



Oklahoma Heart Institute

VOLUME 10 | NUMBER 2 | FALL 2015

LIFE TAKES HEART

Oklahoma Heart's
Top Prevention Tips

Simple Steps
Toward a Healthier
Heart

Whole Heart
Healthy Foods

...and More!





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*Published by Oklahoma Heart Institute
Edited by Newsgroup Communications, Tulsa, OK
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*The Oklahoma Heart Institute Magazine is mailed
directly to referring physicians and other referring
health care professionals in the Tulsa area and is also
available in our patient waiting rooms.*

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to our readers



Cardiovascular disease prevention has become one of the great successes in cardiology. It is estimated that the majority of heart attacks and strokes are preventable by treating the known risk factors. The current issue of Oklahoma Heart Institute Magazine presents informative articles to help you understand how to prevent and treat heart disease. We also offer a special section dedicated to lifestyle choices in diet, food and exercise that can significantly reduce risks and keep your heart as healthy as possible.

We hope that you enjoy the articles and welcome any comments or suggestions regarding the magazine content.

Sincerely,

Wayne Leimbach

Wayne N. Leimbach, Jr., MD
Publisher/Editor, Oklahoma Heart Institute Magazine



ON THE COVER
*“Sun Sets on
Tulsa’s Autumn Sky”
Photo by John Shoemaker*

Heart Attack?

Ways to Reduce Your Risk

By Wayne N. Leimbach, MD, FACC, FSCAI, FCCP, FAHA



The disease that kills the most Americans each year is actually preventable in the majority of cases. It's heart disease, and it causes heart attacks in about 1.2 million people in the United States each year.

If heart disease is treatable for most people and can be diagnosed early, why are so many of us having heart attacks?

Many people don't know they are at risk. Others who actually know their risk factors don't treat them. Still others who know their risk factors do not seek testing to assess whether or not they al-

ready have significant heart disease that needs treating.

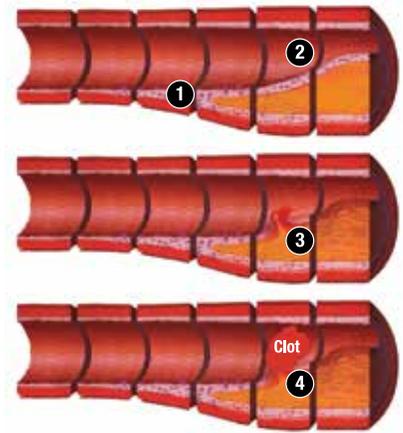
WAYS TO PREVENT A HEART ATTACK

Heart attacks can be prevented by treating the known risk factors that lead to your having one.

First, you should know your blood cholesterol and triglyceride levels (lipids).

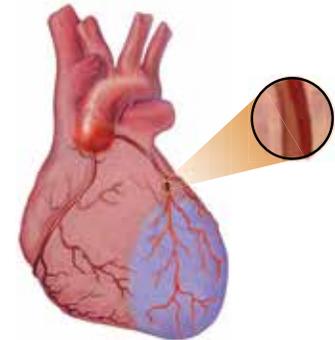
Second, you should know your blood pressures and blood sugar. If these levels are elevated, blockages are probably being made in the blood vessels that provide blood supply to the heart.

Figure 1
**Atherosclerosis:
The Risk of High Cholesterol**



- 1 Initially, as atherosclerotic plaque builds up in the artery, the vessel wall stretches to maintain the vessel lumen.
- 2 Eventually, as the plaque builds up, the vessel lumen narrows.
- 3 Plaque rupture exposes the blood to the plaque contents and promotes formation of a blood clot.
- 4 If the blood clot that forms on the ruptured plaque is large enough to occlude the vessel lumen, then a heart attack occurs.

Figure 2



A heart attack occurs when a blood vessel to the heart muscle becomes totally blocked causing the heart muscle downstream from the blockage to die.

We now know blockage formation can start as early as in the teenage years. The formation of blockages in the blood vessels to the heart can also be caused by smoking, chronic inflammation as measured by a blood test called the high sensitivity-CRP (hs-CRP), and a sedentary lifestyle.

Your risk of having a heart attack increases as blockages continue to develop in the blood vessels supplying the heart muscle. In most cases, blockage material (plaque) in the blood vessels to the heart muscle ruptures, and a blood clot forms on the ruptured plaque, causing the blood vessel

to become completely blocked. This causes heart muscle to die. If a large amount of heart muscle dies, the person will die (Figure 1).

WAYS TO TREAT YOUR RISK FACTORS

Preventative cardiology is important. Here's why. If blockages in the blood vessels to the heart are never made, then blockages cannot rupture, and a blood clot cannot form on the ruptured plaque to block the blood supply to the heart muscle. Thus, a heart attack is prevented.

The goal, then, to preventing heart attacks is preventing blockage formation in the blood vessels to the heart.

You can do this by treating your major risk factors: high lipids (cholesterol and triglycerides), high blood pressures, high blood sugars, cigarette smoking, high hs-CRP (marker of inflammation), and sedentary lifestyle (Table 1).

KNOW YOUR NUMBERS

What are good cholesterol levels? For people at mild risk, LDL cholesterol (the bad cholesterol) should ideally be less than 130. For people with known blockages of the blood vessels and/or with diabetes, the LDL cholesterol levels should be definitely less than 100 and, if possible, less than 70 (Table 2).

What should your blood pressure be? Ideal blood pressures are less than 120/80. The goal for most people is blood pressures at rest consistently to be less than 140/90 (Table 3).

What should your blood sugars be? For most people fasting blood sugars should be less than 110, and ideally less than 100. The blood test called a high sensitivity-CRP is a marker of inflammation. It also indicates increased risk of blockage formation. The hs-CRP should be less than 2, and ideally less than 1.

Almost everyone's blood pressure, cholesterol levels and blood sugars can be normalized today.

WATCH YOUR DIET

You should also follow a low-cholesterol, low-saturated fat diet to reduce cholesterol levels. A low-sodium diet will help reduce blood pressures. A low, simple carbohydrate diet helps reduce the risk of diabetes and lowers triglycerides. Weight loss in overweight patients significantly reduces the risk of diabetes. If your risk factors cannot be normalized with dietary changes and lifestyle modification, then medications should be used.

Studies have shown that if risk factors are normalized, not only can blockage formation be stopped, but also reversal of already existing blockages can occur.

TESTING.

For people who are having symptoms suggestive of heart disease (Table 4) or for people with multiple untreated risk factors, tests should be considered that screen for the presence of already severe blockages in the blood vessels to the heart. These include stress tests, calcium CT scans or CT angiograms. If severe blockages are present, they can be treated before a heart attack occurs.

HEART ATTACK INTERRUPTED

Finally, if you are having symptoms that may be those of a heart attack, call 911, so you can be taken immediately to the hospital.

If the diagnosis is confirmed at the hospital, the heart attack can be interrupted by emergency cardiac catheterization and balloon angioplasty

Table 4
Heart Attack Symptoms Can Include:

- Chest pain, discomfort, heaviness, tightness
- Indigestion symptoms not relieved by antacids
- Discomfort radiating to the left shoulder, arm, jaw, or back
- Discomfort or heaviness of the left arm or both arms
- Sweating, nausea, vomiting
- Extreme weakness or shortness of breath
- Rapid or irregular heart beats

and/or stenting. Most heart attacks can be interrupted, if the patient gets to the hospital early enough. This not only prevents death, but also minimizes the amount of damage done to the heart, so that the person can return to their normal lifestyle.

TAKING ACTION

It is important that we take an active role in our healthcare by knowing our risk factors for heart attacks, aggressively treating those risk factors and making sure symptoms suggestive of heart disease are evaluated.

Only in this way can you reduce your personal risks, thus reducing the number one cause of death in the United States. ❤️

Table 1
Major Treatable Risk Factors for Heart Attacks and Stroke

- High Blood Pressure
- High Lipids (Cholesterol & Triglyceride)
- High Blood Sugars (Diabetes Mellitus)
- Smoking
- High hs-CRP (Marker of inflammation)
- Sedentary Lifestyle
- Low HDL (Good Cholesterol)

Table 2
Cholesterol ATP-III Guidelines Quick Reference

LDL — Cholesterol ("Bad" Cholesterol)	
<70	Optimal if diabetic or CAD
<100	Optimal if any risk factors present
<130	Near optimal
130-159	Borderline high
160-189	High
≥190	Very high
Total Cholesterol	
<200	Desirable
HDL Cholesterol ("Good" Cholesterol)	
<40	Low (↑ risk)
≥60	Good (↓ risk)

Table 3
Blood Pressure Classifications

Blood Pressure Classification	Systolic Blood Pressure (mmHg)	Diastolic Blood Pressure (mmHg)
Normal	<120	and <80
Pre-Hypertension	120-139	or 80-89
Stage 1 Hypertension	140-159	or 90-99
Stage 2 Hypertension	≥160	or ≥100

Dr. Leimbach is a specialist in interventional and structural cardiology, including cardiac catheterization, coronary angioplasty, stents, atherectomy, laser, intravascular ultrasound imaging, and direct PTCA/stents for acute myocardial infarction. He also specializes in percutaneous closure of PFOs, ASDs, PDAs and percutaneous valve replacement or repair procedures such as TAVR and MitraClip. He is Director of the Cardiac and Interventional Laboratories at Oklahoma Heart Institute Hospital and also is Chief of Cardiology. Dr. Leimbach is Co-Founder of the Lipid and Wellness Clinic at Oklahoma Heart Institute. He is Director of the James D. Harvey Center for Cardiovascular Research at Hillcrest Medical Center, as well as Director of the Oklahoma Heart Research and Education Foundation. He serves as Clinical Associate Professor of Medicine at the University of Oklahoma College of Medicine-Tulsa. Dr. Leimbach completed a Clinical Cardiology Fellowship and a Research Fellowship at the University of Iowa Hospitals and Clinics. He also completed his Internal Medicine Internship and Residency Programs at Iowa, where he was selected Chief Resident in Medicine. He received his medical degree from Northwestern University in Chicago and his Bachelor of Science degree from the University of Michigan.

Understanding Heart Disease

By Elaine Burkhardt

An Interview with Edward T. Martin, MD, FACC, FACP, FAHA



Dr. Martin is a noninvasive cardiologist with subspecialty expertise in noninvasive imaging. He is Director of Cardiovascular Magnetic Resonance Imaging at Oklahoma Heart Institute and Hillcrest Medical Center. In addition, he is a Clinical Associate Professor of Medicine at the University of Oklahoma College of Medicine — Tulsa. Dr. Martin has specialty training in Nuclear Medicine, as well as additional training dedicated to Cardiovascular Magnetic Resonance Imaging. He is Chief of Cardiology at Hillcrest Hospital South. He completed his Cardiology Fellowship at the University of Alabama. Dr. Martin's Internal Medicine Internship and Residency training were performed at Temple University Hospital in Philadelphia. He received his medical degree from the Medical College of Ohio. Dr. Martin completed his Master of Science degree in mechanical engineering at the University of Cincinnati and his Bachelor of Science degree in physics at Xavier University. Dr. Martin is a founding member of the Society of Cardiovascular Magnetic Resonance and is an editorial board member of the Journal of Cardiovascular Magnetic Resonance.

Where does Oklahoma, or Tulsa to be more specific, rank in terms of heart disease-related deaths?

Dr. Martin: Heart disease is the leading killer of both men and women in the state of Oklahoma. The last detailed United States state rankings were from 2010 and showed that Oklahoma was 48 out of 50 states in cardiovascular deaths. The third worst.

What are the warning signs?

Dr. Martin: The most classic symptom for a heart attack is discomfort in the center of the chest that lasts more than a few minutes, or that goes away and comes back. It can feel like uncomfortable pressure, squeezing, fullness or pain. However other symptoms can include pain or discomfort in one or both arms, the back, neck, jaw or stomach. Other symptoms that may or may not occur include breaking out in a cold sweat, nausea or lightheadedness.

As with men, a woman's most common heart attack symptom is chest pain or discomfort. But women are somewhat more likely than men to experience some of the other common symptoms, particularly shortness of breath, nausea/vomiting, and back or jaw pain.

What is a person's risk of having a heart attack or suffering from a heart-related condition?

Dr. Martin: The controllable risk factors that increase the risk of developing a heart attack or stroke are smoking, high blood pressure, high cholesterol, diabetes, overweight and obesity and physical inactivity. Additional risk factors include male gender and family history of heart disease.

Multiple risk calculators exist to help the individual person calculate his or her own risk of having a heart attack or dying from coronary heart disease over the next 10 years. They can also be used to check if you may have metabolic syndrome, a group of risk factors that greatly increase your chances of developing cardiovascular disease, including stroke and diabetes. This risk assessment tool can be used by people age 20 or older who do not already have heart disease or diabetes. Some of the better ones can be found at the American Heart Association (AHA) website at <http://www.heart.org/HEARTORG/Conditions/HeartAttack/HeartAttackTool->

[sResources/Heart-Attack-Risk-Assessment_UCM_303944_Article.jsp](http://www.heart.org/HEARTORG/Conditions/HeartAttack/Risk-Assessment_UCM_303944_Article.jsp) and at American College of Cardiology patient website www.cardiosmart.org. But, in general, the greater the number of risk factors you have, the greater the risk; especially if the risk factors are not well controlled.

What screenings are important to help someone learn their risk factors? And what can the doctors at Oklahoma Heart Institute do to help people manage those risks?

Dr. Martin: Everyone should know their risk factors, including your cholesterol, blood pressure, blood sugar and hs-CRP blood test for inflammation. At OHI, we offer inexpensive screening tests to evaluate carotid arteries, cardiac function, peripheral artery disease and your risk for abdominal aneurysm. We also offer a cardiac calcium score to measure arterial plaque buildup, which can cause blockages and heart attacks. All of the tests are painless and literally can save your life and prevent heart attack and strokes.

What local resources are available to help people facing heart disease?

Dr. Martin: Because of the internet, these days it is not as important as it used to be to have local resources available. A wealth of information can be garnered online. Multiple resources are available at the American Heart Association website at <http://www.heart.org/HEARTORG/>. Additionally the American College of Cardiology has a nice patient information website at www.cardiosmart.org. Both sites contain a wealth of information on diet, exercise, weight loss, nutrition, smoking cessation, research, information on clinical conditions and much more.

However local resources do exist. In Oklahoma, the following resources are available:

The Oklahoma State Department of Health's Heart Disease and Stroke Prevention Program has resources available at http://www.ok.gov/health/Disease_Prevention_Preparedness/Chronic_Disease_Service/Heart_Disease_and_Stroke_Prevention_Program/index.html.

Smoking cessation help from the Oklahoma Tobacco Settlement Endowment Trust is available at 1(800)-quitnow (1-800-784-

8669) and at OKhelpline.com. They provide the tools and support you need to quit tobacco. It could include free text and email support, phone and web coaching, patches, gum or lozenges and more for registered participants. Additional smoking cessation help and resources can be found under the Oklahoma State Plan for Tobacco Use Prevention and Cessation at http://www.ok.gov/health/Disease,_Prevention,_Preparedness/Tobacco_Use_Prevention_Service/.

Tips on weight control, nutrition and physical activity can be found at Get Fit Eat Smart Oklahoma at <http://www.digitalprairie.ok.gov/cdm/ref/collection/stgovpub/id/6107> Oklahoma Heart Institute also has a weight loss and wellness center that works with the patient on weight loss as well as a life-long solution for managing weight at www.OklahomaHeartInstitute.hmr diet.com.

How can we all reduce our risks? Are there nutrition and exercise tips?

Dr. Martin: Certain lifestyle modifications can help you reduce your risk of developing coronary heart disease. Most are simple to start but require dedication to implement completely.

- Exercise. Aim for at least 150 minutes of moderate physical activity or 75 minutes of vigorous physical activity – or an equal combination of both – each week. However even lower intensity activity can have big benefits. The AHA recommends 30 minutes of walking a day to reduce your risk of coronary heart disease and stroke, improve your blood pressure, blood sugar levels and blood lipid profile, maintain your body weight and lower the risk of obesity, enhance your mental well-being, reduce your risk of osteoporosis, reduce your risk of breast and colon cancer, reduce your risk of non-insulin dependent (type 2) diabetes. A simple walking program is flexible and boasts high success rates because people can stick with it.



- Reduce the amount of “bad fats” or saturated fats and trans-fatty acids in your diet. These fats are bad and raise the bad or LDL cholesterol levels in the blood. They are commonly found in animal meats and dairy products and in many baked goods, fried foods and snack foods.



- Eat more fish. At least two times per week. They provide omega 3 fatty acids, which may help prevent heart disease and heart arrhythmias.



mias. Omega-3 fatty acids are one of the “better fats”. These are the monounsaturated and polyunsaturated fats. You should try to replace the bad fats with the better fats. These fats are commonly contained in canola oil, olive oil, peanut oil, sunflower oil, avocados, many nuts and seeds and oily fish (salmon, tuna, mackerel, herring and trout).

- A heart healthy diet should include a variety of fruits, vegetables, grains, legumes, fat-free or low-fat dairy products, fish, poultry and lean meats.



- Reduce your salt intake. High-sodium diets are linked to an increase in blood pressure and a higher risk for heart disease and stroke. Nine out of 10 Americans consume too much salt. On average they consume 3,436 mg of sodium daily. Many experts now believe that lowering daily consumption to no more than 1,500 mg of sodium daily would be an effective way to prevent or lower high blood pressure.



One of the best diets that fits with all of the above is the DASH (Dietary Approaches to Stop Hypertension) eating plan. Most healthy eating patterns can be adapted based on calorie requirements and personal and cultural food preferences.

- If you are overweight, lose weight. Obesity is associated with early mortality and excess weight increases the risk of developing heart disease, stroke, diabetes and some cancers. Losing as few as 10 pounds can lower your heart disease risk. Last year 32% of Oklahoma adults were classified as obese. That is having a Body Mass Index (BMI) of 30 or higher. BMI is a numerical value of your weight in relation to your height. BMIs are good indicators of healthy or unhealthy weights for adult men and women, regardless of body frame size. A BMI of less than 25 indicates a healthy weight. A BMI of less than 18.5 is considered underweight. A BMI between 25 and 29.9 is considered overweight. BMI calculators can be found at multiple websites. However The National Heart Lung and Blood Institute has many resources in addition to a BMI calculator at <http://www.nhlbisupport.com/bmi/>. OHI also has the HMR Program for significant weight loss.



- If you smoke, stop. Also avoid second-hand smoke. Smokers are 4 times more likely to develop coronary heart disease. One in four Oklahoma adults smoke compared to 1 in 5 nationally. Smoking cessation is the most important lifestyle modification that one can make to reduce the risk of heart disease and stroke. If you can only make one change, this should be it.



If a person does have heart disease, what treatment options are available?

