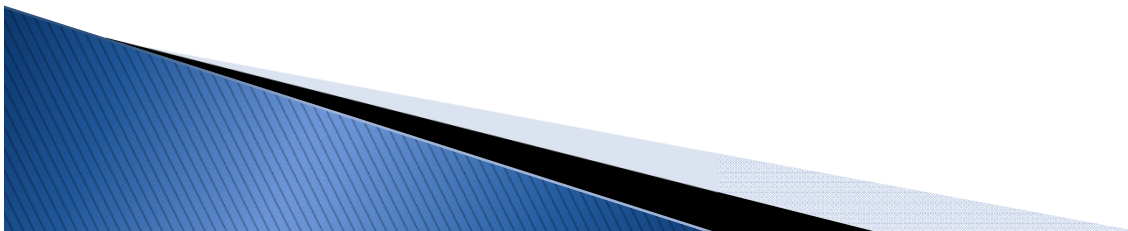


Diabetes and Cholesterol

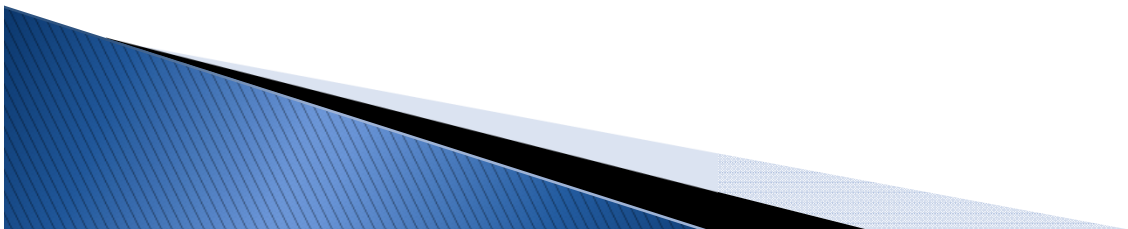
Cayman Islands Diabetic Support Group
2nd September 2010

Dr. Diane Hislop–Chestnut
Grand Harbour Medical Clinic



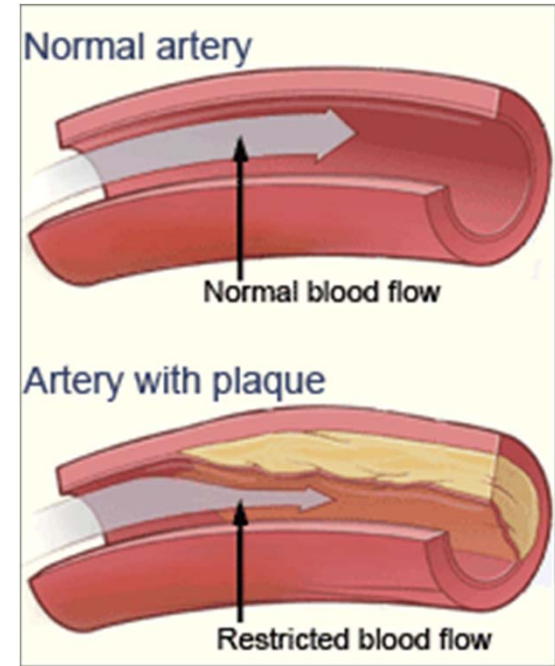
Cholesterol

- ▶ Why is cholesterol important in diabetics?
- ▶ What is cholesterol?
- ▶ What are the symptoms of high cholesterol?
- ▶ How do I interpret cholesterol tests?
- ▶ Which cholesterol levels do diabetics typically have difficulty with?
- ▶ How can I improve my blood tests?



Why is cholesterol important in diabetics?

- ▶ Cholesterol problems are common in patients with diabetes
- ▶ Too much cholesterol can build up in arteries over time → decreases the blood supply to organs
 - Heart disease with chest pain (angina)
 - Heart attack
 - Stroke
 - Narrowing of arteries (atherosclerosis)
- ▶ If you have diabetes, you are twice as likely to have heart disease or stroke



Cholesterol

- ▶ Waxy substance found in the fats (lipids) in your blood
- ▶ Your body needs cholesterol to continue building healthy cells
- ▶ High cholesterol can be inherited
- ▶ High cholesterol is preventable and treatable
 - healthy diet
 - regular exercise
 - sometimes medication



