# Heart Talk

*Heart Health Education*

**Dr. Keshava Aithal**
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63 Chapters on Cardiovascular Health

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# Calcium and Heart Disease

One test, Doctors do to understand a person's risk of heart disease is a coronary artery calcium scan which is a special type of CT scan. It measures the amount of calcium in the wall of the coronary arteries and generate a calcium score. The higher the score the greater the risk Heart attack. If your Calcium score is zero, your risk of heart attack.

Higher the score, higher the risk of heart attack Calcium makes up just a small part of the harmful buildup known as Plaque which narrows the coronary arteries. Plaques also contain cholesterol, inflammatory cells, and scar tissue. On the CT scan, the cholesterol is not visible, but the calcium is easily seen.

Because there is a close correlation between the amount of calcium and amount of plaque,calcium score is a good indicator of plaque inside the arteries There is always a question if the calcium in the diet or from the supplements you take affect your calcium score, according to a study published in one of the major cardiac journals, which was a 20 year study people 45 to 64 years of age, people who consumed the highest amount of calcium from their diet had less calcium in their coronary arteries Compared to people who consume the lowest amount of calcium.

Result is consistent with other well done research showing that dietary calcium is beneficial, calcium helps to lower blood pressure, possibly by improving the function of the lining of the blood vessels. It's one reason DASH diet, which stands for dietary approach to hypertension, includes two servings of low-fat calcium, rich dairy foods per day.

So it is better to get enough calcium from the diet. In the United States, 3/4 of the dietary calcium comes from dairy, products and foods featuring dairy. People who follow vegan diet, which excludes dairy and other animal based foods, may need to make sure that they get enough calcium. Many brands of almond milk, oat milk, or other plant based milks are fortified with calcium.

What about calcium supplements which are often recommended for post menopausal women to help prevent osteoporosis. Although some research suggest a link between high dose of calcium say 1000 mg daily supplement and heart disease, other research does not. Still, it is best to get your calcium from food.

Avoid supplements unless your physician recommends one and many experts advise no more than 500 mg pill per day taken with the food to improve absorption. Some of the Calcium rich foods include low fat yogurt,tofu, almond milk,oat milk,1%milk, ricotta,greek yogurt , kale, cheese, Sardines, salmon I hope this information will help some of you.

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# What Is Lipoprotein a and Why Is It Important for Southeast Asian People

Lipoprotein a, commonly called as L-P - little a or Lp(a) is often elevated in south east Asian people like Indians. It is often called the evil twin of familiar low density lipoprotein or LDL. Lp(a) Particles are similar to LDL particles, but an Apolipoprotein molecule wrapped around each one.

LP little a accelerates the buildup of fatty plaques inside arteries and inflammation even more than LDL does. High LP a level may double or even triple the person risk of heart attack. It also increases the risk of stroke and linked to narrowing of the aortic valve called aortic stenosis. LPL is not picked up by standard cholesterol test. It has to be ordered separately.

Many doctors have not commonly ordered this test because currently there aren't any FDA approved drugs to lower the elevated LP a. LP a levels are large genetically determined, eating and exercise habits have virtually no effect on the level of LP a Europian in Canadian guidelines already recommend that everyone gets tested for LP a levell at least once in their lives. In the United States, that recommendations are more conservative with testing suggested for the following groups 1.

People with premature cardiovascular disease, defined as people who have had a heart attack, stroke or peripheral artery disease or aortic stenosis before the age of 55 for men or before the age of 65 for women line. 2. People who have a father, mother, brother, or sister with premature cardiovascular disease. 3.People with very high LDL cholesterol level that is greater than 190. 4.

Close relatives like siblings, children, and parents of anyone with elevated Lp a level I would measure LP little level at least once in everyone, but definitely in South Asian people who have higher incidence of LP a level. People with high Lp a labels often have close family members who suffered a heart attack or a stroke in their 50s or even earlier.

Some of these people appear to be unlikely candidate for developing heart disease because they don't have any traditional risk factors, such as high LDL cholesterol, diabetes or high blood pressure. But many others have one or more of these risk factors and high LP a add to their overall vulnerability to heart problems.

High Lp a Is considered as risk enhancing factor that warrants more intensive LDL lowering in addition to paying close attention to a healthy lifestyle. Even though aspirin is not recommended routinely for primary prevention, inpatient with elevated LP little more and more cardiologists are recommending low-dose aspirin with elevated Lp a levels.
People with elevated Lp a level should consider consulting a cardiologist for specific advice. They should also have Lp a testing for their close family members.
Unfortunately presently available oral lipid loading drugs. Do not have any effect on LP a. There are 2 PCSK9 inhibitors- Evolocumab and alirocumab both have beneficial effect in lowering LP a .
However, these were given by injection twice monthly. There are novel RNA based drugs in development to lower LP a. And they are promising . Until they are available, options are to use this injectable, drugs or aggressive lowering of LDL cholesterol by statins.
It's always good to have LP a level tested at least once for everyone, more so if you have family history of early heart, disease, or stroke or family members with elevated Lp a level. I hope I did not cause confusion. Always talk to your doctor about this.
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# How Old Is Your Heart

I often joke with my younger Kannada Koota friends that I may be old, but I am young at heart This may not be true, but the analogy may have some truth. If your heart is aging faster than you are, you may be at increased risk for heart attack, stroke, or other cardiovascular events .I will try to explain to you how you can lower the risk.

Some of these information is obtained from a course I attended from Cleveland clinic sometime ago. If you are an adult, there is a good chance that your heart is aging faster than your chronological age.

Older heart increases your likelihood of fatal or non-fatal heart attack, stroke, and other vascular events at an earlier age, Aging heart has bigger chambers, thicker and stiffer walls,calcified arteries and valves and fatty plaques that can limit the blood flow through the arteries.

This process is called remodeling and often related to daily lifestyle habits that cause the heart to age prematurely. Adults with cardiovascular risk factors or family history should specially be careful of the role of their daily habits in their heart health.

There was a study done in 2019 in greater New York area, involving over 6000 adults between the ages of 30 and 74. Researchers use the Framingham risk scoring system to calculate the 10 year cardiovascular risk profile. Average heart was 5.7 years older than the persons chronological age.

Having an aging heart is not the end of the world. Changing harmful habits can slow, stop or reverse that aging process. Seven tips for staying young at heart: 1 Be Active-exercise increases your heart’s pumping power and helps to deliver oxygen throughout your body. It also changes your body chemistry by releasing endorphins, which make you feel good.

Regular exercise will help to keep your blood pressure and weight under control and improve the quality of your sleep. 2. Maintain Healthy weight-connection between obesity and heart disease is well established. Restricting your caloric intake can help you live longer, so long as you are appropriately nourished. 3. Eat a healthy diet.-avoid processed foods,fad diets.

A balanced diet, such as Mediterranean diet has been known to induce weight, loss and lower body mass index, blood pressure control, reducing fasting, blood sugar, total cholesterol, and markers of inflammation, all of these can reduce Cardiovasculat risk. Limit use of salt.

Focus on eating whole, unprocessed foods, including plenty of fruits and vegetables, which are high in fiber, water and nutrients but low on calories . Try to incorporate plant proteins like beans, nuts, and seeds. 4. Avoid Toxins -Avoid smoking, including vaping, avoid secondhand smoke. Limit or eliminate alcohol and foods with added sugar. 5.

Keep your blood pressure, cholesterol, and blood sugar in normal range. 6. Get enough good quality sleep.-too much sleep, too little sleep, or sleep that is frequently interrupted can trigger inflammation in the body, which can contribute to coronary disease.

Poor sleep can lead to poor blood pressure control even when appropriate blood pressure medications are being taken for optimal cardiovascular health. Adults should aim for 7 to 9 hours of good quality sleep. Anxiety,depression, loneliness, and other emotional factors can influence the sleep.

Taking steps to manage these risk factors can have a positive effect on sleep, weight, and overall health. Observe your partner's sleep habits. Excessive snoring, stop breathing for a brief period in the middle of the night, restless legs, excessive daytime sleepiness, and tiredness may suggest sleep apnea and this may need to be tested with sleep study.

Sleep apnea needed to diagnosed and treated to prevent future cardiovascular problems. 7. Get a check up, which should include a cardiac risk profile-Heart attack used to be associated with older adults, but no longer .One in every five heart attacks now occurs in someone under the age of 40.

In young women heart disease can be due to pregnancy related complications such as pre-eclampsia, gestational diabetes, or pregnancy induced hypertension, which are independent risk factors for cardiovascular disease. That's why it is unwise to wait until you become very ill or have health crisis to establish relationship with a physician.

Be patient. It takes years to develop cardiovascular disease, but every step you take towards lowering your cardiovascular risk will bring the age of your heart closer to your chronological age. Unfortunately, there are no shortcuts . Living a heart healthy life is a hard work, but making a few simple changes to your daily habits will pay a big dividend.

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# Should You Be Tested for Sleep Apnea?

Getting a good night sleep regularly is essential for cardiovascular health. That means everyone, specially with those with Cardiovascular disease should get at least seven hours of good sleep every night.

One common problem is obstructive sleep apnea syndrome, which is marked by brief pauses in breathing,often triggering loud snoring, grunting and gasps and choking noises These repeated breathing disturbances, cause your heart rate and blood pressure to go up, which puts stress on your heart. Unfortunately, sleep apnea goes undetected and untreated many times.

People often don't realize that they are periodically, gasping for air through out. the night, unless your spouse or other family members notice it. Some of the symptoms of sleep apnea include excess snoring, brief periods of pauses in breathing at night, restless legs, insomnia, excessive daytime, sleepiness, and tiredness.

Other symptoms of sleep apnea include trouble with concentration or memory, mood changes, morning headaches, vivid, strange or threatening dreams, and nightmares. Some people are so accustomed to sleep deprivation that they don't realize that it is a problem.

Sleep apnea occurs when tissues in the tongue or throat temporarily narrows or blocks the airway during sleep. While people of all ages and sizes can develop sleep apnea, it is most common in older people and those who are overweight or obese, and also people with heart problems, hard to control blood pressure and diabetes.

One way doctors assistedlikelihood of sleep apnea is with STOP BANG questionnaire

Diagnosing sleep apnea— If you think you might have sleep apnea check with your doctor about an evaluation. Sleep specialist are the best to evaluate this. You may want to ask your doctor for a referral to one,as these specialists are often better able to navigate insurance issues and recommend appropriate testing and treatment.

In the past diagnosing sleep apnea always required an overnight stay in a sleep lab , but nowadays home-based test, which are more convenient and less expensive are the norm. These home tests are recommended for people who have moderate to severe sleep apnea and who don't have other significant medical problems.

Treating sleep apnea. Lifestyle changes that can improve sleep apnea include. 1. Loosing weight,if needed 2. Avoiding alcohol within three hours of bedtime. 3. Not taking medication that relax your muscle in the evening. 4. Treating nasal congestion with medication or home remedy. 5. Sleeping on your side or elevating your head.

People with moderate severe apnea often need positive air pressure otherwise called CPAP therapy, which uses a small machine to deliver pressurized air through a mask covering your nose and sometimes your mouth to keep your air way open as you sleep.
Even people with mild sleep apnea, who feels sleepy during the day may benefit from CPAP.Anyway, talking to your physician is the best option for you.

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# Is It a Heart Attack or Heartburn??

You are awakened from sleep at 2 AM by a pain in your chest that causes you to sit up. A few minutes later, the pain has not resolved and you think " this is a heart attack or is this only heartburn?" It is very difficult to distinguish between the two problems, at times even for experts.

Some symptoms of heartburn and heart attack overlap so it can be hard for patients to understand what's going on . It would be wise to get it checked if you are concerned

Why heartburn hurts Heartburn occurs when a weak sphincter at the bottom of the esophagus allows corrosive stomach acid to back up into the esophagus. With no protective lining of mucus to shield its sensitive tissue, the esophagus receives a painful burn. Heartburn is generally felt in the epigastric area, which is the spot between your ribs just below your breast bone.

However, it may start in the abdomen and may radiate towards the throat. You may be able to associate heartburn with eating certain foods. The pain is likely to occur when you are lying down, leave a sour or acidic taste in your mouth and resolves if you take antacids such as Mylanta

Heart Attack Happens:: In contrast, pain in the chest or epigastric area that occurs with exertion or severe stress likely to be caused by heart disease. Although the discomfort may be experienced as burning sensation, a heart attack is classically described as pressure like, squeezing or tightness in the chest That may radiate the shoulders, arms,back or jaw.

This discomfort may be accompanied by other symptoms like shortness of breath, sweating, nausea, vomiting, unexplained, fatigue, dizziness, fainting or feeling of dread.

Women may be more likely to experience these other symptoms than men Pain that occurs with activity and disappears with rest is the classical Definition of Angina, which indicates the heart is not receiving adequate supply of blood when it is under stress. They still require medical attention. On the other hand, the pain of a heart attack in progress may not ease up with rest.

This is a potential medical emergency.Pain from heart attack can also start at rest.

Know your history and your body If you have history of either heart attack or gastroesophageal reflux disease (GERD ) and have experienced similar symptoms in the past, you are more likely having a recurrence of the same problem.

It is important to be sure,if you have a new symptoms which is not typical for heart burn and you have major risk factors for heart disease, such as diabetes, hypertension, high cholesterol, overweight and strong family history of heart disease , you should make sure it isnt heart problem mimicking hear burn.
They are exceptions every room, and both heart attack and Heartburn can mimic each other. If you are concerned, it is best not to self diagnose. Google may make you smarter, but would not make you a doctor.
If you think that you’re having a heart attack , please don’t procrastinate. You need immediate medical attention. You need to call 911 right away. Don’t have your friend or spouse drive you to the emergency room. Call 911 and activate the emergency medical system. Complications including Cardiac Arrest occurs during the early part of the heart attack.
God forbidden,if your spouse is driving and you have cardiac arrest, you won’t survive. Ambulance is your best bet.
Care at ED Often people avoid calling ambulance or seeking care at emergency department for fear of being embarrassed, if their pain turns out to be heart burn. You don’t want embarrassment to stop you from seeking care for a worrisome symptom. You don’t go to the emergency department only to be diagnosed with an important problem.
You also go thereto make sure that a serious condition is ruled out. If there is any possibility your discomfort might be caused by a heart attack, going to the ED could save your life.
We are fortunate to have pretty good Health Care system, but use it wisely to your advantage.
Finally, People with one or more risk factors are more likely to have heart attack, but that doesn’t mean people who don’t have heart attack are immune, even women, even people younger than 40.

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# Should You Be Worried About Your Waist Line

Too much of fat any type isn't healthy, but some forms are worse than others. The flab you can pinch between your fingers is known as subcutaneous fat, which lies just beneath the skin. A more worrisome type of fat lies deep within the abdominal cavity, padding the space between your organs. This is known as viscerall fat and it raises your risk of cardiovascular disease.

There is evidence suggesting that your waist circumference is a better predictor of heart disease than your body mass index. BMI is an indirect estimate of body fat based on your height and weight, it doesn't distinguish between different types of fat. People can have healthy BMI, but still have a large belly and visceral fat.

Another measurement, the waist to hip ratio correlates with visceral fat. But there is no need to do that extra hip measurement because waist circumference alone is strongly linked to visceral fat.

HOW TO MEAURE WAIST CIRCUMFERENCE: Wrap a measuring tape around your bare abdomen just above the upper border of your hip bone which you can easily feel on both sides. Usually the tape measures will cross your belly button, but not for everyone. Make sure the tape measure isn't twisted and that it stays taut, but not tight enough to compress the area. Don't suck in your gut or hold your breath. Check the number right after you exhale. For Indian women, the circumference should be less than 80cm and for Indian men it should be less than 90 cm. Ideally, your waist circumference should be no greater than 1/2 your height.

WHY IS VISCERAL FAT DANGEROUS Visceral fat is also a marker for ectopic fat, which refers to fat that accumulates inside organs such as liver, heart, and pancreas and muscles. This is closely associated with metabolic problems, specially, type two diabetes.

In addition, visceral fat, secretes hormones, and other inflammatory factors, collectively called Adipokines or cytokines which trigger a buildup of fatty Plaques inside arteries. Your genes, ethnic background, and gender, all influence how likely you are to accumulate visceral fat . South Asia people including Indians are at high risk. WHAT CAN YOU DO: 1.

Get regular exercise- situps or other abdominal exercises won’t shrink your belly fat. Instead, you need to burn calories to lose fat and build up muscles through a combination of aerobic and strength training exercise. At least 30 to 40 minutes daily of moderate intensity, exercise, and do strength based exercise for at least two days a week . 2.
Reduced carbohydrate diet-avoid foods and drinks with added sugars and other simple carbohydrates that spike blood sugar and increase your body to store fat. This include foods made with white flour such as pasta, pizza, pretzels, bread,and bagels, and also starchy foods such as white potatoes, white rice, and corn 3.
Time restricted eating-studies suggest that this strategy may lower blood sugar levels and reduce visceral fat. For example, you may eat only between 9 AM and 5 PM and fast during the other 16 hours .This not only limits calorie intake but also may start the body fat burning process.

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# Heart Disease -the Gender Gap

Heart disease has been the number one cause of death for both women and men in America. However, heart problems are still often under diagnosed and under treated in women. The overall prevalence of coronary artery disease is lower in women before menopause. Then they get jelous and they try to catch up to men. They do so in a matter of 15 to 20 years.
So by the time they reach age 65, their risk is almost equal to men. ( JOULOUSY DOES NOT TAKE YOU ANYWHERE ). The average age for first heart attack in men is about 65 years compared to 72 years in women. .
There are gender based gaps at every possible level, from women's awareness of symptoms to how they are treated in the emergency rooms and doctors offices Up until recently women are simply have not been well represented in clinical trials of heart related conditions. But the culture is slowly changing and some of the gaps are starting to close.
Recognition the problem. A 2019 survey by the American heart association found that only 44% of women correctly identified heart disease disease as their most common health threat compared with 65% in 2009. During a heart attack, chest discomfort often described as pressure, tightness or squeezing sensation is by far the most common symptom in both men and women.
Women are slightly more likely than men to have other symptoms, including nausea, fatigue, dizziness, and lightheadedness and shortness of breath. These unusual symptoms often delay the diagnosis and treatment of heart disease in women.
Treatment delay. Women tend to downplay their symptoms and delay seeking treatment. But healthcare providers may be contributing to this problem also. One 2022 study found that women who came to the emergency department with chest pain had to wait an average of 11 minutes longer to see a doctor compared to men who describe similar symptoms. This result in delay in the diagnosis and treatment. Studies have shown that women are also less likely to be referred for diagnostic tests to check for coronary artery disease. Finally women who receive treatment, either medications or surgical procedures for this condition tend to have worse outcome than men

Unusual heart attacks-the female factor. Most heart attacks happen when a blood clot abstract a narrowed coronary artery, supplying the heart. However, there are several less common scenarios can also disrupt the coronary blood flow, causing similar symptoms. These are- 1.
Myocardial infarction with non-obstructive coronary arteries- This refers to heart attacks in which the major coronary arteries do not have significant narrowing. There are several possible causes, among them are temporary spasm of the heart arteries called coronary artery spasm, blockage in a very tiny arteries called.MINOCA ( Myocardial Infarction with Nonobstructive Coronary Arteries ) which is five times more common in women. 2.
Spontaneous coronary artery dissection.(SCAD) which results from a tear in the inner wall of the coronary arteries which creates a flab or swelling. About 90% of people with this problem are women which may at times happen during pregnancy. 3.
Stress cardiomyopathy(broken heart syndrome) which typically occurs after severe emotional stress (Like sudden and unexpected death in the family)or physical stress, triggering a surge of hormones that alters the shape of the heart. More than 80% are women, but outcomes are worse in men.
Bottom line is that women should not ignore some of the unusual symptoms mentioned above and should seek prompt medical attention
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# Can Intermittent Fasting Improve Cardiovascular Health?

Fasting gets back to ancient times when people fasted in the hope of curing many diseases or for religious reasons such as ಏಕಾ ದಶಿ or Ramadan . Today, different forms of fasting remain popular for their possible health benefits, including weight loss and improve cardiovascular health.

One variation of intermittent fasting involves eating only during a certain time window .For example, you would have food only during the hours of 9 AM to 5 PM and then eat nothing during the other 16 hours.

Another approach is an alternate day fasting, which involves fasting or significantly limiting caloric intake for a full day. you choose certain days during the week when you eat nothing or limit your food intake. On the other days of the week you follow your normal eating habits.

Another version of this is 5:2 diet, you eat normally on five days, but restrict your calories on two non-consecutive days

Generally, intermittent fasting has a good safety profile. People with diabetes who is an insulin and certain medication to lower their blood sugar need to be cautious since they may develop significant low blood sugar and reactions. For them fasting isn't dangerous, but it requires careful planning with their doctors to minimize the risk of hypoglycemia

Intermittent fasting, probably helps to improve cholesterol levels and other cardiac risk factors because this practice promotes weight loss When you don't eat for extended period of time, your body switches fuel away from carbohydrate and start burning stored fat.

Intermittent fasting can be challenging in the real world, since it is often difficult to follow a strict eating schedule when you are also juggling various work, family, and social commitments. Intermittent fasting is most successful when people are ready to make strong lifestyle changes.

They use it as a tool to change other lifestyle changes that are affecting their weight and cardiovascular risk. Along with a healthy plant-based diet and regular aerobic exercise and strength building, exercise, and routine preventive care , intermittent fasting can have a safe and effective tool to improve your cardiovascular health.

Researchers found good evidence that intermittent fasting can lower: Waste circumference and weight Fat mass. Triglyceride levels. LDL and total cholesterol level. Fasting insulin level. Systolic blood pressure that is the first blood pressure number in a blood pressure reading

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# When Should You Have a Baseline Cardiac Examination?

It is not a bad idea for all adults to have base line Cardiac examination. It is especially important for anyone with symptoms that may suggest heart disease, such as chest discomfort, shortness of breath and palpitation or if you have risk factors for heart disease or if you have family history heart disease.

The purpose of a baseline cardiac exam is to identify any risk factors that increases your risk of developing heart attack, or stroke, so that you can take steps to modify your risk before it is too late. Heart disease takes many years to develop, so treating risk factors early can reduce the likelihood you will have heart attack in the future.

In a baseline cardiac examination, your doctor will take a complete personal history, family, history of heart disease, and find out whether you have any symptoms of heart disease and also discuss any risk factors you have. Then the doctor will do a complete physical examination including checking your Blood Pressure and in some cases may do an electrocardiogram

Doctor may also order the blood tests, including your total cholesterol, triglycerides, HDL cholesterol, and LDL cholesterol. He may check your blood sugar. It is not a bad idea to have Lipo protein a level done at least once and also obtain high sensitive C reactive protein level (CRP) which is a marker for inflammation.

He also checks your height and weight to assess your BMI and also check your waist circumference to determine if this puts you at risk. He may also check your neck arteries to make sure that you don’t have any evidence for blockage of the carotid arteries and also check the pulses in your feet to make sure that you don’t have peripheral arterial disease.

Your doctor also discuss your diet, eating habits, sleep, habits, and exercise, and also ask whether you smoke or not and also use any illicit drugs and over the counter medication. Based on these results, he may recommend you make some lifestyle changes or prescribe medication to lower your risk of heart disease.

Your primary care physicians are able to do a baseline cardiac examination, but many simply do not have the time. My advice to you all is to have a baseline cardiac examination either through your primary care physician or a cardiologist. Women are not exception.

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# Metabolic Syndrome

Metabolic syndrome is a constellation of conditions. A diagnosis requires at least three of the following 5 cardiovascular factors. 1. Obesity.-if your waist line is more than 90 cm for men or more than 80 cm for women 2. High blood pressure.-if your Blood Pressure is more than 130/85 3. High Triglycerides -if your triglycerides are higher than 150mg/dL 4.
Low HDL or good cholesterol-if your HDL cholesterol is less than 40 mg/dL for men or less than 50 mg/dL in women. 5. High blood Sugar- if your fasting blood sugar is greater than 110 mg/Dl. These people have Insulin Resistance. Normally, when you eat food, your body converts that food into dietary sugars.
Insulin is a hormone released by the pancreas that tells your cells to open up to that sugar and convert it into energy. With insulin resistance, the cells don't react well, and they are resistant to the effect of insulin Which result in excess sugar in the blood.
If you have any, three of the five risk factors mentioned above, you have metabolic syndrome. It's a common and dangerous condition that is steadily increasing in adults of all ages, largely as a result of obesity epidemic.
This syndrome significantly increases your risk for heart attack, stroke, and diabetes Having just one of the risk factor is bad enough, but having more makes the likelihood of bad health outcome is even greater. That is why the term metabolic syndrome was coined. It helps to identify people at risk for cardiovascular disease and diabetes.
Metabolic syndrome also increases the risk of developing liver disease, kidney disease, and sleep apnea
Diagnosis and treatment: You can measure your waist circumference to see if you have at least one risk factor. You can have your blood pressure checked and have your blood sugar, triglycerides and HDL level checked in doctor's office to see if you have metabolic syndrome
Triglycerides are a type of lipids that the body stores in fat cells and uses for energy. Problems begin when excess triglycerides circulate in the blood. The triglyceride levels above 150 -200 increases the risk of heart attack and stroke and raises the risk of death from cardiovascular disease.

Most of the cases of high triglycerides are caused by or worsened by weight gain, sedentary lifestyle, and diet high in fat and carbohydrates. So giving up or drastically, reducing your consumption of alcohol, saturated fats, sugar, and refined carbohydrates should be able to help to reduce the triglyceride level.
Regular exercise, weight reduction and if your Blood Sugar is elevated, bringing down the blood sugar level also helps.
3 most important things that increase your HDL or Good Cholesterol are not smoking, regular exercise and maintaining an ideal body weight
The good news is that you can actually reverse the metabolic syndrome. Losing weight is central to reducing many of the features. Lowering elevated blood pressure, lowering blood sugar and cholesterol level also place a major role in reducing your risk.
If you can do that and leave a healthy lifestyle-exercise daily, eating, healthy diet, getting enough sleep, not smoking and limiting alcohol intake-you will not only decrease your risk for heart disease and diabetes, but also increase your odds of leaving longer.
What to eat when you have metabolic syndrome? Having metabolic syndrome means you are probably overweight and also you have other conditions such as high blood sugar, high triglycerides, and high blood pressure. One of the best antidote is eating a healthy plant-based diet.
Instead of junk foods , eat a lot of vegetables, fruits, nuts, and whole grain, moderate amount of fish and poultry and limit red meat and processed meats. You loose more calories, than you are taking in, you will a have better chance of losing weight. Try to eat smaller portions and focus on foods high in fiber such as vegetables and legumes, which will keep you fuller longer.
Sprouted lentils or whole mung beans ( ಹೆಸರು ಕಾಳು) is great source of protein, very healthy and a great substitute as a snack. Don’t worry. Uncooked ಹೆಸರು ಬೇಳೆ doesn’t produce gas. Cooked once may. If it does, don’t blame me. Blame your digestive system .
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# Music and Cardiovascular System

On the eve of the Hemantha Ghana , I thought it was appropriate to touch upon effect of music on cardiovascular system. There is ample evidence suggesting that music may benefit people with cardiovascular disease. This effect appears to arise from music's ability to influence the autonomic nervous system, which helps to regulate functions such as your heart rate, breathing and blood pressure.
It also governs stress response and relaxation response. Just like practicing meditation or other calming rituals, listening to the music or singing, or playing an instrument helps to nudge the nervous system to favor the relaxation response. Vagus nerve which runs from brain all the way down to the abdomen, mediates the relaxation response.
Stimulating, vagus nerve not only helps to slow down your breathing , Blood Pressureand pulse rate, but also helps to decrease Inflammation which is a key culprit in heart disease. Studies have shown that increased heart rate variability (HRV) in people who listen to various types of music.
HRV measures the slight variation in the time between each heartbeat, which reflects the health of your autonomic nervous system. Higher the HRV values, the heart can quickly respond to rapid changes throughout the body and this resilience is linked to better heart health. Two studies looked specifically at the effect of singing, and they indicated that this practice also boosted HRV.
Here are some other findings from the studies. 1. Better exercise performance - Music may improve a person's workout either by increasing endurance, distance, or duration by making exercise feel less effortful. One of the most important benefits of music is in cardiac rehabilitation . Music iswell known to make patients get better sooner. 2 .
Lower stress hormone level.-2 studies have shown reduction in the stress hormone cortisol level in the saliva by regularly, listening to music , including one in people undergoing dialysis treatment. There appers to be improved cardiovascular survival rates among those with biggest drop in the cortisol level.3.
Lowers the blood pressure-at least one study has shown that listen to the music for 30 minutes or longer daily will help to decrease the blood pressure and heart rate. Type of music is also important. Light music or classical music is clearly beneficial, whereas rap music or rock music may increase the heart rate and blood pressure.

Chronically listening to loud music maybe detrimental to the heart. Listening to music is inexpensive, low risk(PROVIDED YOU KEEP THE VOLUME IN A SAFE RANGE) and this is easily accessible. There is no downside to using music to energize your workouts or to relax. Other examples of benefits of music. 1. You sing a song to a child crying and you will notice the baby stops crying immediately 2.
When you have a fight with your spouse, sing a romantic song and you will see a prompt positive response. 3. 4. Agitated Alzheimer's patient can be calmed by a good music. Patient recovering from stroke can improve their speech and movement with music therapy. So for the next Hemanta Ghana, I would expect more participants and give the organizers more headache.
You organizers for the HemanthaGhana 2026, start your music lessons now. If you need help, come to me and I know where to send you.

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# How Coronary Artery Disease Happens

JIM FIXX was an avid runner who died tragically from Heart Attack in July, 1984 at the age of 52 while running in route 15 in Vermont, near Hardwick. He ran every day in that route. He was the author of famous book , THE COMPLETE BOOK OF RUNNING. His autopsy showed 95% blockage in one artery, 75% in the second and 70% in the third.

Why I am saying this is to inform you that nobody is immune, specially, Indian population.

We often hear the word " hardening of the arteries". These people experience, pain or pressure in the chest during physical exertion or emotional stress. Resting release the discomfort, and this is known as Angina. If the discomfort failed to resolve, they were likely to have a heart attack.