Dr. Martin: The treatment options will vary depending on the nature and severity of the coronary heart disease. The options will range from medical therapy to possibly angioplasty or heart stent to coronary artery bypass surgery. Once you have been affected with coronary heart disease, it is important to try and prevent it from getting worse to improve overall quality of life and extend survival. This is called secondary prevention. The goals for secondary prevention are:

- Complete smoking cessation.
- Blood pressure under 140/90 mmHg.
- Exercise 30 to 60 minutes of moderate-intensity aerobic activity, such as brisk walking, on most but preferably all days of the week, supplemented by an increase in daily lifestyle activities (e.g., walking breaks at work, gardening, household work). High risk patients (e.g., recent acute coronary syndrome or revascularization, heart failure) benefit from medically-supervised cardiac rehabilitation programs.
- Weight management with a Body Mass Index (BMI) between 18.5–24.9 kg/m² and waist circumference less than 40 inches in men and less than 35 inches in women.
- Start dietary therapy. Reduce intake of saturated fat (to less than 7 percent of calories) trans-fatty acids, and cholesterol (to less than 200 mg dietary cholesterol per day). Add plant stanol/sterols (2 grams/day) and viscous fiber (more than 10 grams/day) to further lower LDL cholesterol blood levels. Increased intake of omega-3 fatty acids in the form of fish or in capsule form (1 gram/day) for risk reduction. For treating elevated triglycerides, higher doses are usually necessary for risk reduction.
- In diabetics HbA1c less than 7 percent.
- Aspirin therapy 75-162 mg/day in all patients unless contraindicated.
- Reduce LDL cholesterol levels to less than 100 mg/dL and ideally less than 70 mg/dL.

These are the essential secondary prevention guidelines. Consult with your physician or cardiologist to individualize additional medical therapy and lifestyle changes. ❤️



Top 10 Tips to Help Women Prevent Heart Disease and Stroke

By Wayne N. Leimbach, Jr., MD, FACC, FACP, FSCAI, FCCP, FAHA

MANY WOMEN are not aware that heart disease is the most common cause of death among women in the United States, and stroke is the third most common cause of death. In addition, heart disease and stroke are major causes of long-term disability.

The good news is that the #1 and #3 causes of death for women are preventable for most. There are 10 key heart prevention steps you can take to avoid heart problems and stroke in the future.

1 Do not smoke or use tobacco. Smoking is one of the major risk factors for the development of heart disease and stroke. The chemicals in tobacco can damage the blood vessels, leading to narrowing of the arteries called atherosclerosis. The more you smoke the greater the risk. Even so-called “social smoking” is dangerous and increases the risk of heart disease. Women who smoke and take birth control pills are at particularly high risk for heart attack and stroke because both smoking and taking birth control pills increase the risk of blood clots.

2 Assess your risk of having heart attack or stroke. A significant component of your risk for heart attacks and strokes is related to your genetic background. If you have multiple family members who have had heart attacks and strokes in their 40s or 50s, you may be more susceptible to the other risk factors. By knowing this, you may wish to become even more aggressive in treating your other risk factors.

3 Maintain a healthy weight. Being overweight can lead to conditions that increase your chance of heart disease such as high blood pressure, high cholesterol, and diabetes. One way to see if your weight is healthy is to calculate your body mass index (BMI). This considers your height and your weight in determining whether you are significantly overweight. A BMI of 25 and higher is associated with greater risk of heart disease and stroke.

You should know the BMI is a good, but not perfect guide. Muscle weighs more than fat and a very muscular person who is physically fit could have a high BMI without having excess risk.

Another way to measure whether your weight is healthy is to measure your waist circumference. It is known that abdominal fat places people at greater risk of heart disease than fat stored elsewhere in the body. Women are considered overweight if their waist measurement is greater than 35 inches (88.9 cm).

What women should remember is that even a small weight loss can be beneficial. Reducing the weight by just 5-10% can help decrease blood pressure, lower blood cholesterol and reduce the risk of diabetes.

4 Get more exercise. Getting regular daily exercise can significantly reduce your risk of heart disease. Physical activity has benefits in addition to helping a woman control her weight. The traditional guidelines state that a woman should get at least 30-60 minutes of moderately intense physical activities most days of the week; however, even shorter amounts of exercise offer heart benefits. Dr. Timothy Church from Louisiana State University (LSU) evaluated a question many people wanted to know. What is

the least amount of exercise that one can do and gain benefit? He found that a simple 10-minute walk 7 days a week produced measurable benefit within 6 months. Continued walking 10 minutes 7 days a week produced long-term benefit. The more a person exercises the greater the benefit, but even a 10-minute walk a day was helpful.

5 Avoid foods with cholesterol, saturated fats, and salt. Eating cholesterol can significantly increase one's cholesterol level in the blood. Unlike blood sugars and triglycerides which go up and down within hours of eating, cholesterol can last for days within the blood. Therefore, high cholesterol foods are particularly hazardous. High cholesterol foods include egg yolks and foods made with egg yolks and liver. Eating foods high in saturated fats also significantly raises cholesterol levels. Saturated fats stimulate the liver to make cholesterol. Eating 3-1/2 ounces of cheddar cheese (high saturated fat food) significantly increases a person's cholesterol levels. Finally, salt intake is a major factor determining whether a person develops high blood pressure. Eating less salt and using spices such as lemon, lime, and herbs can significantly decrease one's risk of developing high blood pressure.

6 Eat more heart healthy foods. Focusing on eating fruits, vegetables, whole grains, fat free or low-fat dairy products, fish, beans, peas, nuts, and lean meats can significantly help reduce the risk of heart disease and stroke. In addition, these types of foods tend to be less calorie-dense and help with weight loss.

7 If you drink alcohol, do not have more than 1 drink each day. Too much alcohol raises blood pressure and can raise the risk of stroke and other illnesses. One drink a day or less actually has been shown to have a mild protective effect on the development of heart disease and stroke.

8 Get enough quality sleep: Sleep deprivation can actually harm your health. People who do not get enough sleep have a higher risk of obesity, high blood pressure, diabetes, depression, and risk of heart attack. If you wake up with your alarm clock and you feel refreshed, you probably are getting enough sleep; however, if you are waking up still quite fatigued and you are



A recent national study conducted by the American Heart Association showed that fewer than 50% of American women know that heart disease is their leading killer. Even fewer recognized that heart disease and stroke are preventable in the majority of people.

getting less than 7 hours of sleep, you may need to change your sleep habits. If you feel like you are sleeping more than 8 hours a day, but still feel very tired throughout the day, you may wish to ask your doctor to evaluate you for sleep apnea. Signs and symptoms of sleep apnea include snoring loudly, waking up several times during the night, and waking up with headache, sore throat, and dry mouth.

9 Get regular health screenings to measure blood pressure, cholesterol, blood sugar (test for diabetes), and measure your high sensitivity CRP, a marker of vascular inflammation.

Adult women should have their blood pressure checked at least every 2 years and more frequently if they start to show evidence of elevated blood pressures. Optimal blood pressure is less than 120/80 mmHg. High blood pressure (hypertension) occurs when the blood pressure is greater than 140/90. High blood pressure is a major risk factor for not only heart disease, but for stroke.

Adults should have their cholesterol levels checked at least once every 5 years and after age 45, more frequently. Elevated cholesterol levels are a major risk factor for heart disease. Women should know not only their total cholesterol levels, but also their bad cholesterol level (LDL cholesterol) and their good cholesterol level (HDL cholesterol) as well as their triglyceride levels. It is optimal for women to have their bad cholesterol, less than 130 and if they have evidence of diabetes or heart disease, their target for LDL cholesterol should be definitely less than 100 and, if possible, less than 70.

Diabetes screening is essential. Diabetes is one of the major risk factors for both heart disease and stroke, as well as for peripheral arterial disease. Diabetes screening should start at age 45 for women and retested every 3 years. If the blood sugars are found to be borderline elevated, then more frequent testing should be done.

A high sensitivity CRP (hs-CRP) is a blood test that measures vascular inflammation. Elevated CRP levels greater than 2 are associated with increased risk of heart attack and stroke. This inflammation can be addressed by a physician.

These major risk factors for heart attack and stroke: high blood pressure (hypertension), high cholesterol levels, high blood sugars (diabetes) and high hs-CRP are all treatable, and that is why it is important to check them.

10 Take your medicines routinely. If you are found to have high blood pressure, high cholesterol, or high blood sugars, these are treatable problems. Lifestyle modification has been shown to be very beneficial in reducing blood pressure, cholesterol levels, and blood sugars. However, if lifestyle modification is not effective for a woman, then medications can be prescribed. The medications are very effective and can reduce the risk of heart attack and stroke by some estimates up to 80%.

A recent national study conducted by the American Heart Association showed that fewer than 50% of American women know that heart disease is their leading killer. Even fewer recognized that heart disease and stroke are preventable in the majority of people. Being aware of personal risk can substantially change one's destiny. Eating healthy, staying active, being smoke-free, and getting regular checkups are simple ways to lower a woman's risk of heart disease and stroke. ❤️

Dr. Leimbach is a specialist in interventional and structural cardiology, including cardiac catheterization, coronary angioplasty, stents, atherectomy, laser, intravascular ultrasound imaging, and direct PTCA/stents for acute myocardial infarction. He also specializes in percutaneous closure of PFOs, ASDs, PDAs and percutaneous valve replacement or repair procedures such as TAVR and MitraClip. He is Director of the Cardiac and Interventional Laboratories at Oklahoma Heart Institute Hospital and also is Chief of Cardiology. Dr. Leimbach is Co-Founder of the Lipid and Wellness Clinic at Oklahoma Heart Institute. He is Director of the James D. Harvey Center for Cardiovascular Research at Hillcrest Medical Center, as well as Director of the Oklahoma Heart Research and Education Foundation. He serves as Clinical Associate Professor of Medicine at the University of Oklahoma College of Medicine-Tulsa. Dr. Leimbach completed a Clinical Cardiology Fellowship and a Research Fellowship at the University of Iowa Hospitals and Clinics. He also completed his Internal Medicine Internship and Residency Programs at Iowa, where he was selected Chief Resident in Medicine. He received his medical degree from Northwestern University in Chicago and his Bachelor of Science degree from the University of Michigan.

Oklahoma Heart's Top 10

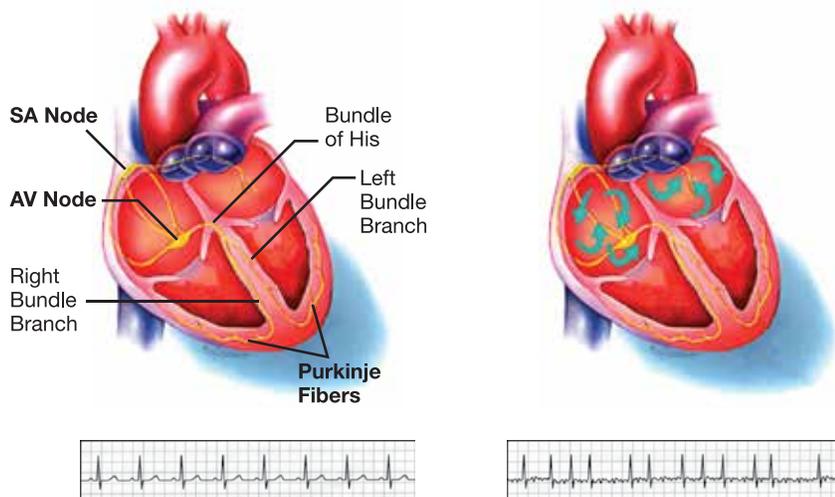
Tips To Help Men Prevent Heart Disease

By Wayne N. Leimbach, Jr., MD, FACC, FSCAI, FCCP, FAHA



Figure A

Normal Sinus Rhythm and Atrial Fibrillation



Cardiovascular disease is the number one cause of death for men. More men die of cardiovascular disease than from all cancers combined. The good news about cardiovascular disease is that much of it is treatable. Even better, the majority of cardiovascular disease is actually preventable.

Check out these 10 tips about cardiovascular disease: they just may help you live longer and/or have a higher quality of life.

10 An elderly person diagnosed with inoperable aortic stenosis should get a referral to a cardiac program that does transaortic valve replacements (TAVR).

Aortic stenosis is a narrowing of the main valve through which the heart pumps blood to the body. When the valve becomes severely narrowed, the heart has difficulty getting blood pumped to the body.

The three most common symptoms of severe aortic stenosis are:

- Episodes of exertional chest pain
- Symptoms of heart failure (shortness of breath with activity, inability to lay flat in bed due to shortness of breath, and ankle swelling)
- Fainting or passing out spells

Severe aortic stenosis is commonly diagnosed by an echocardiogram. This procedure uses ultrasound to image the aortic valve to see how severely restricted the valve leaflets are.

Because surgery in the very elderly can be associated with a significant death rate, it is often not performed. However, if aortic stenosis is not corrected in these patients, then mortality rates can be as high as 50 to 65% in two years.

Transcatheter aortic valve replacement is a new procedure that has been approved by the FDA. In this procedure, a stent valve is placed through the femoral artery in the groin and advanced up

to the aortic valve. The stent valve is mounted on a balloon. The balloon is inflated, which pushes aside the old damaged valve. When the balloon is deflated, the new stent valve falls into place. Self-expanding stents are also available. In the majority of cases, patients go home 2-3 days after the procedure, since there is no major surgical incision from which the patient must recover. Studies have shown that only 4 patients with severe aortic stenosis have to be treated in order to save one life in the first 2 years after diagnosis.

9 For patients with heart rhythm problems who are told that they have atrial fibrillation or frequent PCVs (premature ventricular contraction) that cannot be controlled with medications, they should get a second opinion from a large cardiovascular center that does ablation therapy.

Ablation therapy can be done in the cardiac catheterization laboratory without open heart surgery. Using ablation therapy, the majority of atrial fibrillation patients can be treated so that they remain in normal sinus rhythm (Figures A & B).

Most patients with very frequent PVCs can have the irritable focus in the heart isolated with ablation therapy and have resolution of their PVCs. Both of these techniques can significantly improve their quality of life. However, since many cardiologists are not trained to perform catheter ablation procedures for rhythm disorders, and many hospitals do not have the facilities or expertise to provide such ablation therapies, many patients are left with rhythm problems, which significantly decrease their quality of life. For this reason, a second opinion should always be requested.

8 Patients with heart failure from depressed heart pumping function should be considered for an implantable cardiac defibrillator (ICD). When the heart is damaged to the extent that it is unable to pump normal amounts of blood, there is a risk of serious rhythm disorders called ventricular tachycardia and ventricular fibrillation. These rhythm disorders are often associated with sudden death. Studies have shown that implantation of an ICD can prevent sudden death episodes in these patients. A patient whose heart is only pumping 35% or less of the blood with each squeeze of the heart should be considered for one of these implantable cardiac defibrillators. People may remember that former vice-president Dick Cheney had one of these devices while he was in office.

7 For patients with heart failure, consider Aquapheresis. If a patient's doctor tells him that the heart is only pumping 35% or less of the blood with each squeeze and the person also has symptoms of heart failure, then he usually is placed on diuretics commonly known as water pills. These medications make the patient lose the excess fluid and salt in his body. Symptoms of heart failure are frequently shortness of breath

Figure B
Balloon Catheter Ablation of Atrial Fibrillation

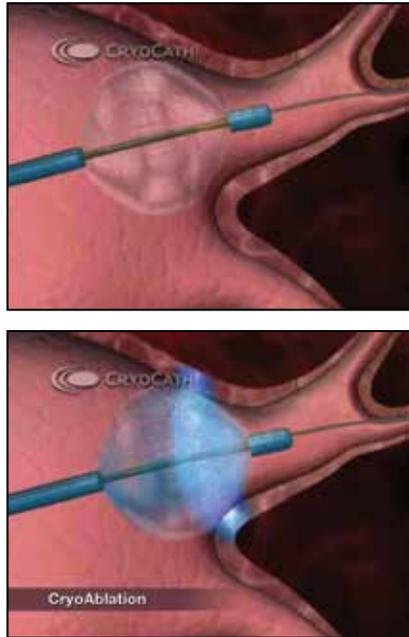
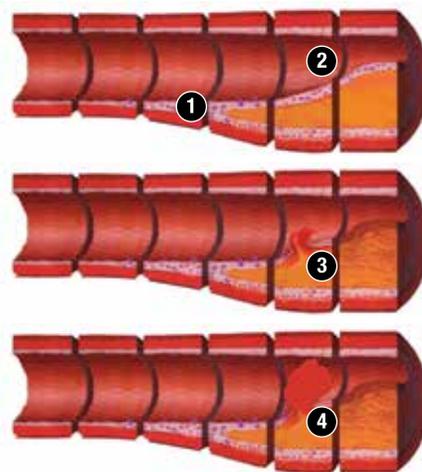


Figure C
Atherosclerosis: The Risk of High Cholesterol



- 1 Initially, as atherosclerotic plaque builds up in the artery, the vessel wall stretches to maintain the vessel lumen.
- 2 Eventually, as the plaque builds up, the vessel lumen narrows.
- 3 Plaque rupture exposes the blood to the plaque contents and promotes formation of a blood clot.
- 4 If the blood clot that forms on the ruptured plaque is large enough to occlude the vessel lumen, then a heart attack occurs.

with mild activity or at rest. Patients often have swelling of their legs or abdomen. Some patients are told that they are resistant to the diuretics and that they cannot have the extra fluid completely removed. For these patients, a referral to a cardiac center would be of value. Large cardiac programs have Aquapheresis, a machine and filter that effectively and quickly removes excess fluid even in patients who are very resistant to water pills. With the removal of large amounts of fluid, patients feel substantially better.

6 If you are a man over the age of 40, you should take a baby aspirin (81 mg) a day unless you have an allergy to aspirin or a bleeding problem. In most cases of heart attacks, a blood clot forms in the blood vessels to the heart, which is the final step in causing the heart attack. A simple baby aspirin a day significantly reduces the risk of a large blood clot forming in the blood vessel to the heart and significantly decreases the risk of having a heart attack and of dying from a heart attack (Figure C).

9 MODIFIABLE RISK FACTORS

- Cholesterol
- Smoking
- Diabetes
- Hypertension
- Abdominal Obesity
- Lack of Exercise
- Lack of Daily Fruit and Vegetable Intake
- Psychosocial Factors
- Alcohol Consumption

5/4/3/2a/2b Know your risk factors for heart attacks and strokes because they can be treated. If you do not make blockages in the blood vessels to your heart, then you can't have the blockages rupture. If you do not have the blockage rupture, then you cannot have a clot formed in the blood vessel to the heart to cause a heart attack. Therefore, if you do not have blockages, you won't have a heart attack. By knowing your risk factors, you can prevent the buildup of blockages in the blood vessels to your heart. The five major risk factors for heart attacks and strokes include smoking, lack of exercise, diabetes mellitus, high blood pressure and high cholesterol. These are all treatable. Cigarette smoking increases the likelihood that a person will make blockages in the blood vessels to the heart, to the brain and in the blood vessels to the extremities. In addition, it accelerates the rate of blockage formation. Smoking cessation is difficult, but it can be done, and it can radically affect quality of life and whether one dies from a heart attack or stroke.

