Cancer Cachexia Appetite Stimulants (Orexigenic Medications)

Reversing the effects of cancer cachexia does not appear to be influenced by stimulating the appetite.\(^1\) Progestrogens (corticosteroids) have been used to improve appetite in palliative care, however quality of life and recommendations for dosage or duration of treatment have not been established.\(^2\) The decision to use an orexigenic drug should be based on the side effects, cost and burden of treatment.\(^1\) In addition, current therapies have used only one drug, which appears to have very little benefit in resolving cachexia.\(^4\) The benefits of using this drug in the elderly with cancer cachexia is not clear.\(^30\) Current studies are investigating an approach of drug combinations to reverse cancer cachexia.\(^3,4\)

Until an effective intervention for reversing cancer cachexia is developed, early intervention with nutritional support and prevention of treatment-related morbidities (e.g., nausea, vomiting, diarrhea, dysphagia, pain, or depression) is advised.\(^4,5\)

<table>
<thead>
<tr>
<th>GENERIC/BRAND NAME</th>
<th>INDICATION/DOSAGE/FORM</th>
<th>COMMENTS</th>
</tr>
</thead>
</table>
| cyproheptadine\(^6,7\) (antihistamine) Periactin\(^\circledast\) | Tablet  
Adult Initial dose: 2 mg 4 x/day  
Maintenance dose: Gradual increase over 3 weeks to 8 mg 4 x/day  
Pediatrics > 13 years: 2 mg 4 x/day  
May gradually increase over 3 weeks to 8 mg 4 x/day  
Maximum Dose: 32 mg/day | Use in oncology population: Increases appetite;\(^8\) failed to prevent weight loss;\(^8,24,27\) not well studied.\(^24\) however, appears to be effective with carcinoid syndrome anorexia/cachexia;\(^27\) non-FDA labeled indications for loss of appetite.\(^28\)  
Nutrition-related side effects: constipation, diarrhea, edema, nausea, polyuria, vomiting, xerostomia\(^9\)  
To reduce stomach upset: Take with food or milk.\(^9\)  
Other side effects: ataxia, drowsiness, dizziness, euphoria, hallucinations, headache, hepatic dysfunction, hypotension, irritability, photosensitivity, poluuryia\(^9\)  
Avoid: Alcoholic beverages;\(^8\) henbane, scopolia, St John’s wort, thuja\(^9\) |
| dexamethasone\(^7,10,11\) decadron (corticosteroid) No brand names | Tablets.  
Initial dose: 0.75 - 9 mg/day  
Reasonable dose: 4 mg/day (A lower dose may also be effective)\(^27\) | Use in oncology population: Improves appetite and QoL;\(^5\) no increase in LBM;\(^27\) no wt gain;\(^8,24,27\) appetite stimulation short-lived;\(^24,27\) appetite may fall after 4 weeks;\(^2\) optimal dose not known;\(^2,13\) significantly lowers appetite loss/wt loss with chemo for lung ca, but no appetite improvement/wt gain;\(^12\) beneficial for some with a poor prognosis;\(^11\) should be used during pre-terminal phase of cachexia\(^7\)  
Nutrition related side effects: bloating, dyspepsia, edema, esophagitis, gastritis, hyperglycemia, nausea, vomiting\(^7,8\)  
Other side effects: bruising, Cushingoid appearance, delayed healing, dizziness, headache, immune suppression, insomnia, muscle weakness, |
| **medroxyprogesterone acetate**<sup>13,14</sup> (progestational agent) | **Prometrium® Provera®** Tablet  
5 mg  
Capsule  
100, 200mg | **Use in oncology population:** Weight gain as increased fat & fluid retention;<sup>15</sup> increased sense of well-being;<sup>16</sup> not enough evidence to recommend doses or duration of treatment to increase appetite.<sup>13</sup>  
**Nutrition related side effects:** constipation, cramps, diarrhea, dyspepsia, edema, hyperglycemia, nausea, vomiting, xerostomia<sup>7</sup>  
**To reduce risk of GI upset:** Take with food; also increases bioavailability.<sup>7</sup>  
**Other side effects:** depression, drowsiness, headache, hot flashes, musculoskeletal pain, vision changes<sup>7</sup>  
**Avoid:** grapefruit juice, grapefruit segments, grapefruit extract, seville oranges (other names: sour orange, *Citrus aurantium*, L, bitter, bigarade used to make marmalade), pummelos (pomelos), tangelos; St John's wort<sup>9</sup>  
**Special Alert:**  
- **Diabetes:** Monitor closely  
- **Liver function:** Monitor | peptic ulcer, psychological disturbances, seizures.<sup>7,8,24,27</sup>  
**To reduce stomach upset:** Take with food & limit caffeine.<sup>7</sup>  
**Avoid:** Alcoholic beverages; grapefruit juice, grapefruit segments, grapefruit extract, seville oranges (other names: sour orange, *Citrus aurantium*, L, bitter, bigarade used to make marmalade), pummelos (pomelos), tangelos; lily-of-the-valley; St John's wort; tansy ragwort.<sup>9</sup>  
**Special Alerts:**  
- **Monitor closely:** diabetes, adrenal and renal function<sup>7</sup>  
- **Long-term use:** calcium wasting, Cushing's syndrome, osteoporosis, muscle wasting (myopathy), cataracts, pancreatitis, adrenocortical insufficiency, low serum zinc level; needs calcium/vitamin D supplement<sup>7,27</sup>  
**Avoid:** grapefruit juice, grapefruit segments, grapefruit extract, seville oranges (other names: sour orange, *Citrus aurantium*, L, bitter, bigarade used to make marmalade), pummelos (pomelos), tangelos; St John's wort<sup>9</sup>  
**Special Alert:**  
- **Monitor closely:** diabetes, adrenal and renal function<sup>7</sup>  
- **Liver function:** Monitor |
| **Tablet  
5 mg  
Capsule  
100, 200mg** | **Minimum dose** (In published trials): 200 mg/day<sup>15</sup> |
| **megestrol acetate**<sup>11,17,18</sup>  
**(progestational agent)** | **Oral Suspension Megace®**  
(200 mg/5 mL)  
Tablets  
Teen & Adult Dosage Megace®  
Initial: 400 mg/day  
(10 mL/day)  
After 1st month: can be changed to:  
480-800 mg/day<sup>27</sup>  
for 3 months  
Usual: 400-800 mg/day  
Elderly: Start at low end of dosing range.  
Conc oral suspension Megace® ES  
(625 mg/5 mL)  
Adult Dosage Megace® ES  
Initial/Usual: 625 mg/day  
(5 mL/day)  
Duration of Use: Maximum of 3 months<sup>19</sup>  
NOTE: Megace® ES (625 mg/5 mL) formula is different than Megace® (200 mg/5 mL).  
They are NOT interchangeable. | **Use in oncology population:** Increases appetite, wt gain & improved health-related QoL;<sup>5,11,29</sup> in 30% of pts;<sup>20</sup> increase in appetite & wt due to increased fat & fluid retention;<sup>5,19,29</sup> no increase in LBM;<sup>5,22</sup> recommended use with an anti-inflammatory agent, (e.g., EPA);<sup>21</sup> must use continuously for 2 mos; may take 4-6 weeks for improvement;<sup>16,17</sup> not enough information to determine optimal dose;<sup>5,29</sup> safety & effectiveness in pediatrics has NOT been established.<sup>29</sup>  
**Avoid use with:** immobile or bedridden patients<sup>19</sup>  
**Nutrition related side effects:** diarrhea, dyspepsia, edema, flatulence, hyperglycemia, nausea, vomiting<sup>7,17,18,29</sup>  
**Other side effects:** adrenal suppression, bone pain, Cushing's syndrome,<sup>29</sup> DVTs (doses > 800 mg/day) especially with concomitant chemo,<sup>27</sup> hot sweats,<sup>29</sup> impotence, edema, vaginal spotting<sup>5,29</sup>  
**To reduce stomach upset:** Take with food.  
**Special Alerts:**  
-Diabetes: Monitor closely, may increase insulin requirements<sup>7,17,18</sup>  
-Renal function, assess periodically<sup>18</sup>  
-Adrenal insufficiency<sup>18,19</sup>  
-Testosterone levels rapidly drops (males)<sup>19</sup> |
| **megestrol acetate**<sup>11,17,18</sup>  
**(progestational agent)** | **Megace® (U.S. brand)**  
Megace® ES  
Megace Os<sup>27</sup>  
(Canada)  
Oral Suspension Megace®  
(200 mg/5 mL)  
Tablets  
Teen & Adult Dosage Megace®  
Initial: 400 mg/day  
(10 mL/day)  
After 1st month: can be changed to:  
480-800 mg/day<sup>27</sup>  
for 3 months  
Usual: 400-800 mg/day  
Elderly: Start at low end of dosing range.  
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**Avoid use with:** immobile or bedridden patients<sup>19</sup>  
**Nutrition related side effects:** diarrhea, dyspepsia, edema, flatulence, hyperglycemia, nausea, vomiting<sup>7,17,18,29</sup>  
**Other side effects:** adrenal suppression, bone pain, Cushing's syndrome,<sup>29</sup> DVTs (doses > 800 mg/day) especially with concomitant chemo,<sup>27</sup> hot sweats,<sup>29</sup> impotence, edema, vaginal spotting<sup>5,29</sup>  
**To reduce stomach upset:** Take with food.  
**Special Alerts:**  
-Diabetes: Monitor closely, may increase insulin requirements<sup>7,17,18</sup>  
-Renal function, assess periodically<sup>18</sup>  
-Adrenal insufficiency<sup>18,19</sup>  
-Testosterone levels rapidly drops (males)<sup>19</sup> |
| **methylprednisolone**<sup>22</sup>  
**(corticosteroid)** | **Tablets:**  
2 mg, 4 mg, 8 mg, 16 mg, 24 mg, 32 mg  
Injection - I.M., I.V.  
Adult dosage: 4-48 mg/day  
Peak action: 1-2 hrs  
Duration: 1.25-1.5 days  
Injection  
Onset: 6-48 hrs  
Peak action: 4-8 days  
Duration: 1-4 weeks  
Effects may diminish after 4 weeks, while side effects may increase.<sup>2</sup> | **Use in oncology population:** Improves appetite & QoL;<sup>5</sup> no weight gain;<sup>1</sup> should be used during pre-terminal phase of cachexia;<sup>5</sup> not enough evidence to recommend doses or duration of treatment to increase appetite;<sup>2</sup> effects may lower after 4 weeks & side effects may increase.<sup>2</sup>  
**Nutrition related side effects:** bloating, dyspepsia, (pedal) edema, esophagitis, gastritis, hyperglycemia, nausea, vomiting<sup>7,8,22</sup>  
**To reduce GI upset:** Take with food; limit caffeine.<sup>22</sup>  
**To reduce nausea:** Take anti-nausea medications. Small, frequent meals<sup>22</sup>  
**Long term use side effects:** adrenal suppression, bone thinning, cataracts, insulin resistance, protein breakdown, water retention<sup>5,22</sup>  
**Other side effects:** immune suppression, insomnia, muscle weakness, poor wound healing<sup>7,22</sup>  
**Avoid:** Alcoholic beverages; grapefruit juice, grapefruit segments, grapefruit extract, seville oranges (other names: sour orange, *Citrus aurantium*, L, bitter, bigarade used to make marmalade), pummelos (pomelos), tangelos; lily-of-the-valley, St John's wort<sup>3</sup> |
<table>
<thead>
<tr>
<th>prednisolone</th>
<th>Tablets</th>
<th>Oral solution</th>
<th>Orally disintegrating tablets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Millipred</td>
<td>5 mg</td>
<td>15 mg/5 mL</td>
<td>(Do not break apart)</td>
</tr>
<tr>
<td>(U.S brand.)</td>
<td>10 mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orapred</td>
<td>15 mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pediapred</td>
<td>30 mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prelone</td>
<td></td>
<td></td>
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<tr>
<td>(Canada)</td>
<td>10 mg</td>
<td></td>
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</tr>
<tr>
<td>ratio-Prednisolone</td>
<td>15 mg/5 mL</td>
<td>15 mg/5 mL</td>
<td>Oral liquid</td>
</tr>
<tr>
<td>Sandoz Prednisolone</td>
<td>Oral liquid</td>
<td>Oral liquid</td>
<td>Oral liquid</td>
</tr>
<tr>
<td>Adult Dose</td>
<td>5 - 60 mg/day</td>
<td>5 - 60 mg/day</td>
<td>5 - 60 mg/day</td>
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<tr>
<td>Oral disintegrating tablet:</td>
<td>10- 60 mg/day</td>
<td>10- 60 mg/day</td>
<td>10- 60 mg/day</td>
</tr>
<tr>
<td>Not enough evidence to recommend doses or duration of treatment.²</td>
<td>Not enough evidence to recommend doses or duration of treatment.²</td>
<td>Not enough evidence to recommend doses or duration of treatment.²</td>
<td>Not enough evidence to recommend doses or duration of treatment.²</td>
</tr>
</tbody>
</table>

**Use in oncology population:** Improves appetite & QoL;⁵ no weight gain;⁸ should be used during pre-terminal phase of cachexia;⁵ effects may lower after 4 weeks & side effects may increase.²

**Avoid:** Alcoholic beverages; grapefruit juice, grapefruit segments, grapefruit extract, seville oranges (other names: sour orange, *Citrus aurantium*, L, bitter, bigarade used to make marmalade), pummelos (pomelos), tangelos; lily-of-the-valley, St John's wort ⁹

**Nutrition related side effects:** bloating, dyspepsia, edema, esophagitis, gastritis, nausea, protein catabolism, vomiting.⁷,⁸,²³

**Other side effects:** catatonia, delusions, depression, dizziness, euphoria, facial flushing, hallucinations, headache, increased sweating, insomnia, lightheadedness, mania, mood changes, nervousness, pancreatitis, restlessness, violent behavior²³

**Long term use side effects:** adrenal suppression, bone loss (with dose of 10 mg/day), cataracts, Cushing’s syndrome, glaucoma/increased intraocular pressure, hirsutism, increased skin temperature, impotence, peptic ulcer, insulin resistance, menstrual irregularities, myopathy, osteoporosis, vertebral compression fractures ⁵,⁸,²³

**To reduce stomach upset:** Take with food, or aluminum/magnesium containing antacids²³

**Special Alert** (Monitor) ²³

- Hypernatremia
- Hypokalemia
- Fluid retention
- Negative nitrogen balance

**Special Alerts:**
- Diabetes: Monitor closely
- Tartrazine sensitivity
- Elevated liver enzymes, hepatomegaly
- Hypocalcemia
- Hypokalemia
- Hypokalemic alkalosis
- Metabolic alkalosis
- Negative nitrogen balance
- Pancreatitis
- Sodium and fluid retention

**Caution:** Do not stop using this medication suddenly; may cause withdrawal symptoms
<table>
<thead>
<tr>
<th>DRUG CATEGORY</th>
<th>COMMON DRUGS USED</th>
<th>BRAND NAMES</th>
<th>COMMENTS</th>
<th>SIDE EFFECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANABOLIC AGENT</td>
<td>fluoxymesterone</td>
<td>Androxy™, Halotestin®</td>
<td>Inferior in wt loss, more toxic vs dexamethasone; limited published reports</td>
<td>Diabetes, DVT, mood swings, osteoporosis</td>
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<tr>
<td></td>
<td>nandrolone decanoate</td>
<td>none</td>
<td>Limited published reports</td>
<td></td>
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<tr>
<td></td>
<td>oxandrolone</td>
<td>Oxandrin®</td>
<td>Limited published reports</td>
<td></td>
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<tr>
<td>ANTIDEPRESSANT/ANTIPSYCHOTIC</td>
<td>mirtazapine</td>
<td>Remeron®</td>
<td>Data to support routine use is lacking; further studies needed</td>
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<tr>
<td></td>
<td>olanzapine</td>
<td>Zyprexa®</td>
<td>Data to support routine use is lacking; further studies needed</td>
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<tr>
<td>ANTI-INFLAMMATORY</td>
<td>EPA (omega 3 FAs)</td>
<td></td>
<td>Mixed results</td>
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<tr>
<td></td>
<td>melatonin</td>
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<tr>
<td></td>
<td>pentoxifylline</td>
<td>Pentoxil®, Trental®</td>
<td>Need larger trials; mixed results (heterogenous group)</td>
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<tr>
<td></td>
<td>thalidomide</td>
<td>Thalomid</td>
<td>Waiting for results from large trial</td>
<td>Constipation, daytime somnolence, peripheral neuropathy, rash</td>
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<tr>
<td>CANNABINOID</td>
<td>dronabinol</td>
<td>Marinol®</td>
<td>No activity on cancer cachexia; inconsistent evidence on effectiveness</td>
<td>Nausea, vomiting</td>
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<tr>
<td>GROWTH HORMONE</td>
<td>ghrelin</td>
<td>none</td>
<td>Limited studies published</td>
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<td>INTERVENTION</td>
<td>CLINICAL TRIALS.GOV IDENTIFIER</td>
<td>STATUS</td>
<td>INTERVENTION</td>
<td>PRINCIPAL INVESTIGATOR</td>
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<tr>
<td>EICOSAPENTAENOIC ACID OMEGA 3 FAs (Anti-inflammatory)</td>
<td>NCT01048970</td>
<td><strong>ENDED: 12/2010</strong></td>
<td>Lung ca (st III/IV) w. paclitaxel + cisplatin; 2 cans/d EPA/DHA oral supplement; begin 1 week prior x 2 chemo cycles, BIA</td>
<td>Oscar Arrieta, MD.</td>
</tr>
<tr>
<td>EICOSAPENTAENOIC ACID OMEGA 3 FAs (Anti-inflammatory)</td>
<td>NCT00815685</td>
<td><strong>ENDED: 9/2010</strong></td>
<td>Open label, Lovaza ((EPA) 4 g x 6 weeks</td>
<td>Nagi Kumar, PhD, RD, FADA</td>
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<tr>
<td>GHRELIN (Growth hormone)</td>
<td>NCT00933361</td>
<td><strong>ENDED: 12/2009</strong></td>
<td>Single group assignment Dose-escalated, 2 x week, SQ ghrelin</td>
<td>Florian Strasser, PD, RD MD</td>
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<tr>
<td>GHRELIN (Growth hormone)</td>
<td>NCT00681486</td>
<td><strong>ENDED: 7/2008</strong></td>
<td>High dose vs low dose daily injection until preterminal</td>
<td>Kent G Lundholm, MD. Dept of Surgery,</td>
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<tr>
<td>GHRELIN (Growth hormone)</td>
<td>NCT00378131</td>
<td><strong>ENDED: 4/2007</strong></td>
<td>Parallel group, 12 weeks</td>
<td>William Polvino, MD.</td>
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<tr>
<td>GHRELIN (Growth hormone)</td>
<td>NCT00219817</td>
<td><strong>ENDED: 10/2006</strong></td>
<td>Parallel assignment, safety &amp; efficacy of RC-1291</td>
<td>William Polvino, MD.</td>
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<tr>
<td>MELATONIN (Anti-inflammatory)</td>
<td>NCT00513357</td>
<td><strong>Active, Ends: 6/2012</strong></td>
<td>Parallel assignment melatonin vs placebo</td>
<td>Egidio Del Fabbro, MD.</td>
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<tr>
<td>MELATONIN (Anti-inflammatory)</td>
<td>NCT00625742</td>
<td><strong>Active, Ends 7/2012</strong></td>
<td>Resistance train 2 x/week w/Thera-bands, walk/run 3-4 mins @ 70-80%</td>
<td>Egidio Del Fabbro, MD.</td>
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<tr>
<td>Drug</td>
<td>Phase</td>
<td>Study Type</td>
<td>Interventions</td>
<td>End Date</td>
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<tr>
<td>-------------------------------------------</td>
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<td>------------------------------------------------------------------------------</td>
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<tr>
<td>Mirtazapine (Antidepressant) Remeron®</td>
<td>II</td>
<td>Single group, open label</td>
<td>max HR, (Atenolol + Ibuprofen + 20 mg po melatonin) &amp; Juven® 90 kcals 2 x/day (29 days)</td>
<td>Claire Verschaegen, MD.</td>
</tr>
<tr>
<td>Mirtazapine (Antidepressant) Remeron®</td>
<td>II</td>
<td>Single group, open label</td>
<td>max HR, 15 mg mirtazapine po at HS daily x 8 weeks</td>
<td>Shalini Dalal, MD.</td>
</tr>
<tr>
<td>Olanzapine (Antidepressant/Antipsychotic) Symbyax®</td>
<td>I</td>
<td>Single group, open label</td>
<td>max HR, 15 mg mirtazapine po at HS daily x 8 weeks</td>
<td>Razelle Kurzrock, MD.</td>
</tr>
<tr>
<td>Oxandrolone Oxandrin®</td>
<td>I</td>
<td>Single group, open label</td>
<td>max HR, 15 mg mirtazapine po at HS daily x 8 weeks</td>
<td>Glenn J. Lesser, MD.</td>
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<tr>
<td>Testosterone</td>
<td>I</td>
<td>Single group, open label</td>
<td>max HR, 15 mg mirtazapine po at HS daily x 8 weeks</td>
<td>Melinda Sheffield-Moore, PhD</td>
</tr>
<tr>
<td>Thalidomide (anti-inflammatory)</td>
<td>II</td>
<td>Single group, open label</td>
<td>max HR, 15 mg mirtazapine po at HS daily x 8 weeks</td>
<td>Eduardo Bruera, MD.</td>
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<tr>
<td>White Wine</td>
<td>II</td>
<td>Single group, open label</td>
<td>max HR, 15 mg mirtazapine po at HS daily x 8 weeks</td>
<td>Tom R. Fitch, MD.</td>
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<tr>
<td></td>
<td>II</td>
<td>Single group, open label</td>
<td>max HR, 15 mg mirtazapine po at HS daily x 8 weeks</td>
<td>Amber L. Isley, MD.</td>
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<tr>
<td></td>
<td>II</td>
<td>Single group, open label</td>
<td>max HR, 15 mg mirtazapine po at HS daily x 8 weeks</td>
<td>Aminah Jatoi, MD.</td>
</tr>
</tbody>
</table>
Appetite Stimulant (Orexigenic) Medications

References


# Chemotherapy & Biotherapy Medications

**NOTE:** Some natural medicines interact with ANY MEDICATION TAKEN BY MOUTH: activated charcoal, agar, alder buckthorn, algin, aloe, American chestnut, barley, bistort, black walnut, butternut, carrageenan, cascara, coffee, charcoal, DMSO, European buckthorn, European chestnut, European mandrake, flaxseed, glucomannan, Iceland moss, jalap, karaya gum, marshmallow, Mexican scammony root, Mormon tea, pinus bark, quillaia, quince, rhatany, rhubarb, rice bran, slippery elm, tannic acid, tragacanth, and water avens.