Symptoms of High Cholesterol

- ▶ no symptoms
- ▶ blood test is the only way to detect high cholesterol
- ▶ baseline cholesterol test at age 20 and then every five years
- ▶ If a diabetic → cholesterol should be checked yearly



How to interpret cholesterol tests

Cholesterol profile

- ▶ Total cholesterol
- ▶ Triglycerides
- ▶ HDL – high density lipoprotein
- ▶ LDL – low density lipoprotein



Total cholesterol

- ▶ High total cholesterol level can increase your risk of heart disease

Total Cholesterol	International Standard	Result
<200 mg/dL	5.17 mmol/L	Normal
200 to 239 mg/dL	5.17 to 6.18 mmol/L	Borderline high
>240 mg/dL	6.21 mmol/L	High

- ▶ Decision about when to treat high cholesterol is usually based upon the level of LDL or HDL cholesterol, rather than the level of total cholesterol



Triglycerides

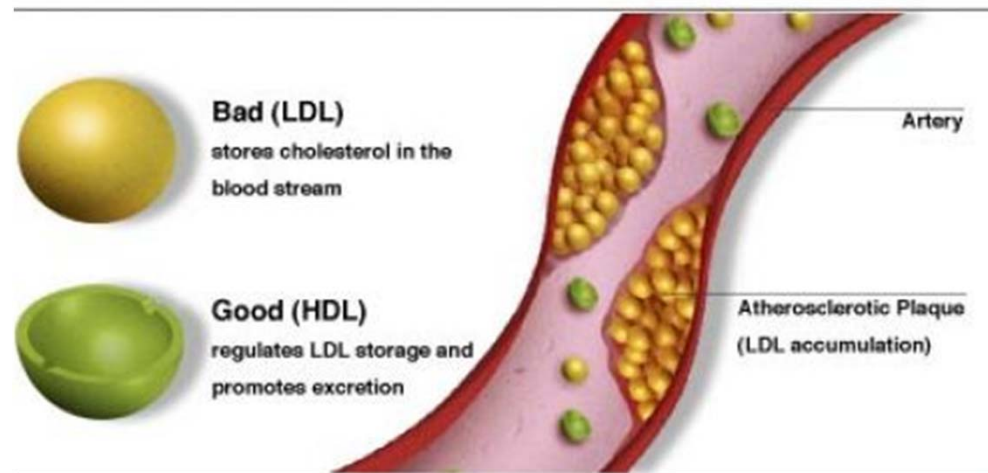
- ▶ Another kind of blood fat
- ▶ Calories ingested in a meal and not used immediately by tissues are converted to triglycerides and transported to fat cells to be stored
- ▶ High triglyceride levels are also associated with an increased risk of coronary disease

Triglyceride level	International Standard	Result
<150 mg/dL	<1.7 mmol/L	Normal
150 to 199 mg/dL	1.7 to 2.25 mmol/L	Borderline high
200 to 499 mg/dL	2.25 to 5.65 mmol/L	High
>500 mg/dL	>5.65 mmol/L	Very high

LDL → Low-density lipoprotein or "bad" cholesterol

- Transports cholesterol particles throughout your body
- LDL cholesterol builds up in the walls of your arteries, making them hard and narrow

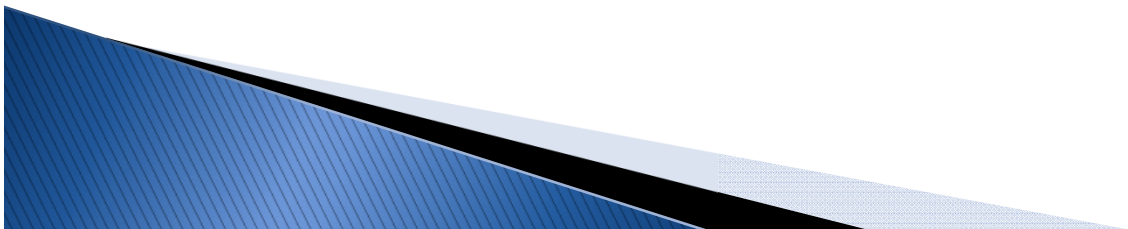
Bad vs. Good Cholesterol



What do you want your LDL cholesterol to be?