While hardening of the arteries can still cause heart attack, it's more common cause is the rupture of a soft plaque, which often occurs without warning. To understand the dangers of soft, vulnerable or unstable plaque, it's important to know how coronary artery disease develops.

Coronary artery disease is caused by atherosclerosis and the process start early in childhood, way before symptoms appear in later years.

Exposure to unrelenting stresses and toxins such as cigarette smoking ,high blood pressure, high blood sugar levels, and other cardiac risk factors damage the normal smooth inner layer of the arteries called endothelium .Cholesterol, and other fats crawl between the layers of tissues in the walls of the arteries.

Body responds to the injured endothelium by sending armies of white blood cells to repair the damage. But the injured endothelium grabs these white blood cells and add them to the cholesterol deposits, forming plaques.

Unless the source of the stress or toxin is removed, the process of recruiting cells and growing Plaques will continue indefinitely.Hence the need for us to modify our risk factors.

Types of plaques. There are two general types of atherosclerotic plaques that can trigger heart attack and other signs of Coronary artery disease. HARD PLAQUES: Hard plaques, the type associated with hardening of the arteries, grow slowly, absorbing calcium in the process. Overtime, they narrow the inside channel, otherwise called lumen of the blood vessel.

As the artery fill with calcium, they become stiff and hard, gradually preventing the blood vessel from dilating, when increased blood flow is needed. It is this complication that produces the chest pain known as angina when exertion exceeds the amount of blood that can flow to the heart muscle.
When plaques grow large enough to prevent blood from flowing through the artery, a heart attack occur occur.
SOFT PLAQUES: Soft plaques otherwise called vulnerable Plaques or unstable plaques. They have a tendency to rupture before they have time to harden. These plaques are covered by thin fibrous caps. Usually they do not cause narrowing of the artery to have any symptoms. Because of the absence of the symptoms, people do not know that they have this kind of unstable plaques.
They have a tendency to rupture without any warning. When their fibrous, cap raptures it releases its fatty contents into the bloodstream. The body responds by releasing enzymes that cause the blood to clot and block blood flow through the artery and causes the heart attack.
This process usually happens when the plaques are young and small, and therefore symptoms do not occur until the plaque ruptures. A heart attack or sudden, cardiac arrest may be the first symptom of this kind of soft unstable or vulnerable plaques.
ARE YOU AT RISK Presence of calcium in the hard plaques makes them visible on calcium scoring. However, the presence of calcium filled plaques does not determine the risk of heart attack. Rather, it is how quickly angina appears with minimal exertion, how severe it feels and how easily it resolves that correlates with heart attack risk.
On the other hand, soft, calcium free Plaques can be seen on Coronary artery CT Scans. Unfortunately, at this time, there is no way to know whether you have a plaque that is vulnerable or unstable that might rupture .Your best protection againstheart Attack is to modify your risk factors as much as possible.
There is evidence suggesting that taking statin drugs may help to reduce the risk of plaque rupture.
As for as, coronary Artery Disease is concerned, prevention is not better than cure- PREVENTION IS THE ONLY CURE. As illustrated by the case of Jim FIXX, NO BODY IS IMMUNE.

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**Dr Keshava Aithal** ಅಂಕ 8 Double 0

# More About Your HDL or Good Cholesterol

Cholesterolis a waxy , pale yellow fat, travels through the bloodstream in small, protein covered particles called Lipo proteins that mix easily with blood. We need cholesterol to form cell membranes, make hormones and synthesize vitamin D among other things.

Your lipid panel includes your total cholesterol, your triglycerides, your HDL cholesterol or good cholesterol and bad cholesterol or LDL cholesterol. HDL has long been referred to as good cholesterol based on observational studies, dating back decades showing that people with high HDL levels are less likely to develop cardiovascular disease.

Recently many cardiologists believe that HDL may be more of a bystander rather than a “good guy” that helped to reduce heart disease risk. High HDL level are closely linked to behaves like healthy eating pattern and getting regular exercise, not smoking and maintaining an ideal body weight. Heredity is often associated with Low HDL.

Researchers have also discovered that the way HDL functions and its role in the body are more complex than previously believed. The analogy that often used to describe HDL is a garbage truck because it picks up extra cholesterol or garbage from the bloodstream and arteries and then transport it to the liver where it is recycled or disposed off.

This was the rational behind developing experimental drugs that raised HDL levels dramatically, as much as 60 to 100%. During the last several years, clinical trials tested five of these experimental drugs known as CEPT inhibitors in people with low HDL level.

These drugs reliably raised HDL levels, but they did not achieve the most important goal that is preventing heart disease,stroke and other complications from clogged arteries. This was disappointing. The thinking was, maybe it wasn’t the number of garbage trucks that matters but how good they were at picking up trash. That is, maybe the drugs increase the wrong kind of HDL cholesterol.

HDL comes in different sizes and shapes. Some types are spherical and some are doughnut shaped . Some types of HDL are great at plucking excess cholesterol from LDL and arterial wall, a process called reverse cholesterol transport, while some are not capable of doing that.

Study done in more than 18,000 patients and published in NEW ENGLAND JOURNAL OF MEDICINE last year showed that those patients who received intravenous injection of experimental drug failed to prevent heart attack, stroke or death from cardiovascular disease even though it reliably increased the HDL level. .
But this finding shouldn't discourage us from focusing on the factors we can control.- namely, making sure that your LDL cholesterol is below 100 or even lower if you have heart disease.
That is true even if you have a high HDL level, which shouldn't be considered overly reassuring or a reason to ignore an elevated LDL cholesterol ideally, your HDL cholesterol should be more than 40 if you are a man or more than 50 if you are a woman. As of now, there is no drug which reliably increases the HDL and decreases the Cardiovascular risk.
Niacin was used in the past which reliably increased HDL, but failed to decrease the Cardiovascular risk. Hence,Niacin is no longer used

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**Dr Keshava Aithal** ಅಂಕ 8 Double 0

# Non-HDL Cholesterol in Your Blood Test

When you have your lipid panel done, typically there are four numbers we see -total cholesterol, triglycerides, HDL cholesterol, and LDL cholesterol. Recently non-HDL cholesterol has been added. Non- HDL CHOLESTEROL is your total cholesterol minus your HDL cholesterol. This non-HDL is important for two reasons. #1. You don't need to fast to check your non-HDL cholesterol.2.

For many people, it may be as good as or even more reliable than LDL cholesterol for assessing heart disease risk.

Traditionally, doctors have focused, mainly on LDL cholesterol, mostly because large studies have shown that statins and other drugs that lower LDL cholesterol levels also decrease the risk of heart attack, stroke, and other cardiovascular problems.

Most labs don't directly measure the LDL in your blood sample.

Instead they use a formula to calculate your LDL, based on your triglycerides, total cholesterol, and HDL cholesterol. Your total cholesterol is not affected by food. However, your Triglycerides are affected by food intake. It goes up after eating. What and when you eat affect your triglyceride levels, so ideally, you should fast before the blood test which help to standardize the results.

It is only the triglyceride levels which is affected by food. Since non-HDL cholesterol calculation is not based on triglyceride value, you may not required to fast before the test. The results are similar, whether you fast or not.

Non-HDL cholesterol value includes all the atherogenic ( Artery clogging ) Lipo protein particles-not just LDL, but also very low density Lipoprotein otherwise called VLDL and intermediate density Lipoprotein otherwise called IDL. These particles which transport triglycerides to tissues are eventually transformed into LDL.

Many lipid specialist think that the non-HDL cholesterol values may be superior to LDL cholesterol value for predicting heart disease risk. Most of us eat every few hours during the day, which means we spend better part of our waking hours in a "FED" state rather than the "FASTING STATE". so results from non-fasting blood test better reflects our typical physiology.

And also the widely used online heart risk calculator use non-HDL cholesterol number.

The target for non-HDL cholesterol is no greater than 30 mg/dL above your recommended LDL level. For example, if your LDL goal is under 100 mg/dL, your non-HDL cholesterol level should be 130 or less. If your non-HDL cholesterol level is elevated, your doctor might further intensify your LDL lowering drug therapy or focus on lowering your elevated triglycerides.
Please note that I am not advocating having the lipid panel done non-fasting. I'm only telling that non-HDL cholesterol doesn't need to be a fasting blood specimen. it is only the triglyceride which need to be fasting blood test. Since, triglycerides are part of the lipid panel. We all ask for fasting blood test for lipid panel.

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# Benefits and Risks of Statins

## BENEFITS AND RISKS OF STATINS

STATINS have been in use since 1980s and the one question patients often ask is about the risks of statin therapy. It is a well known fact that elevated LDL cholesterol is one of the leading risk factor for heart attack, stroke and death from heart disease. In addition, studies have shown that lowering LDL cholesterol decreases all of those risks, as well as reduces the need for bypass surgery and stents. Lifestyle changes and diet can sometimes lower LDL, but they may not be sufficient to override the genetic factors that can cause high LDL. That's where medication's like statins are helpful. How does statin works? 1.

Haulting further progression of coronary disease and in some cases regression of coronary Artery disease. This may take more than a year of starting therapy and at times you need to go on high dose statin therapy and you need to bring your LDL close to 50 or even lower. There is no evidence that lower LDL is bad. 2.

Plaque stabilization- coronary artery plaque rupture is a central component in most patient with heart attack. Many patients have multiple unstable plaques in different coronary arteries, suggesting widespread inflammation in the coronary circulation. Ability of the statins to induce plaque stabilization and preventing its rupture may be an important mechanism of benefit. 3.

Reduced inflammation- inflammation appears to be another important factor, causing atherosclerosis and plaque rupture. Elevated C reactive protein( CRP ) which is a marker for inflammation, are associated with progression of atherosclerosis. Reducing the inflammation protects the risk of the first heart attack in apparently healthy males.

Statins help to reduce the serum CRP level and this affect is unrelated to lipid level 4. Reversal of endothelial dysfunction- Inner most layer of the coronary artery is called endothelium and abnormal functioning of this endothelium causes plaque buildup. Statins improve the endothelial function, and this helps to reduce plaque buildup. 5. Decreased throbus or clot formation - clot formation at the site of plaque rupture causes most heart attacks. Statin therapy has a variety of effect that may reduce thrombus or clot formation. This is called decreased thrombogenicity.

Side effects of statins. 1 Muscle aching - About 10% of the people who take statins may develop muscle aching, which subsides when they stop taking the statin. Sometimes, changing to a different statin may help to reduce the incidence of muscle symptoms. Sometimes using CO Enzyme q 10( CO Q 10 ) at a dose of 100 to 200 mg daily can relieve the symptoms of muscle aching.
CO Q 10 has no side effects and it is an over the counter supplement. Many times, I start the patients on lowest possible dose ( For example Rosuvastatin 2.5 or 5 mg ),starting at once weekly for several weeks and then twice weekly for several weeks, three times weekly for several weeks and then once daily and gradually increase the dose. This almost always helps to eliminate muscle aching.
If you have severe muscle aching, you should tell your doctor immediately to check for muscle damage called rhabdomyolysis, which is an indication to stop statin. ( These patients have very high level of a muscle enzyme called CPK which can be detected by a simple blood test ). This indeed is a serious condition. Fortunately, it is very rare.
In my 43 years of practice, I had only 2 patients who experienced this problem, even though I have used statins on thousands of patients over the years. Statins can also increase the risk of developing diabetes by about 10 to 30%, possibly by preventing your body's insulin from working well (. Insuline Resistance ).
This is more common in people with obesity and pre-diabetes who are already prone to develop diabetes.
Regardless, the cardiovascular benefit of statin therapy for these high risk patients outweighs the risk of diabetes.In addition, if test shows that a person‘s blood sugar is rising after they started taking statins, switching to a different medication that also lowers cholesterol and reduces cardiovascular disease risk can be done. These medications include.
EZETIMIBE ( ZETIA ),one of the PCSK9 Inhibitors like Alirocumab ( PRALUENT ) or Evalocumab ( REPATHA) . The later 2 are injectable and given twice each month. Inclisiran ( LEQVIO ) is another injectable medication, which is given twice a year. A latest one is Bempedoic acid ( NEXLETOL ) which is given orally.
All these medications , not only lower LDL level, but also decreases the risk of Heart disease, just like statins. The reason why we use statin more often is because of the fact that statins have long track record, extensively studied , very effective and very inexpensive.

Liver function test needs to be done about 2 months after starting statins. and then twice a year, since some people may develop abnormal liver function test. Concerns about the statins effect on the brain such as cognitive impairment or dementia are unfounded. Many large trials have specifically tested and found no decrease or increase in cognitive function overtime.
STATINS SHOULD NOT BE USED DURING PREGNANCY.
One more thing. Coronary artery disease is a progress disease. It starts early in life and progresses relentlessly for the rest of our lives. So we need to think about prevention, not just when you are 40 or 50 years old. You got to think about next 20,30,40 years or longer.
That is where statins help, in addition to all the life style changes like exercise, weight reduction, diet, smoking cessation, good quality 7-8 hrs of sleep at night. In most people, Low dose Aspirin for primary prevention is not needed ( That means before you develop heart attack or Cardiovascular disease). Sorry for the length of this write up.

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**Dr Keshava Aithal** ಅಂಕ 8 Double 0

# Triglycerides and Coronary Artery Disease

Elevated triglycerides, along with low HDL is the most common lipid abnormality in Indian population. This combination is a particularly high risk for developing Coronary Artery Disease in Indians. Triglycerides are the most common form of fat, both in the food and in your bloodstream .

The level of triglycerides increase after you eat, and therefore triglyceride levels must be measured after at least eight hours of fasting. Triglycerides in your blood come from fat in your food. But extra calories your body does not use such as those from sugar and alcohol also transformed into triglycerides.

That is why a healthy diet that limits sugar and refined carbohydrates such as white bread and white rice can help to lower triglyceride levels. Minimizing alcohol also helps as does exercise and maintaining healthy weight.

Normal level of triglycerides is less than 150 mg/dL. When the values are between 151 to 200 mg/dL, it is considered borderline high, those between 201 and 499 are high and those above 500 are considered very high. Very high level of triglycerides are often associated with pancreatic inflammation called pancreatitis.

When does risk start to increase? Several studies have shown high triglyceride levels is associated with risk of heart disease. Often, high triglycerides are associated with low HDL, pre-diabetes or type 2 diabetes, and abdominal obesity, and all of these are part of metabolic syndrome.

Study published in American heart journal in 2024, which included more than 14,000 adults who were followed for an average of 11 years showed that risk of heart related problems starts to rise with triglyceride level greater than 89 mg/dl- a level far lower than the 150 mg/dL value considered to be normal

Anyone with a triglyceride level of greater than 150 should be checked and treated for other underlying health problems which include diabetes, obesity, low thyroid level called hypothyroidism, and liver or kidney disease.

How to lower triglycerides Lifestyle changes can have a significant benefit in decreasing the triglyceride level. If people with high triglycerides follow a healthy diet, exercise regularly and lose weight, they can lower the triglyceride levels more than 50% 1. Choose carbohydrate wisely.

Cut back on easily digested carbohydrates like white bread, white rice, chips, sugar laden breakfast cereals, and beverages with lots of added sugar. 2. Watch your fat intake- Decrease your saturated fat intake from meat and butter, both of which can elevate triglycerides.
Try to eat more unsaturated fats from plants,use vegetable oils like olive oil, and consume fatty fish which bring down triglycerides. 3. Avoid excess alcohol- avoid alcohol consumption if your triglycerides are high 4. Regular exercise will help to lower triglyceride. 5. Weight reduction- if you're obese or overweight, reaching a healthy body weight can lower your triglycerides.
Dropping even just 5 to 10% of your weight can help.
Medication for high triglycerides - Many patients with high Triglycerides are already taking cholesterol lowering statin drugs, which lowers the triglycerides by about 30%. Drugs known as Fubrates which include fenofibrate( Antare,Tricor) and gemfibrozil ( Lopid) can lower triglyceride level by about 50%. Unfortunately, they do not lower the risk of heart attack or stroke.
But a drug made from a highly purified form of EPA (an omega 3 fat from fish), called icosapent ethyl ( Vascepa ) can lower Triglycerides by about 30%. When people with diabetes or heart disease take this medication along with the statins, it can lower the risk of heart attack/and death from cardiac disease by about 25%. Icosapent Ethyl which is a prescription only drug and is very different from over-the-counter fish oil supplements found in stores and online. Those non-prescription products also contain EPA , but often in combination with DHA, which is another omega fatty acid. The amount of EPA in these over-the-counter medications are much lower than the prescription one.
Also, these over-the-counter fish supplements are not regulated for purity or quality control. So best option will be to go for prescription form of fish oil or for non-vegetarians, consume fatty fish like salmon or mackerel 2 to 3 times per week.
Very high triglyceride levels, that is 500 mg/mL or above, sometimes have a genetic component. An extreme example is familiar hyperchylomicronemia syndrome, which affects just one to two in 1 million population. In people with very high triglycerides, blood appears milky from high fat levels, and people are prone for inflammation of the pancreas called pancreatitis.
So, bottom line is, if you have high triglycerides, please do not ignore. It can be easily treated with lifestyle measures and medications.

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# Silent Heart Attacks

It is true that most of the heart attacks are associated with sharp chest discomfort, often radiating to the arm, neck, or jaw, sometimes associated with shortness of breath and sweating. However, there are many more heart attacks which go unrecognized, and the symotoms are subtle such as, unexplained fatigue, and weakness, shortness of breath or nausea.

There are instances where heart attacks are truly silent without any warning symptoms, and discovered eventually in your doctors office during an electrocardiogram.

It is well known that overt heart attacks are linked to a higher risk of a stroke. heart Attack-Stroke Link Some of the heightened risk of stroke comes from shared risk factors, including higher blood pressure, diabetes, and elevated cholesterol levels, all of these are risk factors for both heart attack and stroke Sometimes when you have a heart attack, it damages the heart muscle in the wall of the left lower chamber of the heart called left ventricle.

This damage prevents the heart from contracting normally which will result in stagnation of the blood in the area of the damaged heart muscle and may form blood clots there. These blood clots may travel to the brain, causing a stroke.

Patients with diabetes are more likely to have silent heart attacks, probably because of the fact that they often have related problem called neuropathy ( involvement of nerves) which will prevent the pain perception. Sometimes people may attribute the discomfort of a heart attack to in digestion or muscle strain, or an illness such as flu.

Most of the unrecognized heart attacks are discovered on an electric cardiogram in your doctors office. Electrocardiograms are not full proof. Sometimes, you need additional test such as echocardiogram to confirm the diagnosis. People with known heart disease, often gets electrocardiogram regularly, but others may not get electrocardiogram on a regular basis.

By age 65, you should have at least one electrocardiogram done. The need for other tests will depend on your cardiovascular risk factors. Knowing that you have an unrecognized heart attack might be some what uncomfortable and unpleasant, but this information is useful. This knowledge may give you extra incentive to follow a heart, healthy diet, regular exercise, and regular medical check up.

If you have a silent heart attack and if your LDL cholesterol is more than 70 mg/dL, you should take cholesterol lowering drugs. You should also aim for good blood pressure control. If you have diabetes, your doctor may want to have you take certain newer medications known as SGLT-2 Inhibitors or GLP-1 Agonists.
These medications not only help the diabetes, but also can prevent heart attacks and strokes.
TYPICAL SYMPTOMS OF HEART ATTACK -squeezing type of discomfort in the middle of the chest. **-** Chest discomfort, which radiate to the shoulders, arms, and neck -Sweating
LESS TYPICAL SYMPTOMS OF HEART ATTACKS -shortness of breath -weakness or unexplained fatigue. -Nausea or vomiting -Dizziness or lightheadedness -Mid back pain or jaw pain.

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# Kidney-heart Connection

Healthy kidneys are important for cardiovascular health. Two most common cause of chronic kidney disease are hypertension and diabetes, and these are also the leading risk factor for heart disease. The cause and the treatment approaches for kidney disease and heart disease, often overlap.

It is known that most people with chronic kidney disease will die of heart disease before they develop kidney failure and require dialysis. Most people don't develop any symptoms until the kidney starts to fail and this often takes several years and at this point kidney function drops below 15%.

This results in accumulation of waste products and fluid in the body, which would cause loss of energy, trouble concentrating, decreased appetite, swelling of the feet and ankles and more frequent urination specially at night

A Vicious cycle Kidneys play an important role in regulating blood pressure by controlling fluid and sodium level in the blood. When the blood pressure rises, kidneys will help to remove water and sodium from the bloodstream into the urine for excretion. This will bring the blood pressure lower, by stimulating the fluid loss through urination.

On the other hand, when the blood pressure falls, the kidneys retain water and sodium to conserve blood volume and raise the blood pressure Patients with high blood pressure tend to retain too much water and sodium. This leads to added stress on the circulation within the kidneys and can cause weakening of the blood vessels inside the kidneys.

This can become a vicious cycle because kidney disease can cause high blood pressure in itself and uncontrolled high blood pressure is the cause of progressive kidney failure. Likewise, prolonged exposure to high blood sugar as occurs in diabetes causes the membrane of the tiny blood vessels known as capillaries to thicken.

This damages the capillaries within the kidneys and reduces their filtering capacity.

Detecting kidney disease: #1. Serum creatinine- Creatinine is released from the muscle cells into the bloodstream and it is one of the substances, the kidneys filter from the blood. If the kidney function declines, blood creatinine level rises. Levels greater than 1.2 mg/dL in women or 1.4 mg/dL in men may suggest early kidney disease. 2.

Glomerular Filtration rate , otherwise called GFR- this test uses the serum creatinine level along with your age and gender to estimate how well your kidneys are working. Value below 60 is a sign that the kidneys are not working properly. 3. Urine protein test- protein in the urine is an early sign of kidney disease.
A sensitive test is the urine albumin to creatinine ratio (UACR) and this can detect very small amount of the protein, called albumin, a condition known as microalbuminuria. A UACR above 30 MG/ gram may suggest kidney disease.
Who should be tested- People with cardiovascular disease, diabetes, and high blood pressure are higher risk for chronic kidney disease and should be checked at least once a year. Obesity, chronic viral infections such as HIV and hepatitis C, autoimmune disease, such as lupus, and also cancer should also be tested.
Certain medications which include all nonsteroidal anti-inflammatory agents such as Ibuprofen and Naproxen ( Advil, Aleve)can damage the kidneys.
Slowing Kidney Disease- -Heart healthy lifestyle, especially low sodium diet. -If you have diabetes and hyper tension using blood pressure drugs known as ACE Inhibitors and ARBs help to slow the progression of kidney disease -New class of medications originally designed to treat diabetes called SGLT2 inhibitors, help to prevent kidney damage, even in people who do not have diabetes.
They include Canagliflozin( Invokana ),Dapagliflozin( Farxiga ), Empagliflozin( Jardiance ) - Another medication called Fineranone ( Kerendia ) also helps to slow the progression of diabetic kidney disease, and also prevents heart related complications. -Avoid taking nonsteroidal, anti-inflammatory agents like Motrin and Advil long-term, without doctors supervision, since they can cause kidney disease

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# Calculating Your Cardiovascular Risk

Cardiovascular disease is the leading cause of death in the world. One of the secrets to long and healthy life is to prevent the consequences of atherosclerotic cardiovascular disease. The best place to start is by learning your cardiovascular risk so that you can take necessary steps to lower it If you don't know your risk, you won't have the opportunity to prevent it.

Your individual risk of suffering a serious consequences of atherosclerotic cardiovascular disease can be determined using a formula, design to calculate the percentage of risk, over 10 year period or life time. The lower the percentage,lower the chance and higher the percentage, the higher the chance you will suffer significant heart and vascularproblem.

Several different scoring systems are available. They share several common risk factors but differ from each other depending on the studies on which they were based. STANDARD U.S. CALCULATOR- The most widely used calculator in the U.S.is the Pooled cohort risk calculator which estimates the 10 year risk of first atherosclerotic cardiovascular event.

Input your age, gender, race, blood pressure, total cholesterol, and high density cholesterol, and answer yes or no to a few questions- whether you have diabetes, whether you were a smoker or Are being treated for hypertension. The calculator then calculates your risk as follows. -Low risk: less than 5% -borderline risk: 5%-7.4% -intermediate risk: 7.5% to 19.9% -high risk: more than 20%.

Generally speaking, those with risk of 7.5% or higher are candidates for Statin therapy. In spite of its popularity, this calculator is controversial because it omits 2 risk factors, namely family history, and the presence of inflammation. Family history is a very powerful risk factor. Physicians can modify the calculator to include it. Inflammation measured by a blood test for high sensitivity C reactive, protein. ( hs CRP ) is a proven predictor of risk. Without including these factors, the calculation may not be accurate. THE REYNOLDS RISK SCORE Whether or not either parent had a heart attack before the age of 60-and inflammation measured by hsCRP are included in this risk score calculator.

Therefore, this scoring system may provide a more accurate determination of cardiovascular risk in adults who do not have diabetes. People with diabetes are already at elevated risk of heart attack, and stroke anyway. THE EUROPEAN SYSTEM- U.S Pooled Cohort risk calculator ignores, geographical differences. European risk calculator do not.
The SCORE2 and SCORE2-OP calculators take into consideration, atherosclerotic cardiovascular disease risk in the country, where an individual resides ADDITIONAL CONSIDERATION- Risk calculators use the most common risk factors for cardiovascular disease, however, there are many other risk factors which can raise an individual risk.
Examples include elevated Lipo protein (a), high calcium score and diseases that increase systemic inflammation such as rheumatoid arthritis or lupus. Other factors are associated with pregnancy and female hormone changes. These include history of preeclampsia, gestational, diabetes, development of hypertension during pregnancy and menopause prior to age 40.
NEXT STEP- When once you know your risk, you need to act upon it. . This is best accomplished by having an honest discussion with your physician. Risk calculators generally provide 10 year risk estimates, but it's a good idea to lower the lifetime risk. This is because your cardiovascular risk will change as you age.
For example, a 50 year old man with mildly elevated LDL may have a low 10 year risk of cardiovascular disease, but his lifetime risk may be higher. A heart attack can change your life. A stroke can make you disabled. Your goal should be to prevent such adverse events.
Where to find these risk calculators -Pooled cohort calculator Risk Calculator:clinicalc.com/Cardiology/ASCVD/PooledCohort.aspx -REYNOLDS Risk Score:www.reynoldsriskscore.org/default.aspx -SCORE2 and SCORE2-OP: www.escardio.org/Education/Practice-Tools/CVD-prevention-toolbox/SCORE-Risk-Charts Keshava Aithal

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# Effect of Cocoa on the Cardiovascular System

One of the concern about eating chocolate bars is that they typically contain considerable amount of sugar, fat, and calories. The potential health promoting compounds found in chocolate include a category known as flavanols and these compounds are abundant in many plants, including Cocoa beans, which are the seeds of the cocoa tree.

Diets high in flavanols have been linked to improved cardiovascular health. These compounds often helps to improve Cardiovascular health,apparently by increasing the nitric oxide production, which helps to relax the smooth muscles of the wall of the arteries and improved blood flow and also may slightly decrease the blood pressure.

Dark chocolate often considered to improve blood sugar control which may help to prevent diabetes.

Cocoa beans are fermented, dried, roasted and ground into powder, which may be used in some food and beverages. In theory, adding cocoa powder to your diet maybe a healthier way to consume flavanols than eating Chocolate bars.

However, the flavanol content of cocoa powder varies widely and depends on several factors, including the genetics of the particular Cocoa plant harvested and the make up of the soil in which the crop was grown. But the biggest effect is in the way how the beans are processed.

It has been known that Dutch processed Coco is treated with a substance that make it slightly less acidic, which removes some of the bitterness, but also some of the flavanols. Since flavanols are not listed on the nutrition facts panel of food packages, it is not possible to know how much different brands contain.

If you like the flavor of unsweetened cocoa powder in your coffee or other drinks, there is no reason not to add it. But you probably won’t get very big dose of the flavors in just a teaspoon full of cocoa powder.

If you would like chocolate, having a couple of small squares of dark chocolate can be a good way to satisfy your sweet tooth and modestly boost your flavonol intake without adding excessive calories and fat . It is true that dark chocolates likely have more flavanols than milk chocolates but both chocolates still contain sugar and fat.

It’s always better to limit your chocolate intake, including dark chocolate to reduce your fat and sugar content. As we know, in terms of health related benefits, the best option is to eat plenty of fruits and vegetables to get enough flavanols, as well as heart healthy nutrients like fiber, vitamins, and minerals. Good sources of flavanols include berries, grapes, and black or green tea.

I am not opposed to eating small amount of dark chocolate, but keep it in mind about the sugar and the fat contents in them. Next time you want to show your love towards your spouse, make sure you take non- Dutch dark chocolate and have her eat no more than a couple of small pieces daily

Here we go again. This guy tries to take away another thing from us. Right? No, the bottom line is MODERATION!!!

Keshava Aithal

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**Dr Keshava Aithal** ಅಂಕ 8 Double 0

# Alcohol and Your Health

All alcoholic beverages, including red wine, increase the likelihood of cardiac risks and cancer. No studies have found that drinking red wine or any other alcoholic beverages, protect agonist, heart disease or any other diseases. There is good evidence that as little as one drink a day lead to hypertension or arrhythmia, specially atrial fibrillation.

It's also known that alcohol consumption increases the risk of certain cancers.

The idea that alcohol offered health benefit came from several small studies conducted in the 90s. In 1977, a large study, found that people who consume at least one alcoholic drink per day, were less likely to die from cardiovascular disease or any cause than those who did not drink alcohol at all. But later on it appears that the studies were tainted.

The conclusion that alcoholic beverages were not only safe, but actually beneficial were so appealing that objections fell on deaf ears.

Early studies suggested that red wine kept the arteries free from blood clot. Some people thought this explains why the French have low rates of heart disease, despite enjoying high intake of alcohol.

This FRENCH PARADOX was recently explained by the high consumption of monounsaturated saturated fats French consume, such as olive oil and lots of fish, which contains heart healthy Omega-3 fatty acids . It turns out the studies supporting the benefits of red wine were flawed. Subsequent studies found that no alcoholic beverages is good for the heart.

New findings Now, 30 to 35 years later more carefully conducted studies have shown that alcohol is not safe. Multiple studies published in the past two years have showed that even a glass of alcoholic drink a day increases the risk of developing hypertension or arrhythmia, especially atrial fibrillation.

