



Mass General Brigham
Mass General Cancer Center

KEYNOTE-522 Regimen

(ACy first)

Chemotherapy Teaching

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Chemotherapy Regimen

- You are going to start on a chemotherapy treatment plan called **KEYNOTE-522**.
- **KEYNOTE-522** was the name of the first study that found this regimen to effectively treat breast cancer
- **KEYNOTE-522** consists of a combination of medications given IV (into the vein) given in 2 parts. Your provider may reverse the sequence in which the 2 parts are given.
 - Dose-dense Doxorubicin (Adriamycin)
 - Dose-dense Cyclophosphamide (Cytosan)
 - Pembrolizumab (Keytruda)
 - Paclitaxel (Taxol)
 - Carboplatin (Paraplatin)

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Treatment Regimen

Dosing & Schedule

Side Effects

Supportive Care Medications



Chemotherapy Regimen

- There are 2 parts to this regimen. You will receive **P** in both parts.
- **Part 1:** You will receive **A** and **Cy** every other week for 4 cycles. This will be a total of 8 weeks.

Week 1	2	3	4	5	6	7	8
A	-	A	-	A	-	A	-
Cy	-	Cy	-	Cy	-	Cy	-
P*	-	-	-	-	-	P	-

- **Part 2:** You will receive **T** and **C** once a week for 12 weeks

Week 9	10	11	12	13	14	15	16	17	18	19	20
T	T	T	T	T	T	T	T	T	T	T	T
C	C	C	C	C	C	C	C	C	C	C	C
P*	-	-	-	-	-	P	-	-	-	-	-

T = Taxol (Paclitaxel)
 C = Carboplatin
 P = Pembrolizumab*

A = Adriamycin (Doxorubicin)
 Cy = Cytoxan (Cyclophosphamide)



*Pembrolizumab may be given in smaller amounts more frequently

Part 1: Doxorubicin (Adriamycin) & Cyclophosphamide (Cytosan)

Week 1	2	3	4	5	6	7	8
A	-	A	-	A	-	A	-
Cy	-	Cy	-	Cy	-	Cy	-
P	-	-	-	-	-	P	-

First 8 weeks



Side Effects of AC

- Very common
 - Hair loss, fatigue, low blood counts (such as a decrease in white blood cells that help fight infection, a decrease in red blood cells that carry oxygen throughout the body, or a decrease in platelets that help the blood clot)
- Common
 - Mouth sores, nausea, reflux/heartburn
- Less common
 - Constipation, diarrhea, vomiting, fever, and infection
- Rare
 - Heart damage, bladder damage, leukemia (blood cancer), lung inflammation



Managing Side Effects of ACy: Infection

- Pegfilgrastim (or biosimilar)
 - 6mg injection 24-48 hours after completion of chemotherapy
 - Side effects: bone pain
 - You may be eligible for Neulasta Onpro auto-injector. For more information, visit <https://www.neulasta.com/stay-at-home-with-neulasta-onpro/>
- Taking CLARITIN (loratadine) 1 tablet (10 mg) daily for 5-7 days can help *prevent* the side effect of bone pain
- Taking over-the-counter pain medication can help *treat* bone pain



Managing Side Effects of ACy: Infection

Important steps to prevent infection:

- Practice hand hygiene: wash hands frequently especially before eating, after use of the bathroom and after contact with high touch surfaces under warm water with soap, towel dry
- Wipe down high touch with moist cleaning wipes
- Stay away from large crowds and gatherings
- Do not go near anyone who is sick
- Do not clean up animal droppings, animal cages, and tanks



Managing Side Effects of ACy: Nausea and Vomiting

In clinic medications

Your nurse will give you these medications 30-60 minutes before your infusion

- CINVANTI (Aprepitant)
- ALOXI (Palonosetron)
- DECADRON (Dexamethasone)



Managing Side Effects of ACy: Nausea and Vomiting

At home prescriptions

- DECADRON (Dexamethasone)
 - 2 tablets (8mg) with food in the morning for days 2-4 after chemotherapy
 - May cause insomnia, upset stomach
- ZOFRAN (Ondansetron)
 - 1 tablet (8mg) every 8 hours **as needed** for nausea starting on day 4 after chemotherapy
 - May cause constipation, headache
- COMPAZINE (Prochlorperazine)
 - 1 tablet (10mg) every 6 hours **as needed** for nausea
 - May cause dry mouth
- ATIVAN (Lorazepam)
 - 1 tablet (0.5-1mg) every 6 hours **as needed** for nausea
 - May cause sleepiness



Managing Side Effects: Over-the-counter Medications

Diarrhea

Imodium (Loperamide)

2 tablets (4 mg) with first loose stool, then 1 tablet (2 mg) with each stool thereafter for diarrhea (do not take more than 16mg/day)

Constipation

Sennakot (Senna)

2 tablets (17.2 mg) daily as needed for constipation
[Other option: Dulcolax (Bisacodyl) 1 tablet (5 mg) daily as needed]

