## **Case Study**

A 59-year-old male presents with occasional tightness of the chest and several episodes of a mild ache in the chest that came on from exertion. The pain is localized to his left chest and subsides after a few minutes once he "catches his breath." He has no other major health problems except some difficulty sleeping due to occasional leg pains in the night. His vital signs are as follows: pulse 74 bpm; respiration rate; 17/min; temperature 38.8°F; blood pressure (left arm sitting) 150/66.

He smoked one pack a day from the age of 18 to 32 and then quit because his fiancé was very intolerant of smoking. He is a salesman for a roofing company. When business is slow, like in the dead of winter (he lives in central Illinois), he drives Uber and even does some hours at an Amazon fulfillment center, which is adjacent to the nearby interstate.

He and his wife of 26 years have two children in college, and he has helped them out; but he is under enormous stress financially. The household credit card debt is so high he has considered declaring bankruptcy, but he is concerned about this ability to co-sign on the children's student loans in that case.

The family home is in small town, and everyone has a private well. He is aware that the high mineral content of the water can also have some toxins, and he maintains a water softener machine with his pump; but he is so hard-pressed



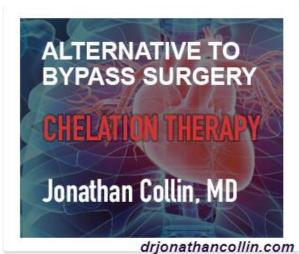
financially that he has not bothered replacing the filters in the filtration system.

His diet is fairly high in meat, potatoes, and not too high in plant foods. He tends to eat a fair amount of takeout food due to his essentially working two jobs and not being home very often. A typically day's diet might include coffee, a bagel with peanut butter, hash browns, or donut, French fries and a burger, spaghetti and meatballs and sometimes a salad.

Although not as troubling as the pain in his chest, he does have gum disease and cannot afford to get the extensive deep cleaning and possible periodontal surgery that his dentist wants him to have. He has several pockets of infection deep in his gums and some temperature sensitivity to foods and drinks.

Testing is ordered to check out his general level of inflammation. He has an elevated C-reactive protein, and a urinary test reveals very high F2-isoprostanes. These are byproducts of arachidonic acid that are formed by high oxidative stress in the arterial surface. High F2 isoprostanes are associated with possible vascular damage and much higher risk of metabolic

syndrome. He also receives an ADMA/SDMA test to see if his nitric oxide levels in the arteries are low, which leads to vessel tightening. His total cholesterol is 205 mg/ dL and his LDL is 155 mg/ dL.



Referral to a cardiologist is made, and he receives a stress test which shows signs of reduced heart performance and ischemia due to exercise. He cannot afford an angiogram due to his poor health insurance, but he does find an imaging center that will do a coronary artery calcium scan for 70 dollars. He scores high, about 800, which shows calcification his heart arteries.

*drjonathancollin.com* He is immediately put on a Mediterranean diet although in his case he is doing a bit less seafood and is allowed some lean chicken meat as well. He finds that he likes the extra

virgin olive oil from Costco and begins to use it generously. He eliminates almost all seed oils, like soy and canola from his diet and this means eliminating restaurant food, which actually is helpful to his budget. He brings raw trail mix combos in individual bags from Trader Joe's to his work so he can get energy in between meals. Although his diet is still a bit pasta heavy, it has about six servings of fruits and vegetables a day, which is a vast improvement. His dietary magnesium intake has probably tripled.

He begins to eat two squares of 85% cocoa extra dark chocolate per day and drinks green tea twice per day. He is told to take 3 grams of vitamin C per day. Also, he diverts some of his saved money from restaurants to a deep dental cleaning and irrigation (but not surgery) and begins to rinse with a hydrogen peroxide solution every day.

The Home Depot offers a special on home water testing kits, and he has his well water tested. It turns out to be high in arsenic (30 ppb), which surprises him. He replaces his old and useless filter for the household water and resolves to keep it up to date.

He is retested with C-reactive protein and F2-isoprostanes after three months (he asked to wait on other tests for the sake of his



pocketbook) and C reactive protein has dropped from 'high' to "moderate' risk for cardiovascular disease. His F2 isoprostanes greatly improved and are normal. His LDL is down to 120 mg dL.

He is not having any chest pain, but he will get a stress test in a few months and hopes to see his lipids improve. He certainly feels healthier and more energized than he can remember feeling.