While red wine contains, resveratrol, a compound known to have antioxidant properties, no studies have confirmed that amount of reservatrol in red wine is beneficial . For that matter, no study has shown that drinking red wine is healthier than drinking, any other alcoholic beverage.

Alcohol and cancer. Even before alcohol was thought to connect with cardiovascular health, link between alcoholic consumption, and cancer had been verified. Alcohol contains ethanol which the body converts to estrogen. High estrogen level increase the risk of breast cancer. The breakdown of ethanol into acetaldehyde can cause liver, esophagus and head and neck cancers.
It is well known that regular alcohol consumption can cause cirrhosis of the liver and also changes in the brain , in addition to increase the risk of peptic ulcer disease and bleeding from stomach. It can also cause weakness in the heart muscle,called Cardiomyopathy and Congestive Heart Failure.
According to WHO, alcohol was a factor in 75000 cases of cancer and 19,000 cases of cancer deaths in United States in 2020 alone. In addition, alcohol is known to be associated with traffic accidents, domestic violence and marital problems.
I am not advising you not to drink alcohol at all. Occasional glass of wine should not be harmful. Sticking to no more than moderate drinking is important. If you drink alcohol, enjoy it with a meal,which will slow down the absorption of alcohol into your blood stream. Because alcohol is high in calories, drinking excessive amount can lead to weight gain, which increases the risk of Diabetes
Keshava Aithal

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**Dr Keshava Aithal** ಅಂಕ 8 Double 0

# Post Menopausal Hormone Therapy and Cardiovascular Risk

In United States about 6 million women each day begin the menopause transition and 75% of them will experience, hot flashes and night sweats, two of the most common symptoms called VASOMOTOR SYMPTOMS OR VMS that can seriously interfere with quality of life.

For almost 2 decades, women have avoided taking hormone therapy( HT) for the relief of these symptoms for fear it could trigger a serious or fatal cardiovascular event. But new data gathered by American College of cardiology found that cardiovascular risk varies.

Careful review of recent studies showed that risk depends on how soon after menopause onset the hormone therapy or HT was started, the type of HT that was used and other cardiovascular risk factors a woman has. Studious have shown that HT is appropriate for younger, healthy, menopausal women with lifestyle limiting bothersome hot flashes.

As a result of extensive studies done, four major medical societies now recommend HT for the relief of menopausal symptoms in women who meet specific criteria. None of the medical societies recommend HT for the prevention of heart disease.

Timing is everything - Studies have shown that cardiovascular disease risk of hormone therapy were much lower in women ages 50 to 59 years than in older women. Risks were also lower for women who began HT within 10 years of menopause onset.

A 2015 analysis of 19 trials found that mortality and heart attack rates were lower in patients who started HT within 10 years after menopause, and stroke rates were higher in those who started HT more than 10 years after menopause.

Type of HT USED. HT comes in oral, transdermal and vaginal formulations. All have their benefits and drawbacks. Oral formulations can raise triglyceride levels and can cause blood clot in the legs and in the lungs. Transdermal patches are less likely to cause blood clots in the legs compared to oral formations and they have no effect on triglycerides.

Vaginal estrogen therapy is the safest option for women with the history of cardiovascular disease, stroke, blood clot in the legs or estrogen responsive cancers. This is because no significant amount of the drug is absorbed into the bloodstream.

What are your risk category? American College of cardiology summarizes their findings by stratifying cardiovascular risk into three categories. Low risk. : -Within 10 years of starting menopause. -normal weight. -normal blood pressure. -Physically active. -10 year cardiovascular risk less than 5% -Low risk for breast cancer
Intermediate risk : -Diabetes -Hypertension -Smoking -Obesity -Abnormal lipids -Metabolic Syndrome -Sedentary lifestyle -Autoimmune diseases such as rheumatoid arthritis. -10 year cardiovascular disease risk of 5 to 10% -Higher risk for breast cancer
High risk : -Presence of cardiovascular disease, including peripheral artery disease. -Conginital heart disease. -Stroke or mini stroke. -10 year cardiovascular risk of 10% or greater. -women with history of breast cancer
Who should probably avoid HT- Harmone therapy is not recommended in women with coronary artery disease, peripheral artery disease or history of stroke, heart attack, blood clot in the legs or in the lungs. It is also not recommended in women with uncontrolled cardiovascular disease risks, including uncontrolled blood pressure, high total cholesterol level and high triglyceride levels.
These risk should be well controlled before starting HT.
When high risk woman suffers from severe hot flashes, frank discussion with her physician should be done, and if the decision was to proceed with HT, transdermal HT is preferred. No form of HT is recommended for women who have experienced stroke or mini stroke
Bottom line HT is considered safe for women who are under age 60, within 10 years of menopause onset, have a 10 year cardiovascular risk less than 5%, no history of blood clot in the legs or in the lungs and no increase risk of breast cancer. These women are considered to be low risk of an adverse cardiovascular event from HT
The need for HT and type used should be evaluated on an yearly basis with the intention it should be used for the shortest time possible.
This review is only for educational purpose and the need for hormone therapy should be discussed frankly with your physician.
Keshava Aithal

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# Heart Healthy Cooking Oils

Adding more plant-based foods in your diet makes sense for a lot of reasons, including the fact that fats found in the plants, such as nuts, seeds, and olives, have mostly unsaturated fats, which is heart healthy Olive oil, a key component of the heart friendly Mediterranean diet is considered to be one of the healthiest oils to use for cooking.

It is just one of the many plant-based oils that are rich in unsaturated fatty acids, which are liquid at room temperature. If you read social media, including WhatsApp, you may have run across posts claiming that seed oils, such as canola, safflower, and sunflower oils are responsible for a host of health problems, including obesity, diabetes, and even heart disease.

But there is no significant scientific evidence to support these claims.

SEED OILS Edible oils derived from plants are commonly known as cooking or vegetable oils. They include seed oils which are extracted from the seeds of different plants, such as canola, corn,, sunflower and sunflower oils. Seed oils contain mostly unsaturated fats, which are heart healthy. They have other attributes also.

For example, canola oil has decent source of alpha lenolenic acid(ALA), the main vegetarian source of essential omega-3 fatty acids. Like EPA and DHA, which are the omega-3 fats found in fatty fish, ALA has anti-inflammatory and other effect thought to be heart healthy. Canola oil also contains Phytosterols which occur naturally in plants that may help to lower cholesterol

According to some, seed oils also have some unsavory attributes. After seeds are crushed, their oil is extracted with hexane, which is a solvent that is hazardous in gas form, but it evaporates during oil processing, and this lives limited if any residual hexane in the liquid form. Another concern involves trans fatty acids, which are linked to higher risk of heart disease.

Canola oil along with all other liquid oils sold in the supermarkets, does contain small amount of tran fats . These form during the deodorizing process that gives oil bland,neutral flavor. However, the amount of trans fats for 1 tablespoon serving is so low, the FDA allows these oils to include a “ contains zero trans fats” claims in their labels.

For these reasons, people should consider canola oil is safe and healthy option for cooking. It's also less expensive than olive oil. Some people avoid olive oil because of its reputation for having grassy, fruity or peppery flavor. Most supermarket olive oils have fairly mild flavor and once you heat it up, all the volatile flavor compounds disappear in about 10 minutes.

Some people get a lot of their calories from processed or restaurant prepared foods, including deep fried foods and that's where the real risk lies. Repeated heating the unsaturated oils up to high temperature creates trans fats and other harmful substances.

Restaurants don't change their oil often enough to get rid of those compounds, which likely contributes to the strong link between the frequent fried food consumption and heart disease.

What about coconut oil? Contrary to report in social media, and WhatsApp, coconut always is not considered as a good oil. It largely consists of saturated fat-80 to 90% of the fat in coconut oil is saturated fat., making it solid at room temperature.

American heart association recommends no more than 6% of your total calories from saturated fats, for those at risk of or who already have heart disease. This is about 13 g based on a 2000 cal diet. 1 tablespoon of coconut oil comes close to that limit, with the 12 g of saturated fat.

Many of the health claims for coconut oil are based on studies that used a special formulation of coconut oil made of 100% medium chain triglycerides-MCTs. MCTs are quickly absorbed and metabolism by the body, which is thought to promote a feeling of fullness and prevent fat storage.

However, the coconut oil found on most supermarket shelves contain mostly Lauric acid which is absorbed and Metabolized more slowly than MCTs. As a result, the health benefit reported from specially constructed MCT coconut oil cannot be applied to regular coconut oil. Bottom line is coconut Oil is neither a super food nor a poison. It is OK to use coconut oil in small amounts.

But you can use coconut for your hair as much as you want

Finally, it is OK to enjoy "fun food",such as french fries and other treats once in a while. The key is to consume seed oils.-and all other sources of fat-in moderation.

Keshava Aithal

HEART TALK NO 24

TO TAKE OR NOT TO TAKE DAILY BABY ASPIRIN.

OK Now you are all done with your Ugadi Celebration, it is time to get back to business. For years, doctors prescribed low-dose aspirin for many patients to prevent cardiovascular disease, including heart attack and stroke. However, aspirin is not harmless. It has bleeding risks.
Even though bleeding risk of low-dose aspirin is low, it can be significant and the risks and the benefit should be weighed against each other.
Until 2018 giving low-dose aspirin to prevent heart disease was a norm.
In 2018, there were three large clinical trials on the use of aspirin for primary prevention.-that is, in people with risk factors for heart disease, but no history of heart attack, stroke, stents or had heart surgery- this revealed while aspirin reduces the incidence of major cardiovascular events, it also increased the risk of hemorrhagic stroke ( Brain Bleed ) which could be devastating.
It also increases gastrointestinal bleeding, resulting in hospitalization, blood transfusion, or even death. These findings lead to the recommendation that most people with risk factor for cardiovascular disease, but no history of heart attack or stroke should avoid taking daily aspirin as a preventative measure.
How does aspirin work? Aspirin helps the heart mainly by preventing blood clots. Aspirin acts by blocking an enzyme called. COX-1. This prevents the formation of Throbaxane A2, a substance that causes platelets to clump together ( Aggregate) and makes platelets less sticky.
With less platelet aggregation, aspirin reduces the risk of blood clot formation in arteries, especially in arteries narrowed by atherosclerosis. Most heart attacks occur when an unstable plaque ruptures and blood clot forms, blocking the blood flow. Aspirin can reduce the likelihood or severity of such an event.
Why would many people continue to take aspirin againstdoctors advise. That is because - -Individuals think that it is better to be safe than sorry and they take it just in case.
They may think that aspirin, sold over-the-counter and commonly referred to as BABY ASPIRIN and can’t be very dangerous. -Their parents or grandparents took it, so they were raised with the concept that daily aspirin is cardio protective
Who should take daily aspirin ? In primary prevention, aspirin has very little role. However, it has a place in secondary prevention., Namely, in individuals who have history of heart attack, stroke, stent or bypass surgery, all people with peripheral vascular disease.
In these people, the benefits of aspirin outweigh risk So, these people should not stop taking aspirin without first discussing with their physicians.

Who else should take aspirin daily? Some cardiologist recommend aspirin for high risk primary prevention patient with low risk of bleeding. Who belong to this category requires clinical judgment. Aspirin is unlikely to be beneficial in primary prevention under the age of 40, since their cardiovascular risk is typically low. Aspirin is also not advisable for those older than 70 for primary prevention because of their bleeding risk is higher For primary prevention in patients between the ages of 40 and 70, the following factors will help to decide the need for aspirin. -10 year cardiovascular risk event exceeding 10% -Strong family, history of early coronary artery disease, at a young age -Significant elevation of Lipoprotein (a) level -Elevated coronary artery calcium score In these individuals, the benefits of low-dose aspirin in preventing cardiovascular disease exceeds their bleeding risk

Bottom line is that if your doctor recommends you discontinue aspirin, stop taking it. If your doctor advised you to take daily aspirin, never stop it unless discussing this with your health care provider.

Keshava Aithal

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**Dr Keshava Aithal** ಅಂಕ 8 Double 0

# To Take or Not to Take Daily Baby Aspirin

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# Effect of Sugar Substitutes on Cardiovascular System

Diet sodas, and other products that contain zero Calorie artificial sweeteners are popular, especially among people trying to loose weight. Recently, the safety of these sugar substitutes were questioned. The evidence that drinking artifiscial sweetener beverages helps people to lose weight is mixed.

Several small studies have hinted at potential health problems, including higher risk of cancer, kidney disease, and heart disease. Now a large study involving more than 100,000 people found a potential link between Artificial sweetners and increased risk of strokes, heart attacks, and related cardiovascular problems.

Erythritol and Xylitol are widely used sugar substitutes, and the studies recently showed they may not be as safe as previously thought. Consuming 30 g of erythritol, the amount often found in sugar-free beverages and other erythritol- sweetened products, lower the threshold for platelet activation, making blood more likely to clot. (Platelets are the cells in the blood that promote clotting).

Within 10 to 15 minutes of consuming these, blood levels of the sweetener increased 1000 fold and stayed elevated for several days . This study closely follows the results of a 2023 study that showed that Erythritol increased the risk of blood clots. Similar study done in June 2024, drinking a beverage containing 30 g of xylitol increase the platelet response in healthy volunteers.

Blood levels of xylitol soured higher than those of Erithritol, but dropped within six hours. Another study done in the United States and Europe have shown that elevated blood levels of either Erithritol or Xylitol are associated with increased risk of heart attack,Strole and death during three years follow up.

This does not mean you will develop a clot if you consume Erythritol or Xylitol, but it does mean you have an elevated risk of forming a clot with the potential to cause a heart attack or a stroke. This should worry anyone diagnosed with cardiovascular disease. But if you don’t have cardiovascular disease, you’re not off the hook. Remember, a first heart attack frequently occur in people who don’t think they have cardiovascular disease What are these sweetness? Erythritol and Xylitol are sugar alcohols, or polyols. Both sweetners occur naturally in small amounts in some fruits, a few vegetables and certain fermented foods.

Both sweetness are manufactured from fermented corn cobs, and, in the case of Xylitol, birch bark, as well. Sugar alcohols are used in many products. In addition to sugar-free candy and baked goods, measurable amount of one or the other can be found in salad dressings, jelly, yogurt, ice cream, peanut butter, Jell-O, catch up, energy drinks, protein bars, diet soda , and on and on.

Erythritol is 70% as sweet as sugar, whereas many artificial sweeteners are hundred to 1000 times sweeter. Truvia, for example, contains erythritol, as do some products made with Splenda and Stevia. But their packages may not reveal this fact. If the manufacturer doesn't claim that the product is low in sugar and calories, they do not have to tell anyone it contains a sugar alcohol.

Artificial sweeteners that appear to be the most problematic are Aspartame ( NutraSweet,Equal )- which was linked to higher risk of Stroke,acesulfame potassium (Sunnett, Sweet One) and Sucralose ( Splenda) are associated with higher coronary artery disease risk. Some experts think that artificial sweeteners may trigger inflammation and alter normal metabolism.

What about sugar? Chronically high blood glucose levels are known to cause inflammation, which may aggravate coronary artery disease. While many of the artificial sweetners are known to cause platelet to clot more easily,sugar had no effect on platelets at all. High level of glucose.-driven inflammation are serious, but only in individuals with diabetes.

It is well known that erythritol and and xylitol cause an immediate rise in the risk of blood clot formation, apparently in everyone.

Therefore, it is better to avoid artificial sweeteners and better to use fruit, table sugar, or honey as a sweetener. Just use them in moderation.

Sorry, I am trying to take away another thing from you all, but it is all for your safety and benefits

Keshava Aithal

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# Cardiovascular Benefits of Tai Chi and Yoga

## CARDIOVASCULAR BENEFITS OF TAI CHI AND YOGA

We often think of exercise as movement that either raises our heart rate ( aerobic exercise ) or builds muscles ( Strength Training ). But two other factors.- flexibility and balance-are also important for a well rounded fitness program. A yoga practice has the potential to target all four factors at the same time.

Recent studies suggest that yoga and tai chi have modest positive effect on several factors linked to cardiovascular health.

3 PILLARS OF EXERCISE- Aerobic exercise that gets the heart pumping such as running, biking, swimming, treadmill, elliptical, etc. are traditionally closely associated with heart health. They increase energy and stamina. Resistanc exercises, such as weightlifting, improve muscle tone and strength. Complementary exercises rely on slow, sustained movement that improve core strength and balance.

Most of the older people tend to fall not because their trip, but because they don't have the muscle strength to stay on their feet when they lose their balance.

HOW YOGA AND TAI CHI HELP- The relaxation response not only slows the heart rate and lowers blood pressure . It may also slow down inflammation and promote favorable changes in the blood vessel function that protect the heart.

As a mind -body practice, yoga, and tai chi, can achieve people to slow down and be more mindful about heart healthy behaviors, such as eating healthy and getting enough sleep. This habits along with positive emotions that yoga and tai chi aim to inspire, such as compassion and gratitude.-may also help to improve cardiovascular health

Multiple trials have shown that broad range of additional effects from tai chi and yoga. These affects appear to originate from the impact of yoga and Tai Chi on the sympathetic and parasympathetic nervous system. Practicing yoga and tai chi helps to tone the parasympathetic, nervous system, which controls, heart rate, blood pressure, digestion, urination, and other bodily functions.

At the same time, these exercises help the sympathetic nervous system keeps the "fights or flight" response in check An hour of yoga three times a week has been shown to lower blood pressure, heart rate, systemic inflammation, and episodes of atrial fibrillation.

In patients with heart failure, Tai Chi can reduce markers systemic inflammation, improve six minute, walk distance, and help to reduce depression. In addition, both tai chi and yoga can be more effective at producing weight loss. We think of exercise as being in motion, but different muscles use up a lot of energy when you are trying to hold yourself still, during yoga and tai chi

SPIRITUAL ASPECTS- Yoga and tai Chi are called mind- body strategies because the concentration involved in tensing and flexing muscles to move slowly and maintain balance requires mindfulness. Some often call this discipline as spiritual component. As you all know, yoga required no special equipment and can be practiced indoors or outdoors.

They are safe, well tolerated and highly adaptable to a wide range of people . Both practices are feasible for individuals who may not be able to sustain that cardiac output required for running.

There are other mind, body practices, such as relaxation, meditation, bio feedback, Reiki, and others. However, they lack scientific evidence of benefit for individuals with heart disease. There is enough, high-quality evidence exist on the benefit of tai chi and yoga on patients with heart failure that the American College of cardiology felt comfortable recommending them for clinical practice.

This is a holistic way of managing heart failure

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# White Coat Hypertension

White coat hypertension is a condition in which your blood pressure is high only when measured in a healthcare setting. These blood pressure spikes are presumed to be related to anxiety and stress. A 2024 review suggested a small but definite increase in the heart related risks in people with white coat hypertension.
People with white coat hypertension are also prone to develop full-time high blood pressure which is defined as reading of 130/80 mmHg or higher. Diagnosis of white coat hypertension requires people to check their blood pressure outside of the doctors' office, either with Home blood pressure monitor or more accurately by an ambulatory blood pressure monitoring.
The latter uses a device that automatically measures and records blood pressure every 15 to 30 minutes over a 24 hour period.
DANGERS OF WHITE COAT HYPERTENSION: White coat hypertension is defined as a blood pressure reading in the doctors office of greater than 130/80 but less than 160/100 and an average daytime blood pressure reading of less than 130/80. If your home blood pressure readings are truly normal, no need for treatment.
However, if you have some strikingly high readings, this intermittent spikes might still be damaging your cardiovascular system.
People with untreated white coat hypertension has a greater risk of heart disease than people whose blood pressure readings are always normal.
FEW POINTERS ABOUT HYPERTENSION AND BLOOD PRESSURE MONITORING: High blood pressure is a silent killer because most of the patients with this condition have no symptoms, yet it silently causes damage. However, blood pressure which is 130/80 mmHg or higher.-the official definition of high blood pressure-injures blood vessels, causing them to thicken and stiffen.
Left untreated, high blood pressure eventually damage the heart, brain and kidneys
That's the reason every adult should have his or her blood pressure checked and kept under control. If your blood pressure starts trending higher or you have already been diagnosed with high blood pressure, it is a good idea to buy a home blood pressure monitor and check your home blood pressure.
Heart attacks ,stroke and other serious health problems correlate more closely with home blood pressure than with office blood pressure.

It is always a good practice to have your blood pressure checked in both arms sequentially, at least once. If this has not been done, please have this done either at home or during next visit with your doctor. If the reading from one arm is higher than the other arm, it is the arm with higher blood pressure should be the one to follow.
Women who have mastectomy should generally have their blood pressure checked in the arm on the side, opposite to the breast that was removed. it is also a good practice to take your home blood pressure monitor to your doctors office periodically to compare the readings with the measurements taken in the doctors office.
If the readings vary by less than 10%, you can take it for granted that your home monitor is well validated.
TIPS FOR MEASURING BLOOD PRESSURE: The following tips can help you to get the most accurate blood pressure readings -Avoid caffeine, tobacco and exercise for at least 30 minutes before hand -Empty your bladder and don't cross your legs during blood pressure measurement.
A full bladder and crossed legs can reduce blood flow return to your heart and your body's natural response to this is to raise your blood pressure. -Sit with your feet flat on the floor -Place cuff on your bare arm (not over the clothing) with the bottom edge about a finger's breadth above your elbow. -Support your forearm by resting it on it table, with your elbow positioned roughly at heart height. -Sit quietly without talking or doing anything else such as reading, watching TV , argue with your spouse, etc., during the measurement
Current guidelines suggest that you should wait one minute and retake the reading and then average the two numbers.
If you're planning to buy a blood pressure monitor, do not buy a wrist cuff or a fingertip sensor, as they are not accurate and always buy one with upper arm cuff
I hope I have given you enough homework for the weekend for those who reads this. For those who don't read, you're on your own.😀 😀 🤣 🤣
Keshava Aithal

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**Dr Keshava Aithal** ಅಂಕ 8 Double 0

# Heart Attack vs Cardiac Arrest

Heart attack and cardiac arrest- these two terms often used interchangeably, and therefore often there is confusion about them. Heart attack and cardiac arrest are not the same thing. Every year in the United States about 720,000 adults sustain a first heart attack and 335,000 have a second or third heart attack . Fortunately, the incidence of cardiac arrest is much lower.

Only 9.3% of people who had a cardiac arrest outside the hospital setting survive. It is important to know the correct signs and symptoms of each, and how to respond promptly. The faster these events are treated, the greater the likelihood the individual will recover with minimal or no loss of function.

HEART ATTACK: A heart attack is a circulatory problem that happens when a coronary artery is blocked by a clot and prevents blood flow to part of the heart muscle. If the artery isn't reopened quickly to restore the blood flow, the heart cells supplied by that artery start to die.

Symptoms include discomfort in the center of the chest or other part of the upper body, breathlessness, sweating, and nausea. But the heart continues to beat and person remains awake most of the time.

WHAT SHOULD YOU DO: If you suspect someone is having a heart attack, call 911 immediately. If aspirin is available, give the person a 325 mg of aspirin to CHEW. This aspirin which is an anti-platelet Agent is sometimes sufficient to begin to break up the clot and restore blood flow. Please do not wait to see if symptoms will subside and do not drive the patient to the hospital.

Wait for the ambulance to arrive. Emergency personnel will assist the patient en route. Importantly they will call ahead so that heart team will begin treatment immediately upon arrival in the emergency room

CARDIAC ARREST: Cardiac arrest results from failure of the heart's electrical system. During cardiac arrest heart abruptly and unexpectedly stops beating. Heart pumps because special electrical cells signal the upper and lower chambers of the heart to contract synchronously.

During Cardiac arrest, an electrical misfire, cause the hearts lower chamber called ventricle to flutter or quiver, causing what is known as ventricular fibrillation. With no blood delivered to the brain and other organs, the person loses consciousness and drops to the ground.

Unless immediate intervention is done, the person will suffer what is known as SUDDEN CARDIAC DEATH .During a cardiac arrest, the person will have no pulse and stops breathing . Other symptoms can include irregular, or gasping or choking sounds known as agonal breathing. Sometimes, a heart attack can trigger cardiac arrest. First hour after the heart attack is the most crucial period.

During this period, there is electrical instability in the heart, causing ventricular fibrillation. Scar tissue from a heart attack can also damage the heart, leaving it, unable to pump effectively. Weakend heart is more prone for ventricular fibrillation.

Because cardiac arrest is so closely tied to coronary artery disease, the underlying risk factors are largely the same.

This include smoking, diabetes, high blood pressure, high cholesterol, physical inactivity, obesity, and family history of early coronary artery disease. Other heart conditions that can predispose people to have a cardiac arrest include weak heart muscle called cardiomyopathy, heart valve problems, and also inherited conditions that affect the hearts electrical system.

Some of these conditions affect young people. These include Long QT Syndrome, abnormality in the Rt Lower chamber of the heart called Right Ventricular Dysplasia and also abnormal thickens of heart muscle, called Hypertrophic Cardiomyopathy. We hear young athletes dying suddenly, and sometimes this could be related to one of the inherited conditions.

Some drug use increases the risk of cardiac arrest, particularly using drug such as cocaine or amphetamines or overdosing on opioids or other pain medications.

The risk of cardiac arrest increases slightly during and for up to 30 minutes after strenuous exercise, especially in people who are out of shape. But the odds are estimated to be one in 1.5 million during any exercise episode, which is far outweighed by the overall heart protection, benefits of exercise.

WHAT SHOULD A BYSTANDER DO DURING CARDIAC ARREST: An automatic, external defibrillator called AED will be necessary to restore the heart rhythm. In the meantime, CPR should be performed without delay and without interruption to keep oxygenated blood flowing to vital organs. One person should begin chest compression at the rate of 100 to 120 bpm, while someone else calls 911 and look for an AED.

CPR should not stop until Emergency Medical personnel arrive or an AED can be used to shock the heart back to life.

IT IS A GOOD IDEA FOR ALL OF YOU LEARN PROPER CPR TECHNIQUES.

KESHAVA AITHAL

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# Plant Protein for Your Heart Health

Some one asked me about getting enough protein from plant source. Here it is - Protein is one of the 3 macronutrients that are needed in large amounts ( others are fats and carbohydrates). Protein requirements are based on age,body size, activity levels and overall health. Dietitian often encourage people to cut back on carbs and eat less fat.

When it comes to protein, advice about the ideal daily amount has been mixed. Americans on an average consume one plant protein source for every three animal protein source.-ratio of 1 to 3. A study published in 2024 showed that changing the ratio to one plant protein source for every 2 animal protein source lowered the risk of stroke by 19%.

A ratio closer to 1 to 1 lower the risk of coronary artery disease by 27%.

The US government recommended dietary allowance (RDA) of 0.8 g of protein per kilogram body weight. Many experts recommend even higher amounts-between 1.2 and 2 grams of protein for kilogram body weight. That means for a healthy 150 pound person, eating between 80 and 136 g of protein each day

AMINO ACIDS; Proteins are composed of hundreds of Amino acids which help our bodies functions in many ways. While animal protein sources contain all amino acids, plant based protein sources do not. You have to eat variety of plant based protein sources to get all the amino acids. Getting adequate protein from plant based foods can be a challenge.

3 ounce of chicken breast contains 20 to 25 gr of protein while a half a cup of cooked beans has only 8 to 10 grams. Thus eyeballing equivalent serving sizes won’t work. You need to know the amount of protein in a portion size in order to achieve your protein goal.

PROTEIN REQUIREMENT FOR WOMEN: Women may need more protein for certain reasons which include pregnancy and breast-feeding. Research also shows that women are more prone to insulin resistance as they age-when cells in their muscles, fat and liver aren’t as sensitive to insulin’s blood sugar- regulating effects. As a result, older women should increase protein and fat intake and fewer carbohydrates. For both men and women, aging alone, increases protein needs, as we become more vulnerable to diminishing muscle mass and bone thinning osteoporosis, which strikes four times more older women than men.

Age related muscle loss, called Sarcopenia is a natural part of aging. After age 30, men begin to lose as much as 3% to 5% of their muscle mass per decade and most will lose about 30% during their lifetime. Strength training and protein are the two ways to build muscle mass and combat sarcopenia

Here are some examples of how much protein you can get from typical serving of high-quality protein sources : Black beans -half cup-7 g Nuts -1/4 cup-7 grams Quinoa -one cup-8 g Lentils -1/2 cup-9 g Baked tofu -3 ounces-13 g Tempeh-3 ounces-18 g Egg -1 large-6 g Cheddar cheese-1 ounce-7 g 2% milk -1 cup-8 g Greek yogurt -6 ounces-17 g Salmon-3 ounces-19 g Chicken/turkey breast-3 ounces-25 g

Another option is whey protein powder or vegan powders made from soy, peas or brown rice are a useful choice if you have trouble getting enough protein from foods. They can be added to oatmeal or smoothies or stirred into a glass of water. Because powders come with measuring scoops, they can help you track how many grams of protein you are consuming.

WATCH YOUR WEIGHT: While attempting to meet your daily plant protein intake, be sure to watch your calorie intake. All foods have calories. Nuts are high in protein, but also high in calories, so is cheese. Peanut butter is a great source of protein, but often contain unhealthy oils and sugar.

While it is OK to boost your daily protein intake with a smoothie, make sure the protein powder you use does not contain sugar or unhealthy, artificial sweeteners, or sugar alcohols.

Timing of your protein : Research suggests that body can make use of only 20 to 40 g of dietary protein at one time. So there is no benefit from getting most of your daily protein from one meal. Instead, try to evenly distribute your protein over breakfast, lunch, dinner, and snacks.

Also, to maximize muscle growth and improve recovery, consume a portion of your daily protein within 30 mts to 1 hour after your strength training workout, through either a drink or a meal.

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# Chest Pain Without Blocked Coronary Arteries

Squeezing chest pain known as angina occurs when heart muscle cells don't get enough oxygen rich blood. Most of the time, this is caused by build up of fatty plaques inside the coronary arteries which restrict normal blood flow. But sometimes, angina occurs from problems in the network of tiny blood vessels in the heart -a condition called coronary microvascular disease.

These people, when they undergo cardiac catheterization will have mild or no blockages. These individuals are often middle-aged women with cardiovascular risk factors, including obesity, diabetes, hypertension, and high cholesterol. In the absence of significant blockages, their symptoms often misdiagnosed as gallbladder disease, indigestion, or sometimes their imagination.