Continued on p. 12

Continued from p. 11

4 Lack of routine physical activity is also a major risk factor for heart attacks and strokes. You don't have to become a jogger or a marathon runner. Studies have shown as little as 10 minutes of walking 7 days a week can produce benefits, and 30 minutes of moderate exercise at least 3-4 times a week produces even greater benefits (Figure D).

3 If your blood sugar after a 10-12-hour fast is greater than 100, then you need to see your doctor about the possibility of having diabetes mellitus. Diabetes mellitus is a major risk factor for heart attacks and strokes. It is one of the treatable risk factors.

2a Blood pressure is another major risk factor for heart attacks and strokes. If your blood pressure is greater than 140/90, then you have an increased risk of having a heart attack or stroke. If you are diabetic or already have heart disease, blood pressure needs to be less than 130/80.

2b Cholesterol is one of the major risk factors for heart attacks and strokes. Cholesterol is broken down into good cholesterol (HDL cholesterol) and bad cholesterol (LDL cholesterol). For most people, the goal is to have the LDL cholesterol less than 130. If one has heart disease or diabetes mellitus, the bad cholesterol (LDL cholesterol) should be less than 100. Studies have shown that if the LDL cholesterol can be decreased to less than 70, and blood sugar and blood pressure controlled, and if the patient does not smoke, blockages in the blood vessels of the heart can actually be reversed.

1 Tip to extend life and improve the quality of life from a cardiovascular standpoint.

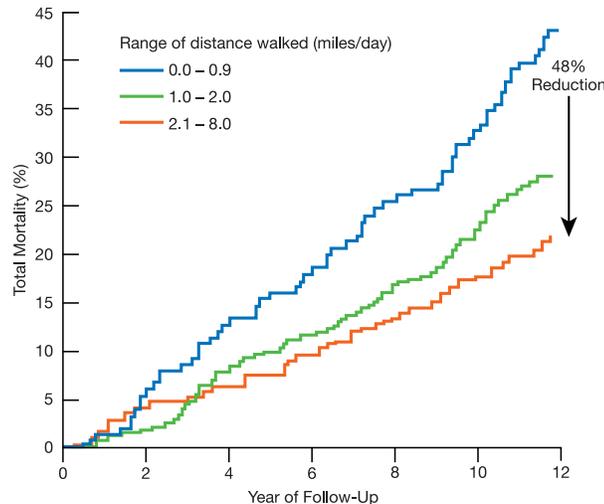
If you have chest pains or other symptoms of a heart attack ...call 911 take an aspirin get to the hospital as fast as possible so the heart attack can be interrupted.

Studies have shown that if a person gets to the hospital and has the occluded blood vessel to the heart opened within 90 minutes, the patient will not die from the heart attack and there will be minimal damage. This means the person can get back to a normal activity level. It is absolutely important to get to the hospital promptly with the onset of symptoms of a heart attack. When patients get to the hospital and they discuss going to the catheterization laboratory to open the vessel, the patient should say "yes, get me there as fast as possible".

The mortality rates for patients presenting to the hospital with a heart attack have declined from 25-30% in the 1970s to less than 5% today. This is because of the ability of doctors to open blocked blood vessels to the heart.

The exciting thing about the field of Cardiology is that major advances have occurred and are con-

Figure D
Effects of Walking on Mortality
(707 Retired Men)



Honolulu Heart Program, NEJM, 1998

tinuing to occur which allow lives to be saved and quality of life to be improved for millions of people. In the field of Cardiology, second opinions are often valuable, and paying attention to risk factors can have tremendous returns. It is better to have health care centered around preventing serious problems than having health care focused on trying to get out of a serious situation.

The good news is that prevention is relatively straightforward and simple and can be done by most everyone. ❤️

Dr. Leimbach is a specialist in interventional and structural cardiology, including cardiac catheterization, coronary angioplasty, stents, atherectomy, laser, intravascular ultrasound imaging, and direct PTCA/stents for acute myocardial infarction. He also specializes in percutaneous closure of PFOs, ASDs, PDAs and percutaneous valve replacement or repair procedures such as TAVR and MitraClip. He is Director of the Cardiac and Interventional Laboratories at Oklahoma Heart Institute Hospital and also is Chief of Cardiology. Dr. Leimbach is Co-Founder of the Lipid and Wellness Clinic at Oklahoma Heart Institute. He is Director of the James D. Harvey Center for Cardiovascular Research at Hillcrest Medical Center, as well as Director of the Oklahoma Heart Research and Education Foundation. He serves as Clinical Associate Professor of Medicine at the University of Oklahoma College of Medicine-Tulsa. Dr. Leimbach completed a Clinical Cardiology Fellowship and a Research Fellowship at the University of Iowa Hospitals and Clinics. He also completed his Internal Medicine Internship and Residency Programs at Iowa, where he was selected Chief Resident in Medicine. He received his medical degree from Northwestern University in Chicago and his Bachelor of Science degree from the University of Michigan.



OHI'S TOP TEN TIPS

1. If you have chest pains or other symptoms of a heart attack:
 - Call 911
 - Take an Aspirin
 - Get to the hospital as fast as possible so the heart attack can be interrupted
- 2a, 2b, 3, 4, 5. Know your risk factors to prevent heart attacks and strokes:
 - Smoking, lack of exercise, diabetes
 - High blood pressure and high cholesterol levels
6. Over the age of 40 years old — Take Aspirin, 81 mg/ day
7. Heart failure and can't remove the fluid — Consider aquapheresis
8. Heart failure and depressed pump function — Consider an ICD
9. Problems with heart rhythm — Get a second opinion and consider ablation
10. For inoperative aortic stenosis — Get a referral to a TAVR program



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Peripheral Arterial Disease

Is Your Leg Pain Related to Cardiovascular Disease?

By Raj H. Chandwaney, MD, FACC, FSCAI, FSVM

Are you having leg pain but don't know what's causing it? It could be lower extremity peripheral artery disease (PAD), which, actually, is very common. Just what is PAD?

Lower extremity PAD disease refers to the presence of plaque accumulation in the blood vessels that deliver blood to the feet. These blood vessels may include the distal abdominal aorta, iliac arteries, common femoral arteries, superficial femoral arteries, popliteal arteries, and/or infrapopliteal arteries (Figure 1). The plaque accumulation in these blood vessels is due to a disease called atherosclerosis. Atherosclerosis is also the disease that causes heart attacks when the plaque accumulates in the blood vessels that feed the heart. Atherosclerosis causes strokes if the plaque accumulates in the blood vessels that feed the brain.

PREVALENCE

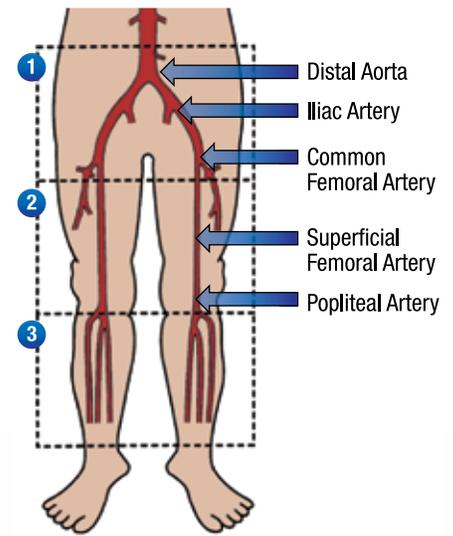
Lower extremity PAD is present in 25-30% of people over age 70. The disease is also present in 25-30% of high-risk individuals over age 50. Individuals who have a history of diabetes or tobacco use are considered to be at high risk for developing lower extremity peripheral arterial disease.

SYMPTOMS

The classic symptom of lower extremity peripheral artery disease is called *claudication*, described as a tightness that occurs in the thighs or calves while walking. Interestingly, claudication only occurs in 10% of patients who have lower extremity peripheral arterial disease.

Atypical leg symptoms refer to any other type of leg discomfort that may occur in patients with lower extremity peripheral arterial disease. *Atyp-*

Figure 1
Blood vessels that provide blood supply to the feet



Sixty percent of patients with lower extremity peripheral arterial disease are asymptomatic.



ical leg symptoms occur in 30% of patients with lower extremity peripheral arterial disease. Sixty percent of patients with lower extremity peripheral arterial disease are asymptomatic. Despite the fact that the majority of patients with lower extremity peripheral arterial disease are asymptomatic, it is very important to diagnose the disease in these asymptomatic individuals.

MORTALITY

Mortality rates are four times greater amongst individuals with lower extremity peripheral arterial disease compared to individuals without the disease. The increased risk of death is equally present in lower extremity peripheral arterial disease patients with or without symptoms. The five-year mortality rate for patients with lower extremity peripheral arterial disease is 25% (one of four patients with the disease are dead in 5 years if not treated).

Seventy-five percent of the deaths that occur in patients with lower extremity peripheral arterial disease are cardiovascular deaths (predominantly heart attack and stroke). Patients with lower extremity peripheral arterial disease are at high risk for heart attack and stroke because individuals with plaque accumulation in the lower extremity arteries are very likely to have plaque accumulation in the arteries that feed the heart and brain. Atherosclerosis is a systemic disease. This means it is usually present throughout the body rather than in just one area of the body.

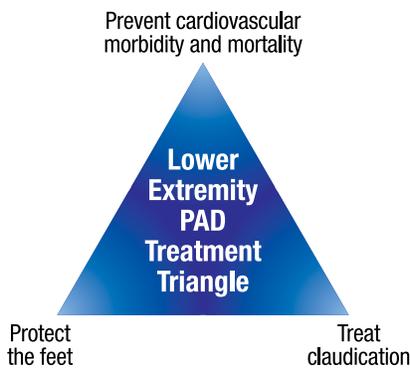
RISK FACTORS

The risk factors for lower extremity peripheral arterial disease are similar to the risk factors for heart attack and stroke. These risk factors include: tobacco use, diabetes, high blood pressure, high cholesterol, family history of atherosclerosis, and advanced age. For unclear reasons, tobacco use and diabetes carry a much higher risk for lower extremity peripheral arterial disease than the other risk factors. The risk of developing lower extremity peripheral arterial disease is equal amongst men and women. Certain races are at higher risk for developing lower extremity peripheral arterial disease, such as African Americans.

DIAGNOSIS

The diagnosis of lower extremity peripheral arterial disease is readily established with the use of the Ankle-Brachial Index (ABI). The ABI is the perfect screening test because it is safe, cheap, accurate, and readily available. The ABI can be measured with the use of a simple hand-held Doppler by obtaining the systolic blood pressure in the ankle and brachial (arm) arteries. In my opinion, the ABI is the ideal test to establish the diagnosis of atherosclerosis, in asymptomatic individuals. Experts suggest performing a screening ABI on all individuals over age 70, and high-risk individuals over age 50. Screening ABIs facilitate the early diagnosis of systemic atherosclerosis in asymptomatic individuals.

Figure 2
Treatment



When patients have symptoms that are concerning for lower extremity peripheral arterial disease, more sophisticated diagnostic tests may be required to diagnose and treat the patient's symptoms. These diagnostic tests include duplex ultrasound, magnetic resonance angiography, CT angiography, and invasive angiography.

TREATMENT

The treatment of patients with lower extremity peripheral arterial disease is best summarized with the *Lower Extremity PAD Treatment Triangle*, which is demonstrated in Figure 2. The most important priority in the care of patients with lower extremity peripheral arterial disease involves addressing the high risk of cardiovascular mortality. This priority is emphasized on the *Lower Extremity PAD Treatment Triangle* by the placement of this priority at the top of the triangle. Strategies used to address the high risk of cardiovascular mortality in patients with lower extremity peripheral arterial disease include:

- Smoking cessation
- Antiplatelet therapy (aspirin or clopidogrel)
- Cholesterol control
- Hypertension control
- Diabetes control
- Therapeutic Lifestyle Changes (heart healthy diet, routine exercise, weight loss)
- Flu shot annually

The next priority to be addressed in patients with lower extremity peripheral arterial disease is protecting the feet from amputation.

The final priority to be addressed in patients with lower extremity peripheral arterial disease is the treatment of leg pain that may be due to claudication. This priority is demonstrated on the *Lower Extremity PAD Treatment Triangle* located at the right lower corner of the triangle. Claudication symptoms can be treated with exercise rehabilitation, pharmacologic therapy, and/or revascularization.

Formalized exercise rehabilitation programs

lasting 3 to 6 months have been proven to increase patient walking distances 100-150%. Rehabilitation sessions typically last 35 to 60 minutes. Patients are instructed to walk at an intensity that causes pain in 3 to 5 minutes, followed by rest until pain resolution, followed by walking again.

Pharmacologic therapy for claudication involves the prescription of cilostazol at a dose of 100 mg twice daily. Cilostazol has been proven to increase patient walking distances by 50%. Cilostazol has limited use with many lower extremity peripheral arterial disease patients because of common side effects that include headache, diarrhea, dizziness, and palpitations. Also noteworthy is that cilostazol has a black box warning contraindicating its use in patients with a history of congestive heart failure.

Finally, revascularization (restoration of blood flow) may be required in patients with lower extremity peripheral arterial disease who do not achieve adequate symptom relief with exercise rehabilitation or pharmacologic therapy. Revascularization strategies include endovascular techniques (balloon angioplasty, stents, atherectomy, or laser) and surgical techniques (bypass surgery).

CONCLUSIONS

Lower extremity peripheral arterial disease is a disease with a high prevalence. Most patients with lower extremity peripheral arterial disease are asymptomatic or have atypical symptoms. Patients with lower extremity peripheral arterial disease have significantly higher mortality rates (25% five year mortality) compared to the general population. Patients with lower extremity peripheral arterial disease die of cardiovascular diseases such as heart attack and stroke. Lower extremity peripheral arterial disease can easily be diagnosed in most patients with a cheap, safe, and simple screening test in the office (ABI). Treatment of all patients with lower extremity peripheral arterial disease should *primarily focus on lowering their risk of cardiovascular death*. Patients with lower extremity peripheral arterial disease require routine foot exams and diligent foot care. Some patients with lower extremity peripheral arterial disease will require treatment to improve claudication symptoms (exercise, pharmacologic, and/or revascularization). A smaller minority of patients will require revascularization to treat critical limb ischemia or acute limb ischemia. ❤️

Raj. H. Chandwaney is an interventional cardiologist with expertise in cardiac catheterization, coronary angioplasty and related interventional procedures such as coronary stents, atherectomy, intravascular ultrasound and peripheral vascular interventional procedures. In addition to board certifications in cardiovascular disease and interventional cardiology, Dr. Chandwaney is also board certified in endovascular medicine by the American Board of Vascular Medicine.



Successfully Treating Heart Failure

By Alan M. Kaneshige, MD, FACC, FASE

Heart failure (HF) is a major public health problem for the United States of America. Heart failure is the inability of the heart to keep up with the metabolic needs of the body, resulting in fluid retention and a decrease in functional capacity. Approximately five million people have the diagnosis of clinical HF. Each year, 550,000 new patients are diagnosed with HF. Heart failure accounts for a million hospital discharges each year and is the most common discharge diagnosis in the Medicare population. Approximately \$30 billion is spent each year on patients with HF, the major portion being for costs of hospitalizations and readmissions.

There are two types of HF, systolic HF (abnormal pump with decreased pumping ability) and diastolic HF (normal pump but decreased ability to fill the heart). Patients with systolic HF are not able to pump enough blood through their circulatory system to keep up with the demands of their organs. These are patients who have damaged hearts from coronary artery disease, heart attacks, uncontrolled hypertension, or specific viral diseases that attack the heart muscle. Patients with diastolic HF have hearts

with normal pumping function. Their hearts are able to squeeze out a normal amount of blood with each heartbeat. But, patients with diastolic heart failure have stiff hearts that take higher pressures to fill the pumping chambers (ventricles). These higher pressures are then reflected back to the lung circulation (pulmonary arteries) and cause congestion (shortness of breath). Patients with diastolic heart failure may have thick-walled hearts from hypertension and certain heart valve conditions.

For successful treatment of patients with both systolic and diastolic HF, the cause of HF must be identified. Heart failure is a syndrome, a collection of symptoms such as progressive shortness of breath, fatigue, and fluid retention. Heart failure is the product of a disease process, such as damage from heart attacks, valvular heart disease, high blood pressure, or even a viral illness. Finding the cause for a patient's HF can determine specific treatments.

Today, most HF is successfully treated with salt restriction, weight reduction, diet, and specific lifestyle changes such as avoiding alcohol and tobacco. In addition to lifestyle changes, physicians have key medicines to help relieve symptoms and to prevent

further deterioration of the heart. Beta blockers, angiotensin converting enzyme inhibitor (ACE inhibitors), angiotensin receptor blockers (ARBs), combination ARB and neprilysin inhibitors, and aldosterone inhibitors are key medicines that help improve heart function and prevent further deterioration. Diuretics (water pills) are used to balance fluids. With aggressive medical treatment and lifestyle changes, patients with damaged hearts have been known to normalize their heart functions and have a good quality of life.

Device therapy plays a large role in the successful treatment of heart failure. In patients with damaged hearts and clinical HF, the conduction system of the heart can be abnormal. When a patient's heartbeat is conducted down an abnormal conduction system, the cardiac chambers pumping blood become out of sync. This dyssynchronous pattern of pumping causes the heart to be inefficient and HF symptoms develop or get worse. Cardiologists with expertise in cardiac rhythms and conduction (electrophysiologists) can place special devices (biventricular pacemakers and defibrillators) that resynchronize a patient's heartbeat and, in most cases, restore

With aggressive medical treatment and lifestyle changes, patients with damaged hearts have been known to normalize their heart functions and have a good quality of life.

cardiac efficiency. In addition to restoring cardiac efficiency, resynchronization therapy can normalize the pumping function of the heart more frequently than medicines alone.

Heart failure can be a progressive condition and may lead to advanced disease. Patients with advanced HF are usually elderly and have multiple medical problems. Many patients have chronic kidney disease. Most advanced HF patients retain too much salt and fluid (fluid overload) in spite of the best medical and device therapy. Approximately 90 percent of the one million annual hospitalizations for HF are due to symptoms of fluid overload. These symptoms include shortness of breath, lung congestion, abdominal distention, and lower extremity swelling (edema). Chronic fluid overload contributes to further HF progression and end-stage heart disease.

Conventional treatment for both acute decompensated and chronic advanced HF is aimed at reducing fluid overload. Physicians initially give diuretics to get rid of both salt (sodium) and water from the congested tissues (interstitial space). By making the kidneys able to excrete more salt and water, diuretics allow the extra fluid to leave the congested tissues, enter the bloodstream, and exit as urine. Diuretics, however, can also activate neuro-hormone systems in the body, which promote HF. Blood flow to the kidneys is reduced and, therefore, filtering and fluid removal are compromised. Prolonged usage of high dose diuretics can increase overall mortality of the HF patient. Patients requiring very high doses of diuretics to maintain their fluid balance and dry weight are said to be “diuretic-resistant”. These patients require even more advanced HF therapy.

