Mercury Detoxification Online Learning Activity Script

International Academy of Oral Medicine and Toxicology (IAOMT); www.iaomt.org
Last updated June 2020

PREFACE TO IAOMT'S MERCURY DETOXIFICATION ONLINE LEARNING VIDEO ACTIVITY

Text on screen:

Welcome to IAOMT's Mercury Detoxification Online Learning Video Activity. The "Materials" tab above this video, as well as the text box below this video, contain links to references and resources cited in this activity, scientific literature related to the topics presented, and a script for this entire video. The successful completion of a quiz at the end of this activity is required for individuals participating in an IAOMT course.

In offering this activity, the IAOMT's intention is to present as much scientific information as possible on different dental materials, treatments, patient and dental staff safety, and other aspects of dentistry.

The objective of the Mercury Detoxification Online Learning Video is that at the conclusion of this activity, participants will be able to recognize diagnostic and treatment tools used for mercury detoxification and their pertinence to dental patients.

The IAOMT emphasizes that health care practitioners must make their own professional judgments for the benefit of themselves and their patients and staffs. You are responsible for exercising your own judgment concerning the specific treatment options to utilize in your practice; for complying with applicable laws and regulations including local dental practice acts and informed consent requirements; and for abiding by insurance requirements including written declarations of coverage.

Only proceed if you understand and agree with these statements.

If you are ready to proceed, the activity will begin with Steve Koral, DMD, MIAOMT, and Phil Mollica, DMD, NMD, MIAOMT, providing you with the coursework for this Mercury Detoxification Online Learning Video Activity.

INTRODUCTION

Welcome to the International Academy of Oral Medicine and Toxicology, the IAOMT, training course on mercury detoxification. As with clinical nutrition, detox medicine is not strictly within the scope of normal dental practice. It is not usually necessary for the dentist to take on the responsibilities of the detox doctor, although many of our colleagues have found it to be a rewarding part of their practice.

Screen to the right:

> You can find integrative practitioners on IAOMT's Friends and Allies page and on the References and Resources file associated with this video. IAOMT encourages collaboration between patients' healthcare professionals.

It is essential, though, that we as dentists be careful not to overstep the limitations of our dental license, and range into areas where a medical license is required. The IAOMT recommends that dentists develop good working relationships with medical, naturopathic, and other practitioners who can provide our patients with expertise in this area.

In this course, we begin with a review of toxic exposure from dental amalgam, then provide an understanding of natural detoxification, examine methods available to measure mercury in the body, and uncover approaches for naturally and clinically promoting excretion and other detoxification strategies.

Mercury is not the only toxic element that people are exposed to, but it is the one that dentists are most responsible for. Because of our mission to reverse the effects of two centuries of amalgam placement by our profession, biological dentists should be familiar with methods of diagnosing and treating mercury toxicity and be able to provide patients with appropriate medical referrals.

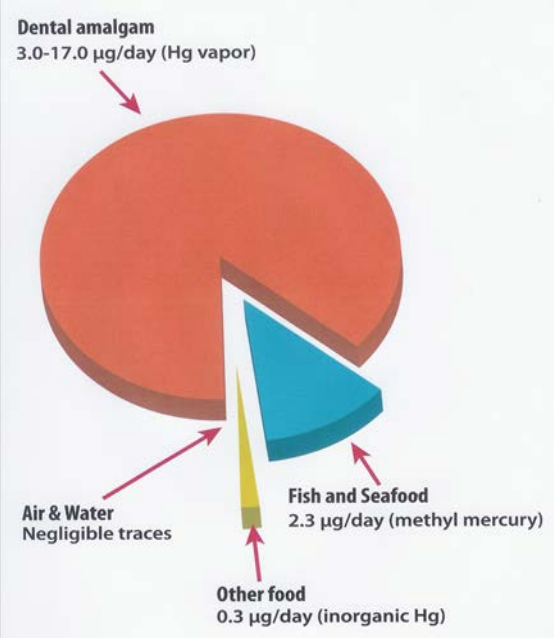
For some patients, eliminating the exposure by removing the amalgam fillings is sufficient. For others, it is just the tip of the iceberg. Practitioners and patients can choose among several strategies for enhancing the body's own ability to excrete the toxins, for chelating them out with drugs, and for sequestering them to counteract harmful effects. Such strategies are best deployed in a whole-body context.

