

# INTRAVENOUS CANCER TREATMENT EDUCATION



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## HYPER-CVAD "A" CYCLES

### Name of the regimen and cancer drugs

Your care team may refer to your treatment as Hyper-CVAD. Hyper-CVAD is made up of "A" cycles and "B" cycles that alternate, and each contain different medications. Hyper-CVAD "A" cycles consist of 4 different anti-cancer therapies.

- **C:** Cyclophosphamide (syē kloē FOS fa mide): Cytoxan®
- **V:** Vincristine (vin KRIS teen): Oncovin®
- **A:** Doxorubicin (doks oh ROO bi sin): Adriamycin®, Hydroxydaunorubicin
- **D:** Dexamethasone (deks a METH a sone): Decadron

You also may receive intrathecal (IT) chemotherapy treatments during "A" cycles. This is a type of treatment that is injected into your cerebrospinal fluid (CSF) to kill cancer cells in the CSF and/or prevent cancer cells from spreading to your CSF from other places. Talk to your care team for more information.

### Common uses

This regimen is most commonly used for acute leukemias or certain types of lymphoma

### Treatment schedule

Your treatment will be given into your vein through an intravenous (IV) line. This may be into a short, flexible temporary catheter in your arm, or through a central venous catheter. A central venous catheter, or central line is a long, flexible IV tube that empties into a very large vein next to the heart. Talk with your care team to see which will be best for you and your treatment.

Each Hyper-CVAD "A" cycle is alternated with "B" cycles every 21 days. Your treatment may be given for a set number of cycles, unless you have side effects which stop you from continuing treatment.

- Cyclophosphamide IV given every 12 hours for 6 total doses on Days 1-3
- Mesna continuous IV infusion over 24 hours on Days 1-3
- Vincristine IV given on Days 4 and 11
- Doxorubicin IV given on Day 4
- Dexamethasone IV or oral on Days 1-4 and 11-14

Cycle	1			2			3			4			5			6			7			8		
Regimen	A			B			A			B			A			B			A			B		
Weeks	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3

Drug	Cycle "A" only	Day 1	2	3	4	...	11	12	13	14	...	21	"B" Cycle Day 1
Cyclophosphamide		■	■	■									
Mesna		■	■	■									
Vincristine					■		■						
Doxorubicin					■								
Dexamethasone		■	■	■	■		■	■	■	■			

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### Other medications

Other medications may be ordered for you to prevent or treat certain side effects. These include:

	Instructions:
<b>Growth Factors</b>	<p>Growth factors, like filgrastim, pegfilgrastim, and others, are medications used to treat neutropenia and prevent infections. Neutropenia is a condition where there are lower-than-normal white blood cells caused by some type of chemotherapy. Growth factors help the bone marrow to make more white blood cells.</p> <p>_____</p> <p>_____</p>
<b>Anti-nausea medications</b>	<p>You will receive medications to prevent nausea just before your cancer treatment. You may also get prescriptions for other medications to take at home, as below:</p> <p>_____</p> <p>_____</p> <p>_____</p>
<b>Medications to prevent side effects</b>  TLS prophylaxis  Mesna for hemorrhagic cystitis prevention	<p>You will receive your medications to prevent side effects just before your cancer treatment. You may get prescriptions for other medications to take at home, as below:</p> <p>_____</p> <p>_____</p> <p>_____</p>
<b>Infection prevention</b>	<p>There is a risk of serious infections during treatment. You may receive medications to prevent infection in the hospital, and may also get prescriptions for medications to take at home for infection prevention, as below:</p> <p>_____</p> <p>_____</p> <p>_____</p>
<b>Blood Product Transfusions</b>	<p>You may receive blood transfusions while you are getting treatment for your cancer. These products are given to replace blood cells or blood products lost during the course of your cancer treatment. Your physician will decide if transfusions are needed based on certain laboratory results, such as hemoglobin, hematocrit, or platelets. If you have personal or religious beliefs that prohibit the receipt of blood product transfusions, please let your care team know before treatment begins.</p>

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## HYPER-CVAD “A” CYCLES

### Possible drug interactions

- Hyper-CVAD “A” cycles contain medications that may interact with other drugs you are taking. Please inform your care providers of all prescription medicine, over-the-counter medications, vitamins, and herbal products that you take.
- Talk with your care provider or pharmacist before taking new medications, supplements, or receiving any vaccines.
- Grapefruit or grapefruit juice may interact with Hyper-CVAD “A” cycles. Avoid eating or drinking these during your treatment.

