

Personal Pollution and Matters of the Heart

John Parks Trowbridge M. D., FACAM

“This can’t be happening” is often the first thought. Gripping, gnawing chest pains give way to a heavier, crushing feeling that generates fear. The idea of “indigestion” soon gives way to “impending doom.” In this setting, 9-1-1 is sometimes a reluctant last resort, after antacids and resting produce only a pitiful response.

The arrival of paramedics brings reassurances from technicians who methodically start oxygen, apply EKG leads, and prepare for transport. Nurses and doctors in the emergency room go about their duties calmly and with dispatch – starting ivs, administering medications that relieve the urgent worry. Transfer to the Coronary Care Unit is swift and easy, and monitors beep with the soothing monotony of a metronome.

From A to Z, everything about the medical team responses engenders trust and dependence in the patient: “These folks really know what they’re doing. Thank God I got here in time.” Trusting eyes gaze into the cardiologist’s face, searching for any clues that the situation is worse than it might appear. Again, reassurance: “You’re here, you’re safe – we need to do some tests to figure out how best to fix you now.”

Slippery slope? Conveyor belt? One-way road to a “dead” end? Many terms have been applied to the “work up” and “treatments” offered in modern cardiology and cardiovascular surgery. In point of fact, major studies 30 years ago showed that one in six bypass operations are life-saving, when high-grade blockage is worsening in the left main artery or early in the left anterior descending (LAD) artery (the “widow-maker” or “artery of sudden death”).¹

Then what of the other **five** in every six patients? Therein lies the rub.

“TREATING” WITH TESTS

Everyone knows about the routine resting heart tracing: 12-lead EKG, often with a “rhythm strip” of several seconds. The predictive value is minimal in the absence of symptoms or an irregular pulse.² A 24-hour (or longer) Holter monitor gives valuable insights into rhythm disturbances but has little use in confirming “ischemic” disease, where blood flow to regions of the heart muscle is becoming compromised. Worthy of

¹ Coronary Artery Surgery Study, Veterans Administration Study, and the National Institutes of Health Study, each well summarized by Whitaker J: *Is Heart Surgery Necessary? – What Your Doctor Won’t Tell You*. Washington DC: Regnery Publishing, 1995.

² Reliance on a standard EKG can be foolhardy: despite a “normal” tracing at 2 pm, I admitted an elderly gentleman to a monitored bed because his story wasn’t quite right; at midnight, he was rushed to the CCU within minutes of the start of his heart attack. Had he been home, he likely would have died.

comment is that ischemic patterns can be documented in patients without blockage in the heart arteries but with magnesium deficiency or other conditions creating episodes of heart artery spasm. Vasospasticity can constrict blood flow transiently, and chest pains, shortness of breath, weakness, pale complexion, and sweating can mimic heart “angina pains” or even “myocardial infarction (MI).”

Angina simply means reversible chest pain events, often responding to nitroglycerin-type medications. The success of these drugs produces further patient trust that the cardiologist “knows how to treat me.” Myocardial infarction results from sudden blockage of blood flow to a (small or large) portion of the heart muscle. A heart artery already narrowing from deposits of plaque is more easily blocked completely by sudden formation of a platelet plug, also called a “thrombosis” (ACS or “acute coronary syndrome”). More recent studies show that the gunk in plaque is more likely to break off if a smooth hardened surface has not formed (so-called “vulnerable plaque”). Such free-floating chunks will always find a smaller arteriole and lodge there, blocking blood flow beyond ... a heart attack.³

Vasospastic episodes can occur in patients who have artery blockage disease and in those who do not. When tests show minimal blockage that should not be causing angina episodes, cardiologists are sometimes stumped and nevertheless recommend “revascularization” procedures: balloon angioplasty, stents, even heart artery bypass. Each of these operations is based upon a “roto-rooter” plumbing concept of heart disease: open the plugged pipes or simply route around them.

This “conventional cardiology concept” comes from the tests upon which they rely in figuring out how to fix heart disease.⁴ Simply stated, “If the only tool you have is a hammer, then all the problems you see look like nails.” Since many cardiology tests look at “the plumbing,” the treatments advised are designed to address flow blockages that can be seen. That viewpoint creates the fundamental restriction – blinders, if you will – preventing well-trained cardiologists from being able to see the value of treatments *other* than those in their “plumber’s toolkit.”