It is known that about 50% of the people undergoing coronary geography have no evidence of flow limiting plaques and yet many still experience symptoms of angina, typically doing exercise or mental stress. This used to be called SYNDROME X in the past. Today it is called. ISCHEMIA WITH NO OBSTRUCTIVE CORONARY ARTERIES( INOCA ).

OXYGEN SUPPLY DEMAND MISMATCH: Normal coronary arteries and their branches are able to regulate the flow to the heart muscle cells by dilating or narrowing, thus giving the heart oxygenated blood needed to perform it's pumping function. Regulation of the coronary blood flow to the heart is governed by chemicals, secreted by heart muscle cells, and the cells lining the coronary branches. This process happens at the level of the micro vessels, which are too small to be seen on coronary angiography. When this processe is disturbed, the supply of blood may not meet demand and symptoms consistent with those of the blocked coronary arteries occur.

WHAT GOES WRONG: INOCA comes in 2 main forms. In the most common form called microvascular angina, the inner walls of the smaller arteries may thick and loose their ability to expand and contract in response to the demand for increased blood flow, such as during exercise or during emotional stress.

In addition, the sheer number and total volume of capillaries (tiniest vessels) are lower in people with micro, vascular disease, compared to people who don't have this. Smoking, hypertension, high cholesterol, and type 2 cancers diabetes are risk factors along with obesity and sedentary lifestyle. The other less common type is called Vasospastic angina.

Muscles within the heart's arteries suddenly clamp down, causing spasm of the coronary arteries. This brief, temporary spasms blocks blood flow to the heart muscle resulting in reduced blood flow to the heart muscle. The same risk factors responsible for micro vascular dysfunction can lead to this problem, although smoking is particularly potent risk factor in this patient population.
There may be other courses also. Estrogen has a role in preserving microvascular and endothelial health. Because 60 to 70% of the patient with micro vascular dysfunction are women in their mid 40s to mid 60s, one hypothesis is that INOCA maybe related to the reduced estrogen level occurring around menopause.
On the other hand, spasm seems to be more common in men, specially, those of Asian descent.
TESTING FOR INOCA: Unfortunately, testing for micro vascular disease is not widely available in the US. The best non-invasive test for diagnosing or ruling out, micro vascular disease is POSITRON EMISSION TOMOGRAPHY ( PET ) stress testing. However,this test is not widely available The other way to diagnose microvascular disease require more specialized testing.
A coronary flow reserve.(CFR) test which measures how well the heart circulation can deliver blood under stress versus at rest . It can be done by placing a wire with sensors in the coronary arteries to measure the quantity of blood flow and resistance to flow at rest, and when the heart is stressed by administering a drug that dilates blood vessels,mimicking the effect of exercise .
By comparing the ratio of coronary blood flow under stress to that rest,microvascular disease can be diagnosed For testing for spasm, the operator injects very small doses of a drug that can provoke the spasm for a few seconds and watch how artery responds .
Patient with coronary spasm may briefly feel chest pain following the injection, and artery will be seen to spasm on the screen before the effect of the drug dissipates.
TREATING INOCA: The same risk factors that contribute to blockages in the larger arteries, such as high blood pressure, high cholesterol, smoking, and diabetes, are also common in people with microvascular disease.
As a result, many people with coronary artery, micro, vascular disease also receive other common medication, such as cholesterol, lowering drug, high blood, pressure medication, Medication for controlling a blood sugar. Lifestyle and medication changes to improve heart disease risk factors also beneficial.
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# Long COVID and Heart

If you are diagnosed with COVID-19 and are continuing to experience symptoms more than 3 months later, you may be one of the more than 18 million adults in the United States with post Covid syndrome, also known as long Covid. It is known that COVID-19 can have lingering effects on the cardiovascular system, including among people with no previous evidence of heart disease.

Even mild infection with COVID-19 virus may increase risk of a heart attack, stroke, or heart failure up to one year after recovering from the infection. According to CDC, 25 to 40% of the individuals with long Covid are unable to carry out their normal daily activities and about 4 million are unable to return to work.

When Covid started, it was thought to be a respiratory illness and that would continue for specific timeframe, like flu. But it turned out that there may be a lingering impact on some people after the acute face ends. This is not the first example of a virus having a post viral syndrome .

Other examples include Epstein-Barr virus linked to lymphoma, hepatitis C virus can cause cirrhosis and human immune deficiency virus can lead to AIDS

SYMPTOMS OF LONG COVID: Symptoms of long Covid includes many cardiac and non-cardiac symptoms. The most common symptoms are general fatigue, and tiredness, persistent brain fog, and sleep disorders. Many may have G.I. symptoms, new or worsening migraine, muscle pain, joint pain, temperature, intolerance, skin rashes. People can also have taste and smell disturbances.

From a cardiac standpoint, chest pain with exertion, palpitation, and fainting spells can occur. Since these are typical symptoms of traditional heart, disease, thorough cardiac testing is needed. Many times these test turned out to be normal.

Although inflammation of the heart muscle called myocarditis and inflammation of the pericardium called pericarditis have been identified as a consequence of acute inflammation from COVID-19, actual incidence of inflammatory heart disease in long Covid syndrome is quite low.

WHO IS AT RISK: Long Covid can affect anyone, including young people who have not had any previous illnesses. Risk is higher. -In people over the age of 65. -Women are more likely to have long Covid. -People with pre-existing heart and lung disease and also with inflammatory disorders like rheumatoid arthritis. -People who did not have Covid vaccine -People with initial severe infection.

However, it can also develop in people who had mild disease.

WHAT CAUSES LONG COVID: We don't know the exact mechanism of the syndrome. -Virus that causes Covid – 19 may be upsetting the immune system, suggesting possibly this is an auto immune reaction. -Coronavirus infection upsets the gut's ecosystem -Virus may attack and injure the innermost layer of the arteries, called endothelium and cause endothelial dysfunction. -The virus damages communication in the brain stem or a nerve that controls autonomic functions in the body, called Vagus Nerve.

This autonomic dysfunction affects the heart rate and blood pressure, resulting in POSTURAL ORTHOSTATIC TACHYCARDIA SYNDROME ( POTS ). POTS causes the heart rate go very fast when you stand up from seated or reclining position. Rapid heart rate, dizziness, and fainting are symptoms of.POTS

WHAT CAN YOU DO: There is no effective treatment for long Covid symptoms. Supportive strategies, such as aggressive electrolyte replenishment, compression stockings, and exercise may be helpful for regulating autonomic dysfunction and POTS. . Exercise is a great rehabilitation tool. However, it seems counterintuitive to tell someone who feels exhausted to exercise.

If they even try only walking for five minutes, a couple of times a week should help. There are some studies, suggesting Paxlovid taken during acute illness, MAY reduce the risk of post-Covid syndrome. Until specific therapies becomes available, supportive therapy such as advice on nutrition, exercise, adequate sleep, and managing depression and pain are the only choices.

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# Natural Ways to Lower Your Cholesterol Level

## NATURAL WAYS TO LOWER YOUR CHOLESTEROL LEVEL

High LDL cholesterol is a modifiable risk factor, meaning if you take steps to lower your LDL level, you will reduce the risk of heart attack and stroke. One of the most common questions people ask is whether they can lower their cholesterol level without taking medications ?Answer is yes, to some extent. The following are some of the ways to reduce your cholesterol level .

DIETARY CHANGES: It is only about 20% of the cholesterol in your blood stream comes from your diet -your liver and intestines make the rest. Most of the cholesterol in an average person's diet comes from animal-based foods such as meat and dairy which are also high in saturated fat. Saturated fats, clearly raises LDL cholesterol and should be consumed in limited amount.

Changing saturated fat for unsaturated fat, such as those in vegetable oils, avocados, and fatty fish will have significant benefits. Choose low fat or plant based dairy products instead of whole milk, cream, cheese, and butter.

INCREASE YOUR FIBER INTAKE : FIBER binds with cholesterol in the gut and helps to eliminate it from your body. All plant-based food contain fiber, so increasing the proportion of vegetables and whole grains will increase your fiber consumption and lower your cholesterol level.

CHOOSE COMPLEX CARBS: Carbs have earned a bad reputation, but it's mostly a misunderstanding. Low carb diet is not healthy diet. It is simple carbohydrate that you want to avoid. You should eat whole grains and products made with whole grains every day instead of foods made with white flour and other refined grains, whose fiber and valuable nutrients are removed in the process of refining.

REDUCE EXCESS WEIGHT: Loosing as little as 5 to 10% of your excess weight can cause your LDL cholesterol to drop. To lose weight naturally, cut back on the number of calories you consume, avoid alcohol and foods with empty calories such as sweets and fats. Also burn more calories than you consume through exercise.

INCREASE YOUR EXERCISE : Exercise helps to increase the HDL level and reduce the LDL level. In addition it may also help to reduce your weight. Recommendation is at least 150 minutes of moderate intensity exercise per week.

SUPPLEMENTS: Many dietary supplements sold in the market claim to benefit heart health. But only three may help to reduce LDL cholesterol and only by a moderate amount -PSYLLIUM HUSK: this is derived from the seeds of the plantago avata plant. This is best known for treatment for constipation and Metamucil is a common brand.

It is thought to absorb bile acid and cholesterol which are then eliminated from the body. The suggested dose is 5 to 10 g. It can lower LDL by above six points on an average. -PLANT STEROLS: Found naturally in the cell membrane of plants like nuts, soy beens, peas and rap seed ( the source of canola oil ). These compounds also called phytosterols, have a structure similar to cholesterol.

Eating them helps to limit the amount of cholesterol your body can absorb. Recent studies suggest that plant sterols will reduced your LDL cholesterol by only 4.4%. -RED YEAS RICE: This is made by steaming white rice with the yeast Monascus Purpueus. This red colored extract contains Monocolin K, the same active ingredient in the prescription cholesterol lowering drug Lovastatin.

Some suggests that supplements containing 4 mg to 10 mg of Monocolin K may reduce LDL cholesterol by about 6 to 7%. The problem with the plant sterols and red east rice is the same as with all the dietary supplements. The amount of active ingredients is not regulated and may vary from batch to batch.

If you want to try these products, do so only under doctor's supervision and use brands, tested and vetted by ConsumerLab.com which is an independent testing company STATINS: Unlike dietary supplements, statin drugs contain a known amount of the active ingredients- which decreases the amount of cholesterol the body makes and boost the liver's ability to clear cholesterol from the blood.

In addition, statins have anti inflammatory effects, they help to stabilize the unstable plaques and prevent plaque rupture which diet alone will not do. These and other prescription drugs can lower LDL cholesterol 25 to 55% .Simply having elevated LDL cholesterol doesn't necessarily mean you should be taking statin. The ultimate goal is to lower your risk of heart disease.

Recommendation is to use the American College of cardiology's risk calculator. The calculator provides treatment advice about managing your LDL and other heart risk factors. Then you can discuss with your physician. When people are reluctant to start taking a statin, a coronary calcium score can help them to make a more informed decision.

Any calcium score above zero means that the person has coronary artery disease. Anyone with that diagnosis should get their LDL cholesterol down to 70 or lower which will prevent additional plaque buildup. You can rest assured that your heart will appreciate your efforts.
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# More About Triglycerides

Elevated triglycerides along with low HDL is quite common in Indian population. Along with elevated LDL, these are also contributes to risk of heart attack and stroke. In addition, markedly elevated Triglycerides is a risk factor for acute pancreatitis. Triglycerides are different type of lipid than cholesterol. Your body makes triglycerides. You do not consume them in your food. Very low density lipoprotein or VLDL made in the liver carry triglycerides and cholesterol to the cells throughout the body.

MEASURING TRIGLYCERIDES: For accurate results, a triglyceride test should be performed after fasting. As a general rule, a Triglycerides level of 150 mg/dL or lower is considered normal. Levels between 150 and 500 mg/dL Are considered elevated. Higher levels then 500 are considered severely elevated, which is often associated with inflammation of the pancreas.

WHAT RAISES TRIGLYCERIDES: The most common reasons for elevated triglycerides are overweight/obesity, a diet high in saturated, fat or sugar, excessive alcohol intake, and sedentary lifestyle. Added sugar is another rich source of triglycerides. An apple contains natural sugar, but no added sugar. On the other hand, applesauce and apple juice are loaded with added sugar.

In some individual, high triglyceride levels have a genetic cause. There are some secondary causes for high triglycerides which includes poorly controlled, diabetes, chronic kidney disease, and uncontrolled hypothyroidism, (under active thyroid.). There is a long list of medications that are associated with elevated triglycerides, including immunosuppressive agents, psychiatric drugs and certain drugs for cancer and HIV, some hormone agents and three classes of cardiology drugs, which include beta adrenergic blockers, thiaand loop diuretics and bile acid sequestrates.

WHAT TO EAT: WITH SO MANY FOODS TO BE AVOIDED, WHAT IS LEFT TO EAT ? A triglyceride lowering diet should include the following foods -Fruits. All fresh fruits, except those with high glycemic index, including pineapples, mangoes, bananas. -Vegetables.

All vegetables, except those with high glycemic index, which are potatoes, sweet potatoes, yams, avoid canned vegetables and frozen vegetables in a sauce. -Legumes. Eat beans, lentils, chickpeas, tofu, and other legumes. -Fish and seafood-if you’re a non-vegetarian, eat fish at least twice a week. -Lean meat. -Dairy- choose low fat and fat free dairy products with no added sugar. -Grains.

Choose fiber, whole-grain bread, cereals, and brown rice over refined grain products -Fats. Liquid vegetable oils, like olive oil or avocado oil over solid fat, like butter, lard, bacon grease -Nuts and peanuts. Eat nuts and peanuts without added sugar or salt, but in moderation due to their high calorie content. -Desserts. Limit dessert to special occasions. -Alcohol.
Limit alcohol consumption or eliminate it altogether
Weight loss is most effective in lowering Trigleride level by 50 to 70%. Secondary causes should also be addressed such as diabetes, chronic kidney disease and hypothyroidism.
MEDICATIONS: In addition to diet and exercise, statins may be prescribed for patient already at risk of heart attack and stroke. Controlling LDL is primary part of managing people with high triglycerides. Lowering LDL with statins will result in a big decrease in the cardiovascular events. Statins also reduce triglyceride levels.
If Trighyceride levels remain high, despite life style changes and statin therapy, other agents, such as fibrates or prescription omega-3 can be used. For individuals with very high triglycerides, and a risk of pancreatitis, a new drug called OLAZARSEN ( TRYNGOLZA ) is available. Consult with your physician, before considering any of these medications.
For most patients with elevated triglycerides, dietary changes and lifestyle changes, addressing any secondary causes and starting statin therapy, will lower their triglyceride levels and with it their cardiovascular risk.
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# Acute Coronary Syndrome

There are several degrees of coronary artery disease. STABLE ANGINA means episodes of chest discomfort during exertion or emotional stress, and usually relieved by rest and then there is acute coronary syndrome otherwise called ACS which encompasses three distinct diagnoses: unstable angina or UA, non-ST segment myocardial infarction or NSTEMI and ST- elevation myocardial infarction or STEMI. ST segment elevation is a specific finding on an electrocardiogram
Many years of high levels of cholesterol and glucose in the bloodstream and also high blood pressure can take a toll on the lining of the arteries throughout the body. Because the arteries feeding the heart are so small, they are especially vulnerable to become narrowed by plaque
According to a study done in 2022 every year more than 1 million people in United States are hospitalized for ACS. ACS includes two distinct types of heart attacks mentioned above and unstable Angela, which is a serious condition that's often prelude to a heart attack All of these warrants immediate medical attention. For all the three, the most common symptom is chest discomfort.
Other symptoms include shortness of breath, indigestion, nausea or vomiting, palpitation, dizziness, or fainting and sweating. To distinguish between different types of ACS, doctors rely on electrocardiogram. The guideline suggest that people receive an electrocardiogram within 10 minutes of arriving at the emergency department.
Another important test is a blood test that measures.TROPONIN, a protein substance released by the damaged heart muscle.
A distinctive hump on the electrocardiogram -rise in the ST segment, which is normally flat, usually means one of the main coronary artery is completely blocked. Most of the time this happens when the fatty plaque ruptures producing a blood clot that completely blocks up the artery.
This interruption in the blood flow damages portion of the heart muscle cells causing the TROPONIN level in the blood to rise. Known as an ST segment elevation myocardial infarction or STEMI, this is the most serious type of heart attack.
However, about 70% of the people with ACS have an artery that is not completely blocked, so a trickle of blood still gets through. Their electro cardiogram shows a variety of different pattern, often involving dips instead of elevation in the ST segment.

Those whose troponin levels indicate heart damage are diagnosed with less severe, but still worrisome type of heart attack known as non-ST elevation myocardial infarction or NSTEMI. People with these type types of ECG changes, but no evidence of heart damage, that means no elevation in the TROPONIN level in the blood are said to have unstable Angina.

TREATMENT: If you suspect you are experiencing ACS, call 911 and then you chew and swallow a regular strength aspirin, which is 325 mg and this helps to initiate dissolving of blood clots. One thing you should not do is to have your spouse or friend Drive you to the emergency room.

Only thing to do is to call 911 At the emergency room, people with ACS may receive clot busting drugs, and may undergo cardiac catheterization and many of them need stenting or coronary artery bypass surgery.

Acute coronary syndrome is a serious condition. Diagnosis and treatment should be initiated promptly. Time is money and don’t waste time and if you suspect this, call 911 right away.

It is always best to avoid this situation. That means follow all the preventive measures to keep your heart and arteries healthy. Eat a healthy diet, get regular exercise, don’t smoke or vape, manage your stress level and take necessary medications to keep your blood pressure, blood sugar, and cholesterol level in a healthy range.

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# Somethings About Stroke and Mini-stroke

About 795,000 strokes occur in the United States every year. More than 9.5 million people, ages 20 and older in the United States report having had a stroke or Mini-stroke. Though the Stroke is the fifth most common cause of death in this country , it's a major cause of serious disability . Few people survive a stroke without some degree of impairment.

An ischemic stroke occurs when blood flow to the brain stops. A temporary blockage of blood flow to the brain, known as transient ischemic attack or TIA can cause range of unsettling symptoms, including slurred speech, arm or leg weakness. This TIA appear suddenly, but usually last less than five minutes, which is why TIAs are often ignored or missed. TIAs are often called mini strokes.

Strokes can occur at any age. More strokes occur in older people due to traditional risk factors which increase with age. There is an increase in the strokes incidence in the 45 to 65 age group, which is most likely due to risk factors like high blood pressure at younger age, a sedantary lifestyle or poor diet.

We are also hearing about environmental issues like micro plastics that may be a risk factor affecting us all.

Mini stroke or TIA can be a harbinger of a future stroke. Nearly one in five people who have suspected TIA will experience a full-blown stroke within three months. Sometimes what appears to be a TIA or mini stroke is more serious than it seems. Even symptoms that go away may actually be a stroke.

According to American heart Association, two out of every five people with a suspected TIA who get an appropriate brain image test find out that they actually had a stroke. That's why it is so important to be aware of the symptoms and seek emergency care right away.

High blood pressure is the strongest preventable risk factor, playing a role in at least 50% of strokes. All modifiable risk factors for heart attack also elevate the risk of stroke and mini stroke, including diabetes, high cholesterol, smoking, obesity, lack of physical exercise, alcohol intake, poor quality sleep, and stress.

Atrial fibrillation, which is a rhythm disorder of the heart is another major risk factor for stroke.

SYMPTOMS OF A TIA OR STROKE: Different areas of the brain have different functions, so the symptoms that occurred during a TIA or a stroke depend on the part of your brain in which blood flow is disrupted. American Stroke Association has recognized a mnemonic BEFAST as a guide to symptom recognition.
This referred to B for loss of BALANCE, headache, and dizziness, E for EYES( blurred vision), F for FACE( one side of the face is drooping),A for ARM( Arm or Leg weakness), S for SPEECH( Speech difficulty) and T for TIME ( Time to call for ambulance immediately).
BALANCE: This symptom can be tricky because many other conditions can cause dizziness or balance issues, including low blood sugar, low blood pressure or inner ear problems. Balance problems caused by a TIA or a stroke, often make it difficult to stand up, and you may fall to one side or other. This symptom is often associated by other symptoms, including speech, disturbances, or vision problems.
EYES: Visual symptoms can manifest in different ways. The most common symptom is not being able to see from one or both eyes. At times, people describe the experience as seeing a dark gray shade that blocks half or all of their vision. Blurred or double vision can also occur.
Sometimes, people mistakenly go to an eye doctor first instead of going to the emergency room FACE: The face can droop on one side during a TIA or a stroke. Usually the corner of the mouth appears pull down, and the person isn't able to smile. ARM OR LEG WEAKNESS; This symptom tends to affect arms more often than legs and usually occur on one side of the body. .
People may describe the feeling as numbness or tingling rather than weakness. Sometimes the entire one side of the body is affected. SPEECH: Slurred or garbled speech is the most common presentation. But in some cases, people struggle to find words or aren't able to understand what other people are saying. This defect also extends to writing and typing, including texting on a smart phone.
This deficit is caused by a lack of blood flow in the language area of the brain. TIME: The final letter T underscores the importance of getting to an emergency room for assessment as soon as possible, even if your symptoms have disappeared.
AHA guidelines call for imaging of the blood vessels in the brain and neck, along with blood test to rule out things that sometimes can make a TIA or a stroke such as low blood sugar or an infection. Timing is crucial, since urgent intervention during a stroke can abort or minimize long-term complications of strokes

Headache can be a symptom of stroke. The type of stroke associated with a sudden intense severe headache is caused by Subarachnoid hemorrhage, which is caused by a raptured artery between the brain and the skull. These strokes comprise only about 5% of all strokes. If you do get the worst headache of your life, call 911 immediately
HOW TO PREVENT A STROKE/ TIA: -Keep your blood pressure, blood, sugar, blood, lipid levels, and body weight in a normal range -Eat a healthy diet -Sit less, move more -Do not smoke -Do not abuse alcohol or drugs -Get an adequate amount of sleep -Keep stress to a minimum -If you have arrhythmia such as atrial fibrillation or chronic kidney disease, work closely with your physician to minimize your stroke risk .
Importantly CHEWING AN ASPIRIN APPLY TO SUSPECTED HEART ATTACKS, BUT NOT TO STROKES. IF YOU HAVE STROKE LIKE SYMPTOMS, TAKING AN ASPIRIN IS NOT RECOMMENDED. Taking an aspirin when you are having a stroke may impact the ability to give you certain emergency treatments in the emergency room.
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# Connection Between Fatty Liver Disease and Heart Disease

SINCE THERE WAS SOME INTEREST IN FATTY LIVER DISEASE LAST WEEK IN KANNDA KUTUMBA, I THOUGHT OF WRITING ABOUT THIS. A healthy liver contains no significant amount of fat. When fat makes up more than 5 to 10% of the liver weight, it is considered a fatty liver. Previously called fatty liver disease, it is now known as metabolic dysfunction-associated steatotic liver disease, MASLD. Worldwide an estimated 30% of the people has MASLD. About one in five people with MASLD have more severe form of the disease, called metabolic dysfunction associated steatohepatitis ( MASH) in which the liver cells are inflamed and injured. This process may create scar tissues, which can eventually replace normal liver cells and leads to cirrhosis.

WHAT CAUSES MASLD; The root cause of the problem is usually access weight-specially accumulation of belly fat known as visual or abdominal obesity. Weight gain can trigger variety of metabolic problems that cause blood sugar, blood pressure and cholesterol levels to rise. All of these factors are closely linked to higher risk for diabetes and cardiovascular disease.

Experts believe that inflammatory compounds and other substances pumped out by fat affected liver may damage the inside of arteries, causing plaque buildup and setting the stage for a heart attack or a stroke.

Other risk factors include type two diabetes or insulin resistance, high cholesterol, or triglycerides, poor diet (especially high sugar, processed food), sedantary lifestyle, heavy alcohol consumption

HOW IS MASLD IS DIAGNOSED: In his early stages, MASLD has no symptoms. It is often discovered incidentally, during an imaging test such as abdominal ultrasound, MRI or CT scan. Sometimes blood test reveal mild elevation in the liver enzymes. However, many patients with MASLD have normal liver functions. Doctors may also use a tool known as FIBROSIS-4 INDEX.

This used a a person’s age plus 3 other common lab values ( platelet count and 2 liver function tests) to estimate person’s risk of serious liver disease. People may also undergo a non-invasive test called transient elastography, also known as Fibroscan which measures liver stiffness. In some cases, liver biopsy may be needed.

TREATMENT: Weight loss is very effective and losing 10% of your body weight can reverse MASLD. The diet recommended for heart health, special Mediterranean diet is a good choice. Other strategies to decrease calorie intake like intermittent fasting can also be helpful. It is well known that there is no safe amount of alcohol for anyone.
But people with obesity and Diabetes were already at high risk for developing liver disease and should absolutely avoid all alcohol.
MEDICATIONS: Some physicians are reluctant to prescribe cholesterol lowering statins in people who may have liver disease. In occasional cases, statins can cause abnormal liver functions, and even more rarely , a drug induced auto immune liver disease, which can cause liver enzyme to rise. But heart protecting effects of statins far out weigh that small risk.
In many cases, mild elevation in the liver enzymes most likely related to MASLD not to statins. Make sure you discuss these with your physician if you ate on statin or if you are planning to start statin.
Some research shows that low-dose aspirin may help to prevent the progression of MASLD to MASH. Unless your physician recommends low-dose aspirin, people should not be taking it on their own. Obesity drugs, such as Semaglutide( wegory) and Tirzapatide( Zepbound) appear to be promising for reversing MASLD. In 2024, FDA approved.Resmtirom (Resdiffra) to treat MASH.
This Drug helps to prevent fat buildup in the liver and may reverse liver scarring.
Pioglitazone, a drug used in type two diabetes may help in MASLD/MASH , especially if you have type two diabetes/insulin resistance
These are for information purpose only and are not recommendations.
I have not seen any recommendation for ghee in the treatment of fatty liver disease.
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# Statins, Their Underutilization

Statins have been in use since 1980s to lower LDL cholesterol. At present, they are the most commonly prescribed medications in the United States for a good reason. They are very effective and powerful in protecting adverse effects of cardiovascular disease.

Statins significantly decrease the incidence of stroke and heart attack in high risk and intermediate risk patients, irrespective of whether they had previous heart attack or stroke. That's the reason physicians prescribe statins for primary and secondary prevention of cardiovascular disease.

Two most common reasons for reduction in the incidence of cardiovascular disease in this country for the past 40 years or so, is because of less cigarette smoking and taking statins. In spite of that, people are often hesitant or reluctant to take statin. People who really need them are probably not taking them or are not taking them at the right dose.

MISCONCEPTIONS REGARDING STATINS: Most common worry about statins is that they cause muscle pain or aching joints. In real life, it occurs probably about 5% of the cases and that means 95% of the people who take statins will have no problem. This side effect does not necessarily mean that individuals cannot take advantage of the of the statins.

Often stopping the statins temporarily and restarting, often result in no significant muscle symptoms. It is also possible to get rid of the muscle aching with less frequent dosing or a lower dose. Often, starting statin at a small dose once a week and gradually increasing the frequency over several weeks, may result in preventing muscle symptoms.

In the past, there were concerns about statins causing dementia has been reported, but this has been disproved in large studies. There is also concern about statin can cause liver damage. Statins target an enzyme in the liver that regulate the cholesterol production and some people worry that the drug will cause liver damage.

However, this problem is so rare that present guidelines do not recommend regular testing for liver dysfunction.

BENEFITS OF STATINS: Statins are well known to lower the LDL cholesterol level. In addition, they help to stabilize the atherosclerotic plaques to prevent cardiovascular disease progression. Some statins when combined with lifestyle changes and other lipid loading therapy may actually cause the plaque to shrink.

Statins also help to repair damage to the lining of the arteries, lower the risk of blood clot formation and reduce inflammation. In addition, statins also protect the heart during non-cardiac surgery. For patients with certain forms of cancer, statins have been known to increase the effectiveness of the chemotherapy and radiation while protecting against the damage these treatments can cause.

WHO SHOULD TAKE STATINS: This depends on an individual's risk of heart attack and stroke. Cardiologists calculate individual's risks based on variety factors, including blood pressure, cholesterol level, smoking history, the presence or absence of diabetes, sex and age. Presence of elevated calcium score and elevated Lipoprotein (a) level often need more aggressive therapy.

Family history of early coronary artery disease is also another factor to consider.

There is always a question whether patients need to be on statin for life. The answer to this question should be to take medication until the risk outweigh the benefits. Since there is very little risk associated with statins, most people need to take them for a long time.

You will be surprised to find out that many cardiologists start taking a low-dose statins in their 30s and 40s, just because they believe in them so much.

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# Breathing Exercises in Relation to Hypertension Treatments

## BREATHING EXERCISES IN RELATION TO HYPERTENSION TREATMENTS

Average person, in 24 hours breathe in and out effortlessly more than 22,000 times .
It is well known that practicing slow deep breathing for just 5 TO 10 minutes a day can lower pressure your systolic blood pressure ( the upper number of your blood pressure) as much as 10 points.
It is very effective, cheap and easy way to lower your blood pressure, but I would not say that this would replace medications your doctor prescribed. This is complementary to your regular medications.
If you have stage one hypertension, meaning your cytology blood pressure between 130 and 139 mmHg, it is possible that breathing exercise can lower your blood pressure to level which you may not need medication. For those with elevated blood pressure, meaning systolic blood pressure between 120 and 129, deep breathing could help to avoid high blood pressure Medications.
BENEFITS OF DEEP BREATHING: A normal respiratory rate is 12 to 18 per minute for adults. Slow breathing is defined as anywhere from 6 to 10 breaths per minute, and it features a prolonged slow exhalation.
As you slowly take deep breath in, your diaphragm contracts and pulls downwards and fully expand your lungs. This stimulates the vegas nerve, which runs from the brain to the colon.
When Vegas nerve is activated , a large volume of air in the lungs delivers extra oxygen to your body and brain, which increases the release of “feel good “ chemicals, called endorphins and lowers the level of epinephrine which is a stress hormone. As you exhale the diaphragm goes back upwards against your lungs. As blood moves out of your lungs, your blood pressure rises slightly.
To counteract this rise, your nervous system simultaneously lowers your heart rate and dilate your blood vessels. Prolonging your exhalation take advantage of this reflex .

