Guidelines for the Use of Antiretroviral Agents in Pediatric HIV Infection

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Table 15g. Antiretroviral Therapy-Associated Adverse Effects and Management Recommendations—Lactic Acidosis
(Last updated April 16, 2019; last reviewed April 16, 2019)

<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>Lactic Acidosis</td>
<td>NRTIs; ZDV; Less likely with 3TC, FTC, ABC, TAF, and TDF</td>
<td>Onset: Generally, after years of exposure; Lactic acidosis may be clinically asymptomatic.</td>
<td>Insidious Onset of a Combination of Signs and Symptoms: Generalized fatigue, weakness, and myalgias; Vague abdominal pain, weight loss, unexplained nausea, or vomiting; Dyspnea; Peripheral neuropathy</td>
<td>Lactic acidosis is associated with use of ddI and d4T. Cases are rare now that these NRTIs are no longer recommended. 3TC, FTC, ABC, TAF, and TDF are less likely to induce clinically significant mitochondrial dysfunction than ZDV.</td>
<td>Prevention: Due to the presence of propylene glycol as a diluent, LPV/r oral solution should not be used in preterm neonates or any neonate who has not attained a postmenstrual age of 42 weeks and a postnatal age of ≥14 days.</td>
<td>Lactate 2.1–5.0 mmol/L (Confirmed with a Second Test): Consider discontinuing all ARV drugs temporarily while conducting additional diagnostic workup. Lactate &gt;5.0 mmol/L (Confirmed With a Second Test) or &gt;10.0 mmol/L (Any One Test): Discontinue all ARV drugs.</td>
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Other Drugs:
- See Risk Factors and Prevention/Monitoring columns for information regarding the toxicity of propylene glycol when LPV/r oral solution is used in neonates.

| Adults: | Female sex; High BMI; Chronic HCV infection; African-American race; Coadministration of TDF with metformin; Overdose of propylene glycol; CD4 cell count <350 cells/mm³; Acquired riboflavin or thiamine deficiency; Possibly pregnancy Preterm Infants or Any Neonates Who Have Not Attained a Post-Menstrual Age of 42 Weeks and a Postnatal Age of ≥14 Days: | Monitoring Asymptomatic Patients: | | | | | |
| | | Lactate >2.0 mmol/L (Confirmed With a Second Test): | Monitoring Patients with Clinical Signs or Symptoms Consistent with Lactic Acidosis: | | | | |
| | | Obtain blood lactate level.a | | | | | |
| | | Additional diagnostic evaluations should include serum bicarbonate, anion gap, and/or arterial blood gas; amylase and lipase; serum albumin; and hepatic transaminases. | | | | | |

Note: Patients may present with acute multi-organ failure (e.g., fulminant hepatic failure, pancreatic failure, respiratory failure).

A diminished ability to metabolize propylene glycol may lead to accumulation and potential adverse events.

*a* Blood for lactate determination should be collected, without prolonged tourniquet application or fist clenching, into a pre-chilled, gray-top, fluoride-oxalate-containing tube and transported on ice to the laboratory to be processed within 4 hours of collection.

*b* Management can be initiated before receiving the results of the confirmatory test.

Key to Acronyms: 3TC = lamivudine; ABC = abacavir; ARV = antiretroviral; BMI = body mass index; CD4 = CD4 T lymphocyte; d4T = stavudine; ddI = didanosine; FTC = emtricitabine; HCV = hepatitis C virus; IV = intravenous; LPV/r = lopinavir/ritonavir; NRTI = nucleoside reverse transcriptase inhibitor; TAF = tenofovir alafenamide; TDF = tenofovir disoproxil fumarate; THAM = tris (hydroxymethyl) aminomethane; ZDV = zidovudine

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References

General Reviews


Risk Factors


Monitoring and Management


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