One of the most widely-known heart tests is the “stress EKG.” A blood pressure cuff is applied, patches with electrical leads are placed on your body, you begin to walk on a treadmill, and the workout is gradually increased to a jog.⁵ If your legs become fatigued, if you become short of breath, or if the heart tracing shows certain changes – “flags” that indicate problems – then the test is concluded; otherwise, you race along to a calculated heart rate. Comparing your blood pressure changes to the exercise heart tracing gives a hint of how well your heart muscle is working, in other words, how well your blood is flowing to your heart and other muscles.

³ Corti R, Farkouh ME, Badmon JJ: The vulnerable plaque and acute coronary syndromes. *Amer J Med* 113(8):668-680, 2002.

⁴ Each of the ideas presented here applies to other blood vessel problems as well – such as “peripheral artery disease (PAD)” or “abdominal aortic aneurysm (AAA)” or “carotid artery disease” – but this commentary is focused on heart disease issues.

⁵ If arthritis, weakness, or other conditions prevent you from walking or running, medications can be injected that will race or work (“stress”) your heart, in order to perform this test.

Even a “negative” (“normal”) stress test is often followed by a “nuclear stress test,” simply because your cardiologist “wants to be sure.” This examination starts with a stress test followed immediately by a radioactive “tracer” injected just as a fancy Geiger counter is placed over your heart. About four hours later, you are placed under the Geiger counter again. Images “after exercise stress” and “at rest” are compared – if the tracer pictures after exercise show “holes” that later “fill,” you have blockage disease restricting the blood flow. If the “holes” don’t “fill” later at rest, then you have had one or more heart attacks where muscle tissue has been replaced by thickened scar. No “holes” after exercise? Then you appear to have adequate blood flow to your heart muscle.

Even a “negative” (“normal”) nuclear stress EKG is often followed by a “coronary angiogram” (heart artery “pictures” – also called an “arteriogram” or “catheterization”), simply because your cardiologist is “being complete” in your evaluation after being admitted for chest pains. Trusting your doctor – and reassured by your test reports so far – naively consent to this much more invasive test. A catheter (tube) is placed into a large artery (as in your groin) and advanced to your heart, where x-ray dye can be injected to outline the pattern of your heart arteries. One tiny technicality: the severity of diameter narrowing is commonly overestimated by 30 to 60 percent.⁶ [As the “gold standard” for coronary artery disease, angiograms have several limitations. Recently developed computerized coronary angiography instruments (not yet widely available) will help to work around some of these errors of interpretation.]

BINGO! Narrowing is likely to be identified, since you *did* come in with chest pains. Now your cardiologist has a reason to recommend “balloon angioplasty” (another tube, this one with a blow-up tip that crushes blockage against the wall of the artery), often with placement of a “stent” (sort of a Chinese finger-trap in reverse, where it is inserted stretched out then “springs open” to press against the wall of the blood vessel). Modern stents are “radioactive” or coated with “chemotherapy,” to reduce your body’s attempt to cover over this strange device, thereby narrowing the artery again.

Balloons? Chemotherapy? Radioactivity? You might have a few questions, but your cardiologist is reassuring that you’ll probably be able to avoid “open heart surgery” (a bypass operation). Now *that’s* appealing! Once again, you innocently consent to another procedure, hoping that your future will be bright and comfortable. But the results from surgery can’t ever be guaranteed.

Speaking of surgery – what happens if your cardiologist invites a cardiovascular surgeon to discuss a bypass operation with you? For the vast majority of patients, the answer is simple: your lack of knowledge about options will mean that you trustingly agree to have the surgery. Americans are suffering in droves, like lemmings to the sea: in the United States in 2005, 469,000 coronary artery bypass procedures were performed

⁶ Michael Chun-Leng Lim - Advanced CT Imaging: Effective diagnosis of coronary disease – *Asian Hospital & Healthcare Management* - http://www.asianhnm.com/diagnostics/ct_imaging.htm - accessed February 18, 2010

on 261,000 patients. An estimated 1,265,000 “stent” procedures were performed; approximately 69 per cent of these were performed on men and approximately 50 per cent were performed on people 65 years of age, according to the National Center for Health Statistics. During 2006, some 2,192 heart transplantations were performed.⁷

BUT WHAT IF YOU’RE “ONE OF THOSE *FIVE*”?