MERCURY EXPOSURE AND THE HUMAN BODY

In the Mercury 101 and 102 courses in this series, we discussed how mercury outgasses from dental amalgam in amounts that exceed published safety limits for many people. Releasing micrograms per day, the metallic mercury vapor that comes off amalgam fillings is lipophilic. It passes through the lungs and mucosal membranes and is distributed everywhere around the body by the blood circulation. It finds its way deep into cells before being oxidized into ionic Hg^{2+} and reacting with critical biochemistry.

Mercury retention in the different tissues of the body depends upon how fast the cells are replaced, how fast intracellular organelles, like mitochondria, are replaced, and how effectively the cells can excrete toxic elements. Blood, for example, turns over at a rapid rate, while brain cells are replaced very slowly.

Sources of Human Mercury Exposure Chart
(World Health Organization [WHO], 1991)



The World Health Organization (WHO) has stated: "Dental amalgam constitutes a potentially significant source of exposure to elemental mercury, with estimates of daily intake from amalgam restorations ranging from 1 to 27 µg/day."

Source of quote: Risher JF, Nickle RA, Amler SN. Elemental mercury poisoning in occupational and residential settings. *International Journal of Hygiene and Environmental Health*. 2003 Jan 1;206(4-5):371-9.

Source of information included in chart: International Programme on Chemical Safety. Environmental health criteria 118: inorganic mercury. World Health Organization. Geneva, 1991.

Research has shown that this results in 67 million Americans aged two years and older exceeding the intake of mercury vapor considered "safe" by the U.S. EPA due to the presence of dental mercury amalgam fillings [or over 122 million Americans exceeding the intake of mercury vapor considered "safe" by the California EPA due to their dental mercury amalgam fillings].

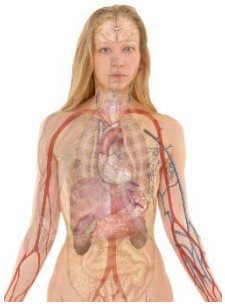
> Source: Richardson GM, Wilson R, Allard D, Purtill C, Douma S, Gravière, J. Mercury exposure and risks from dental amalgam in the US population, post-2000. *Science of the Total Environment*. 2011; 409(20): 4257-4268.

An estimated 80% of the mercury vapor given off of an amalgam filling is absorbed by the lungs and passed to the rest of the body (Lorscheider et al., 1995), particularly the brain, kidney, liver, lung, and gastrointestinal tract (Health Canada, 1996). The half life of metallic mercury varies depending on the organ where the mercury was deposited and the state of oxidation (Bernhoft 2011). For example, the half lives of mercury in the whole-body and kidney regions have been estimated at 58 days (Clarkson and Magos, 2006), whereas mercury deposited in the brain can have a half life of up to several decades (Rooney, 2014).

Sources:

- Lorscheider, F. L., Vimy, M. J., & Summers, A. O. (1995). Mercury exposure from" silver" tooth fillings: emerging evidence questions a traditional dental paradigm. *The FASEB Journal*, 9(7), 504-508.
- Health Canada. (1996). The Safety of Dental Amalgam.

- Bernhoft, R. A. (2011). Mercury toxicity and treatment: a review of the literature. *Journal of Environmental and Public Health*, 2012.
- Clarkson, T.W. and Magos, L. (2006). The toxicology of mercury and its chemical compounds. *Critical Reviews in Toxicology*, 36(8), 609-662.
- Magos, L., & Clarkson, T. W. (2006). Overview of the clinical toxicity of mercury. *Annals of Clinical Biochemistry*, 43(4), 257-268.
- Rice, K. M., Walker, E. M., Wu, M., Gillette, C., & Blough, E. R. (2014). Environmental mercury and its toxic effects. *Journal of Preventive Medicine and Public Health*, 47(2):74.
- Rooney, J. P. (2014). The retention time of inorganic mercury in the brain—A systematic review of the evidence. *Toxicology and Applied Pharmacology*, 274(3), 425-435.

