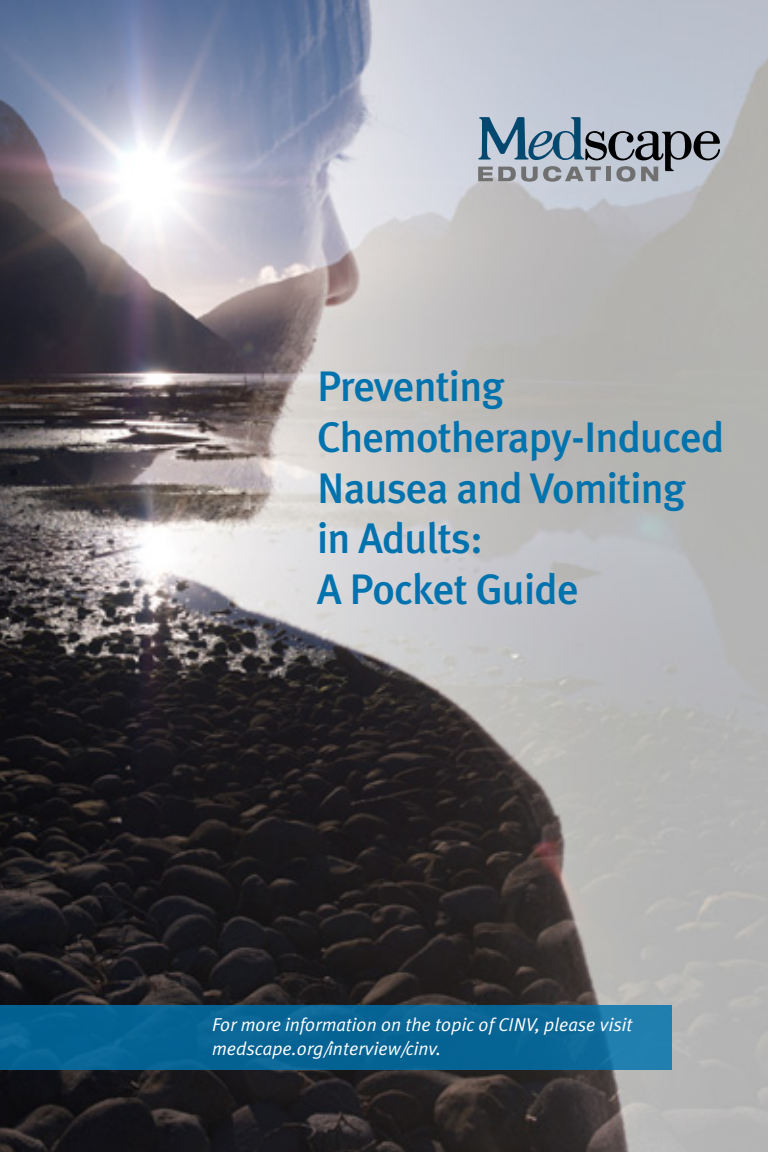


Medscape EDUCATION

Preventing Chemotherapy-Induced Nausea and Vomiting in Adults: A Pocket Guide

For more information on the topic of CINV, please visit medscape.org/interview/cinv.

Chemotherapy-induced nausea and vomiting (CINV) is a common adverse event associated with cancer treatment. Up to 80% of patients undergoing chemotherapy experience nausea and vomiting,[1] with nausea reported by patients as the most common and clinically significant side effect.[2,3] The desire to avoid nausea and vomiting is so strong that patients have postponed or even refused treatment. Additionally, CINV can impose limitations on the patient's ability to function socially, maintain employment, or complete daily activities.[4]

These issues make the prevention of CINV an important component of the care of patients with cancer. This pocket guide is designed for use by healthcare professionals involved in the treatment of patients with cancer. It is divided into 2 sections: *CINV Risk Levels* and *CINV Prevention and Treatment*. This information was compiled from guidelines for antiemetic therapy published by the American Society of Clinical Oncology (ASCO)[5] and the National Comprehensive Cancer Network (NCCN).[6]

CINV Risk Levels summarizes categories of chemotherapeutic agents by emesis risk (high, moderate, low, or minimal) and briefly discusses the emetogenicity of radiation therapy.