If only one-in-*six* patients has a heart bypass operation⁸ that is *life-saving or life-extending*, what is the situation for those other *five* patients who also often undergo the surgery? Most survive, some do not, many feel better ... but their improvements might well have been possible with modern medications and lifestyle changes alone.⁹ Virtually every “open heart” patient will suffer some slight or significant degree of “pump syndrome,” neurological or mental changes associated with the heart-lung pump.¹⁰ About one in twenty bypass patients will die during or soon after surgery. Of those who survive, over half can be expected to suffer fairly dire concerns over the next twelve months: heart attack, stroke, heart rhythm disturbance, congestive heart failure, or rising blood pressure. And each of these events will force these patients back into the trusted arms of their cardiologist and consulting medical specialists.

Perhaps one of the best reviews of the limitations, side-effects, and outright hazards of angioplasty, stents, and bypass surgery can be found in several chapters of the book, **Is Heart Surgery Necessary? What Your Doctor Won’t Tell You**, by Julian Whitaker, M. D.^(see footnote 1) Before undergoing any of these procedures, every patient owes his family – and him or herself – the time to read and understand these risks, in order to question his doctors appropriately and be able to give an actual informed consent, should he so choose.

WHAT ABOUT TREATING THE *PATIENT*?

Wait! Can you actually *afford* to wait, do you *have* the time – the luxury – to read this and other books, to get the true details for yourself? While doctors sometimes give the impression that “you’re a ticking time bomb, we’ve got to move quickly,” published studies have shown quite the opposite conclusion. Harvard cardiologist Peter Graboys showed, twenty years ago, that patients who chose to wait before having bypass surgery suffered no deaths from heart disease over the next 2-½ years.¹¹ A second study showed only a 1.1 per cent annual death rate from heart disease over the following five years for those who politely (or not so!) declined to have an angiogram, likely concluding

⁷ Heart Disease and Stroke Statistics—2008 Update: A Report From the American Heart Association Statistics Committee and Stroke Statistics Subcommittee. *Circulation* 2008;117:e25-e146, published online before print.

⁸ Also called “coronary artery bypass graft” operation or “CABG” (pronounced “cabbage”)

⁹ These statistics were derived in studies some **thirty** years ago, long before many of the advanced heart and blood pressure and rhythm-controlling medications were available to cardiologists.

¹⁰ Butler J, Rocker GM, Westaby S. Inflammatory response to cardiopulmonary bypass. *Ann Thorac Surg* 1993 February;55(2):552-9.

¹¹ Graboys TB, Biegelson B, et al: Results of a second-opinion program for coronary artery bypass grafting surgery. *J Am Med Assoc* 258:611-614, 1987.

that this was just “a map for surgery” that they were reluctant to undergo.¹² This rate is far below an estimated up to five per cent death rate for bypass surgery. Balloon angioplasty surgery offers an estimated one per cent deaths, but recurrent procedures are quite likely.

Recognize that Harvard’s cardiology staff used only routine medications available at *that* time, along with “usual” lifestyle changes – diet, exercise, and so on. As conventional physicians, they had little interest (or faith) in integrative technologies such as nutritional supplements or chelation therapy. The combined use of (even more modern) medications *now*, along with specific “orthomolecular nutrition” and chelation, would be predicted to enhance further the startling results that they obtained with minimal effort, and clinical experience supports that expectation.

Rather than progressing rapidly to invasive and potentially risky tests, an integrative physician sometimes will order a set of echocardiograms, basically “sonar” ultrasound pictures of heart muscle performance. When valves and heart muscle function appear reasonably normal and the “ejection fraction” (percentage of blood pumped from the heart with each beat) is normal or almost so, then performance has been preserved *even though* blockage disease might be present. Activity or exercise might display reduced capacity, consistent with blood flow reduction. A patient with frequent angina, and especially with chest pains at rest, is more likely to have blockage changes best treated first by surgery unless he or she refuses and an aggressive non-surgical treatment program is pursued.¹³

The recent availability of “heart scanners” (EBT or “electron beam tomography”) has helped to quantify the degree of blockage present as well as its location. This 10-minute test uses minimal radiation and gives reasonably reliable pictures, from which a heart artery diagram of calcium-hardened blockage can be constructed. Again, “high-grade” (severe) blockages early in the left-side heart arteries can move a patient toward the “surgical option” for best survival, with follow-up chelation to treat the underlying cause.

An integrative physician offering chelation therapy will, of course, review and consider cardiology tests available from other specialists in order to best plan a treatment program. Angiogram pictures, though, will rarely be required.

