The heart and blood vessels (arteries, veins and capillaries) make up your body’s cardiovascular system and are responsible for carrying oxygen and nutrients throughout your body. By keeping your heart and blood vessels healthy you can lower your risk of diabetes, heart disease, and stroke.

Researchers recently reviewed 50 scientific studies that looked at spinal cord injury (SCI) and the risk factors for persons with SCI developing heart disease earlier in life. This factsheet outlines some of what the researchers learned. This information can also be used to develop preventative guidelines for persons with SCI.

Just as in the general population, persons with SCI develop cardiovascular complications as they age. However, these health issues often are apparent earlier in life for people with SCI. Cardiac death before the age of 45 is four times more likely among persons with SCI than the general population. Because injury to the heart may be masked by the changes in sensation that occur after SCI, heart damage may occur without the typical signs and symptoms.

There are many risk factors that contribute to heart disease. Some you cannot change, such as your age and your family history of heart disease. However, there are many risk factors that you can control including smoking, diabetes, high blood pressure, and unhealthy cholesterol. Diabetes is common in persons with SCI, especially in persons who are overweight or inactive. About 20-50% of persons with SCI have high blood sugar, which puts them at risk for diabetes-related complications. Although persons with tetraplegia generally have low blood pressure, many persons with paraplegia have high blood pressure (hypertension), which is often associated with abnormal cholesterol levels, heart disease and diabetes.
What role does cholesterol play in staying healthy?

Cholesterol comes from two sources: your body and the food you eat. About 1 in 3 American adults without a disability have cholesterol values that are cause for concern. However, about half of all persons with SCI have at least one cholesterol value that falls outside of the recommended range. Too much “bad” cholesterol (low-density lipoprotein; LDL) or not enough “good” cholesterol (high-density lipoprotein; HDL) can put you at risk for heart disease, heart attack and stroke. It’s important to understand the difference between them and to know your values.

What is a lipid profile?

A lipid profile is a panel of blood tests that measure the total cholesterol, HDL cholesterol, LDL cholesterol and triglycerides in your blood. Sometimes a lipid profile also includes values such as the Cholesterol/HDL ratio or a risk score based on cholesterol, age, gender, and other risk factors. The lipid profile, along with other known risk factors of heart disease, aids in determining whether a person is at risk for heart disease and is used in considering treatment options, if necessary. For best results, the lipid profile is measured after an overnight fast and at least 12 hours after intake of caffeine or alcohol.

What do the results tell me?

No single value for total cholesterol, LDL, HDL, or triglycerides can predict your risk for developing cardiovascular disease, but your LDL score is commonly used as the primary value for cholesterol goals and treatment therapy. When LDL is high it can lead to fat deposits in the arteries (called plaque) and reduce the flow of oxygen-carrying blood to the heart. It is generally believed that high levels of HDL may help to prevent cardiovascular disease. High levels of HDL may help to keep other fats from blocking the arteries through plaque buildup. Engaging in regular exercise and physical activity is a great way to improve HDL levels. Low levels of HDL cholesterol (less than 41.0 mg/dL) are frequently observed in people with SCI because many people with SCI are not physically active.

In general, target lipid values are:

- A total cholesterol less than 200 milligrams per deciliter of blood (mg/dL)
  - Levels 201-239 are considered borderline high
  - Total cholesterol over 240 mg/dL is considered high
- An HDL greater than 40 mg/dL for men and greater than 50 mg/dL for women
  - An HDL less than 40 is considered a major risk factor
An HDL greater than 60 mg/dL will cancel out one other risk factor (i.e., a sedentary lifestyle)

- An LDL less than 100 mg/dL
  - An LDL of 130-159 is considered borderline high
  - An LDL above 160 mg/dL is considered high risk
  - If you are overweight, have other risk factors such as high blood pressure, diabetes, a personal or family history of heart disease, or smoke, the LDL level may need to be below 130 mg/dL, and possibly below 100 mg/dL to minimize your risk of developing cardiovascular disease.

How can I work with my doctor to reduce my risk?

You are taking a big step toward good health just by learning about risk factors and ways to keep your cardiovascular system healthy. If your lipid values are outside of the healthy range, taking the following steps with the support of your doctor may help lower your risk of cardiovascular disease:

- Improve your diet. A nutritionist or your doctor can help give you suggestions on how to improve your diet. You can also refer to www.choosemyplate.gov, a website by the US Department of Agriculture that is designed to provide information on a balanced diet, the food groups, sample menus, and eating plans for the general public.
- Increase your daily physical activity. A therapist or exercise professional skilled in the management of SCI can help you design a program that will work best for you.
- If the results of your lipid profile indicate that you are at high risk for cardiovascular disease and diet and physical activity haven’t improved your cholesterol levels, your doctor may recommend prescription medications to help improve your lipid profile.
- If you smoke, stop. This is a key step in improving your lipid profile, and may require support of a counselor, group therapy, or medication.

Are there any additional tips?

Breaking old habits is often difficult. The following suggestions may help:

- Cardiovascular exercises may include circuit training, arm and wheelchair ergometry, and wheelchair sports. Resistance exercise could include weight machines, free weights, or using resistance bands. Flexibility exercise, such as stretching, yoga, and pilates can increase both your physical activity and range of motion. Many exercises can be done inside the home and not all of your physical activity has to be structured. You can add some activity to your daily life just by using a manual instead of power wheelchair if you are physically able, parking further than you typically would and wheeling across the parking lot, using a ramp instead of an elevator, or even
“window shopping” at the mall while wheeling your chair.

- Find a healthy eating plan you can live with and stick with it. Healthy diets encourage you to eat a variety of foods and are easier to stick with than fad diets that restrict certain foods and may be harmful over time. The USDA recommends: “varying fruits and veggies, eating lean protein, making at least half of your grains whole, and choosing reduced fat or fat free dairy products.”

- Buddy up with someone who shares the same goals as you do, and support one another.

References:


For additional information on spinal cord injury or the RRTC on SCI, please visit our web site at www sci-health.org