### Common Side Effects

Common side effects that have been known to happen in patients receiving Hyper-CVAD “A” cycles are listed in the left side of this table. In some instances, the side effects may be reported less often but are still important to discuss. This table does not list all the known side effects for this therapy, only the ones that are experienced most often. Not every patient experiences every known side effect of a drug; even if you are taking the same drug as another patient, you may experience different side effects. Options to help manage any side effects that do occur are included on the right side of this table. These should be discussed with your care provider. If you experience any side effect you cannot manage or that is not listed here, contact your care provider.

Possible Side Effect	Management
<p><b>Decreased white blood cells (WBCs) and increased risk for infection</b></p>	<p>Your WBCs should be monitored by a simple blood test. When your WBCs are low, you are at a greater risk of having an infection. Take the following precautions to protect yourself from infection.</p> <ul style="list-style-type: none"> <li>• Wash your hands often, especially before eating and after using the bathroom.</li> <li>• Avoid crowds and people with fevers, flu, or other infection.</li> <li>• Bathe often for good personal hygiene.</li> </ul> <p>Contact your care team if you experience any signs or symptoms of an infection such as:</p> <ul style="list-style-type: none"> <li>• Fever (temperature more than 100.4°F or 38°C)</li> <li>• Chills</li> <li>• Sore throat</li> <li>• Burning when peeing</li> <li>• Tiredness that is worse than normal</li> <li>• A sore that becomes red, is draining, or does not heal.</li> </ul> <p>Check with your care team before taking any medicine for a fever or chills.</p>

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## HYPER-CVAD “A” CYCLES

Possible Side Effect	Management
<p><b>Decreased platelet count and increased risk of bleeding</b></p>	<p>Your platelets should be monitored by a simple blood test. When they are low, you may bruise or bleed more easily than usual.</p> <ul style="list-style-type: none"> <li>• Use caution to avoid bruises, cuts, or burns.</li> <li>• Blow your nose gently and do not pick your nose</li> <li>• Brush your teeth gently with a soft toothbrush and maintain good oral hygiene</li> <li>• When shaving use an electric razor instead of razor blades</li> <li>• Use a nail file instead of nail clippers</li> </ul> <p>Call your care team if you have bleeding that won't stop. Examples include:</p> <ul style="list-style-type: none"> <li>• A bloody nose that bleeds for more than 5 minutes despite pressure</li> <li>• A cut that continues to ooze despite pressure</li> <li>• Gums that bleed a lot when you floss or brush</li> </ul> <p>Seek medical help right away if you have any severe headaches, blood in your urine or stool, coughing up blood, or bleeding that you cannot stop or lasts a long time.</p> <p><b>You may need to take a break or “hold” your medication for medical or dental procedures. Talk to your care team or dentist before any scheduled procedures.</b></p>
<p><b>Decreased hemoglobin, part of the red blood cells that carry iron and oxygen</b></p>	<p>Your hemoglobin should be checked by a simple blood test. When your hemoglobin is low, you may notice that you get tired or fatigued more easily.</p> <ul style="list-style-type: none"> <li>• Try to get 7 to 8 hours of sleep per night</li> <li>• Avoid operating heavy machinery if you feel too tired</li> <li>• Find a balance between “work” and “rest”</li> <li>• Stay as active as possible, but know that it is okay to rest as needed, too</li> <li>• You might notice that you are more pale than usual</li> </ul> <p>Let your care team know right away if you have:</p> <ul style="list-style-type: none"> <li>• Shortness of breath</li> <li>• Dizziness</li> <li>• Fast or abnormal heartbeat</li> </ul>