NON-SURGICAL TREATMENT OF HEART DISEASE?

Can *blockage* disease be effectively and safely treated *without* surgery? The answer, as demonstrated by dozens of clinical studies and case reports over the past fifty years, is an unreserved “**YES!**”

¹² Graboys TB, Biegelson B, et al: Results of a second-opinion trial among patients recommended for coronary angiography. *J Am Med Assoc* 258(2):537-540, 1992.

¹³ Patients often expect to receive the treatments that they have self-selected as “appropriate” – surgery is sometimes the best choice, since other treatments can be done only on live patients.

However, *reduction* of blockage should be considered only a possible and desirable side effect and not “*the*” goal of a chelation treatment program. An early thought in the late 1950s was that chelation “worked” by removing artery blockage. This seemed a logical way to explain observed improvements in heart function, EKG patterns, congestive heart failure, chest x-ray images, angina chest pains, shortness of breath, and activity levels.¹⁴ Without question, some patients *do* show reduced blockage, as demonstrated by before- and after-treatment heart scan images in two patients reported to the American Chemical Society in 1994.¹⁵ Of interest is that virtually 9 out of 10 patients show improved heart performance – but *not* all of those show reduced blockage disease by *any* test performed.¹⁶

Another factor to recognize is that our tests are less-than-precise in quantifying the degree of blockage present, whether improving or worsening patterns. Several assumptions are made in each test setting (heart, carotid neck arteries, abdominal aorta, legs, and so on). The presumed “gold standard” – such as heart angiograms – are difficult to interpret at best ... and the same test can be read differently on different days ... by the *same* cardiologist. If blockage *doesn't* disappear with chelation, then what could explain the obvious and dramatic clinical improvements in the vast majority of patients? In actual fact, blockage probably *is* reduced in many arteries: a 10 to 15 per cent increase in “cross-sectional diameter” (the area through which blood can flow, where larger diameters have less resistance to flow) produces *double* (or more) blood *volume* delivered to tissues downstream.¹⁷ Current tests fail to reliably detect such small reductions in blockage with increases in blood vessel diameter – but the *patients* can clearly feel and enjoy the improvements, as overwhelmingly noted with chelation therapy. The use of artery bypasses and stents is based upon increasing the diameter of a “feeding” vessel, but such operations involve many risks and the duration of improvements can be limited. Indeed, the *diameter* increases of bypasses and stents are noted only *at* the operation site and not generalized throughout the arterial system as with chelation therapy.

¹⁴ Clarke NE, Clarke CN and Mosher RE. The “in vivo” dissolution of metastatic calcium, an approach to atherosclerosis. *Am J Med Sci* 229:142-149, 1955

¹⁵ Rubin M, Rozema TC, Casdorff HR and Sarchilli A: Cardiac decalcification by Na₂MgEDTA. Presented at American Chemical Society, 208th meeting. Washington DC, 1994; as reported in Messerli FH, ed.: *Cardiovascular Drug Therapy*, 2nd ed. New York, New York: WB Saunders Company, 1996; pp. 1613-7, at 1615-6.

¹⁶ In my clinical experience, *not* unusual is the patient showing clinical improvement while the follow-up heart scans show reduced calcium scores (correlating to blockage) in *some* arteries and increased scores in others. Further, I have had one patient whose ultrasound showed moderately severe carotid neck artery blockage; one side showed dramatic reduction of blockage while the other clearly intensified, leading to referral for carotid endarterectomy surgery on just the worsening side (“CEA”).

¹⁷ As described by Poiseuille’s law or the Hagen-Poiseuille equation in fluid dynamics, ignoring that the flow of non-compressible blood across an irregular lining might show marked reduction of turbulent disruptions as the luminal diameter is increased and the plaque surface becomes smoother, leading to even greater gains in blood volume delivered distally.

Studies documenting patient improvements with chelation are well summarized elsewhere.^{18,19,20} What has received very little attention is how much these improvements can be attributed to *decreased toxic metal burdens* – coincidentally reducing inflammation – and other mechanisms. When platelets have less free radical inflammatory injury, they become less “sticky,” less likely to form sudden “clots” or “plugs” and completely blocking ailing arteries. When magnesium is provided in large doses, blood vessels more readily dilate to increase flow volume and have less spastic tendency to restrict flow. Vitamin B6, vitamin C, amino acids lysine and proline, essential fatty acids, zinc – these and other nutritional supports that are provided during a series of chelation treatments clearly help to stimulate improved clinical function, detoxification, and tissue repair. Even nattokinase (or lumbrokinase), which lowers blood flow “viscosity” by reducing free-floating monomer fibrin strands, might help explain some of the benefits seen in advanced chelation programs.

