Antiemetics: ASCO Guideline Update

Drug, Dose, Schedule Recommendations for Antiemetic Regimens

ASCO® Guidelines

Antiemetic Dosing by Chemotherapy Risk Category

	Agent	Dose on Day of Chemotherapy	Dose(s) on Subsequent Days
High Emetic Risk: Cisplatin and other agents			
NK_1 Receptor Antagonist	Aprepitant	125 mg oral **or** 130 mg IV	80 mg oral; days 2 and 3 (if oral aprepitant on day 1)
	Fosaprepitant	150 mg IV	
	Netupitant-palonosetron	300 mg netupitant/0.5 mg palonosetron oral in single capsule	
	Fosnetupitant-palonosetron	235 mg fosnetupitant/0.25 mg palonosetron IV	
	Rolapitant	180 mg oral	
5-HT_3 Receptor Antagonist[a]	Granisetron	2 mg oral **or** 1 mg **or** 0.01 mg/kg IV **or** 1 transdermal patch **or** 10 mg subcutaneous	
	Ondansetron	Single 24 mg dose administered by tablets, successive oral dissolving tablets, or oral dissolving film applications before the start of chemotherapy **or** 8 mg **or** 0.15 mg/kg IV	
	Palonosetron	0.50 mg oral **or** 0.25 mg IV	
	Dolasetron	100 mg oral ONLY	
	Tropisetron	5 mg oral **or** 5 mg IV	
	Ramosetron	0.3 mg IV	
Dexamethasone	if aprepitant is used[b]	12 mg oral **or** IV	8 mg oral **or** IV once daily on days 2-4
	if fosaprepitant is used[b]	12 mg oral **or** IV	8 mg oral **or** IV on day 2; 8 mg oral **or** IV twice daily on days 3-4
	if netupitant-palonosetron or fosnetupitant-palonosetron is used[b]	12 mg oral **or** IV	8 mg oral **or** IV once daily on days 2 to 4
	If rolapitant is used	12 mg oral **or** IV	8 mg oral **or** IV twice daily on days 2-4
Olanzapine		10 mg or 5 mg oral	10 mg or 5 mg oral on days 2-4
High Emetic Risk: Anthracycline combined with cyclophosphamide[c]			
NK_1 Receptor	Aprepitant	125 mg oral **or**	80 mg oral; days 2 and 3 (if oral aprepitant

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	Agent	Dose on Day of Chemotherapy	Dose(s) on Subsequent Days
Antagonist		130 mg IV	on day 1)
	Fosaprepitant	150 mg IV	
	Netupitant-palonosetron	300 mg netupitant/0.5 mg palonosetron oral in single capsule	
	Fosnetupitant-palonosetron	235 mg fosnetupitant/0.25 mg palonosetron IV	
	Rolapitant	180 mg oral	
5-HT$_3$ Receptor Antagonist[a]	Granisetron	2 mg oral **or** 1 mg **or** 0.01 mg/kg IV **or** 1 transdermal patch **or** 10 mg subcutaneous	
	Ondansetron	Single 24 mg dose administered by tablets, successive oral dissolving tablets, or oral dissolving film applications before the start of chemotherapy, **or** 8 mg **or** 0.15 mg/kg IV	
	Palonosetron	0.50 mg oral **or** 0.25 mg IV	
	Dolasetron	100 mg oral ONLY	
	Tropisetron	5 mg oral **or** 5 mg IV	
	Ramosetron	0.3 mg IV	
Dexamethasone	If aprepitant is used[b]	12 mg oral **or** IV	
	If fosaprepitant is used[b]	12 mg oral **or** IV	
	If netupitant-palonosetron or fosnetupitant-palonosetron is used[b]	12 mg oral **or** IV	
	If rolapitant is used	20 mg (oral **or** IV)	
Olanzapine		10 mg or 5 mg oral	10 mg or 5 mg oral on days 2-4
Moderate Emetic Risk[d]			
5-HT$_3$ Receptor Antagonist	Granisetron	2 mg oral **or** 1 mg **or** 0.01 mg/kg IV **or** 1 transdermal patch **or** 10 mg subcutaneous	
	Ondansetron	8 mg oral twice daily **or** 8 mg oral dissolving tablet twice daily **or** 8 mg oral soluble film twice daily **or** 8 mg **or** 0.15 mg/kg IV	
	Palonosetron	0.50 mg oral **or** 0.25 mg IV	
	Dolasetron	100 mg oral ONLY	
	Tropisetron	5 mg oral **or** 5 mg IV	
	Ramosetron	0.3 mg IV	
Corticosteroid	Dexamethasone	8 mg oral **or** IV	8 mg oral or IV on days 2-3[e]
Low Emetic Risk[f]			
5-HT$_3$ Receptor Antagonist	Granisetron	2 mg oral **or** 1 mg **or** 0.01 mg/kg IV **or** 1 transdermal patch **or** 10 mg subcutaneous	

