Heart Health Numbers You Should Know –
And Why They Matter

The current top three causes of mortality in the United States are #1 heart disease, #2 cancer, #3 chronic lower respiratory disease – collectively accounting for 50% of all yearly deaths. Heart disease (HD) has widely been the main cause of death to Americans and accounts for nearly 1 in every 4 deaths(23.4%). In fact, it is the leading cause of early mortality worldwide.

HD describes several conditions, many of which are directly related to plaque buildup in arteries and other vascular structures. Plaque accumulation leads to arterial narrowing – making it increasingly difficult for adequate blood flow to reach associated tissues. This creates the risk for a heart attack or stroke when the blockage has an impact on vasculature directly leading to the heart muscle or brain. Other types of heart problems can include angina, arrhythmias, and heart failure.

To help reduce the risk for catastrophic HD one needs to know how to protect their heart, understand the mechanisms which promote heart disease, and be able to recognize the warning signs and symptoms of a heart attack. Some signs and symptoms which can materialize before a heart attack include: chest pain or discomfort, pain/discomfort in the upper body, arms, neck, jaw or upper stomach, breathlessness, nausea, lightheadedness, and cold sweats.

The following have been shown to lower one's risk for HD:

- **Lower your blood pressure and cholesterol if elevated**
- **Consume a diet low in salt, refined sugars, total fat, saturated fat, and cholesterol**
- **Consume a diet rich in fiber via fresh fruits and vegetables and heart-healthy fats**
- **Exercise regularly (at least 150 minutes a week)**
- **Avoid excessive intake of alcohol and do not smoke**
- **Ensure safe use of medications and any over-the-counter drugs**
- **Educate oneself on appropriate stress management**
- **Lose weight and body fat if overweight**

Most of the above recommendations tie in the following heart health numbers everyone should know to make sure you are staying on track on risk reduction. Here is a quick breakdown of those numbers and a quick explanation on why they are particularly important.
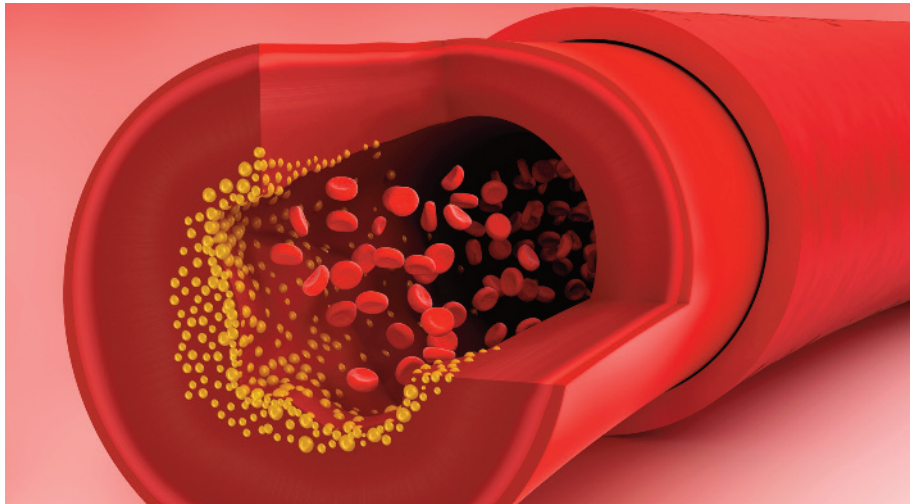
Blood Pressure

High blood pressure forces your heart to work much harder than it needs to as it battles against increased peripheral resistance and promotes progressive damage to vascular walls. It leads to atherosclerosis with secondary arteriosclerosis and ultimately various associated acute incidents such as blood clots or occlusion. Inhibited blood flow results in life-threatening ischemia (lack of adequate oxygen to bodily tissues) and tissue death. High blood pressure can be attenuated via regular aerobic and moderate-intensity resistance training performed in circuits, reducing salt intake, increasing daily potassium intake, and by losing weight and reducing stress levels.
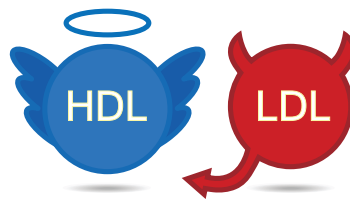
Numbers to Know:

- **≤115/75 mmHg** = **healthy blood pressure**
  a. **115 mmHg systolic** = pressure during heart beats
  b. **75 mmHg diastolic** = pressure in between heart beats

- **>120/80 mmHg** = **pre-hypertension**

- **140/90 mmHg** = **Stage 1 hypertension**

- **≥160 mmHg systolic and/or ≥100 mmHg diastolic**
  = **Stage 2 hypertension**

- **>180 mmHg systolic and/or ≥110 mmHg diastolic**
  = **Stage 3 hypertension**

Blood Cholesterol and Triglycerides

Unhealthy cholesterol levels can contribute to the accumulation of artery-clogging plaque – but not all cholesterol is created alike. The microdamage to vascular walls created by high blood pressure and other issues associated with obesity has a greater affinity to cholesterol with specific qualities. When cholesterol is present in high levels in the blood, problems can arise. LDL cholesterol (low density) is known to promote plaque accumulation while HDL cholesterol (particles) is known to protect the arterial wall from damage. This is why LDL is often referred to as "bad cholesterol" while HDL is often referred to as "good cholesterol". Cholesterol levels are affected by physical activity and diet. Blood triglycerides (fats) seem to be significantly impacted by dietary intake - both acutely and chronically - and can be mediated via lower total fat, sugar intake, processed carbohydrates and higher intake of fiber containing foods. Weight loss has also been associated with improvements in blood lipid profiles.