WHAT ABOUT “PERSONAL POLLUTION”?

ALL chelating medications share in common one key property: forming a particular chemical bond with certain positively-charged ions (metal atoms).²¹ This drug-metal complex allows for easier removal of the metals through the kidneys. In many cases, the chelating drug prefers to bond with so-called “heavy metals” that are **toxic** to the body. Reducing the presence of toxic metals allows for usual “physiologic” chemical reactions to proceed more normally.

Toxic metals insert themselves *in place of* appropriate metals (such as magnesium or zinc), “sitting” on active sites in enzymes and **blocking** needed chemical reactions. In addition, they stimulate a tremendous *increase* in the rate of production of “**free radicals**” (also described as “oxidants” or “ROTS,” “reactive oxygen toxic species”) that inflict lasting damage to body cell structures, especially those involved in the mitochondria, the tiny “energy-factories” that produce the “ATP” that powers *all* cell processes in *all* cells. (Anti-oxidant vitamins – such as vitamins C and E and beta-carotene – glutathione²², and other molecules help to protect vital molecules from free radical injury.) Another concept to describe free radical production is **inflammation**, the destructive and powerful process that creates the pain of arthritis, of heat and chemical

¹⁸ Research sponsored by Hoekstra III PP, Gedye JL, Hoekstra Jr P, Lewis HT, Scarchilli AJ, Parente PA, and Baron J, “Serial infusions of magnesium disodium ethyleneamine tetraacetic acid enhance perfusion in human extremities,” pre-publication draft: Therma-Scan, Inc., 26711 Woodward Ave., Huntington Woods, Michigan 48070.

¹⁹ Chappell LT, Stahl JP, Evans R. EDTA chelation therapy for vascular disease: a meta-analysis using unpublished data. *J Adv Med* 7:131-142, 1994.

²⁰ A complete listing of the dozens of persuasive articles by McDonagh E, Rudolph C, *et alia* is available online at “<http://www.mcdonaghmed.com/abstracts.htm>.”

²¹ Alfred Werner won the 1913 Nobel Prize for inorganic chemistry with his delineation of “complexion” (chelation) chemistry

²² Interestingly, two glutathione molecules might be useful for intracellular detoxification but they only weakly bind to one atom of a toxic metal. However, the GSH molecule cannot be taken by mouth and is “expensive” to produce. Glutathione is essential to be present in high enough concentrations to recycle vitamins C and E, for enhanced anti-oxidant protection.

burns, and basically *all* departures from normal function and physiology. Blockage within blood vessels, of course, is one of these “departures.”

TOXIC METALS have no purpose inside the body. Whenever present, they interfere with normal, necessary biochemical reactions, often by displacing and “substituting for” the usual physiologic metals in enzyme molecules. Impaired enzymes cease their conversions of “Substance A” to “Substance B,” eventually bringing cell metabolism, repair, and reproduction to a standstill.

Apoptosis (dissolution) of such poisoned cells is the common result. Unfortunately, the toxic metal is still present in the body and can affect other cells as well.

One unexpected result of osteoporosis is due to the body’s attempt to sequester (“hide”) lead in the bones, keeping it farther away from more essential cells and tissues. As bone dissipates in older age, lead is released and can cause increasing damage even though it might have been present for dozens of years. These and other observations might explain many of the wonderful results claimed by most patients, as their heavy toxic metal body burden is reduced through chelation therapy.

COMMON TOXIC METALS

| | | | |
|--------|---------|----------|---------------------|
| Lead | Mercury | Arsenic | Cadmium |
| Nickel | Tin | Aluminum | Antimony ... others |

A better understanding of how toxic metals lead to suffering and death is found in several observations over the past forty years, almost from the time humans began in earnest to poison the planet. Animal studies have shown that heavy metals are uniformly neurotoxic, immunotoxic, cancerogenic, and directly harmful to all vital organ systems. The onset and severity of suffering depends, of course, on the dose and exposure patterns as well as cellular compartmentalization and tissue equilibration. Death follows slowly or rapidly based on the same criteria. Toxic heavy metals are throughout the environment (air, food, water, objects) and there is *no* way to avoid them entirely. Since they come into your body easily but leave much more slowly, all of them accumulate over time and increasingly interfere with body metabolism.