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Possible Side Effect	Management
<p><b>Nausea or vomiting</b></p>	<ul style="list-style-type: none"> <li>• Take all medications as prescribed to help prevent and lessen symptoms of nausea and vomiting.</li> <li>• Eat and drink slowly.</li> <li>• Drink 8-10 (8-ounce) glasses of water and/or fluid (soup or broth) each day unless your care team has instructed you to limit your fluid intake.</li> <li>• Eat small, frequent meals throughout the day rather than a few large meals.</li> <li>• Eat bland foods; avoid spicy, fried, and greasy foods.</li> <li>• Avoid intense exercise immediately after eating.</li> <li>• Don't lay down right away after eating.</li> <li>• Wear loose-fitting clothing for comfort.</li> <li>• Avoid strong odors. Consider getting fresh air and try deep breathing.</li> </ul> <p>Let your care team know if you have nausea or vomiting. Your care team may prescribe medication to help with the symptoms.</p>
<p><b>Hair loss (alopecia)</b></p>	<ul style="list-style-type: none"> <li>• Your hair will likely grow back after treatment is over.</li> <li>• Some people choose to wear scarves, caps, or wigs. A short haircut prior to treatment may help with stress of hair loss.</li> <li>• Partial or complete hair loss is likely, usually 1-2 weeks after start of therapy. This hair loss can be all body hair.</li> <li>• Hair will grow back after treatment is completed, although the color and/or texture may be different</li> <li>• It may take 3 to 6 months after therapy is completed to resume normal hair growth</li> <li>• Be sure to keep your head covered to protect it from the sun during the summer and cold during the winter.</li> <li>• If not covering your scalp during the summer months, be sure to use sunscreen when spending time outdoors.</li> </ul>
<p><b>Diarrhea (loose and/or urgent bowel movements)</b></p>	<p>Monitor how many bowel movements you have each day.</p> <ul style="list-style-type: none"> <li>• Drink 8-10 (8-ounce) glasses of water or fluid each day unless your care team has asked you to limit your fluid intake.</li> <li>• Eat small, frequent meals throughout the day rather than a few large meals.</li> <li>• Eat bland, low-fiber foods (such as bananas, applesauce, potatoes, chicken, rice, and toast).</li> <li>• Avoid high fiber foods, such as raw vegetables and fruits and whole grains.</li> <li>• Avoid foods that cause gas, such as broccoli and beans.</li> <li>• Avoid foods with lactose, such as yogurt and milk.</li> <li>• Avoid spicy, fried, and greasy foods.</li> </ul> <p>Contact your care team if:</p> <ul style="list-style-type: none"> <li>• The number of bowel movements you have in a day increases by 4 or more.</li> <li>• You feel dizzy or lightheaded.</li> </ul> <p>Your care team may recommend an over-the-counter medication or prescribe something to help manage your symptoms.</p>