CINV Prevention and Treatment summarizes the available antiemetic agents and recommended prophylactic regimen for each risk level. It also includes a brief discussion of special emetic problems that may occur, such as anticipatory CINV, delayed CINV, and breakthrough CINV.

CINV Risk Levels

The emetogenicity of individual chemotherapeutic agents is considered the primary factor in determining whether a cancer patient will likely experience CINV. ASCO and NCCN recognize 4 levels of classification for emesis-causing chemotherapeutic agents, categorizing each agent according to the percentage of patients likely to experience CINV with its use [5,6]:

- High emetic risk (> 90%)
- Moderate emetic risk (30%-90%)
- Low emetic risk (10%-30%)
- Minimal emetic risk (< 10%)

A summary of chemotherapeutic agents by risk category is presented in Tables 1 through 4.

Table 1. Antineoplastic Agents Administered Intravenously as Single Agents: High Emetic Risk[5,6]

ASCO and NCCN	ASCO	NCCN
• Dacarbazine • Mechlorethamine • Streptozocin	• Carmustine • Cisplatin • Cyclophosphamide (≥ 1500 mg/m^2) • Dactinomycin	• Carmustine • Cisplatin (≥ 50 mg/ m^2) • Cyclophosphamide (>1500 mg/m^2) • Doxorubicin (> 60 mg/m^2) • Epirubicin (> 90 mg/m^2) • Ifosfamide (> 10 g/m^2)

Table 2. Antineoplastic Agents Administered Intravenously as Single Agents: Moderate Emetic Risk [5,6]

ASCO and NCCN	ASCO	NCCN
• Azacitidine • Bendamustine • Carboplatin • Clofarabine • Daunorubicin* • Idarubicin* • Irinotecan • Oxaliplatin	• Alemtuzumab • Cyclophosphamide (< 1500 mg/m^2) • Cytarabine (> 1000 mg/m^2) • Doxorubicin* • Epirubicin* • Ifosfamide	• Aldesleukin ($> 12\text{-}15$ mIU/m^2) • Amifostine (> 300 mg/m^2) • Arsenic trioxide • Busulfan • Cisplatin (< 50 mg/m^2) • Carmustine (≤ 250 mg/m^2) • Cyclophosphamide (≤ 1500 mg/m^2) • Cytarabine (> 200 mg/m^2) • Dactinomycin • Doxorubicin (≤ 60 mg/m^2) • Epirubicin (≤ 90 mg/m^2) • Ifosfamide (< 10 g/m^2) • Interferon (≥ 10 mIU /m^2) • Melphalan • Methotrexate (> 250 mg/m^2) • Temozolomide

* ASCO guidelines designate these anthracyclines as high emetic risk when combined with cyclophosphamide.

Table 3. Antineoplastic Agents Administered Intravenously as Single Agents: Low Emetic Risk[5,6]

ASCO and NCCN	ASCO	NCCN
• Cabazitaxel • Docetaxel • Doxorubicin (liposomal injection) • Etoposide • Fluorouracil • Gemcitabine • Ixabepilone • Mitomycin • Mitoxantrone • Paclitaxel • Pemetrexed • Topotecan	• Bortezomib • Catumaxomab • Cytarabine (< 1000 mg/m^2) • Methotrexate • Panitumumab • Temsirolimus • Trastuzumab	• Aldesleukin ($\leq$ 12 mIU /m^2) • Amifostine ($\leq$ 300 mg/m^2) • Cytarabine (low dose, 100-200 mg/m^2) • Eribulin • Floxuridine • Interferon (> 5 to < 10 mIU/m^2) • Methotrexate (> 50 to < 250 mg/m^2) • Paclitaxel-albumin • Pentostatin • Pralatrexate • Romidepsin • Thiotepa

Table 4. Antineoplastic Agents Administered Intravenously as Single Agents: Minimal Emetic Risk[5,6]

ASCO and NCCN	ASCO	NCCN
• Bevacizumab • Bleomycin • Cetuximab • Cladribine (2-chlorode-oxyadenosine) • Fludarabine • Rituximab • Vinblastine • Vincristine • Vinorelbine	• Busulfan • Pralatrexate	• Alemtuzumab • Asparaginase • Bortezomib • Cytarabine ($100\ mg/m^2$) • Decitabine • Denileukin diftitox • Dexrazoxane • Interferon ($< 5\ mIU/m^2$) • Ipilimumab • Methotrexate ($< 50\ mg/m^2$) • Nelarabine • Ofatumumab • Panitumumab • Pegaspargase • Peginterferon • Temsirolimus • Trastuzumab • Valrubicin