Patients with advanced HF represent difficult challenges. Even with aggressive HF therapy, a significant amount of advanced HF patients do not get adequate fluid removal (diuresis) during their hospitalizations. In one study, half of the patients treated for acutely decompensated HF were discharged from the hospital with less than a five-pound weight loss. Approximately 20 percent either remained at the same weight as admission or even gained pounds. This persistent fluid retention accompanied by congestion contributes to high readmission rates. Ideally, HF patients should strive to achieve and maintain their dry weight.

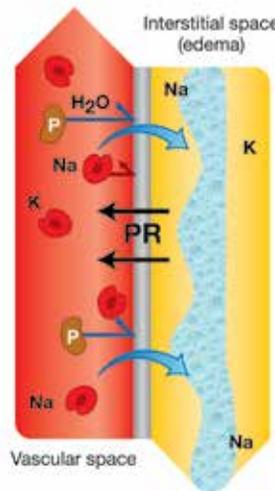
Ultrafiltration is a method by which salt and flu-

What is the Aquadex™ FlexFlow™?

Low blood flow	10-40 mL/min
Low blood volume	33 mL
Precise fluid removal rates	10-500 mL/h
Quick and easy setup	Less than 10 min
Highly automated operation	1 required setting



Fluid Removal by Ultrafiltration



Ultrafiltration can remove fluid from the blood at the same rate that fluid can be naturally recruited from the tissue

The transient removal of blood illicit compensatory mechanisms, termed plasma or intravascular refill (PR), aimed at minimizing this reduction^{1,2}

1. Lauer et al. Arch Intern Med. 1983;99:455-460
2. Marenzi et al. J Am Coll Cardiol. 2001;38:4

id can be removed from a fluid overloaded patient. Ultrafiltration allows plasma water to be separated from whole blood in the bloodstream (intravascular space). Blood is removed from the HF patient by way of a pump and ultrafiltered by pushing the plasma water across a special semipermeable membrane (filter). The separated plasma water removed has the same salt concentration as whole blood. The ultrafiltered blood is then returned to the patient. Ultrafiltration can remove much more salt than diuretic therapy in the same volume of fluid. Ultrafiltration does not significantly disturb the electrolyte balance in the bloodstream or reduce the filtering rate of the kidneys, unlike high dose diuretics. More tissue fluid can be removed at a predictable rate

by ultrafiltration than diuretics. Ultrafiltration can carefully remove fluid from the bloodstream at a controlled rate so that fluid from the tissues (interstitial space) can enter the bloodstream at the same or higher rate as a compensatory reflex to fluid removal. The bloodstream is thus unlikely to become volume-depleted. This Plasma Refill Mechanism may be an explanation why ultrafiltration can avoid the problems of prolonged high dose diuretic usage.

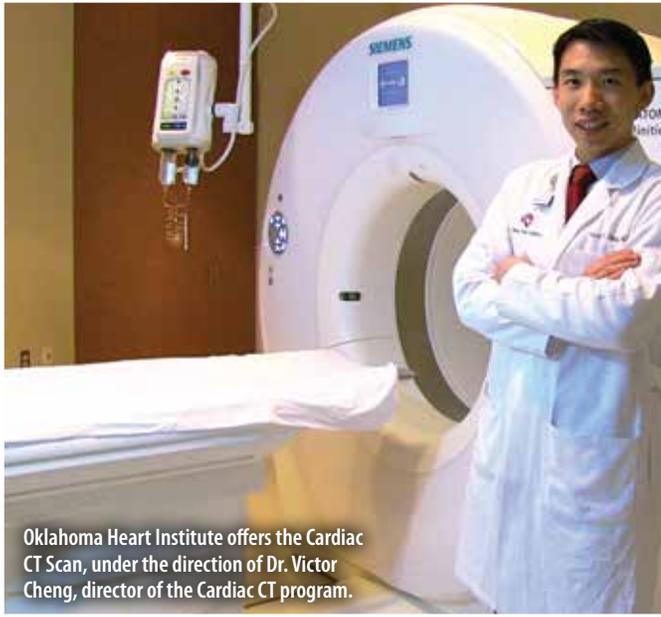
Ultrafiltration is available for clinical use for the advanced heart failure patient who is diuretic-resistant, chronically volume overloaded, and has frequent hospital admissions. Aquapheresis is a term used to represent ultrafiltration in the advanced volume-overloaded HF patient using the Aquadex™ Flex Flow™ machine (a product of CHF Solutions). The Aquadex™ Flex Flow™ machine can precisely remove anywhere from 10 to 500 mL of plasma water per hour depending on patient needs and fluid status. The rate of fluid removal per hour is carefully maintained so as not to exceed the estimated rate of fluid entering the bloodstream from the tissues (plasma refill rate).

Multiple clinical studies have compared ultrafiltration to standard care in acutely decompensated HF patients requiring hospitalization. These studies had encouraging results and prompted the latest HF guidelines to include ultrafiltration as a recommended treatment for the advanced HF patient with congestion not responding to standard medical therapy.

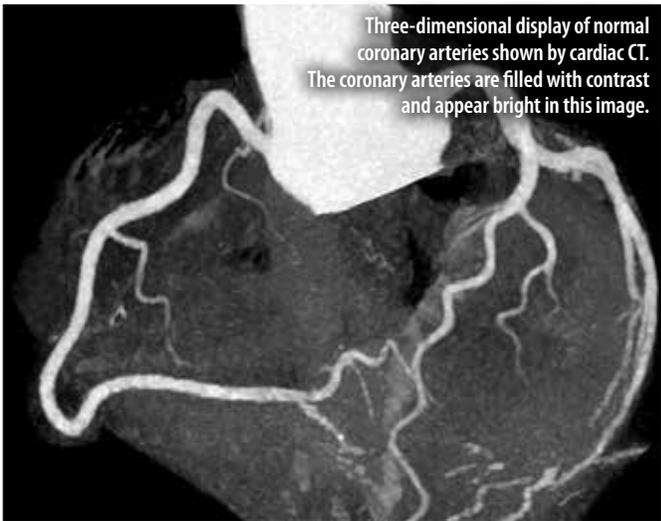
Understanding what causes HF and instituting effective therapy, either medically or with HF devices, will aid in the successful treatment of the HF patient. Advanced treatment is now available for this progressive condition. If a person or family member continues to require frequent readmissions to a hospital for heart failure, consideration should be given to an evaluation at a center that provides advance heart failure therapy.

For end-stage heart failure, left ventricular assist devices (LVAD), have become an option for patients who are failing medical therapy. ❤️

Alan M. Kanesbige is a noninvasive cardiologist with expertise in adult echocardiography, stress echocardiography and transesophageal echocardiography.



Oklahoma Heart Institute offers the Cardiac CT Scan, under the direction of Dr. Victor Cheng, director of the Cardiac CT program.



Three-dimensional display of normal coronary arteries shown by cardiac CT. The coronary arteries are filled with contrast and appear bright in this image.



Cardiac CT at Oklahoma Heart Institute

State-of-the-art scanner detects your risk for heart disease

Heart disease is the leading cause of death in the United States for men and women. But for many, the first symptom of heart disease is a heart attack.

In Tulsa, Oklahoma Heart Institute is changing that by offering a Cardiac CT Scan performed by a state-of-the-art ultrafast scanner that is more than 95 percent sensitive in detecting heart disease. The scanner creates detailed and accurate images of the heart and arteries in just seconds, all meaning easy and early detection of heart disease.

Dr. Victor Cheng administers this new technology at Oklahoma Heart Institute. Cheng, who came to OHI via Los Angeles' Cedars-Sinai Hospital, says using the Cardiac CT Scan is a good way to test if a patient's symptoms are due to heart disease or if a patient with significant risk factors has developed heart disease.

"For both symptomatic and asymptomatic individuals, Cardiac CT detects the presence and amount of plaque in the coronary arteries," Cheng says. "This information helps doctors tailor the intensity of recommended therapies to reduce heart attack risk and can motivate individuals to live a more heart-healthy lifestyle."

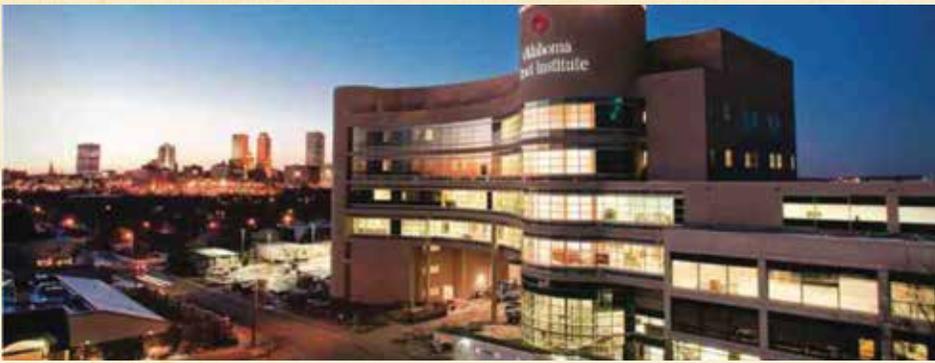
He adds, "For individuals with chest pain or breathlessness, Cardiac CT is the most reliable noninvasive test to show that the person does not have significant

coronary artery blockage. The use of Cardiac CT in this situation determines whether additional evaluation or treatment for coronary artery disease is needed."

Cardiac CT is a painless screening test that uses an X-ray machine to take clear, detailed pictures of a heart and blood vessels. The scanner uses 50-90 percent less radiation than earlier generation scanners. The average patient is exposed to a radiation dosage comparable to a mammogram. This one-time radiation exposure is considered quite safe.

For individuals concerned about, or are at risk for, heart disease, Cardiac CT detects if there is no disease, mild disease or severe disease. Cardiac CT also effectively determines presence of heart disease in those who have undergone a stress test with an inconclusive result.

Oklahoma Heart Institute
 1120 S. Utica Ave.
 1265 S. Utica Ave., Suite 300
 9228 S. Mingo Road, Suite 200
 8801 S. 101st E. Ave.
 918-592-0999
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Oklahoma Heart Institute

SERVICES

www.oklahomaheart.com



Interventional Cardiology

- Cardiac Catheterization
- Coronary Angioplasty
- Coronary Stents
- Multivessel Angioplasty and Stenting
- Atherectomy
- Rotablator Atherectomy
- Thrombolytic Therapy
- Carotid Stenting
- Fractional Flow Reserve
- Intravascular Ultrasound
- Intracardiac Echo
- Paravalvular Leak Plugs
- Myocardial Biopsy
- Pericardiocentesis
- Peripheral Angioplasty
- Peripheral Stents
- Percutaneous ASD Closures
- Percutaneous PFO Closures
- Impella Circulatory Support
- Therapeutic Hypothermia for Cardiac Arrest Patients
- Transcatheter Aortic Valve Replacement (TAVR)
- Transcatheter Mitral Valve Repair
- Venous Ablation
- Aspiration Venous Thrombotic Obstructive Disease

Noninvasive Cardiology

- CT Angiography
- CT Heart Scan
- Cardiac and Vascular Screening Services
- Nuclear Cardiology
- Echo and Doppler Studies
- Nuclear and Echocardiographic Exercise and Pharmacological Stress Testing
- Retinal Imaging
- Thyroid Ultrasound
- Transesophageal Echocardiography, Arterial Venous Peripheral Vascular Imaging and Doppler Studies
- Peripheral Arterial Doppler and Duplex Imaging

- Cardiovascular Magnetic Resonance Imaging
- External Counterpulsation (ECP) Therapy
- Transcranial Doppler
- Aquapheresis Therapy

Electrophysiology

- Electrophysiology Studies
- Ablation Therapy
- Pacemaker Implantation
- Pacemaker and Lead Extraction
- Pacemaker Programming
- Pacemaker Monitoring and Clinic
- Implantable Cardioverter Defibrillator (ICD) Replacement
- ICD and Hardware Removal
- ICD Programming
- ICD Monitoring and Clinic
- Holter Monitoring and Interpretation
- 30 Day Cardiac Event Monitors
- Implantation and Interpretation of Long-Term Heart Monitors
- Signal Averaged EKGs and Interpretation
- Head Up Tilt Testing and Interpretation
- Direct Current Cardioversion
- Antiarrhythmic Drug Loading and Monitoring

Metabolic Disorders

- Diabetes
- Thyroid
- Hypertension
- Other Endocrine Problems

Specialty Clinics

- Advanced Center for Atrial Fibrillation
- Dysrhythmia and Pacer Clinic
- Hypertension Clinic
- Resistant Hypertension Clinic
- Adolescent and Adult Congenital Heart Clinic
- Lipid and Wellness Clinic
- Heart Failure Clinic
- Same Day Appointment Clinic
- Pre-Operative Clinic
- Center for the Treatment of Venous Disease

- Sleep Care
- Center for Peripheral Arterial Disease
- The Valve Clinic

Cardiovascular Surgery

CARDIAC SURGERY

- Coronary Artery Bypass
- Surgical Aortic Valve Replacement
- Transcatheter Aortic Valve Replacement with TAVR Team
- Mitral and Tricuspid Valve Repair and Replacement
- Surgical Treatment of Atrial Fibrillation: "Mini-Maze", Full Maze, Left Atrial Appendage Ligation
- Cardiac Tumor Resection

THORACIC NON-CARDIAC SURGERY

- VATS (Video Assisted Thoracoscopy Surgery) for Biopsy and Treatment
- Minimally Invasive and Open Techniques for Diagnosis and Staging of Lung and Nonpulmonary Cancer in the Chest
- Minimally Invasive and Open Techniques for Therapeutic Lung Cancer Resection
- Surgical Treatment of Esophageal Cancer and Benign Esophageal Conditions

VASCULAR SURGERY

- Endovascular and Open Treatment of Aortic Aneurysms: Abdominal and Thoracic
- Diagnosis, Surgical, Interventional and Medical Management of Peripheral Arterial Disease (PAD)
- Surgical Treatment of Carotid Occlusive Disease
- Limb Salvage

MEDIASTINAL SURGERY

- Evaluation and Treatment of Mediastinal Masses

THYROID/ENDOCRINE SURGERY

- Full Spectrum of Thyroid Surgery (Total versus Near Total Thyroidectomy)
- Parathyroid Surgery with Intraoperative PTH monitoring
- Recurrent Nerve Monitoring

Oklahoma Heart Institute Hospital

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THE DOCTORS OF OKLAHOMA HEART INSTITUTE

Wayne N. Leimbach, Jr., MD, FACC, FACP, FSCAI, FCCP, FAHA



Dr. Leimbach is a specialist in interventional and structural cardiology, including cardiac catheterization, coronary angioplasty, stents, atherectomy, laser, intravascular ultrasound imaging, and direct PTCA/stents for acute myocardial infarction. He also specializes in percutaneous closure of PFOs, ASDs, PDAs and percutaneous valve replacement or repair procedures such as TAVR and MitraClip. He is Director of the Cardiac and Interventional Laboratories at Oklahoma Heart Institute Hospital and also is Chief of Cardiology. Dr. Leimbach is Co-Founder of the Lipid and Wellness Clinic at Oklahoma Heart Institute. He is Director of the James D. Harvey Center for Cardiovascular Research at Hillcrest Medical Center, as well as Director of the Oklahoma Heart Research and Education Foundation. He also serves as Clinical Associate Professor of Medicine at the University of Oklahoma College of Medicine-Tulsa. Dr. Leimbach completed a Clinical Cardiology Fellowship and a Research Fellowship at the University of Iowa Hospitals and Clinics. He also completed his Internal Medicine Internship and Residency Programs at Iowa, where he was selected Chief Resident in Medicine. He received his medical degree from Northwestern University in Chicago and his Bachelor of Science degree from the University of Michigan.

Board certified in Internal Medicine, Cardiovascular Disease and Interventional Cardiology

Robert C. Sonnenschein, MD, FACC, ASE, RVT, RPVI



Dr. Sonnenschein specializes in echocardiography and noninvasive peripheral vascular imaging. He is past Director of Peripheral Vascular Ultrasound Imaging at Hillcrest Medical Center and Oklahoma Heart Institute and serves as Clinical Associate Professor of Medicine at the University of Oklahoma College of Medicine – Tulsa. He completed his Cardiology Fellowship at the State University of New York Upstate Medical Center in Syracuse, where he also completed his Internal Medicine Internship and Residency programs. Dr. Sonnenschein received his medical degree from Rush Medical College in Chicago and his Bachelor of Arts degree from the University of Pennsylvania.

Board certified in Internal Medicine, Cardiovascular Disease, and Adult Echocardiography Registered Vascular Technologist

Robert E. Lynch, MD, FACC



Dr. Lynch is a specialist trained in noninvasive and invasive cardiology with a special interest in the prevention of cardiovascular disease. He is former Chief of Cardiology at Hillcrest Medical Center, where he also has served as Chief of Medicine and President of the medical staff. Dr. Lynch is former Co-Director of the Lipid and Wellness Clinic at Oklahoma Heart Institute and Director of the Executive Health Program. Dr. Lynch is also a Clinical Assistant Professor at the University of Oklahoma College of Medicine – Tulsa. He completed his Cardiology Fellowship, as well as his Internal Medicine Internship and Residency, at the University of Oklahoma Health Sciences Center. Dr. Lynch received his medical degree from the University of Oklahoma School of Medicine and his Bachelor of Science degree from the University of Tulsa. Before establishing his practice in Tulsa, he served as Chief of Medicine at the U.S. Army Hospital, Bangkok, Thailand.

Board certified in Internal Medicine and Cardiovascular Disease

James J. Nemeč, MD, FACC



Dr. Nemeč is a specialist in echocardiography, stress echocardiography and nuclear cardiology. He serves as Director of Nuclear Cardiology for Oklahoma Heart Institute. Dr. Nemeč has served as Assistant Professor of Internal Medicine, Division of Cardiology, at Creighton University and as Assistant Professor, Department

of Radiology, also at Creighton University. He completed his Clinical Cardiology Fellowship at the Cleveland Clinic Foundation and his Internal Medicine Internship and Residency at Creighton University. Dr. Nemeč also completed a year of training in pathology at the University of Missouri, Columbia, MO. He received his medical degree from Creighton University, where he also received his Bachelor of Arts degree.

Board certified in Internal Medicine, Cardiovascular Disease and Nuclear Cardiology

Gregory D. Johnsen, MD, FACC, FSCAI



Dr. Johnsen is an interventional cardiologist with expertise in cardiac catheterization, angioplasty and related interventional procedures, such as stents and atherectomy. He is Director of Cardiac Rehabilitation at Hillcrest Medical Center and Director of the Hillcrest Exercise and Lifestyle Programs. He completed his Clinical Cardiology Fellowship at the University of Oklahoma – Oklahoma City, where he then finished an extra year of dedicated training in interventional cardiology. He completed his Internal Medicine Internship and Residency training at the University of Oklahoma – Oklahoma City, where he also received his medical degree. Dr. Johnsen received his Bachelor of Science degree from Oklahoma State University.