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	Agent	Dose on Day of Chemotherapy	Dose(s) on Subsequent Days
	Ondansetron	8 mg oral tablet, oral dissolving tablet, oral dissolving tablet, oral soluble film, **or** IV	
	Palonosetron	0.50 mg oral **or** 0.25 mg IV	
	Dolasetron	100 mg oral ONLY	
	Tropisetron	5 mg oral **or** 5 mg IV	
	Ramosetron	0.3 mg IV	
Corticosteroid	Dexamethasone	8 mg oral **or** IV	

NOTE. For patients who receive multi-day chemotherapy**,** clinicians must first determine the emetic risk of the agent(s) included in the regimen. Patients should receive the agent of the highest therapeutic index daily during chemotherapy and for 2 days thereafter. Patients can also be offered the granisetron transdermal patch or granisetron extended-release injection that deliver therapy over multiple days rather than taking a 5-HT_3 receptor antagonist daily.
Abbreviations: 5-HT_3, 5-hydroxytryptamine-3; IV, intravenous; NK_1, neurokinin 1.

[a] If netupitant-palonosetron or fosnetupitant-palonosetron are used, no additional 5-HT_3 receptor antagonist is needed.
[b] The dexamethasone dose is for patients who are receiving the recommended four-drug regimen for highly emetic chemotherapy. If patients do not receive an NK_1 receptor antagonist, the dexamethasone dose should be adjusted to 20 mg on day 1 and 16 mg on days 2-4.
[c] In non-breast cancer populations (eg, non-Hodgkin lymphoma) receiving a combination of an anthracycline and cyclophosphamide with treatment regimens incorporating corticosteroids, the addition of palonosetron without the use of an NK_1 receptor antagonist and olanzapine is an option.
[d] If carboplatin area under the curve is ≥ 4 mg/mL/min, add an NK1 receptor antagonist to the 5-HT3 receptor antagonist and dexamethasone. If IV aprepitant is used, 100 mg IV day 1 and then 80 mg oral days 2-3). Dexamethasone dosing is day 1 only: 20 mg with rolapitant; 12 mg with aprepitant, fosaprepitant, or netupitant-palonosetron.
[e] For moderate-emetic-risk agents with a known risk for delayed nausea and vomiting.
[f] Patients treated with low-emetic-risk antineoplastic therapy should be offered a 5-HT_3 receptor antagonist OR dexamethasone.