<table>
<thead>
<tr>
<th>Generic/Brand Name</th>
<th>Nutrition-related side effects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>anastrozole</strong></td>
<td>In general, drink at least 2-3 quarts of fluid every 24 hours. Constipation: Use prescribed medications if needed &amp; drink more fluids. Diarrhea: Use prescribed medication for diarrhea, if needed &amp; drink more fluids. Nausea/vomiting: Use all prescribed medications to prevent on-set of nausea. If using medications for pain control, take it on a full stomach to reduce stomach upset.</td>
</tr>
<tr>
<td>Tablet</td>
<td></td>
</tr>
<tr>
<td>U.S. brand name</td>
<td></td>
</tr>
<tr>
<td>Arimidex®</td>
<td></td>
</tr>
<tr>
<td><strong>asparaginase</strong></td>
<td>In general, drink at least 2-3 quarts of fluid every 24 hours. Nausea/vomiting: Use all prescribed medications to prevent on-set of nausea. If using medications for pain control, take it on a full stomach to reduce stomach upset. Increases blood sugar levels. If diabetic, closely monitor blood sugar levels daily.</td>
</tr>
<tr>
<td>Injection into muscle or infused into a vein</td>
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</tr>
<tr>
<td>Other names:</td>
<td></td>
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<tr>
<td>L-ASP</td>
<td></td>
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<tr>
<td>U.S. brand name</td>
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<tr>
<td>Elspar®</td>
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<tr>
<td>Kidrolase®</td>
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<tr>
<td><strong>bevacizumab</strong></td>
<td>In general, drink at least 2-3 quarts of fluid every 24 hours. Constipation: Use prescribed medications if needed &amp; drink more fluids. Diarrhea: Use prescribed medication for diarrhea, if needed &amp; drink more fluids. Dry mouth Mouth sores: Keep the mouth clean after eating &amp; before bedtime. Vigorously swish prescribed special mouth rinse. Nausea/vomiting (MINIMAL RISK): Use prescribed medication to prevent on-set of nausea. If using medications for pain control, take it on a full stomach to reduce stomach upset. Taste changes</td>
</tr>
<tr>
<td>Infused into a vein</td>
<td></td>
</tr>
<tr>
<td>U.S. brand name</td>
<td></td>
</tr>
<tr>
<td>Avastin ®</td>
<td></td>
</tr>
<tr>
<td><strong>bicalutamide</strong></td>
<td>This medication is usually given to males. Empty the bladder before swallowing this tablet with water. Take this medication at the same time every day. In general, drink at least 2-3 quarts of fluid every 24 hours. Constipation: Use prescribed medications if needed &amp; drink more fluids. Diarrhea: Use prescribed medication for diarrhea, if needed &amp; drink more fluids. Nausea: Use prescribed medication prevent on-set of nausea. If using medications for pain control, take it on a full stomach to reduce stomach upset. Increases blood sugars. If diabetic, closely monitor blood sugar levels daily.</td>
</tr>
<tr>
<td>Tablet</td>
<td></td>
</tr>
<tr>
<td>U.S. brand name</td>
<td></td>
</tr>
<tr>
<td>Casodex®</td>
<td></td>
</tr>
</tbody>
</table>
| **bortezomib**  
Infused into a vein  
U.S. brand name  
Velcade® | In general, drink at least 2-3 quarts of fluid every 24 hours.  
**Constipation:** Use prescribed medications if needed & drink more fluids.  
**Diarrhea:** Use prescribed medication for diarrhea, if needed & drink more fluids.  
**Nausea/vomiting** (LOW RISK): Use prescribed medication to prevent on-set of nausea. If using medications for pain control, take it on a full stomach to reduce stomach upset.  
**Taste changes** |
| --- | --- |
| **capecitabine**  
Tablet  
U.S. brand name  
Xeloda® | Take tablet after eating food, within 30 minutes of a meal with water.  
Do not crush or dissolve tablets.  
In general, drink at least 2-3 quarts of fluid every 24 hours.  
**Diarrhea:** Use prescribed medication for diarrhea, if needed & drink more fluids.  
**Heartburn:** If using antacids for heartburn, wait at least 2 hours after taking this medication.  
**Mouth sores:** Keep the mouth clean after eating & before bedtime.  
Vigorously swish prescribed *special* mouth rinse.  
**Nausea/vomiting:** Use all prescribed medications for nausea to prevent on-set of nausea. If using medications for pain control, take it on a full stomach to reduce stomach upset. |
| **carboplatin**  
Infused into vein, or directly into the peritoneal cavity in the abdomen  
U.S. brand names  
Paraplat  
Paraplatin® | In general, drink at least 2-3 quarts of fluid every 24 hours.  
**Constipation:** Use prescribed medications if needed & drink more fluids.  
**Diarrhea:** Use prescribed medication for diarrhea, if needed & drink more fluids.  
**Mouth sores:** Keep the mouth clean after eating & before bedtime.  
Vigorously swish prescribed *special* mouth rinse.  
**Nausea/vomiting** (MODERATE RISK): Use all prescribed medications for nausea to prevent on-set of nausea. If using medications for pain control, take it on a full stomach to reduce stomach upset. |
| **cetuximab**  
Infusion into a vein  
U.S. brand name  
Erbitux® | In general, drink at least 2-3 quarts of fluid every 24 hours.  
**Constipation:** Use prescribed medications if needed & drink more fluids.  
**Diarrhea:** Use prescribed medication for diarrhea, if needed & drink more fluids.  
**Heartburn**  
**Mouth sores:** Keep the mouth clean after eating & before bedtime.  
Vigorously swish prescribed *special* mouth rinse.  
**Nausea/vomiting** (LOW RISK): Use all prescribed medications for nausea to prevent on-set of nausea. If using medications for pain control, take it on a full stomach to reduce stomach upset. |
| **cisplatin**  
Infused into a vein  
Other names:  
*CDDP*  
*DDP*  
U.S. brand name  
Platinol®  
Platinol®-AQ | In general, drink at least 2-3 quarts of fluid every 24 hours.  
**Diarrhea:** Use prescribed medication for diarrhea, if needed & drink more fluids.  
**Nausea/vomiting** (HIGH RISK) up to 1 week later: Use all of the prescribed medications for nausea to prevent on-set of nausea and continue with around-the-clock coverage for up to 4-7 days. If using medications for pain control, take it on a full stomach to reduce stomach upset.  
**Taste changes** |
| **cyclophosphamide**  
Tablet, injection into a muscle or the lining of the abdomen or lung, infusion into a vein  
U.S. brand name  
Clafen  
Cytoxan®  
Neosar® | Empty the bladder frequently, during the first 24 hours after taking the tablet. Take the tablet on empty stomach.  
Drink about 2-3 L/day to increase frequent urination.  
Mouth sores: Keep the mouth clean after eating & before bedtime.  
Vigorously swish prescribed special mouth rinse.  
Nausea/vomiting: at high doses (HIGH RISK); at lower doses (MODERATE RISK): Use all of prescribed medications for nausea to prevent on-set of nausea. If using medications for pain control, take it on a full stomach to reduce stomach upset. |
|---|---|
| **docetaxel**  
Infusion into a vein  
U.S. brand name  
Taxotere ® | **Note:** **Before treatment:** Use the prescribed steroid medication to reduce severity of swelling & allergic reaction.  
In general, drink at least 2-3 quarts of fluid every 24 hours.  
Diarrhea: Use prescribed medication for diarrhea, if needed & drink more fluids.  
Fluid retention  
Mouth sores: Keep the mouth clean after eating & before bedtime.  
Vigorously swish prescribed special mouth rinse.  
Nausea/vomiting-(LOW RISK): Use all prescribed medications for nausea to prevent on-set of nausea. If using medications for pain control, take it on a full stomach to reduce stomach upset. |
| **doxorubicin**  
Infusion into a vein  
U.S. brand name  
Adriamycin® PFS  
Adriamycin® RDF  
Doxil ®  
Idamycin PFS®  
Rubex® | In general, drink at least 2-3 quarts of fluid every 24 hours.  
Mouth sores: Keep the mouth clean after eating & before bedtime.  
Vigorously swish prescribed special mouth rinse.  
Nausea/vomitting-(MODERATE RISK), however HIGH RISK when used with cyclophosphamide (Cytoxan®, Neosar®). Use all prescribed medications for nausea to prevent on-set of nausea. If using medications for pain control, take it on a full stomach to reduce stomach upset. |
| **erlotinib**  
Tablet  
U.S. brand name  
Tarceva ® | Take tablet on an empty stomach, 1 hour before eating or wait 2 hours after eating.  
In general, drink at least 2-3 quarts of fluid every 24 hours.  
Diarrhea: Use prescribed medication for diarrhea, if needed & drink more fluids.  
Mouth sores: Keep the mouth clean after eating & before bedtime.  
Vigorously swish prescribed special mouth rinse.  
Nausea/vomiting: Use all prescribed medications for nausea to prevent on-set of nausea. If using medications for pain control, take it on a full stomach to reduce stomach upset. |
| **etoposide**  
Tablet, infusion into a vein  
U.S. brand name  
Toposar®  
VePesid®  
Etopophos® | In general, drink at least 2-3 quarts of fluid every 24 hours.  
Diarrhea-with high doses: Use prescribed medication for diarrhea, if needed & drink more fluids.  
Metallic taste: during infusion  
Mouth sores, at high doses: Keep the mouth clean after eating & before bedtime. Vigorously swish prescribed special mouth rinse.  
Nausea/vomiting (LOW RISK), unless at high dose: Use all prescribed medications for nausea to prevent on-set of nausea.  
Use prescribed medication for diarrhea, if needed & drink more fluids. If using medications for pain control, take it on a full stomach to reduce stomach upset. |
<table>
<thead>
<tr>
<th>Drug Name</th>
<th>Formulation</th>
<th>Side Effects and Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>fluorouracil</strong>&lt;br&gt;Injection or infusion into a vein, topical ointment</td>
<td><strong>Note</strong>: Leucovorin (folinic acid) may be used to increase the anti-cancer effects. It may INCREASE the severity of side effects. In general, drink at least 2-3 quarts of fluid every 24 hours. <strong>Diarrhea</strong>-with high doses: Use prescribed medication for diarrhea, if needed &amp; drink more fluids. <strong>Metallic taste</strong>: during infusion. <strong>Mouth sores</strong>: Use ice chips in mouth 10-15 minutes before &amp; after injections to reduce severity &amp; risk for mouth sores. Keep the mouth clean after eating &amp; before bedtime. Vigorously swish prescribed special mouth rinse. <strong>Nausea, occasional vomiting (LOW RISK)</strong>: Use prescribed medications for nausea to prevent on-set of nausea. If using medications for pain control, take it on a full stomach to reduce stomach upset.</td>
<td></td>
</tr>
<tr>
<td><strong>fulvestrant</strong>&lt;br&gt;Injection into the muscle</td>
<td>In general, drink at least 2-3 quarts of fluid every 24 hours. <strong>Constipation</strong>: Use prescribed medications if needed &amp; drink more fluids. <strong>Diarrhea</strong>: Use prescribed medication for diarrhea, if needed &amp; drink more fluids. <strong>Nausea/vomiting (MILD)</strong>: Use all prescribed medications for nausea to prevent on-set of nausea. If using medications for pain control, take it on a full stomach to reduce stomach upset.</td>
<td></td>
</tr>
<tr>
<td><strong>gefitinib</strong>&lt;br&gt;Tablet</td>
<td>In general, drink at least 2-3 quarts of fluid every 24 hours. <strong>Diarrhea</strong>: Use prescribed medication for diarrhea, if needed &amp; drink more fluids. <strong>Nausea/vomiting (MILD)</strong>: Use all prescribed medications for nausea to prevent on-set of nausea. If using medications for pain control, take it on a full stomach to reduce stomach upset.</td>
<td></td>
</tr>
<tr>
<td><strong>gemcitabine</strong>&lt;br&gt;Infusion into a vein</td>
<td>In general, drink at least 2-3 quarts of fluid every 24 hours. <strong>Diarrhea</strong>: Use prescribed medication for diarrhea, if needed &amp; drink more fluids. <strong>Fluid retention</strong>. <strong>Mouth sores</strong>: Keep the mouth clean after eating &amp; before bedtime. Vigorously swish prescribed special mouth rinse. <strong>Nausea/vomiting (LOW RISK)</strong>: Use all prescribed medications for nausea to prevent on-set of nausea. If using medications for pain control, take it on a full stomach to reduce stomach upset.</td>
<td></td>
</tr>
<tr>
<td><strong>imatinib mesylate</strong>&lt;br&gt;Tablet</td>
<td>Take tablet after a meal with a large glass of water at the same time every day. In general, drink at least 2-3 quarts of fluid every 24 hours. <strong>Constipation</strong>: Use prescribed medications if needed &amp; drink more fluids. <strong>Diarrhea</strong>: Use prescribed medication for diarrhea, if needed &amp; drink more fluids. <strong>Heartburn / gas</strong>. <strong>Nausea/vomiting</strong>: Use all prescribed medications for nausea to prevent on-set of nausea. If using medications for pain control, take it on a full stomach to reduce stomach upset.</td>
<td></td>
</tr>
<tr>
<td>Drug</td>
<td>Route of Administration</td>
<td>U.S. Brand Name</td>
</tr>
<tr>
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</tr>
<tr>
<td>irinotecan</td>
<td>Infusion into a vein</td>
<td>Camptosar®</td>
</tr>
<tr>
<td>methotrexate</td>
<td>Tablet, injection into the muscle, infusion into a vein, or spinal fluid</td>
<td>MTX, Amethopterin</td>
</tr>
<tr>
<td>oxaliplatin</td>
<td>Infusion into a vein</td>
<td>Eloxatin®</td>
</tr>
<tr>
<td>paclitaxel</td>
<td>Injection of infusion into a vein</td>
<td>Abraxane®, Taxol®, Onxal™</td>
</tr>
<tr>
<td><strong>PEG interferon</strong></td>
<td><strong>Injection under the skin</strong></td>
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<td>-------------------</td>
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<td></td>
</tr>
<tr>
<td><strong>Other names:</strong></td>
<td><em>interferon alfa-2b</em></td>
<td></td>
</tr>
<tr>
<td><strong>U.S. brand name</strong></td>
<td>PEG-Intron®</td>
<td></td>
</tr>
<tr>
<td><strong>Give injections at bedtime.</strong></td>
<td>In general, drink at least 2-3 quarts of fluid every 24 hours.</td>
<td></td>
</tr>
<tr>
<td><strong>Diarrhea:</strong></td>
<td>Use prescribed medication for diarrhea, if needed &amp; drink more fluids.</td>
<td></td>
</tr>
<tr>
<td><strong>Nausea:</strong></td>
<td>Use all prescribed medications for nausea to prevent on-set of nausea. If using medications for pain control, take it on a full stomach to reduce stomach upset.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>rituximab</strong></th>
<th><strong>Infusion into a vein</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>U.S. brand name</strong></td>
<td>Rituxan®</td>
</tr>
<tr>
<td><strong>In general, drink at least 2-3 quarts of fluid for the first 48 hours after treatment, unless otherwise instructed.</strong></td>
<td><strong>Nausea</strong> (MINIMAL RISK): Use prescribed medications for nausea to prevent on-set of nausea. If using medications for pain control, take it on a full stomach to reduce stomach upset.</td>
</tr>
<tr>
<td><strong>Throat irritation</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>tamoxifen</strong></th>
<th><strong>Tablet</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>U.S. brand name</strong></td>
<td>Nolvadex®</td>
</tr>
<tr>
<td><strong>Swallow the whole tablet with 8 oz. of water. Take this medication at the same time every day.</strong></td>
<td><strong>In general, drink at least 2-3 quarts of fluid every 24 hours.</strong></td>
</tr>
<tr>
<td><strong>Fluid retention</strong></td>
<td><strong>Nausea:</strong> Use prescribed medication for nausea, to prevent on-set of nausea. If using medications for pain control, take it on a full stomach to reduce stomach upset.</td>
</tr>
<tr>
<td><strong>Calcium and/or magnesium supplement use:</strong> Take separately by 2 hours from this medication.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>temozolomide</strong></th>
<th><strong>Capsule</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>U.S. brand name</strong></td>
<td>Temodar® Methazolastone</td>
</tr>
<tr>
<td><strong>Note:</strong> Swallow whole capsule with 8 oz. of water on an empty stomach. Do not open, crush or chew the capsule. To reduce nausea: Take this medication 1 hour before or 2 hours after meals, or at bedtime. If using medications for pain control, take it on a full stomach to reduce stomach upset.</td>
<td><strong>In general, drink at least 2-3 quarts of fluid every 24 hours.</strong></td>
</tr>
<tr>
<td><strong>Constipation:</strong> Use prescribed medications if needed &amp; drink more fluids.</td>
<td><strong>Diarrhea (delayed effect):</strong> Use prescribed medication for diarrhea, if needed &amp; drink more fluids.</td>
</tr>
<tr>
<td><strong>Fluid retention (delayed effect)</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>trastuzumab</strong></th>
<th><strong>Infusion into a vein</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>U.S. brand name</strong></td>
<td>Herceptin®</td>
</tr>
<tr>
<td><strong>In general, drink at least 2-3 quarts of fluid every 24 hours, unless otherwise instructed.</strong></td>
<td><strong>Constipation:</strong> Use prescribed medications if needed &amp; drink more fluids.</td>
</tr>
<tr>
<td><strong>Diarrhea (delayed effect):</strong> Use prescribed medication for diarrhea, if needed &amp; drink more fluids.</td>
<td><strong>Fluid retention</strong></td>
</tr>
<tr>
<td><strong>Nausea/vomiting (LOW RISK):</strong> Use prescribed medications for nausea to prevent on-set of nausea. If using medications for pain control, take it on a full stomach to reduce stomach upset.</td>
<td><strong>Sore throat</strong></td>
</tr>
</tbody>
</table>
**vinblastine**  
Infusion or injection into a vein

Other names:  
VLB

U.S. brand names  
Alkaban-AQ®  
Velban®  
Velsar®

In general, drink at least 2-3 quarts of fluid every 24 hours.  
**Constipation** (1-3 days later): Use prescribed medications if needed & drink more fluids.  
**Diarrhea**: Use prescribed medication for diarrhea, if needed & drink more fluids.  
**Mouth sores**: Keep the mouth clean after eating & before bedtime. Vigorously swish prescribed special mouth rinse.  
**Nausea/vomiting** (MINIMAL RISK) within first 24 hours: Use all prescribed medications for nausea to prevent on-set of nausea. If using medications for pain control, take it on a full stomach to reduce stomach upset.  
**Metallic taste**

**References:**

## CTC Adverse Events Grade Charts

### Lab Values and Measured Conditions

<table>
<thead>
<tr>
<th>Adverse Event</th>
<th>Grade 1</th>
<th>Grade 2</th>
<th>Grade 3</th>
<th>Grade 4</th>
<th>Grade 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hgb &lt;10.0</strong></td>
<td></td>
<td>Hgb&lt;10.0 - 8.0</td>
<td>Hgb&lt;8.0</td>
<td>Life-threatening consequences; urgent intervention indicated</td>
<td>Death</td>
</tr>
<tr>
<td><strong>Anemia</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Corrected serum calcium of &gt;ULN – 11.5 mg/dL</strong></td>
<td></td>
<td>Corrected serum calcium of &gt;11.5 – 12.5 mg/dL</td>
<td>Corrected serum calcium of &gt;12.5 – 13.5 mg/dL</td>
<td>Corrected serum calcium of &gt;13.5 mg/dL</td>
<td>Death</td>
</tr>
<tr>
<td><strong>Hypoglycemia</strong></td>
<td>&lt;LLN – 55mg/dL</td>
<td>&lt;55 – 40 mg/dL</td>
<td>&lt;40 – 30 mg/dL</td>
<td>&lt;30mg/dL life threatening consequences; seizures</td>
<td>Death</td>
</tr>
<tr>
<td><strong>Hypokalemia</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Hyperkalemia</strong></td>
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<tr>
<td><strong>Hypomagnesemia</strong></td>
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<tr>
<td><strong>Hypermagnesemia</strong></td>
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</tbody>
</table>

### Definitions

- **Anemia**: A disorder characterized by a reduction in the amount of hemoglobin in 100ml of blood. Signs and symptoms of anemia may include pallor of the skin and mucous membranes, shortness of breath, palpitations of the heart, soft systolic murmurs, lethargy, and fatigability.

- **Hyperglycemia**: A disorder characterized by laboratory test results that indicate an elevation in the concentration of blood sugar. It is usually an indication of diabetes mellitus or glucose intolerance. ULN (Upper Limit of Normal)

- **Hypoglycemia**: A disorder characterized by laboratory test results that indicate a low concentration of calcium (corrected for albumin) in the blood.

- **Hypokalemia**: A disorder characterized by laboratory test results that indicate a low concentration of potassium in the blood; associated with kidney failure or sometimes with the use of diuretic drugs.

- **Hypermagnesemia**: A disorder characterized by laboratory test results that indicate an elevation in the concentration of magnesium in the blood.
<table>
<thead>
<tr>
<th>Disorder</th>
<th>Definition: A disorder characterized by laboratory tests results that indicate a low concentration of magnesium in the blood.</th>
<th>&lt;LLN – 0.5 mmol/L</th>
<th>&lt;0.5 – 0.4 mmol/L</th>
<th>&lt;0.4 – 0.3 mmol/L</th>
<th>&lt;0.3 mmol/L; life-threatening consequences</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hypernatremia</strong></td>
<td>&gt;ULN – 150 mmol/L</td>
<td>&gt;150-155 mmol/L</td>
<td>&gt; 155-160 mmol/L; hospitalization indicated</td>
<td>&gt; 160 mmol/L; life-threatening consequences</td>
<td>Death</td>
</tr>
<tr>
<td><strong>Hyponatremia</strong></td>
<td>&lt;LLN – 130 mmol/L</td>
<td>-</td>
<td>&lt;130 – 120 mmol/L</td>
<td>&lt;120 mmol/L; life-threatening consequences</td>
<td>Death</td>
</tr>
<tr>
<td><strong>Hypophosphatemia</strong></td>
<td>&lt;LLN – 2.5 mg/dL; &lt;LLN – 0.8 mmol/L</td>
<td>&lt;2.5 – 2.0 mg/dL; &lt;0.8 – 0.6 mmol/L</td>
<td>&lt;2.0 – 1.0 mg/dL; &lt;0.6 – 0.3 mmol/L</td>
<td>&lt;1.0 mg/dL; &lt;0.3 mmol/L; life-threatening consequences</td>
<td>Death</td>
</tr>
<tr>
<td><strong>Hypoalbuminemia</strong></td>
<td>&lt;LLN – 3 g/dL; &lt;LLN – 30 g/L</td>
<td>&lt;3 – 2 g/dL; &lt;30-20 g/L</td>
<td>&lt;2 g/dL; &lt;20 g/L</td>
<td>Life-threatening consequences; urgent intervention indicated</td>
<td>Death</td>
</tr>
<tr>
<td><strong>INR increased</strong></td>
<td>&gt;1.5 x ULN; &gt;1.5 times above baseline if on anticoagulation</td>
<td>&gt;1.5-2.5 x ULN; &gt;1.5-2.5 times above baseline if on anticoagulation</td>
<td>&gt;2.5 x ULN; &gt;2.5 times above baseline if on anticoagulation</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Lymphocyte count decreased</strong></td>
<td>&lt;LLN – 800/mm3; &lt;LLN – 0.8 x 10e9/L</td>
<td>&lt;800 – 500/mm3; &lt;0.8 – 0.5 x 10e9/L</td>
<td>&lt;500 – 200/mm3; &lt;0.5 – 0.2 x 10e9/L</td>
<td>&lt;200/mm3; &lt;0.2 x 10e9/L</td>
<td>-</td>
</tr>
<tr>
<td><strong>Lymphocyte count increased</strong></td>
<td>-</td>
<td>&gt;4000/mm3 – 20,000/mm3</td>
<td>&gt;20,000/mm3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Neutrophil count decreased</strong></td>
<td>&lt;LLN – 1500/mm3; &lt;LLN – 1.5 x 10e9/L</td>
<td>&lt;1500-1000/mm3; &lt;1.5 – 1.010e9/L</td>
<td>&lt;1000 – 500/mm3; &lt;1.0 – 0.5 x 10e9/L</td>
<td>&lt;500/mm3; &lt;0.5 x 10e9/L</td>
<td>-</td>
</tr>
<tr>
<td><strong>Pancreatic enzymes decreased</strong></td>
<td>&lt;LLN and asymptomatic</td>
<td>Increase in stool frequency, bulk, or odor; steatorrhea</td>
<td>Sequelae of absorption deficiency</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Platelet count decreased</strong></td>
<td>&lt;LLN – 75,000/mm3; &lt;LLN – 75.0 x 10e9/L</td>
<td>&lt;75,000 – 50,000/mm3; &lt;75.0 – 50.0 x 10e9/L</td>
<td>&lt;50,000 – 25,000/mm3; &lt;50.0 – 25.0 x 10e9/L</td>
<td>&lt;25,000/mm3; &lt;25.0 x 10e9/L</td>
<td>-</td>
</tr>
</tbody>
</table>

**Definition:** A disorder characterized by laboratory tests results that indicate an elevation in the concentration of sodium in the blood.
**White blood cell decreased**

- **<LLN – 3000/mm³; LLN – 3 x 10⁹/L**
- **<3000 – 2000/mm³; <3.0 – 2.0 x 10⁹/L**
- **<2000 – 1000/mm³; <2.0 – 1.0 x 10⁹/L**
- **<1000/mm³; <1.0 x 10⁹/L**

**Definition:** A finding based on laboratory tests results that indicates a decrease in number of white blood cells in a blood specimen.

**Osteoporosis**

- Radiologic evidence of osteoporosis or Bone Mineral Density (BMD) t-score -1 to -2.5 (osteopenia); no loss of height or intervention indicated
- BMD t-score < -2.5; loss of height < 2 cm; anti-osteoporotic therapy indicated; limiting instrumental ADL
- Loss of height >= 2 cm; hospitalization indicated; limiting self care ADL

**Definition:** A disorder characterized by reduced bone mass, with a decrease in cortical thickness and in the number and size of the trabeculae of cancellous bone (but normal chemical composition), resulting in increased fracture incidence.