Every person will suffer some (slight *or* increasingly significant) degree of impairment among his or her many organ systems, based upon his or her exposures, nutritional status, biochemistry, physiology, and so on. Basically, the “weakest link” in each individual will begin to show toxic damage first. In a more global wholistic view, virtually *all* human ailments (including *expression* of genetic aberrations) can be aggravated by – or even *directly attributed to* – increasing burdens of toxic heavy metals.²³ Since bioaccumulation from the environment cannot be avoided, attention must be directed to minimizing exposure and removing those that have gained entry. The medical procedure of removing them, of course, is called “chelation therapy.”

²³ As an example, low levels of environmental lead have shown a direct relationship with elevated blood pressure without the classic presentation of lead toxicity: Batuman V, Landy E, Maesaka JK, Wedeen RP. Contribution of lead to hypertension with renal impairment. *NEJM* 309(1):17-21, July 7, 1983.

A general idea of the magnitude of “toxicity” can be gleaned from providing tainted cage water to rodents, where their only liquid source is laced with a heavy metal. Daily water intake is based on animal weight. Thus, calculations can be made regarding “how much” of a particular toxic metal was required to kill any individual animal. The lowest dose that killed the *first* one is noted. Amounts are recorded all the way up to the highest dose, the one that finally killed the *last* remaining animal in a group of one-hundred. These name for this group of concentrations is “Lethal Dose” (“LD” for short), and a number is appended, to indicate the population percentage that has succumbed to that amount of toxic metal. For example, the **LD1** is the concentration to kill the first animal; **LD50** is enough dosage to kill half of the subjects (50 out of the 100). The **LD100** dose is the amount that will kill *all* of the animals.

CHELATION DRUGS

have long been approved as safe and effective by the U. S. Food and Drug Administration (FDA). In fact, “the Evers Case” (1978) was a hallmark advance in guaranteeing that doctors may use drugs approved for one purpose for any other condition; a chelator was the subject of dispute with the government.

COMMONLY USED CHELATORS

Calcium-EDTA

(Sodium-EDTA was recently withdrawn from the market but is available by special compounding)

D-penicillamine

DMSA

desferrioximine

DMPS (widely approved around the world, available in the U. S. by special compounding)

BAL (the very first, less commonly used)

Various formulations are available, including intravenous, oral, rectal, intramuscular, and transdermal.

Of greater concern to people who think they have only *minimal* exposure to toxics is that “*small* amounts” of *different* toxic heavy metals can combine to create ever more destructive changes. The overwhelming majority of people are lulled into a false sense of security that they “don’t have too much toxics on board, their levels are really ‘low.’” One rodent study showed that combining the **LD1** level of mercury with *1/20th* the **LD1** level of lead in the cage water did *NOT* kill just 2 animals (addition), it did *NOT* kill 4 or even 8 animals (multiplication) – this seemingly inconsequential *combination* killed *ALL one hundred* of the rodents (amplification).²⁴ Extending the implications to human beings is sobering, particularly when we are making our environment increasingly toxic. Modern medicine has *no* other method to remove toxic metals (as or after they enter) than the chemical process of chelation. Indeed, this is the *only* FDA-approved method of detoxifying from this heavy metal toxic body burden.

TREATING THE “PERSONAL POLLUTION”

The question of “Does chelation work?” was well answered in the very earliest studies, in the 1950s, by Norman E. Clarke, Sr. M. D., the “Father of Chelation Therapy in America.”²⁵

²⁴ Schubert J. Combined effects in toxicology—a rapid systematic testing procedure Cadmium, Mercury and lead. *J Toxic Environ Health* 1978;4:763-776)

²⁵ Clarke NE, Clarke CN, Mosher RE. Treatment of angina pectoris with disodium ethylene diamine tetraacetic acid. *Am J Med Sci* 232:654-666, 1956.

Subsequent studies have confirmed his early observations, with rare exception (and those often criticized as having faulty scientific design or controls). But two questions arise: first, will chelation help *all* blood vessels problems? And second, what about *over-the-counter* oral products that might work just as well as the intravenous treatments?