LDL Cholesterol Level	Category
Less than 100 mg/dL	Optimal
100 to 129 mg/dL	Near or above optimal
130 to 159 mg/dL	Borderline high
160 to 189 mg/dL	High
190 mg/dL and above	Very high

- ▶ Diabetic and no heart disease → <100 mg/dL
- ▶ Diabetic AND heart disease → <70 mg/dL

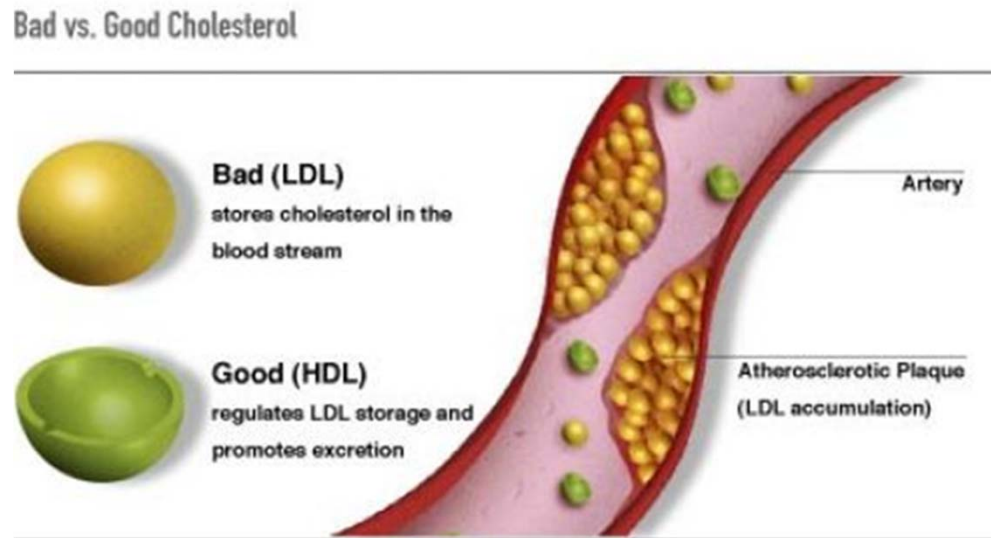




"THE BAD CHOLESTEROL MOLECULES
ARE THE ONES WITH SCARS
AND EYE PATCHES."

High-density lipoprotein (HDL) or "good" cholesterol

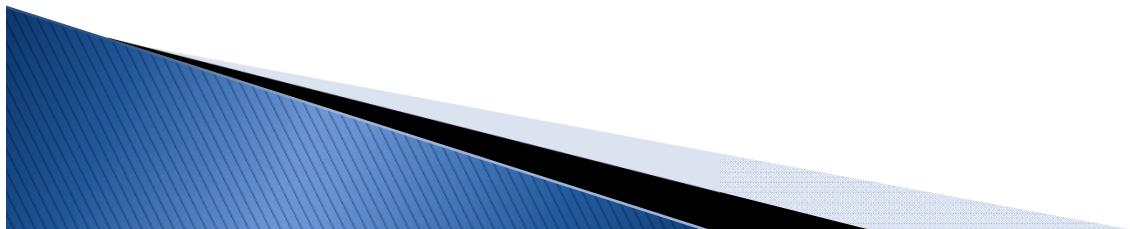
- picks up excess cholesterol and takes it back to your liver where it is then broken down
- removes excess cholesterol from arterial plaque and thereby slowing its buildup



What should my HDL be?