## Nutrition Related Disorders and Conditions

<table>
<thead>
<tr>
<th>Adverse Event</th>
<th>Grade 1</th>
<th>Grade 2</th>
<th>Grade 3</th>
<th>Grade 4</th>
<th>Grade 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Anorexia</strong></td>
<td>Loss of appetite without alteration in eating habits</td>
<td>Oral intake altered without significant weight loss or malnutrition; oral nutritional supplements indicated</td>
<td>Associated with significant weight loss or malnutrition (e.g., inadequate oral caloric and/or fluid intake); tube feeding or TPN indicated</td>
<td>Life-threatening consequences; urgent intervention indicated</td>
<td>Death</td>
</tr>
</tbody>
</table>

**Definition:** A disorder characterized by a loss of appetite.

<table>
<thead>
<tr>
<th>Adverse Event</th>
<th>Grade 1</th>
<th>Grade 2</th>
<th>Grade 3</th>
<th>Grade 4</th>
<th>Grade 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aspiration</strong></td>
<td>Asymptomatic; clinical or diagnostic observations only; intervention not indicated</td>
<td>Altered eating habits; coughing or choking episodes after eating or swallowing; medical intervention indicated (e.g., suction or oxygen)</td>
<td>Dyspnea and pneumonia symptoms (e.g., aspiration pneumonia); hospitalization indicated; unable to aliment orally</td>
<td>Life-threatening respiratory or hemodynamic compromise; intubation or urgent intervention indicated</td>
<td>Death</td>
</tr>
</tbody>
</table>

**Definition:** A disorder characterized by inhalation of solids or liquids into the lungs.

<table>
<thead>
<tr>
<th>Adverse Event</th>
<th>Grade 1</th>
<th>Grade 2</th>
<th>Grade 3</th>
<th>Grade 4</th>
<th>Grade 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Constipation</strong></td>
<td>Occasional or intermittent symptoms; occasional use of stool softeners, laxatives,</td>
<td>Persistent symptoms with regular use of laxatives or enemas; limiting instrumental</td>
<td>Obstitution with manual evacuation indicated; limiting self care ADL</td>
<td>Life-threatening consequences; urgent intervention indicated</td>
<td>Death</td>
</tr>
</tbody>
</table>

**Definition:** A disorder characterized by occasional or intermittent symptoms; occasional use of stool softeners, laxatives, or enemas; persistent symptoms with regular use of laxatives or enemas; limiting instrumental.
<table>
<thead>
<tr>
<th></th>
<th>ADL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Definition:</strong></td>
<td>A disorder characterized by irregular and infrequent or difficult evacuation of the bowels.</td>
</tr>
</tbody>
</table>

| **Diarrhea** | Increase of <4 stools per day over baseline; mild increase in ostomy output compared to baseline | Increase of 4-6 stools per day over baseline; moderate increase in ostomy output compared to baseline | Increase of >=7 stools per day over baseline; incontinence; hospitalization indicated; severe increase in ostomy output compared to baseline; limiting self care ADL | Life-threatening consequences; urgent intervention indicated | Death |

| **Definition:** | A disorder characterized by frequent and watery bowel movements. |

| **Dehydration** | Increased oral fluids indicated; dry mucous membranes; diminished skin turgor | IV fluids indicated < 24 hrs | IV fluids or hospitalization indicated | Life-threatening consequences; urgent intervention indicated | Death |

| **Definition:** | A disorder characterized by excessive loss of water from the body. It is usually caused by severe diarrhea, vomiting or diaphoresis. |

| **Dry Mouth** | Symptomatic (e.g., dry or thick saliva) without significant dietary alteration; unstimulated saliva flow >0.2ml/min | Moderate symptoms; oral intake alterations (e.g.,copious water, other lubricants, diet limited to purees and/or soft, moist foods); unstimulated saliva 0.1 to 0.2 ml/min | Inability to adequately aliment orally; tube feeding or TPN indicated; unstimulated saliva <0.1ml/min | - | - |

| **Definition:** | A disorder characterized by reduced salivary flow in the oral cavity. |

| **Dysphagia** | Symptomatic, able to eat regular diet | Symptomatic and altered eating/swallowing | Severely altered eating/swallowing; tube feeding or TPN or hospitalization indicated | Life-threatening consequences; urgent intervention indicated | Death |

| **Definition:** | A disorder characterized by difficulty in swallowing. |

<p>| <strong>Esophagitis</strong> | Asymptomatic; clinical or diagnostic observations only; intervention not | Symptomatic; altered eating/swallowing; oral supplements indicated | Severely altered eating/swallowing; tube feeding, TPN or hospitalization | Life-threatening consequences; urgent operative intervention indicated | Death |</p>
<table>
<thead>
<tr>
<th>Definition: A disorder characterized by inflammation of the esophageal wall.</th>
<th>Fatigue</th>
<th>Fatigue not relieved by rest; limiting instrumental ADL</th>
<th>Fatigue not relieved by rest; limiting self care ADL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fatigue</strong></td>
<td>Fatigue relieved by rest</td>
<td>Fatigue not relieved by rest; limiting instrumental ADL</td>
<td>Fatigue not relieved by rest, limiting self care ADL</td>
</tr>
<tr>
<td><strong>Definition: A disorder characterized by a state of generalized weakness with a pronounced inability to summon sufficient energy to accomplish daily activities.</strong></td>
<td><strong>Malabsorption</strong></td>
<td>Altered diet; oral intervention indicated</td>
<td>Inability to aliment adequately; TPN indicated</td>
</tr>
<tr>
<td><strong>Malabsorption</strong></td>
<td>-</td>
<td>-</td>
<td>Life-threatening consequences; urgent intervention indicated</td>
</tr>
<tr>
<td><strong>Definition: A disorder characterized by inadequate absorption of nutrients in the small intestine. Symptoms include abdominal marked discomfort, bloating and diarrhea.</strong></td>
<td><strong>Mucositis Oral</strong></td>
<td>Asymptomatic or mild symptoms; intervention not indicated</td>
<td>Moderate pain; not interfering with oral intake; modified diet indicated</td>
</tr>
<tr>
<td><strong>Mucositis Oral</strong></td>
<td>Loss of appetite without alteration in eating habits</td>
<td>Oral intake decreased without significant weight loss, dehydration or malnutrition</td>
<td>Severe pain; interfering with oral intake</td>
</tr>
<tr>
<td><strong>Definition: A disorder characterized by inflammation of the oral mucosa.</strong></td>
<td><strong>Nausea</strong></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Nausea</strong></td>
<td>Loss of appetite without alteration in eating habits</td>
<td>Oral intake decreased without significant weight loss, dehydration or malnutrition</td>
<td>Inadequate oral caloric or fluid intake; tube feeding, TPN, or hospitalization indicated</td>
</tr>
<tr>
<td><strong>Definition: A disorder characterized by a queasy sensation and/or the urge to vomit.</strong></td>
<td><strong>Pain</strong></td>
<td>Mild pain</td>
<td>Severe pain; limiting instrumental ADL</td>
</tr>
<tr>
<td><strong>Pain</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Definition: A disorder characterized by the sensation of marked discomfort, distress or agony.</strong></td>
<td><strong>Sore throat</strong></td>
<td>Mild pain</td>
<td>Severe pain; limiting instrumental ADL; limiting ability to swallow</td>
</tr>
<tr>
<td><strong>Sore throat</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Definition: A disorder characterized by marked discomfort in the throat.</strong></td>
<td><strong>Vomiting</strong></td>
<td>1-2 episodes (separated by 5 minutes) in 24 hours</td>
<td>&gt;=6 episodes (separated by 5 minutes) in 24 hrs; tube feeding, TPN or hospitalization indicated</td>
</tr>
<tr>
<td><strong>Vomiting</strong></td>
<td>3-5 episodes (separated by 5 minutes) in 24 hours</td>
<td>-</td>
<td>Life-threatening consequences; urgent intervention indicated</td>
</tr>
<tr>
<td><strong>Definition: A disorder characterized by the reflexive act of ejecting the contents of the stomach through the mouth.</strong></td>
<td><strong>Weight gain</strong></td>
<td>5-&lt;10% from baseline</td>
<td>&gt;=20% from baseline</td>
</tr>
<tr>
<td><strong>Weight gain</strong></td>
<td>10-&lt;20% from baseline</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
### Definition:
A finding characterized by an increase in overall body weight; for pediatrics, greater than the baseline growth curve.

<table>
<thead>
<tr>
<th>Weight loss</th>
<th>Definition</th>
<th>5 to &lt;10% from baseline; intervention not indicated</th>
<th>10-&lt;20% from baseline; nutritional support indicated</th>
<th>&gt;=20% from baseline; tube feeding or TPN indicated</th>
<th>-</th>
<th>-</th>
</tr>
</thead>
</table>

### Definition:
A finding characterized by a decrease in overall body weight; for pediatrics, less than the baseline growth curve.

<table>
<thead>
<tr>
<th>Obesity</th>
<th>Definition</th>
<th>BMI 25-29.9kg/m²</th>
<th>BMI 30-39.9 kg/m²</th>
<th>BMI &gt;+40kg/m²</th>
<th>-</th>
</tr>
</thead>
</table>

### Definition:
A disorder characterized by having a high amount of body fat.

Dry Mouth Products and Therapies

There are significant differences in the performance of various saliva substitutes and more studies on the properties of saliva substitutes are still needed.\(^1\) It is estimated that saliva substitutes provide relief for approximately 40% of patients who use them.\(^2\) More research studies are needed.

<table>
<thead>
<tr>
<th>BRAND NAME</th>
<th>COMPOSITION/INGREDIENTS</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acupuncture</td>
<td>Acupuncture points: ears, chin, index finger, forearm, leg</td>
<td>Limited evidence; concern with safety measures; further study needed.(^2,3,4)</td>
</tr>
<tr>
<td>Aquoral™</td>
<td>Corn oil, silicon dioxide, aspartame, or artificial flavorings (citrus)</td>
<td>Use 2 sprays 3-4 times a day. Metered doses of .001 ml/spray . 40 ml solution (400 sprays). Flavor: citrus.</td>
</tr>
<tr>
<td><strong>Biotene® Oral Balance®</strong></td>
<td>Glyceryl polymethacrylate, polyglycitol, xylitol, hydroxyethyl cellulose, beta-d-glucose, sodium phosphate, aloe vera, potassium thiocyanate, lysozyme, lactoferrin, glucose oxidase, lactoperoxidase</td>
<td>Rub on gums. Safe to swallow excess gel to lubricate throat 1.5 oz tube, pH 5.5 . Laclede Research Labs <a href="http://www.biotene.com">http://www.biotene.com</a> Available at most pharmacies: Walgreens.com</td>
</tr>
<tr>
<td><strong>Biotene® Oral Balance®</strong></td>
<td>Purified water, starch hydrolysate, sunflower oil, propylene glycol, xylitol, glycerine, purified milk extract (proteins, vitamins &amp; minerals), flavor, sodium benzoate, flax seed oil, xanthan gum, rosemary extract, cellulose gum, avocado oil, lactoperoxidase, glucose oxidase, potassium thiocyanate, lysozyme, lactoferrin, potassium sorbate, zinc gluconate</td>
<td>Squirt directly into the mouth as often as moisture is needed. 45 ml 1.5 oz bottle. Laclede, Inc., Healthcare Products <a href="http://www.biotene.com">http://www.biotene.com</a> Available at most pharmacies: Walgreens.com</td>
</tr>
<tr>
<td><strong>Biotene® Oral Balance®</strong></td>
<td>Purified water, starch hydrolysate, sunflower oil, propylene glycol, xylitol, glycerine, purified milk extract (proteins, vitamins &amp; minerals), flavor, sodium benzoate, flax seed oil, xanthan gum, rosemary extract, cellulose gum, avocado oil, lactoperoxidase, glucose oxidase, potassium thiocyanate, lysozyme, lactoferrin, potassium sorbate, zinc gluconate</td>
<td>Squirt directly into the mouth as often as moisture is needed. Swallow excess liquid to help with throat lubrication. Repeat several times daily as needed. Note: Use after meals &amp; before bedtime. 1.5 oz spray bottle. Laclede, Inc., Healthcare Products. <a href="http://www.biotene.com">http://www.biotene.com</a> Available at most pharmacies: Walgreens.com</td>
</tr>
<tr>
<td>Product</td>
<td>Ingredients</td>
<td>Quantity</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Caphosol®</td>
<td>Dibasic sodium phosphate 0.032, monobasic sodium phosphate 0.009, calcium chloride 0.052, sodium chloride 0.569, purified water qs ad (%w/w) NOTE: 71mg of sodium/30ml dose</td>
<td>For xerostomia: 2-10 x /day. No eating or drinking for at least 15 mins after use. Requires mixing; then swish the mouth &amp; spit out. Repeat again.</td>
</tr>
<tr>
<td>Carrots or celery</td>
<td></td>
<td>Chewing required.</td>
</tr>
<tr>
<td>Cherry or olive pit</td>
<td></td>
<td>Recommended at DryMouth.info</td>
</tr>
<tr>
<td>Entertainer's Secret Throat Relief™</td>
<td>Sodium carboxymethylcellulose, aloe vera gel, glycerin, dibasic sodium phosphate, potassium chloride, potassium sorbate</td>
<td>Flavor: honey-apple. 2 oz 60 ml spray bottle.</td>
</tr>
<tr>
<td>Glandosane® Mouth Moisturizer</td>
<td>Sodium carboxy methylcellulose, sorbitol, sodium chloride, potassium chloride, calcium chloride dihydrate, magnesium chloride hexahydrate</td>
<td>Flavor: mint. 15 ml spray bottle, pH 7.0.</td>
</tr>
<tr>
<td><strong>Product</strong></td>
<td><strong>Active Ingredients</strong></td>
<td><strong>Flavors</strong></td>
</tr>
<tr>
<td>-------------</td>
<td>------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Halls Refresh™ candy</td>
<td>Dipotassium hydrogen phosphate, flavor, carbon dioxide</td>
<td>Juicy strawberry, refreshing mint, tropical wave</td>
</tr>
<tr>
<td>MEDActive® Patient-Friendly™ Oral Relief Spray</td>
<td>Isomalt, &lt; 2% of: acesulfame potassium, beta carotene, blue 1, blue 2, natural &amp; artificial flavoring, red 40, soy lecithin, sucralose</td>
<td></td>
</tr>
<tr>
<td>Moi-Stir® Oral spray</td>
<td>Dimethicone, poloxamer 407, spilanthes extract (natural herb), water, xylitol, potassium sorbate, EDTA, sodium saccharin, sucra-lose, glycerin, xanthan gum, &amp; flavor</td>
<td>Lemonade, orange créme, ruby raspberry, natural spring, vanilla mint, butter-scotch.</td>
</tr>
<tr>
<td>Mouth Kote® Dry Mouth Spray</td>
<td>Water, xylitol, sorbitol, yerba santa, citric acid, natural lemon-lime flavor, ascorbic acid, sodium benzoate, sodium saccharin</td>
<td>Lemon-lime</td>
</tr>
<tr>
<td>Numoisyn® Liquid</td>
<td>Water, sorbitol, linseed (flaxseed) extract, chondrus crispus, methylparaben, sodium benzoate, potassium sorbate, dipotassium phosphate, propylparaben</td>
<td>Clear consistency similar to saliva. 30 ml/bottle or 300 ml/bottle. Abdominal discomfort may be experienced with IBS or diverticular disease or use of a high linseed (flaxseed) diet.</td>
</tr>
<tr>
<td>Numoisyn® Lozenges</td>
<td>Sorbitol, polyethylene glycol, malic acid, sodium citrate, calcium phosphate dibasic, hydrogenated cottonseed oil, citric acid, magnesium stearate &amp; silicon dioxide</td>
<td>100 lozenges/bottle. Do not exceed 16 lozenges/24 hrs.</td>
</tr>
<tr>
<td>Product Name</td>
<td>Ingredients</td>
<td>Usage</td>
</tr>
<tr>
<td>------------------------------</td>
<td>----------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Oasis® Moisturizing Mouthwash</strong>&lt;br&gt;<strong>No prescription needed.</strong></td>
<td>Water, glycerin, sorbitol, poloxamer 338, PEG-60 hydrogenated castor oil, carboxymethylcellulose, cetylpyridinium chloride, copovidone, disodium phosphate, flavors, methylparaben, propylparaben, sodium benzoate, sodium phosphate, sodium saccharin, xanthan gum, xanthan gum, FD&amp;C blue #1</td>
<td>Use 1 oz of mouthwash for 30 seconds. Do not swallow. 16 fl. oz. bottle. <strong>Flavors:</strong> peppermint, spearmint. GlaxoSmithKline (GSK) <a href="http://www.oasisdrymouth.com">http://www.oasisdrymouth.com</a> Available at most pharmacies: Walmart, CVS, RiteAid</td>
</tr>
<tr>
<td><strong>Oasis® Moisturizing Mouth Spray</strong>&lt;br&gt;<strong>No prescription needed.</strong></td>
<td>Glycerin (vegetable source), cetylpyridinium chloride, copovidone, flavors, methylparaben, PEG-60 hydrogenated castor oil, propylparaben, sodium benzoate, sodium saccharin, water, xanthan gum, xylitol</td>
<td>Use PRN up to 30 times or 60 sprays/day. 1.0 fl. oz bottle (150 sprays/bottle). <strong>Flavors:</strong> peppermint, spearmint. GlaxoSmithKline (GSK) <a href="http://www.oasisdrymouth.com">http://www.oasisdrymouth.com</a> Available at most pharmacies, such as Walmart, CVS, RiteAid</td>
</tr>
<tr>
<td><strong>Optimoist® spray</strong>&lt;br&gt;<strong>No prescription needed.</strong></td>
<td>Saliva substitute</td>
<td>2 oz spray bottle, pH 3.5. Colgate Oral Pharmaceuticals Canton, MA 800-226-5428</td>
</tr>
<tr>
<td><strong>OraMoist™ Time-released Dry Mouth Disc</strong>&lt;br&gt;<strong>No prescription needed.</strong></td>
<td>Xylitol, polyvinyl pyrrolidone, carbomer homopolymer, triglycerides, lemon flavor, citric acid, calcium carbonate, hydroxypropyl cellulose, sodium chloride, silicone dioxide, magnesium stearate, glucose oxidase, lysozyme, lactoferrin, carmine</td>
<td>Time-released dry mouth treatment disc. Place disc on roof of mouth or inner cheek. Lasts up to 4 hrs. Limit: 3 discs/day. <strong>Flavor:</strong> natural fruit; 16 discs/box. Quantum Health. Available at CVS Pharmacy, RiteAid, Walgreens Store locator: <a href="http://www.oramoist.com">www.oramoist.com</a></td>
</tr>
<tr>
<td><strong>Quench® Mist Mouth Spray</strong>&lt;br&gt;<strong>No prescription needed.</strong></td>
<td>De-ionized water, citric acid, benzoic acid, natural orange extract, FD&amp;C Yellow #6 or Red #40</td>
<td>Flavors: cherry, lemon, grape and orange. Mueller Sports Medicine, Inc. <a href="http://www.quenchgum.com">http://www.quenchgum.com</a> Most sporting goods stores</td>
</tr>
<tr>
<td><strong>Salivart® oral moisturizer spray</strong>&lt;br&gt;<strong>No prescription needed.</strong></td>
<td>Carboxymethyl cellulose, hydroxyethyl cellulose</td>
<td>Usually 1-2 sprays a day. 30 g or 70 g spray can preservative-free, pH 6.2-7.2. Gebauer Pharmaceuticals, Cleveland, OH 800-321-9348</td>
</tr>
<tr>
<td>Product</td>
<td>Ingredients/Description</td>
<td>Flavor/Availability</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>SalivaSure® Tablets</strong></td>
<td>Xylitol, fruit acids, salts and a phosphate buffer</td>
<td>Flavor: mild mint, 90 count bottle. Scandinavian Formulas, Inc. Dental Pharmacy 319.335.7435. CVS Pharmacy will order</td>
</tr>
<tr>
<td><strong>Stoppers4® Dry Mouth Spray</strong></td>
<td>Water (aqua/deionized), glycerin, xylitol, hydroxyethylcellulose, lysozyme, lactoferrin, glucose oxidase, spearmint flavor (natural), sodium benzoate</td>
<td>4 fl oz bottle. Flavor: Mint. Woodridge Labs, Inc. <a href="http://www.woodridgelab.com">http://www.woodridgelab.com</a> Available at: Walgreens, CVS, Rite Aid</td>
</tr>
<tr>
<td><strong>Sugar-free candies</strong></td>
<td></td>
<td>Available at all major mass merchandisers, grocery stores and drug stores</td>
</tr>
<tr>
<td><strong>Sugar-free gum</strong></td>
<td>Biotene® or Xylifresh® (xylitol); Eclipse® (maltitol, sorbitol, mannitol, aspartame, acesulfame K); Extra® (sorbitol, mannitol, maltitol, acesulfame K and aspartame); Orbit® (sorbitol, mannitol, xylitol, aspartame, acesulfame K); Orbit® White (maltitol, sorbitol, mannitol, aspartame, acesulfame K); Orbit® Ice White (sorbitol, mannitol, maltitol syrup, aspartame, acesulfame K); Airwaves® (isomalt, sorbitol, mannitol, maltitol syrup (in Honey Lemon only), aspartame, acesulfame K); Trident® (sorbitol, mannitol, acesulfame, aspartame); Zapp! Gum (xylitol)</td>
<td>Zapp!® gum flavors: fruit punch, apple, fresh fruit, apple cinnamon, cinnamon, peppermint. <a href="http://www.zappgum.com/categories/Xylitol-Chewing-Gum/">http://www.zappgum.com/categories/Xylitol-Chewing-Gum/</a> Available at all major mass merchandisers, grocery stores and drug stores.</td>
</tr>
<tr>
<td><strong>Thayers® Dry Mouth Spray</strong></td>
<td>Purified water, vegetable glycerin, calcium gluconate, tris amino, citric acid, potassium chloride, natural peppermint flavor &amp; eucalyptus, or natural citrus flavor from oils of lemon &amp; lime.</td>
<td>Flavors: citrus, peppermint. Henry Thayer &amp; Company <a href="http://www.thayers.com">http://www.thayers.com</a> Health food stores</td>
</tr>
<tr>
<td><strong>Xero-Lube® Artificial Saliva spray</strong></td>
<td>Xylitol, carboxymethyl cellulose, hydroxyethyl cellulose</td>
<td>15 ml spray, sodium-free, pH 7.0. Colgate Oral Pharmaceuticals. Canton, MA 800-226-5428</td>
</tr>
</tbody>
</table>
| **Xylimelts®**  
| **Thyme tea**  
| *No prescription needed.* | Native American remedy. Pour hot water over a twig of thyme. Let the water cool to desired temp. | |

<table>
<thead>
<tr>
<th><strong>PREVENTION THERAPIES</strong></th>
<th><strong>COMMENTS</strong></th>
<th><strong>SIDE EFFECTS</strong></th>
</tr>
</thead>
</table>
| **Amifostine (Ethyl®)**  
| *By prescription only* | Reduces damage to the salivary glands. By injection only, given prior to each radiation treatment session for head and neck cancer. Injection before radiation treatment. | **Side effects**: nausea/vomiting, hypotension, flushing, chills, malaise, fever, rash, dizziness, drowsiness, hiccups, and sneezing  
Anti-nausea medications may be prescribed  
Adequate fluid intake  
Blood pressure will be monitored  
Serum calcium levels may be monitored. |
| **Cevimeline (Evoxac®)**  
| *By prescription only* | Capsule. To be effective, this medication needs the salivary glands to be **partially** working. Effective about 2-4 hours | **Side effects**: dry eyes, blurry vision, nasal congestion, muscle pain, vaginal itching/discharge, constipation, poor appetite, diarrhea, chest tightness, shortness of breath, eye pain, fever, mouth sores and eye drainage |
| **Pilocarpine HCl Salagen® tablet**  
| *By prescription only* | 5 mgs taken 3-4 x/day with 8 oz water. About 1 ½ hrs to work, and effective for 2-3 hrs. To be effective, needs the salivary glands to be partially working | **Side effects**: arthralgia, chills, cough, diarrhea, fever, flushing, indigestion, myalgia, nausea, polyuria, runny nose, sweating, or unusual tiredness or weakness |
References


INDEX OF BIOTHERAPY AND CHEMOTHERAPY DRUGS

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actinomycin-D
Adriamycin (R) (see doxorubicin)
Afinitor (R) (see everolimus)
Alimta (R) (see pemetrexed)
Alkaban-AQ (R) (see vinblastine)
Alkeran (R) (see melphalan)
altretame
anastrozole
ARA-C (see cytarabine)
anastrozole
asparaginase
Avastin (R) (see bevacizumab)
aZactidine
BCNU (see carmustine)
bevacizumab
bicalutamide
BiCNU (R) (see carmustine)
bleomycin
CeeNu (R) (see carmustine)
bortezomib
busulfan
Busulfex (R) (see busulfan)
carboplatin
carmustine
Casodex (R) (see bicalutamide)
CCNU (see lomustine)
CeeNu (R) (see lomustine)
Cerubidine (R) (see daunorubicin)
cetuximab
CDDP (see cisplatin)
chlorambucil
cisplatin
Cosmegen (R) (see actinomycin-D)
CTX (see cyclophosphamide)
cyclophosphamide
cytarabine
Cytoxan (R) (see cyclophosphamide)
DAC (see decitabine)
dacarbazine
Daunomycin (R) (see daunorubicin)
dacarbazine
dactinomycin (see actinomycin-D)
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ifosfamide
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irinotecan
ixabepilone
Ixempra (R) (see ixabepilone)
lapatinib
L-asparaginase (see asparaginase)
leucovorin
leuprolide
Leustatin (R) (see cladribine)
Lomustine
Lukeran (R) (see chlorambucil)
Lupron (R) (see leuprolide)
mechlorethamine
melphanal
methotrexate
mitomycin C
mitotane
mitoxantrone
MTC (see mitomycin C)
MTX (see methotrexate)
Mustargen (R) (see mechlorethamine)
Mutamycin (R) (see mitomycin C)
Myleran (R) (see busulfan)
Mylocel (R) (see hydroxyurea)
Mylosar (see azacitidine)
Navelbine (R) (see vinorelbine)
Neosar (R) (see cyclophosphamide)
Neupogen (R) (see sorafenib)
nilotinib
Nipent (R) (see pentostatin)
Novantrone (R) (see mitoxantrone)
Oncaspar (R) (see pegaspargase)
Oncovin (R) (see vinceristine)
oxaliplatin
paclitaxel
panitumumab
Paraplatin (R) (see carboplatin)
pazopanib
PEG-ASP (see pegaspargase)
pegaspargase
PEG interferon
PEG-Intron (R) (see PEG interferon)
pemetrexed
pentostatin
Platolin (R) AQ (see cisplatin)
Procrit (R) (see epoetin alfa)
rituximab
Rituxan (R) (see rituximab)
sorafenib
streptozocin
Sprycel (R) (see dasatinib)
Stutent (R) (see sunitinib)
sunitinib
tamoxifen
Tarceva (R) (see erlotinib)
Tasigna (R) (see nilotinib)
Taxol (R) (see paclitaxel)
Taxotere (R) (see docetaxel)
Temodar (R) (see temozolomide)
temozolomide
temsrirolimus
teniposide
thioguanine
Thioplex (R) (see thiotepa)
thiotepa
topotecan
Toposar (R) (see etoposide)
TOR (see toremifene)
toremifene
Trastuzumab
Tykerb (R) (see lapatinib)
valrubicin
Valstar (R) (see valrubicin)
 Vectibix (R) (see panitumumab)
 Velban (R) (see vinblastine)
 Velcade (R) (see bortezomib)
 VePesid (R) (see etoposide)
 Viadaza (R) (see azacitidine)
vinblastine
vincristine
vinorelbine
vorinostat
Votrient (R) (see pazopanib)
VP-16 (see etoposide)
Vumon (R) (see teniposide)
Zanosar (R) (see streptozocin)
Zeloda (R) (see capecitabine)
Zolinza (R) (see vorinostat)
Zortress (R) (see everolimus)
### Other Medications Frequently Used with Chemotherapy

| **dexamethasone** | **Note:** This corticosteroid has many uses, including treating nausea & vomiting associated with some chemotherapy drugs, and to reduce inflammation. **Do not suddenly stop this medication,** unless instructed by the healthcare provider. It may cause appetite loss, stomach upset, vomiting and/or weight loss. In general, drink at least 2-3 quarts of fluid every 24 hours. **Fluid retention, weight gain, increased appetite.** **Heartburn/nausea/vomiting:** Take this medication with food to reduce stomach upset. **Limit caffeine.** If using medications for pain control, take it on a full stomach to reduce stomach upset. **Increases blood sugar levels.** If diabetic, closely monitor blood sugar levels daily. **Sore throat** |
| Tablet, infusion into a vein | **U. S. brand names** | **Decadron®** | **Dexasone** | **Diodex** | **Hexadrol** | **Maxidex** |
| | **epoetin alfa** | This medication is used to increase red blood cell production in the treatment of fatigue and anemia. **Diarrhea:** Use prescribed medication for diarrhea, if needed & drink more fluids. **Fluid retention** **Vomiting:** Use prescribed medication for nausea to prevent on-set of nausea. If using medications for pain control, take it on a full stomach to reduce stomach upset. |
| Injection under skin, into arm, abdomen or thigh | **U.S. brand names** | **Eprex®** | **Procrit®** |
| | **filgrastim** | **Note:** This is a supportive medication is used to stimulate production of white blood cells. **Nausea** *(MILD)*: Use prescribed medications for nausea to prevent on-set of nausea. If using medications for pain control, take it on a full stomach to reduce stomach upset. |
| Injection under the skin or infusion into a vein | **Other names:** | **G-CSF** | **Granulocyte colony stimulating factor** |
| | **US. brand name** | **Neupogen®** |
| | **leucovorin** | **Note:** When given with fluorouracil (5FU), it may INCREASE the side effects of 5FU. When given in combination with methotrexate, is LESSENS the side effects of methotrexate. In general, drink at least 2-3 quarts of fluid every 24 hours. **Nausea/vomiting** *(RARE)*: Use prescribed medication for nausea to prevent on-set of nausea. If using medications for pain control, take it on a full stomach to reduce stomach upset. |
| Tablets, injection or infusion into a vein | **Other names:** | **Calcium leucovorin** | **Citrovorum factor** | **Folinic acid** | **5-formyl tetrahydrofolate** |

**References:**
Pain Medications

The World Health Organization's 3-step plan for managing pain is based on the pain severity. The individual's response is used to determine the effective dose for aspirin, acetaminophen, and other non-steroidal anti-inflammatory drugs (NSAIDs). When pain relief is not achieved with the maximum dosage of one NSAID, other medications within the same step is trialed before stopping NSAIDs therapy.