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Antiemetic Dosing by Radiation Therapy Risk Category

	Agent	Dose	Schedule
High Emetic Risk: Total body irradiation			
5-HT$_3$ Receptor Antagonist[a]	Ondansetron	8 mg oral **or** 8 mg oral dissolving tablet, **or** 8 mg oral soluble film **or** 8 mg **or** 0.15 mg/kg IV	Use as prophylactic therapy. Once daily to twice daily on days of radiation therapy, with first dose given before radiation therapy. Once daily to twice daily on day after each day of radiation therapy, if radiation therapy is not planned for that day.
	Granisetron	2 mg oral **or** 1 mg **or** 0.01 mg/kg IV	Use as prophylactic therapy. Once daily on days of radiation therapy, before radiation therapy. Once daily on day after each day of radiation therapy, if radiation therapy is not planned for that day.
Corticosteroid	Dexamethasone	4 mg oral **or** IV	Use as prophylactic therapy. Once daily on days of radiation therapy, before radiation therapy. Once daily on day following each day of radiation therapy, if radiation therapy is not planned for that day.
Moderate Emetic Risk: Upper abdomen[b] and Craniospinal irradiation			
5-HT$_3$ Receptor Antagonist[c]	Ondansetron	8 mg oral **or** 8 mg oral dissolving tablet, **or** 8 mg oral soluble film **or** 8 mg **or** 0.15 mg/kg IV	Use as prophylactic therapy. Once daily to twice daily on days of radiation therapy, with first dose given before radiation therapy.[d]
	Granisetron	2 mg oral **or** 1 mg **or** 0.01 mg/kg IV	Use as prophylactic therapy. Once daily on days of radiation therapy, before radiation therapy.[d]
	Tropisetron	5 mg oral **or** IV	Use as prophylactic therapy. Once daily on days of radiation therapy, before radiation therapy.[d]
Corticosteroid	Dexamethasone	4 mg oral **or** IV	Use as prophylactic therapy. Once daily on days of first 5 radiation therapy fractions, before radiation therapy.
Low Emetic Risk: Brain, Head and neck, Thorax, Pelvis[e]			
5-HT$_3$ Receptor Antagonist[f]	Ondansetron	8 mg oral **or** 8 mg oral dissolving tablet, **or** 8 mg oral soluble film **or** 8 mg **or** 0.15 mg/kg IV	Use as rescue therapy.[g]
	Granisetron	2 mg oral or 1 mg or 0.01 mg/kg IV	Use as rescue therapy.[g]
Corticosteroid	Dexamethasone	For brain, if not already taking corticosteroid, 4 mg oral **or** IV; for other anatomic regions, 4 mg oral **or** IV	Use as rescue therapy. Titrate up as needed to maximum of 16 mg oral or IV daily.[g]
Dopamine receptor antagonist[h]	Prochlorperazine	5-10 mg oral **or** IV	Use as rescue therapy. Titrate up as needed to maximum of 3-4 administrations daily.[g]

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	Agent	Dose	Schedule
	Metoclopramide	5-20 mg oral **or** IV	Use as rescue therapy. Titrate up as needed to maximum of 3-4 administrations daily.[g]
Minimal Emetic Risk: Extremities, Breast			
5-HT$_3$ Receptor Antagonist[i]	Ondansetron	8 mg oral 8 mg oral dissolving tablet, **or** 8 mg oral soluble film **or** 8 mg **or** 0.15 mg/kg IV	Use as rescue therapy.[j]
	Granisetron	2 mg oral **or** 1 mg **or** 0.01 mg/kg IV	Use as rescue therapy.[j]
Corticosteroid	Dexamethasone	4 mg oral **or** IV	Use as rescue therapy.[j]
Dopamine receptor antagonist[h]	Metoclopramide	5-10 mg oral **or** IV.	Use as rescue therapy.[j]
	Prochlorperazine	5-20 mg oral **or** IV.	Use as rescue therapy.[j]

[a] Either 5-HT$_3$ receptor antagonist is appropriate.

[b] Radiation therapy involving (at least in part) the anatomic region from the superior border of the 11th thoracic vertebra to the inferior border of the third lumbar vertebra.

[c] Ondansetron or granisetron preferred due to larger body of evidence for these agents.

[d] Monitor patients during radiation therapy schedules spanning multiple weeks to detect symptoms experienced during interspersed days when radiation therapy and prophylaxis are not administered (eg, weekends) and to balance benefits and toxicities of prolonged 5-HT$_3$ receptor antagonist therapy.

