F₂-Isoprostanes (F₂-IsoPs)

Individuals with the highest levels of F₂-IsoPs have a 30-fold increased risk of developing coronary heart disease¹.

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

F₂-IsoPs levels should be measured in:
- Asymptomatic individuals
- Chronic smokers
- Individuals at risk for pre-diabetes/diabetes

What are F₂-IsoPs?
F₂-IsoPs are prostaglandin-like compounds produced by free radical mediated oxidation of arachidonic acid².

What is the function of F₂-IsoPs?
F₂-IsoPs have potent biological effects associated with inflammation and therefore may mediate chronic disease initiation and progression. Most importantly, F₂-IsoPs serve as a barometer of lipid (arachidonic acid) oxidation. Additionally, F₂-IsoPs may also act as potent vasoconstrictors³ via thromboxane formation in the endothelium, and promote platelet activation resulting in thrombus formation⁴.

Why measure F₂-IsoPs levels?
- F₂-IsoPs are elevated with increased intake of red meat⁵ and decreased with exercise⁶.
- Elevated levels of urinary F₂-IsoPs are seen in conditions associated with increased risk for atherosclerosis¹ and certain forms of cancer⁷,⁸.
- Lower steady state levels are associated with cardiovascular fitness and reduced risk.

How often should I order F₂-IsoPs testing?
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.

What type of sample is required?
The F₂-IsoPs test should be performed on a urine sample collected in a yellow top tube (without preservative).

How should my patients prepare for the F₂-IsoPs test?
There are no preparations necessary. The patient does not have to be fasting for the F₂-IsoPs test and can be taking medications.

Is the F₂-IsoPs test covered by insurance?
The F₂-IsoPs test is covered by most commercial insurances and Medicare.

Relative Risk:
- Low: <0.86 ng/mg
- High: ≥0.86 ng/mg

References
5. 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.
**F₂-Isoprostanes (F₂-IsoPs)**

**CPT Code** 83789/82570

**Order Code** C918

**Sample Type** Urine

**Tube Type** Yellow Top

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**F₂-Isoprostanes (F₂-IsoPs) Treatment Algorithm**

**F₂-IsoPs Test Results**

- **≥0.86 ng/mg**
  - **Assess LDL-C levels.** If not at goal, consider statins, ezetimibe or combination therapy if not contraindicated.

- **< 0.86 ng/mg**
  - **Assess smoking habits.** Note: Smoking cessation is essential as individuals who smoke are at 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.

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**Treatment Recommendations**

*These recommendations are for educational purposes only. Specific treatment plans should be provided and reviewed by the treating physician.*

Retest every 6 months or whenever a standard lipid panel is performed

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