Board certified in Internal Medicine, Cardiovascular Disease and Interventional Cardiology

Alan M. Kaneshige, MD, FACC, FASE



Dr. Kaneshige is a noninvasive cardiologist with expertise in adult echocardiography, stress echocardiography and transesophageal echocardiography. He is Chief of Cardiology at Oklahoma Heart Institute, where he is Director of the Congestive Heart Failure C.A.R.E. Center and the Adolescent and Adult Congenital Heart Clinic. He is past Chief of Cardiology at Hillcrest Medical Center. Dr. Kaneshige completed his Internal Medicine Internship and Residency at Creighton University School of Medicine, where he also received his medical degree. He received a Bachelor of Science in chemistry at Creighton University. Dr. Kaneshige completed his Clinical Cardiology fellowship at Creighton, where he also served as Chief Cardiology Fellow for two years. He completed an additional Cardiac Ultrasound Fellowship at the Mayo Clinic in Rochester. Dr. Kaneshige served as Assistant Professor of Medicine at Creighton University School of Medicine, where he was Director of the Noninvasive Cardiovascular Imaging and Hemodynamic Laboratory.

Board certified in Internal Medicine, Cardiovascular Disease, Adult and Transesophageal Echocardiography

Edward T. Martin, MS, MD, FACC, FACP, FAHA



Dr. Martin is a noninvasive cardiologist with subspecialty expertise in noninvasive imaging. He is Director of Cardiovascular Magnetic Resonance Imaging at Oklahoma Heart Institute and Hillcrest Medical Center. In addition, he is a Clinical Associate Professor of Medicine at the University of Oklahoma College of Medicine – Tulsa. Dr. Martin has specialty training in Nuclear Medicine, as well as additional training dedicated to Cardiovascular Magnetic Resonance Imaging. He is chief of Cardiology at Hillcrest Hospital South. He completed his Cardiology Fellowship at the University of Alabama. Dr. Martin's Internal Medicine Internship and Residency training were performed at Temple University Hospital in Philadelphia. He received his medical degree from the Medical College of Ohio. Dr. Martin completed his Master of Science degree in mechanical engineering at the University of Cincinnati and his Bachelor of Science degree in physics at Xavier University. Dr. Martin is a founding member of the Society of Cardiovascular Magnetic Resonance and is an editorial board member of the Journal of Cardiovascular Magnetic Resonance.

Board certified in Internal Medicine and Cardiovascular Disease

Roger D. Des Prez, MD, FACC



Dr. Des Prez is a noninvasive cardiologist with specialty expertise in echocardiography, nuclear cardiology and cardiac computed tomography. He is Director of Cardiac Computed Tomography at Oklahoma Heart Institute Hospital, at Hillcrest Medical Center and Bailey Medical Center. Dr. Des Prez received his medical degree and Bachelor of Arts degree from Vanderbilt University. He completed his Residency in Internal Medicine and Pediatrics at University Hospital of Cleveland. Dr. Des Prez practiced for six years as an internist with the Indian Health Services in Gallup, NM. He returned to Vanderbilt University as a member of the Internal Medicine Faculty, at which time he also completed his cardiology training.

Board certified in Internal Medicine, Cardiovascular Disease, Echocardiography, Pediatrics and Nuclear Cardiology

Christian S. Hanson, DO, FACE



Dr. Hanson is a specialist in Endocrinology, Metabolism and Hypertension at Oklahoma Heart Institute with expertise in diabetes, lipids and hypertension. He also serves as Clinical Associate Professor of Medicine in the College of Osteopathic Medicine – Oklahoma State University. He completed a Fellowship in Endocrinology, Metabolism and Hypertension at the University of Oklahoma in Oklahoma City. Dr. Hanson's Internal Medicine Residency and Rotating Internship were completed at Tulsa Regional Medical Center. He received his medical degree from Oklahoma State University and his Bachelor of Science degree from Northeastern Oklahoma State University in Tahlequah.

Board certified in Internal Medicine, Endocrinology and Metabolic Diseases

David A. Sandler, MD, FACC, FHRS



Dr. Sandler is a cardiologist with subspecialty expertise in electrophysiology, complex ablation, and atrial fibrillation management. Dr. Sandler is Director of Electrophysiology at Oklahoma Heart Institute Hospital. He completed his Cardiac Electrophysiology Fellowship and his Cardiovascular Medicine Fellowship at New York University Medical Center, New York, NY. Dr. Sandler performed his Internal Medicine Internship and Residency at Mount Sinai Medical Center, New York, NY. He earned his medical degree from Georgetown University School of Medicine in Washington, DC. Dr. Sandler received his Bachelor of Arts degree at the University of Pennsylvania in Philadelphia.

Board certified in Internal Medicine, Cardiovascular Disease and Cardiac Electrophysiology

Raj H. Chandwaney, MD, FACC, FSCAI, FFSVM



Dr. Chandwaney is an interventional cardiologist with expertise in cardiac catheterization, coronary angioplasty and related interventional procedures such as coronary stents, atherectomy, intravascular ultrasound and peripheral vascular interventional procedures. Dr. Chandwaney is Director of the Chest Pain Center and Cardiology Telemetry Unit at Oklahoma Heart Institute Hospital. He completed his Clinical Cardiology Fellowship at Northwestern University Medical School in Chicago, IL., where he also completed an Interventional Cardiology Fellowship. Dr. Chandwaney's Internal Medicine Internship and Residency were performed at Baylor College of Medicine in Houston, TX. He received his medical degree from the University of Illinois at Chicago. Dr. Chandwaney completed his Master of Science degree at the University of Illinois at Urbana-Champaign, where he also received his Bachelor of Science degree.

Board certified in Internal Medicine, Cardiovascular Disease, Interventional Cardiology and Endovascular Medicine

D. Erik Aspenson, MD, FACE, FACP



Dr. Aspenson is a subspecialist in Endocrinology, Metabolism and Hypertension at Oklahoma Heart Institute, with expertise in diabetes, lipids, hypertension and thyroid diseases. He completed a fellowship in Endocrinology at Wilford Hall Medical Center, Lackland AFB, Texas. Dr. Aspenson's Internal Medicine Internship and Residency were completed at David Grant Medical Center, Travis AFB, California where he served as Chief Resident. He received his medical degree from the University of Oklahoma and his Bachelor of Science degree at Oklahoma State University.

Board certified in Internal Medicine, Endocrinology and Metabolic Diseases

Frank J. Gaffney, MD, FACC



Dr. Gaffney is an interventional and noninvasive cardiologist with subspecialty expertise in transesophageal echocardiography, nuclear cardiology, and coronary angiography. He completed his Cardiovascular Medicine Fellowship at Scott & White Memorial Hospital in Temple, Texas. Dr. Gaffney completed his Internal Medicine Internship and Residency at Brooke Army Medical Center in San Antonio. He then remained on staff at Scott & White Memorial Hospital for several years, before entering his Fellowship in Cardiovascular Medicine. Dr. Gaffney earned his medical degree from New York Medical College, Valhalla, New York, and he received his Bachelor of Arts degree at Hofstra University in Hempstead, New York.

Board certified in Internal Medicine, Cardiovascular Disease and Nuclear Cardiology

Eric G. Auerbach, MD, FACC



Dr. Auerbach is a general cardiologist whose major interest is preventive cardiology and cardiovascular risk reduction. He completed his cardiology fellowship at the University of Miami/Jackson Memorial Hospital in Miami, FL, following which he obtained additional subspecialty training in cardiovascular MRI, nuclear cardiology, and cardiac CT imaging. His areas of expertise also include echocardiography, stress testing and management of lipid disorders. In addition to holding board certification in cardiovascular disease, he is a diplomat of the American Board of Clinical Lipidology. Dr. Auerbach's Internal Medicine Internship and Residency were performed at the University of Miami/Jackson Memorial Hospital. He earned his medical degree at the University of Miami, Miami, FL, and his Bachelor of Arts degree at Princeton University, Princeton, NJ. Dr. Auerbach is the Director of Preventive Cardiology at Oklahoma Heart Institute, the medical director of The Weight Loss & Wellness Center at Oklahoma Heart Institute and a Clinical Associate Professor of Medicine at the University of Oklahoma College of Medicine – Tulsa.

Board certified in Internal Medicine, Cardiovascular Disease and Nuclear Cardiology

Kelly R. Flesner, MD



Dr. Flesner is a subspecialist in Endocrinology, Metabolism and Hypertension at Oklahoma Heart Institute, with expertise in diabetes, lipids, hypertension and thyroid diseases. Prior to joining Oklahoma Heart, she was at St. John Medical Center in Tulsa. She completed

her fellowship in Endocrinology at the University of Texas at Galveston. Her Internal Medicine Internship and Residency were completed at the University of Texas in Houston, where she also received her medical degree. She earned her Bachelor of Science degree at Texas A&M University in College Station, TX.

Board certified in Internal Medicine, Endocrinology, Diabetes and Metabolic Diseases

Robert L. Smith, Jr., MSc, MD, FACC, FSCAI



Dr. Smith specializes in interventional cardiology including cardiac catheterization, coronary angioplasty, and related interventional procedures such as coronary stents, atherectomy, intravascular ultrasound, and peripheral vascular interventional procedures. He completed

an Interventional Cardiology Fellowship at the University of Florida College of Medicine in Jacksonville, FL. Dr. Smith performed his Clinical Cardiology Fellowship at Vanderbilt University School of Medicine in Nashville, TN and Tulane University School of Medicine in New Orleans. He received his medical degree from the University of Oklahoma College

of Medicine in Oklahoma City and then completed his Internal Medicine Internship and Residency at Emory University School of Medicine in Atlanta, GA. Dr. Smith received his Bachelor of Arts, Bachelor of Science and Master of Science degrees at the University of Oklahoma in Norman, OK. *Board certified in Internal Medicine, Cardiovascular Disease, Interventional Cardiology and Nuclear Cardiology*

Craig S. Cameron, MD, FACC, FHRS



Dr. Cameron is a specialist in cardiac electrophysiology, including catheter ablation of arrhythmia, atrial fibrillation management, pacemakers, implantable defibrillators, and cardiac resynchronization devices. He completed his Cardiac Electrophysiology Fellowship and his Cardiovascular Disease Fellowship at Baylor University Medical Center in Dallas, TX. Dr. Cameron's Internship and Internal Medicine Residency were performed at Baylor College of Medicine in Houston. He earned his medical degree from the University of Kansas School of Medicine in Kansas City, KS. Dr. Cameron received his Bachelor of Science degree at Pittsburg State University in Pittsburg, KS.

Board certified in Cardiovascular Disease and Cardiac Electrophysiology

Eugene J. Ichinose, MD, FACC



Dr. Ichinose specializes in interventional cardiology including cardiac catheterization, coronary angioplasty and related interventional procedures such as coronary stents, atherectomy, intravascular ultrasound and peripheral vascular interventional procedures. He completed his Interventional and Clinical Cardiology Fellowships and his Internal Medicine Residency at the University of Massachusetts Memorial Health Care Center in Worcester, MA. Dr. Ichinose received his medical degree from Louisiana State University in New Orleans. He earned his Bachelor of Science degree from Texas Christian University in Fort Worth, TX.

Board certified in Internal Medicine, Cardiovascular Disease, Interventional Cardiology and Nuclear Cardiology

Cristin M. Bruns, MD



Dr. Bruns is a specialist in Endocrinology, Diabetes and Metabolism at Oklahoma Heart Institute, with expertise in diabetes, thyroid disease (including thyroid cancer) and polycystic ovary syndrome. She completed her Internal Medicine Internship and Residency and Endocrinology Fellowship at the University of Wisconsin Hospital and Clinics in Madison, WI. Dr. Bruns earned her medical degree from Saint Louis University School of Medicine in St. Louis, MO and her Bachelor of Arts and Bachelor of Science degrees in biology from Truman State University in Kirksville, MO. Prior to joining Oklahoma Heart Institute, Dr. Bruns worked as a clinical endocrinologist at the Dean Clinic in Madison, Wisconsin.

Board certified in Internal Medicine, Endocrinology and Metabolic Diseases

John S. Tulloch, MD



Dr. Tulloch is a noninvasive cardiologist with expertise in adult echocardiography, peripheral vascular imaging, nuclear cardiology, cardiac computed tomography and MRI. Dr. Tulloch is Director of the Cardiac and Vascular Ultrasound Department of Hillcrest Medical Center's Cardiovascular Diagnostics. He completed his Cardiovascular Fellowship at the University of Kansas Medical Center in Kansas City, KS. Dr. Tulloch's Internal Medicine Internship and Residency also were completed at the University of Kansas Medical Center. He earned his medical degree from Ross University School of Medicine in New Brunswick, NJ and received his Bachelor of Science degree in biology from Avila University in Kansas City, MO.

Board certified in Internal Medicine, Cardiovascular Disease, Cardiovascular Tomography, and Nuclear Cardiology

Anthony W. Haney, MD, FACC



Dr. Haney is a noninvasive cardiologist with expertise in nuclear cardiology, echocardiography, peripheral vascular imaging and MRI. He also performs diagnostic cardiac catheterization. He completed his Cardiovascular Fellowship at the Medical College of Virginia in Richmond. Dr. Haney's Internal Medicine Internship and Residency were completed at the Mayo Clinic in Scottsdale, AZ. He earned his medical degree from the University of Oklahoma School of Medicine.

Board certified in Internal Medicine, Cardiovascular Disease and Nuclear Cardiology

Ralph J. Duda, Jr., MD, FACP, FACE, FASH



Dr. Duda is a specialist in Endocrinology, Diabetes and Metabolism at Oklahoma Heart Institute, with expertise in diabetes, lipids, hypertension and thyroid diseases. He completed his Fellowship in Endocrinology and Metabolism at the Mayo Graduate School of Medicine, where he also completed his Residency in Internal Medicine. Dr. Duda received his medical degree from Northwestern University School of Medicine in Chicago, IL. He earned his Bachelor of Science degree from Benedictine University in Lisle, IL.

Board certified in Internal Medicine, Endocrinology, Diabetes and Metabolism, Clinical Lipidology, Clinical Hypertension, Clinical Bone Densitometry and Thyroid Ultrasonography

Douglas A. Davies, MD, FACC



Dr. Davies is a hospital-based cardiologist who provides continuity of care for patients admitted to Oklahoma Heart Institute – Hospital. He completed a Clinical Cardiology Fellowship and additional training in nuclear cardiology at the Medical College of Virginia, where he also completed his Internal Medicine and Residency programs. Dr. Davies received his medical degree from Johns Hopkins University School of Medicine in Baltimore.

Board Certified in Internal Medicine, Cardiovascular Disease, Nuclear Cardiology and Cardiovascular Computed Tomography Angiography

Neil Agrawal, MD



Dr. Agrawal is a noninvasive cardiology specialist with expertise in adult echocardiography, nuclear cardiology, cardiac computed tomography and MRI. He completed his Cardiovascular Fellowship at the University of Vermont. Dr. Agrawal's Internal Medicine Internship and Residency were completed at the University of Louisville, and he earned his medical degree from St. George's University in Granada, West Indies. Dr. Agrawal completed his Bachelor of Science degree in biochemistry at the University of Texas at Austin.

Board certified in Internal Medicine

Kamran I. Muhammad, MD, FACC, FSCAI



Dr. Muhammad is a subspecialist in interventional cardiology. In addition to expertise in traditional areas of interventional cardiology, such as coronary intervention (angioplasty, stent placement, atherectomy, intravascular imaging) and peripheral vascular and carotid artery intervention, Dr. Muhammad has a special interest and expertise in interventional therapies for structural and valvular heart disease including the percutaneous non-surgical replacement and repair of heart valves — TAVR and MitraClip. As such, he currently serves as the Director of the Structural Heart Disease Program at OHI.

With dedicated and advanced training in structural heart disease intervention from the world-renowned Cleveland Clinic, Dr. Muhammad has been a pioneer in this field in Oklahoma. He led a team of OHI physicians in performing the first transcatheter aortic valve replacements (TAVR) and first transcatheter mitral valve repairs (MitraClip) in Tulsa and the region. Under his direction, these programs are the most experienced and comprehensive programs of their kind in the state, providing our patients with expert care and class-leading technologies for the non-surgical treatment of structural and valvular heart diseases.

In addition to his clinical experience, Dr. Muhammad has authored many peer-reviewed articles and textbook chapters on important cardiology topics. He also serves as Clinical Associate Professor of Medicine at the University of Oklahoma College of Medicine — Tulsa.

Dr. Muhammad completed his Clinical Cardiology and Interventional Cardiology Fellowships at the Cleveland Clinic which included additional dedicated training in peripheral vascular and structural cardiac intervention. Dr. Muhammad completed his Internal Medicine Internship and Residency at Yale University where he was selected and served as Chief Resident. He earned his medical degree from the University of Massachusetts Medical School, graduating with top honors and election to the Alpha Omega Alpha (ΑΩΑ) honor society. Dr. Muhammad earned his Bachelor of Science degree in computer science from the University of Massachusetts, Amherst.

Arash Karnama, DO, FACC



Dr. Karnama is a specialist in interventional cardiology, including cardiac catheterization, coronary intervention, nuclear cardiology, echocardiography (TEE/TTE), cardioversion, peripheral angiography, peripheral intervention, carotid angiography, intravascular ultrasound, atherectomy, and PTCA/stenting for acute myocardial infarction. Dr. Karnama completed his Interventional and Clinical Cardiology Fellowships at Oklahoma State University Medical Center and his Internal Medicine Internship and Residency at the Penn State Milton S. Hershey Medical Center in Hershey, PA. Dr. Karnama received his medical degree from Des Moines University in Des Moines, IA and his Bachelor of Arts degree from the University of Iowa in Iowa City.

Board certified in Internal Medicine, Interventional Cardiology, Cardiovascular Disease, Nuclear Cardiology, and Cardiovascular Computed Tomography

Victor Y. Cheng, MD, FACC, FSCCT



Dr. Cheng joins Oklahoma Heart Institute after serving as cardiology faculty at Cedars-Sinai Medical Center and assistant professor at the University of California in Los Angeles for the past four years. He is a specialist in noninvasive heart and vascular imaging, particularly in cardiac computed tomography (CT), a topic on which he has published numerous original research publications addressing quality, clinical use, and novel applications. Dr. Cheng's training included a Clinical Cardiology Fellowship and Advanced Cardiac Imaging Fellowship at Cedars-Sinai Medical Center, and an Internal Medicine Internship and Residency at the University of California in San Francisco. Dr. Cheng received his medical degree from Northwestern University in Chicago, IL and his Bachelor of Science degree from Northwestern University in Evanston, IL.

Board certified in Internal Medicine, Cardiovascular Disease, Nuclear Cardiology, Echocardiography and Cardiovascular Computed Tomography

Jana R. Loveless, MD



Dr. Loveless is a sleep specialist, with expertise in the diagnosis and treatment of sleep disorders. Prior to joining Oklahoma Heart Institute, Dr. Loveless was with Nocturna of Tulsa, Warren Clinic and Springer Clinic. She completed her Internal Medicine Residency program at the University of Oklahoma, Tulsa, where she was Chief Resident. She also earned her medical degree from the University of Oklahoma, Tulsa. Dr. Loveless completed graduate studies at Texas Tech University, and she earned her Bachelor of Arts degree at Davidson College in Davidson, North Carolina.

