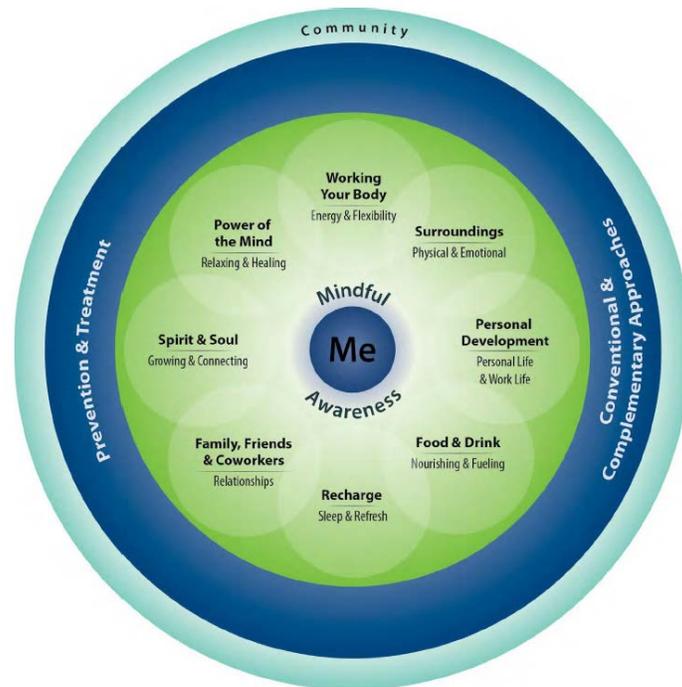


WHOLE HEALTH: CHANGE THE CONVERSATION

Advancing Skills in the Delivery of
Personalized, Proactive, Patient-Driven Care

Chelation, Cleanses, Saunas, and Supplements: What Every Clinician Should Know
About Popular Approaches to “Detox”
Clinical Tool



This document has been written for clinicians. The content was developed by the Integrative Medicine Program, Department of Family Medicine and Community Health, University of Wisconsin-Madison School of Medicine and Public Health in cooperation with Pacific Institute for Research and Evaluation, under contract to the Office of Patient Centered Care and Cultural Transformation, Veterans Health Administration.

Information is organized according to the diagram above, the *Components of Proactive Health and Well-Being*. While conventional treatments may be covered to some degree, the focus is on other areas of Whole Health that are less likely to be covered elsewhere and may be less familiar to most readers. There is no intention to dismiss what conventional care has to offer. Rather, you are encouraged to learn more about other approaches and how they may be used to complement conventional care. The ultimate decision to use a given approach should be based on many factors, including patient preferences, clinician comfort level, efficacy data, safety, and accessibility. No one approach is right for everyone; personalizing care is of fundamental importance.

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Introduction

We are surrounded by a myriad of toxins. Pesticides, smoke, phenols, herbicides, pesticides, volatile organic compounds – there are literally tens of thousands chemicals in our food, air, water, and household products. For most of them, we do not have a full understanding of their health effects.

As the Centers for Disease control National Report on Human Exposure to Environmental Toxins, (<http://www.cdc.gov/exposurereport/>) indicates, these compounds are not merely present in our external world; they are inside us as well, and they have the potential to cause us harm. A 2011 systematic review concluded that in 2004, 4.9 million deaths (8.4% of the total number worldwide) and 86 million Disability-Adjusted Live Years (DALYs) were attributable to environmental exposures.¹ Understandably, people are concerned about toxin exposures and want to find ways to detoxify (“detox”). Any therapeutic approach that can reduce the total body burden, the sum total of toxins affecting the body, is said to have potential health benefits.

Incorporating detoxification into health care is not a new phenomenon. For example, Panchakarma, an array of different detox techniques, has been practiced for thousands of years as a fundamental part of Indian Ayurvedic medicine. Panchakarma involves a combination of therapies, including sweating, oil massage, emesis and purgation therapy, enemas, bloodletting, nasal irrigation, and/or fasting. These and other therapies are chosen depending on the therapist and the goals of the treatment.

Many different detoxification methods continue to be used today. New methods for removing toxins from the body are being developed – and marketed - all the time. 92% of naturopaths in the US use some form of detoxification as part of their patient care practices, and there are numerous books and websites that focus on detox methods.²

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Detox has been defined by complementary therapies researcher Edzard Ernst as follows:

“In alternative medicine, ‘detox’ ... describes the use of alternative therapies for eliminating ‘toxins’ (the term usually employed by proponents of alternative medicine) from the body of a healthy individual who is allegedly being poisoned by the by-products of her own metabolism, by environmental toxins or (most importantly) by her own over-indulgence and unhealthy lifestyle (e.g. alcohol, cigarettes and food).”³

This clinical tool describes the most popular detox methods that are most likely to be used by your patients. Research findings and safety information are summarized for each one as well, to the extent that such information is available. *Please note: These therapies are mentioned in an effort to increase clinician awareness, not to specifically promote their use.* The therapeutic approaches described below have sparked a good deal of controversy.