Colace (Docusate)

1 capsule (100 mg) daily as needed for constipation

Miralax (Polyethylene Glycol)

1 capful (17 g) mixed with 1 glass of water daily as needed for constipation



Managing Side Effects: Over-the-counter Medications

Reflux & Heartburn

Tums (Calcium carbonate)	1 to 4 tablets (500-2000mg) <i>as needed</i> when reflux/heartburn symptoms occur
Pepcid (Famotidine)	1 to 2 tablets (10-20mg) twice daily <i>as needed</i> for reflux/heartburn
Prilosec (Omeprazole)	1 tablet (20mg) once daily for 14 days

Aches & Pain

Tylenol (Acetaminophen)	2 tablets (1000mg of <i>Extra Strength</i>) every 8 hours as needed for pain or 2 tablets (650mg of <i>Regular Strength</i>) every 6 hours as needed for pain. Do not exceed 3000mg/day.
Motrin/Advil (Ibuprofen)	1-3 tablets (200-600mg) every 6 hours with food as needed for pain. Do not exceed 2400mg/day. [Alternative: Aleve (Naproxen) 1 tablet (200mg) every 8 hours with food as needed for pain. Do not exceed 600mg/day.]



Pembrolizumab

Week 1	2	3	4	5	6	7	8
A	-	A	-	A	-	A	-
Cy	-	Cy	-	Cy	-	Cy	-
P	-	-	-	-	-	P	-

Week 9	10	11	12	13	14	15	16	17	18	19	20
T	T	T	T	T	T	T	T	T	T	T	T
C	C	C	C	C	C	C	C	C	C	C	C
P	-	-	-	-	-	P	-	-	-	-	-

Throughout the entire treatment



Side Effects

Side effects of Pembrolizumab

- Common
 - Rash, increased liver enzymes, increased blood sugar, thyroid problems (chills, fatigue, sweating)
- Less common
 - Cough and shortness of breath, muscle/joint pain, diarrhea
- Rare
 - Blurry vision, irregular heartbeat, kidney problems, allergic reaction



Managing Side Effects of Pembrolizumab: Over-the-counter Medications

Diarrhea

Imodium (Loperamide)

2 tablets (4 mg) with first loose stool, then 1 tablet (2 mg) with each stool thereafter for diarrhea (do not take more than 16mg/day)

Rash

Cortizone (hydrocortisone 1% cream)

Apply to the affected area three times per day **as needed** for rash

Allegra (fexofenadine)

1 tablet (180mg) twice daily **as needed** for rash

Let your treatment team know if you develop a rash. We may want to evaluate it before you start additional medications.



Part 2: Paclitaxel (Taxol) & Carboplatin

Week 9	10	11	12	13	14	15	16	17	18	19	20
T	T	T	T	T	T	T	T	T	T	T	T
C	C	C	C	C	C	C	C	C	C	C	C
P	-	-	-	-	-	P	-	-	-	-	-

Last 12 weeks



Side Effects

Side effects of Paclitaxel (Taxol) & Carboplatin

- Very common
 - Hair loss, fatigue
- Common
 - Nail changes, muscle/joint aches, numbness/tingling in hands/feet, mild infusion reaction (such as dizziness or fast heartbeat)
- Less common
 - Nausea/vomiting, diarrhea, fever and infection
- Rare
 - Severe allergic reaction



Managing Side Effects of TC: Nausea/Vomiting & Infusion Reactions

In clinic medications

Your nurse will give you these medications 30-60 minutes before your infusion

- ZOFRAN (Ondansetron)
- DECADRON (Dexamethasone)
- ZYRTEC (Cetirizine) or BENADRYL (Diphenhydramine)
- PEPCID (Famotidine)



Managing Side Effects of TC: Nausea and Vomiting

At home prescriptions

- ZOFRAN (Ondansetron)
 - 1 tablet (8mg) every 8 hours **as needed** for nausea
 - May cause constipation, headache
- COMPAZINE (Prochlorperazine)
 - 1 tablet (10mg) every 6 hours **as needed** for nausea
 - May cause dry mouth
- ATIVAN (Lorazepam)
 - 1 tablet (0.5-1mg) every 6 hours **as needed** for nausea
 - May cause sleepiness



Managing Side Effects of TC: Peripheral Neuropathy

- Peripheral Neuropathy is numbness, tingling, loss of sensation, or weakness in your hands or feet.
- There is no one way to prevent chemotherapy-induced peripheral neuropathy.
- Tell your treatment team if you are experiencing these symptoms. We can prescribe medicine to help you.