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## HYPER-CVAD "A" CYCLES

Possible Side Effect	Management
<p><b>Constipation</b></p>	<p>Keep track of how many bowel movements you have each day.</p> <ul style="list-style-type: none"> <li>• Drink 8-10 (8-ounce) glasses of water or fluid each day unless your care team has asked you to limit your fluid intake.</li> <li>• Stay active and exercise, if possible.</li> <li>• Eat foods high in fiber like raw fruits and vegetables.</li> </ul> <p>Contact your care team if you have not had a bowel movement in 3 or more days.</p> <p>Your care team may recommend over-the-counter medications to help with constipation. A daily stool softener such as docusate (Colace®) and/or laxative such as senna (Senakot®) may be helpful. If these do not help within 48 hours, tell your care team.</p>
<p><b>Mouth irritation or sores (stomatitis or mucositis)</b></p>	<p>Practice good mouth care.</p> <ul style="list-style-type: none"> <li>• Rinse your mouth after meals and at bedtime, and more frequently if you develop sores in your mouth.</li> <li>• Brush your teeth with a soft toothbrush or cotton swab after meals.</li> <li>• Use a mild non-alcohol mouth rinse at least 4 times a day (after eating and at bedtime). One example is a mixture of 1/8 teaspoon of salt and 1/4 teaspoon of baking soda in 8 ounces of warm (not hot) water.</li> <li>• Avoid acidic, hot or spicy foods and beverages, and rough foods that might irritate the mouth.</li> <li>• If you have sores in your mouth, avoid using tobacco products, alcohol, and mouthwashes that contain alcohol.</li> </ul> <p>Call your care team if you experience pain or sores in your mouth or throat.</p>
<p><b>Changes in body fluid color</b></p>	<p>Doxorubicin may cause tears, sweat, saliva, and urine to have a red-orange tint for a few days after treatment</p>
<p><b>Tumor Lysis Syndrome</b></p>	<p>This is a condition that results from the rapid destruction of cancer cells in the body during the initial cycles of treatment. When cancer cells are destroyed, they release their contents into the bloodstream, causing abnormal levels of electrolytes. This may cause kidney or heart problems and have series effects on other organs. Your care team will do blood tests to check for this side effect.</p>
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## HYPER-CVAD "A" CYCLES

Possible Side Effect	Management
<b>Steroid toxicity</b>	<p>High doses of steroids, such as prednisone or dexamethasone, can cause a variety of side effects, including but not limited to:</p> <ul style="list-style-type: none"> <li>• High blood pressure</li> <li>• High blood sugar</li> <li>• Irritability/mood changes</li> <li>• Insomnia</li> <li>• Stomach irritation</li> </ul> <p>Let your care team know if you have existing high blood or diabetes. To minimize some of these side effects, try to take steroids in the morning time with food.</p>

### Rare but serious side effects

Tell your care provider if you experience any symptoms of these problems:

- Cyclophosphamide can cause irritation of the bladder walls, leading to blood in the urine. It can be prevented by drinking plenty of fluids (8-10 eight ounce) glasses per day and emptying bladder frequently, especially before bed. Mesna will be given to you through the IV while you receive Cyclophosphamide to help prevent this side effect.
- Cyclophosphamide and doxorubicin may be harmful to your liver. Speak to your care team to know when you need to have blood tests done to monitor your liver function. If you get this side effect, your doctor may change your dose or stop treatment for some time.
- Vincristine may cause numbness, pain, or burning in your hands or feet. Talk to your care team about ways to resolve this side effect.
- Doxorubicin may affect your heart's ability to pump blood. Tell your healthcare provider right away if you experience new or worsening shortness of breath, chest pain, irregular heartbeat, or swelling of your ankles or legs.
- Doxorubicin and vincristine are vesicants. If it leaks outside of the IV, it can cause severe damage to your skin. Notify your nurse right away if you feel any pain, aching, burning, itching, swelling, or redness at the site of your IV.
- A secondary cancer can rarely occur months or years after treatment. Your care team will check your blood cell counts even after treatment is done to monitor for this side effect.

If you experience ANY new, worsening, or uncontrolled side effects, call your care team immediately.

(INSTITUTIONAL CONTACT INFO)

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## HYPER-CVAD “A” CYCLES

### Handling body fluids and waste

Some of the drugs you receive may be present in urine, stool, sweat, or vomit for many days after treatment. Many cancer drugs are toxic, your bodily waste may also be toxic and can be dangerous to come into contact with. Once you have started Hyper-CVAD “A”, follow the instructions below for at least seven days after your treatment. This is to keep you, your loved ones, and the environment as safe as possible.

