A Summary of Lab Tests for Heavy Metal Testing

Understanding Heavy Metal Toxicity

People living in polluted areas, such as cities and industrial areas, report a much higher incidence of chronic illnesses than their counterparts in less developed areas. Mercury, aluminum, cadmium, nickel, cobalt, uranium, lead, thallium, arsenic, etc. exist in our water, air, food, amalgam dental fillings and are absorbed into the body's cells. Once inside the body they can cause tissue destruction, functional disturbances and a general weakening of the person's resistance to illness. Occasionally, these toxic metals can reside in the body's cells but not be substantially present in the blood, urine or hair samples. Therefore, they are overlooked by single-event or unprovoked testing procedures, such as those normally conducted by third-party testing labs. In these situations, such overly simplistic or unprovoked tests will return results that are falsely negative. That is, they fail to detect the presence of toxic metals in, say, the urine sample when these toxic metals do exist in the patient's body.

Chronic and debilitating health concerns, if caused by toxic metals, can be eliminated once appropriate detoxification is achieved. The following lab tests provide the detection of specific toxic metals, including a strategy for reducing the risk of troublesome false negatives when testing for the presence of these metals.

The detection of heavy metal toxicity can be a key factor to a successful clinical outcome in the treatment of any chronic or acute health concern. Heavy Metal testing is appropriate at the beginning, middle and end of therapy. Toxic Element or Heavy Metal Lab tests work most effectively when the patient has avoided consuming fish, inorganic foods or mineral supplements, and has not had direct contact with such substances as chlorine, drugs or chemicals for the three days immediately preceding the test.

It is extremely important to support the liver and make sure phase I and II detox pathways are open and functioning prior to starting any detoxification program. First morning urine should be on the acidic side or range (5.5-6.2) as this represents that the body is able to excrete toxins of any type (lactic acid, pesticides, chemicals, hormones, etc). Traditionally an alkaline first morning urine shows us that the pelvic region is congested and holding toxins, ie. some use the term non-excretors and will most likely get a 'false negative' on their heavy metal lab results.*

Urinary Toxic Elements

A Comprehensive Urine Element Profile and/or the Toxic Element Clearance profile assess urinary excretion of toxic metal elements acquired through either chronic or acute exposure. These tests are pretty effective at monitoring the progress of detoxification regimens and nutrient element status during treatment. The most effective way to determine which toxic metals are present is to establish a baseline test. You can do this by administrating a 'challenge agent' such as DMSA or DMPS; which are metal specific, collect the urine 2-6 hours after the challenge agent is administered, and then send the urine sample to the lab in containers they provide. You will receive your results generally in 5-7 business days. Results showing anything higher than 5 ppm of heavy metals are considered high enough to warrant detoxification treatment. *If lab results show no metals being excreted on baseline test, liver and kidney support need to be incorporated before retesting.

Limitations for Urinary Toxic Elements testing methods: Does not show total body burden of heavy metals. End point of detox can have a 'layered' effect in lab results as things are changed in a person's environment. For example: one of our patients consistently tested below 5 ppm of all heavy metals for several months upon completing an extensive heavy metal and constitutional health program. After that time she stopped smoking her organic tobacco cigarettes. Urinary output of mercury, cadmium, and aluminum suddenly rose and stayed consistent between 17 and 20 ppm on these metals. Smoking kept these deeper levels 'cloaked' until the patient was ready to quit and we handled the next layer detoxification in her therapy.

Provocative Agents – Typical Collection Times for Urinary Toxic Elements Test

EDTA - 6-24 hours, DMPS (IV) - 2-6 hours, DMPS (oral) - 6-9 hours, DMSA - 6-9 hours, NDF/NDF Plus – 2-6 hours

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Fecal Metal Test

This analysis of toxic elements provides information about the potential for toxic metal burden. For many toxic metals, fecal biliary excretion is the primary natural route of elimination from the body. This route of excretion may cause aggravations in those people with compromised G.I. or colon function. Fecal elemental analysis also provides a direct indication of dietary exposure to toxic metals. The primary process by which the body eliminates the insidious sulfhydryl reactive metals is through the formation of metal-glutathione complexes, of which greater than 90% are excreted into the bile. Evidence for the extent of exposure to mercury from dental amalgams is provided by the fact that fecal mercury levels are highly correlated with the number of amalgams in the mouth. Fecal mercury levels for people with dental amalgams are remarkably similar from day to day, and approximately ten times higher than in people who do not have mercury amalgams. Fecal metals are normally at very low levels unless a provocative agent is given.
Specimen collection is convenient for the patient and only requires a single-step procedure.

Limitations for Fecal testing methods: Does not represent the total body burden. The end point of detox will be difficult to achieve as reabsorption occurs often with the infrequency of bowel movements compared to the rate of exposure of heavy metals.
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Hair Analysis

This analysis shows the presence of toxic heavy metals and essential minerals transported, by the blood, to hair follicles. While elements in blood are kept constant, hair is not subject to this same homeostasis and can reflect changes before abnormalities are apparent. Toxic elements may be 200-300 times more highly concentrated in hair than in blood or urine. The CDC acknowledges the value of hair mercury levels as a maternal and infant marker for exposure to neurotoxic methylmercury from fish.

Limitations for Hair Analysis testing method: Does not represent total body burden. The levels of toxic metals will be influenced by an individual's ability to excrete toxins efficiently. We have seen false negatives in clinic – try Urine Toxic Element after a course of Liver Life. Hair is also subject to external contamination, particularly from hair products such as bleaches, perms, or dyes. Therefore, hair treated within the past two months will not provide accurate information. Also, with very recent toxic exposure, the test will not show the element present.
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Whole Blood Element

This diagnostic method assists in determining deficiencies, excesses and imbalances of essential elements as well as recent or ongoing exposure to specific toxic elements. Whole blood analysis measures total element levels that circulate extra-cellularly (serum/plasma) as well as intra-cellularly (function within blood cells).

Limitations of Blood Element testing: Blood analysis does not accurately reflect total body metal burden as blood circulates metals are deposited in various tissues and bind very tightly. For example, blood lead levels appear to peak 4 to 5 hours after exposure and then decrease exponentially with a half-life of about 27 days. Therefore, levels of lead in blood are limited to detection of only very recent or ongoing exposure.
Available at: *www.gdx.net www.greatplainslaboratory.com www.metametrix.com*

Urinary Porphyrin Profile Analysis

This laboratory test measures the current body burden of mercury, lead, arsenic, aluminum and xenobiotics. The utility of urinary porphyrins as a diagnostic tool is not new – its use has been documented in the medical literature since 1934.The porphyrin profile is an easy and useful screening tool for the possible presence of a porphyria (elevated porphyrins), either genetically produced or induced by environmental toxins, or a combination of both. Various toxins interfere with the function of enzymes responsible for heme or haem biosynthesis leading to alteration in the porphyrin profile. Porphyrins are particularly well suited as biomarkers for two reasons. First, the pathway is highly active, so any disturbance tends to cause rapid and relatively large accumulations of intermediates (a chemical compound synthesized from simpler compounds). Second, the enzymes of the porphyrin producing pathway are widely distributed in human tissues and some of them are highly sensitive to the presence of various toxins. Urine collection required. Recommended by many DAN! (Defeat Autism Now) practitioners.

Limitations of Urinary Porphyrin Profile Analysis: Doesn't give a full picture of all toxic metals in the body. You can have a false negative with inadequate intake of water or hydration.
Available at**:** *www.metametrix.com http://www.labbio.net/pages/index_vh_eng.htm*