To help:

- Protect your hands and feet from extreme heat or cold
- Wear comfortable non-slip shoes
- Don't wear clothing or shoes that are too tight



Managing Side Effects of TC: Over-the-counter Medications

Diarrhea

Imodium (Loperamide)	2 tablets (4 mg) with first loose stool, then 1 tablet (2 mg) with each stool thereafter for diarrhea (do not take more than 16mg/day)
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Constipation

Sennakot (Senna)	2 tablets (17.2 mg) daily as needed for constipation [Other option: Dulcolax (Bisacodyl) 1 tablet (5 mg) daily as needed]
Colace (Docusate)	1 capsule (100 mg) daily as needed for constipation
Miralax (Polyethylene Glycol)	1 capful (17 g) mixed with 1 glass of water daily as needed for constipation



Fertility

- Your treatment can affect fertility in women and men.
- Infertility means you cannot become pregnant or make someone pregnant. Infertility related to chemotherapy can be temporary or permanent.
- Before starting treatment, talk with your healthcare team about preserving your fertility and what you can do.
 - Egg harvesting for women and sperm banking for men may be options before starting chemotherapy.

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Other Information

Sexuality & Fertility

Supportive Care Resources



Sexuality and Birth Control

- It is fine to be sexually active while receiving chemotherapy; however, you should not get pregnant or get someone pregnant during this time.
- Women may notice a change in their menstrual periods during chemotherapy treatment. Bleeding may lessen, become spotty, or stop completely.
- Women can still get pregnant even if their menstrual period changes or stops. Always use a reliable form of birth control.
- Tell your healthcare team right away if you have unprotected sex or if you think that birth control has failed.



Supportive Care Resources

- Yoga
- Acupuncture / Acupressure
- Massage
- Support groups
- Survivorship programs
- Workshops
- Music therapy

To learn more about all our Supportive Care offerings log onto: [massgeneral.org/cancer/supportive-care](https://www.massgeneral.org/cancer/supportive-care)



Frequently Asked Questions

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Frequently Asked Questions

Treatment Day Overview

Exercise & Diet

Supplements & Herbs

- **Q: What will my day look like?**
 - Lab Appointment (~15 mins)
 - Provider Appointment (~30 mins)
 - Pre-medications/Hydration (~30 mins)
 - Infusion (~1.5-2 hours)
 - *Times may be lengthened for cold cap therapy*
 - Times will vary for each patient, but your doctor can help provide an estimate during your first appointment.



Frequently Asked Questions

Q: Who do I call for cold caps?

- You may be eligible for cold caps, a device to reduce hair loss. Please talk to your care team for more information.

Q: Can I exercise?

- Yes, exercise is generally safe for cancer patients. Your ability to exercise may depend on the type of cancer and treatments being used. Please talk to your care team to discuss which exercises are appropriate for you.



Frequently Asked Questions

Q: Should I take my nausea medications when I'm not nauseous?

- It is important to take DECADRON (Dexamethasone) ***as scheduled with Part 1 (ACy)*** despite having no symptoms of nausea. However, if you are not nauseous, you do not need to take your ***as needed*** medications.

Q: Who do I call for my pegfilgrastim (or biosimilar) refill?

- Please reach out to your specialty pharmacy listed on the pegfilgrastim (or biosimilar) label.

Q: Can I take herbal supplements and vitamins?

- Many herbal supplements may interact with medications. Please let your team know if you are currently or are planning to take any herbal products.



Frequently Asked Questions: What Can I Eat?

If you feel well:

Aim to eat a variety of foods high in nutrients including plenty of fruits, vegetables, whole grains and protein every 3-4 hours. These foods help your body rebuild tissues and keep your immune system strong. Stay well hydrated. Most people need between 2-3 liters, or 66-99oz per day, non-caffeinated fluids.

High protein food examples:

Meat, poultry, fish, eggs, seafood, lentils, beans, nuts, seeds, & unsweetened yogurts.



Frequently Asked Questions: What Can I Eat?

The day of chemo:

- 1) Come in well hydrated.
- 2) Eat a light meal:
 - Yogurt + fruit
 - Nut butter or an egg + toast
 - Oatmeal + nuts, fruit

If you are experiencing side effects including nausea, diarrhea/constipation, taste changes, mouth sores:

- See [massgeneral.org/cancer/nutrition](https://www.massgeneral.org/cancer/nutrition) for tips and recipes.
- Ask your care team to refer you to our Registered Dietitians.



Your Breast Cancer Team

- Oncologist
- Nurse Practitioner
- Pharmacist
- Oncology Social Worker
- Practice Nurse
- Infusion Nurse



When to call?

If experiencing:

- Fever of 100.4F (38C) or higher
- Chills
- Bleeding/unusual bruising
- Sore throat or trouble swallowing
- Dizziness
- Problems with urination
- Uncontrolled nausea, vomiting
- Uncontrolled diarrhea
- Flu-like symptoms
- Extreme fatigue or weakness
- Cough or shortness of breath
- Confusion or agitation
- Rapid heartbeat
- New swelling in arms/legs, face
- Uncontrolled pain or new pain
- COVID-19 or other infectious disease exposures



Contact Information

- For urgent matters, please call. For all other non-urgent matters, please use the patient portal
- Phone Numbers
 - Boston: 617-726-6500
 - Waltham: 781-487-6100
 - Danvers: 978-882-6060
- Patient Portal:
 - patientgateway.org





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