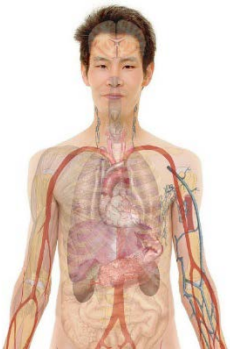


Furthermore, mercury vapor taken into the body can bind to sulfhydryl groups of protein and to sulfur-containing amino acids throughout the body (Bernhoft, 2011). Mercury vapor, which is lipid soluble, can cross the blood-brain barrier with ease and is converted into inorganic mercury in the cells by catalase oxidation (Lorscheider et al., 1995). This inorganic mercury is eventually bound to glutathione and protein cysteine groups (Lorscheider et al., 1995).

Sources:

- Bernhoft, R. A. (2011). Mercury toxicity and treatment: a review of the literature. *Journal of Environmental and Public Health*, 2012.
- Lorscheider, F. L., Vimy, M. J., & Summers, A. O. (1995). Mercury exposure from" silver" tooth fillings: emerging evidence questions a traditional dental paradigm. The *FASEB Journal*, 9(7), 504-508.

Toxic effects of this mercury exposure vary by individual, and one or a combination of symptoms can be present and can change over time. An array of co-existing factors influence this personalized reaction to dental mercury including the presence of other health conditions, the number of amalgam fillings in the mouth, gender, genetic predisposition, dental plaque, selenium levels, exposure to lead, consumption of milk or alcohol, methylmercury levels from fish consumption, and the potential for mercury from dental amalgam fillings to be transformed into methylmercury within the human body.



Unfortunately, some individuals do not excrete mercury as well as others. When the body cannot detoxify from mercury exposure fast enough, it can result in more mercury “bioaccumulating” in the body, which has also been referred to as “retention toxicity.”

In addition to the fact that individual response to mercury varies, the effects of these exposures are even more insidious because it can take many years for symptoms to manifest themselves, and previous exposures, especially if they are relatively low-level and chronic (as is often the case from mercury amalgam fillings), might not be associated with the delayed onset of symptoms.

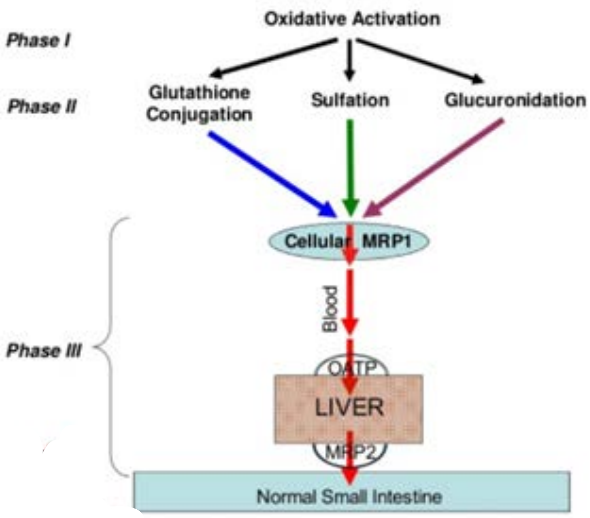
> Source: Kall J, Just A, Aschner M. What is the risk? Dental amalgam, mercury exposure, and human health risks throughout the lifespan. *Epigenetics, the Environment, and Children's Health across Lifespans*. David J. Hollar, ed. Springer. 2016. pp. 159-206 (Chapter 7).

DETOXIFICATION MECHANISMS IN THE HUMAN BODY

The human body is wonderfully capable of mitigating toxic exposures by means of natural detoxification at all levels. The biological basis for it is the three-phase scheme of cellular excretion, familiar to everyone who has studied medicine and physiology.

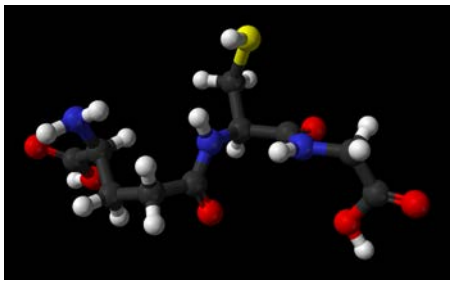
The same three-phase process is at work all over the body. It moves endogenous toxins, like bilirubin, and exogenous ones like pesticides, drugs, and mercury, out of cells toward their final route of elimination through the liver and the kidneys. Understanding the three-phase process of cellular excretion is essential to understanding the clinical practice of detox medicine.

