Metals
TOXIC + NUTRIENT

Gastrointestinal Health

Assessing toxic metal burden that may help contextualize gut barrier dysfunction and dysbiosis-pattern GI presentations.



Toxic metals such as mercury, lead, cadmium, aluminum, and arsenic have no known physiological function and can accumulate in the body following dietary, environmental, or occupational exposure, and a growing body of research links toxic metal exposure to disruption of intestinal barrier integrity and gut microbiota composition relevant to GI disorders including IBD[1,2,3]. Mosaic Diagnostics offers Metals testing across five specimen types to help identify a toxic metal contributor to complex issues[1–5].

When Might Providers Consider Heavy Metals Testing

Unexplained GI Symptoms, Nausea, or Vomiting: GI complaints without a clear structural or infectious cause, particularly with a plausible metal exposure history.

IBD or Dysbiosis-Pattern GI Symptoms with Exposure History: Known or suspected exposure via dental amalgams (mercury), well water, high-mercury seafood, contaminated rice/grain (arsenic), or occupational sources, in patients with relapsing GI symptoms.[1,2,3]

Intestinal Permeability ("Leaky Gut") Presentations: GI complaints alongside systemic immune or sensitivity patterns suggestive of impaired mucosal barrier integrity.[1,3]

GI Symptoms with Overlapping Systemic Features: GI complaints co-occurring with fatigue, weakness, cognitive changes, or other systemic symptoms suggestive of a broader metal burden[1,2,3].

What Heavy Metals Testing Measures

Selected Analytes	Everyday Exposure Sources	GI Relevance
Core GI-Relevant Toxic Metals (Arsenic, Lead, Mercury, Cadmium)	Contaminated rice, grains, and well water (arsenic); aging plumbing, paint, and imported spices or cosmetics (lead); high-mercury fish and dental amalgams (mercury); cigarette smoke, shellfish, and contaminated soil or produce (cadmium)[7].	The most extensively studied toxic metals in relation to gut health; associated with disrupted tight-junction proteins, increased intestinal permeability, and gut microbiota dysbiosis.[1,2,3]
Aluminum	Cookware, antiperspirants, and processed foods[8].	Experimental studies suggest that aluminum may alter intestinal tight-junction proteins and barrier integrity[1,3].
Nutrient (Essential) Element Status (Zinc, Copper, Selenium, Magnesium)	Obtained through diet (meat, seafood, nuts, seeds, and whole grains); status can be influenced by restrictive diets, GI malabsorption, or competitive interaction with toxic metal exposure[9].	Zinc and selenium status has been linked to intestinal mucosal integrity, oxidative stress regulation, and inflammatory bowel disease pathogenesis and resolution; assessed alongside toxic element burden, particularly relevant in GI-related malabsorption or during metal detoxification monitoring.[6]

Clinical Applications & Evidence Context

Condition	Clinical Encapsulation
Inflammatory Bowel Disease (Crohn's Disease & Ulcerative Colitis) **& Dysbiosis**	Intestinal epithelial barrier dysfunction, immune dysregulation, and microbial dysbiosis are associated with GI-related disorders including IBD; heavy metal exposure (arsenic, lead, mercury, cadmium) has been shown to damage the intestinal barrier and disrupt gut microbiota composition and may be a relevant adjunctive consideration in complex or relapsing GI presentations[1,4,5].
Intestinal Permeability ("Leaky Gut")	Heavy metals including cadmium and mercury have been shown in experimental models to downregulate intestinal tight-junction proteins and increase gut permeability; Metals testing may help identify a toxicant-driven contributor to barrier dysfunction in patients with leaky-gut-pattern presentations[1,3].
Dysbiosis-Pattern GI Symptoms with Metal Exposure History	Patients with a plausible metal exposure history (dental amalgams, well water, high-mercury seafood, occupational exposure) presenting with bloating, altered bowel habits, or other dysbiosis-pattern symptoms may benefit from metals testing, given documented effects of arsenic, lead, mercury, and cadmium on gut microbiota composition[2,3].
Unexplained GI Symptoms, Nausea & Vomiting	Gastrointestinal symptoms and nausea/vomiting are listed among the symptom presentations associated with heavy metal accumulation; Metals testing (stool or whole blood, depending on acuity) may help identify a metal-exposure contributor in patients with these symptoms and no clear alternative cause[1,2,3].
Treatment-Resistant GI Presentations with Overlapping Systemic Symptoms	GI complaints co-occurring with fatigue, weakness, cognitive changes, or other systemic symptoms may reflect a broader metal burden; Metals testing may help characterize this contributor in patients whose GI360, OAT, or IgG Food MAP findings have not fully explained persistent symptoms[1,2,3].

How Heavy Metals Testing Supports Clinical Reasoning

Avoids Exposure Context

When the standard workup is incomplete, inconclusive, or does not account for environmental or dietary contributors, Metals testing adds an exposure-oriented layer to the differential[1,2,3].

Supports Hypothesis Generation

Toxic metal burden is a biologically plausible contributor to gastrointestinal, systemic, and overlapping symptom patterns documented in the peer-reviewed literature[1,2,3,7].

Guides Clinical Reasoning

Especially useful when GI symptoms cluster with other systemic features, fluctuate over time, or occur in the context of a plausible exposure history[1,2,3].

How to Order

To order the Heavy Metals Testing, contact your Mosaic Diagnostics representative or visit [www.mosaicdx.com]. Specimen collection kits and requisition forms are available through your account portal. For clinical support or interpretation questions, contact our clinical education team.



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References

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