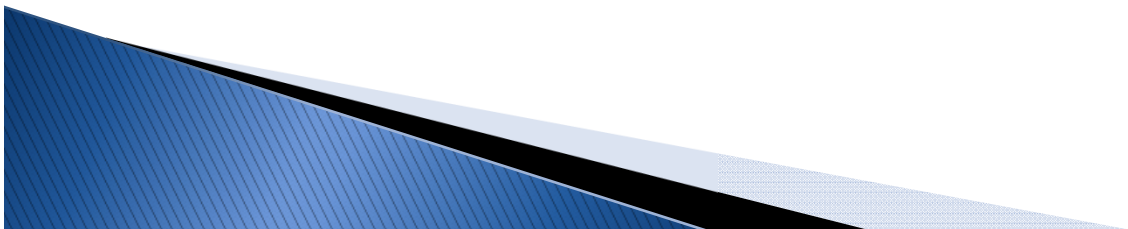
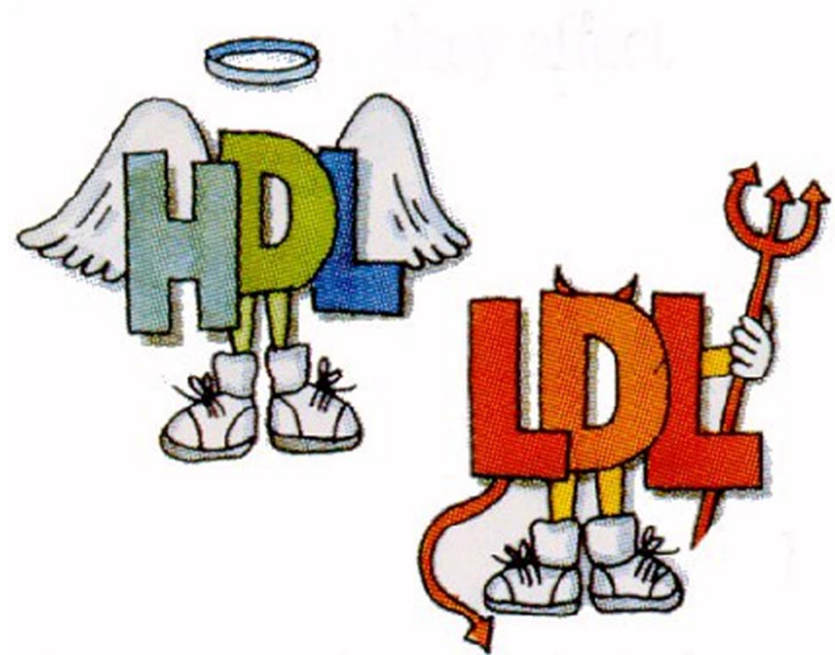
HDL Cholesterol Level	Category
< 40 mg/dL (for men) < 50 mg/dL (for women)	Low HDL cholesterol. A major risk factor for heart disease.
60 mg/dL and above	High HDL cholesterol. HDL > 60 mg/dL is considered protective against heart disease.