Numbers to Know (current AACE/ACE guidelines):

- **High-risk goals: LDL < 100 mg/dL, non-HDL < 130 mg/dL, apoB < 90 mg/dL (apoB – protein involved in lipid metabolism and main constituent of LDL as well as very low-density lipoprotein (VLDL)**
  - *Two or more risk factors and 10-year risk 10%-20%*
  - *Diabetes or Chronic Kidney Disease stages 3/4 with no other risk factors*
- **Moderate-risk goals: Same goals as high risk**
  - *Two or more risk factors and 10-year risk < 10%*
- **Low-risk goals: LDL < 130 mg/dL, non-HDL < 160 mg/dL, apoB not relevant**
  - *0 risk factors*

Fasting Blood Sugar

It may seem odd that blood sugar (glucose) levels can have an impact on HD, but one must understand that HD functions hand-in-hand with metabolic disorder; including diabetes. Diabetes is considered a major risk factor for HD as it has a direct impact on vascular health and integrity. Diabetes dramatically increases the risk of various cardiovascular problems including coronary artery disease with chest pain (angina), heart attack, stroke and atherosclerosis. If you have diabetes and are overweight, you are even more likely to have heart disease or stroke. Diabetes and poor blood glucose metabolism can be managed via appropriate aerobic and anaerobic exercise, losing weight, appropriate medication, and various dietary modifications (not least importantly the reduction of excess processed sugars/carbohydrates).

Numbers to Know:

- **Prediabetes:** *(for all tests, risk is continuous, extending below the lower limit of a range and becomes disproportionately greater at higher ends of the range)*
  - **Fasting Plasma Glucose 100–125 mg/dL (5.6–6.9 mmol/L): Impaired Fasting Glycemia (IFG) Test**
  - *OR* **2-hour Plasma Glucose 140–199 mg/dL (7.8–11.0 mmol/L): Impaired Glucose Test (IGT)**
  - *OR* **A1C 5.7–6.4%**

- **Diabetes:**
  - **Fasting Plasma Glucose ≥126 mg/dL (7.0 mmol/L) on two separate occasions**
  - *OR* **2-hour plasma glucose ≥200 mg/dL (11.1 mmol/L) during an Oral Glucose Tolerance Test (OGTT)**
  - *OR* **A1C ≥6.5%**
  - *OR* **Classic diabetes symptoms + random plasma glucose ≥200 mg/dL (11.1 mmol/L)**

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Body Fat, Waist Circumference & BMI

Body fat levels have a direct impact on HD. One must understand that fat tissue is by no means inert and is in direct communication with the endocrine and other systems to create changes within the body. High total body fat creates metabolic disorder which ultimately leads to HD via low grade systemic inflammation, increases in blood pressure and other mechanisms. High visceral fat (surrounding the abdominal organs) presents the greatest risk for HD and metabolic syndrome. This is why simply taking a waist circumference measurement can be very useful in assessing one's risk for disease. It must be understood that obesity + low activity + high blood pressure/glucose = a high risk for all forms of metabolic and cardiovascular pathology. Now optimal ranges for body fat among individuals and the separate sexes can vary greatly based on body type, genetics, and activity participation – but obesity and medical referral values are universally recognized. Body mass index (BMI) is obtained by simply taking an individual's height and weight – so it does not directly look at body fatness or type of fat. However, a high BMI has been shown via significant research to be generally associated with most forms of cardiovascular and metabolic disease. BMI should be used in conjunction with body fat and waist circumference values to give a full picture of one's relative risk for HD. One can attend to high body fat via various modes of regular exercise (particularly high-volume aerobic interval training combined with resistance training), management of daily caloric intake, getting enough sleep and maintaining optimal levels of stress.

Numbers to Know:

- **Body fat** = males <20% for fit-healthy; females <26% for fit-healthy
- **Stage 1 Obesity** = males ≥25% body fat; females ≥32% body fat; >38% old age
- **Stage 2 Obesity** = males ≥30% body fat; females ≥40% body fat
- **Steve 3 Obesity** = males ≥35% body fat; females ≥45% body fat
- **High risk** = males ≥40 inch waist circumference; females ≥35 inch (signifies significant visceral adiposity)
- **High risk** = BMI >30 obesity >35 morbid obesity males or females (must consider body fat)

Making various dietary, lifestyle and exercise modifications in an effort to keep one's heart health numbers in check can go a long way in preventing the early onset of HD. Considering it is the reigning #1 killer in the United States as well as worldwide, it is an issue which cannot easily be ignored. For those who choose to ignore that stats and risks – the cards are unfortunately stacked strongly against them. Overall, making intelligent dietary modifications, avoiding alcohol and tobacco, engaging in regular aerobic and anaerobic exercise, managing stress and getting enough sleep can make a world of difference – especially for those genetically predisposed to such issues.

CEUQuiz
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The CEU Quiz is now available online at: **http://www.ncsf.org/continueded/onlineceu.aspx**