- Pregnant women should avoid touching anything that may be soiled with body fluids from the patient.
- Toilet and septic systems
  - You may use the same toilet, septic tank, and/or sewer that you usually use. If you have a low-flow toilet, close the lid and flush twice to ensure that all waste has been discarded.
- If the toilet or toilet seat becomes soiled with urine, stool, or vomit, clean the surface after every use before other people use the toilet.
- Wash hands with soap and water after using the toilet for at least 20 seconds.
- If you need a bedpan, be sure your caregiver knows to wear gloves to assist with cleanup and to wash the bedpan with soap and water every day.
- If you do not have good control of bladder or bowels, use a disposable pad with a plastic back, a diaper, or a sheet to absorb body waste.
- Wash any skin that has been exposed to body waste with soap and water.
- Linens or clothing that are soiled with body fluids or body waste should be washed separately from other linens and clothing. If you do not have a washer, place the soiled linens in a plastic bag until they can be washed.
- Wash hands with soap and water after touching linens or clothing that may be soiled with body fluids.

### Intimacy, sexual activity, contraception, and fertility

This treatment may cause changes that can affect intimacy and sexuality, including desire and body image. Maintaining physical closeness and/or intimacy with loved ones can be continued during treatment. Holding hands, hugging, and kissing can be done safely. It is recommended that you talk to your care team about any restrictions or questions you may have.

Some treatments can influence the ability to have children, also known as fertility. If you’re interested in preserving fertility, talk to your care team before treatment. Ask your healthcare provider to determine when it is safe to become pregnant after your treatment. Patients of reproductive ability should not become pregnant or get their partners pregnant while receiving Hyper-CVAD “A”. Some of the drugs you receive may be present in semen and vaginal secretion for many days after treatment. You should use barrier devices, such as condoms, during sexual activity to limit exposure to body fluids.

- Talk to your care team about birth control. Not all options may be right for your treatment or cancer. Effective contraception could include one or more of the following: barrier methods (e.g. condoms), hormone methods (e.g. birth control pills), or surgery.
- Tell your care team if you become pregnant or plan to breastfeed.

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## HYPER-CVAD "A" CYCLES

### Additional resources

Prescribing information link

**Cyclophosphamide (Cytoxan):** [https://www.accessdata.fda.gov/drugsatfda\\_docs/label/2013/012141s090,012142s112lbl.pdf](https://www.accessdata.fda.gov/drugsatfda_docs/label/2013/012141s090,012142s112lbl.pdf)

**Vincristine (Oncovin):** [https://www.accessdata.fda.gov/drugsatfda\\_docs/label/2014/071484s042lbl.pdf](https://www.accessdata.fda.gov/drugsatfda_docs/label/2014/071484s042lbl.pdf)

**Doxorubicin (Adriamycin):** [https://www.accessdata.fda.gov/drugsatfda\\_docs/label/2020/050467s078,050629s030lbl.pdf](https://www.accessdata.fda.gov/drugsatfda_docs/label/2020/050467s078,050629s030lbl.pdf)

**Dexamethasone (Decadron):** [https://www.accessdata.fda.gov/drugsatfda\\_docs/label/2004/11664slr062\\_decadron\\_lbl.pdf](https://www.accessdata.fda.gov/drugsatfda_docs/label/2004/11664slr062_decadron_lbl.pdf)

### Additional instructions

Updated – April 9, 2024

**Important notice:** The Association of Community Cancer Centers (ACCC), Hematology/Oncology Pharmacy Association (HOPA), National Community Oncology Dispensing Association, Inc. (NCODA), and Oncology Nursing Society (ONS) have collaborated in gathering information for and developing this patient education guide. This guide represents a brief summary of the therapy derived from information provided by the drug manufacturer and other resources. This guide does not cover all existing information related to the possible uses, directions, doses, precautions, warnings, interactions, adverse effects, or risks associated with this therapy and should not substitute for the advice of a qualified healthcare professional. Provision of this guide is for informational purposes only and does not constitute or imply endorsement, recommendation, or favoring of this therapy by ACCC, HOPA, NCODA, or ONS, who assume no liability for and cannot ensure the accuracy of the information presented. The collaborators are not making any representations with respect to the medications whatsoever, and any and all decisions, with respect to such medications, are at the sole risk of the individual receiving therapy. All decisions related to receiving this therapy should be made with the guidance and under the direction of a qualified healthcare professional.

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