Early Detection, Healthy Diet and Lifestyle Changes Critical for Addressing Metabolic Syndrome and Halting Progression of Liver Disease

Author: Dr. Juan Pablo Frias, M.D., *medical director and principal investigator, National Research Institute, Los Angeles, USA*

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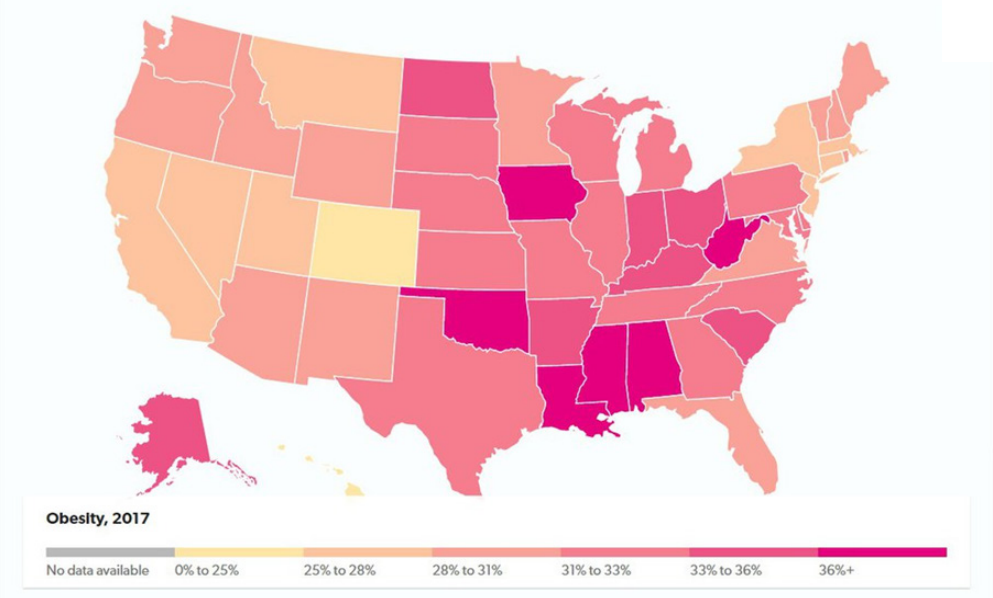
Metabolic syndrome—the presence of a cluster of risk factors specific for cardiovascular disease—greatly raises the risk of developing type 2 diabetes, heart disease, stroke or all three.[1] Risk factors include abdominal obesity, impaired fasting blood glucose, high blood pressure, high triglyceride levels and low HDL cholesterol.

Most people who have metabolic syndrome are overweight or obese and have insulin resistance, making it more difficult for cells in the body to respond to insulin, triggering blood sugar levels to rise and leading to type 2 diabetes.[2]

Increasing rates of obesity are increasing rates of metabolic syndrome,[3] and it may soon become the main risk factor for cardiovascular disease, ahead of cigarette smoking. Studies show that nonalcoholic fatty liver disease (NAFLD)—the accumulation of lipids in liver cells not associated with the consumption of alcohol—is strongly associated to the features of metabolic syndrome and that insulin resistance is a key pathogenic factor for both NAFLD and metabolic syndrome.[4]

This paper highlights the link between obesity, metabolic syndrome and liver disease, and the role of diet and lifestyle changes for preventing disease progression. We also point to the value of non-invasive diagnostic exams at the point of care to cost-effectively gain quick insight into liver health to quantitatively estimate liver fat content and liver stiffness. Results enable heath care professionals to make the most informed treatment decisions, while also ruling out the need for an invasive and expensive liver biopsy or other invasive testing.



Source: Obesity rate nearly triples in the United States over the last 50 years - USAFacts

Impact of Obesity in NAFLD/NASH and Metabolic Syndrome

The impact of obesity on vital organs, especially on the liver, can be devastating, causing insulin resistance that leads to abnormal levels of blood sugar and increases the amount of free fatty acids circulating in the blood and inside the liver cells. This buildup of fat in the liver is very common in those with metabolic syndrome or type 2 diabetes, and increases the risk of liver fibrosis, cirrhosis, liver cancer and death.