A list of some simple, reasonable “detox” suggestions you can comfortably recommend is found at the end of this document.

Most detox programs are safe, but ideally, it is important that patients keep their health care teams updated about approaches they try. The more aware clinicians are of detox programs, the better they will be able to advise patients. Detox programs should be used with particular caution by people who are critically ill, have nutritional disorders such as iron deficiency anemia, or have endocrine disorders such as diabetes or thyroid disease.

Detox Diets

A number of “detox diets” purport to flush the body and support the toxin-removal efforts of the liver, kidneys, and lymphatics.⁴ Some require limiting the diet to fruits, vegetables, or some combination of liquids. Others focus on the use of specific food products or dietary supplements, which may or may not be marketed by the diet’s creator. Many of them feature calorie restriction as well.

Detox diets, as well as other detox approaches, are touted for a wide array of health concerns, ranging from fatigue and constipation to hormonal imbalances, mercury filling-related toxicity (another controversial topic), and various forms of pain. Chemical sensitivity, hyper-reactivity to medications, skin problems, and cognitive impairment may also be listed as potential indications, among many others.

Some examples of popular detox diets include:⁴

- **Fasting.** One of the oldest detoxes approaches ever used. A person simply does not eat for a day (or sometimes more). Unfortunately, fasting can lead to water loss and may also slow metabolism, leading to greater difficulties losing weight. A person should probably not fast continuously for more than a day or two, and they should use caution if they have renal, hepatic, immune, or other diseases.
- **Martha’s Vineyard Diet Detox.** Designed by Roni DeLuz, an RN and naturopath, this diet plan involves drinking liquid every two hours, doing coffee and water

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enemas (see the colonics section below), and taking laxative supplements sold on the diet developer's website. A person refrains from working out or eating foods that require chewing while following the diet. Water, juice made from organic fruits and vegetables, and soups are the only foods allowed.

- **Fruit Flush Diet Plan.** Developed by clinical nutritionist Jay Rob, this diet focuses on low-calorie, fiber-dense fruits. Protein shakes and water are drunk regularly, and dinner is typically a vegetable salad, half an avocado, or a protein shake. During the second two days, the focus is fruits every 2 hours during the day. After that, the diet becomes somewhat less restrictive.
- **Lemonade Diet/Master Cleanse.** This 10-day diet allows only three things. A lemonade-like drink, an herbal laxative tea, and an electrolyte drink. It is built around a book entitled *The Master Cleanser*, and others have since elaborated on the book's recommendations. After the 10 days, juices, soups, and raw fruits and vegetables are gradually added back on, but meat and dairy are discouraged.

There are a number of popular detox diets out there, but data supporting their use is limited. A diet with a variety of fruits and vegetables is always reasonable to recommend, whether for detox or in general.

Detox Supplements

Note: Please see the module on [Dietary Supplements](#) for more information about how to determine whether or not a specific supplement is appropriate for a given individual. Supplements are not regulated with the same degree of oversight as medications, and it is important that clinicians keep this in mind. Products vary greatly in terms of accuracy of labeling, presence of adulterants, and the legitimacy of claims made by the manufacturer.

Patients are likely to ask you about various supplements that are claimed to assist with detoxification. The Natural Medicines Comprehensive Database, based on the findings of its multiple evidence-based reviews, concludes that, "There is insufficient reliable information available about the effectiveness of any method of detoxification."⁵ However, whether or not they would ever recommend these remedies, having general familiarity with them is helpful.

Some of the most commonly recommended supplements are listed in Table 1.⁶

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Table 1. Dietary Supplements Commonly Used for Detoxification^{5,6}			
Supplement	Evidence	Safety	Comments
Burdock <i>Arctium lappa</i> , <i>Arctium minus</i>	No studies met inclusion in Natural Standard	Generally safe. Has oxytocic effects – caution in pregnancy. Rarely causes allergic response	Roots and leaves are eaten as vegetables in Japan
Chlorella <i>Chlorella pyrenoidosa</i>	Limited research available. Decreased maternal-fetal dioxin transfer in Japanese study. ⁷	Safe for two months in studies. High vitamin K content – caution with warfarin. Can cause diarrhea and abdominal cramping, especially in first week of use. Can make feces green	A variety of single-cell green algae. Promising findings for fibromyalgia
Cilantro <i>Coriandrum sativum</i>	Evidence for heavy metal chelation conflicting or unclear	Has Generally Recognized as Safe (GRAS) status; is a food. Rarely causes allergy symptoms. Caution with clotting disorders	Can cross the blood-brain barrier to mobilize heavy metals stored in the brain. ⁸
Clay <i>Bentonite</i> , <i>Attapulgite</i> , <i>Kaolin</i>	Limited research exists around clinical benefit. Binds acids and metals in the gut	Slow down the absorption of medications. This can lead to toxicity with citrate salts in the gut. May be harmful when dust inhaled	A very popular detox remedy. Clays were once present in many medications (e.g., Kaopectate, Rolaids, and Maalox). Used topically for facials and mud baths
Dandelion root <i>Taraxacum officinale</i>	Used as a kidney protector. Has diuretic properties, is anti-inflammatory, but data not clear as far as detox	Has GRAS status in the US. Some people with ragweed family allergies are allergic to it	Roasted root can be used as a coffee substitute

