## Nausea and Vomiting in Patients With Serious Illness
### Drug Classes and Medications for Treatment of Nausea and Vomiting

<table>
<thead>
<tr>
<th>Class</th>
<th>Mechanism</th>
<th>Indications</th>
<th>Drugs</th>
<th>Side Effects</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antidopaminergic Therapies</td>
<td>• Block emetic pathways originating from the GI and CTZ&lt;br&gt;• Antidopaminergic (D2)&lt;br&gt;• Direct pro-kinetic effect (metoclopramide)</td>
<td>Opioids, chemotherapy, toxins, or drugs associated nausea and vomiting</td>
<td>• Prochlorperazine&lt;br&gt;• Promethazine&lt;br&gt;• Metoclopramide&lt;br&gt;• Haloperidol</td>
<td>• Extra-pyramidal effects&lt;br&gt;• Sedation&lt;br&gt;• Hypotension&lt;br&gt;• Contraindicated in bowel obstruction</td>
<td>Low</td>
</tr>
<tr>
<td>Serotonin receptor antagonists</td>
<td>Block emetic pathways occurring through vagal stimulation, 5-HT3 receptors in the GI tract, and/or the CTZ</td>
<td>Chemotherapy, toxins (CTZ, GI tract) associated nausea and vomiting</td>
<td>• Ondansetron&lt;br&gt;• Granisetron&lt;br&gt;• Dolasetron&lt;br&gt;• Tropisetron&lt;br&gt;• Palonosetron (second generation)</td>
<td>• Constipation&lt;br&gt;• Headache</td>
<td>Moderate</td>
</tr>
<tr>
<td>Antihistamines</td>
<td>Uncertain action at the vomiting center</td>
<td>Inner ear pathology, adjuvant to other agents</td>
<td>• Diphenhydramine&lt;br&gt;• Hydroxyzine&lt;br&gt;• Meclizine&lt;br&gt;• Doxepin</td>
<td>• Sedation&lt;br&gt;• Constipation&lt;br&gt;• Confusion&lt;br&gt;• Orthostatic hypotension&lt;br&gt;• Dry mouth</td>
<td>Low</td>
</tr>
<tr>
<td>Anxiolytics – Benzodiazepines</td>
<td>Works via the cerebral cortex Pathway</td>
<td>• Anxiety, PTSD post-chemotherapy&lt;br&gt;• Useful as an adjunct</td>
<td>• Lorazepam&lt;br&gt;• Oxazepam&lt;br&gt;• Diazepam</td>
<td>• Sedation&lt;br&gt;• Confusion&lt;br&gt;• Falls and fractures</td>
<td>Low</td>
</tr>
<tr>
<td>Corticosteroids</td>
<td>• May relieve cancer associated nausea through effects on reducing inflammatory mediators, tumor edema, pressure on GI tract, and reducing intracranial pressure from tumor mass&lt;br&gt;• The exact mechanism in nausea and vomiting is unknown</td>
<td>• Bone pain&lt;br&gt;• Stimulate appetite</td>
<td>• Dexamethasone&lt;br&gt;• Methylprednisolone&lt;br&gt;• Prednisone</td>
<td>• Fluid retention&lt;br&gt;• Increased blood pressure&lt;br&gt;• Mood swings&lt;br&gt;• Weight gain&lt;br&gt;• Increased risk of infections&lt;br&gt;• Thinning bones (osteoporosis) and fractures</td>
<td>Low</td>
</tr>
<tr>
<td>Class</td>
<td>Mechanism</td>
<td>Indications</td>
<td>Drugs</td>
<td>Side Effects</td>
<td>Cost</td>
</tr>
<tr>
<td>-----------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>-------</td>
</tr>
</tbody>
</table>
| Cannabinoids          | Cannabinoid receptors are widespread in the central nervous system and the mechanism of action is unknown | • Nausea unresponsive to conventional treatment  
• May be used in combination with other antiemetic therapies  
• Combination antiemetic therapy with dronabinol and prochlorperazine may result in synergistic antiemetic effects and minimize the toxicities | Dronabinol  
Nabilone | • Tachycardia  
• Low blood pressure  
• Blood shot eyes  
• Muscle relaxation  
• Slowed digestion  
• Dizziness  
• Depression  
• Hallucinations  
• Paranoia | Moderate |
| Medical Marijuana     | THC or tetrahydrocannabinols is the psychoactive compound in marijuana. CBD or cannabidiol is another compound in marijuana that is not psychoactive | • Three randomly controlled trials involving 43 subjects demonstrated cannabis to be an effective antiemetic | THC  
CBD | • Headaches  
• Dry mouth and dry eyes  
• Lightheadedness and dizziness  
• Drowsiness  
• Fatigue | Moderate |
| Neurokinin-1 receptor (NK-1) antagonists | Prevent both central and peripheral stimulation of vomiting centers | • Added to the standard antiemetic regimen (the combination of 5HT3 + steroid) for high dose chemotherapy or highly emetogenic chemotherapy | Aprepitant  
Rolapitant | • Many drug-drug interactions  
• Anemia  
• Dizziness  
• Urinary tract infection  
• Indigestion  
• Decreased appetite  
• Hiccups  
• Abdominal pain  
• Headache | High  