Although the emetogenicity of individual chemotherapeutic agents is of primary consideration when assessing a patient's risk of CINV, other factors should be taken into account. Combination treatments often elevate the potential for patients to experience nausea and vomiting, as do certain patient characteristics. For example, the risk of CINV is raised for patients who are female or younger or who have an impaired quality of life.[7]

Radiation therapy also carries emetic risk. Due to the lack of published trial data available to help delineate emetic risk groups for patients undergoing radiation therapy, ASCO has adopted 2009 consensus recommendations from the Multinational Association of Supportive Care in Cancer and European Society for Medical Oncology, which loosely categorize the emetic risk of radiation therapy according to the target treatment area, as presented in Table 5.[5] Other relevant considerations when assessing emetic risk for a patient undergoing radiation therapy include the treatment field, the dose of radiotherapy administered per fraction, and the pattern of fractionation.

Table 5. Summary of Emetic Risk for Radiation Therapy[5]

Risk Category	Targeted Area
High	Total body irradiation Total nodal irradiation
Moderate	Upper abdomen Upper body irradiation Half-body irradiation
Low	Cranium Craniospinal Head and neck Lower thorax region Pelvis
Minimal	Extremities Breast

CINV Prevention and Treatment

A variety of antiemetic agents are available for the prevention and treatment of CINV, the most effective being 5-hydroxytryptamine$_3$ ([5-HT$_3$] serotonin) receptor antagonists, neurokinin 1 (NK-1) receptor antagonists, and corticosteroids. Agents that have a lower therapeutic index include metoclopramide, butyrophenones, phenothiazines, cannabinoids, olanzapine, and benzodiazepines.[8] Antiemetic agents are used singly or in combination depending on the chemotherapeutic agent's level of emetic risk. When multiple chemotherapeutic agents are administered together, selection of an antiemetic regimen is based on the combination's most emetogenic agent.

5-HT$_3$ (Serotonin) Receptor Antagonists

Introduced in the 1990s, 5-HT$_3$ antagonists form the cornerstone of CINV prophylaxis and treatment. Currently, these 5-HT$_3$ antagonists are available in the United States:

- Ondansetron
- Granisetron
- Dolasetron
- Palonosetron

The most common adverse effects of these agents are mild headache, transient elevation of hepatic aminotransferase levels, and constipation.

Neurokinin 1 Receptor Antagonists

The newest class of antiemetic agents effective for the prevention of CINV are the NK-1 receptor antagonists.[8] Aprepitant was the first available drug in this class. It was followed by fosaprepitant, a water-soluble phosphoryl prodrug for aprepitant, which is converted to aprepitant within 30 minutes of intravenous administration. In 2 prospective phase 3 trials, adding aprepitant to ondansetron and dexamethasone reduced the risk of emesis or the need for rescue medications by approximately

50%. Aprepitant has subsequently been established as an important component of antiemetic strategies for highly emetic chemotherapeutic regimens.[8]

Corticosteroids

Corticosteroids can be used alone as prophylactic treatment for patients receiving chemotherapeutic agents with low emetic potential, but they are most effective when used in combination with other antiemetic agents.[8] Of the corticosteroids, dexamethasone and methylprednisolone have been the most widely used in treating CINV.

When corticosteroids are administered with aprepitant, doses should be reduced by approximately 50%. For cases in which corticosteroids are included in the antineoplastic regimen, therapeutic corticosteroid doses should not be attenuated. Corticosteroids are contraindicated for patients receiving interleukin-2 or interferon.[6]

Additional Antiemetic Agents

The following antiemetic agents are characterized by lower efficacy and a greater potential for adverse effects compared with 5-HT_3 antagonists, NK-1 receptor antagonists, and corticosteroids[8]:

- **Phenothiazines, butyrophenones, and metoclopramide –** appropriate for use as primary prophylaxis in patients receiving chemotherapeutic regimens with low emetic potential or for use as a salvage treatment in patients with breakthrough CINV

- **Synthetic cannabinoids –** appropriate for use in patients receiving chemotherapeutic regimens with low to moderate emetic potential; are associated with adverse effects such as postural hypotension and dysphoria

- **Olanzapine –** effective at preventing acute and delayed CINV; however, use of olanzapine is hampered by lack of information regarding its efficacy compared with other antiemetics or when combined with aprepitant

Benzodiazepines also have only modest antiemetic efficacy, but are useful in some situations. Lorazepam is helpful in the prevention and treatment of anticipatory emesis and as an adjunct to other antiemetic agents when first-line treatment fails.