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Glutathione	Good IV for chemotherapy toxicity, but no data for oral use.	Safe for oral use	Poor oral bioavailability in humans – not likely to be useful
Milk thistle <i>Silybum marianum</i>	Used for “liver detox.” Hepatoprotective, due to antioxidant effects, as well as cell membrane stabilization and many others. Good scientific evidence for cirrhosis and chronic liver disease in terms of labs, but mortality benefit less clear	Well tolerated. Safe at recommended doses for 4-6 years. Above ground parts may be estrogenic – avoid in gynecological cancers. Can have a laxative effect	Used for thousands of years. Some evidence for cirrhosis, type 2 diabetes, and liver disease
N-Acetyl Cysteine (NAC)	An amino acid derivative. Approved for acetaminophen overdose. Effects on heavy metal clearance less clear	Can cause gastrointestinal adverse effects, especially at high doses; allergic reactions rare. In general, quite safe	Precursor of glutathione. Used clinically for 40 years.
Spirulina e.g., <i>Spirulina maxima</i> and <i>Spirulina platensis</i>	Absorb metals, including chromium, nickel, and copper well in in vitro studies	Caution with contamination with heavy metal-containing algae species. Hypercalcemia in kids, pregnant and breastfeeding women	A variety of blue-green algae. Promising findings for lowering lipids

Clinical Tip: Supplements for Detox

In general, detox supplements are safe, but data supporting their use is limited. I tend to only recommend detox supplements on rare occasions, but if someone really wants them, I often will have them give NAC a try for a short period of time, or encourage them to eat more fiber and healthy fruits and vegetables. Remember that oral glutathione is not bioavailable, so it is not a reasonable choice.

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Other supplement groups you may encounter in detox remedies (*again, the focus here is to give you name familiarity, not necessarily to recommend use*) include:

- Anticatarrhals (mucus reducers): Boneset, echinacea, garlic, goldenseal, hyssop, sage, yarrow
- “Blood cleaners:” Burdock, Echinacea, Oregon grape, red clover, yellow dock
- Diuretic herbals: Cleavers, corn silk, horsetail, juniper berries, parsley, uva ursi, yellow dock
- Laxatives: Bentonite clay, buckthorn, cascara, licorice, rhubarb, senna, yellow dock
- Diaphoretics (cause sweating): boneset, burdock, cayenne, elder flowers, ginger, goldenseal, Oregon grape

Chelation Therapy

Chelation occurs when a particular chemical binds to an ion such as iron, mercury, or lead. By binding the ion, a chelating agent negates its toxic effects. There are several agents used for chelation in conventional medicine, including Succimer (DMSA) and Dimaval (DMPS), which are used to treat heavy metal poisonings, and deferoxamine, which is used to treat iron overload.

Ethylenediamine tetraacetic acid (EDTA) is a chelating agent that is FDA-approved for use with lead, mercury, arsenic, bismuth, copper and nickel toxicity. Intravenous EDTA chelation is not approved for use in the treatment of vascular disease, Alzheimer’s, or autism, but it is used as a “complementary” therapy by some practitioners for these conditions. According to the National Health Statistics Report, the number of patients using this form of chelation therapy increased from 66,000 to 110,000 thousand adults from 2002 to 2007.⁹ According to the VA’s Health Affairs Information Group Survey, one VA facility offered chelation therapy as of 2011.¹⁰

Prior to 2013, systematic reviews of EDTA chelation did not find overall benefit.¹¹ However, in 2013, EDTA chelation therapy received renewed attention when the Trial to Assess Chelation Therapy (TACT) concluded that EDTA modestly reduced risk of adverse cardiovascular outcomes in patients with a history of myocardial infarction (HR 0.82, 95% CI 0.69-0.99.)¹² The study did NOT suggest that chelation therapy become part of therapeutic guidelines until more research was conducted.