TYPES OF DEEP BREATHING TECHNIQUES: Many of you know these techniques already. One method is to count to five while breathing in through your nose, then exhaling for five counts. Purse your lips as though you are blowing out a birthday candle, which will help to slow down your exhalations. You can also try holding your breath after the inhalation.

One common pattern invoice inhaling for four counts, holding for seven and exhaling for eight but you can vary this timing as you wish. Many of you practice yoga and may resort to pranayama( prana means breath and ayama means stretching or lengthening. You can also try single nostril breathing using the above techniques.

For some, using a device might be more appealing. Inspiratory muscle strength training. ( IMST) uses a small, handheld device that provides resistance as you inhale and exhale. You can buy the device online for as little as $20.

A well design study published in the journal of American Heart Association in 2021, showed that doing IMST for 30 breaths per day, six days per week reduce systolic blood pressure by an average of 9 mmHg after six weeks. More elaborate option is an FDA cleared device called Respirate, sold online for $350. It features a chest strap with a sensor to monitor your breathing pattern.

You follow musical cues via headphones to gradually slow down your breathing. For most of us, this kind of device is unnecessary, since we know the yoga technique.

Many of these breathing techniques can be practiced any time of the day anyway. A word of caution if you want to practice this while driving. Deep breathing can make you relax and often make you sleepy and you don’t want to be sleepy while driving. So please use caution.

This is a simple and inexpensive way to improve your blood pressure. It is complimentary to your blood pressure medication and certainly it does not replace your prescribed drugs.

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# Primordial Prevention and Genetic Profiling

## PRIMORDIAL PREVENTION AND GENETIC PROFILING

Cardiovascular disease is the leading cause of death and disability in the world. We know a lot about what predisposes people to coronary artery disease. In spite of that, doctors cannot predict heart attack very accurately. Some people who appear prone to heart disease, never have one while others succumb to heart disease despite having no obvious risk .

Primordial prevention is a concept which focuses on preventing heart disease very early in life. Instead of waiting until people develop risk factors such as high blood pressure, high cholesterol, or diabetes and treating them, we could identify and prevent the development of those conditions in the first place.

Primary prevention on the other hand, refers to treating risk factors like high blood pressure, diabetes, and high cholesterol to prevent the development of cardiovascular disease. Secondary prevention applies to people who already have the disease like heart attack. Idea here is to prevent recurrence or complications .

Question is whether genetic profiling would help in primordial prevention. American heart Association looked at this in a statement in 2022. Using a small sample of blood or saliva, these test analyze millions of common variants in your DNA to create what is known as polygenic risk score ( PRS ).

One can have zero, one or two copies of any gene variant, each of which may either raise or lower your risk of coronary artery disease. Scientists have discovered variants, by comparing the genetic codes of people with established heart disease to those without coronary artery disease.

Many of these variants occur in genes, known to affect heart disease, such as those related to cholesterol, blood pressure, and blood clotting.

POLYGENIC RISK SCORE ( PRS ): A polygenic risk score reflects the overall impact of all the variants together and is expressed as a percentile. But high score, for instance, the 95percentile, doesn’t mean you have 95% chance for developing the disease. It means that out of hundred people, your score is higher than 95 people and the same as or lower than five.

There is some evidence that polygenic risk score for coronary artery disease may offer some improvement for predicting the development of risk in people who are middle-aged or younger. For example, standard risk calculators to guide statin treatment, don't apply to people under the age of 40. But polygenic risk score can help to decide if and when a person should start statin therapy.
WHO MAY NEED POLYGENIC RISK SCORE ( PRS )EVALUATION: PRS may be useful for identifying someone's genetic predisposition to heart disease before standard risk factors appear. It is most useful in specific conditions for example, those with families history of early coronary artery disease.
Even if you don't have symptoms or abnormal lab results, a high PRS can flag elevated risk based on your DNA. -people with normal health metrix but unsuspected early disease in the family, like heart attack before age 40 with normal cholesterol or sudden cardiac death or stroke in a healthy sibling.
In these cases, PRS can help to detect hidden inherited risk One limitation is that the scores are based mainly on people with European ancestry, which means the score may not be reliable for people of different ethnicities. For older people, PRS aren't helpful as decades of lifestyle habits have shaped their risk and genetical factors are less relevant in this age group.
One example, if a baby has genes linked to the development of hypertension by age 30, one could modify that child's diet, encouraging exercise, and preventing obesity, early in life may prevent the problem. Focusing on prevention very early in life could make a huge difference in reducing cardiovascular disease.
Polygenic risk factor analysis can be useful, not only for heart disease, but also for type two diabetes, hypertension, hyperlipidemia including metabolic syndrome ,certain cancers, including breast and prostate cancer, Alzheimer's disease, certain Autoimmune diseases like Lupus, Rhuematoid Arthritis and so on.
Who does PRS testing? There are providers like Allelica, GenomicMD, Mass General at Brigham do this test. Insurance doesn't pay for this. It may cost $250-300. In future, this test may be less expensive and may be available for non-Europian population.
This information is for educational purpose only and future will tell us more about the utility of this test for general use. The information above is obtained from medical podcasts and Internet.
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# Utility of CT Scan to Detect Coronary Artery Disease

Besides thorough history, physical examination and electrocardiogram, doctors do stress testing to diagnose coronary artery disease. Regular stress testing entails monitoring the electrical activity of the heart. Nuclear stress testing, also monitors the electrical activity and evaluates heart muscle function as also stress echocardiogram.

These 2 later tests are better than regular stress test, but they're not perfect. Stress tests only detect if a person has one or more severely narrowed coronary arteries ( that is more than 70% blockage ),that restrict blood flow, triggering symptoms,and/or abnormal finding during the test.

There are two other test available, which would accurately detect presence or absence of coronary heart disease. Invasive coronary angiography has been used for more than half a century. This involves passing a slender tube called catheter through a leg or arm artery up to the heart and injecting a dye and visualize the arteries on a x-ray. Even though it is rare, occasionally serious complications can occur, including bleeding at the catheter insertion site or damage to the artery. On the other hand, cardiac CT angiography ( CCTA ) which was developed nearly 25 years ago, is non-invasive. During this test, a dye is injected into a vein in the arm or hand.

Instead of standard x-ray, used in invasive coronary angiography, this test uses a CT scanner, which take multiple rapid x-rays that are merged together to create a detailed three dimensional view of the heart's arteries. While the preparation and set up may take up to an hour, the actual scan lasts less than a minute.

Now we know that most heart attacks are caused by not from serious blockages, but when smaller non-obstructive plaques rupture and form a clot that triggers a heart attack. CCTA reveals both obstructive and non-obstructive plaques. CCTA may may help cardiologists find and treat heart disease sooner.

CCTA has class 1 indication, and an "A" level of evidence-that means the strongest possible recommendation for use as a first line tool to evaluate people with chest discomfort or those coming to the emergency room with chest pain. Most of the people seen in the emergency room, have non-cardiac disease, meaning their chest pain is not related to the heart.

So CCTA can be helpful to rule out a possible heart attack.

As a part of CCTA test, you will also get calcium score. The amount of calcium in the arteries, otherwise called plaque burden is calculated by a computer and provides a score. A calcium score of zero means you don't have significant plaque.
Score of one to 100 indicates mild coronary artery disease, 100 to 400 is moderate coronary artery disease and more than 400 is severe coronary artery disease. When the risk is higher than expected, it helps to direct the person towards appropriate medication's, such as statins and lifestyle modifications.
Even though, hard, calcified plaques are less likely to rupture and cause a heart attack than the soft " vulnerable" plaques, Calcium scoring proves to be an accurate way of gauging the total burden of atherosclerosis. The presence of hard Plaques suggest that you may have Plaques throughout your cardiovascular system.
A follow up CCTA may be performed to determine whether the plaque poses a significant obstruction to blood flow. Recently, there is more improvement in CCTA technique. If the significance of a plaque is uncertain, a sophisticated technique known as FRACTIONAL FLOW RESERVE ( FFR ) maybe applied to calculate the amount of blood flow through the blocked artery.
CT-FFR helps to determine whether a lesion is severe enough to require interventions , such as stenting. Previously, this FFR test was available only during invasive coronary arteriography. However, CT-FFR is not available in many of the hospitals.
SOME CAUTION ABOUT CCTA: There is a lot of excitement about use of CCTA. But the benefits depends heavily on the quality of the image and not all scanners are the same. There are some in individuals who are not good candidates for CTTA.
These include people with high heart rate that can't be effectively lowered with medication and also people who are obese with the body mass index of more than 40. Both these conditions can limit the image quality. People who have allergy to the dye should avoid this test.
People with known coronary artery disease, maybe less likely to benefit from CCTA because the results might not change how they are being treated. However, in future, as the technology improves, repeat scanning might help physicians to see how well specific treatment is working and if adjustments are needed .
If you have chest pain or other symptoms suggesting heart disease and the result of CCTA test is negative, meaning you don't have significant plaque, we can confidently say that the symptoms are not those of a heart attack, and we need to look elsewhere for answers. If you have mild disease, risk factor modification to prevent disease progression should be done.

On the other hand, if someone has extensive disease, the patient would need an invasive cardiac catheterization in preparation for interventions like stenting or bypass surgery
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# Diastolic Blood Pressure and Its Significance

Present blood pressure guidelines, defines ideal blood pressure reading as less than 120 /80 mm of Mercury and there are studies suggesting even lower systolic blood pressure ( First number in the reading) may help to prevent even more heart attacks and strokes, as long as this low readings does not cause side effects like dizziness or lightheadedness.

However, the diastolic blood pressure ( the lower number in your blood pressure reading), lower is not necessarily better.

Normal versus abnormal diastolic value: NORMAL: 60-79 Elevated BP: Less than 80( with Systolic BP 120-129 Hypertension stage 1: 80-89 Hypertension stage 2: >90 Hypotension( low BP): < 60.

Studies have suggested that very low diastolic blood pressure, less than 60 mmHg is associated with an increased risk of heart attack and stroke in people at high cardiovascular risk. In general, we tend to focus more on systolic blood pressure, which reflects the amount of pressure in the arteries as the heart contracts and pumps out blood to the body.

On the other hand, diastolic pressure is measured as the heart relaxes. It reflects the amount of blood flowing into the arteries, supplying the heart muscles. Therefore this diastolic blood pressure is often refers to as coronary perfusion pressure.

Diastolic blood pressure is a function of arterial tone and resistance- that is how stiff or relaxed your blood vessels are.

EFFECT OF DIASTOLIC BLOOD PRESSURE ON HEART: As mentioned above, coronary artery perfusion occur predominantly during diastole. If you have blockage in the coronary arteries, pressure beyond the constricted artery will fall even lower as blood flows through the narrowed channels.

That is the reason why too low diastolic blood pressure is not recommended, since this may compromise blood flow to the heart muscles and compromise heart function

According to a study published in JAMA, people with diastolic values below 60 mmHg had higher rates of heart attacks, strokes, and death from any cause. Those with diastolic values between 70 and 80, had the lowest risk for those outcomes. So it is recommended that ideal diastolic blood pressure reading is between 70 and 80 mm of Mercury.

Off note is the fact that, all the available blood pressure medications lower both systolic and diastolic blood pressure

MEDICATIONS FOR HIGH BLOOD PRESSUE: Regarding treatment of high blood pressure, everyone is different. Your doctor will consider your individual situations, which includes any other health considerations, sensitivity to the medications and likelihood of developing dizziness or other side effects.

The goal is to lower your systolic blood pressure to below 130 to reduce your risk of heart attack and stroke without triggering, dizziness, lightheadedness, or fainting.

In general, systolic blood pressure tends to arise with age and diastolic blood pressure tends to fall. Sometimes, when diastolic blood pressure dips below 60, the systolic pressure is around 90 or 100. If that is the case, reducing the blood pressure medication makes sense.

On the other hand if your systolic blood pressure is well controlled and your diastolic blood pressure is below 60, your doctor may listen to your heart carefully to make sure that your aortic valve is not leaking. Leaking aortic valve called AORTIC REGURGITATION, is one of the reason why some people may have low diastolic blood.

On the other hand, if your aortic valve is normal, and you do physical activity without any symptoms, such as chest pain or shortness of breath or lightheadedness, a low diastolic blood pressure should not pose a problem.

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# Inherited High Cholesterol

( FAMILIAL HYPERCHOLESTEROLEMIA )
Almost 1/3 of the adult Americans have high level of bad cholesterol or LDL cholesterol which doubles the risk of developing cardiovascular disease. Most of these people likely have dozens of different, genetic mutations, each of which raises LDL by a little bit. Overtime, coupled with less than ideal diet, and not enough exercise, their LDL level slowly increases.
About 5% of the population have LDL cholesterol level more than 190 and in them the risk of heart disease is five times higher than people with near optimal LDL level. Inthis group, minority have familial hypercholesteremia or FH which is a genetic condition that affects about one in 250 adults
WHAT IS FH Most people with FH have a mutation or variant in one of the three different genes that provide instructions that help remove excess LDL from the bloodstream. Those people who inherit one variant from a parent have heterozygous FH which can cause LDL level anywhere from 190 to 350 mg/dL . People who inherit 2 variants , that is one from each parent, have homozygous FH.
This is a very rare condition and occurs only about 4 in a million population and it can raise LDL level as high as 1000 mg/dL.
DIAGNOSIS OF FH Diagnosis is based on family history of very high cholesterol or premature cardiovascular disease before the age of 55 in men and before the age of 65 in women. In them, LDL in the blood stream can accumulate on the eye lids, causing small, cholesterol field nodules called XANTHELESMA.
It can also deposit under tendons, especially those along the backs of the hands, the elbows or the back of the ankles. These are called TENDON XANTHOMAS.
Accumulations of these deposits around the cornea will produce white ring around the cornea called.CORNEAL ARCUS. But the biggest threat is the buildup of LDL cholesterol in the arteries supplying the heart.
People with untreated FH can sustain heart attack in their 40s or earlier, likely because of the cumulative exposure to high LDL, starting at birth
If a parent or a sibling has very high cholesterol or had a heart attack at a young age, that is before the age of 55 in men or 65 in women, that is a red flag for possible FH.
Genetic testing isn’t strictly necessary, as high LDL is reliable sign of heart disease risk in anyone, regardless of cause.

However, FH testing can be beneficial for your biological parents, siblings, and children, each of whom have a 50/50 chance of having the same FH variant
Present guidelines, recommend checking cholesterol level in children at least once between the ages of 9 and 11 and again between the ages of 17 and 21.
Complications of FH If untreated, FH can lead to -Early atherosclerosis -Heart attacks and strokes earlier in life -Sudden cardiac death -Aortic stenosis ( causing narrowing of the Aortic Valve)-In severe cases, especially with homozygous FH
Treatment of very high LDL The present cholesterol treatment guidelines emphasize the importance of lowering the high LD leveland keeping it low for decades.
Whatever the underlying cause may be, treating severe hyper cholesterolemia makes sense. The first choice is a high intensity statin,such as Atorvastatin 40 to 80 mg daily or Rosuvastatin 20 to 40 mg daily.
At these doses, the LDL should come down by at least 50%. In those high risk patients whose LDL remains elevated and not at goal, additional medication may be needed.
These include.: -Ezetimibe( Zetia )-which helps to prevent cholesterol absorption from the gut -Bempedoic acid( Nexletol)-that blocks the cholesterol production in the liver -Alirocumab ( Praluent ) or Evalocumab ( Repatha )- injectable drugs that helps to remove excess LDL from the bloodstream.
These are given twice a month. -Incliseron ( Leqvio )- twice yearly injection that interferes with a protein in the liver that regulates LDL
LIPOPROTEIN APHERESIS: This is a procedure which is used to rapidly and significantly lower. The LDL cholesterol level in patient with severe hypercholesterolemia ( mainly for patients with Homozygous FH ), especially those who do not respond adequately to medications. It is like dialysis for cholesterol.
During the procedure, blood is drawn from the patient and cholesterol is removed from the plasma and the remaining blood is returned to the patient. Unfortunately, it has to be done once every one to two weeks. Effect is temporary and LDL level begins to rise again after the procedure.
This treatment needs to be continued long-term unless some mother effective treatment such as GENE THERAPY is available.
Of course, heart healthy diet, regular exercise, and smoking cessation should also be continued.
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# Is Presence of Heart Murmur a Concern

May or may not be. A murmur is an unusual sound heard when a doctor examines your heart with the stethoscope. It is often described as swishing sound that occurs between the heart beats . In simple terms, a memory is produced when increased amount of blood passes through a normal valve or normal/increased amount of blood flow through an abnormal valve.

The murmur means something MAY BE WRONG. however, it doesn't necessarily mean that the problem is serious. They can be benign or harmless or may be concerning.

HOW ARE THE MURMERS PRODUCED Inside the heart, blood flows from the upper chambers called atria to the lower chamber called ventricles through mitral valve on the left side and Tricuspid valve on the right side Then, blood from the right ventricle flows through the PULMONIC VALVE into the PULMONARY ARTERY and then to the lungs.

From the left ventricle, blood passes through the AORTIC VALVE into the aorta and then to the Coronary arteries supplying the heart muscle then to the rest of the body.

When the pressure between two of these structure is different, then the blood will rush from the area of higher pressure to the area of lower pressure.

This rapid flow produces turbulence and rushing sound, called Murmur and can be heard through a stethoscope.

CAUSES OF HEART MURMER Murmurs can be heard in most of the newborns which resolve by itself with time. However, some newborns may have abnormal connection between the two upper chambers. ( ATRIAL SEPTAL DEFECTS) or between two lower chambers (VENTRICULAR SEPTAL DEFECTS). These sometimes spontaneously close with time, while other times they need surgery to close these.

Murmurs are fairly common during pregnancy because of the increased blood flow through the valves. These tend to be harmless and most of them resolve on their own after delivery. Anemia or low blood count can also cause heart murmur, and this usually disappears when anemia is corrected. With this, there is no structural abnormalities in the valves.

Overactive thyroid called hyperthyroidism can also cause heart murmur because of the increased blood flow through the valves ( Hperdynamic Circulation ).

Many times, Murmurs are caused by structural heart abnormalities . This can be caused by a narrow valves.( Stenosis ) or a leaky Valve ( Regurgitation ) or abnormal connection between a coronary artery and the heart chamber ( Fistula ).
EVALUATION OF HEART MURMERS A heart murmur is usually detected when a physician listens to the heart with a stethoscope. Some murmurs are so loud that one can hear the murmur with the stethoscope just above the skin Murmurs are graded from 1 to 6, depending on the intensity and duration of the Murmur.
Grade one and grade 2 murmurs are usually benign while higher grades of murmur may need to be investigated. Echocardiogram will detect whether your heart murmur is normal or abnormal. USUALLY if you have a significant murmur related to structural heart disease, you don't necessarily need surgery or other interventions, unless you have significant symptoms.
Your cardiologist will follow these with periodic physical examination and serial echocardiograms, and then determine the need for any procedures.
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# Antioxidant-rich Diet and Heart

Human body is like Kurukshetra. There is battle raging inside our body everyday. Free radicals which are products of cellular metabolism, damage healthy cells, seeking to destroy them and opening the door to a host of diseases. The best defense against damage caused by free radicals is a diet rich in antioxidants.

FREE RADICALS A free radical ( which is a Rascal ) is an atom with an unpaired electron that is formed when oxygen binds with another molecule. Since lone electron is unstable, it will attach onto another cell and kidnap an electron, destroying the cell in the process Antioxidants fight, and destroye free radicals. Early in life, our body makes enough antioxidants to keep the process in check.

After age 40, production of antioxidants in our body diminishes. If you don't ingest more antioxidants through your diet, free radicals will build up, causing oxidative stress Oxidative stress damages the lining of the arteries, causing inflammation and promote plaque buildup. It also reduces the distendibility of the blood vessels which make them stiff.

This would impair circulation and increase workload on the heart. In general, oxidative stress causes systemic inflammation . This is what cause many diseases like coronary disease, diabetes, high blood pressure and Alzheimer's disease. A diet high in saturated fat and sugar contributes to oxidative stress.

Environmental factors like smoking, air pollution, pesticides, heavy alcohol intake and bacterial, viral, and fungal infection will also do the same. It is true that we don't have control over everyone of them, but we have control over antioxidants we consume.

MAIN ANTIOXIDANTS FOODS:

VITAMIN C -Citrus fruits like orange and Grape fruit -Kiwi, Strawberry and Papaya -Bell peppers, Broccoli and Brussels sprouts VITAMIN E -Nuts and seeds -Vegetable oils -Avacados,Spinach CAROTENOIDS( beta-carotene,lutein, lycopene etc) -Orange and yellow vegetables like carrots, pumpkins,sweet Potato -Green leafy vegetables like Spinach, Kale -Tomatoes, Red peppers and Watermelon POLYPHENOLS AND FLAVONOIDS -Berries-Blueberries, raspberries,blackberries, Grapes,cherries,plums ,apples Dark chocolate,Green tea, Coffee Herbs and Spices- Turmeric, Oragono, Cinnamon SELENIUM AND ZINC( MINERAL ANTIOXIDANTS - Brazil Nuts( Rich inselenium ) - Seafoods, Poultry, Beans, Lentils - Whole grain In general, fruits of different colors, provide different antioxidants, so nutritionists recommend eating RAINBOW.

The larger the variety of antioxidant rich foods we consume, the greater the chance that our body can fend of the damage caused by free radicals. Surprisingly, no antioxidant vitamin supplements, including vitamin C, and vitamin E, lower heart disease risk. Risk In fact,surprisingly some of these vitamin supplements taken excessively may even cause harm.

Therefore it is best to get antioxidants from fresh fruits in our diet. Mediterranean diet is a great way to get the variety of antioxidants needed.

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# Understanding Your Blood Pressure

## UNDERSTANDING YOUR BLOOD PRESSURE

THIS IS FOR YOUR SUNDAY AFTERNOON READING PLEASURE-

High blood pressure or hypertension is often called silent killer. Many people with high blood pressure don't know that they have it because they don't have symptoms and often the first symptoms may be a stroke or a heart attack. Therefore, it is important for everyone to know their blood pressure and bring it down if it is elevated.

Your blood pressure fluctuates, normally during the course of the day in response to things like pain, stress, anxiety, exercise, and salty food. These fluctuations are normal and not necessarily cause for concern. However, if there is sustained elevation in the blood pressure which is called hypertension , is a cause for concern BLOOD PREESSURE CATEGORIES Normal BP is Systolic BP <120 AND diastolic Bo <80 ELEVATED BP means sysolic BP is 120-139 AND diastolic BP <80 STAGE 1 HYPERTENSION- Systolic BP 130-139 OR diastolic BP of 80-89 STAGE 2 HYPERTENSION- Systolic BP >140 OR diastolic BP >90 HYPERTENSIVE CRISIS- Systolic BP >180 OR Diastolic BP >120

As you can see from the above table, normal blood pressure is less than 120 over less than 80 mm of mercury. Blood pressure is said to be ELEVATED WHEN THE SYSTOLIC NUMBER IS 120-129 millimeters of mercury AND less than 80 mmHg in diastolic number.

As you all know that when the blood pressure is higher than normal.( hypertension.), it is the most significant risk factor for cardiovascular disease. For every 20 points that your blood pressure rises over 120/80 mmHg, the risk of heart attack and strokes doubles.

Some people have higher blood pressure when they are in the doctors office, but their blood pressure becomes normal after leaving the office. This is called white coat hypertension. This is in response to stress. If this happens, you will be advised to take your blood pressure at home with a home blood pressure cuff.

About 15 to 30% of the people with white coat hypertension will develop sustained hypertension at some point. It is well known that white coat hypertension increase the risk of fatal or non-fatal cardiovascular disease. In about 15 to 30% of the people whose blood pressure is normal in doctors office and rises after they leave the office. This is called MASKED HYPERTENSION.

This is particularly dangerous because it is seldom discovered and therefore not gets treated. That's the reason it is important for you to monitor your blood pressure at home.

SYSOLIC AND DIASTOLIC BLOOD PRESSURES our heart contracts and relaxes several thousand times each day. Blood pressure is measured both during contraction and relaxation. Systolic blood pressure measures the force of blood againstthe artery walls when the heart contracts. It is the first and higher of the two numbers.

Diastolic blood pressure is the force of blood when the heart relaxes and refills between the contractions. It is the second and lower number you get in your blood pressure reading. Coronary arteries get their blood supply predominantly during diastole and therefore diastolic blood pressure is also important.

If the diastolic blood pressure is less than 60 mmHg, it may decrease the coronary blood supply, more so if you already have blockage of the arteries.

AGE AND BLOOD PRESSURE As we get older, our arteries tend to accumulate fatty plaques from atherosclerosis. And this may make the arteries stiff and may not relax well. When more oxygenated blood is required, our arteries may not be able to relax well. This causes blood pressure to rise. As the arteries becomes stiffer and stiffer overtime, our blood pressure rises gradually.

CAUSES OF HIGH BLOOD PRESSURE There are several causes for elevation in the blood pressure. Often heredity and genetics is the cause. Blood pressure also gets elevated in cold weather, pregnancy, anxiety, salty foods, and certain medications. Regular use of nonsteroidal anti-inflammatory agents, such as ibuprofen or Advil and Aleve can cause high blood pressure, in addition to causing kidney problems and high potassium level.

Overactive Thyroid called hyper thyroidism, narrowing of the kidney arteries.( Renal Artery Stenosis) and over secretion of adrenal hormone called aldosterone ( Hyperaldosteronism) are some of the secondary causes of hypertension.

SYSTOLIC AND DIASTOLIC HEART FAILURE Elevated systolic or diastolic pressures can lead to heart failure, which result from inability of the heart to meet the body's need for oxygenated blood. When this occurs from damage to the heart muscle, as a result of heart attack, heart muscle gets weak and could not able to pump adequately . This is called systolic heart failure.
High blood pressure can also damage the heart muscle by making it too stiff and prevents adequate relaxation. This may cause.DIASTOLIC HEART FAILURE.
Sometimes, systolic and diastolic heart failures occur together. There are good medications available for treating both these conditions.
MANAGING YOUR BLOOD PRESSURE Blood pressure control is very important for all of us to prevent cardiovascular disease. If your blood pressure is above normal or rising, your doctor may put you on anti-hypertensive medications.
He may also recommend certain lifestyle changes, including eating, a healthy, low sodium diet, Regular exercise, avoiding smoking, losing weight, lowering stress and getting 7 to 8 hours of good quality sleep and limiting alcohol intake. Both medications and lifestyle modifications have complementary effect on lowering the blood pressure.
Bottom line is that if your doctor puts you on blood pressure medications, it is important for you to stay on it. You should not stop or decrease the dose of the medication on your own when your blood pressure came down to normal with medications. If you stop the medication on your own, your blood pressure will bounce back to higher level and may increase the risk ofcardiovascular disease.
You can change or stop the medications only under your physician's advice
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# Is It Panic Attack or Heart Rhythm Disorder

Many people with anxiety and panic attacks often have racing heart associated, sometimes with shortness of breath and dizziness. These symptoms may overlap with a condition called SUPRAVENTRICULAR TACHYCARDIA OR SVT.
This condition occurs when faulty electrical signal in the heart override the heart's normal pacemaker or electrical conduction system, and this triggers a series of fast heartbeats. During an episode of SVT, the heart rate can go up as high as 250 beats per minute or more and people may have multiple symptoms.( normal heart rate is between 60 to 100 bpm.).
When this happens, the hearts's lower chamber called ventricles don't have enough time to fill up with blood in between heartbeats. As a result, the brain and body may receive less blood than normal, and this may result in light headedness. Other symptoms that can occur with both SVT and a panic attack include sweating, choking sensation, chest pain, weakness.
During panic attacks, people may also experience feeling of impending doom and helplessness. Both panic attacks and SVT tend to be more common in women. Often in young women, SVT is often misdiagnosed as anxiety or panic attack, but this may happen in people of all ages. Most of the episodes of SVT start abruptly and end abruptly. However, many times they need medication to abort an episode
Many people with SVT, often have short episodes of flullering in the chest. These are often called atrial premature beats.These atrial premature rates are not harmful except they cause annoying symptoms called palpitation. They can also trigger anxiety or panic attack.
In some cases, this can be related to excessive caffeine consumption.( like coffee, tea, coke, Pepsi, etc.), alcohol consumption, excessive chocolate consumption. Some people are very sensitive to even small amount of these substances which can cause atrial premature beats. And SVT.
Sometimes, atrial premature beats, can trigger SVT or another condition called atrial fibrillation during which time heart beats fast and irregular, and may produce the same symptoms like SVT.
The problem with SVT is this-Since they often occur sporadically, it can be difficult to diagnose unless an electrocardiogram is taken during an episode. Nowadays, it is possible to record these episodes at home if you have a smart watch. An electric cardiogram done in doctors office can be normal.