Recommended Antiemetic Regimen for Chemotherapeutic Agents with High Emetic Risk

ASCO and NCCN recommend using the combination of a 5-HT_3 (serotonin) receptor antagonist, a corticosteroid (dexamethasone), and an NK-1 receptor antagonist such as aprepitant or fosaprepitant before intravenous administration of chemotherapeutic agents or certain combination treatments associated with a high risk of emesis.[5,6] The different classes of antiemetic agents and their recommended doses are summarized in Tables 6 and 7. Table 8 summarizes recommended antiemetic regimens for patients receiving oral chemotherapeutic agents with moderate to high emetic risk.

Table 6. Recommended 5-HT_3 Antagonists for an Antiemetic Regimen Administered with Highly Emetic Chemotherapy[5,6]

	Recommendations for Day 1 Dosing	
5-HT_3 Antagonist	**ASCO**	**NCCN**
Dolasetron	PO: 100 mg	PO: 100 mg
Granisetron	PO: 2 mg *or* IV: 1 mg *or* 0.01 mg/kg	PO: 2 mg *or* 1 mg BID* *or* IV: 0.01 mg/kg (up to 1 mg)
Ondansetron	PO: 8 mg BID *or* IV: 8 mg *or* 0.15 mg/kg	PO: 16-24 mg *or* IV: 8-24 mg (max 32 mg/d)
Palonosetron	PO: 0.50 mg *or* IV: 0.25 mg	IV: 0.25 mg†

* NCCN includes the granisetron transdermal patch (3.1 mg/24 h) as an option, recommending it be applied around 24 to 48 hours prior to first chemotherapy dose and used for no longer than 7 days.

† NCCN lists intravenous palonosetron as the preferred 5-HT_3 antagonist.

Table 7. Additional Components of a Triplet Antiemetic Regimen Administered with Highly Emetic Chemotherapy[5,6]*

Agents	Regimens*
Neurokinin 1 Antagonist	
Aprepitant	PO: 125 mg on day 1 (NCCN also recommends giving 80 mg/d on days 2-3)
Fosaprepitant	IV: 150 mg on day 1 (As an alternative, NCCN says to give fosaprepitant 115 mg IV on day 1, followed by aprepitant 80 mg PO on days 2-3)
Corticosteroid	
Dexamethasone†	PO or IV: 12 mg on day 1 PO: 8 mg/d on days 2-3 or 2-4 (NCCN recommends 8 mg BID on days 3-4 for patients receiving fosaprepitant 150 mg IV on day 1)

* Per NCCN guidelines, lorazepam (PO, IV, sublingual: 0.5-2 mg every 4-6 h on days 1-4) can be administered with or without an H2 blocker or proton pump inhibitor as part of an antiemetic regimen.

† If dexamethasone is being administered without a neurokinin 1 antagonist, ASCO advises increasing dosing for dexamethasone to 20 mg on day 1 and to 16 mg on days 2 through 4.

Table 8. Recommended Antiemetics To Use with Oral Chemotherapeutic Agents of Moderate to High Emetic Risk[5]*

5-HT_3 Antagonist	Daily Dose
Granisetron	PO: 2 mg *or* 1 mg BID
Ondansetron	PO: 16-24 mg
Optional Agents	
Lorazepam	PO *or* sublingual: 0.5-2 mg every 4-6 h as needed
H2 blocker or proton pump inhibitor	Dose not specified

*ASCO does not offer specific recommendations for preventing emesis during oral chemotherapy.

