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From the Director, Virginia Center on Aging

By Edward F. Ansello, Ph.D.

Metabolic Syndrome and How to Fight It

While Metabolic Syndrome sounds like a great name for a rock band, it's actually a health condition that's causing an increasing amount of attention. It's present in one of three adults in the United States. Fortunately, there's good news to share about fighting this condition.

Metabolic Syndrome involves the presence of five features in our bodies: 1) a larger than preferred waist size (above 35 inches for women, 40 inches for men), 2) high levels of triglycerides (150 or higher), 3) low levels of the good cholesterol HDL (under 50 for women, 40 for men), 4) blood pressure higher than ideal (systolic 130 or higher, diastolic 85 or higher), and 5) too much blood sugar (100 or higher). We have metabolic syndrome, a sign of insulin resistance, if we have three of these five features.

Understanding metabolic syndrome and the ins and outs of relationships among these five conditions or features goes a long way in helping us to understand the fundamental functions of our well-being.

Not surprisingly, our diets contribute to having the metabolic syndrome. One culprit seems to be too many of our calories coming from carbohydrates in refined grains, potatoes, fruit juices, and added sugars rather than from vegetables, whole grains, beans, and whole fruits. Consider a common American lunch: a sandwich, with a small bag of potato chips, with a cookie for dessert. This is carbohydrates, with a side of carbohydrates, with a dessert of carbohydrates. When we eat too many refined carbohydrates, we can develop "carbohydrate-induced high blood triglyceride levels," basically, fat that can overwhelm the liver and cause it to send these fats into the bloodstream, which, in turn, raises the risk for atherosclerosis, a cardiovascular disease.

Higher levels of triglycerides often go hand-in-hand with low levels of the good cholesterol HDL. Together, they signal a greater risk for developing type 2 diabetes, the adult onset condition that is rampant in many developed countries.

Diabetes affects most every part of our bodies from top to toes. Eyes: diabetes can cause spots, blurry vision, and retinopathy. Brain: diabetes is increasingly seen as a risk factor for dementia and stroke. Kidneys: diabetes is the leading cause of kidney failure. Heart: diabetes doubles the risk of heart attack. Extremities (fingers and toes): diabetes increases risks for numbness, pain, and weakness, peripheral artery disease, and the chances of amputations.

Obesity creates an amazing range of health consequences. Fat around the waist is the most dangerous. But we have to differentiate among subcutaneous fat (just below the surface), visceral fat, and liver fat, the latter two causing greater damage. Visceral fat appears to be more closely linked to type 2 diabetes and coronary heart disease, theoretically because visceral fat cells release fat that goes straight to the liver helping to make the body "resistant" to its own insulin and excess fat in the pancreas helps to make the pancreas produce less insulin. With insulin resistance, our insulin cannot keep up with moving blood sugar into cells and type 2 diabetes results. The relationship to diet in this process is fairly direct. Consuming foods made with saturated fat (e.g., palm oil, butter) rather with polyunsaturated fat (e.g., canola, olive, sunflower oils) produces more visceral fat and liver fat. Fructose (and its dozens of variants with other names) and high-fructose syrups, all found abundantly in so many canned and packaged foods, soft drinks, and snacks, are strongly associated with visceral and liver fat.

Measure your waist size. Place a tape measure around your middle, just above the hipbones. Pull the tape snug, then breathe out, and measure. Just like the advice to stand on scales daily, regularly measuring our waists will help avoid unwanted gains. At least we are less likely to say, "Where did these 10 pounds or two inches come from?"

Carbohydrates account for about half of the calories in a typical American diet, with about two-thirds of these coming from refined grains, added sugars, fruit

juice, and potatoes. Researchers working to lower triglycerides are testing diets where carbohydrates account for only 40% of the diet. The OmniCarb studies with overweight and obese adults have shown that when carbohydrate intake was cut to only 40% of calories, triglycerides fell sharply and HDL rose (<https://pubmed.ncbi.nlm.nih.gov/27933186/> and https://www.ahajournals.org/doi/10.1161/circ.127.suppl_12.A016). This reduction to 40% also lowered levels of fructosamine, a marker of blood sugar levels and predictor of type 2 diabetes.

High blood pressure or hypertension affects some 70 million Americans, and is a risk factor for stroke, and heart and kidney disease, if is not controlled. About one of three American adults has high blood pressure, defined as 130/80 or more.



The DASH (Dietary Approaches to Stop Hypertension) Diet was designed to combat high blood

pressure, but, because it is a lifestyle change, it can produce positive results in fighting all five features of the metabolic syndrome. Daily recommended consumption is: Grains: 6-8 servings. Vegetables: 4-5 servings. Fruits: 4-5 servings. Nuts, seeds, legumes: 4-5 servings. Dairy 2-3 servings. Lean meat, poultry or fish: less than 6 one-ounce servings. See this NIH link for an extensive analysis of DASH; <https://www.nhlbi.nih.gov/health-topics/dash-eating-plan>.

The Mediterranean Diet has become almost a generic term for a way of eating healthy foods. It is a plant-based diet rather than meat-based. Its components have been endorsed by the World Health Organization. We have all heard of its benefits and each of us has some concept of what it entails: daily consumption of vegetables, fruits, whole grains, and healthy fats (especially olive oil), with weekly rather than daily consumption of fish, eggs, beans, and poultry. The Mayo Clinic offers a good overview: <https://www.mayoclinic.org/healthy-lifestyle/nutrition-and-healthy-eating/in-depth/mediterranean-diet/art-20047801>.

Movement and exercise. As soon as someone recommends more “exercise,” many of us tune out. Maybe we should discuss Exercise Resistance as well as insulin resistance. What exercise recommenders are basically encouraging is movement. This has become more difficult, admittedly, during COVID-19 induced isolation. Many of us stay in our homes, some before a television or a laptop, not moving for hours. But breaking this sedative habit is essentially important to countering metabolic syndrome.

Movement prompts digestion, circulation, and metabolism, strengthens joints and muscles, and changes stimulation. What I found in visiting Sardinia, a famed Blue Zone for healthy longevity, was not crowds of older adults exercising in public squares but rather older adults enmeshed in activity and movement. They walk to shop, to visit with family and neighbors, and are engaged as part of their communities. Whether up in mountain villages near Nuoro or the Western flatlands around Oristano, older adults were moving. Perhaps as importantly, when they weren’t moving, they were often socially engaged having coffee with friends at small shops or visiting with each other in streets or on benches. I was not struck by images of an idyllic paradise, for there’s widespread unemployment and youth exodus; but I was impressed by the integration of movement in the daily lives of these older adults.

Movement, as well as seeing a healthcare provider and the aforementioned dietary improvements, are the basics we need to combat metabolic syndrome.

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