NOTE: Most individuals experiencing cancer-related pain will need a Step 2 or Step 3 medication. Step 1 medications may be skipped if the initial pain is rated "moderate" to "severe".¹

### STEP 1. Analgesics (For MILD pain)

<table>
<thead>
<tr>
<th>GENERIC/BRAND NAME</th>
<th>INDICATION/ DOSAGE/FORM</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>acetaminophen (APAP)</td>
<td>Analgesic: (Used with headaches, muscle aches, menstrual periods, colds &amp; sore throats, toothaches, backaches, osteoarthritis, vaccination reactions &amp; fever)²,³²</td>
<td>Less effective than aspirin for soft tissue pain.¹,⁵ For &quot;moderate&quot; to &quot;severe&quot; pain when used with an adjunctive opioid ⁵ Nutrition-related side effects: None (small doses) MAJOR Interactions: Alcoholic beverages, chaparral, comfrey ²,³¹,³² Special Alerts: -Urinary glucose results with test strips (Chemstrip), falsely lowered ²,³¹ and some glucometers ⁴¹; urinary 5-HIAA, false positive ²,⁴² -Phenylketonuria (PKU): Chewable tablet may contain aspartame, a source of phenylalanine -Hepatotoxicity risk: &gt; maximum daily dose; chronic alcoholics &gt; 2000 mg/day or 2 grams /day ³¹</td>
</tr>
<tr>
<td>Acephen³⁰</td>
<td>-Tablet</td>
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</tr>
<tr>
<td>Actamin⁰</td>
<td>-Tablet, chewable</td>
<td></td>
</tr>
<tr>
<td>Backaid® Max Str Back Relief</td>
<td>-Tablet, disintegrating</td>
<td></td>
</tr>
<tr>
<td>Excedrin®</td>
<td>-Effervescent granules</td>
<td></td>
</tr>
<tr>
<td>Feverall⁰</td>
<td>-Oral liquid (elixir)</td>
<td></td>
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<tr>
<td>GenapapTM</td>
<td>-Oral drops</td>
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<tr>
<td>Genortra Caplets with acetaminophen</td>
<td>-Suspension</td>
<td></td>
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<tr>
<td>Genoric</td>
<td>-Gel syrup</td>
<td></td>
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<tr>
<td>Inholtra®</td>
<td>-Suppository (rectal)</td>
<td></td>
</tr>
<tr>
<td>Mapap®</td>
<td>Adults: q 4- 6 hrs or q 6- 8 hrs ² (oral or rectal)</td>
<td></td>
</tr>
<tr>
<td>Percogesic⁰</td>
<td>*Maximum: &lt; 1 gram/dose or 1000 mg/dose or 4 grams/day or 4000 mg/day ²</td>
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<tr>
<td>Q-Pa⁰</td>
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<tr>
<td>Tactinal®</td>
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<tr>
<td>Tempra® ¹</td>
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<tr>
<td>Tyleiño⁰</td>
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<tr>
<td>Tylenol® Extra Strength</td>
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<td>Uniserts®</td>
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<tr>
<td>Vitapap®</td>
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<tr>
<td>Walgreens® Arthritis Pain Relief</td>
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</tbody>
</table>

¹ The U.S. Food & Drug Administration is currently investigating the maximum dose. ³⁹
| Acetaminophen (Prescription) | Analgesic formulation  
(Used with mild to moderate pain & fever) | For "moderate" to "severe" pain when used with an adjunctive opioid  
Nutrition-related side effects: Constipation, nausea, vomiting  
MAJOR Interactions: Alcoholic beverages, chaparral, comfrey  
Special Alerts: - Urinary glucose results with test strips (Chemstrips), falsely lowered  
Urinary 5-HIAA, false positive  

| Acetaminophen, butalbital + caffeine (Prescription) | Combination formulation  
(Used with tension headaches) | Nutrition-related side effects: Anorexia, nausea, stomach pain  
To reduce stomach upset: Take with 8 oz milk or after a meal. Avoid caffeine.  
MAJOR Interactions: Alcoholic beverages, chaparral, comfrey  
Special Alerts: - Urinary glucose results with test strips (Chemstrips), falsely lowered  
Urinary 5-HIAA, false positive  

| Acetaminophen, isometheptene + dichlorphenamide (Prescription) | Combination formulation  
(Used with severe tension, or migraine headaches) | Nutrition-related side effects: None  
MAJOR Interactions: Alcoholic beverages, chaparral, comfrey  
Special Alerts: - Urinary glucose results with test strips (Chemstrips), falsely lowered  
Urinary 5-HIAA, false positive  

(*The U.S. Food & Drug Administration is currently investigating the maximum dose.*)
| aspirin | Non-steroidal anti-inflammatory formulations  
(Used with pain, inflammation, neuropathic & arthropathic pain) | For "moderate" to "severe" pain when used with an adjunctive opioid.  
Nutrition-related side effects: Dyspepsia, nausea, vomiting  
To reduce stomach upset: Take with 8 oz of milk of after a meal.  
MAJOR Interactions: Alcoholic beverages, danshen, dong quai, evening primrose oil, garlic, ginger, ginkgo, ginseng, horse chestnut, policosanol, willow bark.  
Special Alerts:  
- 5-HIAA  
- Serum amylase  
- PTT  
- VMA  
- Diabetes, closely monitor.  
- Hepatotoxicity  
- Tartrazine sensitivity  
- Reyes syndrome (children)  
Do not use product with a strong, vinegar odor. |
|---|---|---|
| capsicain | Local topical analgesic formulations  
(Used with postherpetic neuralgia) | Qutenza® patch is applied by healthcare professional for 60 minutes.  
Repeated q 3 months or PRN, but not < 3 months  
Nutrition-related side effects: Nausea, vomiting, weight changes. |
| celecoxib | Non-steroidal anti-inflammatory formulation  
(Used with osteoarthritis, rheumatoid arthritis, ankylosing spondylitis & painful menstrual periods) | Nutrition-related side effects: constipation, diarrhea, dysgeusia, dyspepsia, flatulence, nausea, pharyngitis, stomach pain.  
To prevent constipation: Drink 6 - 8 full glasses of water/day.  
Increase dietary fiber.  
To reduce stomach upset: Take with food or 8 oz milk.  
Limit caffeine.  
MAJOR Interaction: St. John's wort  
Special Alerts: Sulfa sensitivity |
<table>
<thead>
<tr>
<th>Product</th>
<th>Formulations</th>
<th>Side Effects</th>
<th>Medication Notes</th>
</tr>
</thead>
</table>
| **Choline & magnesium trisalicylate**<sup>5</sup>  
(choline & magnesium trisalicylate  
Choline Magnesium Trisalicylate<sup>6</sup>  
Trilisate<sup>8</sup>  
Tricosal<sup>8</sup>) | Non-steroidal anti-inflammatory formulations  
(Used with arthritis & shoulder pain)<sup>32</sup>  
-Tablet, q 6–8 hrs  
-Oral solution, q 6–8 hrs | Nutrition-related side effects: constipation, diarrhea, dyspepsia, nausea, stomach pain, vomiting  
To reduce stomach upset: Take with a meal or with milk.  
To prevent constipation: Drink 6 - 8 full glasses of water/day.  
Increase dietary fiber.<sup>2</sup>  
MAJOR Interactions: Alcoholic beverages, chaparral, comfrey<sup>31</sup>  
Special Alerts: Diabetes, closely monitor<sup>32</sup> | |
| **Diflunisal**<sup>5</sup>  
(Dolobid<sup>8</sup>) | Non-steroidal anti-inflammatory formulation  
(Used with osteoarthritis)<sup>32</sup>  
-Tablets: q 8-12 hrs<sup>8</sup> | Nutrition-related side effects: constipation, diarrhea, flatulence, nausea, vomiting<sup>32</sup>  
To prevent constipation: Drink 6 - 8 full glasses of water/day.  
Increase dietary fiber.<sup>2</sup>  
To reduce stomach upset: Take with a milk, or food.<sup>32</sup>  
MAJOR Interaction: St John's wort.<sup>31</sup> | |
| **Etodolac**<sup>5</sup>  
(Lodine<sup>6</sup>  
Lodine XL<sup>6</sup>) | Non-steroidal anti-inflammatory formulation  
(Used with osteoarthritis and rheumatoid arthritis)  
-Tablets, q 6–8 hrs  
-Tablet, extended-release, q 6–8 hrs | Nutrition-related side effects: constipation, diarrhea, flatulence, nausea, pharyngitis, vomiting<sup>32</sup>  
To prevent constipation: Drink 6 - 8 full glasses of water/day.  
Increase dietary fiber.<sup>2</sup>  
To reduce stomach upset: Take with a meal or with milk.  
Limit caffeine.<sup>3,41</sup>  
MAJOR Interaction: St John's wort.<sup>31</sup> | |
| **Fenoprofen calcium**<sup>5</sup>  
(Nalfon<sup>6</sup>  
Nalfon<sup>6</sup> 200) | Non-steroidal anti-inflammatory formulation  
(Used with osteoarthritis, rheumatoid arthritis, gouty arthritis & ankylosing spondylitis)<sup>32</sup>  
-Capsule, 4-6 hrs  
Maximum: 3 grams/day or 3000 mg/day | Nutrition-related side effects: bloating, constipation, dyspepsia, stomach pain, rapid weight gain<sup>2</sup>  
To prevent constipation: Drink 6 - 8 full glasses of water/day.  
Increase dietary fiber.<sup>2</sup>  
To reduce stomach upset: Take with meals or with milk.<sup>32</sup>  
Interactions: Beta glucan, ginkgo<sup>2</sup>  
Special Alerts: Diabetes, closely monitor<sup>2</sup> | |
| **ibuprofen**<sup>5</sup>  
(Non-prescription) |
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Advil®</td>
</tr>
<tr>
<td>Advil® Liqui-Gels</td>
</tr>
<tr>
<td>Genpril®</td>
</tr>
<tr>
<td>Ibu®</td>
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<tr>
<td>Midol®</td>
</tr>
<tr>
<td>Motrin®</td>
</tr>
<tr>
<td>Nuprin®</td>
</tr>
</tbody>
</table>
| **ibuprofen**<sup>5</sup>  
(Prescription) |
| Caldolor™ |
| **ketoprofen**<sup>5</sup>  
(Prescription) |
| Acton® |
| Orudis® |
| Orudis®KT |
| Oruvail® |
| **ketorolac**<sup>5</sup>  
(Prescription) |
| Toradol® |

### ibuprofen

- **Non-steroidal anti-inflammatory inflammation**
  - (Used with fever pain or inflammation from headache, toothache, back pain, arthritis, menstrual cramps, or minor injury)<sup>2</sup>
  - Tablets
  - Chewable tablet
  - Oral liquid suspension
  - 6 mo - 11 yrs: q 6-8 hrs<sup>10</sup>
  - Adults: q 4-6 hrs

**Maximum Daily Dose**
- 6 mo - 11 yrs: 40 mg/kg/day
- Adults: 800 mg/dose or 3200 mg/day

### ibuprofen

- **Non-steroidal anti-inflammatory formulation**
  - (Used with mild to moderate pain, and available for hospital use only)<sup>2</sup>
  - Solution, parenteral: I.V. or I.M., infusion time not <30 minutes administered in hospital setting
  - Adults: q 6 hrs

**Maximum**
- q 6-8 hrs
- q 6-8 hrs

### ketoprofen

- **Non-steroidal anti-inflammatory formulation**
  - (Used with arthritis: gouty, juvenile, osteo & rheumatoid types; menstrual pain, ankylosing spondylitis, Reiter's syndrome, bursitis, tendinitis)
  - Capsule, immediate-release q 6-8 hrs
  - Capsule, extended-release q 6-8 hrs
  - Maximum: 75 mg/day

**Stronger, longer lasting & easier on the stomach compared to aspirin.<sup>5</sup>**

**Nutrition-related side effects:** anorexia, constipation, diarrhea, dyspepsia, flatulence, stomatitis<sup>2,32</sup>

**To prevent constipation:** Drink 6 - 8 full glasses of water/day. Increase dietary fiber.<sup>2</sup>

**MAJOR Interaction:** Beta glucans, ginkgo, St John's wort<sup>2,31</sup>

**Special Alerts:** Diabetic oral meds, closely monitor<sup>2</sup>
<table>
<thead>
<tr>
<th>medication</th>
<th>formulation</th>
<th>side effects</th>
<th>special alerts</th>
</tr>
</thead>
</table>
| magnesium salicylate (Non-prescription) | Non-steroidal anti-inflammatory formulation (Used with arthritis) -Tablets, q 4 hrs | Nutrition-related side effects: dyspepsia, nausea, stomach pain, xerostomia  
To reduce stomach upset: Take with 8 oz milk or after a meal  
Do not recline for 30 minutes  
MAJOR Interactions: alcoholic beverages, danshen, dong quai, evening primrose oil, ginkgo, policosanol, willow bark  
Special Alerts: Diabetic, oral meds, closely monitor | |
| meclofenamate sodium (Prescription) | Non-steroidal anti-inflammatory formulation (Used with osteoarthritis, rheumatoid arthritis, menstrual pain, heavy menstrual flow, ankylosing spondylitis & psoriatic arthritis) -Capsules, 3 - 4 doses/day Maximum: 400 milligrams (mg)/day | Nutrition-related side effects: constipation, diarrhea, dyspepsia, flatulence, stomatitis, stomach pain  
To reduce stomach upset: Take with a meal or with milk  
Moderate Interactions: Alcoholic beverages | |
| mefenamic acid (Prescription) | Non-steroidal anti-inflammatory formulation (Used with menstrual pain) -Capsules, q 6 hrs | Nutrition-related side effects: bloating, constipation, diarrhea, flatulence  
To prevent constipation: Drink 6 - 8 full glasses of water/day. Increase dietary fiber.  
To reduce stomach upset: Take with a meal or with milk.  
MAJOR Interaction: St John's wort, thuja | |
| meloxicam (Non-prescription) | Non-steroidal anti-inflammatory formulations (Used with osteoarthritis, rheumatoid arthritis, juvenile rheumatoid arthritis & ankylosing spondylitis ) -Tablets -Oral suspension Maximum: 15 mg/day | Nutrition-related side effects: constipation, diarrhea, dyspepsia, flatulence, nausea, pharyngitis  
To prevent constipation: Drink 6 - 8 full glasses of water/day. Increase dietary fiber.  
To reduce stomach upset: Take with a meal or with milk. Avoid caffeine.  
MAJOR Interaction: St John's wort | |
| naproxen  
  *(Non-prescription)*  | Aleve®  
  Comfort Pac with Naproxen®  
  Leader Naproxen Sodium®  
  Midol® Extended Relief  
  Naprelan®  | Non-steroidal anti-inflammatory formulation  
  *(Used with fever, headaches, muscle aches, arthritis, gout, menstrual periods, common cold, toothache, backache & Paget's disease)*  
  -Tablet: q 8-12 hrs  
  -Gelatin-coated tablet: q 8-12 hrs  
  Kids & geriatrics: q 8-12 hrs  
  Adults: q 8 hrs  
  Dosage timing varies based on condition.  
  For "moderate" to "severe" pain when used with an adjunctive opioid  
  Nutrition-related side effects: constipation, diarrhea, dyspepsia, flatulence, nausea, stomach pain, stomatitis, vomiting, xerostomia  
  To prevent constipation: Drink 6 - 8 full glasses of water/day.  
  To reduce stomach upset: Take with a meal or with milk.  
  Limit caffeine.  
  MAJOR Interactions: danshen, dong quai, evening primrose oil, ginkgo, policosanol, St John's wort, willow bark.  
  Special Alerts: Diabetes, closely monitor  |}

| naproxen  
  *(Prescription)*  | Anaprox®  
  Anaprox® DS  
  EC-Naprosyn®  
  Naprosyn®  
  Naprosyn® Suspension  | Non-steroidal anti-inflammatory formulation  
  *(Used with fever, headaches, muscle aches, arthritis, gout, menstrual periods, common cold, toothache, backache & Paget's disease)*  
  -Tablet  
  -Tablet, enteric coated, delayed-release  
  -Tablet, extended-release  
  -Suspension (liquid)  
  Dosage timing varies based on condition.  
  For "moderate" to "severe" pain when used with an adjunctive opioid  
  Nutrition-related side effects: constipation, diarrhea, dyspepsia, flatulence, nausea, stomach pain, stomatitis, vomiting, xerostomia  
  To prevent constipation: Drink 6 - 8 full glasses of water/day.  
  To reduce stomach upset: Take with a meal or with milk.  
  Limit caffeine.  
  MAJOR Interactions: danshen, dong quai, evening primrose oil, ginkgo, policosanol, St John's wort, willow bark.  
  Special Alerts: Diabetes, closely monitor |
**STEP 2. Opioids (Moderate-to-severe pain) Prescription-only**

The opioids (also called narcotics) is the major supportive therapy for cancer pain management. They are often used concurrently with aspirin, ibuprofen and acetaminophen.

Opioids cause constipation due to its action on slowing gastric and intestinal muscle contractions and movement causing hard stools. Constipation will resolve only if it is treated. Prevention of constipation is recommended.

Constipation is a common problem, occurring in 40%- 95% of patients treated with opioids, and can occur even with one dose of morphine.

If constipation is already present (no BM > 3 days) lactulose may be used to clean out the bowel. If experiencing nausea/vomiting, cleansing enemas may be required.

<table>
<thead>
<tr>
<th>GENERIC/BRAND NAME</th>
<th>INDICATION/ DOSAGE/FORM</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>buprenorphine</td>
<td>Medical opioid formulations (Used for moderate to severe pain)</td>
<td>Nutrition-related side effects: constipation, dyspepsia, nausea, stomach pain, vomiting, xerostomia.</td>
</tr>
</tbody>
</table>
| buprenorphine + naloxone (Suboxone<sup>®</sup>) | Mixed opioid formulation<sup>5</sup>  
(Used with opioid dependency)  
-Tablets, sublingual: one a day  
-Film, sublingual, one a day | Added to pre-existing opioid regimen; less euphoric side effects, easier to discontinue use<sup>2</sup>  
Nutrition-related side effects: constipation, diarrhea, nausea, stomach pain, vomiting<sup>32</sup>  
Prevent constipation<sup>2,5,39,43</sup>  
-Stimulant laxative +/- stool softener (e.g., senna +/- docusate, 2 Tabs q AM, maximum 8-12 tablets/day, (Senokot-S<sup>®</sup>, usually 2-4 tablets 2 x/day)<sup>43</sup>  
-Drink 8-10 glasses of fluids daily  
-If able, eat foods high in fiber content, such as raw fresh produce, whole grain products.  
-If able, add 1-2 Tablespoons of bran to food & drink 1 glass of fluids at same meal.  
-If able, daily exercise, such as light walking.  
-Notify healthcare professional if no BM > 2 days.  
-Increase dose of laxative when opioid is increased<sup>43</sup>  
Nausea or vomiting: Assess bowel regimen.<sup>52</sup>  
MAJOR Interactions: alcoholic beverages, butanediol, gamma butyrolactone, gamma-hydroxybutyrate, gotu kola, grapefruit*, hydrazine sulfate, iron products<sup>32</sup>, Jamaican dogwood, kava, l-tryptophan, marijuana, marsh tea, melatonin, motherwort, niacin (nicotinic acid)<sup>32</sup>, St John's wort, sweet bay, thuja, valerian, wild lettuce, yohimbine<sup>2,3,31,32</sup>.  
*Grapefruit Interaction: Avoid grapefruit juice, grapefruit segments, grapefruit extract, seville oranges (other names: sour orange, Citrus aurantium, L, bitter, bigarade used to make marmalade), pummelos (pomelos), and tangelos<sup>27,28,29</sup>  
Nutrition-related withdrawal symptoms: abdominal cramps, diarrhea, nausea<sup>2,5</sup> |
| butorphanol (Stadol<sup>®</sup>, Stadol<sup>®</sup> NS<sup>®</sup>) | Medical opioid formulations  
(Used with migraine headaches, moderate to severe pain)<sup>34</sup>  
-Solution, I.V. or I.M. q 3-4 hrs  
-Metered Nasal Spray, 2-dose sequence q 3-4 hrs | Usually not for chronic pain<sup>6</sup>; alters how pain is perceived<sup>34</sup>  
Nutrition-related side effects: (Nasal spray)- nausea, sore throat, vomiting<sup>34</sup>  
(Injection)- anorexia, constipation, dysgeusia, nausea, stomach pain, vomiting, xerostomia<sup>32</sup>  
Prevent constipation<sup>2,5,39,43</sup>  
-Stimulant laxative +/- stool softener (e.g., senna +/- docusate, 2 Tabs q AM, maximum 8-12 tablets/day, (Senokot-S<sup>®</sup>, usually 2-4 tablets 2 x/day)<sup>43</sup>  
-Drink 8-10 glasses of fluids daily  
-If able, eat foods high in fiber content, such as raw fresh produce, whole grain products.  
-If able, add 1-2 Tablespoons of bran to food & drink 1 glass of fluids at same meal.  
-If able, daily exercise, such as light walking.  
-Notify healthcare professional if no BM > 2 days.  
-Increase dose of laxative when opioid is increased<sup>43</sup>  
Nausea or vomiting: Assess bowel regimen.<sup>52</sup> |
### MAJOR Interactions

- Alcoholic beverages
- Butanediol
- Gamma butyrolactone
- Gamma-hydroxybutyrate
- Gotu kola
- Grapefruit*
- Hydrazine sulfate
- Jamaican dogwood
- Kava
- L-tryptophan
- Marijuana
- Marsh tea
- Melatonin
- Motherwort
- St John's wort
- Sweet bay
- Thuja
- Valerian
- Wild lettuce

*Grapefruit Interaction: Avoid grapefruit juice, grapefruit segments, grapefruit extract, seville oranges (other names: sour orange, Citrus aurantium, L. bitter, bigarade used to make marmalade), pummelos (pomelos), and tangelos