Recommended Antiemetic Regimen for Chemotherapeutic Agents with Moderate Emetic Risk

Guidelines for managing moderate emetic risk differ between ASCO and NCCN (Tables 9 and 10).[5,6] ASCO recommends administering the 5-HT_3 agent palonosetron and the corticosteroid dexamethasone on day 1, prior to the first dose of chemotherapy. Use of an NK-1 antagonist is cited as optional, but clinicians who choose to do so should follow dosing guidelines for preventing emesis with highly emetic chemotherapeutic agents and should limit use of dexamethasone to day 1 only.[5]

NCCN also recommends a 2-drug combination comprising a 5-HT_3 antagonist and the corticosteroid dexamethasone prior to the first dose of a moderately emetic chemotherapeutic regimen. Although NCCN guidelines indicate intravenous palonosetron as the preferred 5-HT_3 antagonist, dolasetron, granisetron, and ondansetron are also listed as options. NCCN suggests adding an NK-1 antagonist when appropriate, specifically recommending aprepitant to prevent emesis in patients receiving certain combination chemotherapeutic regimens. The guidelines also allow agents with a lower therapeutic index to be added.

If antiemetics are required on subsequent days, NCCN advises using one of the 5-HT_3 antagonists—with the exception of palonosetron—alone or with an NK-1 antagonist and dexamethasone, provided an NK-1 antagonist was used on the first day. Dexamethasone monotherapy is another option for days 2 and 3.[6] (For specific recommendations on antiemetic regimens to use with oral chemotherapeutic agents having moderate to high emetic risk, see Table 8.)

Table 9. Recommended 5-HT$_3$ Antagonists for an Antiemetic Regimen Administered with Moderately Emetic Chemotherapy

5-HT$_3$ Antagonist	Day 1	Days 2-3*
NCCN		
Dolasetron	PO: 100 mg	PO: 100 mg/d
Granisetron	PO: 2 mg *or* 1 mg BID† *or* IV: 0.01 mg/kg (up to 1 mg)	PO: 1-2 mg/d *or* 1 mg BID *or* IV: 0.01 mg/kg/d (up to 1 mg)
Ondansetron	PO: 16-24 mg *or* IV: 8-12 mg (max 32 mg/d)	PO: 8 mg BID *or* 16 mg/d *or* IV: 8 mg/d (max 32 mg/d)
Palonosetron	IV: 0.25 mg	NA
ASCO		
Palonosetron	PO: 0.50 mg *or* IV: 0.25 mg	NA

* Per NCCN guidelines, 5-HT$_3$ antagonists should be given as monotherapy on days 2 and 3 unless a neurokinin 1 antagonist was administered on day 1 (see Table 10).

† NCCN includes the granisetron transdermal patch (3.1 mg/24 h) as an option, recommending it be applied 24 to 48 hours prior to first chemotherapy dose and used for no longer than 7 days.

Table 10. Additional Options for an Antiemetic Regimen Administered with Moderately Emetic Chemotherapy

Agent	Day 1	Days 2-3
NCCN		
Corticosteroid	*Dexamethasone (with a 5-HT_3)* PO *or* IV: 12 mg	*Dexamethasone (with no 5-HT_3)** PO *or* IV: 8 mg/d
Neurokinin 1 antagonist (optional)	*Aprepitant* PO: 125 mg Fosaprepitant IV: 115 mg	*Aprepitant** PO: 80 mg/d NA
Agents with lower therapeutic index (optional)	*Lorazepam* PO *or* sublingual: 0.5-2 mg every 4-6 h as needed H2 blocker or proton pump inhibitor Dose not specified	*Lorazepam* PO *or* sublingual: 0.5-2 mg every 4-6 h as needed H2 blocker or proton pump inhibitor Dose not specified
ASCO†		
Corticosteroid	*Dexamethasone (with a 5-HT_3)* PO *or* IV: 8 mg	*Dexamethasone (alone)* PO *or* IV: 8 mg/d
Neurokinin 1 antagonist (optional)	*Aprepitant* PO: 125 mg *Fosaprepitant* IV: 150 mg	*Aprepitant* PO: 80 mg/d NA

* Aprepitant can be used with dexamethasone (PO or IV, 8 mg/d) on days 2 and 3, but not with a 5-HT_3 agonist.

† If administering dexamethasone with a neurokinin 1 antagonist on day 1, ASCO recommends increasing the dexamethasone dose to 12 mg and advises against administering dexamethasone on days 2 and 3.

Recommended Antiemetic Regimen for Chemotherapeutic Agents with Low or Minimal Emetic Risk

ASCO recommends dexamethasone monotherapy for the treatment of patients undergoing chemotherapy with low emetic risk. The NCCN guidelines list dexamethasone and alternative treatments that can be used when corticosteroids are contraindicated or otherwise not advised (Table 11).