However, on occasions in certain individuals, resting electrocardiogram may show abnormality suggesting short-circuiting in the electrical conduction system or otherwise called ORE-EXCIETATION ( like WPW SYNDROME). If this is present, it may be the trigger for SVT or Atrial Fibrillation .
Often, your cardiologist has to do long-term monitoring called event monitoring or loop monitoring for up to a month. You press a button to activate the recording whenever you notice your heart racing
A more convenient option, which may be available is a single waterproof patch that resembles a large Band-Aid. This is placed on your chest, it can record your heart activity for up to 30 days. For less frequent episodes another option is an implantable loop recorder, which is placed by a cardiologist just under the skin of the chest.
It can be programmed to capture high heart rates, or you can activate recordings by pressing a button on a small wand held over the device. However, this is usually reserved for people with more serious symptoms, such as fainting.
PREVENTING EPISODES OF SVT
-Avoid excessive caffeine consumption and alcohol consumption.
Chocolate can also precipitate in episode and better to avoid these,if you have palpitation -Your cardiologist may recommend certain medication to prevent recurrence of these episodes -Avoid smoking, including vaping and avoid illicit drug use -Doing Yoga and Meditation is a great way to help anxiety and panic attacks and may also improve your palpitation.
WHAT CAN YOU DO DURING AN EPISODE? ▪ Try to be calm, take deep breaths slowly. ▪ Valsalva maneuver- This maneuver will activate the vagus nerve which will slow down the heart rate. If you activate vagus nerve, you may be able to abort an episode. During this maneuver, you take a deep breath and hold it and push down as though you are constipated and moving the bowels.
Hold your breath for about 10 seconds and then relax. If this does not abort the episode, you can repeat this once or twice one minute apart ▪ You can also activate Vegus nerve by putting cold water on your face or drinking cold water or coughing violently few times ▪ Carotid Sinus massage- This also will activate the Vegus nerve. I would not recommend that you do this at home, unless you were trained to do that. THIS IS RESERVED ONLY FOR DOCTORS AND EXPERIENCED PEOPLE PREFERABLY DONE IN MONITORED SETTING. ▪ If an episode last more than 15 to 20 minut and if you have chest pain, shortness of breath, or if you faint, someone needs to call 911 and you need to go to the emergency room
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# Women and Spontaneous Coronary Artery Dissection

This topic is for all the women in the group and to their well wishers
Vast majority of the heart attacks are the result of atherosclerosis, and is the disease of aging. Most men experience their first heart attack in their mid 60s and women in their early 70s. Heart attacks can also occur in young, relatively healthy individuals also. When they do, SPONTENEOUS CORONARY ARTERY DISSECTION, otherwise called SCAD more likely to be the cause.
Instead of causing blockage and blood clots that interfere with the blood flow through the coronary arteries, SCAD causes a tear in the inside wall of an artery and drift into the lumen( which is the hollow center of the artery through which blood flows).
SCAD is the most common cause of heart attacks in women under the age of 65 but it can occur any time in a woman's life
CAUSES OF SCAD Even 10 years back, SCAD was considered to be rare event. Increasing awareness of the disease is causing it to be recognition more often. Unfortunately SCAD is under diagnosed even now. It is important to have high index of suspicion when a young person present with chest pain, more so in young women without traditional cardiovascular risk factor
SCAD is often seen in women with fibromuscular dysplasia, in patients with systemic inflammatory diseases such as rheumatoid arthritis or connective tissue disorders like Marfan Syndrome( where there is weakness in the wall of the arteries) and also in patients with hypothyroidism( underactive Thyroid).
Often SCAD is associated with pregnancy, occurring during the third trimester or shortly after delivery. It is more common in women with multiple previous pregnancies. SCAD in men is often associated with bench pressing heavy weights, and other forms of extreme exertion.
In both sexes, it is often seen increasingly associated with illicit drug use, emotional turmoil, and activities that cause internal pressure to raise such as Valsalva manueuver retching and straining. According to one study,, coronary artery tortuosity maybe a marker for a potential mechanism for SCAD.

Triggers for SCAD -Emotional stress precedes the event in approximately 50% of the cases -Exercise. Intense exertion precedes the event in an about 30% of the cases, including isometric stress, like lifting or pushing more than 50 pounds. Males are more likely than females to have isometric exertion as a trigger of SCAD -Hormonal. Endogenous or exogenous sex hormones such as estrogen and progesterone may trigger.SCAD

SIGNS AND SYMPTOM These patients often present similar to atherosclerotic heart disease, with changes in the electrocardiogram, and also increase in the cardiac biomarkers, such as increase in TROPONIN in the blood and also along with following symptoms -Chest pain and/or pain in the arms, neck or back -Sweating -Nausea and/orvomiting -Difficulty in breathing

CONFIRMING THE DIAGNOSIS Coronary and geography is considered the gold standard for confirming the diagnosis of SCAD.

MEDICAL TREATMENT Arterial tear that characterize SCAD generally heal by themselves overtime. Within 4 to 6 weeks, no evidence of the dissection can be seen in majority of the patients. For this reason, the primary treatment for.SCAD is medical management with aspirin and beta blockers with the goal of controlling blood pressure and heart rate.

There is some evidence that statin drug and angiotensin converting inhibitors ( like Lisinoprril) or Angiotensin receiptor blockers ( like Losartan) may be helpful. Platelet inhibitors like Plavix, Brillinta or Prasugrel may be prescribed in some patients.

Angioplasty and Stenting are not considered a standard treatment, since studies have shown that failure rates were higher with this procedures. These procedures and coronary bypass surgery are considered only for selected patients.

FOLLOW UP OF PATIENTS WITH SCAD All patients with SCAD needs to be followed by cardiologist and vascular medicine specialists. They all need to have CT Angiography to make sure that they don’t have any abnormalities in the blood vessels of the rest of your body, such as brain aneurysm.

Most experts, recommend avoiding extreme endurance training, exercising to exhaustion, competitive sports, and activities acquiring significant Valsalva maneuvers or straying. However, regular moderate intensity exercise is encouraged

Bottom line- SCAD was an overlooked condition, even 10 years back. Often patients were told., you are a fluke or you are the only patient I have with this diagnosis. But awareness has improved and more and more people, especially younger ones are found to have this diagnosis.

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# Factors Driving Heart Disease

What are the secrets of long life without the fear of heart disease? A major global study showed that smoking and high blood pressure are the most important factors driving the risk of developing heart disease. Along with high cholesterol ,overweight and diabetes are the five factors account for about 50% of the burden of cardiovascular disease.

The study was published in New England Journal of Medicine, which combined data from more than 2 million people in 39 countries on six continents. Researchers estimated their lifetime risk of developing cardiovascular disease and death from any cause up to 90 years of age, based on whether they had or did not have each of the five factors mentioned above.

Compared to people with all five risk factors at age 50, those who had none of these factors were much less likely to develop cardiovascular disease or die early. On an average, women with none of the risk factors at midlife, live 13 years more without heart disease while men live another additional 11 years.

As for overall survival, women without these five risk factors lived about 14 1/2 years longer while men gained nearly 12 extra years.

RISK MANAGEMENT Often all of these five risk factors occur together. It is not a surprise that presence of multiple risk factors significantly increase the risk. Among these factors, fewer than 9% of the Americans, age 65 and older are smokers . All of the other risk factors tend to become more prevalent as people age.

On the other hand, younger people get most benefit from modifying the risk factors. If you reach the age of 50 and have a number of these risk factors, it is all the more important for you to make changes to reduce the risk because of the huge impact it can have on how long you live. The study suggested that high blood pressure has the greatest impact.

Among people between the ages of 55 and 59 with all five risk factors, lowering the blood pressure to a healthy range was linked to the greatest increase in the number of years free from heart disease.

About 70% of all people older than 65 have high blood pressure, but only about 15 to 20% have it under control. Unfortunately, as much as 50% of all people with high blood pressure are no longer taking their blood pressure medications as prescribed.

Normal blood pressure is 120/80 and the blood pressure guidelines define high blood pressure as a reading of 130/80 or higher.

Your body weight or your cholesterol values can be measured quite precisely with a single reading. However, your blood pressure is different. It fluctuates quite a bit. Your blood pressure can be affected by so many different factors such as how much coffee you drink, whether you are under stress, how much alcohol you consume and so on.

Because of anxiety when you go to your doctor's office where blood pressure is often elevated, it is often difficult for your doctor to say that you definitely have high blood pressure or not. Often it will be helpful to have your blood pressure checked two or three times during your office visit.

It is a good practice for you to take deep breaths in and out for 5-10 minutes when you're sitting in your doctor's waiting room to calm yourself down. This also applies when you are sitting on the examination table while waiting for the doctor to come in. On the other hand, it's always a good practice to start monitoring your blood pressure at home.

If your blood pressure is even borderline elevated, it should be a wake up call for you to talk to your doctor about what you can do to lower it.

Some of the strategies include healthy eating habits, decreasing the salt intake, limiting or eliminating alcohol intake, exercise regularly, sleeping at least 7 to 8 hours at night and managing your stress with meditation and relaxation techniques suggest as yoga.

Good Luck to you all- For those of you who read this and to to those who don't read.

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# Some Information About Heart Rate Variability

Heart rate variability or HRV is a measure of tiny fluctuations in timing from one beat of your heart to the next. It is very small and measured in milliseconds. It is true that steady regular pulse is a sign of healthy heart. On the other hand, high HRV is linked to better cardiac health, which suggests that your heart is rapidly adapting to changes happening throughout your body.

HRV is a reflection of our autonomic nervous system Activity. This system runs on autopilot and regulates involuntary actions like heart rate, breathing, digestive system, etc. It is the interplay between two opposing systems. Sympathetic nervous system activates the “ fight or flight” response, in other words, governs the-stress response.

This increases the heart rate with less heart rate variability. On the other hand, parasympathetic nervous system, also known as ” rest and digest” system, promotes relaxation and recovery, which tends to lower the heart rate and increases HRV. A high HRV typically is better, and indicates parasympathetic dominance, meaning the body is better at managing stress and recovery.

The constant interaction between these two systems underlies the variability of your heart rate.

FACTORS AFFECTING HRV -HRV decreases with age. Older individuals generally have lower HRV compared to younger people, because of decline in the parasympathetic nervous system activity with aging. -Fitness level: Physically fit individuals often have a higher HRV because their cardiovascular system is better able to manage stress and recovery.

Regular aerobic exercise can increase HRV. -Stress: Poor sleep can reduce HRV. Good quality sleep is associated with higher HRV as it supports parasympathetic nervous system activity. -Nutrition and hydration: Poor nutrition, dehydration, and excessive alcohol intake can lower HRV.

A balanced diet, hydration and avoiding excessive stimulant like coffee and alcohol increases HRV. -Illness/Diseases: Cronic inflammation, heart disease, diabetes, anxiety, and depression and infection can lead to lower HRV.

It can be a helpful biomarker for assessing the health impact of chronic conditions. - Meditation.: Activities that-promote relaxation, like meditation, deep, breathing, yoga, and mindfulness can all significant increase the HRV by stimulating the parasympathetic nervous system. - Time of the day: HRV fluctuate throughout the day, typically being higher in the morning after good night sleep and lower in the evening after a stressful day.

It is also typically higher after a period of relaxation and lower after intense, physical activity or stress.

MEASURING HRV HRV is typically measured by analysis of the electrocardiogram or 24 hour Holter monitoring. Most smart watches measure your HRV automatically while you are sleeping, either continuously or briefly at specific intervals. Some also check periodically throughout the day or on demand.

Overnight checks are thought to better represent your autonomic nervous system activity, since these measurements were not influenced by activity and other external factors. You can check the companion health metric on your smart phone which are usually presented as an average over a set of time.

There is no set definition of what constitutes a high or low values, since so many things influence, HRV, including age, fitness level, genetics, medical history, and lifestyle habits. As such, there are no guidelines or recommendations from professional cardiovascular societies regarding HRV

If you want to track your HRV, don’t compare yourself with others. Just focus on your own baseline value. It may be helpful to see if you can improve your HRV as you adopt heart, healthy habits. Besides getting regular exercise, factors that tend to increase HRV are meditation, stress reduction, healthy, eating, and good quality sleep for 7 to 8 hours at night.

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# Choosing Healthy Carbs

Nutritionist refer to carbs as simple or complex, low quality or high quality or even good or bad. Carbohydrate-rich foods are also ranked by how quickly the sugar that they contain is absorbed into our bloodstream after eating them. This scale is known as GLYCEMIC INDEX or GI . Foods are ranked on a scale of 0 to 100. Pure glucose has a GI value of 100.

However, the GI value does not account for the quantity of the specific food a person typically eats. A separate measure known as GLYCEMIC LOAD, indicates the change in the blood glucose level when someone eats a typical serving of the food. It is calculated by multiplying the GI value by the amount of carbohydrate it contains.

GLYCEMIC INDEX <50 : Low 50-69: Medium > 70: High

GLYCEMIC LOAD 0-10: Low 11-19: Medium >20: High For the highest quality carb intake, choose foods that have low glycemic index and low glycemic Load and limit those with high numbers. Studies have suggested that diets with a higher glycemic index and glycemic load are associated with higher risk of developing diabetes , cardiovascular disease and death.

The link was strongest among people who are overweight or obese.

Glycemic index is one way to think about carbohydrate quality, but it is not the only way. Carbs can also be classified as sugars, starches, and fiber. SUGARS Easily digested, sugary foods, such as sodas, candies and desserts have a high GI value. Eating them causes blood sugar, spikes, and dips, which overtime can make the body less sensitive to insulin, the hormone that regulates blood sugar.

This results in insulin resistance and can trigger weight gain, inflammation, diabetes, metabolic syndrome, and coronary artery disease.

FIBER Foods full of fibers are digested much more slowly and tend to have a lower GI value. These include whole carbohydrate-rich foods such as whole grains, legumes( bean, peas), nuts, vegetables, and fruits. These carbohydrates are also classified as complex, high-quality or good carbs.

STARCHES These are the most commonly consumed form of carbohydrates. This include cereal grains, such as rice, wheat and corn, and root vegetables such as potatoes. People tend to eat mostly highly processed grains, such as white rice and foods made with white flour. These refined starches are quickly broken down into sugar, which is why they have higher GI index

RESISTANT STARCH Resistant start is similar to fiber in that it cannot be directly absorbed by the body. They are resistant to digestion in the small intestine, and instead reaches the large intestine intact. Unlike regular starch, which is broken down into glucose and absorbed into the bloodstream, resistance start act more like fiber in the digestive system.

It passes through small intestine without being digested and then ferment in the large intestine where it is broken down by specific gut bacteria. Eating foods high in resistant starch helps the growth of these health promoting bacteria. They produce short chain fatty acids which make our body more sensitive to insulin and reduces inflammation.

In other words, resistance starch has the opposite effect from sugars and other highly processed carbs in the body.

SOMETHING ABOUT POTATOES Potatoes have high glycemic index. Potato lovers might want to consider potato salad instead. REASON- if you leave the potatoes in the refrigerator for one or two days, the cold temperature transforms some of the starch into resistance starch.

Another trick that may slightly lower the foods glycemic impact is to add vinegar or lemon juice, as the acid slows the conversion of starch to sugar in the body.

FOODS WITH LOW GLYCEMIC LOAD Brand cereals, apples, oranges, kidney beans, black beans, lentils, cashews, peanuts, carrots MEDIUM GLYCEMIC LOAD Pearled barley, brown rice, oatmeal, whole-grain bread, whole grain pasta FOODS WITH HIGH GLYCEMIC LOAD White potatoes, refined, breakfast cereals, sugary beverages, candy bars, white rice, white flour-pasta.

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# Indian Diet and Associated Metabolic Risk Factors

Rapid dietary transitions in India have been associated with an alarming rise in the incidence of diabetes, pre-diabetes, obesity and cardiovascular disease.
There was a recent large scale nationwide study by the INDIAN COUNCIL OF MEDICAL RESEARCH( ICMR) AND MADRAS DISBETES RESEARCH FOUNDATION ( MDRF)has directly link the high carbohydrate content of the average Indian diet to an increase risk of new on diabetes and pre-diabetes.
I thought of reviewing the result of the study, which may help some of you here who consume a lot of carbohydrate and also to your relatives back home. Study analyzed the diets of over 18,000 adults across all regions of India, found that more than 62% of daily calories in the average Indian diet come from low quality carbohydrates such as white rice, milk, wheat, and added sugars.
Combine with high saturated, fat intake and low protein consumption, this dietary imbalance has become Important recipe for diseases.
LOW QUALITY CARB SOURCES: A significant portion of these carbohydrates comes from refined sources, such as white rice, refined, white flour ( Atta or Maida), and added sugars INCREASED RISK : Individuals with the highest carbohydrate consumption were found to have up to 30% higher risk of developing newly diagnosed type two diabetes compared to those consuming the list INSUFFICIENT PROTEIN INTAKE: Protein intake in the Indian diet was notably low, averaging only 12% of the daily calories, and that too predominantly from plant sources like cereals and pulses and very little from dairy, eggs and fish.
This protein intake is well below the global recommendation of 15 to 20% of the calories. REPLACEMENT STRATEGY: The study demonstrated that replacing just 5% of the dietary calories from carbohydrates with plant protein or dairy protein, significantly lower the risk of diabetes and pre-diabetes. Replacing carbs with red meat, did not show the same protective benefits.
GRAIN SWITCHING IS INSUFFICIENT: An important finding was that simply switching from white rice to other milled whole grains, like wheat or millet did not significantly reduce the risk. The key is to reduce the total quantity of carbohydrates and improve overall dietary composition.

The studies suggested that higher intake of milled whole grains, like wheat and millet, were still associated with adverse metabolic profiles, showing no benefit for milled whole grains. In India, most whole grains are consumed as milled flour for chapati and roti.
Milling lowers the particle size of whole wheat and increases its glycemic index to the extent that blood sugar response becomes similar to that of refined wheat products and white rice. Studies have shown that milled whole wheat flour increased blood sugar response after eating and increased body weight.
Replacing carbohydrates with protein from plant sources, dairy, eggs, or fish was associated with lower risk of diabetes. The quality of plant protein was thought to be equally important because in the present study, protein from pulses and legumes, but not cereals was associated with a lower risk.
Replacing rapidly digestible carbohydrates like refined grains, with the protein may improve blood sugar control, and lower the overall glycemic index of the diet while also addressing protein deficiencies Saturated fat intake was also high in Indian foods.
This is likely due to the high intake of ghee ( clarified butter ) in the North and the use of subsidized palm oil and coconut oil in the South. In addition, palmolein oil, due to its lower cost compared to other vegetable oils, is widely used in the food industry and in processed foods.
The definition of added sugars in this survey included only sugar added at the table, during cooking and from products with added sugars on the product label. It does not include sugar in the prepared food, especially Indian sweets. WHICH YOU ALL HAD LAST NIGHT ((HA HA HA ) . Therefore, actual sugar intake, maybe even much higher.
KEY HIGHLIGHTS.
FROM THE ICMR DIETART STUDY -60% of the total energy in Indian diets come from low quality carbohydrate (refined sugars and cereals) -High carb diet increases the risk of type 2 diabetes by about 30%, pre-diabetes by 20% and obesity by 22% -Replacing refined carb with milled grains, such as wheat or millet flour, offered no benefit -Substituting 5% of the carbohydrate calories with protein from dairy, pulses, eggs, or fish, significantly reduced diabetes, and pre-diabetes risk. -Protein intake in India is low-only 12% of total calories-with most coming from plant sources, and very little from dairy or animal protein.
Global recommendation is 15-20%.

Bottom line is to reduce total carbs, not just change the grain. Dr. Sudha Vasudevan ,Senior Scientist and Head of the Department of Foods, Nutrition and Dietics Reaearch at the Madras diabetes Research Foundation stated that irrespective of the grain type, total carbohydrate need to be reduced and replacing white rice with milled whole grain, like wheat or millet flour offers no benefit.
The reason she gave is this.-Whole grains must be consumed intact. Once they are mlled into fine flours, their glycemic index increases, making the body's response, similar to that of refined white rice. Milling breaks down the grain structure, causing blood sugar to spike faster.
All of this information is obtained from recent ICMR study done in India
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# Value of Blood Sugar Monitoring

Many people with diabetes, who are on insulin often use continuous glucose monitoring called CGMs using a skin patch. However, there are advantages for people who don't have diabetes to be mindful about their blood sugar. Often people want insight into how their eating and exercise pattern affect blood sugar fluctuations. These devices used to be available only through prescription in the past. However, at least two companies have developed over- the-counter continuous monitoring devices and are available without prescription and they are not very expensive Lingo from Abbott and Stella from Dexcom, two of the over-the-counter devices available.

HOW DO THEY WORK: The sensor, a " a small, flexible wire", is inserted under your skin by an applicator and it tracks your blood sugar levels 24/7. The device comes with two sensors, each one lasts up to 15 days and connect to an app on your iPhone or android that delivers your readings.

ADVANTAGES Monitoring your blood sugar may be useful for some people, even if you don't have diabetes and being mindful of glucose levels can help almost everyone move through the days more smoothly, helping with the issues such as fatigue, cravings, and mood swings. Many of us have more unhealthy habits than healthy habits.

Even though genes play a major role in developing prediabetes and diabetes, it can still develop solely from unhealthy lifestyle habits, such as poor eating choices, stress, inadequate sleep, and lack of exercise. This can all affect how our body processes sugar.

Pre-diabetes is defined as blood sugar levels which are higher than normal, but not high enough to be diagnosed as type two diabetes ( blood sugar level between 100 and 126). Nearly half of those 65 and older have pre-diabetes and this typically does not produce any warning signs.

While obesity place a major role in the development of diabetes and pre- diabetes, often people diagnosed with pre-diabetes are quite healthy and not overweight. Stress, being too sedentary, not sleeping well.-these all lead to blood sugar not being processed properly.

In women, menopause can also play a significant role to have pre-diabetes because of diminished estrogen and progesterone levels promote fats storage in the belly. This belly fat is associated with insulin resistance, meaning they are making insulin but body don't use it as efficiently. Incidence of diabetes has been gradually increasing over the past several years.

According to the CDC data, nearly 12% of the people in the United States, have diabetes, and more than 29% of the people 65 and older have diabetes too. American Diabetic Association recommends all adults, 35 and older, regardless of their risk factors, be screened at least once every three years for pre-diabetes and diabetes.

WHY BLOOD SUGAR FLUCTUATES When we eat carbohydrate-rich meals, blood sugar spikes, and then a short time later, blood sugar goes down dramatically, which may make us feel drained. By eating, balanced meals, and snacks, which include protein, fat and carbohydrate, we maintain more stable, blood sugar levels, which may keep our energy level consistent.

Surprisingly, blood sugar levels are not just a function of what we eat. Chronic stress and sleep deprivation can also increase blood sugar levels. Irregular meals and snack times can also lead to much bigger fluctuations in the blood sugar levels. One way to decrease the cravings and mood swings is to keep a narrow range of blood sugar, making sure that it never gets too high or too low.

If it goes too low you may over eat because you are too hungry, it can then swing too high, which can impair your mood. Too much fluctuations can also affect your body weight by altering your metabolism.

WHAT CAN YOU DO TO KEEP THE BLOOD SUGAR BALANCE -EATING AT REGULAR INTERVAL. This habit should prevent extreme blood sugar fluctuation.

-PORTION CONTROL. Portion control and regular meal time are the two things that is best bet for having more consistent blood sugar in a narrower range

-EATING HEALTHY- Mediterranean style diet, eating fruits, vegetables, legumes, whole grains, nuts, seafood, and skinless poultry-these foods will keep our body fuller longer and minimize blood sugar swings

-REGULAR EXERCISE- At least 30 minutes of moderate intensity exercise, five times a week would make your body better able to use the insulin you make —

SMOKING CESSATION- Smoking can indirectly affect the blood sugar by increasing insulin resistance and encouraging other unhealthy habits, such as poor diet, excess alcohol intake.

SOME INFORMATION ABOUT METFORMINE AND LONGIVITY: People with diabetes are living longer nowadays than in the past decades. Often it is suspected that most of the people with type two diabetes are taking a medication called METFORMIN.
And there is some evidence that metformin may be responsible for the longevity Researchers evaluated data from the WOMEN'S HEALTH INITIATIVE, a large national study that tracked nearly 162,000 participant between the ages of 50 to 79 for more than 30 years.
This analysis focused on 438 women 60 years and older, who are newly diagnosed with type 2 diabetes and hadn't used any diabetes medication before starting treatment. Half were taking metformin and other half another type of medication called Sulfonylurea.
Researchers also looked at participants' age, lifestyle habits, how long they had diabetes, other health conditions ( such as High blood pressure, heart disease, lung disease or cancer), body weight, and any other medications they were taking. The study showed that older women with diabetes who used metformin were less likely to die before the age of 90 than those who took Sulfonylurea.
Researchers thought that benefits of metformin come from its effect in increasing the insulin sensitivity and lowering the level of a growth factor implicated in cancer risk. There is also some evidence metforminne may decrease inflammation and slow something called cellular senescence, where cells stop dividing and replicating.
One of the study authors envision a future, where even people without diabetes might take metformin because of its potential effect on longevity. Clearly, we are not there yet, and certainly there is no recommendation for people to take metformin for this purpose at present. Time alone will tell.
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# Potassium Connection

Recommended daily consumption of potassium is 3500 to 4700 mg daily.
Vegetarians who consume a lot of vegetables, legumes, and fruits probably get plenty of potassium in their diet. Many plant based foods are not only rich in potassium, they are also naturally low in sodium, both of these can help to keep blood pressure in a normal range.
Diary products, and fish are also good source of potassium.
STORY OF SALT SUBSTITUTE Study published in New England journal of medicine a few years back, involving over 21,000 people living in rural China, many of whom had high blood pressure and history of stroke, 50% of them used regular salt while the other half used salt substitute that contained 25% potassium chloride and 75% sodium chloride.
After a follow up of about 4.7 years the risk stroke was 14% lower in those using the salt substitute. In the United States, about 75% of the sodium in the average diet comes from foods that are prepared elsewhere, namely processed foods and meals from supermarkets and restaurants.
Many entrées at restaurants chains contain more than 2300 mg of sodium-the recommended limit for an entire day's worth of salt.
NATURAL VS ADDED POTASSIUM Eating more fresh and unprocessed food is a smarter strategy of getting your potassium, rather than salt substitute that contain 50 or 100 percent potassium chloride. Food manufacturers already use potassium chloride in some products ( such as bread, cereal, cheese, and processed meats) to replace the percentage of the regular sodium chloride they would normally use. Potassium salt has some bitter, metallic flavor that sometimes limits how much people will tolerate.
POTASSIUM AND THE KIDNEY There is another reason to be cautious about supplementing food supply with potassium. High potassium levels called Hyperkalemia can trigger dangerous heart rhythm disorders and in extreme cases can cause cardiac arrest. Fortunately, hyperkalemia or high potassium levels isn't something most people need to worry about.

Most of the people who have normal kidneys shouldn't have a problem, since kidneys filter excess potassium out of the body through urine. Advanced age, diabetes and heart failure may impair kidney function, and also certain medications can cause the kidneys to retain potassium. These medications are often used to treat high blood pressure and heart failure.
These include, so called potassium sparing diuretics. ( like epleranone or Inspra, Spiranolactone or Aldactone), and Triamterene ( Dyrinium, Maxzide). Two classes of drugs, used to treat high blood pressure and heart failure can also elevate potassium levels.
These include ACE Inhibitor such as Lisinopril( Prinavil,Zestril), Ramipril and Angiotensin receptor blockers such as Losartan ( Cozaar) and Valsartan ( Diovan) also can cause potassium elevation in some people. A blood test called basic metabolic panel is usually done 2 to 4 weeks after people start taking these medications can detect abnormal potassium levels.
Once you are on a stable drug regimen, and your doctor has confirmed your kidney function is normal, you can have your potassium checked on a yearly basis. But to be safe, if you are taking one of these drugs it is better to avoid salt substitutes containing potassium chloride.
It's also a good idea to check with your doctor if you can eat more potassium-rich foods, although the risk of hyperkalemia from food is likely very small. Commonly used painkillers called nonsteroidal anti-inflammatory agents, such as ibuprofen ( Advil) and Aleve( Naproxen) can also cause high potassium level more so when used chronically.
Common symptoms of high potassium level include muscle weakness, fatigue, nausea, tingling or numbness in the body, chest pain, shortness of breath, slow and irregular heartbeat, and in extreme cases, cardiac arrest.
Low potassium level called hypokalemia can also occur. Diuretics, like hydrochlorothiazide,chlorthalidone, Furosemide( Lasix), Bumtenide( Bumex), Torsemide can cause low potassium level. Symptoms of low potassium include muscle weakness, fatigue, muscle cramps, or spasms, constipation, cardiac irregularities.
GOOD SOURCES OF POTASSIUM -Sweet Potato -Soybeans -Cantaloupe -Banana, grapes, orange, apricot -spinach -Tomatoes
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# What Is Virtigo

Vertigo is not really a cardiovascular condition, but someone asked me to write on this topic and here it is
VERTIGO is a symptom, not a condition in itself. Telling someone that you have vertigo is like saying you have back ache. Vertigo is the sensation that the environment around you is spinning in circles. It can also make you feel dizzy and off balance. The word vertigo originate from Latin word, VERTERE , meaning “to turn”. It can make you feel unsteady on your feet, lightheaded, faint or feel like you are in motion when you are not. Some people also have associated nausea and vomiting. It may last for a few seconds or a few days, but feels very uncomfortable to the patient. Fortunately, it is rarely dangerous, but it can provoke falls, which is a leading cause of death from injury in older adults
TYPES OF VERTIGO There are mainly two types of vertigo- PERIPHERAL AND CENTRAL. 1.PERIPHERAL VERTIGO This is the most common type of vertigo and many cases originate from the inner ear, which is the headquarters of our body’s vestibular system, which regulates our sense of balance and spatial orientation.
The common triggers include dehydration, alcohol use, hormonal imbalance during perimenopause, certain foods, and also stress
A) BENIGN PAROXYSMAL POSITIONAL VERTIGO (BPPV) This is more prevalent in older adults and occurs when tiny crystals in the inner ear called CANALITHS shift out of place. Certain head moments, such as turning over in bed can trigger intense symptoms.
B) VESTIBULAR MIGRAINES This is variant of conventional migraines. This form does not always involve a headache, but produce vertigo and other balance related symptoms.
C) VESTIBULAR NEURITIS This is typically caused by a viral infection, and this condition is often called acute labyrinthitis, and it is a inflammation of the balance apparatus of the inner ear D)MENIERE’S DISEASS This condition is often associated with ringing in the ears and progressive, low frequency, hearing loss. This is often prompted by a change in the inner ear fluid volume
CENTRAL VERTIGO This is less common. It occurs when you have a condition affecting your brain, like an infection, stroke or traumatic brain injury. People with central vertigo, usually have more severe symptoms like severe instability or difficulty in walking.