Screen to the right:



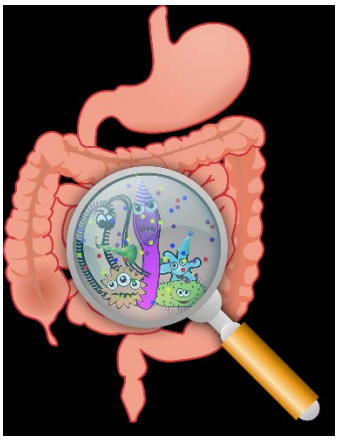
Source: Shade C, Elias A. Quicksilver Therapeutic Detoxification System: Understanding Detoxification Strategies for Mercury Intoxication. 2015.

Glutathione, an antioxidant composed of three amino acids – glutamine, glycine, and cysteine--is crucial for detoxification. It binds to toxins in the liver to initiate the excretion process. In particular, GSTs, glutathione-S-transferases, are the enzymes that attach mercury and many phase l products to glutathione for transport out of the cell. GSTs comprise a very large family of enzymes, with different varieties found in cytosol, mitochondria and microsomes. They can be as much as 10% of cytosolic protein in liver cells.



Many polymorphisms of GSTs exist, which means that some GSTs are less efficient than others. The result is that some individual people are more or less efficient at excreting those toxins, one of the many reasons why **some people seem to be uniquely susceptible** to the effects of toxic exposures. The glutathione system is itself a complex, interconnected universe of many functions, with many enzyme systems using and affecting their critical currency, the glutathione molecule.

Inflammation is a major inhibitor of natural pathways of excretion. Mercury swallowed from amalgam fillings is very pro-inflammatory in the gut, and a strong promoter of systemic inflammation.



While we usually focus on amalgam derived mercury that is absorbed by the lungs and distributed by the blood circulation, the mercury that is swallowed is a powerful ecological and pro-inflammatory influence in the gut. Intestinal inflammation exerts a powerful negative influence on the whole Phase ll and Phase lll system, inhibiting natural cellular excretion. This is another argument for the whole body approach, because all the methods that are used by physicians to reduce intestinal inflammation, whether it's addressing environmental and food allergies and sensitivities , gluten, parasites, dysbiosis, or reducing toxic metals in the gut, will tend to unlock natural detox function.

DIAGNOSING AND TESTING FOR MERCURY TOXICITY

What would lead a doctor to suspect metal toxicity in a patient? Many chronic conditions such as fatigue, fibromyalgia, digestive ailments, autoimmunity, neurodegenerative disorders, and others can have a component of metal toxicity and should be evaluated for an underlying toxic influence.

A diagnosis of mercury toxicity is still a matter of clinical judgment. Clinical tests plus clinical symptoms paint a picture. The presence of mercury body burden, measures of mercury retention, along with associated symptoms suggest the diagnosis.

However, properly diagnosing "adverse health effects" related to dental mercury amalgam fillings is impeded by the intricate list of potential responses to the elemental form of the substance, which include over 250 specific symptoms.

Source:

- Rice KM, Walker Jr EM, Wu M, Gillette C, Blough ER. Environmental mercury and its toxic effects. *Journal of Preventive Medicine and Public Health*. 2014 Mar;47(2):74.

The table shown here is a brief listing of some of the symptoms most commonly associated with inhalation of elemental mercury vapors (which is the same type of mercury continually emitted from dental amalgam fillings):