### Nutrition-related withdrawal symptoms

- Diarrhea

### Medical Opioid Formulations

**Codeine**
- **(Used to help relieve symptoms, usually combined with other medications, such as aspirin, acetaminophen, and cold medicines to relieve mild to moderate pain)**
  - Tablet
  - Capsule
  - Liquid solution

**Nutrition-related side effects:**
- Constipation
- Nausea
- Stomach pain
- Vomiting

**Prevent constipation**
- Stimulant laxative +/- stool softener (e.g., senna +/- docusate, 2 Tabs q AM, maximum 8-12 tablets/day, (Senokot-S®, usually 2-4 tablets 2 x/day)
- Drink 8-10 glasses of fluids daily
- If able, eat foods high in fiber content, such as raw fresh produce, whole grain products.
- If able, add 1-2 Tablespoons of bran to food & drink 1 glass of fluids at same meal.
- If able, daily exercise, such as light walking.
- Notify healthcare professional if no BM > 2 days.
- Increase dose of laxative when opioid is increased

**MAJOR Interactions:**
- Alcoholic beverages
- Butanediol
- Gamma butyrolactone
- Gamma-hydroxybutyrate
- Gotu kola
- Hydrazine sulfate
- Jamaican dogwood
- Kava
- L-tryptophan
- Marijuana
- Marsh tea
- Melatonin
- Motherwort
- St John's wort
- Sweet bay
- Thuja
- Valerian
- Wild lettuce

### Codeine with Acetaminophen

**APAP w/Codeine**
- Pyregesic-C
- Tylenol® with Codeine #2
- Tylenol® with Codeine #3
- Tylenol® with Codeine #4
- Vopac®

**Medical Opioid Formulations**
- **(Used with relief of moderate to severe pain)**
  - Tablets q 4 hrs
  - Capsule
  - Oral solution (elixir)
  - Solution
  - Suspension q 4 hrs
  - Adults: q 4 hrs
  - Maximum Daily Dose (acetaminophen): Not > 4 grams/24 hrs or 4,000 mg/24 hrs

**Nutrition-related side effects:**
- Anorexia
- Constipation
- Nausea
- Stomach pain
- Vomiting
- Xerostomia

**Oral suspension used with mild to moderate pain; tablets used for mild to moderately severe pain.**

**Prevent constipation**
- Stimulant laxative +/- stool softener (e.g., senna +/- docusate, 2 Tabs q AM, maximum 8-12 tablets/day, (Senokot-S®, usually 2-4 tablets 2 x/day)
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**Nutrition-related side effects:**
- Anorexia
- Constipation
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- Stomach pain
- Vomiting
- Xerostomia

*The U.S. Food & Drug Admin.*
<table>
<thead>
<tr>
<th>Medicine</th>
<th>Description</th>
<th>Side Effects and Interactions</th>
</tr>
</thead>
</table>
| **stratin is currently investigating the maximum dose.** 39 | **To reduce stomach upset:** Take with a meal or with milk, although it will decrease effectiveness. 42  
**Nausea or vomiting:** Assess bowel regimen. 52  
**MAJOR Interactions:** alcoholic beverages, butanediol, cabbage, 2,44, chaparral, comfrey, gamma butyrolactone, gamma-hydroxybutyrate, gotu kola, grapefruit*, hydrazine sulfate, Jamaican dogwood, kava, l-tryptophan, marijuana, marsh tea, melatonin, motherwort, St John’s wort, sweet bay, thujia, valerian, wild lettuce. 2,31  
*Grapefruit Interaction:** Avoid grapefruit juice, grapefruit segments, grapefruit extract, seville oranges (other names: sour orange, Citrus aurantium, L, bitter, bigarade used to make marmalade), pummelos (pomelos), and tangelos 27,28,29  
**Special Alerts:** Urinary glucose results with test strips (Chemstrips), falsely lowered 2,3,41; urinary 5-HIAA, false positive 42; serum amylase, increased 42  
**Nutrition-related withdrawal symptoms:** abdominal or stomach cramps, nausea 44 | **codeine with aspirin** 14  
**Empirin with Codeine** 2 | **Mixed opioid formulations**  
(Under with mild, moderate, and moderate to severe pain) 12  
-Tablets  
-Tablet, Extended Release  
**Adults:** q 4 hrs 42  
**Maximum:** not >360 mg/ day  
**Nutrition-related withdrawal symptoms:** abdominal or stomach cramps, nausea 2  
**Associated with higher levels of nausea/vomiting compared to other opioids** 5  
**Nutrition-related side effects:** constipation, nausea, stomach pain, vomiting  
**Prevent constipation:**  
-Stimulant laxative +/- stool softener (e.g., senna +/- docusate, 2 Tabs q AM, maximum 8-12 tablets/day, (Senokot-S®, usually 2-4 tablets 2 x/day) 43  
-Drink 8-10 glasses of fluids daily  
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-Notify healthcare professional if no BM > 2 days.  
-Increase dose of laxative when opioid is increased 43  
**Nausea or vomiting:** Assess bowel regimen. 52  
**To reduce stomach upset:** Take with a meal or with milk.  
**MAJOR Interactions:** alcoholic beverages, butanediol, danshen, dong quai, evening primrose oil, gamma butyrolactone, gamma-hydroxybutyrate, ginkgo, gotu kola, grapefruit*, hydrazine sulfate, Jamaican dogwood, kava, l-tryptophan, marijuana, marsh tea, melatonin, motherwort, policosanol, St John’s wort, sweet bay, thujia, valerian, wild lettuce, willow bark. 2,31  
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**Special Alerts:** Diabetic meds (oral & insulin), increased risk for hypoglycemia, closely monitor 42; serum amylase levels, increased 42  
**Nutrition-related withdrawal symptoms:** abdominal or stomach cramps, nausea 2 |
<table>
<thead>
<tr>
<th>Drug</th>
<th>Formulation</th>
<th>Maximum Daily Dose</th>
<th>Nutrition-related side effects:</th>
<th>Prevent constipation</th>
<th>MAJOR Interactions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>codeine, aspirin + butalbital</td>
<td>Mixed opioid formulation</td>
<td>Capsule q 4 hrs</td>
<td>dyspepsia, flatulence, indigestion, nausea, stomach pain</td>
<td>2</td>
<td>Alcoholic beverages, butanediol, Country mallow, danshen, dong quai, ephedra, evening primrose oil, gamma butyrolactone, gamma-hydroxybutyrate, ginkgo, gotu kola, grapefruit*, hydrazine sulfate, Indian snakeroot, Jamaican dogwood, kava, L-tryptophan, marijuana, marsh tea, melatonin, motherwort, peyote, policosanol, St John's wort, sweet bay, thuja, tiratricol, valerian, wild lettuce, willow bark.</td>
</tr>
<tr>
<td>Fiorinal® with Codeine</td>
<td>(Used with tension headaches)</td>
<td>Not &gt; 6 capsules/day</td>
<td>To reduce stomach upset: Take with a meal or with milk.</td>
<td>2</td>
<td>Avoid grapefruit juice, grapefruit segments, grapefruit extract, seville oranges (other names: sour orange, Citrus aurantium, L, bitter, bigarade used to make marmalade), pummelos (pomelos), and tangelos.</td>
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<tr>
<td>Fiorinal® with Codeine C-III</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Special Alerts: Diabetic meds (oral &amp; insulin), increased risk for hypoglycemia; closely monitor.</td>
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<tr>
<td>dihydrocodeine bitartrate,</td>
<td>Mixed opioid formulation</td>
<td>Capsule q 4 hrs</td>
<td>constipation, dyspepsia, nausea, vomiting</td>
<td>2</td>
<td>Alcoholic beverages, butanediol, Country mallow, danshen, dong quai, ephedra, evening primrose oil, gamma butyrolactone, gamma-hydroxybutyrate, ginkgo, gotu kola, grapefruit*, hydrazine sulfate, Indian snakeroot, Jamaican dogwood, kava, L-tryptophan, marijuana, marsh tea, melatonin, motherwort, peyote, policosanol, St John's wort, sweet bay, thuja, tiratricol, valerian, wild lettuce, willow bark.</td>
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<tr>
<td>aspirin, caffeine</td>
<td>(Used with moderate to</td>
<td></td>
<td>To reduce stomach upset: Take with a meal or with milk.</td>
<td>2</td>
<td>Avoid grapefruit juice, grapefruit segments, grapefruit extract, seville oranges (other names: sour orange, Citrus aurantium, L, bitter, bigarade used to make marmalade), pummelos (pomelos), and tangelos.</td>
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<tr>
<td>Synalgos-DC®</td>
<td>moderately severe pain; 2</td>
<td></td>
<td></td>
<td></td>
<td>Special Alerts: Diabetic meds, such as insulin, meglitinide, nateglinide (Starlix®),</td>
</tr>
</tbody>
</table>
| Hydrocodone + Acetaminophen | Mixed Opioid Formulations  
(Used with moderate to severe pain) | Repaglinide (Prandin®), glyburide (DiaBeta®, Glynase PresTab®, Micronase®), and tolbutamide (Orinase®, Toi-Tab®), increased risk of side effects  
Nutrition-related withdrawal symptoms: abdominal or stomach cramps, nausea 2

**Hydrocodone + Acetaminophen**  
Anexia®  
Axocet®  
Co-gesic®  
Dolorex Forte®  
Hycet®  
Hydrocet®  
Liquicet®  
Lorcet®  
Lortab®  
Norco®  
Maxidone®  
Polygesic®  
Stagesic®  
Vicodin®  
Vicoden® ES  
Vicoden® HP  
Xodol®  
Zamicet®  
Zydone®  

**Nutrition-related side effects:** constipation, nausea, vomiting.  
**Prevent constipation:** 2,39,43  
- Stimulant laxative +/- stool softener (e.g., senna +/- docusate, 2 Tabs q AM, maximum 8-12 tablets/day, (Senokot-S®, usually 2-4 tablets 2 x/day)  
- Drink 8-10 glasses of fluids daily  
- If able, eat foods high in fiber content, such as raw fresh produce, whole grain products  
- If able, add 1-2 Tablespoons of bran to food & drink 1 glass of fluids at same meal.  
- Daily exercise, if possible, such as light walking.  
- Notify healthcare professional if no BM > 2 days.  
- Increase dose of laxative when opioid is increased.  
**Nausea or vomiting:** Assess bowel regimen.  
**To reduce stomach upset:** Take with a meal or with milk.  
**MAJOR Interactions:** alcoholic beverages, butanediol, cabbage, chaparral, comfrey, gamma butyrolactone, gamma-hydroxybutyrate, gotu kola, grapefruit, hydrazine sulfate, Jamaican dogwood, kava, l-tryptophan, marijuana, marsh tea, melatonin, motherwort, St John’s wort, sweet bay, thujah, valerian, wild lettuce.  
**Grapefruit Interaction:** Avoid grapefruit juice, grapefruit segments, grapefruit extract, seville oranges (other names: sour orange, Citrus aurantium, L, bitter, bigarade used to make marmalade), pummelos (pomelos), and tangelos  
**Special Alerts:** Urinary 5-HIAA, false positive results  
**Nutrition-related withdrawal symptoms:** abdominal or stomach cramps, nausea

| Hydrocodone with Ibuprofen | Mixed Opioid Formulation  
(Used short-term to relieve severe pain) | Anorexia, constipation, diarrhea, dyspepsia, flatulence, nausea, vomiting, xerostomia  
**Nutrition-related side effects:**  
**Prevent constipation:** 2,39,43  
- Stimulant laxative +/- stool softener (e.g., senna +/- docusate, 2 Tabs q AM, maximum 8-12 tablets/day, (Senokot-S®, usually 2-4 tablets 2 x/day)  
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**Nausea or vomiting:** Assess bowel regimen.  
**To reduce stomach upset:** Take with a meal or with milk.

**MAJOR Interactions:** alcoholic beverages, beta glucans, butanediol, danshen, dong quai, ephedra.  
**Grapefruit Interaction:** Avoid grapefruit juice, grapefruit segments, grapefruit extract, seville oranges (other names: sour orange, Citrus aurantium, L, bitter, bigarade used to make marmalade), pummelos (pomelos), and tangelos  
**Special Alerts:** Urinary 5-HIAA, false positive results
| quai, evening primrose oil, gamma butyrolactone, gamma-hydroxy-butyrate, ginkgo, gotu kola, grapefruit*, hydrazine sulfate, Jamaican dogwood, kava, l-tryptophan, marijuana, marsh tea, melatonin, motherwort, policosanol, St John’s wort, sweet bay, thuja, valerian, wild lettuce, willow bark. | quai, evening primrose oil, gamma butyrolactone, gamma-hydroxy-butyrate, ginkgo, gotu kola, grapefruit*, hydrazine sulfate, Jamaican dogwood, kava, l-tryptophan, marijuana, marsh tea, melatonin, motherwort, policosanol, St John’s wort, sweet bay, thuja, valerian, wild lettuce, willow bark. 2,31

*Grapefruit Interaction: Avoid grapefruit juice, grapefruit segments, grapefruit extract, seville oranges (other names: sour orange, *Citrus aurantium*, L. bitter, bigarade used to make marmalade), pummelos (pomelos), and tangelos 27,28,29

Special Alerts: Diabetic meds, glipizide, glyburide, tolbutamide, increased risk of certain side effects 2

| hydromorphone Dilaudid® Dilaudid-5 Exalgo™ 16 | Medical opioid formulation
(Used to treat moderate to severe pain. The extended-release formulation is to provide around-the-clock pain relief) 2
-Tablets: q 4-6 hrs
-Oral liquid: q 3-6 hrs
-Tablets, ER, q 24 hrs
-Suppository, rectal
-Solution, I.V., Sub-Q, PCA, or epidural 2
(ER-extended-release)

Nutrition-related side effects: constipation, nausea, vomiting, xerostomia
Prevent constipation 2,5,43
-Stimulant laxative +/- stool softener (e.g., senna +/- docusate, 2 Tabs q AM, maximum 8-12 tablets/day, (Senokot-S®, usually 2-4 tablets 2 x/day) 43
-Drink 8-10 glasses of fluids daily
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-Notify healthcare professional if no BM > 2 days.
-Increase dose of laxative when opioid is increased 43
Nausea or vomiting: Assess bowel regimen. 52
To reduce stomach upset: Take with a meal or with milk.
Major Interactions: alcoholic beverages, butanediol, gamma butyrolactone, gamma-hydroxybutyrate, gotu kola, hydrazine sulfate, Jamaican dogwood, kava, l-tryptophan, marijuana, marsh tea, melatonin, motherwort, St John’s wort, sweet bay, thuja, valerian, wild lettuce. 2,31
Special Alert: Sulfite sensitivity 2

| fentanyl Actiq® Duragesic® Fentora® Onsolis® Sublimaze | Medical opioid formulations
(Used for treating cancer-related pain) 2
-Buccal soluble film: > q 2 hrs
(Limit: 4 or less doses/day)
-Lozenge (> 16 yrs old)
> 4 hrs for new episode of breakthrough pain
Maximum lozenge/day: 4 or less
-Solution, I.V., Sub-Q or injection

Strong opioid; prerequisite: similiar opioid medicine with tolerance developed 2
-Oral transmucosal (buccal) fentanyl is for treating "breakthrough" cancer pain 2,40

Actiq® is used only to treat "breakthrough pain" in patients with cancer (> 16 yrs), who are regularly using opioid pain medicines around-the-clock for constant cancer pain 2
Nutrition-related side effects: (Lozenge or tablet)-constipation, dental problems (lozenge contains sugar) nausea, stomatitis, vomiting 2
(Transdermal patch)-anorexia, constipation, diarrhea, dyspepsia, nausea, stomach pain, vomiting
Prevent constipation 2,5,39,43
-Stimulant laxative +/- stool softener (e.g., senna +/- docusate, 2 Tabs q AM, maximum 8-12 tablets/day, (Senokot-S®, usually 2-4 tablets 2 x/day) 43
### Medical Opioid Formulations

**Fentanyl**
- Transdermal patch ER, q 72 hrs
- Dose for fentanyl is individualized.

Each patient should be individually titrated to provide adequate pain relief and minimize side effects.

(ER - extended-release)

<table>
<thead>
<tr>
<th>Prevent constipation</th>
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<td>-Increase dose of laxative when opioid is increased 43</td>
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**Nausea or vomiting:** Assess bowel regimen.52

**MAJOR Interactions:** alcoholic beverages, butanediol, gamma butyrolactone, gamma-hydroxybutyrate, gotu kola, grapefruit*, hydrazine sulfate, Jamaican dogwood, kava, l-tryptophan, marijuana, marsh tea, melatonin, motherwort, St John's wort, sweet bay, thuja, valerian, wild lettuce.2,31

*Grapefruit Interaction: Avoid grapefruit juice, grapefruit segments, grapefruit extract, seville oranges (other names: sour orange, *Citrus aurantium*, L, bitter, bigarade used to make marmalade), pomelos (pomelos), and tangelos.27,28,29

**Special Alert:** Diabetic: Actiq® contains ~ 2 gms of sugar/ unit.2

### levorphanol
Levo-Dromoran®
- Medical opioid formulations
  - (Used to treat moderate to severe pain)
  - Tablets, q 6-8 hrs
  - Solution, I.M. or Sub-Q, q 6-8 hrs, I.V. q 3-6 hrs

- Strong opioid, 4 - 8 times as potent as morphine 24
- Nutrition-related side effects: constipation, nausea, stomach pain, vomiting.
- Xerostomia

**Prevent constipation** 2,5, 39,43

- Stimulant laxative +/- stool softener (e.g., senna +/- docusate, 2 Tabs q AM, maximum 8-12 tablets/day, (Senokot-S®, usually 2-4 tablets 2 x/day)43
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**Nausea or vomiting:** Assess bowel regimen.52

**To reduce stomach upset:** Take with a meal or with milk.

**MAJOR Interactions:** alcoholic beverages, butanediol, gamma butyrolactone, gamma-hydroxybutyrate, gotu kola, hydrazine sulfate, Jamaican dogwood, kava, l-tryptophan, marijuana, marsh tea, melatonin, motherwort, St John's wort, sweet bay, thuja, valerian, wild lettuce.2,31

### merperidine
Demerol®
- Medical opioid formulations
  - (Used to treat moderate to severe pain) 2
  - Tablets q 4 hrs
  - Solution, by I.V., I.M., Sub-Q, q 4

- Strong opioid, low potency, significantly less effective orally than by the parenteral route', generally not used with chronic pain 5
- Toxicity (seizures, delirium & other neuropsych changes) compared to other opioids,5

**Nutrition-related side effects:** anorexia, constipation, nausea, vomiting
<table>
<thead>
<tr>
<th>hrs or continuous I.V.</th>
<th>Prevent constipation \textsuperscript{2, 5, 39, 43}</th>
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<td>To reduce stomach upset: Take with a meal or with milk.</td>
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<tr>
<td>MAJOR Interaction: St John's wort.\textsuperscript{31}</td>
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<td>Nutrition-related withdrawal symptoms: abdominal cramps, anorexia, diarrhea, nausea, vomiting \textsuperscript{2}</td>
<td></td>
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<tr>
<th>Medical opioid formulations</th>
<th>Strong opioid, rapid onset of action \textsuperscript{2}</th>
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<tr>
<td>(Used to treat moderate to severe pain which has not responsive to nonopiate treatment; reduces withdrawal symptoms in narcotic drug &amp; heroin addiction, and part of a drug detox &amp; maintenance program) \textsuperscript{2}</td>
<td>Tablet, dispersable (Diskets) Dissolve in 4 oz of orange juice, Tang\textsuperscript{®}, citrus flavors of Kool-Aid\textsuperscript{®} or other acidic fruit beverage (not grapefruit). Allow the tablet to disperse in the liquid. Drink immediately.</td>
</tr>
<tr>
<td>- Tablets, q 3-12 hrs</td>
<td></td>
</tr>
<tr>
<td>- I.V., I.M., Sub-Q., q 3-6 hrs</td>
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</tr>
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<td>- Tablets, dispersable (Diskets)</td>
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<tr>
<td>- Oral solution (liquid)</td>
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<tr>
<td>Effective pain relief usually takes 3 - 5 days of use.\textsuperscript{3}</td>
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<td>Prevent constipation \textsuperscript{2, 5, 39, 43}</td>
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\textsuperscript{*}Grapefruit Interaction: Avoid grapefruit juice, grapefruit segments, grapefruit extract, seville oranges (other names: sour orange, Citrus aurantium L. bitter, bigarade used to make marmalade), pummelos (pomelos), and tangelos.\textsuperscript{7, 29, 30} |
| Nutrition-related withdrawal symptoms: diarrhea, nausea, vomiting \textsuperscript{2} |

| methadone |
| Diskets\textsuperscript{®} Dispersible Tablets |
| Dolophine\textsuperscript{®} |
| Methadose\textsuperscript{®} |

<table>
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<td>Morphine</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td>Astramorph PF</td>
</tr>
<tr>
<td>Avinza</td>
</tr>
<tr>
<td>Duramorph®</td>
</tr>
<tr>
<td>Embeda™</td>
</tr>
<tr>
<td>Infumorph™</td>
</tr>
<tr>
<td>Kadian®</td>
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<tr>
<td>Kadian® ER</td>
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<tr>
<td>MS-Contin®</td>
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<tr>
<td>MSIR Ora-morph SR®</td>
</tr>
<tr>
<td>Roxanol™</td>
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<tr>
<td>Roxanol-T</td>
</tr>
</tbody>
</table>

**Medical opioid formulations**

*(Used to treat moderate to severe pain, dulling the brain's pain perception center)*

- Capsule
- Capsule, delayed release
- Capsule, ER: One (1) x/day
- Capsule, ER, 24 HR
- Powder for suspension, ER
- Tablet: q 4 hrs PRN
- Tablet, ER: q 8 -12 hrs
- Solution, oral: q 4 hrs
- Solution, I.V., epidural or intrathecal
- Syrup
- Suppositories

**Nutrition-related side effects:** anorexia, constipation, diarrhea, nausea, stomach pain, vomiting, weight loss

- Prevent constipation
- Stimulant laxative +/- stool softener (e.g., senna +/- docusate, 2 Tabs q AM, maximum 8-12 tablets/day, (Senokot-S®, usually 2-4 tablets 2 x/day)
- Drink 8-10 glasses of fluids daily
- If able, eat foods high in fiber content, such as raw fresh produce, whole grain products.
- If able, add 1-2 Tablespoons of bran to food & drink 1 glass of fluids at same meal.
- Daily exercise, if possible, such as light walking.
- Notify healthcare professional if no BM > 2 days.
- Increase dose of laxative when opioid is increased

**Nausea or vomiting:** Assess bowel regimen.

**To reduce stomach upset:** Take with a meal or with milk.

**MAJOR Interactions:** alcoholic beverages, butanediol, gamma butyrolactone, gamma-hydroxybutyrate, gotu kola, hydrazine sulfate, Jamaican dogwood, kava, L-tryptophan, marijuana, marsh tea, melatonin, motherwort, policosanol, St John's wort, sweet bay, thuja, valerian, wild lettuce.

<table>
<thead>
<tr>
<th>Oxycodone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dazidox®</td>
</tr>
<tr>
<td>Endocodone®</td>
</tr>
<tr>
<td>ETH-Oxydose®</td>
</tr>
<tr>
<td>Oxycontin®</td>
</tr>
<tr>
<td>Oxyfast®</td>
</tr>
<tr>
<td>OxylIR®</td>
</tr>
<tr>
<td>Percolone®</td>
</tr>
<tr>
<td>Roxicodone®</td>
</tr>
</tbody>
</table>

**Medical opioid formulations**

*(Used used to treat moderate to severe pain)*

- Capsule q 4-6 hrs
- Tablet, regular: q 4 hrs
- Tablet, ER: q 12 hrs
- Liquid concentrate: q 4 hrs
- Solution, liquid: q 4 hrs

**(ER-Extended-release)**

**Concentrate solution** Mix with at least 1 oz (30 mL) of juice or other liquid, or with applesauce or pudding

**Nutrition-related side effects:** constipation, nausea, vomiting, xerostomia

- Prevent constipation
- Stimulant laxative +/- stool softener (e.g., senna +/- docusate, 2 Tabs q AM, maximum 8-12 tablets/day, (Senokot-S®, usually 2-4 tablets 2 x/day)
- Drink 8-10 glasses of fluids daily
- If able, eat foods high in fiber content, such as raw fresh produce, whole grain products.
- If able, add 1-2 Tablespoons of bran to food & drink 1 glass of fluids at same meal.
- Daily exercise, if possible, such as light walking.
- Notify healthcare professional if no BM > 2 days.
- Increase dose of laxative when opioid is increased

**Nausea or vomiting:** Assess bowel regimen.

**To reduce stomach upset:** Take with a meal or with milk.

**MAJOR Interactions:** alcoholic beverages, butanediol, gamma butyrolactone, gamma-hydroxybutyrate, gotu kola, hydrazine sulfate, Jamaican dogwood, kava, L-tryptophan, marijuana, marsh tea, melatonin, motherwort, policosanol, St John's wort, sweet bay, thuja, valerian, wild lettuce.