Identifying people at high risk of experiencing complications is important in order to prevent NAFLD from progressing to non-alcoholic steatohepatitis (NASH), fibrosis and cirrhosis. NASH is an asymptomatic, progressive and burgeoning liver disease that can lead to increased liver-related mortality and morbidity. Estimates show that 357 million people will have NASH globally by 2030[5]—representing 27% of the adult population.[6]

As the incidence of diabetes and obesity continue to rise, it will become an imperative to effectively identify and manage the associated liver disease, and address its increased risk of morbidity and mortality. A program targeting gradual weight reduction and physical exercise continues to be the gold standard of treatment for all forms of NAFLD.

Diets high in sugar-laden drinks and trans fatty acids pose the greatest risk of liver death with NAFLD, according to a 195-country analysis.[7] Epidemics of NAFLD, type 2 diabetes and obesity are rampant in many countries, including wealthy and poor nations alike.[8]

Researchers have concluded that specific dietary risks, and not simply metabolic risks, independently drive the global burden of NAFLD.[9]

Obesity Epidemic in the United States

In 2000, **30.5%** of American adults had obesity, meaning they had a body mass index of 30 kg/m^2 or higher. That rate increased through 2015-2016, helping to fuel related health issues like NAFLD, type 2 diabetes, cardiovascular disease and some cancers. Recent data shows that the obesity rate reached **42.4%** in 2017-2018 – surpassing 40% for the first time.[10]

NAFLD affects roughly 100 million Americans and costs the United States healthcare system **$32 billion** annually.[11] In a recent retrospective analysis among Medicare Advantage plans, the annual cost of NAFLD was $9,062 for a new diagnosis and $5,363 for long-term management versus $4,111 per matched control.[12]

Costs per patient and overall costs per year are the result of inpatient hospitalization and outpatient appointments, emergency department visits, organ transplantation, medical procedures or new diagnoses, new medications or changes to existing medications and mortality.

Fostering Lifestyle Changes

Lifestyle modification, including diet and exercise followed simultaneously, have been shown to prevent or reverse metabolic syndrome, NAFLD, NASH and, in some cases, the development of fibrosis.[13] For example, a weight reduction of 3% can reverse liver fat in 35% of patients and a reduction of 10% or more can regress fibrosis in nearly half of patients studied.

Data suggest mild to moderate activity, such as walking, can reduce liver fat, irrespective of diet. Various regimens of aerobic and resistance training have been shown to reduce hepatic fat content through improvements in insulin resistance, liver fatty acid metabolism, liver mitochondrial function and inflammation. These data provide justification for the current guidelines that recommend an exercise regimen that fits with the patient's individual abilities and preferences to facilitate long-term compliance with a more active lifestyle.[14]

An interim look at an ongoing study of 10,000 patients with no history of liver disease found that only **44%** of patients evaluated had what is considered normal livers.[15] The majority had some form of liver abnormality, ranging from elevated liver fat to liver fibrosis, including **13%** suspected of having undiagnosed liver fibrosis or cirrhosis. Significantly, the vast majority of patients had no symptoms.

The asymptomatic nature and increasing prevalence of liver disease highlights the importance of initial testing for identifying and risk stratifying patients with NAFLD, while the progressive nature of the disorder and the need to assess the effectiveness of an intervention highlights the value of regular assessments.