- ▶ >40 mg/dL (1.0 mmol/L) for men
- ▶ >50 mg/dL (1.3 mmol/L) for women



Diabetic Profile

- ▶ Low HDL
- ▶ High triglycerides
- ▶ High LDL

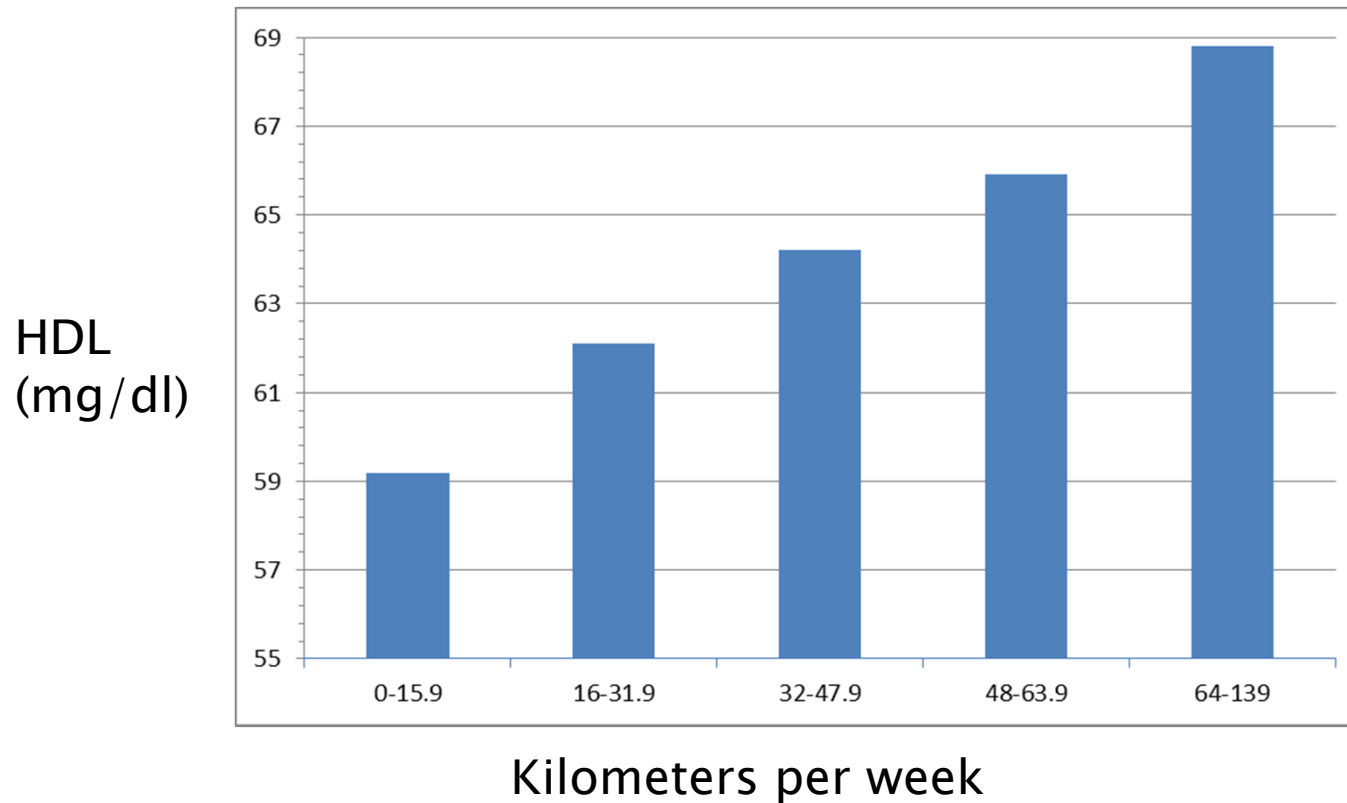


Increase HDL or Healthy Cholesterol

- ▶ Blood sugar control
- ▶ Diet and weight loss
- ▶ Exercise
- ▶ Medications (niacin, fibrates, statins)



HDL and exercise



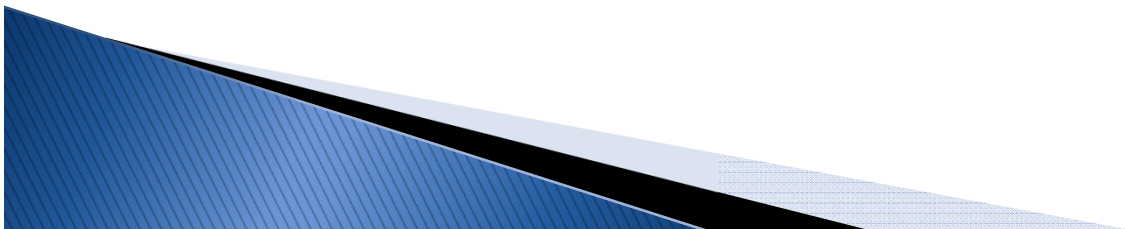
Lower Triglycerides

- ▶ Blood sugar control
- ▶ Diet and weight loss
- ▶ Medications (fibrates, niacin, statins)
- ▶ Fish oil
- ▶ Alcohol avoidance



Lower LDL or “bad” cholesterol

- ▶ Diet and weight loss
- ▶ Exercise
- ▶ Medications (statins, niacin)



Low cholesterol diet

▶ Eat heart-healthy foods

- fiber
- fresh fruits and vegetables
- grains and complex carbohydrates
 - whole-grain breads
 - whole-wheat pasta
 - whole-wheat flour
 - brown rice
 - oatmeal and oat bran
- fish
 - cod, tuna and halibut — have less total fat, saturated fat and cholesterol than do meat and poultry
 - salmon, mackerel and herring are rich in omega-3 fatty acids, which help promote heart health



Low cholesterol diet

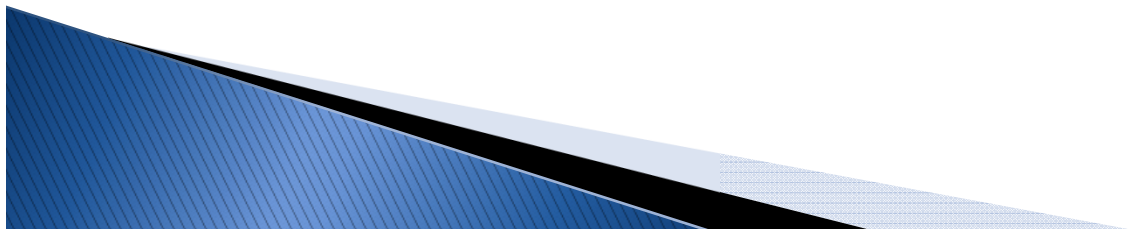
▶ Stock up on fruits and vegetables

- Snack on seasonal fruits
- Experiment with vegetable-based casseroles, soups and stir-fries