[e] Corticosteroid is the preferred first agent for the brain. Any antiemetic class is appropriate for head and neck, thorax, and pelvis.

[f] Either 5-HT$_3$ receptor antagonist is appropriate.

[g] Depending on the severity of symptoms and the remaining duration of radiation therapy, patients can receive subsequent rescue therapy as needed, or begin receiving prophylactic therapy for the remainder of radiation therapy.

[h] Either dopamine receptor antagonist is appropriate.

[i] Either 5-HT$_3$ receptor antagonist is appropriate.

[j] Patients can receive therapy as needed. Alternative explanations for symptoms should be investigated to avoid the need for prophylactic therapy for the remainder of radiation therapy.

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Additional Antiemetic Recommendations

Therapy	Recommendation
Antineoplastic Combinations	Adults treated with antineoplastic combinations should be offered antiemetics appropriate for the component antineoplastic agent of greatest emetic risk.
Adjunctive Drugs	Lorazepam is a useful adjunct to antiemetic drugs, but is not recommended as a single-agent antiemetic.
Cannabinoids	Evidence remains insufficient for a recommendation regarding medical marijuana for the *prevention* of nausea and vomiting in patients with cancer receiving chemotherapy or radiation therapy. Evidence is also insufficient for a recommendation regarding the use of medical marijuana in place of the tested and US Food and Drug Administration-approved cannabinoids dronabinol and nabilone for the *treatment* of nausea and vomiting caused by chemotherapy or radiation therapy.
Complementary and Alternative Therapies	Evidence remains insufficient for a recommendation for or against the use of ginger, acupuncture/acupressure, and other complementary or alternative therapies for the *prevention* of nausea and vomiting in patients with cancer.
High Dose Chemotherapy with Stem Cell or Bone Marrow Transplant	Adult patients treated with high-dose chemotherapy and stem-cell or bone marrow transplantation should be offered a three-drug combination of an NK_1 receptor antagonist, a 5-HT_3 receptor antagonist, and dexamethasone. (New) A four-drug combination of an NK1 receptor antagonist, a 5-HT3 receptor antagonist, dexamethasone, and olanzapine may be offered to adults treated with high-dose chemotherapy and stem-cell or bone marrow transplantation.
Multiday Antineoplastic Therapy	Adult patients treated with multiday antineoplastic agents should be offered antiemetics before treatment that are appropriate for the emetic risk of the antineoplastic agent given on each day of the antineoplastic treatment and for 2 days after completion of the antineoplastic regimen. Adult patients treated with 4- or 5-day cisplatin regimens should be offered a three-drug combination of an NK1 receptor antagonist, a 5-HT3 receptor antagonist, and dexamethasone.
Breakthrough Nausea or Vomiting	For patients with breakthrough nausea or vomiting, clinicians should re-evaluate emetic risk, disease status, concurrent illnesses, and medications; and ascertain that the best regimen is being administered for the emetic risk. Adults who experience nausea or vomiting despite optimal prophylaxis, and who did not receive olanzapine prophylactically, should be offered olanzapine in addition to continuing the standard antiemetic regimen. Adults who experience nausea or vomiting despite optimal prophylaxis, and who have already received olanzapine, may be offered a drug of a different class (e.g. an NK1 receptor antagonist, lorazepam or alprazolam, a dopamine receptor antagonist, dronabinol, or nabilone) in addition to continuing the standard antiemetic regimen.
Anticipatory Nausea and Vomiting	All patients should receive the most active antiemetic regimen appropriate for the antineoplastic agents being administered. Clinicians should use such regimens with initial antineoplastic treatment, rather than assessing the patient's emetic response with less effective antiemetic treatment. If a patient experiences anticipatory emesis, clinicians may offer behavioral therapy with systematic desensitization.

Abbreviations: IV, intravenous; mg, milligrams; kg, kilograms; XRT, radiation therapy

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