Metabolic Syndrome Diet

Foods to Avoid

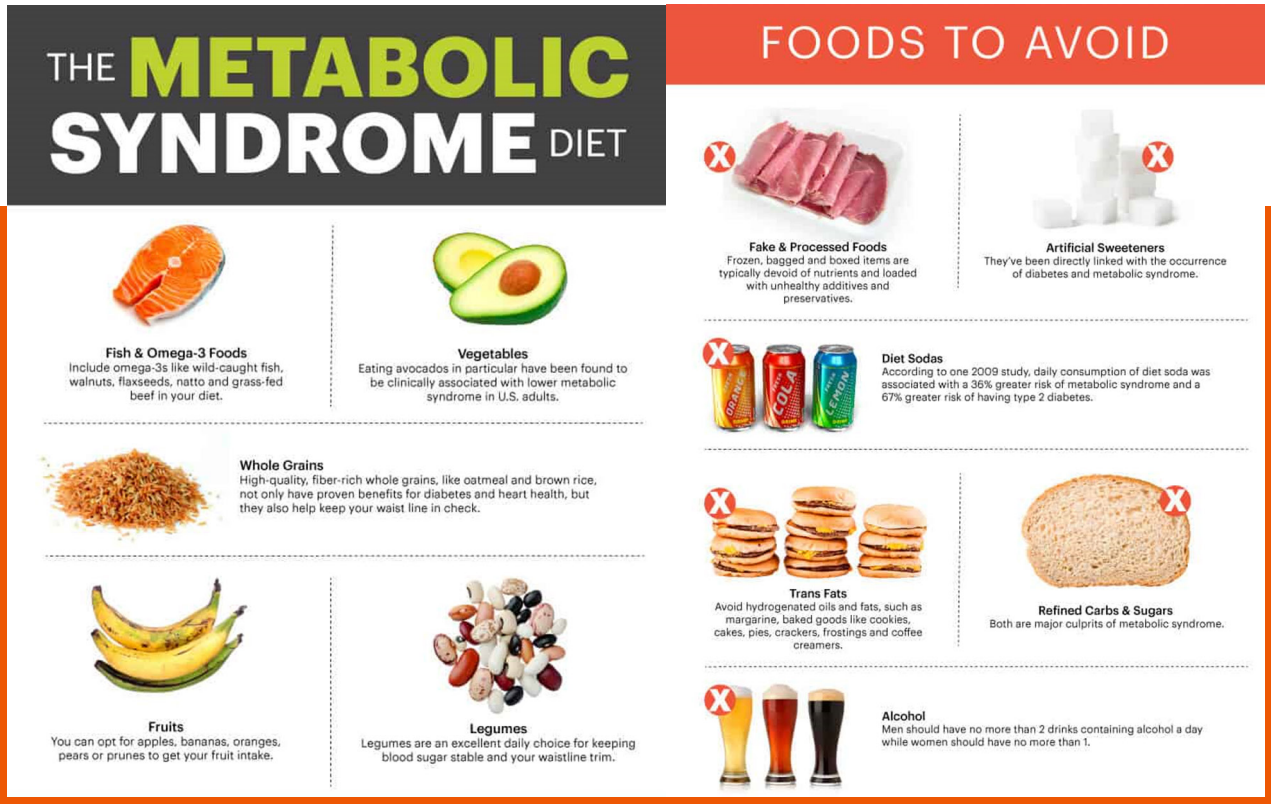
Those with metabolic syndrome should avoid sugary foods, including simple, refined carbohydrates. A **low-carbohydrate diet** can help patients lose weight and improve blood sugar control. It may also help prevent type 2 diabetes and heart disease. Patients should also keep away from sugars disguised by chemical names, such as glucose, dextrose, fructose, levulose and maltose, as well as artificial sweeteners, such as aspartame, sucralose and saccharin.

Patients should also avoid:

Processed foods:[16] corn syrup, sweets (candy, chocolate bars), white bread, white rice, white flour, baked goods (cakes, cookies, doughnuts, pastries), potato chips, crackers, fruit juices, soda and sugary drinks.

Trans fats, which are common in artificial partially hydrogenated oils and added to processed foods to give them a longer shelf life, may raise unhealthy cholesterol levels and increase the risk of heart disease and stroke.

Deep-fried foods, packaged biscuits and cookies, margarine, microwave popcorn with artificial butter, crackers, potato chips, frozen pizza, frozen fries, pies and pastries, vegetable shortening, cake mixes and frosting, frozen dinners and nondairy creamers.[17]



Source: Metabolic Syndrome: Proven Diet & Natural Treatment Plan - Dr. Axe

Healthy Food Choices

Foods that can improve metabolic syndrome are those rich in fiber. In fact, adding more fiber can help lower the risk of heart disease and stroke. Fiber reduces low-density lipoprotein levels (LDL), also known as "bad cholesterol," and can help balance blood sugar levels. Women should eat at least 25 grams of fiber per day and men should eat at least 38 grams of fiber per day.[18]

Suggested fibrous foods include: fresh and frozen fruit, dried fruit, fresh and frozen vegetables, oats, barley, dried beans, lentils, brown rice, quinoa, couscous, bran, whole-grain bread and pasta and cinnamon powder.

