubicin** and for **48 hours** after each dose of **cyclophosphamide**:

- 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.
- **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.
- **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

Updated Date: July 16, 2026

Brought to you by:
ACCC Association of Cancer Care Centers™
HOPA Hematology/Oncology Pharmacy Association
NCODA Network for Collaborative Oncology Development & Advancement
ONS Oncology Nursing Society

Patient Education Sheets

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.

This guide does not cover all information available on the possible uses, directions, doses, precautions, warnings, interactions, adverse effects, or risks associated with this medication. It should not be used as a substitute for the advice of a qualified healthcare professional. The provision of this guide is for informational purposes only. It does not constitute or imply endorsement, recommendation, or favoring of this medication by ACCC, HOPA, NCODA, or ONS, who assume no liability for and cannot ensure the accuracy of the information presented. All decisions regarding this medication should be made with the guidance and direction of a qualified healthcare professional.

Permission:
Patient Education Sheets are provided as a free educational resource for patients with cancer and their caregivers in need of concise, easy-to-understand information about cancer therapy. Healthcare providers may copy and distribute the sheets to patients and direct them to the Patient Education Sheets website. However, commercial reproduction or reuse, as well as rebranding or reposting of any type, are strictly prohibited without permission of the copyright holders. Permission requests, including direct linking from Electronic Health Records, and licensing inquiries should be emailed to patienteducationsheets@ncoda.org.

PES-140

Brought to you by:
ACCC Association of Cancer Care Centers
HOPA Hematology/Oncology Pharmacy Association
NCODA Network for Collaborative Oncology Development & Advancement
ONS Oncology Nursing Society