Acrodynia or similar symptoms such as emotional instability, loss of appetite, general weakness, and skin changes	**Anorexia**	**Cardiovascular problems**/ labile pulse [frequent changes in heart rate]/tachycardia [abnormally rapid heartbeat]
Cognitive/neurological impairments/memory loss/decrease in mental function/difficulties with verbal and visual processing	**Delusions/delirium/hallucination**	**Dermatological conditions**/ dermographism [skin condition characterized by raised red marks]/dermatitis
Endocrine disruption/enlargement of thyroid	**Erethism** [symptoms such as irritability, abnormal responses to stimulation, and emotional instability]	**Fatigue**
Headaches	**Hearing loss**	**Immune system impairments**
Insomnia	**Nerve response changes**/peripheral neuropathy/decreased coordination/ decreased motor function/ polyneuropathy/neuromuscular changes such as weakness, muscle atrophy, and twitching	**Oral manifestations**/ gingivitis/metallic taste/oral lichenoid lesions/stomatitis/salivation
Psychological issues/mood changes related to anger, depression, excitability, irritability, mood swings, and nervousness	**Renal [kidney] problems**/ proteinuria/nephrotic syndrome	**Respiratory problems**/ bronchial irritation/bronchitis/cough/ dyspnea [breathing difficulties]/ pneumonitis/respiratory failure
Shyness [excessive shyness]/social withdrawal	**Tremors**/mercurial tremors/ intention tremors	**Weight loss**

In addition to understanding symptoms of mercury exposure, it is important for dental professionals to understand the basics of testing for it. This aspect of oral health integration is especially important because a growing number of patients are seeking out biological dentists to remove their mercury fillings as part of a detoxification program. More specifically, in some cases, a healthcare practitioner recommends mercury-free dentistry to assist the patient in recovering from a medical condition or in achieving a more optimal level of well-being.

IAOMT encourages oral health integration, which connects oral health to overall health and vice versa. What this means is that many IAOMT dentists and biological dentists work with patients' physicians who are conducting heavy metals testing. Since each health professional has preferences for the testing that they use, it's helpful if biological dentists learn about all of them to better serve our patients.

There are a variety of commonly used tests for mercury exposure, and there is no general consensus right now as to which test is the best. Health professionals have different opinions about this. So, as a biological dentist dedicated to working integratively with other health professionals, you should be familiar with the range of tests doctors are currently using, which include the following.

Diagnostic Tests for Mercury Exposure

1. Hair Analysis
2. Urine mercury-- lead, copper, tin, and albumin testing-- and urine mercury porphyrin profile
3. Fecal metal screen (not very common)
4. Intra-oral mercury vapor levels
5. Blood mercury levels (really only measures for recent, high level exposure)
6. Mercury levels in saliva
7. Cysteine and glutathione status
8. Tri-test, which uses samples of blood, hair, and urine and distinguishes between different types of mercury
9. Mercury challenge or mobilization testing, which uses a drug to provoke release in urine
    a. British Anti-Lewisite (BAL), or Dimercaprol
    b. Penicillamine
    c. 2,3 Dimercaprol succinic acid (DMSA)
    d. 2,3 -Dimercapto-1-Propanesulfonic Acid (DMPS)

Allergies merit a separate discussion because diagnosing a mercury allergy can involve the use of additional types of tests. Health conditions linked to dental metal allergies/hypersensitivities include autoimmune disorders, fatigue, multiple chemical sensitivities, oral lichenoid lesions, and even infertility.

For this reason, documenting metal allergies can also be an essential diagnostic tool. The most common test for mercury and metal allergies is skin patch testing; however, that exposes patients to the suspected allergen. Two relatively new alternatives to skin patch testing are a modified version of the Lymphocyte Transformation Test (LTT) and the Lymphocyte Response Assay (LRA).

Dental biocompatibility testing is also used to assist in establishing which products and materials are more compatible for each unique dental patient. If biological testing is used, a patient's blood sample is sent to a laboratory where the serum is evaluated for the presence of IgG and IgM antibodies to the chemical ingredients used in dental products. The patient is then provided with a detailed list of which name-brand dental materials are safe for their use and which ones could result in a reaction.

INITIAL STEPS FOR REDUCING MERCURY BURDEN

Screen to the right: Removing dental amalgam mercury fillings is a major and urgent step in reducing mercury burden. There are also other steps that can be taken, and we will explore them in this segment.

The IAOMT exists to help dentists become proficient in the techniques of mercury-free dentistry, including safe removal of mercury amalgam fillings. Reducing the burden of mercury is an area that many dentists have ventured into, and it is an area that presents great opportunities for cooperation and teamwork with physicians. Mercury detox necessarily employs the key principles of toxicology. First, remove the exposure. In this case, that means safe removal of the mercury fillings. And second, reduce the body burden of the toxin.