**Special Alert:** Limit fat content of meals with 160 mg tablets

**Nutrition-related withdrawal symptoms:** anorexia, cramps, diarrhea, nausea, vomiting
<table>
<thead>
<tr>
<th>Mixed opioid formulations</th>
<th>Strong opioid</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(Used to relieve moderate to severe pain)</strong>&lt;sup&gt;2&lt;/sup&gt;</td>
<td><strong>Nutrition-related side effects:</strong> constipation, nausea, vomiting</td>
</tr>
<tr>
<td>- Tablets</td>
<td><strong>Prevent constipation</strong>&lt;sup&gt;2,3,9,43&lt;/sup&gt;</td>
</tr>
<tr>
<td>- Capsule</td>
<td>- Stimulant laxative +/- stool softener (e.g., senna +/- docusate, 2 Tablets q AM, maximum 8-12 tablets/day, (Senokot-S®, usually 2-4 tablets 2 x/day)&lt;sup&gt;43&lt;/sup&gt;</td>
</tr>
<tr>
<td>- Solution, oral</td>
<td>- Drink 8-10 glasses of fluids daily</td>
</tr>
<tr>
<td>Adult/Geriatrics: q 6 hrs</td>
<td>- If able, eat foods high in fiber content, such as raw fresh produce, whole grain products.</td>
</tr>
<tr>
<td>Pediatrics: q 4-6 hrs</td>
<td>- If able, add 1-2 Tablespoons of bran to food &amp; drink 1 glass of fluids at same meal.</td>
</tr>
<tr>
<td>Severe pain: q 3-4 hrs</td>
<td>- Daily exercise, if possible, such as light walking.</td>
</tr>
<tr>
<td>oxycodone + acetaminophen&lt;sup&gt;21&lt;/sup&gt;</td>
<td>- Notify healthcare professional if no BM &gt; 2 days.</td>
</tr>
<tr>
<td>One (1) tablet may contain up to 650 mg of acetaminophen</td>
<td>- Increase dose of laxative when opioid is increased&lt;sup&gt;43&lt;/sup&gt;</td>
</tr>
<tr>
<td>Maximum Daily Dose</td>
<td>Nausea or vomiting: Assess bowel regimen.&lt;sup&gt;52&lt;/sup&gt;</td>
</tr>
<tr>
<td>(acetaminophen)</td>
<td>To reduce stomach upset: Take with a meal or with milk.</td>
</tr>
<tr>
<td>1 gm /dose (1000 mg/ dose) or 4 gm/day or (4000 mg/day)</td>
<td><strong>MAJOR Interactions:</strong> alcoholic beverages, butanediol, cabbage&lt;sup&gt;2&lt;/sup&gt;, chaparral, comfrey, gamma butyrolactone, gamma-hydroxybutyrate, gotu kola, hydrazine sulfate, Jamaican dogwood, kava, I-tryptophan, marijuana, marsh tea, melatonin, motherwort, St John's wort, sweet bay, thuja, valerian, wild lettuce.&lt;sup&gt;2,31&lt;/sup&gt;</td>
</tr>
<tr>
<td><em>The U.S. Food &amp; Drug Administration is currently investigating the maximum dose.</em>&lt;sup&gt;39&lt;/sup&gt;</td>
<td>Nutrition-related withdrawal symptoms: abdominal or stomach cramps, nausea&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mixed opioid formulation</th>
<th>Nutrition-related side effects: constipation, dyspepsia, nausea, vomiting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(Used to relieve moderate to severe pain)</strong>&lt;sup&gt;2&lt;/sup&gt;</td>
<td><strong>Prevent constipation</strong>&lt;sup&gt;2,3,9,43&lt;/sup&gt;</td>
</tr>
<tr>
<td>- Tablet q 6 hrs</td>
<td>- Stimulant laxative +/- stool softener (e.g., senna +/- docusate, 2 Tablets q AM, maximum 8-12 tablets/day, (Senokot-S®, usually 2-4 tablets 2 x/day)&lt;sup&gt;43&lt;/sup&gt;</td>
</tr>
<tr>
<td>Maximum Aspirin Dose:</td>
<td>- Drink 8-10 glasses of fluids daily</td>
</tr>
<tr>
<td>not &gt; 4 grams or 12 tablets/day</td>
<td>- If able, eat foods high in fiber content, such as raw fresh produce, whole grain products.</td>
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<tr>
<td></td>
<td>- If able, add 1-2 Tablespoons of bran to food &amp; drink 1 glass of fluids at same meal.</td>
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<tr>
<td></td>
<td>- Daily exercise, if possible, such as light walking.</td>
</tr>
<tr>
<td></td>
<td>- Notify healthcare professional if no BM &gt; 2 days.</td>
</tr>
<tr>
<td></td>
<td>- Increase dose of laxative when opioid is increased&lt;sup&gt;43&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Nausea or vomiting: Assess bowel regimen.&lt;sup&gt;52&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>To reduce stomach upset: Take with a meal or with milk.</td>
</tr>
<tr>
<td></td>
<td><strong>MAJOR Interactions:</strong> alcoholic beverages, butanediol, danshen, dong quai, evening primrose oil, gamma butyrolactone, gamma-hydroxybutyrate, ginkgo, gotu kola, hydrazine sulfate, Jamaican dogwood, kava, I-tryptophan, marijuana, marsh tea, melatonin, motherwort, policosanol, St John's wort, sweet bay, thuja, valerian, wild lettuce, willow bark.&lt;sup&gt;2,31&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Special Alert: Diabetic meds (insulin &amp; oral), increased risk for hypoglycemia, closely monitor&lt;sup&gt;2,22&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Nutrition-related withdrawal symptoms: abdominal or stomach cramps, nausea&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
</tbody>
</table>
| **oxycodone with ibuprofen**
Combumox™ | **Mixed opioid formulation**
(Used short-term not > 7 days to relieve moderate to severe pain)²
-Tablets, q -6 hrs
Maximum: Not > 4 tablets/ 24 hrs | **Nutrition-related side effects:** constipation, diarrhea, dyspepsia, nausea, vomiting, xerostomia²
**Prevent constipation**², 2.5, 39, 43
-Stimulant laxative +/- stool softener (e.g., senna +/- docusate, 2 Tabs q AM, maximum 8-12 tablets/day, (Senokot-S®, usually 2-4 tablets 2 x/day)⁴³
-Drink 8-10 glasses of fluids daily
-If able, eat foods high in fiber content, such as raw fresh produce, whole grain products.
-If able, add 1-2 Tablespoons of bran to food & drink 1 glass of fluids at same meal.
-Daily exercise, if possible, such as light walking.
-Notify healthcare professional if no BM > 2 days.
-Increase dose of laxative when opioid is increased ⁴³
**Nausea or vomiting:** Assess bowel regimen.⁵²

To reduce stomach upset: Take with a meal or with milk.

**MAJOR Interactions:** alcoholic beverages, beta glucan², butanediol, danshen, dong quai, evening primrose oil, gamma butyrolactone, gamma-hydroxy-butyrate, ginkgo, gotu kola, grapefruit⁴, hydrazine sulfate, Jamaican dogwood, kava, l-tryptophan, marijuana, marsh tea, melatonin, motherwort, policosanol, St John's wort, sweet bay, thuja, valerian, wild lettuce, willow bark.², 21

*Grapefruit Interaction:* Avoid grapefruit juice, grapefruit segments, grapefruit extract, seville oranges (other names: sour orange, Citrus aurantium, L, bitter, bigarade used to make marmalade), pummelos (pomelos), and tangelos ²⁷, ²⁸, ²⁹

**Special Alert:** Diabetic meds (glipizide, glyburide, tolbutamide), increased risk of certain side effects ²

Nutrition-related withdrawal symptoms: diarrhea, nausea, vomiting ²

| **oxymorphone**
Numorphan®
Opana®
Opana ER® | **Medical opioid formulations**
(Used to treat moderate to severe pain)²
-Tablet, q 4-6-hrs
-Tablet, ER: q 12 hrs
-Solution, I.M. or Sub-Q, q 4-6-hrs
-I.V.
-Suppository (rectal): q 4-6 hrs (IR-immediate release)
(ER-extended-release) | **Opana ER tablet:** Taken on an empty stomach, at least 1 hr before or 2 hrs after a meal²
**Nutrition-related side effects:** constipation, nausea, vomiting, xerostomia
**Prevent constipation**², 2.5, 39, 43
-Stimulant laxative +/- stool softener (e.g., senna +/- docusate, 2 Tabs q AM, maximum 8-12 tablets/day, (Senokot-S®, usually 2-4 tablets 2 x/day)⁴³
-Drink 8-10 glasses of fluids daily
-If able, eat foods high in fiber content, such as raw fresh produce, whole grain products.
-If able, add 1-2 Tablespoons of bran to food & drink 1 glass of fluids at same meal.
-Daily exercise, if possible, such as light walking.
-Notify healthcare professional if no BM > 2 days.
-Increase dose of laxative when opioid is increased ⁴³
**Nausea or vomiting:** Assess bowel regimen.⁵²
| **MAJOR Interactions:** alcoholic beverages, butanediol, gamma butyrolactone, gamma-hydroxybutyrate, gotu kola, hydrazine sulfate, Jamaican dogwood, kava, l-tryptophan, marijuana, marsh tea, melatonin, motherwort, St John's wort, sweet bay, valerian, wild lettuce.2,31  
**Nutrition-related withdrawal symptoms:** diarrhea, nausea, vomiting 2 |
|---|
| **pentazocine**  
Talwin®  
Talwin Lactate |
| Medical opioid formulation  
(*Used to treat moderate to severe pain*) 2  
- Injection only q 3-4 hrs  
I.M., Sub-Q., I.V. |
| Strong opioid, rarely used for chronic pain, due to hallucinations and other psychosis-like side-effects 5  
**Nutrition-related side effects:** constipation, dysguesia, nausea, vomiting 2  
Prevent constipation 2,5,39,43  
- Stimulant laxative +/- stool softener (e.g., senna +/- docusate, 2 Tabs q AM, maximum 8-12 tablets/day, (Senokot-S®, usually 2-4 tablets 2 x/day) 43  
- Drink 8-10 glasses of fluids daily  
- If able, eat foods high in fiber content, such as raw fresh produce, whole grain products.  
- If able, add 1-2 Tablespoons of bran to food & drink 1 glass of fluids at same meal.  
- Daily exercise, if possible, such as light walking.  
- Notify healthcare professional if no BM > 2 days.  
- Increase dose of laxative when opioid is increased  
Nausea or vomiting: Assess bowel regimen.52 |
| **pentazocine with acetaminophen**  
APAP/Pentazocine HCl  
Talacen® |
| Medical opioid formulation  
(*Used to treat mild to moderate pain*) 2  
- Tablets: q 4 hrs, up to 6/day  
- Caplets: q 4 hrs, up to 6/day  
**Maximum Daily Dose** (acetaminophen) 1 gm /dose (1000 mg/ dose) or 4 gm/day or (4000 mg/day) |
| Strong opioid, rarely used for chronic pain, due to hallucinations and other psychosis-like side-effects 5  
**Nutrition-related side effects:** anorexia, constipation, dyspepsia, nausea, vomiting, xerostomia 2  
Prevent constipation 2,5,39,43  
- Stimulant laxative +/- stool softener (e.g., senna +/- docusate, 2 Tabs q AM, maximum 8-12 tablets/day, (Senokot-S®, usually 2-4 tablets 2 x/day) 43  
- Drink 8-10 glasses of fluids daily  
- If able, eat foods high in fiber content, such as raw fresh produce, whole grain products.  
- If able, add 1-2 Tablespoons of bran to food & drink 1 glass of fluids at same meal.  
- Daily exercise, if possible, such as light walking.  
- Notify healthcare professional if no BM > 2 days.  
- Increase dose of laxative when opioid is increased  
*The U.S. Food & Drug Administration is currently investigating the maximum dose.* 39 |
<table>
<thead>
<tr>
<th>Drug</th>
<th>Medical Opioid Formulation</th>
<th>Clinical Trials (non-oncology population) reported fewer of the GI side effects</th>
<th>Nutrition-related Side Effects</th>
<th>Prevent Constipation</th>
<th>Special Alert</th>
<th>Nutrition-related Withdrawal Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tapentadol</td>
<td>Nucynta®</td>
<td>Medical opioid formulation (Used to treat moderate to severe pain)</td>
<td>Clinical trials (non-oncology population) reported fewer of the GI side effects</td>
<td>Constipation, nausea, vomiting</td>
<td>Stool softener</td>
<td>Abdominal or stomach cramps, nausea</td>
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<tr>
<td></td>
<td></td>
<td>- Tablet: q 4-6 hrs Day #1. Second dose may be given as soon as 1 hr after 1st dose</td>
<td></td>
<td></td>
<td>(Senokot-S®, usually 2-4 tablets 2 x/day)</td>
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<tr>
<td>Tramadol</td>
<td>Rybix ODT Ryzolt™ Ultram® ER</td>
<td>Medical opioid formulations (Used to treat moderate to severe pain)</td>
<td>Nutrition-related side effects: anorexia, constipation, diarrhea, dyspepsia, nausea, vomiting, xerostomia</td>
<td>Prevent constipation</td>
<td>Sulfite sensitivity</td>
<td>Abdominal or stomach cramps, nausea</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Tablet, regular: q 4-6 hrs</td>
<td></td>
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<td>- Tablet oral disintegrating: 4-6 hrs</td>
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<td></td>
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<td>- Tablet, extended release (ER) one (1) /day</td>
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<td></td>
<td></td>
<td>Maximum (tablet): not &gt; 400 mg/day</td>
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<td></td>
<td></td>
<td>Maximum ER Tablet: not &gt; 300 mg/day</td>
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<td></td>
<td></td>
<td>To reduce stomach upset: Take with a meal or with milk.</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
| MAJOR Interactions: alcoholic beverages*, grapefruit*, St John's wort, thuja ³¹ | **Grapefruit Interaction**: Avoid grapefruit juice, grapefruit segments, grapefruit extract, seville oranges (other names: sour orange, *Citrus aurantium*, L, bitter, bigarade used to make marmalade), pummelos (pomelos), and tangelos.²⁷,²⁸,²⁹  
Special Alert: Phenylketonuria (PKU): oral disintegrating tablet may contain phenylalanine. ²  
Nutrition-related withdrawal symptoms: diarrhea, nausea ² |
|---|---|
| **tramadol with acetaminophen**  
Ultracet™ (Canada)  
Tramacet (Canada)  
**Medical opioid formulation**  
*(Used to treat moderate to severe pain, not be used > 5 consecutive days)* ²  
-Tablets  
**Adults**: q 4-6 hrs  
**Maximum**: 2 tablets/dose or 8 tablets/day  
**Maximum Daily Dose**  
(acetaminophen)  
1 gm/dose (1000 mg/dose) or 4 gm/day or (4000 mg/day)  
*The U.S. Food & Drug Administration is currently investigating the maximum dose.* ³⁹ | **Can be taken with or without food, but take it the same way with each dose** ²  
**Nutrition-related side effects**: anorexia, constipation, diarrhea, nausea  
**Prevent constipation** ²,²⁵,³⁹,⁴³  
-Stimulant laxative +/- stool softener (e.g., senna +/- docusate, 2 Tabs q AM, maximum 8-12 tablets/day, (Senokot-S®, usually 2-4 tablets 2 x/day) ⁴³  
-Drink 8-10 glasses of fluids daily  
-If able, eat foods high in fiber content, such as raw fresh produce, whole grain products.  
-If able, add 1-2 Tablespoons of bran to food & drink 1 glass of fluids at same meal.  
-Daily exercise, if possible, such as light walking.  
-Notify healthcare professional if no BM > 2 days.  
-Increase dose of laxative when opioid is increased ⁴³  
**Nausea or vomiting**: Assess bowel regimen. ⁵²  
To reduce stomach upset: Take with food.  
**MAJOR Interactions**: alcoholic beverages, cabbage ², chaparral, comfrey, grapefruit*, St John's wort, thuja ²,³¹  
*Grapefruit Interaction*: Avoid grapefruit juice, grapefruit segments, grapefruit extract, seville oranges (other names: sour orange, *Citrus aurantium*, L, bitter, bigarade used to make marmalade), pummelos (pomelos), and tangelos.²⁷,²⁸,²⁹  
Nutrition-related withdrawal symptoms: diarrhea, headache, nausea ² |
**Step 3. Adjuvant Medicines (Increases analgesic efficacy)**

Some medicines were developed primarily for medical conditions, yet have some pain-relieving properties. Adjuvant medicines are frequently used with the "first-line" or standard cancer pain medicines, (opioids and NSAIDs) to treat the hard to manage, cancer-related (bone or nerve) pain.45

<table>
<thead>
<tr>
<th>GENERIC/BRAND NAME</th>
<th>CLASS-COMMON USE-FORM</th>
<th>COMMENTS</th>
</tr>
</thead>
</table>
| amitriptyline      | Antidepressant formulation (Used to treat symptoms of depression) <sup>2</sup> -Tablet | Use in oncology population: to help relieve nerve pain (tingling & burning pain) from a damaged nerve, caused by the tumor pressing on a nerve, or from cancer treatment <sup>34,45,49</sup>  
Nutrition-related side effects: appetite changes, constipation, nausea, vomiting, weight changes, xerostomia <sup>2</sup>  
MAJOR Interactions: 5-HTP, alcoholic beverages, arsenic, butanediol, cesium, country mallow, ephedra, ergot, gamma butyrolactone, gamma-hydroxybutyrate, gotu kola, grapefruit*, Hawaiian baby woodrose, hubane, hydrazine sulfate, Jamaican dogwood, kava, L-tryptophan, lithium, marijuana, marsh tea, melatonin, motherwort, SAMe, scopolia, St John's wort, sweet bay, valerian, wild lettuce. <sup>31</sup>  
*Grapefruit Interaction: Avoid grapefruit juice, grapefruit segments, grapefruit extract, seville oranges (other names: sour orange, Citrus aurantium, L, bitter, bigarade used to make marmalade), pummelos (pomelos), and tangelos <sup>27,28,29</sup>  
Nutrition-related withdrawal symptoms: nausea <sup>32</sup> |
| baclofen           | Muscle relaxant formulation (Used to relieve muscle tightness, spasms, or cramping resulting from multiple sclerosis) <sup>2</sup>  
-Tablet, 3 times/day  
-Injection | Use in oncology population: when pain is caused by muscle spasm <sup>49</sup>  
Nutrition-related side effects: anorexia, constipation, diarrhea, nausea, stomach pain, weight gain <sup>2</sup>  
MAJOR Interactions: gamma butyrolactone, gamma-hydroxybutyrate, procaine, thuja. <sup>31</sup>  
Special Alert: Diabetes-monitor closely <sup>2</sup> |
| bupropion          | Antidepressant formulations (Used to treat major depressive disorder and seasonal affective disorder) <sup>2</sup>  
-Tablet, 2-3 x/day  
-Tablet, Extended Release-1 x/day  
-Tablet, Extended Release, 12 HR  
-Tablet, Extended Release, 24 HR | Use in oncology population: to help relieve nerve pain (tingling & burning pain) from a damaged nerve, caused by the tumor pressing on a nerve, or from cancer treatment <sup>34,45,49</sup>  
Nutrition-related side effects: appetite changes, constipation, nausea, stomach pain, vomiting, weight loss, xerostomia <sup>2</sup>  
To reduce stomach upset: Take with food. <sup>2</sup>  
MAJOR Interactions: Alcoholic beverages, diet pills, 5-HTP, ergot, Hawaiian |
| **calcitonin salmon**<br>  **Miacalcin®**<br>  **Miacalcin® Nasal**<br>  **Fortical®** | **Calcium regulator formulation**<br>  (Used in the treatment of postmenopausal osteoporosis) 2<br>  -Injection, I.M. or sub-Q, q 6-12 hrs<br>  -Intranasal spray | Use in oncology population: to help relieve the pain of cancer when cancer has bone mets (breast or prostate cancer, or multiple myeloma). 36,45<br>  Nutrition-related side effects: anorexia, nausea, stomach pain, vomiting 2 |
| **capsaicin**<br>  (Non-prescription)<br>  **Arthricare® For Women**<br>  **Capsagesic-HP Arthritis Relief®**<br>  **Capsin®**<br>  **Icy Hot® Arthritis Therapy**<br>  **Theragen® HP Top Therapatch® Warm**<br>  **Trixacin® cream**<br>  **Zostrix®**<br>  **Axsain®**<br>  **Capsaicin Capsaicin Hp** | **Local topical analgesic formulations**<br>  (Used with muscle sprains, muscle strains, neuralgia & arthritis pain) 36<br>  -Lotion<br>  -Cream<br>  -Gel/Jelly<br>  -Film<br>  -Pad<br>  -Ointment<br>  -Liquid<br>  -Stick<br>  **Adults & teens: 3-4 times/day** 37 | Use in oncology population: for neuropathic and joint pain 36 |
| **carbamazepine**<br>  **Carbatrol®**<br>  **Epitol®**<br>  **Equetro®**<br>  **Tegretol®**<br>  **Tegretol®-XR** | **Anticonvulsant formulations**<br>  (Used to used to treat epileptic seizures, nerve pain, such as trigeminal neuralgia or diabetic neuropathy) 2,49<br>  -Tablet, 2 x/day<br>  -Tablet, chewable, 2 x/day<br>  -Tablet, extended-release, 2x/day<br>  -Capsule, extended-release, 2x/day<br>  -Oral liquid suspension, 4 x/day | Use in oncology population: to help control burning & tingling pain; nerve damage pain 34,36<br>  Nutrition-related side effects: constipation, diarrhea, dyspepsia, nausea, vomiting, xerostomia 2<br>  To reduce stomach upset: Take oral liquid or tablet with meals. 2<br>  MAJOR Interactions: alcoholic beverages, chaparral, comfrey, gamma butyrolactone, gamma-hydroxy-butyrate, ginkgo, grapefruit*, niacin (niacinamide), psyllium, St John's wort, tansy ragwort, thuja. 2,31<br>  *Grapefruit Interaction: Avoid grapefruit juice, grapefruit segments, grapefruit extract, seville oranges (other names: sour orange, Citrus aurantium, L, bitter, bigarade used to make marmalade), pummelos (pomelos), and tangelos 27,28,29<br>  Other Interactions: Diabetes, closely monitor 2; Fructose intolerance, liquid contains sorbitol 2
<table>
<thead>
<tr>
<th>Drug Name</th>
<th>Formulation</th>
<th>Use in Oncology Population</th>
<th>Nutrition-Related Side Effects</th>
<th>Major Interactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carisoprodol (Soma®, Vanadom®)</td>
<td>Skeletal Muscle Relaxant Formulation (Used as a muscle relaxer which works by blocking pain sensation)</td>
<td>Use in oncology population: when pain is caused by muscle spasm</td>
<td>Gastrointestinal: dyspepsia, nausea, vomiting</td>
<td>Major: Alcohol beverages, gamma butyrolactone, gamma-hydroxybutyrate, procaine, St John's wort</td>
</tr>
<tr>
<td>Chlorzoxazone (Parafon Forte DSC®, Paraflex®, Relaxazone®, Eze DS®, Remular®, Remular-S®, Strifon Fort®)</td>
<td>Skeletal Muscle Relaxant Formulation (Used as a muscle relaxant as part of treatment for skeletal muscle pain or injury)</td>
<td>Use in oncology population: when pain is caused by muscle spasm</td>
<td>Gastrointestinal: anorexia, constipation, dysphagia, nausea, stomach pain, vomiting</td>
<td>Major: Gamma butyrolactone, gamma-hydroxybutyrate, procaine</td>
</tr>
<tr>
<td>Citalopram (Celexa®)</td>
<td>Antidepressant Formulation (Used to treat depression)</td>
<td>Use in oncology population: to help relieve nerve pain (tingling &amp; burning pain) from a damaged nerve, caused by the tumor pressing on a nerve, or from cancer treatment</td>
<td>Gastrointestinal: anorexia, diarrhea, dysgeusia, dyspepsia, flatulence, nausea, pharyngitis, stomach pain, vomiting, weight changes, xerostomia</td>
<td>Major: Alcohol beverages, 5-HTP, ergot, ginkgo, grapefruit*, Hawaiian baby woodrose, L-tryptophan, lithium, SAMe, St John's wort, thuja</td>
</tr>
<tr>
<td>Clodronate (clodronic acid (U.S.), Bonefos, Clasteon, Difosfonal, Loron, Mebonat, Ossiten)</td>
<td>Bisphosphonate Formulations (Used for treating osteolytic bone diseases and osteoporosis)</td>
<td>Use in oncology population: to help relieve the pain of cancer when cancer has bone mets (breast or prostate cancer, or multiple myeloma).</td>
<td>Gastrointestinal: diarrhea, mouth irritation, nausea, sores in throat, stomach cramps or pain, vomiting</td>
<td>Special Alert: Take oral medicine (tablet or capsule) at least 2 hrs before or after eating. **</td>
</tr>
</tbody>
</table>

*Grapefruit Interaction: Avoid grapefruit juice, grapefruit segments, grapefruit extract, seville oranges (other names: sour orange, *Citrus aurantium*, L. bitter, bigarade used to make marmalade), pummelos (pomelos), and tangelos.

