Table 15c. Antiretroviral Therapy-Associated Adverse Effects and Management Recommendations—Gastrointestinal Effects  (Last updated April 16, 2019; last reviewed April 16, 2019) (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 ARV drugs, but most notably RTV-boosted PIs</td>
<td>Onset: • Early Presentation: • Nausea and emesis, both of which may be associated with anorexia and/or abdominal pain</td>
<td>Varies with ARV agent; generally ≤15%</td>
<td>Unknown</td>
<td>Instruct patient to take PIs with food. Monitor for weight loss and ARV adherence.</td>
<td>Reassure patient that these adverse effects generally improve over time (usually 6–8 weeks). Consider switching to ARV drugs with smaller tablet sizes (see Appendix A, Table 2). Provide supportive care. In extreme or persistent cases, use antiemetics or switch to another ARV regimen.</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>All ARV drugs, but most notably RTV-boosted PIs</td>
<td>Onset: • Early Presentation: • More frequent bowel movements and stools that are generally soft</td>
<td>Varies with ARV agent; generally ≤15%</td>
<td>Unknown</td>
<td>Monitor for weight loss and dehydration.</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 to another ARV regimen in persistent and severe cases. Treatment data in children are lacking; however, the following strategies may be useful when the ARV regimen cannot be changed: • Dietary modification • Using bulk-forming agents (e.g., psyllium) • Using antimotility agents (e.g., loperamide) • Using crofelemer, which is approved by the FDA to treat ART-associated diarrhea in adults aged ≥18 years; no pediatric data are available.</td>
</tr>
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| Pancreatitis    | Rare, but may occur with RTV-boosted PIs or NRTIs | Onset:  
  • Any time, usually after months of therapy  
Presentation:  
  • Emesis, abdominal pain, elevated amylase and lipase levels (asymptomatic hyperamylasemia or elevated lipase do not in and of themselves indicate pancreatitis) | <2% in a recent case series | Use of concomitant medications associated with pancreatitis (e.g., TMP-SMX, pentamidine, ribavirin)  
Hypertriglyceridemia  
Advanced HIV infection  
Previous episode of pancreatitis  
Alcohol use | Measure serum amylase and lipase concentrations if persistent abdominal pain develops | Discontinue offending agent and **avoid reintroduction**.  
Manage symptoms of acute episodes.  
If pancreatitis is associated with hypertriglyceridemia, consider using interventions to lower TG levels. |

**Key to Acronyms:** ART = antiretroviral therapy; ARV = antiretroviral; FDA = Food and Drug Administration; NRTI = nucleoside reverse transcriptase inhibitor; PI = protease inhibitor; RTV = ritonavir; TG = triglyceride; TMP-SMX = trimethoprim sulfamethoxazole; ZDV = zidovudine

**References**