Neither ASCO nor NCCN recommends routine prophylaxis for patients receiving chemotherapeutic agents associated with minimal emetic risk.

Table 11. Recommendations for Preventing Emesis Induced by Chemotherapeutic Agents of Low Emetic Risk[5,6]

Agent	ASCO	NCCN*
Dexamethasone	PO *or* IV: 8 mg on day 1	PO *or* IV: 12 mg/d
Metoclopramide	NA	PO *or* IV: 10-40 mg prior to chemotherapy, repeated every 4-6 h as needed
Prochlorperazine	NA	PO *or* IV: 10 mg prior to chemotherapy, repeated every 4-6 h as needed

* Per NCCN guidelines, lorazepam (PO, IV, sublingual: 0.5-2 mg every 4-6 h on days 1-4) can be administered with or without an H2 blocker or proton pump inhibitor as part of any antiemetic regimen.

Additional Recommendations for Preventing Emesis in Patients Undergoing Chemotherapy

Multiday Chemotherapy

For each day of a moderately to highly emetic chemotherapeutic regimen, NCCN guidelines recommend administering a 5-HT_3 antagonist and dexamethasone prior to the first chemotherapy dose. If intravenous palonosetron is given on day 1, subsequent doses appear safe but may not be needed. Absent contraindications, dexamethasone should be continued for 2 to 3 days after administration of chemotherapeutic agents strongly associated with delayed emesis.[6]

ASCO guidelines suggest administering emesis prophylaxis each day of chemotherapy based on the regimen's emetic risk and for 2 days after chemotherapy ends.[5]

Limited data suggest it may be appropriate to add daily aprepitant to the antiemetic regimen for patients undergoing multiday chemotherapy with highly emetic agents, such as cisplatin.[5,6]

Combination Chemotherapy/ Concurrent Chemotherapy and Radiation Therapy
Patients receiving combination chemotherapy or chemotherapy plus radiation therapy should receive antiemetic treatment based on the chemotherapeutic agent with the highest emetic risk, unless the risk for emesis associated with radiation therapy is higher.[5]

Concurrent High-Dose Chemotherapy and Stem Cell or Bone Marrow Transplantation
Recommendations for patients undergoing high-dose chemotherapy and stem cell or bone marrow transplantation include treatment with a 5-HT_3 antagonist and dexamethasone.[5] One study supports the use of palonosetron for emetic control, and another showed improved vomiting control with the use of aprepitant during chemotherapy conditioning.[5]

Pediatric Patients
For pediatric patients receiving agents with high or moderate emetic risk, a combination of a 5-HT_3 antagonist and corticosteroid is suggested before chemotherapy.[5] Higher weight-based doses of 5-HT_3 antagonists may be required for adequate antiemetic protection because of the variation of pharmacokinetic parameters in children.

Recommended Prophylactic Treatment for Patients Undergoing Radiation Therapy

The risk of CINV for patients receiving radiation therapy varies, with a minority of patients receiving therapy that has high emetic risk.[5] In general, the recommended treatment for patients with low to high risk includes a 5-HT_3 antagonist, with dexamethasone as an added option for patients with the highest risk.

Other CINV Occurrences

Patients may experience nausea and vomiting before treatment (anticipatory CINV), well after treatment (delayed CINV), or during treatment despite receiving prophylaxis. These special cases and recommended approaches to treatment are discussed below.

Anticipatory CINV

Patients predisposed to motion sickness or who have had poor control of nausea and vomiting during previous chemotherapy may experience anticipatory CINV. In cases of anticipatory CINV, behavioral therapy with systematic desensitization is recommended.[5,6] Acupuncture/acupressure and additional relaxation therapies, such as hypnosis/guided imagery or music therapy, are also suggested.[6]

The NCCN guidelines provide recommendations for additional medical treatment, including the following:

- Alprazolam, PO: 0.5–2 mg TID, beginning the night before treatment; or
- Lorazepam, PO: 0.5–2 mg, given the night before and the morning of treatment.