**Special Alert: Take oral medicine (tablet or capsule) at least 2 hrs before or after eating.
| **clomipramine**  
**Anafranil®**  
Antidepressant formulation  
*Used treat people with obsessive-compulsive disorder*  
-Capsule, 1 x/day | **Use in oncology population:** to help relieve nerve pain (tingling & burning pain) from a damaged nerve, caused by the tumor pressing on a nerve, or from cancer treatment.  
**Nutrition-related side effects:** appetite changes, constipation, diarrhea, dyspepsia, nausea, vomiting, stomach pain, weight changes, xerostomia.  
To reduce stomach upset: Take capsule with food.  
**MAJOR Interactions:** alcoholic beverages, 5-HTP, ergot, grapefruit*, Hawaiian baby woodrose, henbane, l-tryptophan, lithium, SAMe, scopolia, St John’s wort.  
*Grapefruit Interaction: Avoid grapefruit juice, grapefruit segments, grapefruit extract, seville oranges (other names: sour orange, Citrus aurantium, L, bitter, bigarade used to make marmalade), pummelos (pomelos), and tangelos.  
**Nutrition-related withdrawal symptoms:** nausea, vomiting. |
<table>
<thead>
<tr>
<th>Medicine</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Decadron** | Steroid formulation (Used with treatment of adrenal gland insufficiency, severe inflammation states such as severe asthma or allergies, rheumatoid arthritis, ulcerative colitis, SLE, MS, eye & skin conditions) 2.  
- Tablets  
- Injection, I.M. or I.V.  
For cerebral edema: I.M., q 6 hrs, then tapered  
For palliative care of recurrent/inoperable brain tumors:  
- maintenance injection  
- Tablets, q 2-3 x/day  
Use in the oncology population, to help with pain relief from nerve or spinal cord compression, liver or bone pain; by reducing inflammation & swelling. 34,46 Used with palliative mg of leukemias & lymphomas; cerebral edema with primary or mets brain tumor; craniotomy. 2 (Used in the emergency mg of elevated intracranial pressure, epidural spinal cord compression) 49  
Nutrition-related side effects: appetite changes, diarrhea, dyspepsia, nausea, pharyngitis, vomiting, weight changes 2  
MAJOR Interactions: grapefruit*, lily-of-the-valley, St John's wort, tansy ragwort. 31  
*Grapefruit Interaction: Avoid grapefruit juice, grapefruit segments, grapefruit extract, seville oranges (other names: sour orange, Citrus aurantium, L, bitter, bigarade used to make marmalade), pummelos (pomelos), and tangelos 27,28,29  
Special Alerts: Calcium, decreases absorption, increases excretion 2; Diabetes, hyperglycemia, closely monitor 2; Potassium, lowers serum levels 2 |
| **Desipramine** | Antidepressant formulations (Used with depression, postherpetic neuralgia, diabetic neuropathy, low back pain)  
- Tablet, 1 x/day  
Use in oncology population: to help relieve nerve pain (tingling & burning pain) from a damaged nerve, caused by the tumor pressing on a nerve, or from cancer treatment 34,46,49  
Nutrition-related side effects: appetite changes, bloating, constipation, mouth swelling or inflammation, nausea, stomach cramps or pain, weight changes, xerostomia 2  
MAJOR Interactions: 5-HTP, alcoholic beverages, arsenic, butanediol, cannabis (marijuana), cesium, country mallow, ephedra, ergot, gamma butyrolactone, gamma-hydroxybutyrate, gotu kola, Hawaiian baby woodrose, henbane, hydrazine sulfate, Jamaican dogwood, kava, L-tryphophan, lithium, marijuana, marsh tea, melatonin, motherwort, SAMe, scopolia, St John's wort, sweet bay, valerian, wild lettuce. 31  
Special Alert: Diabetes, closely monitor 2  
Nutrition-related withdrawal symptoms: nausea 32 |
| **Dexamethasone** | Steroid formulations (Used to treat allergic disorders, skin conditions, ulcerative colitis, arthritis, SLE, psoriasis, or respiratory disorders) 2.  
- Tablet  
- Oral solution  
- I.V., I.M.  
Frequency variable  
Use in oncology population: with cerebral edema, adrenal insufficiency, chemo-related nausea/vomiting, multiple myeloma. 36  
Nutrition-related side effects: bloating, nausea, stomach pain, vomiting 2  
MAJOR Interactions: alcoholic beverages, grapefruit*, lily-of-the-valley, St John's wort, tansy ragwort. 31  
*Grapefruit Interaction: Avoid grapefruit juice, grapefruit segments, grapefruit extract, seville oranges (other names: sour orange, Citrus aurantium, L, bitter, bigarade used to make marmalade), pummelos (pomelos), and tangelos 27,28,29  
To prevent stomach upset: Take with food or milk. 32  
Special Alert: Diabetic meds (insulin or oral), closely monitor 2 |
<table>
<thead>
<tr>
<th>Drug &amp; Formulation</th>
<th>CNS Stimulant Formulations</th>
<th>CNS Stimulant Formulations (Used with Attention-Deficit Hyperactivity Disorder, Narcolepsy)</th>
<th>CNS Stimulant Formulations (Used with Attention-Deficit Hyperactivity Disorder, Narcolepsy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dextroamphetamine</td>
<td>CNS stimulant formulations</td>
<td>CNS stimulant formulations (Used with attention-deficit hyperactivity disorder, narcolepsy)</td>
<td>CNS stimulant formulations (Used with attention-deficit hyperactivity disorder, narcolepsy)</td>
</tr>
<tr>
<td>Dexedrine®</td>
<td>Tablet, q 3-4 hrs, 1-2 x/day</td>
<td>- Tablet, q 3-4 hrs, 1-2 x/day</td>
<td>- Tablet, q 3-4 hrs, 1-2 x/day</td>
</tr>
<tr>
<td>Dexedrine®</td>
<td>Capsule, extended-release, 1-2 x/day</td>
<td>- Capsule, extended-release, 1-2 x/day</td>
<td>- Capsule, extended-release, 1-2 x/day</td>
</tr>
<tr>
<td>Dextrostat®</td>
<td>Solution liquid</td>
<td>Solution liquid</td>
<td>Solution liquid</td>
</tr>
<tr>
<td>Liquadd®</td>
<td>Use in oncology population: to enhance the effect of the opioid; reduces the opioid dose</td>
<td>Use in oncology population: to enhance the effect of the opioid; reduces the opioid dose</td>
<td>Use in oncology population: to enhance the effect of the opioid; reduces the opioid dose</td>
</tr>
<tr>
<td>ProCentra®</td>
<td>Nutrition-related side effects: anorexia, constipation, diarrhea, dysgeusia (unpleasant), dyspepsia, flatulence, weight loss, xerostomia</td>
<td>Nutrition-related side effects: anorexia, constipation, diarrhea, dysgeusia (unpleasant), dyspepsia, flatulence, weight loss, xerostomia</td>
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</tr>
<tr>
<td>dextromethorphan</td>
<td>Antitussive formulations</td>
<td>Antitussive formulations (Used to relieve coughs due to colds or flu)</td>
<td>Antitussive formulations (Used to relieve coughs due to colds or flu)</td>
</tr>
<tr>
<td>(DM) Babee Cof®</td>
<td>Capsule, liquid-filled</td>
<td>- Capsule, liquid-filled</td>
<td>- Capsule, liquid-filled</td>
</tr>
<tr>
<td>Benylin®</td>
<td>- Tablet, chewable, q 4-12 hrs</td>
<td>- Tablet, chewable, q 4-12 hrs</td>
<td>- Tablet, chewable, q 4-12 hrs</td>
</tr>
<tr>
<td>Buckley's®</td>
<td>- Elixir</td>
<td>- Elixir</td>
<td>- Elixir</td>
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<tr>
<td>Creo-Terpin®</td>
<td>- Liquid</td>
<td>- Liquid</td>
<td>- Liquid</td>
</tr>
<tr>
<td>Dextalone®</td>
<td>- Strip, dissolving</td>
<td>- Strip, dissolving</td>
<td>- Strip, dissolving</td>
</tr>
<tr>
<td>Diabetuss®</td>
<td>- Solution</td>
<td>- Solution</td>
<td>- Solution</td>
</tr>
<tr>
<td>Pediacare®</td>
<td>- Syrup, q 6-8 hrs</td>
<td>- Syrup, q 6-8 hrs</td>
<td>- Syrup, q 6-8 hrs</td>
</tr>
<tr>
<td>Pertussin®</td>
<td>- Suspension</td>
<td>- Suspension</td>
<td>- Suspension</td>
</tr>
<tr>
<td>ES Silphen®</td>
<td>- Suspension, extended-release q 12 hrs</td>
<td>- Suspension, extended-release q 12 hrs</td>
<td>- Suspension, extended-release q 12 hrs</td>
</tr>
<tr>
<td>DM St. Joseph®</td>
<td>- Lozenge, q 2-4 hrs</td>
<td>- Lozenge, q 2-4 hrs</td>
<td>- Lozenge, q 2-4 hrs</td>
</tr>
<tr>
<td>Tylenol® Simply Cough</td>
<td>Use in oncology population: as a cough suppressant with no analgesic or narcotic properties and fewer GI side effects</td>
<td>Use in oncology population: as a cough suppressant with no analgesic or narcotic properties and fewer GI side effects</td>
<td>Use in oncology population: as a cough suppressant with no analgesic or narcotic properties and fewer GI side effects</td>
</tr>
<tr>
<td>Vicks®</td>
<td>Nutrition-related side effects: constipation, nausea, stomach pain, vomiting</td>
<td>Nutrition-related side effects: constipation, nausea, stomach pain, vomiting</td>
<td>Nutrition-related side effects: constipation, nausea, stomach pain, vomiting</td>
</tr>
<tr>
<td>Formula 44</td>
<td>MAJOR Interactions: butanediol, cola nut, country mallow, ephedra, gamma butyrolactone, gamma-hydroxybutyrate, glutamic acid (l-glutamine), green tea, guarana, Indian snakeroot, mate, oolong tea, peyote, pu-erh tea, tiratricol.</td>
<td>MAJOR Interactions: butanediol, cola nut, country mallow, ephedra, gamma butyrolactone, gamma-hydroxybutyrate, glutamic acid (l-glutamine), green tea, guarana, Indian snakeroot, mate, oolong tea, peyote, pu-erh tea, tiratricol.</td>
<td>MAJOR Interactions: butanediol, cola nut, country mallow, ephedra, gamma butyrolactone, gamma-hydroxybutyrate, glutamic acid (l-glutamine), green tea, guarana, Indian snakeroot, mate, oolong tea, peyote, pu-erh tea, tiratricol.</td>
</tr>
<tr>
<td>Zicam®</td>
<td>Special Alerts: Diabetes, product may contain sugar</td>
<td>Special Alerts: Diabetes, product may contain sugar</td>
<td>Special Alerts: Diabetes, product may contain sugar</td>
</tr>
<tr>
<td>Cough</td>
<td>Phenylketonuria (PKU), chewable tablets may contain aspartame, a source of phenylalanine</td>
<td>Phenylketonuria (PKU), chewable tablets may contain aspartame, a source of phenylalanine</td>
<td>Phenylketonuria (PKU), chewable tablets may contain aspartame, a source of phenylalanine</td>
</tr>
</tbody>
</table>

**Nutrition-related withdrawal symptoms:** anorexia, dyspepsia, vomiting, weight loss

**Nutrition-related side effects:** anorexia, constipation, diarrhea, dysgeusia (unpleasant), dyspepsia, flatulence, weight loss, xerostomia

**MAJOR Interactions:** butanediol, cola nut, country mallow, ephedra, gamma butyrolactone, gamma-hydroxybutyrate, glutamic acid (l-glutamine), green tea, guarana, Indian snakeroot, mate, oolong tea, peyote, pu-erh tea, tiratricol.

**Special Alert:** Fruit juices containing ascorbic acid/vitamin-C

**Special Alert:** Coconut, product may contain sugar

**Phenylketonuria (PKU), chewable tablets may contain aspartame, a source of phenylalanine**
<table>
<thead>
<tr>
<th>Drug</th>
<th>Antidepressant Formulations</th>
<th>Use in Oncology Population</th>
<th>Nutrition-Related Side Effects</th>
<th>Major Interactions</th>
<th>Nutrition-Related Withdrawal Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Duloxetine</strong>&lt;br&gt;Cymbalta®</td>
<td>Antidepressant Formulations (Used to treat major depressive disorder, chronic musculoskeletal pain, diabetic neuropathy)&lt;sup&gt;2,49&lt;/sup&gt; &lt;br&gt;-Capsule&lt;br&gt;-Capsule, delayed-release, 1 x/day</td>
<td>Use in oncology population: to help relieve nerve pain (tingling &amp; burning pain) from a damaged nerve, caused by the tumor pressing on a nerve, or from cancer treatment&lt;sup&gt;34,45,49&lt;/sup&gt;</td>
<td>Nutrition-related side effects: anorexia, constipation, dyspepsia, nausea, pharyngitis, weight loss, xerostomia&lt;sup&gt;2&lt;/sup&gt;</td>
<td>MAJOR Interactions: alcoholic beverages, 5-HTP, ergot, Hawaiian baby woodrose, L-tryptophan, lithium, SAMe, St John's wort, thuja.&lt;sup&gt;2,31&lt;/sup&gt;</td>
<td>Nutrition-related withdrawal symptoms: nausea&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Escitalopram</strong>&lt;br&gt;Lexapro®</td>
<td>Antidepressant Formulations (Used to treat anxiety and major depressive disorder)&lt;sup&gt;2&lt;/sup&gt; &lt;br&gt;-Tablet, 1 x/day&lt;br&gt;-Solution, oral liquid, 1 x/day</td>
<td>Use in oncology population: to help relieve nerve pain (tingling &amp; burning pain) from a damaged nerve, caused by the tumor pressing on a nerve, or from cancer treatment&lt;sup&gt;34,45,49&lt;/sup&gt;</td>
<td>Nutrition-related side effects: constipation, diarrhea, dyspepsia, flatulence, stomach pain, xerostomia&lt;sup&gt;2&lt;/sup&gt;</td>
<td>MAJOR Interactions: alcoholic beverages, 5-HTP, ergot, ginkgo, Hawaiian baby woodrose, L-tryptophan, lithium, SAMe, St John’s wort, thuja.&lt;sup&gt;2,31&lt;/sup&gt;</td>
<td>Nutrition-related withdrawal symptoms: diarrhea, nausea, vomiting&lt;sup&gt;2,32&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Fluoxetine</strong>&lt;br&gt;Prozac®</td>
<td>Antidepressant Formulations (Used with depression)&lt;sup&gt;2,49&lt;/sup&gt; &lt;br&gt;-Tablet, 1 x/day&lt;br&gt;-Capsule, extended-release, 1 x/day</td>
<td>Use in oncology population: to help relieve nerve pain (tingling &amp; burning pain) from a damaged nerve, caused by the tumor pressing on a nerve, or from cancer treatment&lt;sup&gt;34,45,49&lt;/sup&gt;</td>
<td>Nutrition-related side effects: appetite changes, constipation, dysgeusia, stomach pain, weight changes&lt;sup&gt;2&lt;/sup&gt;</td>
<td>MAJOR Interactions: alcoholic beverages, 5-HTP, ergot, ginkgo, Hawaiian baby woodrose, L-tryptophan, lithium, SAMe, St John’s wort, thuja.&lt;sup&gt;2,31&lt;/sup&gt;</td>
<td>Nutrition-related withdrawal symptoms: dizziness/nausea&lt;sup&gt;32&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Fluoxetine</strong>&lt;br&gt;Prozac® Weekly&lt;br&gt;Rapiflux®&lt;br&gt;Sarafem®&lt;br&gt;Selfemra®</td>
<td>Antidepressant Formulations (Used to treat social anxiety disorder and obsessive-compulsive disorders)&lt;sup&gt;2&lt;/sup&gt; &lt;br&gt;-Capsule, delayed release, 1 x/day&lt;br&gt;-Tablet, 1 x/day</td>
<td>Use in oncology population: to help relieve nerve pain (tingling &amp; burning pain) from a damaged nerve, caused by the tumor pressing on a nerve, or from cancer treatment&lt;sup&gt;34,45,49&lt;/sup&gt;</td>
<td>Nutrition-related side effects: appetite loss, constipation, dysgeusia, dyspepsia, stomach pain, weight changes&lt;sup&gt;2&lt;/sup&gt;</td>
<td>MAJOR Interactions: alcoholic beverages, 5-HTP, ergot, ginkgo, Hawaiian baby woodrose, L-tryptophan, lithium, SAMe, St John’s wort, thuja.&lt;sup&gt;2,31&lt;/sup&gt;</td>
<td>Nutrition-related withdrawal symptoms: dizziness/nausea&lt;sup&gt;32&lt;/sup&gt;</td>
</tr>
<tr>
<td>Drug</td>
<td>Formulation</td>
<td>Use in Oncology Population</td>
<td>Nutrition-Related Side Effects</td>
<td>Major Interactions</td>
<td>Special Alert</td>
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<tr>
<td>Gabapentin</td>
<td>Anticonvulsant formulation (Used to treat some types of seizures and manage postherpetic neuralgia, and diabetic neuropathy)</td>
<td>To control burning &amp; tingling pain; nerve damage pain.</td>
<td>Pharyngitis, flu-like symptoms.</td>
<td>Gamma butyrolactone, gamma-hydroxybutyrate, ginkgo, thuja.</td>
<td>Potassium, oral supplement.</td>
</tr>
</tbody>
</table>
| Gabaron™ | - Capsule  
- Tablet  
- Solution, oral liquid | The dose is different for each individual. | Nutrition-related withdrawal symptoms: nausea. | | |}
| Glycopyrrolate | Anticholinergic formulations (Used to reduce secretions in the mouth, throat, airway, and stomach before surgery) | With the management of respiratory secretions at the end of life. | Constipation, dysgeusia, flatulence, pharyngitis, stomach pain, thirst, vomiting, xerostomia. | Henbane, scopolia. | Diet, well-balanced, not excessive in calcium or vitamin D; Hydration, adequate fluid intake & urine output of 2 L/day; Vitamin D supplements, avoid; Calcium supplements, avoid. |
| Robinul® | - Tablet, 3 x/day  
- Solution, oral, 3 x/day | | | | |
<table>
<thead>
<tr>
<th>Drug Name</th>
<th>Formulations</th>
<th>Uses in Oncology Population</th>
<th>Nutrition-related Side Effects</th>
<th>MAJOR Interactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lacosamide</td>
<td>Anticonvulsant formulations (Used to treat partial-onset seizures in epilepsy)</td>
<td>- Tablet, film-coated, 2 x/day - Solution</td>
<td>Use in oncology population: to control burning &amp; tingling pain; nerve damage pain</td>
<td>Nutrition-related side effects: anorexia, diarrhea, dyspepsia, nausea, pharyngitis, stomach pain, stomatitis, vomiting, xerostomia</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>MAJOR Interactions: alcoholic beverages</td>
</tr>
<tr>
<td>Lamotrigine</td>
<td>Anticonvulsant formulations (Used alone or with other meds to treat seizures; and delay mood episodes in bipolar disorder)</td>
<td>- Tablet - Tablet, chewable - Tablet, disintegrating - Tablet, Extended Release</td>
<td>Use in oncology population: to control burning &amp; tingling pain; nerve damage pain</td>
<td>Nutrition-related side effects: constipation, diarrhea, dyspepsia, nausea, pharyngitis, stomach pains, stomatitis, vomiting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The dose is different for each individual.</td>
<td></td>
<td>MAJOR Interactions: gamma butyrolactone, gamma-hydroxybutyrate, ginkgo, thuja.</td>
</tr>
<tr>
<td>Lidocone</td>
<td>Local anesthetic formulation (Used for local anesthesia, and peripheral nerve block)</td>
<td>- Solution, I.V infusion, bolus 15–30 min - Skin patch (up to 12 hrs within a 24-hr period</td>
<td>Use in oncology population: for neuropathic pain; burning, sensitive, deep, sharp, stabbing pain, pins &amp; needles.</td>
<td>Nutrition-related side effects: dysgeusia (metallic taste), nausea, vomiting.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>MAJOR Interactions: fever bark, grapefruit*, St John's wort, thuja.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*Grapefruit Interaction: Avoid grapefruit juice, grapefruit segments, grapefruit extract, seville oranges (other names: sour orange, Citrus aurantium, L, bitter, bigarade used to make marmalade), pummelos (pomelos), and tangelos</td>
</tr>
<tr>
<td>Maprotiline</td>
<td>Antidepressant formulations (Used to relieve mental depression, including anxiety; and chronic neurogenic pain)</td>
<td>- Tablet, 1-3 x/day</td>
<td>Use in oncology population: to help relieve nerve pain (tingling &amp; burning pain) from a damaged nerve, caused by the tumor pressing on a nerve, or from cancer treatment.</td>
<td>Nutrition-related side effects: constipation (severe), nausea, pharyngitis, vomiting, weight loss, xerostomia</td>
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<td>MAJOR Interactions: alcoholic beverages, 5-HTP, ergot, Hawaiian baby woodrose, I-tryphophan, lithium, SAMe, St John's wort.</td>
</tr>
<tr>
<td>Generic Name</td>
<td>Brand Names</td>
<td>Description</td>
<td>Use in Oncology Population: when pain is caused by muscle spasm</td>
<td>Nutrition-related side effects: anorexia, diarrhea, dyspepsia, nausea, pharyngitis, stomach cramps or pain, stomatitis, vomiting</td>
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<tr>
<td><strong>metaxalone</strong></td>
<td>Skelaxin®</td>
<td>Muscle relaxant formulation (Used in the treatment of skeletal muscle pain or injury)</td>
<td>-Tablet, 3-4 x/day</td>
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<tr>
<td><strong>methocarbamol</strong></td>
<td>Robaxin®/Robaxin®-750</td>
<td>Muscle relaxant formulation (Used as a muscle relaxant as part of treatment for skeletal muscle pain or injury)</td>
<td>-Tablet, 4 x/day</td>
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<tr>
<td><strong>methylphenidate</strong></td>
<td>Concerta®, Metadate® CD, Methylin®, Methylin® ER, Ritalin®, Ritalin®-LA, Ritalin®-SR</td>
<td>CNS stimulant formulations (Used with attention-deficit/hyperactivity disorder and narcolepsy)</td>
<td>-Tablet, 2-3 x/day</td>
<td>Use in oncology population: to enhance the effect of the opioid and the opioid dose can be reduced.</td>
</tr>
<tr>
<td><strong>milnacipran</strong></td>
<td>Savella®</td>
<td>Antidepressant formulation (Used to treat fibromyalgia)</td>
<td>-Tablet, 1-2 x/day</td>
<td>Use in oncology population: to help relieve nerve pain (tingling &amp; burning pain) from a damaged nerve, caused by the tumor pressing on a nerve, or from cancer treatment</td>
</tr>
<tr>
<td><strong>mirtazapine</strong></td>
<td>Remeron®, Remeron® SolTab, Remeron® RD (Canada)</td>
<td>Antidepressant formulations (Used to treat depression)</td>
<td>-Tablet, 1 x/day</td>
<td>Use in oncology population: to help relieve nerve pain (tingling &amp; burning pain) from a damaged nerve, caused by the tumor pressing on a nerve, or from cancer treatment</td>
</tr>
<tr>
<td>Drug</td>
<td>Formulation Details</td>
<td>Use in Oncology Population</td>
<td>Nutrition-Related Side Effects</td>
<td>Major Interactions</td>
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<tr>
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<tr>
<td><strong>Modafinil</strong>&lt;br&gt;Provigil®&lt;br&gt;Alertec</td>
<td>CNS stimulant formulation&lt;br&gt;(Used with narcolepsy, work shift sleep disorder, obstructive sleep apnea)&lt;br&gt;-Tablet, 1 x/day</td>
<td>Use in oncology population: to enhance the effect of the opioid and the opioid dose can be reduced.&lt;br&gt;Nutrition-related side effects: anorexia, constipation, diarrhea, dyspepsia, nausea, pharyngitis, polydipsia, stomatitis, vomiting, xerostomia.</td>
<td>MAJOR Interactions: alcoholic beverages, country mallow, ephedra, grapefruit*, Indian snakeroot, peyote, St John's wort, tansy ragwort, tiratricol.*</td>
<td>*Grapefruit Interaction: Avoid grapefruit juice, grapefruit segments, grapefruit extract, seville oranges (other names: sour orange, <em>Citrus aurantium</em>, L, bitter, bigarade used to make marmalade), pummelos (pomelos), and tangelos.</td>
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<tr>
<td><strong>Nabilone</strong>&lt;br&gt;Cesamet®</td>
<td>Cannabinoid formulation&lt;br&gt;(Used with refractory chemotherapy-induced nausea/vomiting)&lt;br&gt;-Capsule, 2-3 times/day during chemotherapy, effective for 48-72 hrs</td>
<td>Use in oncology population: for refractory pain states&lt;br&gt;Nutrition-related side effects: appetite changes, nausea, xerostomia.</td>
<td>Interactions: Alcoholic beverages</td>
<td>*Grapefruit Interaction: Avoid grapefruit juice, grapefruit segments, grapefruit extract, seville oranges (other names: sour orange, <em>Citrus aurantium</em>, L, bitter, bigarade used to make marmalade), pummelos (pomelos), and tangelos.</td>
</tr>
<tr>
<td><strong>Nortriptyline</strong>&lt;br&gt;Aventyl®&lt;br&gt;Pamelor®</td>
<td>Antidepressant formulations&lt;br&gt;(Used to treat depression, post-herpetic neuralgia)&lt;br&gt;-Capsules, 1-4 x/day&lt;br&gt;-Solution, oral, 3-4 x/day</td>
<td>Use in oncology population: to help relieve nerve pain (tingling &amp; burning pain) from a damaged nerve, caused by the tumor pressing on a nerve, or from cancer treatment.&lt;br&gt;Nutrition-related side effects: appetite changes, constipation, diarrhea, dysgeusia, dyspepsia, nausea, stomach cramps, weight changes, xerostomia.</td>
<td>MAJOR Interactions: alcoholic beverages, 5-HTP, ergot, Hawaiian baby woodrose, henbane, l-tryphophan, lithium, SAMe, scopolia, St John's wort.</td>
<td>*Grapefruit Interaction: Avoid grapefruit juice, grapefruit segments, grapefruit extract, seville oranges (other names: sour orange, <em>Citrus aurantium</em>, L, bitter, bigarade used to make marmalade), pummelos (pomelos), and tangelos. Special Alert: Diabetic meds, including chlorpropamide (Diabinese®), closely monitor.</td>
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<tr>
<td><strong>Octreotide</strong>&lt;br&gt;Sandostatin&lt;br&gt;Sandostatin LAR Depot</td>
<td>Anticholinergic formulation&lt;br&gt;(Used to treat severe diarrhea in certain intestinal tumors, acromegaly, AIDS-related diarrhea, chemo-induced diarrhea, insulin-dependent diabetes, and other conditions)&lt;br&gt;Nutrition-related side effects: anorexia, constipation, diarrhea, flatulence, nausea, pharyngitis, polyphagia, steatorrhea, stomach pain, vomiting, weight.</td>
<td>Use in oncology population: to treat the pain from bowel obstruction, from progressive GI &amp; genitourinary cancers.</td>
<td>Nutrition-related side effects: anorexia, constipation, diarrhea, flatulence, nausea, pharyngitis, polyphagia, steatorrhea, stomach pain, vomiting, weight.</td>
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</table>
### Producing Tumors of the Pancreas