The range of occlusive (blockage) blood vessel disorders – in the heart, neck, brain, central core (including kidneys), and legs – has been widely studied. The results are uniformly positive, though the percentages of those areas that improve rise with increasing distance from the brain. As a clinical rule-of-thumb, “brain” and “eye” problems improve significantly about 75 per cent of the time, heart problems about 88 per cent, and leg problems about 92 per cent. (Some studies have suggested even better results.^{26,27}) The differences deserve further investigation, but suffice it to say that they probably relate in some degree to different forms of calcium deposition (“hardening”) in the different artery walls.

The most common diseases causing significant blood vessel blockages are diabetes (both types, especially when poorly controlled) and high blood pressure (“hypertension”). In both conditions – as in most others – the improvements with chelation can be startling. Legs scheduled for amputation – a frequent conclusion for diabetics – have been largely saved by chelation treatments.^{28,29} Clinical experience confirms that blood sugar control is often improved, sometimes dramatically, and dosages of insulin or oral hypoglycemics can be reduced for many patients ... reducing side effects, of course.

The sugar-control implications for “Metabolic Syndrome” (an inaccurate title for “insulin resistance syndrome”) are overwhelming. Also misnamed as “CardioMetabolic Syndrome,” this pattern shows elevating blood pressure, blood sugar, and triglycerides, lowered HDL (“heart protective”) cholesterol, along with enlarging waistline. This cluster of disease findings is associated with higher incidences of heart attacks and strokes, two of the top three leading killers in the United States. Chelation therapy produces impressive results in these patients. Results in other disease conditions (such as Raynaud’s phenomenon, scleroderma, systemic lupus, rheumatoid arthritis, Parkinson’s, and so on) are similarly encouraging.³⁰

So the second question – “over-the-counter” items that might help – raises some interesting concerns. For example, when people order the latest hyped-up bottle from a newsletter or other brochure, are they actually worsening inside while they *delay* seeking

²⁶ Olszewer E, Sabbag FC, Carter JP. A pilot double-blind study of sodium-magnesium EDTA in peripheral vascular disease. *J Natl Med Assoc* 82(3):173-177, 1990.

²⁷ Olszewer E and Carter JP. EDTA chelation therapy: a retrospective study of 2,870 patients. *Medical Hypoth* 27:41-49, 1988.

²⁸ Lamar CP. Chelation therapy of occlusive arteriosclerosis in diabetic patients. *Angiology* 15:379-394, 1964.

²⁹ Casdorff HR, Farr CH. EDTA chelation therapy, III: treatment of peripheral arterial occlusion, an alternative to amputation. *J Holistic Med* 5(1):3-15, 1983.

³⁰ Boyle AJ, Clarke NE, Mosher RE, et alia: Chelation therapy in circulatory and other sclerosing diseases, such as scleroderma and rheumatoid arthritis. *Fed Proc* 20 (Part II Supp) 10:243-251, 1961.

actual, scientific, evidence-based chelation therapy? Younger people, with lesser exposures to toxics and fewer degenerative issues, might “buy some time” with such readily obtained “nutritionals.” Older folks – especially those with degenerative diseases or (even unknown) history of prolonged or extra-ordinary exposures – are walking straight into the lions’ den. While any one individual might live a long and fruitful life without actual chelation, the vast majority are likely to succumb to the common killers, usually at the common ages. Even sequential “negative” (“normal”) test reports showing minimal blockage changes in arteries are no protection against sudden blockage from “sticky” platelets or other results of localized inflammation.

The longer-lived European (especially Mediterranean and Baltic) societies, particularly those whose citizens remain vital and active late in life, can offer some hints as to useful dietary counsel. Sulfur – found in onions, garlic, many grains, legumes, red meats, eggs, nuts and seeds, broccoli, cabbages, even milk and asparagus – readily binds with toxic heavy metals, but only weakly. Selenium – found in brazil nuts and a variety of meats – also can bind to heavy metals. When foods are grown (or animals are raised) in sulfur- or selenium-deficient soils, they have minimal amounts of these valuable minerals. Their use as significant “chelators” – even in the form of alpha-lipoic acid or methyl-sulfonyl methane (“MSM”) or N-acetyl-cysteine (“NAC”) – has not been adequately studied.