Chelation therapy is thought to work in part by chelating calcium out of calcium deposits in blood vessels. It has been noted to have adverse effects, and these should be discussed with patients when appropriate. Examples of complications range from injection site irritation and nausea/vomiting to hypotension, cardiac arrhythmias, hypocalcemia, renal failure, and (very rarely) death.¹³

Chelation with EDTA seems to have modest cardiovascular effects, but given the adverse effects associated with therapy, it should be recommended with caution.

Colonics

A colonic is, in essence, a therapeutic enema. Water and other substances, ranging from fiber and herbal remedies to probiotics or coffee, are instilled into the colon in an attempt to detoxify the body. Examples of herbs that might be used include psyllium, marshmallow, and slippery elm. Recent reviews have failed to find substantive research supporting the use of this practice, though it is advocated by many organizations nonetheless.¹⁴ Proponents of the practice suggest that it helps to decrease inflammation, thereby making the intestines less permeable to larger, potentially more allergenic molecules¹⁵.

More research is needed to determine how beneficial colonics are to health. What is known is that colonics are not without adverse effects; these include nausea, diarrhea, bloating, and cramping. More serious risks include bowel perforation, infection, and electrolyte changes.¹⁴ A number of people with varied backgrounds are members of the International Association of Colonic Hydrotherapists (I-ACT).¹⁶

Saunas

Sauna therapy has been used for centuries, especially in Scandinavia. There is a Finnish adage stating, “If the sauna, schnapps, and birch tar don’t help, then death is near.” Sauna therapy has multiple physiological effects.¹⁷ Thermal stress can increase heart rate, which enhances cardiac output. Peripheral vascular resistance can decrease sharply, as does diastolic blood pressure but not systolic pressure. Circulation to muscles, kidneys, and other organs increases. Effects on metabolic rate and oxygen consumption are comparable to moderate exercise. Norepinephrine output increases, but cortisol does not, unless cold-water immersion occurs. Beta-endorphins likely provide pain-reducing and pleasurable effects. Saunas also lead to muscle relaxation and aldosterone secretion.

Benefits of sauna therapy have been found in a number of studies, though sample sizes tend to be quite small. Findings include:¹⁷

- Improved respiration in asthma and chronic obstructive pulmonary disease
- Bi-weekly saunas improved ejection fraction, exercise tolerance, and odds of not being hospitalized. Systolic and diastolic blood pressures decrease by an average of 20 mmHg and 9 mm Hg respectively. Exercise alone had less of an effect on weight loss and blood pressure than exercise combined with sauna therapy. Sauna therapy does not seem to increase myocardial infarction risk.
- Hunger, somatic complaints, and ability to relax improved in a small study of people with mild depression
- Pain intensity and long-term ability to return to work improved in people hospitalized for chronic pain
- People with rheumatoid arthritis showed NON-significant improvements in pain and stiffness

Saunas are, when used appropriately, an approach to detox with a variety of potential benefits, according to a number of small studies.

Putting it all Together: Suggestions for What to Tell Your Patients

Because there is limited research supporting many popular detox approaches, it is difficult to advise patients about their use, particularly if they personally find these approaches to be helpful. Remember the ECHO criteria for using a therapy – Efficacy, Cost, Harms, and Opinions. See the [Introduction to Complementary Approaches](#) module. Some integrative clinicians actually create detox programs despite the current lack of research supporting many of these techniques, focusing on safety rather than efficacy data.

Here are some reasonable approaches you might consider, as you work collaboratively with patients in the area of detox:

- **Exercise.** In addition to its many other health benefits, exercise is an excellent sudorific; i.e., it promotes detoxification via sweating. Glutathione, a compound involved in many of the body's detoxification chemical pathways, increases in muscle cells during exercise.
- **Drink fluids.** Unless contraindicated for medical reasons, a standard detox practice that makes sense is to have people push fluids. 8-10 glasses of water a day is a reasonable goal for most people.
- **Hydrotherapy** is another safe and easy approach to follow. Hot and cold showers and baths can be helpful.
- **Therapeutic disclosure.** Writing, typing, or otherwise discussing emotions can have a detoxifying effect as well. See the [Therapeutic Journaling](#) clinical tool.
- **Focus on positive emotions.** Gratitude, optimism, and resilience can serve as detox for the emotions.
- **Focus on food safety.** See the [Food Safety](#) clinical tool.
- **Slow down and relax.** Take breaks. Enjoy yourself along the way.
- **Sleep enough.** Remember that one role of sleep is to allow the brain to remove toxins and waste products.
- **Spend time in nature.** Fresh air and natural beauty have few contraindications.

Whole Health: Change the Conversation Website

Interested in learning more about Whole Health?
Browse our website for information on personal and professional care.

<http://projects.hsl.wisc.edu/SERVICE/index.php>

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