Board Certified in Internal Medicine and Sleep Medicine

Mathew B. Good, DO



Dr. Good is an invasive/noninvasive cardiology specialist with expertise in adult echocardiography, nuclear cardiology, cardiac computed tomography, peripheral vascular ultrasound and MRI. He completed his Cardiovascular Fellowship at the University of Kansas Medical Center in Kansas City, KS, where he also completed his Internal Medicine Internship and Residency. Dr. Good received his medical degree from the Oklahoma State University Center for Health and Sciences in Tulsa and his Bachelor of Arts degree from the University of Colorado in Boulder.

Board certified in Internal Medicine and Cardiovascular Computed Tomography

Stanley K. Zimmerman, MD, FACC, FSCAI



Dr. Zimmerman is Director of Vascular Services at Hillcrest South as well as the Vascular Lab Medical Director. He is a specialist in interventional cardiology, including cardiac catheterization, coronary angioplasty, and related interventional procedures such as coronary stents, atherectomy, vascular ultrasound and peripheral vascular interventional procedures.

He completed his Interventional and Cardiovascular Fellowships at the University of Kansas Medical Center in Kansas City, KS, as well as his Internal Medicine Internship and Residency. In addition, Dr. Zimmerman received his medical degree from the University of Kansas Medical Center and

his Bachelor of Arts degree from the University of Kansas in Lawrence.

Board certified in Internal Medicine, Cardiovascular Disease and Interventional Cardiology

Stephen C. Dobratz, MD, FACC



Dr. Dobratz specializes in diagnostic and interventional cardiology, including cardiac catheterization, peripheral angiography, pacemakers and defibrillators, cardioversion, cardiac nuclear studies, cardiac computed tomography, transesophageal echo and echocardiograms. He completed his Fellowship in Cardiology at Allegheny General Hospital in Pittsburgh, Pennsylvania. Dr. Dobratz completed his Internal Medicine Internship and Residency at the University of Arizona in Tucson. He earned his medical degree at Eastern Virginia Medical School in Norfolk and his undergraduate degree at James Madison University in Harrisonburg, Virginia.

Board certified in Cardiovascular Disease

Paul Kempe, MD



Dr. Kempe is a Cardiovascular Thoracic Surgeon at Oklahoma Heart Institute. He completed his Residency in Cardiothoracic Surgery at Boston University Medical Center in Boston, MA. He completed his General Surgery Internship and Residency at Richland Memorial Hospital in Columbia, South Carolina. Dr. Kempe earned his medical degree at the University of Texas Southwestern Medical School in Dallas. He received his undergraduate degree in Chemistry at Abilene Christian University.

Board certified in Thoracic Surgery

Michael Phillips, MD, FACC, FACS



Dr. Phillips is a Cardiovascular Thoracic Surgeon at Oklahoma Heart Institute. He completed his fellowship at Mid America Heart Institute in Kansas City, MO and his general surgery residency at the Mayo Graduate School of Medicine. He earned his medical degree from the University of Missouri. Dr. Phillips received his undergraduate degrees in Biology and Chemistry at William Jewell College in Liberty, MO.

Board certified by in Thoracic and General Surgery

James B. Chapman, MD, FACC, FSCAI



Dr. Chapman is a specialist in interventional cardiology, including cardiac catheterization, coronary angioplasty and related interventional procedures such as stents, atherectomy, laser, intravascular ultrasound imaging and direct PTCA for acute myocardial infarction.

He completed a Clinical Cardiology Fellowship St. Vincent Hospital and Health Care Center in Indianapolis, IN. He also completed his Internal Medicine Internship and Residency programs at St. Vincent. Dr. Chapman received his medical degree from Indiana University School of Medicine in Indianapolis and his Bachelor of Science degree from Indiana University in Bloomington, IN.

Board certified in Internal Medicine, Cardiovascular Disease and Interventional Cardiology

Sandra E. Rodriguez, MD



Sandra Rodriguez is a noninvasive cardiology specialist with expertise in congestive heart failure and transplants. She completed an Advanced Heart Failure and Transplant Fellowship at the University of Colorado Hospital in Aurora, Colorado and her Cardiology Diseases Fellowship at Texas Tech University Health Sciences Center in Lubbock Texas. Dr. Rodriguez completed her Internal Medicine Residencies at Texas Tech and the Universidad El Bosque in Bogota, Colombia. She earned her medical degree from Medicine School, Escuela de Medicina "Juan N. Corpas," in Bogota.

Board certified in Internal Medicine, Cardiovascular Disease and Advanced Heart Failure/Transplant Cardiology

Joseph J. Gard, MD, FACC, FHRS



Dr. Gard is a cardiologist who specializes in electrophysiology, complex ablation and atrial fibrillation management. He completed his Cardiac Electrophysiology Fellowship and his Cardiology Fellowship at the Mayo School of Graduate Medical Education in Rochester, Minnesota. Dr. Gard also performed his Internal Medicine

Residency at Mayo. He earned his medical degree from the University of Nebraska in Omaha, Nebraska. Dr. Gard received his Bachelor of Science degree from Boston College in Chestnut Hill, Massachusetts.

Board certified in Cardiovascular Disease, Internal Medicine, Electrophysiology and Clinical Cardiac Electrophysiology

Edward J. Coleman, MD, FACC, FAHA, FACS, FCCP



Dr. Coleman is a cardiovascular surgeon who specializes in cardiac, thoracic and vascular surgery. He completed his residency in cardiothoracic surgery at State University of New York at Buffalo in Buffalo, New York. He was Senior & Chief Resident at Mary Imogene Bassett Hospital/Columbia University College of Physicians & Surgeons in Cooperstown, New York. Dr. Coleman performed his Internship and Residency in general surgery at the University of Rochester School of Medicine & Dentistry in Rochester, NY. He earned his medical degree from State University of New York at Buffalo School of Medicine, Buffalo, New York. Dr. Coleman received his Bachelor of Arts degree from Norwich University in Northfield, Vermont.

Board Certified in General Surgery and Thoracic Surgery

Michael B. Newnam, MD



Dr. Newnam is a Board Certified specialist in the diagnosis and treatment of sleep disorders. He completed his Family Practice Internship & Residency programs at the Womack Army Medical Center in Ft. Bragg, NC. Dr. Newnam earned his medical degree from the University of Oklahoma and his Bachelor of Science degree from Oral Roberts University in Tulsa, OK.

Board Certified in Family Medicine and Sleep Medicine

John M. Weber, MD, RPV1



Dr. Weber is a Peripheral Vascular Surgeon at Oklahoma Heart Institute who specializes in complex vascular disease. He offers both, open and endovascular treatment of arterial and venous disease. Areas of interest include open and endovascular treatment of aortic pathology, cerebrovascular surgery, limb salvage surgery, vascular access, and complex venous therapies. He completed his residency in Vascular Surgery at the Cleveland Clinic in Cleveland, Ohio. Dr. Weber earned his medical degree at the University of Oklahoma College of Medicine. He also completed his undergraduate degree at the University of Oklahoma.

David Liff, MD



Dr. Liff is an interventional cardiologist who specializes in peripheral vascular disease as well as coronary interventional disease. He completed a Peripheral Interventional Fellowship at Ochsner Clinic in New Orleans, LA and an Interventional Cardiology Fellowship at Hofstra/

North Shore University/Long Island Jewish Hospital Center in New York. Dr. Liff completed his Clinical Cardiology Fellowship at Emory University Hospital System in Atlanta, GA. He also performed his Internal Medicine Internship and Residency at Emory. Dr. Liff earned his medical degree from Ohio State University School of Medicine. He received his Bachelor of Science degree from the University of Michigan in Ann Arbor, MI.

Board certified in Internal Medicine, Cardiovascular Disease and Interventional Cardiology

Move More, Eat Less: Diabetes Prevention

By Cassie Stanzak, RD, LD, CDE



In 2012, 29.1 million Americans had diabetes. Even more astonishing, 86 million Americans, age 20 and older had prediabetes. Not only does diabetes cause serious health complications including heart disease, blindness, kidney failure, and lower-extremity amputations, it is the seventh leading cause of death in the United States. This is the reality.

So how can this “epidemic” be stopped? How can you decrease your risk of ever developing type 2 diabetes? These are the questions that everyone should be asking and taking seriously. The good news is that type 2 diabetes is largely preventable and the answer is easy for everyone to understand: know your risk, move more, eat less. If that was all you knew, and that was all you did, that would be a great start.

It is very important to make diabetes prevention

a priority. The risk factors for diabetes include: obesity (especially around the waist), inactivity, being over the age of 45, high blood pressure or on medication for high blood pressure, low HDL cholesterol, a family history of diabetes, or a personal history of gestational diabetes (diabetes with onset during pregnancy). Often there are no symptoms with onset of type 2 diabetes; therefore early screening may help people avoid the more serious complications of the disease. According to the American Diabetes Association, all patients should be screened for diabetes at 3-year intervals beginning at age 45, especially people who are overweight or obese. If multiple risk factors are present, screening should be done at an earlier age and more frequently. As far as what to do if you are at risk, focus on the things you can change and do not dwell on the things you cannot. No matter how frustrating it is, we can't get

any younger! Let's narrow it down to the modifiable factors: weight, activity, cholesterol and blood pressure. Knowing that cholesterol and blood pressure can be much improved by a healthy weight and activity leads us back to the basics: move more, eat less.

Let's get moving. Working your muscles more often improves their ability to use insulin and absorb glucose, putting less stress on your insulin-making cells. Being physically active on a regular basis not only helps prevent type 2 diabetes, but it also helps prevent heart disease, aids in weight loss, improves cholesterol and blood pressure, and increases your chances of living longer and living healthier. What defines physical activity? The 2008 Physical Activity Guidelines for Adults defines physical activity as “anything that gets your body moving.” For health benefits, adults need at least

30 minutes of physical activity, 5 days per week (a total of 150 minutes per week). Going for a walk, taking a dance class, mowing the yard, riding a bike, swimming, bowling, tennis, playing basketball. These are some, but not all activities that can get you started. If you are new to exercise, understand that you may not be ready for 30 minutes at one time, and that is okay. The important thing is that you find what works for you. The 30 minutes can be divided into three 10-minute increments if necessary. Do something you enjoy. Find a partner. Listen to music. Understand that exercise needs to be part of everyone's daily routine.

There is no magic diet, special diet or fad diet to prevent diabetes. The key is portion control while following a balanced, healthy eating plan. Practicing portion control can help reduce fat and calorie intake, resulting in lower cholesterol and weight loss, both of which are helpful in preventing type 2 diabetes.

Portion sizes have gotten out of hand, especially at restaurants. The average restaurant meal today is more than four times larger than in the 1950s, according to the Centers for Disease Control and Prevention. In the 1950s, the average burger sandwich was 3.9 ounces. Now a burger sandwich is 12 ounces. And possibly one of the biggest culprits of weight gain and obesity, soda/sweetened beverages,

averaged 7 ounces per serving in the 1950s. Now the average soda is 42 ounces. As life gets more hectic, fast food consumption has become a growing part of the American diet. With "Super-Sized" options and the consumer wanting to get the most for their money, people are consuming very high fat, high calorie meals. Yes, fast food restaurants now provide healthier options, smaller portions, and junior meals, but we, the consumers, have to make the decision that those portions are normal, appropriate sizes and choose them.

When preparing meals at home, portion control is also the key. Like the restaurants, home meals have increased due to the increased size of plates, bowls, and glasses. If you feel that overeating at meal time is a problem area for you, try using a smaller 9-inch plate. Using a smaller plate will help small portions of food look like more, because the plate will appear full. With that 9-inch plate, fill half of it with non-starchy vegetables (i.e. green beans, carrots, broccoli, cucumbers, spinach, celery, etc). These foods are very low calorie, yet high in nutrients. With the other half plate remaining, fill $\frac{1}{4}$ of the plate with a high fiber carbohydrate (i.e. sweet potatoes, black beans/lentils, whole wheat pasta, brown rice, whole grain toast, etc.) Then fill the last $\frac{1}{4}$ of the plate with a palm-size portion (about 3 ounces) of lean protein (chicken

breast, fish, turkey, pork tenderloin, etc.). You have just created a balanced, healthy plate. This method of planning the meal is called the Plate Method. Consuming a plate like this will result in smaller portions and less fat and calories. The more consistently you try to use the Plate Method, the more your body will get comfortable with these smaller portions and balanced eating. Try to envision this plate even when eating out. Everyone in the family can use the Plate Method. This is a healthy eating plan that everyone should be following. If the focus is on eating less, that will also result in consuming fewer calories and less fat. Remember: portion control is the key.

Diabetes prevention really is as basic as becoming more physically active and eating less. Also, as mentioned above, eating healthy and losing weight can get you started on a path to avoid serious health complications. The time is now. Today is the day to start. Making a few diet and lifestyle changes can really help in creating the long healthy road ahead. ❤️

Cassie Stanzak is a Registered Dietitian and Certified Diabetes Educator who has been working at the Hillcrest Diabetes Center for over 6 years.





The Weight Loss & Wellness Center
at Oklahoma Heart Institute | An HMR Program

Life-Long Solution for Managing Your Weight.

Health Management Resources (HMR) is a leading provider of medically-supervised weight management programs in the country. People lose 2-3 times more weight than with most other programs.

HMR healthy meals make losing weight easier through good-tasting & convenient fast food alternatives.

THREE OPTIONS

- Decision-Free Diet
- Healthy Solutions Diet
- HMR at Home Program

The Weight Loss & Wellness Center at Oklahoma Heart Institute, an HMR Program is an official licensee of the HMR Program, a non-surgical, clinic-based diet that U.S. News & World Report has named a "Best Diet for Weight Loss".



U.S. News' Best Diets 2015 panel of nutrition experts ranked the HMR Program, which The Weight Loss & Wellness Center at Oklahoma Heart Institute, an HMR Program licenses, but did not evaluate any products or services of The Weight Loss & Wellness Center at Oklahoma Heart Institute, an HMR Program itself.

Information Sessions:

Mondays • 11:30am - 12:30pm

Tuesdays • 6:00pm - 7:00pm

For more information, call: 918.579.3444

www.OklahomaHeart.com/WLWC



A HEART-HEALTHY EATING PLAN

The Mediterranean Diet

By Nasrin Sinichi, Clinical Dietitian

The Mediterranean diet is a modern nutritional recommendation inspired by the traditional dietary patterns of Greece, Spain and Italy. The Mediterranean means “the sea between lands.” The principal aspects of this diet include proportionally high consumption of olive oil, legumes, unrefined cereals, fruits, and vegetables, moderate to high consumption of fish, moderate consumption of dairy products (mostly as cheese and yogurt), moderate wine consumption, and low consumption of meat and meat products.

Benefits of the Mediterranean Diet

The Mediterranean diet has been researched for over 50 years, and its benefits continue to become apparent. The traditional Mediterranean diet reduces the risk of heart disease. In fact, an analysis of more than 1.5 million healthy adults demonstrated that following a Mediterranean diet was associated with a reduced risk of death from heart disease, stroke and cancer and diabetes, as well as a reduced incidence of Parkinson’s and Alzheimer’s diseases.

The Dietary Guidelines for Americans recommends the Mediterranean diet as an eating plan that can help promote health and prevent disease.

A recent randomized Spanish trial of diet patterns published in *The New England Journal of Medicine* in 2013 followed almost 7,500 individuals over 5 years and found that individuals on a Mediterranean diet had a 30 percent reduction in risk of having a major cardiovascular event and a 49 percent decrease in stroke risk.

A meta-analysis published in the *American Journal of Clinical Nutrition* in 2013 compared Mediterranean, vegan, vegetarian, low-glycemic index, low-carbohydrate, high-fiber, and high-protein diets with control diets. The research concluded that Mediterranean, low-carbohydrate, low-glycemic index, and high-protein diets are effective in improving markers of risk for cardiovascular disease and diabetes.

Key components of the Mediterranean diet

The Mediterranean diet emphasizes:

- Eating primarily plant-based foods, such as fruits and vegetables, whole grains, legumes and nuts
- Replacing butter with healthy fats, such as olive oil
- Using herbs and spices instead of salt to flavor foods
- Limiting red meat to no more than a few times a month
- Eating fish and poultry at least twice a week
- Drinking red wine in moderation (optional)

The diet also recognizes the importance of being physically active. People who follow the average Mediterranean diet eat less saturated fat than those who eat the average American diet. More than half the fat calories in a Mediterranean diet come from monounsaturated fats (mainly from olive oil), which doesn’t raise blood cholesterol levels the way saturated fat does.



Focus on fruits, vegetables, nuts and grains

The Mediterranean diet traditionally includes fruits, vegetables and grains. For example, residents of Greece average six or more servings a day of antioxidant-rich fruits and vegetables.

Grains in the Mediterranean region are typically whole grain and usually contain very few unhealthy trans fats. Bread is an important part of the diet. However, throughout the Mediterranean region, bread is eaten plain or dipped in olive oil, not with butter or margarine, which contains saturated or trans fats.

Nuts are another part of a healthy Mediterranean diet. Nuts are high in fat, but most of the fat is healthy. Because nuts are high in calories, they should not be eaten in large amounts, generally no more than a handful a day. For the best nutrition, avoid candied or honey-roasted and heavily salted nuts.

Olive oil contains a very high level of monounsaturated fats, most notably oleic acid, which epidemiological studies suggest may be linked to a reduction in coronary heart disease risk. There is also evidence that the antioxidants in olive oil improve cholesterol regulation and LDL cholesterol reduction, and that it has other anti-inflammatory and anti-hypertensive effects.

The inclusion of red wine is considered a factor contributing to health as it contains flavonoids with powerful antioxidant properties. ❤️



Superfast Mediterranean Pizza Recipe Yield: 4 servings (serving size: 2 wedges)

With artichokes, arugula, pesto, prosciutto, and Parmesan, this pizza has intense, addictive flavor. Splurge and try it with homemade pesto.

From Morocco, to Italy, to Greece, to Turkey, to the Middle East, these recipes are tasty and none take more than 20 minutes to make.

INGREDIENTS:

Cooking spray

1 tablespoon cornmeal

1 (13.8-ounce) can refrigerated pizza crust dough

2 tablespoons commercial pesto

1/2 cup (2 ounces) shredded part-skim mozzarella cheese

1 (9-ounce) package frozen artichoke hearts, thawed and drained

1 ounce thinly sliced prosciutto

2 tablespoons shredded Parmesan cheese

1 1/2 cups arugula leaves

1 1/2 tablespoons fresh lemon juice

PREPARATION:

1. Position oven rack to lowest setting. Preheat oven to 500°.
2. Coat a baking sheet with cooking spray; sprinkle with cornmeal. Unroll dough onto prepared baking sheet, and pat into a 14 x 10-inch rectangle. Spread the pesto evenly over dough, leaving a 1/2-inch border. Sprinkle mozzarella cheese over pesto. Place baking sheet on the bottom oven rack; bake at 500° for 5 minutes. Remove pizza from oven.
3. Coarsely chop artichokes. Arrange artichokes on pizza; top with sliced prosciutto. Sprinkle with Parmesan. Return pizza to the bottom oven rack; bake an additional 6 minutes or until crust is browned.
4. Place arugula in a bowl. Drizzle juice over arugula; toss gently. Top the pizza with arugula mixture. Cut the pizza into 4 (7 x 5-inch) rectangles; cut each rectangle diagonally into 2 wedges.