Delayed CINV

Delayed CINV is nausea or vomiting that occurs 24 hours or more after chemotherapy. Prevention is the optimal strategy for dealing with delayed CINV. As such, NCCN and ASCO guidelines on antiemetic prophylaxis for chemotherapeutic regimens considered moderately or highly emetic are designed to prevent acute and delayed CINV.[5,6] NCCN considers intravenous palonosetron the most effective 5-HT_3 antagonist for preventing delayed CINV and recommends using aprepitant in patients undergoing chemotherapy with an anthracycline.[6]

Breakthrough CINV

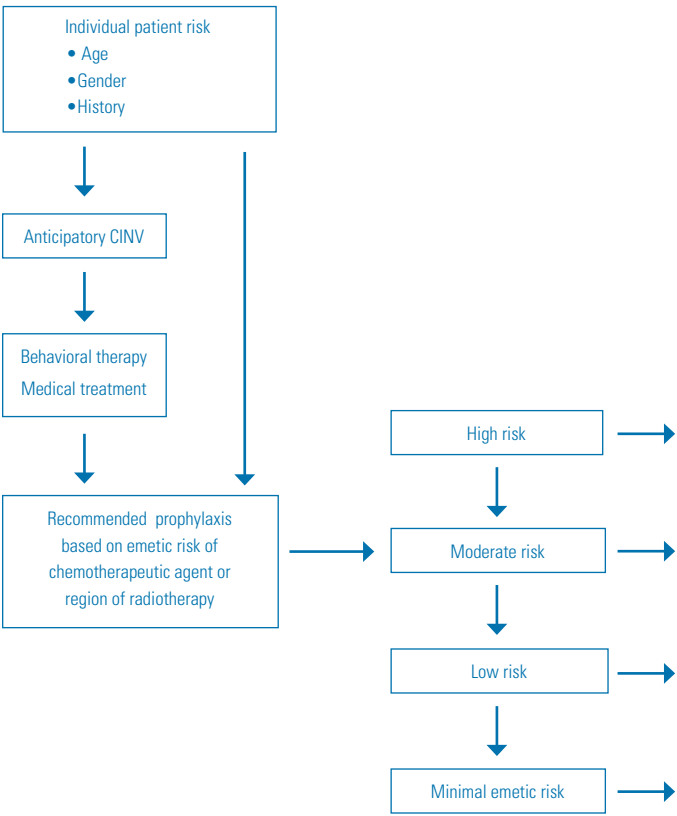
Some patients may experience CINV despite prophylactic measures and require rescue therapy with additional antiemetic agents. Clinicians should reevaluate patients experiencing breakthrough CINV for emetic risk, disease status, comorbid illnesses, and medications and determine whether the best antiemetic regimen is being administered.[5] Table 12 summarizes changes to the antiemetic regimen that are recommended for consideration.

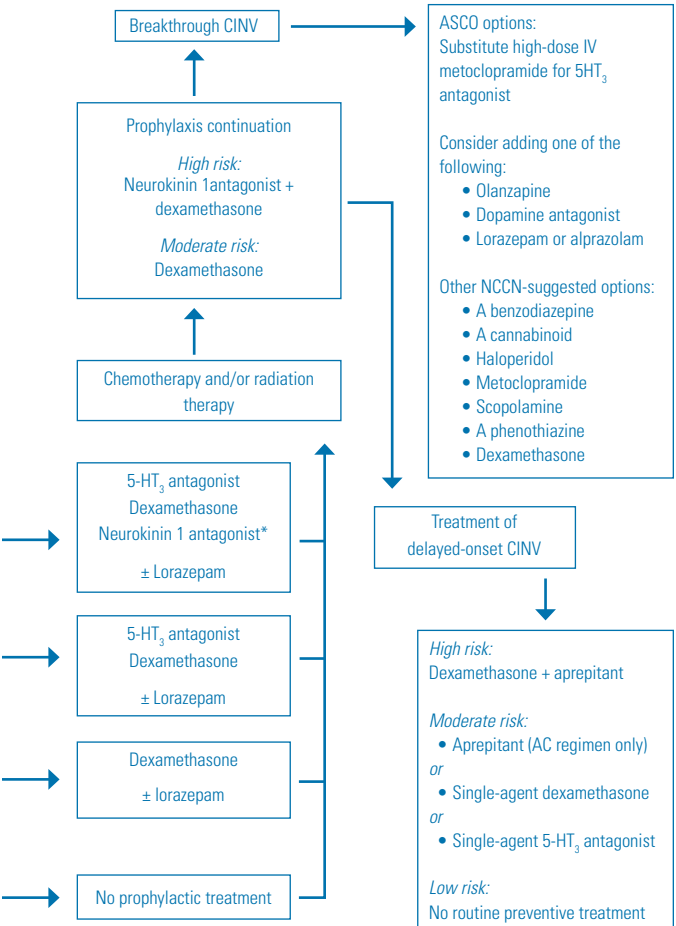
Table 12. Recommendations for Treating Breakthrough CINV[5,6]

