**F₂-Isoprostanes (F₂-IsoPs)**

CPT Code 82542/82570  
Sample Type Urine  
Tube Type Yellow Top

**Description**

F₂-IsoPs, prostaglandin-like compounds formed from the free radical-mediated oxidation of arachidonic acid¹, are the ‘gold standard’ for measuring oxidative stress in the body. F₂-IsoPs also have potent biological effects associated with inflammation and therefore may mediate chronic disease initiation and progression. Additionally, F₂-IsoPs may also act as potent vasoconstrictors² via thromboxane formation in the endothelium, and promote platelet activation resulting in thrombus formation³.

**Clinical Use**

The F₂-IsoPs test may be performed on individuals at risk of future cardiovascular disease due to lifestyle risks, or those with a family history of cardiovascular disease.

**Clinical Significance**

- Elevated levels of urinary F₂-IsoPs are seen in conditions associated with increased risk for atherosclerosis⁴ and certain forms of cancer⁵,⁶.
- F₂-IsoPs are elevated in smokers⁷ and with increased intake of red meat⁸ and are decreased with exercise⁹.
- Lower steady state levels are associated with cardiovascular fitness and reduced risk.

**Testing Frequency**

The frequency of testing is determined by an individual’s medical history, but may be performed yearly alongside a standard lipid panel in asymptomatic individuals with lifestyle risk factors.

**Sample Type**

The F₂-IsoPs test should be performed on a urine sample collected in a yellow top tube (without preservative).

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**Commercial Insurance or Medicare Coverage**

Coverage guidelines, also known as NCD (National Coverage Determination) or LCD (Local Coverage Determination) have been established or posted by CMS (Medicare & Medicaid). Guidelines should be reviewed for coverage and limitations. Limited information has been provided by the majority of the larger carriers (Aetna, United HealthCare, Cigna, Blues).

**Understanding Medical Necessity**

The following ICD-10 codes for F₂-Isoprostanes are listed as a convenience for the ordering physician. The ordering physician should report the diagnosis code that best describes the reason for performing the test.

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Diagnosis Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 2 Diabetes Mellitus with Hyperglycemia</td>
<td>E11.65</td>
</tr>
<tr>
<td>Type 2 Diabetes Mellitus without Complications</td>
<td>E11.9</td>
</tr>
<tr>
<td>Other Specified Diabetes Mellitus without Complications</td>
<td>E13.9</td>
</tr>
<tr>
<td>Pure Hypercholesterolemia, Unspecified</td>
<td>E78.00</td>
</tr>
<tr>
<td>Familial Hypercholesterolemia</td>
<td>E78.01</td>
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<tr>
<td>Mixed Hyperlipidemia</td>
<td>E78.2</td>
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<tr>
<td>Other Hyperlipidemia</td>
<td>E78.4</td>
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<tr>
<td>Hyperlipidemia, Unspecified</td>
<td>E78.5</td>
</tr>
<tr>
<td>Hyperuricemia without Signs of Inflammatory Arthritis and Tophaceous Disease</td>
<td>E79.0</td>
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<tr>
<td>Essential (primary) Hypertension</td>
<td>I10</td>
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<tr>
<td>Atherosclerotic Heart Disease of Native Coronary Artery without Angina Pectoris</td>
<td>I25.10</td>
</tr>
</tbody>
</table>

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F₂-IsoPs levels are increased with:
- Cigarette smoking
- Poor diet (including high red meat intake)
- Sedentary lifestyle
References


8. Tappel A. Heme of consumed red meat can act as a catalyst of oxidative damage and could initiate colon, breast and prostate cancers, heart disease and other diseases. Med Hypotheses. 2007; 68: 562-564.


Treatment Considerations

These treatment considerations are for educational purposes only. Specific treatment plans should be provided and reviewed by the treating practitioner.

✓ Assess LDL-C levels.
  • If not at goal, consider lipid-lowering therapy, ideally with a statin-based regimen if not contraindicated.

✓ Assess smoking habits.
  NOTE: Smoking cessation is essential as individuals who smoke are increased risk of heart disease and blood clots.

✓ Assess lifestyle habits.
  • Consider diet/exercise/weight reduction efforts as appropriate.
  • Consider improving cardiovascular conditioning. Individuals who are not conditioned may have increased oxidation, but this will reduce as conditioning improves.
  • Consider optimal caloric intake as individuals who exercise a lot may not be taking in enough calories for their activity level. In short, they may be at risk for increased oxidation in their bodies due to lack of nutritional balance.