Utilizing the available scientific evidence, the IAOMT has developed extensive safety recommendations for removal of existing dental mercury amalgam fillings, including detailed protective measures that are to be utilized for the procedure. The IAOMT's recommendations build upon traditional safe amalgam removal techniques such as the use of masks, water irrigation, and high volume suction by supplementing these conventional strategies with a number of additional protective measures, the need for which have only recently been identified in scientific research.

Essential details about IAOMT's Safe Mercury Amalgam Removal Technique (SMART) can be found at www.theSMARTchoice.com. We also address the safety measures and more in our Safe Removal of Amalgam Fillings online learning video activity.

First Five Steps to Detoxify

In addition to removing amalgam fillings, there are a number of methods that can be applied to assist the body in reducing mercury burden. The first strategies we will present are those approaches to detoxification that are distinct from the prescribed use of a chelating agent. These initial steps are often introduced as essential aspects of mercury detoxification treatment plans.

Initial Detoxification Step #1: Make Good Nutrition a Priority

As always, good nutrition is essential to healing. Malnutrition increases susceptibility to toxicity. Clinical nutrition's role for good general health includes:

- Good hydration
- Promoting an alkaline body chemistry environment
- Decreasing systemic inflammation
- Managing environmental and food allergies and sensitivities
- Providing supportive cofactors
- Minimizing additional toxic loads
- Maximizing organic food

Initial Detoxification Step #2: Get Exercise!

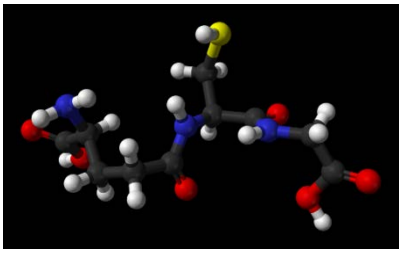
Exercise is a crucial method for detoxification because

- Exercise encourages blood circulation and lymphatic drainage
- Exercise engages the mechanism of sweat to excrete toxins
- Exercise encourages replacement of mercury toxic mitochondria

Detox at a mitochondrial level works by replacing old mitochondria. Exercising with adequate levels of intercellular glutathione present encourages this “out with the old, in with the new” detoxification at the mitochondrial level.

Initial Detoxification Step #3: Raise Glutathione Levels

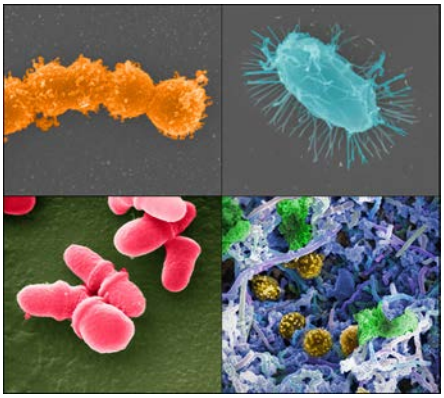
Many of the nutritional approaches to natural detoxification are aimed at increasing intracellular glutathione levels. Remember that glutathione is an antioxidant that binds to toxins in the liver to initiate the process of excreting them from the body.



To raise the levels of intracellular glutathione, some health providers suggest that their patients

- Take in adequate levels of protein
- Get adequate sleep to take stress off antioxidant systems
- Consume sulfur-rich foods like eggs, broccoli, and garlic to promote glutathione function
- Utilize supplements recommended to you by your doctor such as Vitamin C, alpha lipoic acid, N-acetyl cysteine, and liposomal glutathione

Initial Detoxification Step #4: Keep Your Gut Microbiome Healthy



The microbiome has been defined by the Center for Ecogenetics and Environmental Health at the University of Washington as "the genetic material of all the microbes - bacteria, fungi, protozoa and viruses - that live on and inside the human body… The microbiome may weigh as much as five pounds. The bacteria in the microbiome help digest our food, regulate our immune system, protect against other bacteria that cause disease, and produce vitamins including B vitamins B12, thiamine and riboflavin, and Vitamin K, which is needed for blood coagulation."