OTHER ASSOCIATED SYMPTOMS Vertigo is often associated with other symptoms, such as nausea and vomiting, dizziness, balance issues, hearing loss in one or both ears, ringing in the ears, headache, motion sickness, and a feeling of fullness in the ear. Often people have what is called nystagmus which is a jerking eye moment, during which your eyes move from side to side rapidly and uncontrollably.
TREATMENT STRATEGIES If dizziness is associated with other symptoms, such as sudden changes in the vision, hearing or speech, numbness or tingling on one side of your body or face, you will need emergency medical attention, to make sure that you're not having a stroke or other neurological conditions.
In any case, your first vertigo attack should prompt you to make a doctors visit, since there is no way of knowing whether the course is common or serious.
MEDICATIONS are often prescribed to decrease the sensitivity of the inner ear, reducing dizziness, and nausea that comes with it . Your doctor may give you meclizine or antihistamines like cyclizine to ease vertigo symptoms.
A canalith repositioning procedure called EPLEY MANUEVER which involves moving your head through a series of positions to shift the ear crystals to other areas that won't trigger dizziness.
Vestibular therapy or balance rehabilitation, in which you learn exercises to help you manage dizziness, and balance problems. This type of physical therapy helpful in most cases.
Most important thing is to be active. Whether your episode is short or long, chronic or episodic, avoid being sedentary when symptoms subside. It causes more harm than good to sit and wait for the next episode of vertigo.
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# Update on Coronary CT Calcium Score

Coronary artery disease is a condition in which fatty material and plaque buildup in the walls of the coronary arteries surrounding the heart muscle. When this happens, the artery narrows or becomes blocked, preventing adequate blood flow from reaching the heart, causing angina or heart attack.

PATHOPHYSIOLOGY OF CORONARY CALCIUM DEPOSITION Coronal classification occurs as part of the ongoing process. Overtime, lipid filled plaques undergo, dystrophic, calcification, a process mediated by inflammatory cells, vascular smooth muscle cells, and oxidative stress.

While calcification is typically associated with stable Plaques, a high calcium score correlates with greater burden of atherosclerosis and increased risk of heart attack and strokes.

FACTORS CONTRIBUTING TO CORONARY ARTERY CALCIFICATION -Age related vascular changes -Hypertension and abnormal functioning of the innermost layer of the coronary arteries( Endothelial dysfunction). -Abnormal lipids and chronic inflammation -Diabetes and pre-diabetes -Smoking and chronic oxidative stress -Genetic predisposition to arterial calcification -Chronic kidney disease and calcium-phosphorus metabolism disorders

CORONARY ARTERY CALCIUM AND PLAQUE STABILITY Studies have suggested that calcified Plaques maybe more stable compared to non-calcified soft Plaques, which are prone to rupture and cause acute cardiovascular events. However, a high overall coronary artery calcium score, still signifies an extensive atherosclerotic burden which necessitates aggressive prevention measures.

IDENTIFTING RISK Before coronary CT calcium scoring was available, risk was assessed with the physical examination and lab work. An individuals age, weight, blood pressure, cholesterol, and body mass index were entered into a formula, which calculates whether they were at low, intermediate or high risk.

However, some individuals thought to be at low risk still have heart attacks and strokes, so obviously, we were miscalculating risk in some individuals. This is where CT calcium scoring is useful. It helps to identify high risk, patience who were otherwise missed.

CALCIUM SCORE MEASUREMENT AND INTERPRETATION Coronary artery calcium scoring is performed using a non-contrast, cardiac CT and quantified using AGATSTON SCORING METHOD.

The total calcium score is stratified into these risk categories. -0: no detectable calcified plaque ( very low risk) -1 to 100: Minimal to mild plaque ( low to moderate risk) -101 to 400: moderate to severe plaque ( high risk ) -More than 400: Extensive plaque ( very high risk )

LIMITATIONS OF CALCIUM SCORING While coronary artery, calcium scoring is a useful risk stratification tool, it doesn't provide information on noncalcified soft plaques, which can still cause significant cardiovascular risk. Complementary imaging method such as coronary CT angiogram. ( CCTA ), may provide additional insights into plaque composition

CALCIUM SCORE BY AGE AGE 20-39: - Most individuals have calcium score of zero - Any detectable calcium in this age group is concerning and suggest early atherosclerosis and should undergo aggressive risk factor modification AGE 40-49 -a calcium score of zero remains common in lower risk, individuals, but some Calcification may begin to appear in those with cardiovascular risk factors.

AGE 50-59 -The prevalence of coronary calcium increases significantly in this age group. A calcium score of 1 to 100 is common in this age group and scores more than 400 indicate high likelihood of coronary artery disease AGE 60 AND OLDER -most individuals in this age group will have some degree of coronary calcification. Calcium score more than 400 are frequently observed, necessitating aggressive risk factor, modification, and further cardiac evaluation.

WHO SHOULD GET A CALCIUM SCORE TEST A calcium scoring test can assist your physician in making treatment decisions for people with borderline risk of heart disease. Calcium score testing results could help you if you are between the ages of 40 and 70 and increased risk for heart disease but don't have symptoms.

People at increased risk include -Have a family history of heart disease -use tobacco products, now or in the past -Have a history of high cholesterol, diabetes, or prediabetes or high blood pressure -Have overweight with a body mass index of greater than 25 or obesity with the body mass index of greater than 30 -Have inactive lifestyle If you are younger than 40 years old and high cholesterol runs in your family ( familiar hyper cholesterolemia) , you might consider calcium score testing

WHO SHOUDN'T GET CALCIUM SCORE TEST Pregnant women should not have calcium scoring test because a CT scan could harm a fetus A calcium score test may not be helpful if you -Don't have any risk factors for heart disease -Have high risk of heart disease -Have a diagnosis of coronary disease or had prior treatment for coronary artery disease -Have symptoms that may suggest coronary artery disease -Want to know if your treatment for heart disease is working. -You are taking a high intensity, statin as a preventive measure, you don't need this test

HOW OFTEN SHOULD YOU HAVE A CALCIUM SCORE TEST You may see a benefit from having a calcium score test every 3 to 5 years. It's only helpful to repeat a scan if you had normal score meaning calcium score of zero, the first time and want to know if your risk is still low.

However, it is not helpful to repeat the test if you ever had an abnormal results before, meaning a calcium score greater than zero.

A coronary city calcium scoring test cost about $100 and usually insurance doesn't pay for it. The test itself takes less than a minute to perform. To have the test done, you need an order from a physician.

In summary, you want to be sure the test will answer your question. Calcium scoring does not identify soft, young plaques that can rupture causing a heart attack. Therefore, normal test may not be reassuring, if someone has just discomfort or difficulty in breathing. However, in someone who feels well, a calcium score of zero can indicate low risk of heart attack and stroke.

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# Indian Version of Mediterranean Diet

The Mediterranean diet is a way of eating that emphasizes plant-based foods and healthy fats. You focus on overall eating pattern rather than following strict formulas or calculations.

In general, you eat : -Lots of vegetables and fruits, beans, lentils, and nuts -A good amount of whole grains, like whole wheat bread, and brown rice -Use extra virgin olive oil as a source of healthy fat -A good amount of fish, especially icy in omega-3 fatty acids -A moderate amount of natural cheese and yogurt -Little or no red meat, choosing poultry, fish, or beans instead of red meat -Little or no sweets, sugary drinks or butter -Moderate amount of wine with meals, but if you don't already drink, don't start.

INDIAN ADAPTATION OF THE MEDITERRANEAN DIET If you combine the foundation of the heart protective Mediterranean diet with vibrant and vegetarian friendly aspect of the Indian cuisine, you will get variety of flavorful dishes, packed with fiber and anti-inflammatory diet that may also provide health benefits.

There was a small study published in August 2025 in the journal of the clinical lipidology in which researchers swapped in foods common to northern India to create an Indian adapted Mediterranean diet. This is a small study involving 53 people recruited from a cardiology clinic in New Delhi.

After three months on the diet, the participants had modest improvement in body mass index, blood sugar, and leptin levels. Leptin is produced by fat cells which can trigger inflammation- an outpouring of harmful substances in the bloodstream that is known to contribute to heart disease.

DIETARY INFLMMATORY INDEX SCORE According to the study,Indian version of Mediterranean diet has the lowest dietary inflammatory index score ever reported in a scientific study. This score. -which is based on 45 dietary factors, such as vitamins, minerals, and other beneficial compounds.-reflex a diet's inflammatory potential. Anti-inflammatory foods like vegetables, fruits, whole grains, and healthy oil have lower scores, while pro-inflammatory foods( rich in sugar, unhealthy fats, and red and processed meat) have higher scores. There is wide variation in Indian cuisines in various regions, but there are aspects of a heart healthy diet commonly found throughout India.

This include red meat in moderation, but plenty of legumes, along with variety of inflammation-fighting foods, such as fruits, vegetables, and spices.

These are the ingredients of Indian version of the Mediterranean diet PROTEINS: About 40% Indians are vegetarians and those who consume animal protein, often choose chicken or fish, as many people avoid beef and pork for religious reasons. Legumes, which are low in fats, but high in fiber are popular sources of protein in Indian diet.

Featuresd recipes include Chana Masaala( chickpeas in a tomato based sauce), Dal( a soupy stew made from dried split lentils or peas) and Paneer( mild flavoredcheese dish) are all protein sources used in curries and other dishes. CARBOHYDRATES: White basmati rice is common in Indian diet.

However., changing to brown rice and other whole grains, including millet, barley and buckwheat may improve nutritional value. Flat breads, such as roti and chapatis are prepared with whole wheat instead of white flour. HEALTHY FATS: In some Indian cuisines Ghee( Clarified butter) or coconut oil are used, both of which contain high amount of saturated fats.

Instead of these, more healthy oil sources include using peanut oil or mustard oil which are easily available in India. The ideal choice would be extra virgin olive oil or avocado oil, and use ghee only sparingly for extra flavor. VEGITABLES: Eggplant, tomatoes and peppers are often in both Mediterranean diet and its Indian version. Green leafy vegetables include spinach and readily available fenugreek leaves and radish leaves in India. In United States, especially in Southern states, collard greens are healthy options.

FRUITS: Besides oranges and bananas, fruits commonly eaten in India include tropical fruits, such as mangoes, papaya, and guavas .People in this country, who go to Indian restaurants often drink mango lassi, which is made with mango pulp and yogurt. However, this often include added sugar and heavy cream, making them more like a rich unhealthy drink.

For those who like mangoes, a healthier version would be to make your own by blending plain yogurt, and chunks of frozen mangoes, and a pinch of ground cardamom. Off-course in this country, there are plenty of varieties of healthy fruits available.

AROMATIC ROOTS AND SPICES.: These compounds are responsible for the unique flavors to Indian foods, but they are also known for their anti-inflammatory properties. This include onions, garlic, and ginger, and of course, Garam masala, which is a blend of spices that often contains coriander, cumin, cinnamon, cardamom, cloves, and black pepper.

Turmeric and red Indian chili or other popular and potent additions are part of healthy Indian cuisins
BENEFITS OF MEDITERRANEAN DIET: The Mediterranean diet and it's Indian version have many benefits, which include: -Lowering your risk of cardiovascular disease, including heart attack, and stroke -Supporting body weight that is healthy for you -Supporting healthy blood, sugar levels, blood pressure and cholesterol. -Lowering your risk of metabolic syndrome -Supporting a healthy balance of gut microorganisms in your digestive system -Lowering your risk of a certain cancers -Slowing the decline of brain function as your age -Helping you live longer
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# Pre-diabetes and Diabetes 101

I am not a diabetologist, but there is a strong association between pre-diabetes, diabetes and heart disease. I'm hoping that this discussion will help at least some of you.

Glucose is the primary fuel source for humans. While some tissues, such as muscles can use glucose or alternative fuels, the brain relies solely on glucose for normal function. Because of this, regulating blood glucose level is critical for maintaining brain and body function. Normal blood sugar is tightly controlled within range of 70 to 140 mg/dl to ensure adequate energy for bodily functions.

NORMAL GLUCOSE CONTROL The body has developed mechanisms to help to manage glucose levels, ensuing the rise appropriately after meals and to store glucose for use during fasting periods when food intake is lower.

ROLE OF INSULIN Insulin is the key hormone responsible for glucose regulation. When we eat, carbohydrates are absorbed, causing the sugar to rise in the blood and this rise in the blood sugar triggers the release of insulin from the pancreas. Primary role of insulin is to keep blood sugar levels within normal range after meals .

It does this by acting at multiple sites in the body, predominantly at the tissue levels, stimulating glucose uptake by muscles and fat after meals. Insulin also acts in the liver to promote glycogen formation or the storage of glucose for use between meals in the fasting state.

The liver helps to maintain blood glucose levels by releasing stored glycogen and producing glucose through what is called gluconeogenesis during fasting. This ensures a study supply of fuel for the brain and other tissues, like the gut and muscles, even when we are not eating.

These two rolls of insulin-namely, limiting the glucose spikes after meals and ensuring steady glucose levels during fasting.-are key to maintaining balance in the blood sugar.

WHAT HAPPENS WITH DIABETES With diabetes, this precise regulatory system is disrupted. Insulin action is impaired, leading to elevated blood sugar or hyperglycemia. Diabetes can be due to one of the two disruptions to the system

INSULINE DEFIENCY: This is when the pancreas does not produce enough insulin. This happens mostly in type 1 diabetes.

INSULINE RESISTENCE: this is when the body produces insulin, but it does not work effectively at the tissue level. This is more common in type 2 diabetes.

INSULINE RESISTENCE With insulin resistance, there is plenty of insulin, but it cannot act effectively on peripheral tissues, which leads to elevated blood glucose level due to decreased glucose uptake by the tissues HOW DOES THIS CAUSE ELEVATED BLOOD GLUCOSE: Hyper glycemia with insulin resistance is due to multiple causes PERIPHERAL TISSUES DON'T "SEE" THE INSULIN: With insulin resistance, insulin continues to be produced from the pancreas after meals, but the peripheral tissues don't "SEE" the insulin, and are unable to take glucose from the blood, resulting in post- meal hyperglycemia.

THE LIVER ALSO CANNOT "SEE" THE INSULIN: Normally, insulin suppresses the release of glucose from the liver after meals. In Insulin resistance, the liver thinks that the body is fasting and continues to release glucose, even when blood sugar levels are already high, further contributing to hyperglycemia.

This combination of reduced glucose uptake by the peripheral tissues and increased glucose production by the liver leads to persistent hyperglycemia, which is the hallmark of type 2 diabetes Overtime, these elevated blood sugar levels contribute to the long-term complications of diabetes, including damage to the eyes, kidneys, nerves, and blood vessels

DIAGNOSIS OF DIABETES Type 2 diabetes affects about 6% of the world's population. Nearly half of these individuals are unaware of their diagnosis. The lack of awareness often leads to delay or insufficient treatment, resulting in significant morbidity and mortality. Early diagnosis is crucial to improve patient outcomes and to prevent long-term complications.

IDENTIFYING RISK The first step in the diagnosis is identifying patients at risk of developing type 2 diabetes. Most guidelines recommend screening the following population- -Adults over the age of 45 -overweight individuals of any age who have one or more risk factors.

These risk factors include.- -family history: having a first-degree relative with diabetes. -Ethnicity and ancestry: Diabetes is more prevalent among African-Americans, Latinos, indigenous people of North America, South Asian, specially people from Indian subcontinent Gestational diabetes history: Women with history of gestational diabetes are more likely to develop type 2 diabetes after pregnancy Certain comorbidities: These include cardiovascular disease, hypertension, and hyperlipidemia.

DIAGNOSING TYPE 2 DIABETES -A fasting blood sugar( after at least 8 hours of fasting ) greater than 126 mg/dL -Oral glucose tolerance test- For this, the patient drinks a solution containing 75 g of glucose and their blood sugar is measured two hours later.
Reading of greater than 200 mg/dL is diagnostic of diabetes. -Hemoglobin A1c: This test measures patient's average blood sugar levels for the past three months, which can give information about both fasting and post-meal blood sugars. A A1c of 6.5% or higher confirms a diagnosis of diabetes. This test does not need to be fasting.
Regardless of the test used, any abnormal results must be confirmed with repeat testing. A confirmed diagnosis requires two abnormal results from any of these screening tests
PRE-DIABETES AND ITS DIAGNOSIS.
Pre-diabetes is diagnosed using the same test as we use for type 2 diabetes, but with different cutoffs IMPAIRED FASING GLUCOSE: Patients with a fasting blood sugar of 100-126 mg/dL are classified as having impaired fasting glucose , one type of pre-diabetes IMPAIRED GLUCOSE TOLERENCE: If a patient undergoes an oral glucose tolerance test where blood sugar is measured two hours after consuming 75 g of glucose, result of 140-200 mg/dL indicates impaired glucose tolerance,another form of prediabetes HEMOGLOBIN A1c: A1c between 5.7% And 6.4% indicates pre-diabetes.
MONITORING FOR COMPLICATIONS Diabetes is a complex deceased that requires constant monitoring/not just of the sugar, but of the many complications that can arise over time 1. Cardiovascular disease: this is the number one cause of death and serious illness in patients with type 2 diabetes.
If a patient has symptoms of heart disease such as chest pain, shortness of breath, unexplained fatigue, it is essential to have cardiovascular evaluation. However, patient without symptoms, routine cardiac testing is not necessary. 2. EYES: patient should receive diabetes eye examination every year to check for diabetic retinopathy, which can lead to vision loss if untreated 3.
KIDNEYS: kidney function should also be monitored annually, including a urine test for microalbuminuria, which can detect early diabetic kidney disease 4. NERVES: diabetic neuropathy can cause foot problems, reducing sensation in the feet and increasing the risk of ulcers and infections

SLEEP APNEA: diabetes has a major impact on sleep and mental health. Sleep apnea is extremely common in patients with type 2 diabetes, and make blood sugar harder to control. Patients who snores ,wake up gasping for breath, or feel excessively tired during the day should be screened for obstructive sleep apnea. If suspected , a sleep study can confirm the diagnosis.
PREVENTING PROGRESSION TO DIABETES All patients with pre-diabetes are at risk of developing type 2 diabetes, but with proper intervention, you can prevent this.
LIFE STYLE CHANGES The most effective way to prevent diabetes is through lifestyle changes, particularly weight loss and increasing physical activities.
Studies have shown that loosing just 7% of body weight through a reduced calorie diet and at least 150 minutes of moderate intensity exercise per week can cut the risk of diabetes by 50% over three years MEDICATIONS Medication can also play a role, particularly for patients at high risk METFORMIN: metformin is the only medication that has been specifically studied for diabetes prevention.
It can reduce the risk of diabetes by 31% overall, with even greater benefits in patience with a body mass index over 35, where risk reduction reaches 58%.
GLUCAGON-LIKE PEPTIDE-1 ( GLP-1 ) RECEPTOR AGONISTS AND SODIUM-GLUCOSE COTRANSPORTER 2 (SGLT2 )INHIBITORS: These newer medications originally developed for diabetes, treatment have shown promise in diabetes prevention due to their significant weight loss effects
WHAT ABOUT STATINS? My talk will be incomplete if I don’t talk about statins. A common concern in patient with prediabetes is the use of statins, which are widely prescribed to reduce cardiovascular risk. Some studies suggest that statins slightly increase the risk of developing diabetes, which might seem like a reason to avoid them in pre-diabetic patients.
However, it is essential to look at the bigger picture. Prediabetes itself is already linked to an increased risk of cardiovascular disease and statins significantly lower the risk. For most patients, the cardiovascular benefits of statins far outweigh the slight increase in diabetic risk, making them an important part of preventive care. However, patients on statins should have regular monitoring of their blood sugar to ensure that blood sugar levels are well maintained.
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# Cardiac Arrest in Apparently Healthy Young Adults

Sudden cardiac death is the Swift and unexpected ending of all heart activity. Breathing and blood flow stop right away. Within seconds the patient is unconscious and dies. Sudden cardiac death in apparently healthy people under the age of 40 is rare. It is more common in males than females .

In the literature “young” is arbitrary defined as an age of 35 to 40 years old or less. Beyond this age, coronary artery disease is the commonest cause of sudden unexpected cardiac death. Even though, coronary artery disease and heart attacks can occur in younger people, it is not as common as in older individuals.

Heart condition that are not diagnosed such as congenital heart disease ( including coronary artery anomalies ) can cause sudden death in teenagers and young adults during physical activity, such as competitive sports. But sudden cardiac death can also occur without activity .

HOW COMMON IS SUDDEN CARDIAC DEATH IN YOUNG PEOPLE Most sudden cardiac deaths are in older adults, particularly those with heart disease. However, sudden cardiac death is the leading cause of death in young athletes. Estimates vary, but some reports suggest that about one in 50,000 to 1 in 100,000 young athletes dies of sudden cardiac death each year

CAUSES OF SUDDEN CARDIAC DEATH Changes in the heart’s electrical activity often causes sudden cardiac death. Anything that strains the heart or damages heart tissue can increase the risk of sudden cardiac death. Some of these conditions that can lead to sudden cardio that in young people are: THICKENED HEART MUSCLE, ALSO CALLED HYPERTROPHIC CARDIOMYOPATHY.

This genetic condition is the most common cause of sudden cardiac death in young people. It causes the heart muscle to become too thick. This thickening makes it hard for the heart to pump blood, and this can cause fast and irregular and chaotic heartbeat. The heart can’t pump the blood to the body. This life threatening type of irregular heart beat is called VENTRICULAR FIBRILLATION.

LONG QT SYNDROME . This is a cardiac rhythm, problem in which electrical conduction system takes longer than normal to reset between beats. This is shown in the electric cardiogram as prolonged QT interval. This heart rhythm condition can cause fast, chaotic heartbeats. It is linked to fainting for no apparent reason and sudden death, especially in young people.

If one is born with this condition, it is called congenital Long QT syndrome. It can also be caused by several medications or health condition, in which case it is called acquired Long QT syndrome . OTHER HEART RHYTHM CONDITIONS. These include Brugada Syndrome and Wolf- Parkinson- White Syndrome ( WPW SYNDROME ).

FORCEFUL HIT TO THE CHEST A blunt chest injury that causes sudden cardiac death is called COMMOTIO CORDIS. This may occur in athletes who are hit hard in the chest by sports equipment or by another player. This condition does not damage the heart muscle. Instead, it changes the heart electrical signaling.

The blow to the chest can trigger ventricular fibrillation which can lead to cardiac arrest. The hit must occur at a specific time in the heart's signaling cycle.

CONGENITAL HEART DISEASE Some people are born with changes in the heart and blood vessels. These changes can reduce blood flow and lead to sudden cardiac death. NONCARDIAC CAUSES OF SUDDEN CARDIAC DEATH.

These include drug overdose, blood clot in the lungs called pulmonary embolism, bleeding around the brain, called subarachnoid hemorrhage, seizures, anaphylaxis ( Severe allergic reaction ) and certain infections. WARNING SIGNS. Many times sudden cardiac death occurs without warning or warning signs may not be noticed. Some of the warning signs include.- Fainting, also called syncope.

Fainting that cannot be explained and occurs during activity or exercise could mean there may be a heart problem SHORTNESS OF BREATH OR CHEST PAIN. These symptoms could be a sign of a heart problem. But condition such as asthma also can be the cause. That is why it is important to get a complete health check up.

FAMILY HISTORY OF SUDDEN CARDIAC DEATH This family history makes a person more likely to have the same type of heart event. If there is a family history of death that cannot be explained, it's important to talk to the physician about screening options.

CAN SUDDEN CARDIAC DEATH IN YOUNG PEOPLE BE PREVENTED if someone is at high risk of sudden cardiac death, doctors may tell him or her not to play competitive sports. Depending on the underlying condition, medicine or surgery maybe recommended to lower the risk of sudden death. For example, a device called an implantable cardioverter-defibrillator ( ICD ) maybe be placed in the chest.
This device continuously check the heart rhythm. If life-threatening heart rhythm occur, the ICD delivers electrical shocks to reset the heart. Many athletic training centers, schools, offices, airports,gyms-and other places have a portable device called an automated external defibrillator called AED. An AED is used to treat someone during cardiac arrest.
It delivers shock to reset the heart rhythm. No training is needed to use it. The device tells you what to do. It is programmed to give a shock only when necessary.
PROGNOSIS OF YOUNG ADULTS WHO HAVE CARDIAC ARREST Among all apparently healthy young adults who have a cardiac arrest, about 60% die before reaching the hospital, and only 9 to 16% are discharged from the hospital alive. However, survival rate increases to about 35%, for those who have a witnessed cardiac arrest with shockable heart rhythm and receive prompt initial chest compression with cardiopulmonary resuscitation (CPR) or use of AED which provides an electrical shock to the heart.
RESPONSIBILITY OF BYSTANDERS Bystandards should call 911 and immediately start CPR. If available, an AED should be used. Once its box is opened, the AED provides verbal instruction about how to attach sticky pads to the chest and advices when to press a button to deliver a shock to the heart or announces that a shock will be given automatically.
All resuscitative efforts, including CPR should continue until emergency medical service professionals are at the scene and take over the care of the victim.
WHO SHOULD BE SCREENED FOR SUDDEN DEATH RISK FACTORS There is no agreement on this in the medical community. One Italian study found that mandatory heart checks of young people with an electrocardiogram leads to a lower rates of sudden cardiac death. But some worry, this type of screening can suggest something is wrong when there is not a problem. This is called a false positive result. Another worry is that screening would lead to over diagnosis of conditions that may never cause harm. One idea was to do routine electric cardiogram on athletes before they play competitive sports to identify risk and prevent sudden cardiac death. However, it is not clear that routine electrocardiogram for athletes can prevent sudden cardiac death.

But such testing might help to identify some who are at a higher risk. If there is a family history or risk factor for conditions that cause sudden cardiac death, screening is typically recommended. American Heart Association does not recommend sudden cardiac death screening for young people who are not atheles and who don’t have heart disease symptoms.
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# Cardiovascular Effects of Snow Shoveling

◦ Friends, I have sent this once before. I have revised it and sent this again for the benefit of those who venture into shoveling the snow this time . About hundred people, mostly men dies during or just after shoveling snow each year in US and many more are admitted to the hospital with chest pain or other heart related symptoms .

Deeper the snow and longer the snowfall, higher the rates of heart attacks.

Why should this happen? Shoveling, snow, including pushing a heavy snowblower can raise your heart rate and blood pressure more quickly and more dramatically. Snow shoveling is very similar to performing a peak exercise on a stress test, so it puts a lot of strain on your heart.

The difference is that 85% of the predicted maximum heart rate which is aimed during the peak stress test in your doctors office, is achieved within two minutes of heavy snow shoveling, and this puts a lot of strain on your heart and more so for someone who isn't used to actually exercising regularly.

WHY SNOW SHOVELING IS DANGEROUS TO YOUR HEART 1. Intense exercise and cold temperature. First, shoveling snow put much higher workload on the heart than what people normally do for their exercise. To estimate the intensity of an activity or exercise, experts often use the term metabolic equivalent.(Mets). One MET is how much energy you use just sitting still.

Moderate intensity exercises are 3 to 5.9 METs and vigorous exercise is like shoveling snow are 6 METs and higher. 2. So when you are shoveling snow , you can reach your maximum heart rate and Blood Pressure after just a few minutes, as your heart has to work hard to send oxygenated blood to your legs and arm muscles.

Snow shoveling requires use of arm muscles, which, for most people is more strenuous than other exercise. If you have coronary artery disease, that is one or more of your heart arteries are narrowed, there may not be enough blood to supply your heart muscles. That results in discomfort, also known as Angina. If the discomfort gets. worse and persists, that is a heart attack. 3.

After a snowstorm, it is quite cold outside and windy and cold temperature can make our arteries constrict. This further worsens any blood flow problems in the arteries of the heart. So it's likely that the intense physical exertion from shoveling snow combined with cold weather is what makes this practice risky for people who have or who are at risk for heart disease.

We don’t hear anyone having a heart attack while raking leaves, partly because it is not as cold and effort isn’t as intense. It is about 4 METs

The impact of snow removal is especially concerning for people who already have cardiovascular risks like sedentary lifestyle, obesity, being a current or farmer smoker, having diabetes, high cholesterol or high blood pressure as well as people who have had a heart attack or stroke.

People with these characteristics and those who have had bypass surgery or coronary artery stenting simply should not be shoveling snow.

Symptoms of heart attack after showing snow Chest discomfort, trouble, breathing or discomfort that radiates down the arm or into the neck are hallmark signs of potential heart attack. If you experience any of these symptoms, stop and seek medical attention right away.

Call 911, not your spouse driving you to the ER .You should also pay attention to other less common signs of a heart attack because not everyone have classical symptoms. These less frequent symptoms include dizziness, lightheadedness, getting tired more easily, feeling like a cold sweat is coming. Unfortunately, the first symptom of heart attack could be sudden death.

So what is the solution? The philosophy that GOD PUTS THE SNOW THERE AND HE WILL TAKE IT AWAY-doesn’t help-in that case, he will take several weeks.

Many Cardiologists suggest that if you had a normal stress test and the test showed no reason for concern or you routinely do vigorous exercise, such as running, playing single tennis or cycling 10 mph or faster, it is reasonable to remove an inch or two of snow from your driveway or sidewalk. But do it slowly and pay close attention to how you are feeling.

You shouldn’t be doing your entire driveway at one sitting. Shovel a small portion, take rest and do some more. Even maneuvering a heavy snowblower can be taxing.

Best thing to do is, after a heaviest snowfall, please play it safe and hire a professional Please don’t ask me to pay the professional. Remember, I am retired. Unfortunately you have to pay. That is the money well spent.

Remember,thick heavy snow is more difficult to clear and more strenuous Pushing the snow with a shovel is less taxing to your heart than lifting and throwing.

TIPS TO REDUCE THE INCREASED RISK FROM SNOW SHOVELING -If you have known or suspected Cardiovascular disease or risk factor for heart disease, get someone else to do your snow removal for you ( NOT YOUR SPOUSE OR FRIENDS). -If you must shovel the snow, start gradually and pace yourself. -Always cover your mouth and nose, wear layered clothing, as well as a hat and glosses. -Ideally, push or sweep the snow rather than lifting and throwing it,that action involves little less exertion. -Be extremely careful when the wind is blowing, the wind makes the temperature feel even colder than it is and will increase the effect of the cold on your heart -Breath continuously and don't hold your breath -Avoid shoveling right after waking -Stay well hydrated -Stop immediately if you feel unwell.
And also don't forget the other effects of snow shoveling, such as injuring your back, falling and having a fracture or other injuries. DON'T COMPLAIN LATER THAT I DIDN'T WARN YOU
All the above information are well known to all of you. I'm just reiterating the well known facts. Good Luck during this snow storm. REMEMBER NO BODY IS IMMUNE. I STRONGLY URGE EACH ONE OF YOU TO LEARN CARDIO PULMONARY RESUSCITATION (CPR). . GOOD LUCK AND BE SAFE.
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# Peripheral Arterial Disease

Peripheral Arterial disease ( PAD ) it's a form of atherosclerotic vascular disease, which affects predominantly the arteries in the lower extremities. PAD occurs when fatty deposits collect in the arteries, supplying the legs and reduce the blood flow to the lower extremities. It is often a surrogate for coronary artery disease and cerebrovascular disease .