▶ Healthier fat

- Saturated fat and trans fat raise your total cholesterol and LDL
- No more than 10% of daily calories from saturated fats
- Monounsaturated fat – olive, peanut and canola oils is a healthier option
- Almonds, walnuts – good source for healthy fat



Low cholesterol diet



▶ Avoid

- Saturated fats → lard and butter
- Trans-fats → margarines and commercially baked cookies, crackers and snack cakes (increase LDL and decrease HDL)
 - Watch out for labels which say trans-fat free
 - The US only requires that the food contain <0.5 grams of trans-fat a serving
 - Read the ingredients list → partially hydrogenated oil

▶ Limit your dietary cholesterol

- Diabetes, heart disease – <200mg/day



Healthy Lifestyle

▶ Exercise regularly

- 30 to 60 minutes of exercise a day
- Find an exercise buddy or join an exercise group
- Three to six 10-minute intervals of exercise

▶ Lose extra pounds

- 5 to 10 pounds can help lower cholesterol levels



Healthy Lifestyle

▶ Don't smoke

- If you smoke, stop
- Quitting can improve your HDL cholesterol level
- And the benefits don't end there
- Just 20 minutes after quitting, your blood pressure decreases
- Within 24 hours, your risk of a heart attack decreases
- Within one year, your risk of heart disease is half that of a smoker's
- Within 15 years, your risk of heart disease is similar to that of someone who's never smoked



Cholesterol level

Food	Serving Size	Cholesterol Level
Boiled egg	1	225 mg
Cream cheese	1 oz	31 mg
Cheddar cheese	1 oz	29 mg
Butter	1 oz	61 mg
Lamb	3.5 oz	90 mg
Beefsteak	3.5 oz	70 mg
Chicken	3.5 oz	84 mg
Kidney, beef	3.5 oz	710 mg
Liver, beef	3.5 oz	378 mg
Ice Cream	3.5 oz	56 mg
Shrimp	3.5 oz	193 mg
Mahi Mahi	3.5 oz	84 mg
Cod	3.5 oz	55 mg
Tuna	3.5 oz	44 mg

Cholesterol level

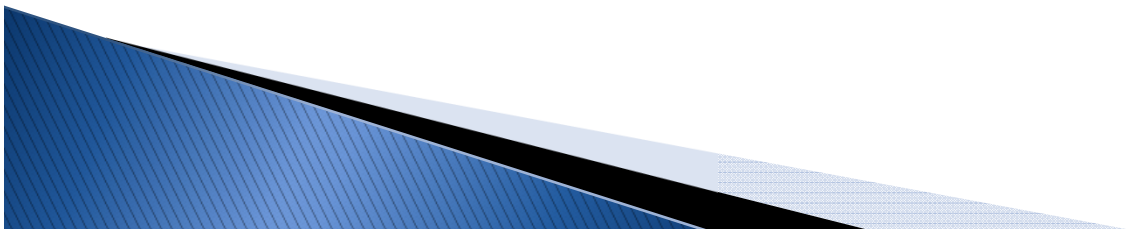
Food	Serving Size	Cholesterol Level
Skim Milk	8 oz	5 mg
Whole Milk	8 oz	24 mg
Strawberries	1 cup	0 mg
Brown Rice	1 cup	0 mg
Whole Wheat Pasta	1 cup	0 mg
Grapes	10 grapes	0 mg
Breadfruit	4 oz	0 mg
Mango	1 cup	0 mg

Watch the sugar content!!



Summary

- ▶ High cholesterol can cause blockage of blood vessels
- ▶ Diabetics are at higher risk of heart disease and stroke so cholesterol management is important
- ▶ Lowering cholesterol involves
 - Good blood sugar control
 - Diet
 - Exercise
 - Medications
- ▶ LDL goal
 - <100 mg/dl if no heart disease
 - <70 mg/dl if heart disease
- ▶ HDL goal
 - >40 mg/dl in men
 - >50 mg/dl in women



Thank you



Diabetes and Cholesterol

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