Note: This updated version of Artichoke and Arugula Pizza with Prosciutto is based on a recipe that originally ran in *Cooking Light*, January 2007. The recipe was retested and updated for *Cooking Light Crave!*, Oxmoor House, 2013.

Nutritional Information: Amount per serving: Calories: 260, Fat: 7.9g, Saturated fat: 2.4g, Monounsaturated fat: 3.8g, Polyunsaturated fat: 0.4g, Protein: 11.3g, Carbohydrate: 37.5g, Fiber: 3.8g, Cholesterol: 12mg, Iron: 2mg, Sodium: 762mg, Calcium: 131mg

The DASH Diet

Dietary Approaches to Stop Hypertension

By Nasrin Sinichi, Clinical Dietitian



The DASH diet was promoted by the National Heart, Lung, and Blood Institute (NHLBI) for patients with hypertension to control their blood pressure. U.S. News & World Report ranked the DASH diet as number 1 in January 2013.

Why was the DASH diet created?

Hypertension has been a growing concern in the USA during the last fifty years. According to the NHLBI, high blood pressure is associated with a significantly greater risk of developing heart attack, heart failure, stroke, and kidney disease. For patients aged from 40 to 70 years, for every rise of 20 mm Hg in systolic BP (SBP) or 10 mm Hg in diastolic BP (DBP), the risk of a cardiovascular disease doubles. US health authorities say that over half of all Americans with hypertension have poor blood pressure control.

The DASH diet is designed not only to bring down high blood pressure, but it is also a well-balanced approach to eating for people in general. The DASH diet encourages less sodium (salt) consumption and increase intake of magnesium, calcium and potassium, in order to help lower blood pressure. According to the Mayo Clinic, the DASH diet may also protect against stroke, heart disease, cancer, diabetes and osteoporosis.

How effective is the DASH diet?

Patients with pre-hypertension who followed the DASH eating plan experienced an average drop of 6 mm Hg in SBP and 3 mm Hg in DBP.

What is included in the DASH diet?

DASH diet includes plenty of fruits, vegetables, low-fat dairy products, and whole grains, as well as some legumes, poultry and fish, plus small amounts of red meat, fats, and sweets. It's low in saturated fat, total fat, and cholesterol. DASH diet focuses on portion size, consuming a wide variety of food, and obtaining proper amounts of nutrients.

A TYPICAL 2,000 CALORIE-PER-DAY DASH DIET MAY CONSIST OF:

6 to 8 daily servings of grains — includes pasta, rice, cereal and bread. One serving could be a slice of whole-wheat bread, ½ cup of cooked pasta, rice or cereal.

4 to 5 servings of vegetables — includes fiber- and vitamin-rich vegetables, including broccoli, sweet potatoes, or tomatoes. One serving could be ½ a cup of raw or cooked vegetables.

4 to 5 servings of fruits — rich in fiber, magnesium, potassium, vitamins and other minerals. One serving is 1 medium fresh fruit.

2 to 3 servings of low-fat dairy — major sources of calcium, protein and vitamin D including cheese, yogurt, and milk. For the DASH diet to work, these dairy products must be either low fat or fat-free. One serving could include 1 cup of skim or 1% milk.

Up to 6 servings of fish, poultry or lean meat — even though meats are rich in proteins, B vitamins, zinc and other nutrients, DASH dieters should keep these nutrients down and make sure the

mainstay of their diet is high in fruit and vegetables. One serving may include 1 oz of poultry (cooked, skinless), lean meat or seafood, 1 egg.

4 to 5 servings of nuts, seeds and legumes — good sources of protein, potassium, magnesium, fiber, phytochemicals, and other essential nutrients. Examples include sunflower seeds, beans, peas, lentils, almonds, peanuts and pistachios.

2 to 3 servings of fats and oils — For a healthy immune system, we have to consume adequate amounts of fats. Human body needs fat to properly absorb essential vitamins and other nutrients. One serving may include 1 teaspoon of margarine.

Up to 5 servings per week of sweets — DASH dieters do not need to give up sweets altogether but should keep their intake limited. One serving includes 1 cup of lemonade, ½ a cup of sorbet.

Alcohol — DASH dieters should consume no more than two drinks for men and one drink for women per day. 

GOING SHOPPING TIPS

1. MAKE A LIST. With a list in hand, you're less likely to stray from the DASH diet to the tempting but unhealthy foods.



2. EAT FIRST. If you shop when you're hungry, everything will look appealing, which makes it hard to resist those high-fat, high-sodium items.

3. BUY FRESH. Fresh foods often have more flavor and health-promoting vitamins, minerals and fiber, contain less sodium, fat and added sugar than processed foods.

4. READ LABELS. Most packaged foods in the U.S. have a Nutrition Facts label that can help you figure out how they fit into your DASH diet.

SODIUM LEVELS IN THE DASH DIET

The Standard DASH diet — the dieter can consume up to 2,300 mg of sodium each day

The Low Sodium DASH diet — the dieter can consume up to 1,500 mg of sodium each day

Daily Nutritional Goals in the DASH diet

(for a 2,000-Calorie Eating Plan)

Total fat	27% of calories
Saturated fat	6% of calories
Protein	18% of calories
Carbohydrate	55% of calories
Cholesterol	150 mg
Sodium	2,300 mg
Potassium	4,700 mg
Calcium	1,250 mg
Magnesium	500 mg
Fiber	30 mg

*1,500 mg of sodium in the low sodium DASH diet

WHO SHOULD FOLLOW THE DASH DIET?

Dietary Guidelines for Americans recommend the DASH eating plan as a model for healthy eating for all age groups! The whole family can enjoy the DASH diet as well. The DASH diet was developed to help people lower their blood pressure, lowering cholesterol and inflammation in children as well as adults.

In addition to being recommended by physicians, DASH is also endorsed by:

- The NHLBI (one of the National Institutes of Health, U.S. Department of Health and Human Services)
- The American Heart Association (AHA)
- The 2010 Dietary Guidelines for Americans
- U.S. guidelines for treatment of high blood pressure
- The 2011 AHA Treatment Guidelines for Women
- The Mayo Clinic

Resources available:

- NHLBI Deliciously Healthy Eating — Keep the Beat™ Recipes
- The Mayo Clinic DASH Recipes
- American Heart Association

DASH Menu Plans

- DASH Eating Plan: Your Guide to Lowering Blood Pressure with DASH
- The Mayo Clinic — Sample Menus for the DASH Eating Plan

Cookbooks

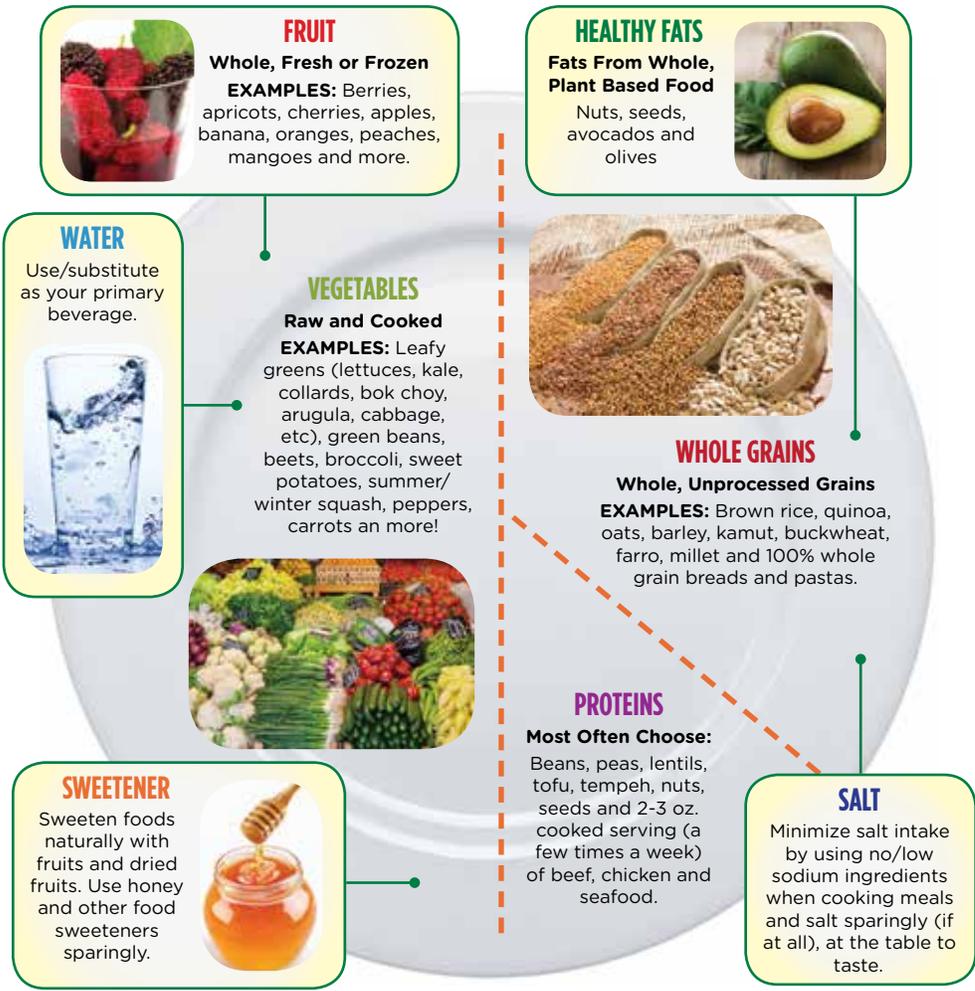
- Keep the Beat™ Recipes: Deliciously Healthy Dinners
- American Dietetic Association Cooking Healthy Across America
- American Heart Association Cookbooks

Books

- The DASH Diet for Hypertension
- Thomas Moore, MD, Laura Svetky, MD, et al...

How-to Build a Healthy Meal

Sometimes it can be heavy lifting when you try to plan meals with the freshest, most nutritious ingredients. So you throw in the apron and head for the drive thru. Instead, try using the four pillars of health and the plate method. It's surprisingly simple to build a healthy meal if you begin with that solid foundation. You'll quickly find your plate piled high with lean beef, chicken or seafood, seasonal fruits and colorful vegetables, delicious whole grains, beans, nuts and seeds. On top of that you'll be living a healthier, more energetic and longer life.



FILL UP ON NUTRIENT RICH FOOD

400 Calories of Oil	400 Calories of Chicken	400 Calories of Spinach, Beans and Eggplant
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BISON CHILI
Serves: 4 to 6

This chunky, veggie-packed chili is just the thing for cold-weather comfort or watching the game. A surprise ingredient—cauliflower—adds even more flavor.

- 1/2 pound ground bison**
- 1 large onion, finely chopped**
- 1 large carrot, finely chopped**
- 1/2 head cauliflower, stemmed and cut into small florets (about 3 cups)**
- 1 medium green bell pepper, finely chopped**
- 3 large garlic cloves, finely chopped**
- 2 teaspoons ground cumin**
- 2 tablespoons no-salt-added chili powder**
- 1 tablespoon apple cider vinegar**
- 1 can no-salt-added diced tomatoes**
- 1 can no-salt-added crushed tomatoes**
- 1 can no-salt-added kidney beans, drained and rinsed**
- 1/2 cup loosely packed cilantro leaves, chopped**

Heat a large Dutch oven or pot over high heat. When the pot is very hot, add bison and brown it, stirring often for 5 minutes. Add onion and carrot, and cook, until both begin to soften, about 5 minutes. Add 1/2 cup water to deglaze the pan, scraping brown bits from the bottom of the pan as the water evaporates. Add cauliflower, bell pepper and garlic and cook until vegetables begin to soften, about 5 minutes. Add cumin, chili powder, vinegar, tomatoes and beans along with 1 cup water. Bring to a boil; reduce to a simmer, cover and cook, stirring occasionally, until vegetables are fork tender, about 45 minutes. Serve garnished with chopped cilantro.

Healthy Eating Principles

WHOLE FOOD
Choose foods that are whole, fresh, natural, organic, local, seasonal and unprocessed.
Eliminate the consumption of refined, highly processed foods and foods void of nutrients, such as artificial flavors, colors, preservatives, sweeteners and hydrogenated fats.

HEALTHY FATS
Get your healthy fats from plant sources, such as nuts, seeds and avocados.
Minimize extracted oils and processed fats.
Choose leaner meats and seafood as well as low-fat dairy products.



PLANT-STRONG™
Reconfiguring the Plate: No matter what type of diet you follow including those that incorporate dairy, meat and/or seafood — eat more plants, like raw and cooked vegetables, fruits, legumes and beans, nuts, seeds and whole grains.
Eat a colorful variety of plants to ensure you're getting the best nutrients for your body, which leads to feeling satisfied.

NUTRIENT DENSE
Choose foods that are rich in nutrients when compared to their total caloric content — also known as foods with high density.
Build your menus around plant-based foods to ensure highly micro-nutrient-dense meals.
Choose foods with a wide spectrum of vitamins, minerals, phytonutrients and antioxidants.

Menu Planning



Make Every Day a Salad Day Serves 2

Fresh ideas for satisfying salads

Salads are a simple way to get creative in the kitchen — so many flavorful combinations! Try making your next salad with an array of your favorite greens. Then, add beans, grains, fruit, veggies, seeds, nuts...the possibilities are endless.

Strawberry Fields 2 cups spinach, 1 cup shaved fennel, 1/2 cup strawberries, 1/4 cup red onions, 3 T mint, 3 T white balsamic vinegar

Rocket & Fennel 2 cups arugula, 1/2 cup shaved fennel, 1 cup sunflower sprouts, 1/2 cup sliced pear, 2 T lemon zest, 1 tsp chili flakes and 2 T lemon juice

Chopped Asian Salad 1 cup tatsoi, 1 cup mache, 1/4 cup red peppers, 1/4 cup edamame, 1/4 cup cucumber, 3 T nori seaweed, 1 T toasted sesame seeds, 3 T lime juice, 1 T tamari and 3 T cilantro

Roasted Veggie Salad 2 cups butter lettuce, 1/4 cup roasted cauliflower, 1/4 cup roasted peppers, 1/4 cup roasted cherry tomatoes, 1/4 cup roasted red onion, 1/2 cup roasted sweet potato, 2 T rosemary, 1 t chili flakes and 3 T balsamic vinegar

Make a Super Smoothie

A nutrient-dense meal you can sip slow or take on the go. Serves 2

Blend a smoothie for an easy way to pack tons of nutrients into one meal. Start with juice, non-dairy beverages (like soy, rice or almond milk) or water then add your favorite fresh or frozen fruits, greens and spices, and blend until smooth. Smoothies can really hit the spot for a quick breakfast or an after-workout treat, and they're an easy way to pack in a few extra servings of fruits and vegetables.



Menu planning takes on a whole new meaning when you use ingredients that work well for breakfast, lunch or dinner. Fresh or frozen fruit goes in smoothies for breakfast, salads for lunch or desserts for dinner. Veggies are all-star menu mainstays for breakfast omelets, lunch wraps and dinner stir-frys. Many grains, nuts and seeds can be worked into all three meals. Use fresh or dried herbs to spice it all up!

Hearty Breakfast Bowls

This big breakfast is a great way to start the day.

It's the most important meal of the day, after all, so kick it into high gear with a hearty breakfast bowl. Use the chart below as a quick guide to mixing up a filling, tasty morning meal that's packed with nutrients.

BUILD A BETTER BREAKFAST IN THREE EASY STEPS:

1. Start with a base of whole grains, using water, juice or non-dairy milks to cook.
2. Then consider sweetening with fruits, and give it some texture with nuts and seeds.
3. Don't forget the spice during cooking or as a topping. You can also add a bit more juice or non-dairy milk if you like.

Almond Rice Brown rice, almond milk, chopped dates, toasted almonds, diced bananas and nutmeg

Apple Spice Oats Steel cut oats, apple juice, cinnamon, currants, nutmeg, toasted pecans and diced apples

Mango Quinoa Quinoa, coconut milk, water, frozen mango, vanilla, diced apricots, bananas and mangos

Spiced Millet Millet, soy milk, honey, cinnamon, toasted sesame seeds, toasted sunflower seeds, toasted hemp seeds and fresh berries



Quick Tip:

At the beginning of the week, cook a big batch of your favorite grains and use in multiple meals, including breakfast.

Cherry Oat Combine 3 cups of oat milk, with 1 cup of frozen cherries, 1/2 cup of dates, 2 cups of greens and 1 teaspoon of vanilla.

Super Green Combine 3 cups of water with 2 bananas, 1 cup of berries, 1/2 cup of kale and 1/2 cup of spinach

Apple Pie Combine 3 cups of almond milk with 2 apples, 1 banana, 1/2 cup of dates, 2 cups of greens, 1 teaspoon of cinnamon, nutmeg and vanilla.

Tropical Green Combine 3 cups of orange juice with 1 cup of frozen mango, 1/2 cup of dried apricot, 1 banana, 1 cup of spinach and 1 teaspoon of ginger.

Other options: Also consider adding 2-3 tablespoons of avocado, nut or seed butter, ground flax seeds, chia seeds, hemp seeds, unsweetened cocoa powder or wheat germ.

Quick tip:

Using frozen fruits and veggies helps keep your smoothie frosty and thick.

LIFE TAKES HEART

For 25 years, at Oklahoma Heart Institute we've known that living well takes a healthy heart. That's why our 41 specialists are dedicated to diagnosing and treating cardiovascular, metabolic and sleep problems with a team approach and unmatched, advanced technology. We tackle even the most difficult problems, so you can get better results.

When you need complete heart care, trust the doctors of OHI. We have what it takes so you can live well. Our patients are living proof.

TECHNOLOGY AND KNOW-HOW FOR RESULTS YOU CAN DEPEND ON.



Oklahoma Heart Institute

Nationally Recognized Cardiovascular Specialists

The Perfect Date

Ask anyone what's so great about a date, and they'll quickly tell you they're sweet. And rich. Literally, this food is the perfect date.

Unlike white sugar, which has no fiber, vitamins or minerals, dates are a natural sweetener. Push the sugar aside and use dates in its place to sweeten hot or cold cereal, in cakes, cookies, puddings, muffins, sweet breads, smoothies and salad dressings, as well as chopped into salads. They're also a great replacement for oil in dressings, supporting your heart health and your overall efforts to eat healthier.

Dates make the perfect party guest as well. Delicious hot or cold, look for an assortment of great date recipes on wholefoods.com.

You'll quickly see why the date will be your best new sweetie.

FUN DATE FACTS

- They come from a palm tree.
- They don't need refrigeration.
- They're portable.
- They're a great source of protein.
- They're high in potassium.
- They're a high-energy food.
- They've been used for centuries as a sweetener and for desserts.
- They have a laxative effect, so eat in moderation.

