### Table 15c. Antiretroviral-Therapy-Associated Adverse Effects and Management Recommendations—Gastrointestinal Effects  
(Last updated May 22, 2018; last reviewed May 22, 2018)  (page 1 of 2)

<table>
<thead>
<tr>
<th>Adverse Effects</th>
<th>Associated ARVs</th>
<th>Onset/Clinical Manifestations</th>
<th>Estimated Frequency</th>
<th>Risk Factors</th>
<th>Prevention/Monitoring</th>
<th>Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nausea/Vomiting</td>
<td>All ARVs, but most notably—NRTIs: • ddl and ZDV at a higher rate than others PIs: • Especially with RTV boosting (e.g., LPV/r, DRV/r)</td>
<td>Onset: • Early Presentation: • Nausea, emesis—may be associated with anorexia and/or abdominal pain</td>
<td>Varies with ARV agent; 10% to 30% in some series</td>
<td>Unknown</td>
<td>Instruct patient to take PIs with food. Monitor for weight loss, ARV adherence. <strong>Do not use</strong> ddl, d4T, or NFV (individually or together) as part of an ARV regimen.</td>
<td>Reassure patient that these adverse effects generally improve over time (usually 6–8 weeks). Supportive care. In extreme or persistent cases, use antiemetics or switch ARV regimen.</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>PIs: • Particularly NFV, LPV/r, and DRV/r NRTIs: • ddl and d4T at a higher rate than 3TC or FTC</td>
<td>Onset: • Early Presentation: • Generally soft, more frequent stools</td>
<td>Varies with ARV agent; generally ≤15% (range 5% to 30%)</td>
<td>Unknown</td>
<td>Monitor for weight loss, dehydration. <strong>Do not use</strong> ddl, d4T, or NFV (individually or together) as part of an ARV regimen.</td>
<td>If prolonged or severe, exclude infectious or noninfectious (e.g., lactose intolerance) causes of diarrhea. Reassure patient that this adverse effect generally improves over time (usually 6–8 weeks). Consider switching ARV regimen in persistent and severe cases. Although treatment data in children are lacking, potentially useful modalities include: • Dietary modification • Bulk-forming agents (psyllium) • Antimotility agents (loperamide) • Crofelemer is FDA-approved for treatment of ART-associated diarrhea only in adults ≥18 years of age; no pediatric data available.</td>
</tr>
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<td>Pancreatitis</td>
<td>More Common:</td>
<td>Onset:</td>
<td>&lt;2% in recent series</td>
<td>Use of concomitant medications associated with pancreatitis (e.g., TMP-SMX, pentamidine, ribavirin)</td>
<td>Do not use ddI or d4T (individually or together) as part of an ARV regimen</td>
<td>Discontinue offending agent—avoid reintroduction. Manage symptoms of acute episode. If associated with hypertriglyceridemia, consider interventions to lower TG levels.</td>
</tr>
<tr>
<td></td>
<td>• ddI, d4T (especially if administered concurrently)</td>
<td>Presentation:</td>
<td></td>
<td>Hypertriglyceridemia</td>
<td>Advanced disease</td>
<td></td>
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<tr>
<td></td>
<td>Rare:</td>
<td>• Emesis, abdominal pain, elevated amylase and lipase (asymptomatic hyperamylasemia or elevated lipase do not in and of themselves indicate pancreatitis)</td>
<td></td>
<td>Previous episode of pancreatitis</td>
<td>Alcohol use</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• RTV-boosted PIs</td>
<td></td>
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<tr>
<td></td>
<td>• Other ARVs</td>
<td></td>
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*a ddI, d4T, and NFV are no longer recommended; these ARVs should not be used (individually or together) as part of an ARV regimen. Co-administration of ddI and d4T is contraindicated (no exceptions).*

**Key to Acronyms:**

- 3TC = lamivudine
- ART = antiretroviral therapy
- ARV = antiretroviral
- d4T = stavudine
- ddI = didanosine
- DRV/r = darunavir/ritonavir
- FDA = Food and Drug Administration
- FTC = emtricitabine
- LPV/r = lopinavir/ritonavir
- NFV = nelfinavir
- NRTI = nucleoside reverse transcriptase inhibitor
- PI = protease inhibitor
- RTV = ritonavir
- TG = triglyceride
- TMP-SMX = trimethoprim sulfamethoxazole
- ZDV = zidovudine

### References