ASCO	NCCN
Options for consideration (dosing not specified): • Adding lorazepam or alprazolam • Adding olanzapine • Substituting high-dose IV metoclopramide for the 5-HT_3 antagonist • Adding a dopamine antagonist	Add one of the following agents*: • *Benzodiazepine* Lorazepam, PO *or* IV: 0.5-2 mg every 4-6 h • *Cannabinoids* – Dronabinol, PO: 5-10 mg every 3 h *or* every 6 h – Nabilone, PO: 1-2 mg BID • *Others* – Haloperidol, PO *or* IV: 0.5-2 mg every 4-6 h – Metoclopramide, PO or IV: 10-40 mg every 4 h *or* every 6 h – Olanzapine, PO: 2.5-5 mg BID – Scopolamine: 1 patch every 72 h • *Phenothiazines* – Prochlorperazine, supp PR: 25 mg every 12 h; *or* PO *or* IV: 10 mg every 4 h or every 6 h – Promethazine, PO *or* IV (central line only): 12.5-25 mg every 4 h • *5-HT_3 antagonists* – Dolasetron, PO: 100 mg/d – Granisetron, PO: 1-2 mg/d or 1 mg BID; *or* IV: 0.01 mg/kg/d (up to 1 mg/d) – Ondansetron, PO *or* IV: 16 mg/d • *Corticosteroid* Dexamethasone, PO *or* IV: 12 mg/d

* NCCN guidelines recommend adding one agent from a class of drugs that is not already included in the current antiemetic regimen.

Appendix - Treatment Algorithm for CINV




Breakthrough CINV
ASCO options:
Substitute high-dose IV metoclopramide for 5HT3 antagonist
Consider adding one of the following:
• Olanzapine
• Dopamine antagonist
• Lorazepam or alprazolam
Other NCCN-suggested options:
• A benzodiazepine
• A cannabinoid
• Haloperidol
• Metoclopramide
• Scopolamine
• A phenothiazine
• Dexamethasone
Prophylaxis continuation
High risk:
Neurokinin 1antagonist + dexamethasone
Moderate risk:
Dexamethasone
Chemotherapy and/or radiation therapy
5-HT3 antagonist
Dexamethasone
Neurokinin 1 antagonist*
± Lorazepam
5-HT3 antagonist
Dexamethasone
± Lorazepam
Dexamethasone
± lorazepam
No prophylactic treatment
Treatment of delayed-onset CINV
High risk:
Dexamethasone + aprepitant
Moderate risk:
• Aprepitant (AC regimen only)
or
• Single-agent dexamethasone
or
• Single-agent 5-HT3 antagonist
Low risk:
No routine preventive treatment

Appendix – Online Resources

American Cancer Society
https://www.cancer.org

American Cancer Society – Clinical Trials Matching Service
http://www.cancer.org/treatment/treatmentsandsideeffects/clinicaltrials/app/clinical-trials-matching-service.aspx

American Society of Clinical Oncology
http://www.asco.org

American Society for Radiation Oncology
https://www.astro.org

Association of Oncology Social Work
http://www.aosw.org

Cancer.Net
http://www.cancer.net

CDC – Cancer Prevention and Control
http://www.cdc.gov/cancer

Clinical Trials (NIH)
http://www.clinicaltrials.gov

Mayo Clinic – Cancer Treatment, Clinical Trials
http://www.mayoclinic.org/cancer-treatment/clintrials.html

Multinational Association of Supportive Care in Cancer
http://www.mascc.org

National Cancer Institute
http://www.cancer.gov

National Comprehensive Cancer Network
http://www.nccn.org

Oncology Nursing Society
http://www.ons.org

PubMed
http://www.ncbi.nlm.nih.gov/pubmed

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