Source of quote: Fast Facts about the Human Microbiome. The Center for Ecogenetics and Environmental Health, University of Washington, 1/2014. https://depts.washington.edu/ceeh/downloads/FF_Microbiome.pdf.

Source of photo: Human Microbiome Project (HMP) by National Human Genome Research Institute. National Institute of Mental Health, National Institutes of Health, Department of Health and Human Services. https://www.flickr.com/photos/genomegov/27058469155/in/album-72157672130483806/.

The importance of keeping the gut microbiome healthy also directly relates to mercury detoxification. The gut is a chemical reaction vessel when exposed to mercury: it becomes a reservoir of toxicity where complex interactions between human and microbial metabolisms take place. The bacteria can turn inorganic mercury into easily absorbed methyl mercury, and de-methylate it back to inorganic. They can take conjugated mercury that the liver has dumped into the bile, decouple the mercury from glutathione, and make it available to be reabsorbed back into the bloodstream. Reducing the mercury concentration of the bowel contents is a powerful healing method: it creates the conditions for a net reduction of mercury throughout the body.

Intestinal cleansing to reduce enterohepatic recirculation of toxins, gut inflammation, and systemic inflammation can be promoted by

- Staying hydrated with plenty of water
- Avoiding foods that cause sensitivity or inflammation
- Reducing intake of sugar and processed foods
- Eating fibrous foods, which can increase antioxidant activity
- Utilizing supplements recommended to you by your health provider such as charcoal, clay (bentonite, zeolite), probiotics, or specially formulated products

Initial Detoxification Step #5: Up-Regulate the Cellular Detox System

The universe of cellular defenses is vast and complex with numerous points of vulnerability and strength. Each of the many proteins involved are subject to variability in efficiency due to genetic polymorphisms, as well as epigenetic influences. Likewise, there are many avenues available for nutrient support and targets for pharmaceutical actions.

Some molecules that are the common currencies of antioxidant and detox function are glutathione, vitamin C, and coenzyme Q-10. They all can be augmented by nutrition, which rounds out our five initial detoxification steps perfectly since nutrition was step #1. That step, as well as the rest of the steps, all lead to up-regulating the cellular detox system, which paves the pathway to renewed health.

DETOXIFICATION PRODUCTS INCLUDING CHELATING AGENTS

Chelation was first developed for industrial purposes in the early twentieth century, and research during World War II for its effectiveness as an antidote to poison gas advanced the use of chelation for other forms of poisoning.

Due to a burgeoning awareness of the impacts of heavy metals on health, chelation is currently being practiced for medical purposes more often. Importantly, heavy metals testing and chelation address mercury as well as other metals such as cadmium and lead, all of which are stored within the body through a lifetime of exposures. This means that the combination of testing and detoxification has the potential to improve a wide-range of health conditions associated with these heavy metals.

Scientific literature supports the potential for heavy metal detoxification to improve health outcomes. Perhaps the most well-known study documenting the efficacy of chelation is from the National Heart, Lung, and Blood Institute, which sponsored the first large-scale clinical trial on detoxification in patients with coronary heart disease. It is also known as the first Trial to Assess Chelation Therapy (TACT 1).

The results, published in 2014, showed that chelation therapy with disodium EDTA benefitted patients with diabetes, producing the following statistics: “Patients with diabetes, who made up approximately one third of the 1,708 TACT participants, had a 41 percent overall reduction in the risk of any cardiovascular event; a 40 percent reduction in the risk of death from heart disease, nonfatal stroke, or nonfatal heart attack; a 52 percent reduction in recurrent heart attacks; and a 43 percent reduction in death from any cause.”

> Source of quote: Escolar E, Lamas GA, Mark DB, Boineau R, Goertz C, Rosenberg Y, Nahin RL, Ouyang P, Rozema T, Magaziner A, Nahas R. The effect of an EDTA-based chelation regimen on patients with diabetes mellitus and prior myocardial infarction in the Trial to Assess Chelation Therapy (TACT). *Circulation: Cardiovascular Quality and Outcomes*. 2014 Jan 1;7(1):15-24.