GREAT DATE IDEAS

- Slide a pecan inside a date. Voila! Instant pecan pie! (Very kid friendly too)
- Try dried dates. When fruit is dried, its sugar content quadruples and you eat less. A few dates are so satisfying you won't find yourself overindulging.
- Chopped dates are an excellent substitute for raisins.

COOKIE DOUGH BOY *Makes 24 Cookie Balls*

- 2 cups pecans**
- 1 cup unsweetened coconut flakes**
- 1/4 cup date paste (see below)**
- 8 pitted and chopped dates**
- 1 tsp vanilla**
- 1 tsp cinnamon**
- Dash of sea salt**
- 1 Tbsp coconut manna, or tahini**
- 1/2 cup raisins**

Place pecans and coconut flakes into food processor using the "S" blade and process until it resembles a flour-like consistency. Add remaining ingredients except for the raisins and pulse until batter sticks together. Remove batter and mix in raisins. Roll into balls and refrigerate or freeze until serving.

Optional: Coat cookies in additional coconut flakes or cinnamon.

DATE PASTE *Makes about 1 cup*

Dates are nature's candy and date paste is a wonderful, versatile sweetener.

1 cup dates, pitted

Soak dates in enough water to cover for 2-4 hours. Add dates along with 1/2 cup of the soaking water to a food processor or blender and process until smooth. Use more soaking water if a thinner paste is desired. Refrigerate any left over date past for future use.

NO-OIL BALSAMIC DRESSING

Makes 1 3/4 cups

Drizzle this tangy dressing over green salads or steamed veggies.

- 2 cups boiling water**
- 3 tablespoons packed chopped pitted dates**
- 1 cup balsamic vinegar**
- 3 tablespoons reduced-sodium tamari or soy sauce**
- 2 tablespoons Dijon mustard**
- 3 tablespoons nutritional yeast**
- 1 tablespoon onion powder**
- 1 clove garlic, minced**

Pour water over dates in a medium heat-proof bowl and set aside to let soak until soft, about 15 minutes. Reserve 1/4 cup of the soaking liquid and then drain dates and transfer to a blender. Add reserved water, vinegar, tamari, Dijon, yeast, onion powder and garlic and purée until smooth.

DOUBLE GREEN SMOOTHIE

Try this surprise smoothie for a quick breakfast packed with nutrients.

- 1 1/2 cups unsweetened non-dairy beverage, such as almond, rice or soy**
- 2 dried apricots or 4 pitted dates**
- 1 banana**
- 2 cups leafy greens, such as baby spinach, collard leaves or chopped kale leaves**
- 1/2 cup fresh or frozen berries**

Combine non-dairy beverage, apricots, banana, kale, spinach and berries in a blender and blend well until smooth.





CARROT-RAISIN BAKED OATMEAL *Serves 8*

Take oatmeal on the go with this delicious baked version, somewhat of a guilt-free carrot cake chock full of oats. Make in a pie plate for wedges or in a mini-muffin pan for bite-size servings.

- Canola spray oil**
- 2 cups rolled oats**
- 1/2 cup chopped pecans, toasted**
- 1/2 cup raisins**
- 1 teaspoon baking powder**
- 3/4 teaspoon ground cinnamon**
- 1/2 teaspoon fine sea salt**
- 1 cup lowfat (1%) milk or nondairy beverage**
- 2 eggs**
- 2 teaspoons pure vanilla extract**
- 1 cup shredded carrots**

Preheat the oven to 350°F. Lightly coat a 9- to 9 1/2-inch pie plate or a 24-cup mini-muffin pan with spray oil.

In a large bowl, stir together oats, pecans, raisins, baking powder, cinnamon and salt. In a separate bowl, whisk together milk, eggs and vanilla until evenly blended. Stir in carrots. Add carrot mixture to oat mixture and stir until evenly blended.

Transfer batter to the prepared pie plate or spoon into the muffin cups. Bake until firm and golden brown on top, 45 minutes for the pie plate or 30 minutes for the muffin pan. Let cool slightly. If baking in a pie plate, cut into 8 wedges to serve.



APPLE, SAGE AND TURKEY MEATLOAF

Serves 8

This moist and delicious meatloaf lets the deep, rich flavor of turkey shine through. Shredded apple adds moisture and a light sweetness to the mix, and sage makes it irresistibly fragrant.

- 2 apples, cored, peeled and grated**
- 1 large yellow onion, finely chopped (about 1 cup)**
- 2/3 cup Italian-style (seasoned) bread crumbs**
- 1/2 cup low-fat (1%) milk**
- 2 pounds ground turkey, preferably a mix of white and dark meat**
- 1/4 cup chopped fresh sage leaves**
- 1 large egg, lightly beaten**
- 1 teaspoon fine sea salt**
- 1/2 teaspoon freshly ground black pepper**
- 1/4 cup tomato sauce (optional), plus more for serving**



Preheat the oven to 400°F. Line a small baking sheet with parchment paper.

Combine apples, onion, bread crumbs and milk in a large bowl and let stand 5 minutes to soften bread crumbs. Add turkey, sage, egg, salt and pepper and mix until combined. Scrape the mixture onto the baking sheet. With water-moistened hands, shape the mixture into a loaf about 10 inches long and 5 inches wide. Spread top of loaf with 1/4 cup of the tomato sauce, if using, and bake until meatloaf is lightly browned and cooked through (an instant-read thermometer inserted into the center should register 165°F), 50 to 60 minutes.

Let meatloaf sit 10 minutes before slicing and serving. Serve with warmed tomato sauce if desired.



Healthy Eating with Whole Foods Market



AT WHOLE FOODS MARKET, shoppers often ask why the store smells so good.

"It's because everything in here is so fresh," says Sharon Stroud, Healthy Eating Specialist at Tulsa's Whole Foods Market.

At Whole Foods Market you won't find any of these ingredients — artificial colors or flavors, artificial sweeteners, hydrogenated oils, high fructose corn syrup, or synthetic preservatives in our foods. All the meat, dairy, and eggs at WFM exceed the animal welfare standards.

From the dairy to the deli, you will find many fresh, fragrant, and nutritious foods at

Whole Foods Market.

"We want people to live healthy lives. That means cooking with natural ingredients and foods that fuel you, rather than deplete you," says Stroud.

"We carry natural and certified organic produce," says Stroud. "In our bulk section, we carry many unprocessed foods including whole grains, beans and legumes, raw nuts and seeds, and dried fruits.

Whole Foods Market carries safe and efficacious supplements. The Premium Body Care symbol on many of our body care products means these products are free from harmful chemicals and are safe for us and the environment. We even carry many natural cleaning products.

"That's what differentiates us from other grocery stores," Stroud says. "Our standards are the highest in the industry."



Stocking your pantry

REMOVE

Refined sugar White sugar, cane sugar, brown sugar, corn syrup, alternative sweeteners (agave, maple, brown rice syrup)

Refined salts All forms of white refined table salt

Extracted oils Canola oil, olive oil, vegetable oils, nut & seed oils, spray oils

Refined grains, flours and pastas White rice, white flours, white and refined pastas

INCLUDE

Sweetness from fruits Fresh fruits, dried fruits, fruit juices, honey, minimally processed concentrates

Minimal salts Low sodium shoyu/tamari, miso, seaweeds

Fats from whole food plants only Avocado, olives, capers, nuts, seeds, etc

100% Whole grains, flours and pastas Examples include quinoa, millet, amaranth, whole rice, farro, hulled barley, kamut

Spices impart flavor to stimulate the digestion.

Stocking your fridge

REMOVE

Non lean meat, seafood Processed meats, barbecued meats, luncheon meats, bacon

Non lean, processed cheese American cheese

Liquid dairy (full fat, low fat and nonfat) Dairy milk, cream, butter

Eggs Remove all eggs

INCLUDE

Leaner meats and seafood, plant-based options 2-3 oz. portion or less of meats and seafood, or instead use plant proteins such as beans, tofu, or tempeh

Leaner cheese

- 1 oz portion or less, use as a garnish
- Examples include feta, goat cheese, and low fat/part skim mozzarella

Non-dairy alternatives Soy milk, almond milk, rice milk, oat milk, etc

Egg alternatives for baking Silken tofu, Ener-G egg replacer, applesauce, flax seeds, bananas, soy yogurt, tapioca/potato starch

Plenty of fresh and frozen vegetables and fruits!!!



HOMEMADE CHAI TEA Serves 4

Making this tea from scratch is easier than you might think. Enjoy hot or iced.

- 1 cinnamon stick
- 6 whole green cardamom pods
- 6 whole cloves
- 1 (1-inch) piece ginger root, peeled and thinly sliced
- 4 whole black peppercorns
- 3 cups water
- 2 single-serve black tea bags or 1 tablespoon loose black tea
- 2 tablespoons raw honey
- 1 cup unsweetened coconut milk

Ingredient Options: Use non-dairy milk for a vegan version. Place cinnamon, cardamom, cloves, ginger, peppercorns and water into a small pot and bring to a boil. Cover, reduce heat and simmer for 5 minutes. Remove from heat and set aside to let steep for 10 minutes. Return pot to the heat and bring to a boil. Remove from heat, add tea, cover and set aside to let steep for 3 to 5 minutes. Strain through a fine mesh sieve, discarding solids, then return liquid to the pot. Stir in sugar and milk and heat over low heat for 1 minute. Pour into cups and serve.



Desserts

Chocolate Mousse. Banana Ice Cream. Blueberry Cobbler. You've got to love the glorious sweet stuff, right?

Almost everyone has a sweet tooth. But, dessert doesn't necessarily have to mean sugar highs and gluten gluttony. By replacing refined flours and sugars with more nourishing ingredients like raw honey, applesauce, dates and nuts, spices and dried fruits, you can have your cake and eat it too!

Try these irresistible dessert recipes from Whole Foods Market's Health Starts Here program. They fall into the 4 pillars of healthy eating — whole unprocessed foods, plant strong, healthy fats from whole foods, and nutrient dense. Finally, the delectable tastes you crave without all the guilt. Sweet!

A FEW SWEET FACTS

- Overindulgence in sweet foods such as cakes, cookies, candy, soft drinks, and other sweet treats will crowd out the important nourishment from your diet. This can result in nutritional deficiencies as well as promote obesity.
- Our sweet tooth was given to us to help us seek out the nourishing fruits that provide vitamins, minerals, antioxidants, and fiber. Replacing the desserts made with refined flours and sugars with more nourishing ingredients is easy and the desserts are really delicious.

DATES VERSUS WHITE SUGAR AND FLOUR

Refined carbs like white sugar and flour are empty calories, which rob us of our valuable stores of vitamins and minerals. And, when we eat too much of them causing wild blood sugar swings, we need more and more to satisfy our cravings. Consuming sugar has been linked to fatigue, nervousness and headache, as well as obesity.

That's why natural sweeteners like dates are better for us. They're a great energy booster and provide nutritious sources of vitamins and minerals.

Use them in desserts, oil free salad dressings and as a snack by themselves



CHOCOLATE MOUSSE

Your guests will never suspect what secret ingredients are in this dairy-free chocolate mousse. Make the day before and chill in individual serving glasses.

3/4 cup raw cashews

1 cup packed pitted dates (about 20)

1 (15-ounce) can pureed organic butternut squash

3/4 cup unsweetened coconut milk beverage, more if needed

1/4 cup unsweetened cocoa powder

1 teaspoon vanilla extract

Fresh raspberries (optional)

Grated coconut (optional)

Place cashews and dates in a medium bowl and cover with very hot water. Let soak for 2 hours to soften. Drain well.

Place drained cashews and dates, butternut squash and coconut milk in a high-powered blender or food processor and process until smooth (this may take 1 to 2 minutes). Add cocoa and vanilla. Process again, adding a bit more coconut milk if needed to make a smooth, mousse-like texture. Chill at least 1 hour or until ready to serve. Garnish with raspberries and coconut.

BANANA ICE CREAM

Peel some ripe bananas and break into several pieces. Wrap in waxed paper and put in a freezer bag. Freeze overnight. These can be used for smoothies and banana ice cream.

To make ice cream in a Champion Juicer, put blank in shaft cover rather than the juicing screen. Push frozen banana pieces through the juicer and the machine will homogenize to the consistency of ice cream. Serve immediately. Top with chocolate sauce if desired.

To make ice cream in a food processor, put small chunks of bananas in the processor with the S blade and add small amounts of lite coconut milk and process to ice cream consistency. Serve.



RAW CHOCOLATE SAUCE

- 1/2 cup raw cacao
- 1/2 cup raw honey
- 1/2 cup raw smooth cashew butter
- 1 tsp. vanilla

Place all ingredients in the food processor and process into a thicker sauce - about 2 minutes.

BLUEBERRY CREAM PIE

Crust

- 1/4 cup dates, pitted, soaked
- 1/2 cup walnuts
- 1/4 cup shredded coconut

Filling

- 2-3 medium bananas
- 1 lb. fresh blueberries of choice (or frozen)
- 1/2 cup dates, pitted



1. In a food processor, using the "S" shaped blade, blend the crust ingredients well.

2. Press mixture firmly into the bottom and sides of a pie plate, forming a crust.

3. Slice the bananas into 1/4 rounds, leaving 1/4-1/2 of one banana for the creamy filling. Cover the bottom of the pie shell with a layer of banana pieces.

4. In a food processor, blend one cup of blueberries with the remaining piece of banana and 1/2 cup of dates. Mix in the remaining blueberries (whole). Pour this over the sliced bananas in the pie shell. Garnish with walnuts, other berries, etc. Chill and serve.

****Blueberries have pectin in them, so when you chill the blended blueberries they will set and make a firm pie.*

YUMMY NO BAKE CHOCOLATE CAKE

- 2 cups raw walnuts
- 1/2 cup chopped, pitted dates
- 3/4 cup cacao powder
- 3 tbsp. raw clover honey
- 1 tsp. vanilla extract
- 1/4 tsp. Himalaya pink salt
- 1 tbsp. Coconut butter
- Sliced strawberries

In a food processor, chop the walnuts for about 20 seconds until a sandy consistency is achieved. Do not over process or the cake will be oily. Add the pitted dates and pulse 4 or 5 times to mix the dates and the walnuts. Add the cacao, coconut butter, vanilla extract, honey, and salt and process for about 15 seconds or until the mixture comes together in a ball.

Lightly press into an 8" square baking dish to form a cake. Top with sliced strawberries. For a more decadent cake top with the Cashew Vanilla Frosting.

CASHEW VANILLA

FROSTING

- 1/4 cup cashew butter
- 1-1/2 tsp. raw honey
- 1-1/2 tsp. coconut butter
- 1/4 tsp. vanilla extract



Place all ingredients in a blender bowl. Blend all ingredients until smooth. Refrigerate to cool and thicken if necessary. Try using half of the water to start out and add more if needed to get the nice frosting consistency.

Store cake in the refrigerator.



POWER FLOURS

- **WHOLE WHITE WHEAT FLOUR** A whole grain flour from a softer wheat berry that grinds up quite a bit finer than the regular whole wheat flour (hard red winter wheat). It makes an excellent substitute for white flour in recipes.
- **WHOLE GRAIN SPELT FLOUR** An ancient wheat, the very first wheat that was cultivated. Spelt has a nice nutty flavor and has a higher protein and fiber content than the hard red winter wheat (which is typically used in breads). It can be used for traditional wheat flour in most recipes 1 to 1.
- **BARLEY FLOUR** Substitute up to 1/3 the amount of flour in cookie, bread, and muffin recipes. It has a slightly nutty taste.
- **QUINOA FLOUR** A complete protein and rich in minerals. This grain does not contain gluten. So it cannot be substituted in baking recipes for wheat flour. Substitute several tablespoons of quinoa flour for wheat in your recipe for added nutrition and protein.
- **CHOCOLATE OR CACAO** Chocolate has long been treasured as a rare and luxurious treat and in small amounts is actually good for your health (not to be confused with the milk chocolate candy that is high in fat and sugar, and has none of the benefits of dark chocolate). Studies have found dark chocolate is rich in antioxidants that may support healthy blood pressure and healthy cholesterol levels. Raw cacao powder and cocoa powder are subtly different. Raw cacao can be used in place of cocoa in recipes. Raw cacao is a dietary supplement as well as a food ingredient that some people use in an attempt to better their health.

Sweet Endings



During the holidays, all of us eat too much sugar, which can have an adverse effect on our immune systems. This scrumptious pumpkin pecan cookie will satisfy your sweet tooth without the use of refined sugar. The bonus here is that it contains something most refined desserts do not — nutrients and fiber. So you can have your dessert and eat it too!

How sweet is that?



PUMPKIN PECAN COOKIES

Makes about 30 cookies

- 2 cups pecans, toasted and cooled**
- 1/2 cup rolled oats**
- 1 cup whole wheat pastry flour**
- 1 teaspoon baking soda**
- 1/2 teaspoon sea salt**
- 1 teaspoon ground cinnamon**
- 1/4 teaspoon ground cloves**
- 3/4 cup puréed pumpkin, or cooked fresh pumpkin**
- 1 tablespoon orange zest (from 2 small oranges)**
- 3/4 cup freshly squeezed orange juice (from 3 small oranges)**
- 2 teaspoons vanilla extract**
- 1 cup chopped, pitted dates**

Preheat oven to 375 F. Put pecan and oats into a food processor. Pulse until a fine meal forms. Add flour, baking soda, salt, cinnamon, cloves and pulse to combine. Transfer to a large mixing bowl. Add remaining ingredients to the food processor. Blend until a smooth puree forms, scraping as needed. Form a well in the center of the dry ingredients. Scrape the pumpkin mixture into the well and fold all the ingredients together with a spatula. Scoop about 2 tablespoons of batter onto two parchment lined baking sheets, spacing them about 1 1/2 inches apart. Flatten slightly. Bake 20 minutes, until just browned. Cool briefly and serve or store in an airtight container.



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Carotid Artery Evaluation

1

Strokes rank 3rd among all causes of death behind diseases of the heart and cancer. To assess your risk for stroke, an ultrasound probe is placed on your neck to screen for blockages in your carotid arteries which supply blood to the brain. This is also a marker of heart attack risk. **15 minutes, \$40**

Cardiac Function Evaluation

2

To analyze cardiac function and calculate your Ejection Fraction (the amount of blood your heart is able to pump), an ultrasound probe will be positioned at various locations on your chest. **15 minutes, \$40**

Abdominal Aorta Evaluation

3

Most abdominal aneurysms are asymptomatic. They're the 10th leading cause of death in males over 55. To screen for aneurysm, an ultrasound probe is used to analyze your abdominal aorta. **15 minutes, \$40**

Ankle/Brachial Index

4

Blood pressures are obtained from your legs and arms to screen for peripheral artery disease. It not only assesses circulation to the legs, but also is a marker of heart attack risk. **15 minutes, \$40**

Cardiac Calcium Score

5

Coronary plaque can build up silently for years, and if untreated can cause blockages and heart attacks. This test measures the calcified plaque in the coronaries and is an indirect measure of the total amount of plaque in the coronaries. A multi-slice CT scanner takes a series of pictures of your heart in just a few seconds. **15 minutes, \$99**

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