- **Powder for suspension**
- **Powder of solution**
- **Solution, long-acting, I.M.** (intestinal tumor) q 4 weeks x 2 mos
- **Solution, short acting, sub-Q** (intestinal tumor) q 2-3 x/day

**Gain, xerostomia**

**Special Alert:** Diabetes, closely monitor

### Orphenadrine

**Invagesic®**

**Norflex®**

**Muscle relaxant formulations**

*Used to help treat skeletal muscle pain or injury*

- **Tablet, 3 x/day**
- **Tablet, extended-release 2 x/day**

Use in oncology population: when pain is caused by muscle spasm

**Nutrition-related side effects:** constipation, diarrhea, nausea, stomach pain, stomatitis, vomiting, xerostomia

**MAJOR Interactions:** alcoholic beverages, gamma butyrolactone, gamma-hydroxybutyrate, procaine

### Oxcarbazepine

**Trileptal®**

**Anticonvulsant formulations**

*Used to treat partial seizures*

- **Tablet, 2 x/day**
- **Suspension oral liquid, 2 x/day**

Use in oncology population: To control burning & tingling pain; nerve damage pain

**Nutrition-related side effects:** constipation, dysgeusia, dyspepsia, nausea, stomach pain, stomatitis, vomiting, xerostomia

**MAJOR Interactions:** alcoholic beverages, gamma butyrolactone, gamma-hydroxybutyrate, ginkgo, tansy ragwort, thuja

### Pamidronate

**Other names:**

- **ADP Sodium**
- **AHPB Sodium**
- **Aredia®**

**Bisphosphonate formulations**

*Used to treat Paget's disease of bone; used to treat bone damage from breast or bone marrow cancer*

- **Powder for solution**
- **Solution, I.V.**

For hypercalcemia: I.V. 2-24 hrs

For bone mets: I.V. 2-4 hrs, then repeat q 3-4 weeks or 1 x/month

Use in oncology population: to help relieve the pain of cancer when cancer has bone mets (breast or prostate cancer, or multiple myeloma); treats hypercalcemia of malignancy

**Nutrition-related side effects:** anorexia, cheilosis, constipation, diarrhea, dysgeusia, dyspepsia, dysphagia, nausea, pharyngitis, polydipsia, stomach cramps or pain, stomatitis, vomiting, weight changes, xerostomia

**Special Alert:** Diet, well-balanced, not excessive in calcium or vitamin D; Hydration, adequate fluid intake & urine output of 2 L/day; Vitamin D supplements, avoid; Calcium supplements, avoid

### Paroxetine

**Paxil®**

**Paxil®-CR**

**Pexeva®**

**Antidepressant formulations**

*Used to treat depression, obsessive-compulsive disorder, anxiety disorders, post-traumatic stress disorder, and premenstrual dysphoric disorder*

- **Tablet, 1 x/day**
- **Tablet, extended-release, 1 x /day**
- **Oral suspension, 1 x/day**

Use in oncology population: to help relieve nerve pain (tingling & burning pain) from a damaged nerve, caused by the tumor pressing on a nerve, or from cancer treatment

**Nutrition-related side effects:** appetite loss, constipation, diarrhea, dysgeusia, dyspepsia, flatulence, nausea, stomach pain, vomiting, weight changes, xerostomia

**To reduce stomach upset:** Take with food.

**MAJOR Interactions:** 5-HTP, ergot, ginkgo, Hawaiian baby woodrose, l-tryphophan, lithium, SAMe, St John's wort, thuja.
<table>
<thead>
<tr>
<th>Drug/Brand</th>
<th>Formulations/Uses</th>
<th>Use in Oncology Population</th>
<th>Nutrition-Related Side Effects</th>
<th>To Reduce Stomach Upset</th>
<th>MAJOR Interactions</th>
<th>Special Alerts</th>
<th>Nutrition-Related Withdrawal Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>phenytoin</strong>&lt;br&gt;Dilantin®&lt;br&gt;Dilantin® Infatabs®&lt;br&gt;Dilantin® Kapseals®&lt;br&gt;Dilantin-125®&lt;br&gt;Phenytek®&lt;br&gt;Dilantin-30 (Canada)</td>
<td>Anticonvulsant formulations <em>(Used to control seizures)</em>&lt;br&gt;-Capsule&lt;br&gt;-Capsule, extended-release, 1-4 x/day&lt;br&gt;-Tablet, chewable, 2-3 x/day&lt;br&gt;-Suspension, oral, 3 x/day</td>
<td>Use in oncology population: To control burning &amp; tingling pain; nerve damage pain.&lt;br&gt;Nutrition-related side effects: anorexia, constipation, nausea, pharyngitis, stomach pain, vomiting, weight loss.&lt;br&gt;To reduce stomach upset: Take with food or milk.</td>
<td>To reduce stomach upset: Take with food or milk.</td>
<td>MAJOR Interactions: alcoholic beverages, butanediol, chaparral, comfrey, folic acid, gamma butyrolactone, gamma-hydroxybutyrate, ginkgo, St John’s wort, tansy ragwort, thuja.</td>
<td>Special Alerts: Enteral nutrition, give medicine 2 hrs before or after a feeding; Calcium supplement, if needed, give separately by 2 hrs; Thiamine supplement, if needed, give separately by 2 hrs; Vitamin D supplement, if needed, give separately by 2 hrs; Diabetic meds, including tolbutamide, closely monitor.</td>
<td>Nutrition-related withdrawal symptoms: diarrhea, nausea, vomiting.</td>
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<td><strong>prednisone</strong>&lt;br&gt;Deltasone&lt;br&gt;Liquid Pred&lt;br&gt;Meticorten&lt;br&gt;Orasone&lt;br&gt;Prednisone Intensol®&lt;br&gt;Prednicen-M&lt;br&gt;Prednicot&lt;br&gt;Sterapred®&lt;br&gt;Sterapred® DS</td>
<td>Steroid formulations <em>(Used to treat allergic disorders, skin conditions, ulcerative colitis, arthritis, SLE, psoriasis, or respiratory disorders)</em>&lt;br&gt;-Tablet&lt;br&gt;-Solution, oral liquid solution&lt;br&gt;-Solution, oral concentrated&lt;br&gt;Oral concentrated solution: Can be mixed with juice <em>(not grapefruit)</em>, other flavored liquids, or soft foods such as applesauce.</td>
<td>Use in oncology population: For the managing pain (from the bronchial or lumbosacral plexopathy, frequently located in the low back, buttock, hip &amp; thigh) when added to opioids; to help with pain relief from nerve or spinal cord compression, liver or bone pain, by reducing inflammation &amp; swelling.&lt;br&gt;Nutrition-related side effects: dyspepsia, nausea, pharyngitis, stomach pain, sudden weight gain, vomiting.</td>
<td>To reduce stomach upset: Take on a full stomach.</td>
<td>MAJOR Interactions: alcoholic beverages, grapefruit*, lily-of-the-valley, St John’s wort.</td>
<td>Special Alert: Diabetes, closely monitor; Calcium, may need to supplement; Vitamin D, may need to supplement; Potassium, may need to supplement.</td>
<td>Nutrition-related withdrawal symptoms: stomach upset, stomatitis, weight loss.</td>
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<tr>
<td><strong>pregabalin</strong>&lt;br&gt;Lyrica®</td>
<td>Anticonvulsant formulation <em>(Used to control seizures and to treat fibromyalgia, treat pain in diabetic neuropathy, or herpes zoster (post-herpetic neuralgia)</em>&lt;br&gt;-Capsule, 2-3 x/day</td>
<td>Use in oncology population: To control burning &amp; tingling pain; nerve damage pain.&lt;br&gt;Nutrition-related side effects: appetite increase, bloating, constipation, diarrhea, dysphagia, edema, flatulence, nausea, pharyngitis, stomatitis, vomiting, weight loss.</td>
<td>To reduce stomach upset: Take on a full stomach.</td>
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<tr>
<td>Drug</td>
<td>Formulation</td>
<td>Use in oncology population</td>
<td>Nutrition-related side effects</td>
<td>Major Interactions</td>
<td>Special Alerts</td>
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<td><strong>protriptyline</strong>&lt;br&gt;Vivactil®&lt;br&gt;Antidepressant formulation&lt;br&gt;(Used to treat symptoms of depression)&lt;sup&gt;2,49&lt;/sup&gt;</td>
<td>-Solution, 2-3 x/day</td>
<td>Use in oncology population: to help relieve nerve pain (tingling &amp; burning pain) from a damaged nerve, caused by the tumor pressing on a nerve, or from cancer treatment&lt;sup&gt;34,45,49&lt;/sup&gt;</td>
<td>Appetite changes, constipation, diarrhea, dyspepsia, flatulence, nausea, pharyngitis, stomach cramps, vomiting, weight changes, xerostomia&lt;sup&gt;32,41&lt;/sup&gt;</td>
<td>MAJOR Interactions: Alcoholic beverages&lt;sup&gt;32&lt;/sup&gt;, Diabetic meds, Alcoholic beverages&lt;sup&gt;32&lt;/sup&gt;, pioglitazone (Actos®, Duetact®), rosiglitazone (Avandia®, Avandaryl®, Avandamet®), closely monitor&lt;sup&gt;2,32&lt;/sup&gt;; Magnesium supplement, take separately by 2 hrs.&lt;sup&gt;41&lt;/sup&gt;</td>
<td>Diabetes&lt;sup&gt;32&lt;/sup&gt;</td>
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<td><strong>scopolamine</strong>&lt;br&gt;Transderm Scop®&lt;br&gt;Anticholinergic formulation&lt;br&gt;(Used to relieve nausea, vomiting, and dizziness with motion sickness, post-op recovery from anesthesia, treatment of parkinsonism, spastic muscle, IBS, diverticulitis)&lt;sup&gt;3,32&lt;/sup&gt;</td>
<td>-Patch, extended release (3 days)</td>
<td>Use in oncology population: to help relieve pain from bowel obstruction, by reducing the secretion of body fluids, slows the GI tract, which reduces pressure &amp; pain on the bowel wall.&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Appetite changes, constipation, diarrhea, dyspepsia, flatulence, nausea, pharyngitis, stomach cramps, vomiting, weight changes, xerostomia&lt;sup&gt;32&lt;/sup&gt;</td>
<td>MAJOR Interactions: Alcoholic beverages&lt;sup&gt;32&lt;/sup&gt;, 5-HTP, cannabis (marijuana)&lt;sup&gt;7&lt;/sup&gt;, ergot, Hawaiian baby woodrose, hanbane, l-tryptophan, lithium, SAMe, scopola, St John's wort&lt;sup&gt;31&lt;/sup&gt;</td>
<td>Potassium chloride&lt;sup&gt;32&lt;/sup&gt;</td>
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<td><strong>sertraline</strong>&lt;br&gt;Zoloft®&lt;br&gt;Antidepressant formulation&lt;br&gt;(Used to treat depression, obsessive-compulsive disorder, panic disorder, anxiety disorders, post-traumatic stress disorder, and premenstrual dysphoric disorder)&lt;sup&gt;2&lt;/sup&gt;</td>
<td>-Tablet, 3-4 x/day</td>
<td>Use in oncology population: to help relieve nerve pain (tingling &amp; burning pain) from a damaged nerve, caused by the tumor pressing on a nerve, or from cancer treatment&lt;sup&gt;34,45,49&lt;/sup&gt;</td>
<td>Appetite changes, constipation, diarrhea, dyspepsia, flatulence, nausea, pharyngitis, stomach cramps, vomiting, weight changes, xerostomia&lt;sup&gt;32,41&lt;/sup&gt;</td>
<td>MAJOR Interactions: Alcoholic beverages&lt;sup&gt;32,41&lt;/sup&gt;, 5-HTP, ergot, ginkgo&lt;sup&gt;2&lt;/sup&gt;, grapefruit*, Hawaiian baby woodrose, l-tryphohan, lithium, SAMe, St John's wort, thuja&lt;sup&gt;2,31,41&lt;/sup&gt;</td>
<td>Diabetes&lt;sup&gt;32&lt;/sup&gt;</td>
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*Grapefruit Interaction: Avoid grapefruit juice, grapefruit segments, grapefruit extract, seville oranges (other names: sour orange, Citrus aurantium, L, bitter, bigarade used to make marmalade), pummelos (pomelos), and tangelos<sup>27,28,29</sup> |

**Special alerts:** Diabetic-oral meds, such as tolbutamide (Orinase)<sup>32</sup>; latex sensitivity: liquid concentrate dropper contains latex<sup>32</sup> |

**Nutrition-related withdrawal symptoms:** Nausea<sup>2</sup>
<table>
<thead>
<tr>
<th>Drug</th>
<th>Category</th>
<th>Description</th>
<th>Use in Oncology Population</th>
<th>Nutrition-related Side Effects</th>
<th>Interactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>strontium-89 chloride Metastron® Quadrant®</td>
<td>Radiopharmaceutical</td>
<td>(Used to help relieve bone pain from some cancers, such as multiple myeloma) 2-32. Injectable, I.V. Solution</td>
<td>Use in oncology population: to provide relief of bone pain by irradiating the cancerous bone areas. 2-38,45.</td>
<td>Nutrition-related side effects: diarrhea 32.</td>
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<tr>
<td>tizanidine Zanaflex® Zanaflex® Capsule</td>
<td>Skeletal muscle relaxant formulations</td>
<td>(Used to temporarily relieve spasms and muscle cramping with MS, CVA, or spinal injury) 2,32. Tablet q 6-8 hrs - Capsule q 6-8 hrs. Maximum Dosage 36 mg/24 hrs.</td>
<td>Use in oncology population: when pain is caused by muscle spasm 49.</td>
<td>Nutrition-related side effects: anorexia, constipation, diarrhea, dyspepsia, dysphagia, nausea, pharyngitis, stomach pain, vomiting, weight loss, xerostomia 2,32.</td>
<td>Interactions: alcoholic beverages 2,41.</td>
</tr>
<tr>
<td>topiramate Topamax® Topiragen</td>
<td>Anticonvulsant formulations</td>
<td>(Used to treat seizures and prevent migraine headaches) 2. Tablet, 2 x/day - Capsule, 2 x/day. Drink 6 - 8 glasses of water daily to prevent kidney stone formation. 32.</td>
<td>Use in oncology population: To control burning &amp; tingling pain; nerve damage pain 34,45,49.</td>
<td>Nutrition-related side effects: anorexia, constipation, diarrhea, dysgeusia, dyspepsia, dysphagia, edema, flatulence, nausea, pharyngitis, polydipsia, stomach pain, stomatitis, tongue swelling, weight loss, xerostomia. 2,32,41.</td>
<td>MAJOR Interactions: alcoholic beverages, gamma butyrolactone, gamma-hydroxybutyrate, ginkgo 2, iron 32, St John's wort, thuja. 31,41. Special Alerts: Ketogenic diet: Avoid high fat, low carbohydrate diet, increases the risk of kidney stones 32. Diabetes: oral meds-pioglitazone (Actos®),32 metformin 2. Osteoporosis.</td>
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<tr>
<td>trazodone Desyrel® Desyrel Dividose Oleptro</td>
<td>Antidepressant formulation</td>
<td>(Used to treat depression, treat depression, anxiety disorders, insomnia, and chronic pain) 2. Tablet, divided doses - Tablet, extended-release, 1 x/day.</td>
<td>Use in oncology population: to help relieve nerve pain (tingling &amp; burning pain) from a damaged nerve, caused by the tumor pressing on a nerve, or from cancer treatment 34,45,49.</td>
<td>Nutrition-related side effects: anorexia, constipation, diarrhea, dysgeusia, (bad taste), nausea, stomach pain, vomiting, weight changes, xerostomia 2. To reduce stomach upset: Take the regular tablet with or immediately after a meal or light snack. Take the extended-release tablet at bedtime without food. 2. MAJOR Interactions: 5-HTP, alcoholic beverages, chaparral, comfrey, ergot, ginkgo, grapefruit*, Hawaiian baby woodrose, l-tryphophan, lithium, SAMe, St John's wort. 2,31.</td>
<td>*Grapefruit Interaction: Avoid grapefruit juice, grapefruit segments, grapefruit extract, scville oranges (other names: sour orange, Citrus aurantium, L, bitter, bigarade used to make marmalade), pummelos (pomelos), and tangelos 37,25,29.</td>
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<tr>
<td>Trimipramine</td>
<td>Antidepressant formulation&lt;br&gt;(Used to treat symptoms of depression)&lt;sup&gt;2&lt;/sup&gt;&lt;br&gt;-Tablet&lt;br&gt;-Capsule, divided doses</td>
<td>Use in oncology population: to help relieve nerve pain (tingling &amp; burning pain) from a damaged nerve, caused by the tumor pressing on a nerve, or from cancer treatment&lt;sup&gt;34,45,49&lt;/sup&gt; &lt;br&gt;Nutrition-related side effects: anorexia, black tongue, constipation, diarrhea, dysgeusia (strange taste), dyspepsia, nausea, stomatitis, vomiting, weight gain, xerostomia&lt;br&gt;MAJOR Interactions: 5-HTP, alcoholic beverages, arsenic, cannabis, cesium, country mallow, ephedra, ergot, Hawaiian baby woodrose, l-tryptophan, lithium, SAMe, scopolia, St John's wort&lt;sup&gt;2,31&lt;/sup&gt;&lt;br&gt;Special Alert: Diabetes, monitor closely&lt;sup&gt;2&lt;/sup&gt;&lt;br&gt;Nutrition-related withdrawal symptoms: anorexia, diarrhea, nausea, vomiting, xerostomia&lt;sup&gt;32&lt;/sup&gt;</td>
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<tr>
<td>Valproic acid</td>
<td>Anticonvulsant formulations&lt;br&gt;(Used to treat different types of seizure disorders)&lt;sup&gt;2&lt;/sup&gt;&lt;br&gt;-Capsule&lt;br&gt;-Tablet, extended-release&lt;br&gt;-Tablet-delayed release&lt;br&gt;-Capsule sprinkle&lt;br&gt;-Oral syrup</td>
<td>Use in oncology population: To control burning &amp; tingling pain; nerve damage pain&lt;sup&gt;34,36&lt;/sup&gt;&lt;br&gt;Nutrition-related side effects: appetite changes, constipation, diarrhea, heartburn, pharyngitis, weight changes&lt;br&gt;To prevent stomach upset: Take with food.&lt;br&gt;MAJOR Interactions: alcoholic beverages, butanediol, gamma butyrolactone, gamma-hydroxybutyrate, gotu kola, hydrazine sulfate, Jamaican dogwood, kava, l-tryptophan, marijuana, marsh tea, melatonin, motherwort, St John's wort, sweet bay, thuja, valerian, wild lettuce&lt;sup&gt;31&lt;/sup&gt;&lt;br&gt;Special Alert: Oral syrup, do not mix into carbonated beverages; Hydration, drink plenty of water or other liquids while taking this medicine; Urea cycle disorder: monitor serum ammonia&lt;sup&gt;32&lt;/sup&gt;; Calcium, increase dietary intake, or use supplement&lt;sup&gt;41&lt;/sup&gt;; Vitamin D, increase dietary intake, or use supplement&lt;sup&gt;41&lt;/sup&gt;</td>
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<tr>
<td>Venlafaxine</td>
<td>Antidepressant formulations&lt;br&gt;(Used to treat major depressive disorder, anxiety disorder, panic disorder, and hot flashes)&lt;sup&gt;2,34,49&lt;/sup&gt;&lt;br&gt;-Tablet&lt;br&gt;-Tablet, extended-release&lt;br&gt;-Capsule, extended-release, 2-3 x/day</td>
<td>Use in oncology population: to help relieve nerve pain (tingling &amp; burning pain) from a damaged nerve, caused by the tumor pressing on a nerve, or from cancer treatment&lt;sup&gt;34,45,49&lt;/sup&gt;&lt;br&gt;Nutrition-related side effects: anorexia, constipation, diarrhea, dysgeusia, dyspepsia, flatulence, nausea, stomach pain, vomiting, xerostomia&lt;br&gt;To prevent stomach upset: Take tablet with food.&lt;sup&gt;41&lt;/sup&gt; Take the extended-release capsule with food. Swallow the capsule whole with fluid.&lt;sup&gt;4&lt;/sup&gt;&lt;br&gt;MAJOR Interactions: alcoholic beverages, 5-HTP, ergot, ginkgo, Hawaiian baby woodrose, l-tryptophan, lithium, SAMe, St John's wort, thuja&lt;sup&gt;2,31,41&lt;/sup&gt;&lt;br&gt;Special Alert: Diabetes, closely monitor&lt;sup&gt;41&lt;/sup&gt;&lt;br&gt;Nutrition-related withdrawal symptoms: anorexia, diarrhea, nausea, vomiting, xerostomia&lt;sup&gt;32&lt;/sup&gt;</td>
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zoledronic acid (Reclast®, Zometa®) is a Bisphosphonate formulation used to prevent or treat osteoporosis in postmenopausal women or long-term use of steroids > 12 months; increases bone mass in males with osteoporosis, treat Paget's disease, multiple myeloma, hypercalcemia of malignancy, or mets bone cancer. Solution-injection over at least 15 minutes. Drink at least 2 glasses of fluids within a few hours before receiving this medicine.

Use in oncology population: to help relieve the pain of cancer when cancer has metastasized to the bone (breast or prostate cancer, or multiple myeloma). Nutrition-related side effects: anorexia, cheilosis, constipation, diarrhea, dysgeusia, dyspepsia, dysphagia, nausea, pharyngitis, polydipsia, stomach cramps or pain, stomatitis, vomiting, weight changes, xerostomia. Special Alert: Diet, well-balanced, not excessive in calcium or vitamin D; Hydration, adequate fluid intake & urine output of 2 L/day; Vitamin D supplements, avoid; Calcium supplements, avoid.

Pain Medication References:


42. Rx List The Internet Drug Index. Rx List, Inc. 2011. Available at: http://www.rxlist.com/drugs/alpha_a.htm

44. Vopac. Available at: http://www.drugs.com/cons/vopac.html


47. Paice JA. Mechanisms and Management of Neuropathic Pain in Cancer. Available at: http://www.supportiveoncology.net/journal/articles/0102107.pdf


50. Clodronic Acid (Oral Route, Injection Route) Last updated: Nov. 1, 2010 Source: Drug Information provided by: Micromediex Available at: http://www.mayoclinic.com/health/drug-information/DR600433


## Pancreatic Enzymes

### Individualization of Dosing
- Clinical symptoms
- Degree of steatorrhea
- Fat content of the diet

If symptoms of steatorrhea persist, the dosage may be increased by a healthcare professional only.

### Dosage Schedule

#### Children 4 years & older & adults:
- **Starting dose**: 500 lipase units/kg of body weight/meal
- **Gradually increase dosage.**

#### Maximum dose:
- 2,500 lipase units/kg of body weight/meal, or < or equal to 10,000 lipase units/kg of body weight/day, or < 4,000 lipase units/grams fat ingested/day.

If doses > 2,500 lipase units/kg of body weight/meal, further investigation is warranted.1,2

#### Geriatric patients:
Reduce the lipase units/kg of body weight/meal. They weigh more & tend to eat less fat/kg of body weight.1,2

### Common side effects:
- Stomach pain
- Gas

### Serious side effects:
- Mouth irritation (not swallowed completely)
- Increase uric acid levels

If unable to swallow the capsule:
1. Carefully open the capsules.
2. Add to small amount room temperature applesauce.
3. Immediately swallow the mixture (Do not chew).
4. Drink water to ensure all spheres are swallowed.

Doses > 6,000 lipase units/kg of body weight/meal:
- Increased risk for colonic stricture (children < 12 yrs)
- Re-assess & immediately lower dose or titrate down to lower range.

### Allergic reaction symptoms:
Trouble with breathing, skin rash, or swollen lips. SEEK IMMEDIATE MEDICAL CARE.

### References:
Pancreatic Enzymes

2. FDA approved Creon® Full Prescribing Information Rev. 8/2010.
   Available at: http://www.creon-us.com/assets/pdf/FDA%20approved%20CREON_PI.pdf
   Available at: http://www.rxlist.com/zenpep-drug.htm