TACT 1: Lamas GA, Goertz C, Boineau R, Mark DB, Rozema T, Nahin RL, Lindblad L, Lewis EF, Drisko J, Lee KL, TACT Investigators. Effect of disodium EDTA chelation regimen on cardiovascular events in patients with previous myocardial infarction: the TACT randomized trial. *JAMA.* 2013 Mar 27;309(12):1241-50.

Not surprisingly, a variety of products and practices related to detoxification have emerged due to the interest in detoxification. Most therapeutic protocols involve plant-based or nutritional compounds that stimulate the body's innate free-radical and toxin control systems, with focus on glutathione and total thiol status.

Chelation can also remove essential nutrients, so patients need to be closely monitored. So, before we provide more information about chelating agents, we want to emphasize that they are very powerful drugs, and they should be used only under the supervision of a qualified medical professional.

Banner across the bottom: Chelating agents are very powerful drugs, and they should be used only under the supervision of a qualified medical professional.

Similar to the many options for mercury testing, there is no general consensus on mercury detox. So, again, it is helpful to be familiar with the different types of products and even to research these products if a patient is using them so that you are aware of risks, benefits, and potential side effects and interactions.

Pharmaceutical products used as chelating agents include

- Calcium EDTA (ethylenediaminetetraacetic acid)
- Penicillamine
- DMSA (meso-2, 3-dimercaptosucccinic acid
- DMPS (Sodium 2,3-dimercaptopropane-1-sulfonate

Natural supplements, products, and practices used for mercury detoxification include

- Chlorella
- A fibrous diet
- Sulphur-containing foods including garlic, cilantro, and broccoli
- Supplements including taurine, alpha lipoic acid (ALA), N-acetyl cysteine (NAC), glutathione, Vitamin E, Vitamin C, hyaluronic acid, and methylsulfonylmethane (MSM) have also been applied as chelators.
- Oxidative Stress Relief (OSR) was taken off the market as of 2010, was renamed Irminix® and is in the process of going through clinical trials in Europe and the USA
- Sweating /Infrared sauna
- Lymphatic massage, exercise, clay baths, saunas, and foot baths
- Spagyric remedies, which are plant-based medicines, are sometimes used for detoxification.

Mercury detox protocols include those by

- Andrew Cutler, PhD, PE
- Hal Huggins, DDS, MS
- Dietrich Klinghardt, MD, PhD
- Christopher W. Shade, PhD
- Amy Yasko, PhD, NHD, AMD, HHP, FAAIM
- A number of other protocols are now also suggesting genetic testing to assist patients in understanding limitations they might have in excreting toxins. One area that is currently receiving attention involves the MTHFR gene (methylenetetrahydrofolate reductase (NAD(P)H)) and its role in detoxification.

Patients and their health care providers obviously have many options when devising a detoxification plan. Understanding the array of tests, products, and protocols associated with chelation and detoxification helps to shine light on the personalized medicine that each patient needs to find healing and recovery.

CONCLUSION

In the scope of the detox process, biologically-minded dentists are primarily responsible for eliminating exposure to toxic mercury by safely removing amalgam fillings and doing so where there is fully informed consent and free choice by the patient. We know that where there is amalgam, there is mercury exposure. But actually making a diagnosis of "mercury toxicity" is a medical function and is beyond the scope of a dental license in most jurisdictions.

Still, many of our dental colleagues venture into detox medicine to varying degrees, and find it a rewarding part of their practice. The IAOMT recommends building good working relationships with practitioners of other health care specialties, so our patients can get the best we can all offer. Good clinical practices are interdisciplinary. Further education and team building will lead to success.

POSTFACE TO IAOMT'S MERCURY DETOXIFICATION ONLINE LEARNING VIDEO ACTIVITY

Text on screen:

You have finished viewing the video component of this activity. If you are participating in this activity as part of an IAOMT course, you must successfully complete a quiz to obtain credit. Access to the quiz is provided in the "Activity Content" below this video, as well as on the menu to the left. Additionally, the "Materials" tab above this video contains links to references and resources cited in this activity, scientific literature related to the topics presented, and a script for this entire video. Thank you for learning with the IAOMT, as we work together to achieve safer dentistry and a healthier world.