Some publicly-promoted products have cilantro, chlorella or other algae, and other botanical nostrums and are widely touted as helping to remove toxic metals. Again, their use as significant “chelators” has not been persuasively studied. Claims are made for EDTA in various products administered *orally*, but none of these have been subjected to rigorous scientific studies in any ways that successful *intravenous* EDTA chelation has been evaluated. Indeed, a number of formulas also have the nutritional element chromium listed as an ingredient in the *same* capsule or tablet. Once EDTA “finds” the included chromium, it binds more strongly than with almost anything else and is only slowly released. So, you get virtually no benefit from the chromium or chelation value from the oral EDTA.

If neither foods nor “over-the-counter” “oral chelators” offer much prospect of demonstrable lasting improvement, then what options exist other than intravenous chelation therapy? Here we are treading on “unstudied ground” once again. Heavy toxic metals interfere in so many ways – blocking enzyme and other metabolism reactions, creating inflammation, making “sticky” platelets, “rusting” the inner linings of blood vessels and thereby encouraging blockage, damaging brain and nerve functions, impairing immune defenses, encouraging the development of cancer, and so on. Theoretically the reduction of the total body burden, by any means, should aid the restoration of more normal functions.

Several chelation medications – such as D-penicillamine and DMSA – have been given orally, safely, for many years. *Perhaps* the detoxification of heavy metals cannot work nearly as successfully as intravenous EDTA. However, speculation can be offered: carefully *prescribed* use of various oral chelation *medications* might, over long periods of

time, offer important benefits to people unable or unwilling to take in-the-vein treatments; *however*, they might forego some (possibly critical) improvements with artery blockage disease. In the near future, this would be a fruitful area for study by the National Center for Complementary and Alternative Medicine (in the U. S. National Institutes for Health).

WHEN HOT DOGS ARE BANNED ...

Based on the studies available over the past sixty years, should we be optimistic regarding chelation therapy – whether *intravenous* EDTA or various *oral* chelator medications – finally coming available for the majority of Americans? Absolutely not.

At a recent trial, where I was serving as an expert witness for the defense, the state medical board attorney noted that “Since EDTA and other chelation medications are approved by the FDA for removal of toxic metals, then really their use is ‘conventional’ medicine practice, not ‘alternative’ or ‘integrative,’ right?” My reply: “Well, yes, *except* for one teeny-tiny technicality.” “What’s that?” asked the prosecutor. “The State Medical Boards.” “Why do you say *that*?” he asked, surprised. “Isn’t that why we’re in *this* trial? All of the medical boards *ignore* approval by the FDA, *ignore* the clear evidence found in the medical literature, and *ignore* the overwhelming reports of patient benefits from chelation – and they *prosecute* the doctors offering the treatment, just as *you* are today.”

A recent pediatrics study claims that 10,000 emergency room visits are made each year for children who are choking on hot dogs. Some six dozen reportedly die. *Each* year. If that many patients suffered death as a result of chelation therapy properly administered, the treatment would have been banned several dozen years ago. In sharp contrast to the “wiener losers,” whenever any *single* patient complains of “side effects” or – as happens every few years, when a patient ill enough to finally seek chelation treatments dies anytime *during* the therapy program – the State launches a fullscale investigation, usually seeking to remove the “offending” doctor’s license to practice medicine.³¹ As a society, we tolerate *dozens* of deaths from the lowly hot dog – at the same time we tolerate *dozens of millions* of preventable deaths and untold suffering from heart attacks, strokes, high blood pressure, kidney failure, macular degeneration, and amputations for gangrene, among the many disease conditions that could have been helped by chelation. When will the public demand a **change** of policy that we *can* believe in?

John Parks Trowbridge M. D., has been certified since 1985 as a chelation specialist by the American Board of Clinical Metal Toxicology, for which he now serves as Secretary. A Fellow of the American College for Advancement in Medicine, he has served as director, officer, or president of a number of professional and public associations. Popular as a professional and public speaker, he co-authored Bantam’s bestselling **The Yeast Syndrome** among several other books, CDs, and DVDs. His upcoming book, **LIFE LONG HEALTH**, presents chelation perspectives gathered from 27 years of offering this treatment. He provides a broad array of integrative medical therapies at his solo practice, Life Celebrating Health in Humble (Houston), Texas: jptlch@earthlink.net, 1-800-FIX-PAIN. (copyright at common law 2010 John Parks Trowbridge)

³¹ Carter JP: *Racketeering in Medicine: The Suppression of Alternatives*. Norfolk, Virginia: Hampton Roads, 1992.