Potassium-rich foods help balance blood pressure: bananas, dates, orange, grapefruit, cantaloupe, collard greens, edamame beans, black beans, lentils, mushrooms, potato with skin, tomatoes, oat bran and yogurt.

Omega-3 fatty acids help raise HDL cholesterol levels. They also help keep the heart and blood vessels healthy. These healthy fats can be found in some fish and other foods, such as:[19] flax seeds, chia seeds, pumpkin seeds, olive oil, pine nuts, walnuts, almonds, navy beans, avocados, salmon, sardines, tuna, mackerel and trout.

A healthy diet for metabolic syndrome replaces most processed, packaged foods with nutritious, whole foods and should be a consistent lifestyle choice, not a temporary diet.

Cost Effective Way to Identify and Monitor Patients

A weight loss program combined with FibroScan®, an FDA cleared technology for the diagnosis and monitoring of adult patients as part of an overall evaluation of liver health, is an effective approach for monitoring the impact of lifestyle changes on changes in liver fat.

Unlike blood tests that measure circulating markers of liver injury, such as alanine aminotransferase (ALT) and aspartate aminotransferase (AST), FibroScan directly and non-invasively measures physical properties of stiffness and fat liver. This rapid and reliable tool provides reproducible results, allowing for both diagnosis and monitoring of liver stiffness and liver fat.

FibroScan is a highly mobile, point of care tool that can be operated by a medical assistant, nurse or clinician, with interpretation by the healthcare professional. It produces numeric measurements, not images, allowing for simplified interpretation and consistency of measurement for monitoring changes in liver tissue over time. These liver stiffness and fat measurements have been validated against liver biopsy and MRI-based tools.[20]

FibroScan risk-stratifies patients suspected of having liver disease, which is critical for identifying patients with progressive liver disease, elevated cancer risk and elevated cardiovascular risk. This capability saves medical practices and health plans the expense of utilizing a technician to perform an ultrasound and eliminates the need for a radiologist/ specialist to interpret results or recommend expensive follow-up testing for patients. This exam also improves patient outcomes by helping to identify asymptomatic liver disease before it becomes symptomatic, provides quantitative output—which can be used to create scores to simplify risk stratification—and delivers consistent quantitative results.

Moreover, FibroScan is the only tool readily available and affordable to monitor fatty liver disease and is especially valuable when giving feedback to patients regarding their efforts with diet and exercise. FibroScan is supported by over 2,500 peer reviewed publications and serves as the reference for non-invasive tests in major international guidelines,

Collectively, these factors can potentially reduce referral cost/risks of over- and under-referral and allows for earlier, targeted interventions. In the future, when combined with blood biomarkers, FibroScan-based scores may be a cost-effective approach for assessing patients before treatment and monitoring patients on treatment, and is likely to become a routine part of patient management.

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Juan Pablo Frias, M.D., Medical Director, National Research Institute

Dr. Juan Pablo Frias is Medical Director and Principal Investigator of National Research Institute in Los Angeles, CA. He received his medical degree from Vanderbilt University School of Medicine and completed his Fellowship in Endocrinology, Diabetes and Metabolism at the University of California, San Diego. Dr. Frías has held academic positions at the University of Colorado Health Sciences Center, Barbara Davis Center for Diabetes, and the University of California San Diego School of Medicine, where he is currently on the clinical faculty. He has been involved in diabetes and metabolism-related research for over 25 years and has authored numerous publications in this field including publications in The New England Journal of Medicine, The Lancet, Lancet Diabetes and Endocrinology, Cell Metabolism, Diabetes, and Diabetes Care.

About Echosens

Echosens, the developer of FibroScan®, is an innovative high-technology company offering a full range of products and services supporting physicians in their assessment and management of patients with chronic liver diseases. FibroScan is supported by over 2,500 peer-reviewed publications and examinations are covered by Medicare, Medicaid and many insurance plans.
For more information, please visit http://www.echosens.us and follow us on Twitter (@echosens).

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