In other words, people with peripheral arterial disease often have coronary artery disease and/ or Cerebrovascular disease. It is estimated that one in 10 people over the age of 55 have lower extremity PAD. The same factors that cause plaque buildup in the coronary arteries also result in plaque deposits in the lower extremity arteries. This includes advanced age, smoking, high cholesterol, high blood pressure, diabetes, and sedentary lifestyle.

SYMPTOMS OF PAD The classical pain of PAD is called claudication ( from Latin word meaning " to limp"). The pain usually occurs in the calf muscles, but also strike the thigh, hip or buttocks. This occurs while walking and goes away with rest. Sometimes people don't notice the discomfort until they walk a mile into the walk, but some patients experienced the pain even before they reach their mailbox Some other changes which people will notice with PAD include coldness or discoloration in one or both feet, slow healing of foot sores or slow growth of leg hair or toenail.

All of these are signs of poor circulation to the legs and may signal more serious condition called critical, limb-threatening ischemia ( CLTI ), which, if untreated, may lead to amputation.

CLTI requires immediate treatment with artery opening procedure to restore blood flow. ( angioplasty and stenting or bypass surgery to the legs. ) Although smoking is the biggest culprit to cause PAD, diabetes is also worrisome. Diabetes tends to weaken and damage the blood vessels. If not well controlled, diabetes may lead to peripheral neuropathy which cause numbness in the feet.

As a result, pain from the PAD may go unrecognized.

DIAGNOSIS OF PAD To test for PAD, doctors do a test called ANKLE-BRACHIAL INDEX, which compares the blood pressure in your arm to the blood pressure in your ankle. If your arteries are clear, the two readings should be fairly similar. Lower pressure in the ankle suggest PAD. Doctors sometimes also use an ultrasound or a CT angiogram for more precise diagnosis.

PREVENTING PAD The same lifestyle advice for preventing heart attack also applies for PAD.: quit smoking, follow a healthy diet and get regular exercise. For people with PAD, walking is probably the best way to slow the progression of the disease and reduce its complications. This might sound counterintuitive because our natural tendency is to avoid pain by limiting walking.

The temporary discomfort pays off over the long run. Walking promotes blood flow in the smaller arteries of your legs and create new channels ( called collaterals ) that help to move blood around the blocked areas and this may eventually helps to decrease the pain.

This is something like a highway closure when there are multiple detours to move the traffic on smaller roads around the obstruction. Overtime, the traffic flow will be the same as if the original highway was reopened. Ideally people should walk as long as they can, until they feel leg pain and then rest until the pain subsides and then continue to walk.

Overtime, you will be able to walk farther and farther before the pain sets in. This process improves the release of nitric oxide from the leg arteries, which relaxes blood vessels to deliver more blood and helps the muscles use oxygen efficiently.

Supervised exercise therapy, done on a treadmill, or in any place that allows for continuous walking, overseen by an exercise therapist or nurse has proven benefits for people with PAD. Unless you are very disciplined, leg pain makes it difficult to override that temptation to quit walking. You may need to be gently pushed to walk far enough to make the exercise beneficial

DRUGS FOR PAD PAD and CAD are both forms of atherosclerotic cardiovascular disease and respond to the same medical therapy. Studies have shown that only 30% of the people with PAD take the recommended medication’s for slowing the progression of atherosclerosis and reducing their risk.

People diagnosed with PAD should immediately start taking a statin and anti-platelet drugs like Aspirin or Plavix. They should stop smoking and take control of their blood sugar, blood pressure, cholesterol, and weight.

If your PAD is mild at the time it is diagnosed, and you get these risk factors under control, there is a good chance you can prevent the disease progression A medication called CILOSTAZOL may help people with PAD to walk longer distances before needing to stop due to pain

SURGICAL OPTION Stenting is another option. However, stenting is not as effective as supervised walking therapy in relieving leg pain caused by clarification. Stenting or surgery, however, can be the go-to treatment in an emergency. If patient's limb is threatened by lack of blood flow, or at risk of getting gangrene or needing an amputation, stenting or surgery may save his leg.

Similarly, if leg pain becomes so severe that it impairs one's lifestyle or ability to work, then surgery or stenting may be recommended. The ability to stent sometimes depends on the size and location of the blockage. Some peripheral arteries are so small to stent or the blocked area is too long to place a stent.

The popliteal artery which is behind the knee, continually bends and flexes, which may cause a stent to break.

In summary, many people with PAD often ignore their symptoms. Since many people with this disease have coronary disease or cerebrovascular disease also , it is important to pay attention to PAD symptoms. If someone has symptoms suggesting PAD, it is better to have ANKLE-BRACHIAL INDEX TEST done to diagnosed the condition. This is a very simple test and it's non-invasive.

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# What Is Apo B Test and Who Should Have It

Excess amount of cholesterol in our bloodstream, can accumulate in our arteries, causing heart attack or a stroke or peripheral arterial disease. Standard blood test, which include total cholesterol, triglycerides, LDL cholesterol, and HDL cholesterol may not always give a full picture about the risk.

Many people, especially those with diabetes, fatty liver disease, and abdominal obesity may benefit from another test called Apolipoprotein B also called Apo B test Cholesterol is a waxy substance, and it is water insoluble, and therefore it cannot freely circulate in the bloodstream. It is packaged into tiny protein-covered particles, called Lipoproteins, which helped them to move freely in the circulation.

Apo B is a protein that attaches to harmful fat particles in the blood to form Lipoprotein, including low density lipoprotein or LDL.An Apo B test measures the number of LDL and other fat particles that can contribute to blocked arteries. It is a better indicator of your risk than LDL cholesterol, which is an estimate rather than direct measurement.

All the lipoproteins that contribute to clogged arteries, known as atherogenic particles carry a single Apo B molecule on their surface. But they differ in the amount of cholesterol they carry.

They include not only LDL cholesterol, but also intermediate density lipoprotein.( IDL), very low density, Lipoprotein(VLDL), chylomicrons( the largest, lowest density particles made mainly of fat) and lipoprotein (a)

A standard cholesterol test usually reports your total cholesterol- which is the sum of your VLDL, LDL, IDL AND HDL combined. . Some labs also report non-HDL cholesterol, which is total cholesterol minus the HDL. This value measures all the cholesterol in atherogenic Apo B particles. But this does not reveal the actual number of these particles, which carry varying amount of cholesterol.

**APO TEST RESULTS**

The apo B number is important because LDL particles-which carry most of the cholesterol in your blood-come in a range of sizes and are not created equal. If the LDL particle in your blood are mostly on the small size, you will have a greater number of these particles for any given LDL cholesterol level compared to someone with larger particles.

The more particles are traveling in your blood, the more likely they are to become stuck inside your arterial wall. So, while your LDL cholesterol value may appear normal or even low, your apo B maybe high

Since the apo B test reveals the total number of atherogenic particles in the blood, it provides a better picture of a person's risk of cardiovascular disease

**Apo B numbers**

In healthy people, apo B values are less than 90 mg/dL which is considered acceptable. Values between 90 and 129 mg/dL ore considered borderline high to moderately elevated. Values greater than 130 mg/dl are linked to a much higher risk for cardiovascular diseas. However, it is better to keep the number less than 70 for high risk patients

**WHO NEEDS APO B TEST**

This test is widely available. There are two reasons why apo B test is not done routinely. 1. Based on decades of research that relies on cholesterol values, regular lipid panels is deeply ingrained as the standard way to assist heart disease risk 2. LDL cholesterol and Apo B are very closely related, so for most people, LDL cholesterol is generally a good surrogate for Apo B

Present guideline suggests that people with heart disease aim for an LDL level below 55 mg/dL. While.an Apo B of 90 mg/dL is fine in a healthy person, an ideal Apo B value is less than 70 mg/dL, if you have multiple risk factors or you already have heart disease

People with metabolic syndrome, pre-diabetes, diabetes, abdominal obesity, elevated triglycerides, or fatty liver disease- are more likely to have high Apo B levels. These people should consider Apo B testing. This should also be considered in people with strong family history of early heart, disease, as well as those with normal or low LDL level and have evidence of cardiovascular disease.

**HOW TO IMPROVE APO B LEVEL**

Lifestyle habits, such as following a Mediterranean diet, getting regular exercise can moderately lower the number. Cholesterol, lowering medication, including statins, Ezetimibe ( Zetia), Bempedoic acid( Nexletol ),PCSK9 inhibitors such as Alirocumab(praluent), Evolocumab ( Repatha), and Inclisiran (Lequivo )- these are much more effective in improving apo B level.

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# Prevent-new Cardiovascular Risk Estimation

Several cardiovascular risk estimation calculators were developed in US and in Europe. Many of them helped to estimate the 10 year risk of developing cardiovascular disease.
In 2023, American heart Association and American College of cardiology developed a new calculator called PREVENT ( PREDICTING RISK OF CARDIOVASCULAR DISEASE EVENTS ) which estimates 10 year and 30 year risk of developing cardiovascular disease, including atherosclerotic cardiovascular disease and heart failure.
It is the first tool to combine, cardiovascular, kidney and metabolic health measures to guide primary prevention focused treatment decisions.
PREVIOUS RISK CALCULATORS DEVELOPED IN US:
FRAMINGHAM RISK SCORE: This was the first risk calculator developed to help primary prevention for cardiovascular disease in 1998. The calculator used data from the Framingham heart study, one of the first longitudinal study evaluating cardiovascular disease.
THE POOLED COHORT EQUATIONS ( PCEs ) RISK CALCULATOR: This was developed by American College of cardiology and American Heart Association in 2013 largely replace the Framingham risk calculator. PCEs added DATA concerning fatal and non-fatal CVD, making it more comprehensive compared with the Framingham score. PCEs consistently over estimated the risk.
PREVENT ( PREDICTING RISK OF CARDIOVASCULAR DISEASE EVENTS ) app was developed in 2023 from large observational cohort study of more than 6.5 million US adults, making it more applicable to the current US population compared with the previous calculators which rely on older studies.
Additionally, the PREVENT app includes the use of estimated glomerular, filtration rate, urine albumin to creatine ratio, ZIP Code ( as a surrogate factor for social economic factors ) and hemoglobin A1c. PREVENT app also includes an option for assessing the risk of developing heart failure, and in addition helps to calculate 10 and 30 year risk estimates

COMPONENTS OF PREVENT RISK CALCULATOR This include; Age Gender Smoking status Systolic blood pressure Total cholesterol level HDL cholesterol level BMI ( basil, metabolic index) Diabetic status eGFR ( Estimated Glomerular filtration rate-available in your comprehensive metabolic panel ) Hemoglobin A1c Anti-hypertensive medication use Statin medication use

This calculator helps to estimate the 10 year and 30 year risk of developing cardiovascular disease and heart failure in people between the ages of 30 and 79. Based on calculated risk, The following estimations could be made: Less than 5% = Low risk 5 to 7.5% = Borderline risk 7.5 to 20%. = Intermediate risk. More than 20% = high risk Generally, speaking, patients with 10 year risk of greater than 7.5%, needs to be on statin therapy depending upon their LDL level.

In People with 10 year risk less than 7.5%, use of statin therapy depends on presence of other risk factors. Patients with diabetes as well as those with LDL level greater than 190 mg/dL, needs to be on statin therapy irrespective of their risk score. Patients who have elevated Lipo protein(a) level needs to be on statin therapy, irrespective of their LDL level.

This is because Lp(a) is stickier and is more atherogenic( higher tendency to cause atherosclerosis) then LDL cholesterol. People with elevated Lp(a) should also consider taking low-dose aspirin.

There has been a recent paradigm shift with the selected use of imaging with a coronary artery calcium score ( CAC) to define atherosclerotic cardiovascular disease risk estimation and the initiation of preventive medication and life style changes.

ADVANTAGES OF PREVENT SCORE PREVENT score was done using a large sample size, including over 6 million individuals compared to only over 48,000 participants in the previous PCE. PREVENT model removes race from the risk prediction.

Given the increasing prevalence of cardiovascular disease among the younger population ( age less than 40), the PREVENT equation includes age 30 to 39, enabling earlier risk identification and a greater opportunity for providing preventive advice, such as healthy lifestyle and possibly earlier use of drug therapy. This also includes eGFR as a risk modifier.

Major improvement in the model is the inclusion of heart failure as a primary outcome. Inpatients who develop heart failure, over 60% of patients have history of atherosclerotic cardiovascular disease.

In summary, risk calculators including PREVENT is only a guideline and at the individual level, decision to treat goes far beyond population studies like PREVENT. Individual should also consider additional factors such as family history, lifestyle, and presence of cardiovascular disease risk enhancers.
These risk enhancers include: family history of premature cardiovascular disease, chronic kidney disease, persistent LDL cholesterol greater than 160 mg/dL or triglycerides greater than 175 mg/dL, elevated Lp(a) level, high risk racial/ethnic groups ( Such as we Indians), inflammatory conditions, such as rheumatoid arthritis, HIV, Lupus and factors unique to women ( pre-eclampsia, premature menopause, polycystic ovarian syndrome).
If there is still uncertainty in the use of preventive interventions, a coronary calcium score ( CAC) can be used for additional help.
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# Some Myths About Cardiovascular Care

More than 70% of the Americans use social media, which has become a popular source of health information. This trend is especially troubling to cardiologists. According to an article in the December 2025 issue of the American journal of preventive cardiology, misinformation about cardiovascular care, especially about statins is a major threat to public health.

When people who are good candidates for statins either avoid or stop taking them, with the result they are more vulnerable to disabling or fatal heart attacks. In this issue of HEART TALK, I will try to explain some of the myths about the diet, exercise, and statin use.

A FEW MYTHS ABOUT HEALTHY EATING MYTH

## 1: ALL FATS ARE BAD

This is not true. Healthy facts are essential for our body. Think of olive oil, avocados, nuts, seeds, and fatty fish. These foods contain fats that help improve cholesterol by raising HDL and lowering LDL cholesterol.

The Mediterranean diet, which emphasizes these healthy fats, has been shown to improve heart health, even when combined with statin therapy

MYTH #2: SIMPLY CUTTING OUT CHOLESTEROL-RICH FOODS SOLVE HIGH CHOLESTEROL: While it is true that reducing foods like organ meats or shellfish can help, dietary cholesterol, actually has a limited effect on your blood cholesterol. The real culprits are saturated, fat and trans fats, which have a much greater impact. So instead of fixating on cholesterol-rich foods, focus on an overall heart healthy diet.

MYTH #3; MANAGING CHOLESTEROL MEANS BORING BLAND MEALS This is not true. Healthy eating can and should be enjoyable! Using herbs, spices and creative cooking techniques, you can transform nutritional meals into flavorful satisfying dishes.

MYTH

## 4: EGGS ARE BAD BECAUSE OF CHOLESTEROL

Eggs were once blamed for raising the cholesterol. Truth is, for most healthy people, dietary cholesterol has minimal impact on blood cholesterol. Eggs are rich in

proteins and nutrients. Moderate egg intake is ok
MYTH #5:FRUITS HAVE TOO MUCH SUGAR Fruits contain natural sugar, but also fiber, vitamins, antioxidants, and water. Truth is, whole fruit supports health. It is not comparable to added sugar in soda or candy.
MYTH #6:DAIRY IS INFLAMMATORY FOR EVERY ONE Some people are lactose intolerant. Diary isn't harmful for most people. Yogurt and milk provide protein, calcium, and probiotics
MYTH#7: SALADS ARE ALWAYS HEALTHY Some salads contain more calories than burgers due to heavy dressings and fried toppings. Truth is- ingredients matter more than the label.
MYTHS ABOUT EXERCISE
MYTH #1: ONLY INTENSE EXERCISE BENEFITS HEART: This is false. Moderate physical activity is also highly effective in promoting heart health. Brisk walking, cycling, swimming, elliptical or even gardening can significantly reduce cardiovascular risk. The secret is consistency.
Short repeated periods of exercise go a long way to improve health, by lowering blood pressure, reducing LDL cholesterol and raising HDL cholesterol. Instead of doing 30 minutes of exercise continuously daily, if you do 10 minutes of exercise three times daily should also be equally effective.
MYTH

# 2: EXERCISE HAS A SIGNIFICANT IMPACT ON LDL LEVEL:

While physical activity does help to raise HDL level and improve overall cardiovascular health, its effect on lowering LDL is minimal. It is important to address this myth because many high risk patients believe exercise and diet alone are enough to lower the LDL cholesterol.
For these patients, lifestyle changes are vital, but often not sufficient on their own.
MYTH #3: EXERCISE CAN UNDO THE EFFECT OF AN UNHEALTHY DIET While staying active is vital, it is not a free pass to eat poorly. A diet high in saturated and trans fat can still raise LDL cholesterol and increase cardiovascular risk, regardless of regular exercise.

Additionally, around 20% of the population are naturally better absorbers of dietary cholesterol, making healthy eating, particularly critical for them. What is the bottom line?? to get the best results, healthy eating and regular exercise need to go hand-in-hand.

MYTH #4: IF YOU EAT WELL AND EXERCISE REGULARLY, YOU DON'T NEED STATINS AND OTHER LIPID LOWERING DRUGS:

While lifestyle changes are incredibly important, they are not always enough. Many people, especially those with genetic predisposition, high cardiovascular risk or existing heart disease, still need statins or other drugs to effectively manage cholesterol level.

Think of it this way: Lifestyle changes and lipid lowering medications work together as a team, providing a more complete approach to managing cholesterol and improving heart health.

MYTH #5: YOU NEED TO EXERCISE DAILY TO GET THE BENEFITS; It is recommended that atleast 30 minutes of aerobic exercise five times a week for a total of at least 150 minutes per week is beneficial, However, Weekend Warriors, who can do the 150 minutes during the weekend only, get equal benefits.

So in other words, if you're working, you cannot give an excuse that you don't have the time to do the exercise during the weekdays. You can accomplish the entire 150 minutes goal, during the weekend and get the benefit.

STATIN MYTHS Social media posts about statins side effects are often dominated by anecdotal experiences and sometimes invalid information.

MYTH #1: STATINS CAUSE MEMORY LOSS: In 2012, after a series of flawed studies linked memory loss to statin use and FDA required statin drug labels to include information about memory loss and cognitive function. Many people worried that lower cholesterol levels might impair brain function.

The fact is the brain produces its own cholesterol and does not rely on the cholesterol present in the blood. The studies were poorly designed, lacking many scientific controls, needed for validity and often relying on anecdotal evidence and self reported symptoms. To confirm this association, additional well designed studies were performed, including large scale, randomized control trials.

But no significant difference in cognitive function between statin users and non-users was ever found. The FDA has since clarified that the potential cognitive effect are very rare and reversible when they do occur and the benefit of statins in reducing cardiovascular events far outweigh the risks.

MYTH

# 2: STATINS INCREASE THE RISK OF DIABETES

While statins can slightly raise the blood sugar levels, this is mainly a concern for patients with existing pre-diabetes. For these individuals, a diabetic diagnosis might just confirm a pre-existing condition. Importantly, the cardiovascular benefits of statins far outweigh slight risk, even in these individuals.

Bottom line is to check blood sugar after several months of statin therapy, and if the blood sugar has increased significantly, changing to another statin or trying another cholesterol lowering drug such as Azitimibe( Zetia) can be tried.

I hope the above information is helpful for some of you. I'm hoping that I did not open up the Pandora's box.

Keshava Aithal CC

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# Medical Glossary

## A

Aortic Valve
The valve that controls blood flow from the left ventricle into the aorta, the main artery that carries blood to the body.
Related chapters: Heart Talk #2 (chapters/chapter2.html), Heart Talk #43 (chapters/chapter43.html)

Apolipoprotein
A protein that binds with lipids (fats) to form lipoproteins, which transport cholesterol and other fats through the bloodstream.
Related chapters: Heart Talk #2 (chapters/chapter2.html)

Arrhythmia
An irregular heartbeat that occurs when the electrical signals that coordinate heartbeats don't work properly.
Related chapters: Heart Talk #46 (chapters/chapter46.html)

Atherosclerosis
A condition where fatty deposits (plaque) build up in the artery walls, narrowing the arteries and restricting blood flow to organs.
Related chapters: Heart Talk #1 (chapters/chapter1.html), Heart Talk #12 (chapters/chapter12.html), Heart Talk #16 (chapters/chapter16.html), Heart Talk #20 (chapters/chapter20.html)

Atrial Fibrillation
An irregular and often rapid heart rhythm that can lead to blood clots in the heart and increase stroke risk.
Related chapters: Heart Talk #46 (chapters/chapter46.html)

## B

Blood Pressure
The force of blood pushing against artery walls as the heart pumps blood. Measured in millimeters of mercury (mmHg).
Related chapters: Heart Talk #45 (chapters/chapter45.html), Heart Talk #48 (chapters/chapter48.html)

BMI (Body Mass Index)

A measure of body fat based on height and weight. Calculated as weight in kilograms divided by height in meters squared.
Related chapters: Heart Talk #6 (chapters/chapter6.html), Heart Talk #10 (chapters/chapter10.html)

# C

Calcium Score
A measurement of calcium buildup in coronary arteries using CT scanning, indicating the presence and extent of coronary artery disease.
Related chapters: Heart Talk #1 (chapters/chapter1.html), Heart Talk #40 (chapters/chapter40.html)

Cholesterol
A waxy, fat-like substance found in all cells of the body. The body needs cholesterol to make hormones, vitamin D, and substances that help digest food.
Related chapters: Heart Talk #2 (chapters/chapter2.html), Heart Talk #3 (chapters/chapter3.html), Heart Talk #12 (chapters/chapter12.html), Heart Talk #13 (chapters/chapter13.html), Heart Talk #23 (chapters/chapter23.html)

Coronary Artery Disease
A condition in which the major blood vessels that supply the heart with blood, oxygen, and nutrients become damaged or diseased, usually due to plaque buildup.
Related chapters: Heart Talk #1 (chapters/chapter1.html), Heart Talk #16 (chapters/chapter16.html), Heart Talk #17 (chapters/chapter17.html), Heart Talk #40 (chapters/chapter40.html)

CT Scan (Computed Tomography)
An imaging procedure that uses X-rays and computer processing to create detailed pictures of the inside of the body.
Related chapters: Heart Talk #1 (chapters/chapter1.html), Heart Talk #40 (chapters/chapter40.html)

# D

DASH Diet
Dietary Approaches to Stop Hypertension - an eating plan designed to help lower blood pressure through nutrition.
Related chapters: Heart Talk #32 (chapters/chapter32.html), Heart Talk #48 (chapters/chapter48.html)

Diabetes

A chronic condition that affects how the body processes blood sugar (glucose), leading to elevated blood sugar levels.
Related chapters: Heart Talk #10 (chapters/chapter10.html), Heart Talk #18 (chapters/chapter18.html), Heart Talk #50 (chapters/chapter50.html)

Diastolic Pressure
The bottom number in a blood pressure reading, measuring the pressure in arteries when the heart rests between beats.
Related chapters: Heart Talk #45 (chapters/chapter45.html)

# E

ECG/EKG (Electrocardiogram)
A test that records the electrical activity of the heart over a period of time using electrodes placed on the skin.
Related chapters: Heart Talk #17 (chapters/chapter17.html), Heart Talk #46 (chapters/chapter46.html)

Emergency Medical Services
Healthcare services provided in response to medical emergencies, including ambulance transport and immediate medical care.
Related chapters: Heart Talk #28 (chapters/chapter28.html)

# H

HDL (High-Density Lipoprotein)
Often called 'good cholesterol' - HDL picks up excess cholesterol in the blood and carries it back to the liver for disposal.
Related chapters: Heart Talk #2 (chapters/chapter2.html), Heart Talk #3 (chapters/chapter3.html), Heart Talk #13 (chapters/chapter13.html), Heart Talk #23 (chapters/chapter23.html)

Heart Attack
A medical emergency that occurs when blood flow to part of the heart is blocked, usually by a blood clot, causing damage to the heart muscle.
Related chapters: Heart Talk #17 (chapters/chapter17.html), Heart Talk #28 (chapters/chapter28.html)

Heart Murmur
An unusual sound heard during a heartbeat, often caused by turbulent blood flow through the heart valves.
Related chapters: Heart Talk #43 (chapters/chapter43.html)

Hypertension

High blood pressure - a condition in which the force of blood against artery walls is consistently too high.
Related chapters: Heart Talk #45 (chapters/chapter45.html), Heart Talk #48 (chapters/chapter48.html)

# I

Insulin Resistance
A condition in which cells don't respond properly to insulin, leading to elevated blood sugar levels and increased diabetes risk.
Related chapters: Heart Talk #10 (chapters/chapter10.html), Heart Talk #50 (chapters/chapter50.html)

Intermittent Fasting
An eating pattern that cycles between periods of fasting and eating, which may have cardiovascular and metabolic benefits.
Related chapters: Heart Talk #8 (chapters/chapter8.html)

# K

Kidney Function
The ability of the kidneys to filter waste products from the blood and regulate fluid balance, closely linked to heart health.
Related chapters: Heart Talk #18 (chapters/chapter18.html)

# L

LDL (Low-Density Lipoprotein)
Often called 'bad cholesterol' - LDL carries cholesterol to arteries where it may accumulate as plaque.
Related chapters: Heart Talk #2 (chapters/chapter2.html), Heart Talk #3 (chapters/chapter3.html), Heart Talk #12 (chapters/chapter12.html), Heart Talk #23 (chapters/chapter23.html)

Lipoprotein(a)
A type of LDL cholesterol particle that can accelerate atherosclerosis and increase heart disease risk.
Related chapters: Heart Talk #2 (chapters/chapter2.html)

# M

Metabolic Syndrome
A cluster of conditions including high blood pressure, high blood sugar, excess abdominal fat, and abnormal cholesterol levels that increase heart disease risk.

Related chapters: Heart Talk #10 (chapters/chapter10.html), Heart Talk #51 (chapters/chapter51.html)

MRI (Magnetic Resonance Imaging)

An imaging technique that uses magnetic fields and radio waves to create detailed images of organs and tissues.

Related chapters: Heart Talk #40 (chapters/chapter40.html)

Myocardial Infarction

The medical term for a heart attack - death of heart muscle tissue due to lack of blood supply.

Related chapters: Heart Talk #17 (chapters/chapter17.html), Heart Talk #28 (chapters/chapter28.html)

# O

Omega-3 Fatty Acids

Essential fats that have anti-inflammatory properties and cardiovascular benefits, found in fish, nuts, and seeds.

Related chapters: Heart Talk #23 (chapters/chapter23.html), Heart Talk #29 (chapters/chapter29.html)

# P

Panic Attack

A sudden episode of intense fear or anxiety that triggers severe physical reactions, sometimes mistaken for heart problems.

Related chapters: Heart Talk #46 (chapters/chapter46.html)

Plaque

A buildup of cholesterol, fat, calcium, and other substances in the artery walls that can restrict blood flow.

Related chapters: Heart Talk #1 (chapters/chapter1.html), Heart Talk #2 (chapters/chapter2.html), Heart Talk #12 (chapters/chapter12.html), Heart Talk #16 (chapters/chapter16.html)

# R

Resveratrol

A compound found in red wine, grapes, and berries that may have cardiovascular protective effects.

Related chapters: Heart Talk #21 (chapters/chapter21.html)

# S

Saturated Fat

A type of dietary fat that is solid at room temperature and can raise LDL cholesterol levels when consumed in excess.

Related chapters: Heart Talk #23 (chapters/chapter23.html), Heart Talk #32 (chapters/chapter32.html)

Silent Heart Attack

A heart attack that occurs with minimal or no symptoms, often going unrecognized until discovered later.

Related chapters: Heart Talk #17 (chapters/chapter17.html)

Statin

A class of medications that lower cholesterol levels by blocking an enzyme the liver needs to produce cholesterol.

Related chapters: Heart Talk #3 (chapters/chapter3.html), Heart Talk #12 (chapters/chapter12.html)

Stress Test

A diagnostic test that measures heart function during physical activity or medication-induced stress.

Related chapters: Heart Talk #40 (chapters/chapter40.html)

Stroke

A medical emergency that occurs when blood flow to the brain is interrupted, causing brain cells to die.

Related chapters: Heart Talk #21 (chapters/chapter21.html), Heart Talk #48 (chapters/chapter48.html)

Systolic Pressure

The top number in a blood pressure reading, measuring the pressure in arteries when the heart beats.

Related chapters: Heart Talk #45 (chapters/chapter45.html)

# T

Triglycerides

A type of fat found in the blood that, when elevated, can increase the risk of heart disease.

Related chapters: Heart Talk #16 (chapters/chapter16.html)

# U

Unsaturated Fat

A healthier type of dietary fat that is liquid at room temperature and can help lower LDL cholesterol.

Related chapters: Heart Talk #23 (chapters/chapter23.html), Heart Talk #32 (chapters/chapter32.html)

# V

Ventricular Septal Defect

A hole in the wall between the heart's two lower chambers (ventricles), often present from birth.

Related chapters: Heart Talk #43 (chapters/chapter43.html)

Vertigo

A sensation of spinning or dizziness, which can sometimes be related to cardiovascular issues.

Related chapters: Heart Talk #53 (chapters/chapter53.html)

Visceral Fat

Deep abdominal fat that surrounds internal organs and is strongly linked to cardiovascular disease risk.

Related chapters: Heart Talk #6 (chapters/chapter6.html), Heart Talk #10 (chapters/chapter10.html)

# W

Waist Circumference

A measurement around the abdomen used to assess visceral fat and metabolic disease risk.

Related chapters: Heart Talk #6 (chapters/chapter6.html)

Whole Grains

Grains that contain all parts of the grain kernel and provide fiber, vitamins, and minerals beneficial for heart health.

Related chapters: Heart Talk #50 (chapters/chapter50.html)

# Y

Yoga

A mind-body practice combining physical postures, breathing techniques, and meditation that may benefit cardiovascular health.

Related chapters: Heart Talk #26 (chapters/chapter26.html)