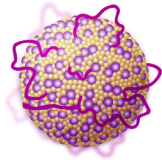
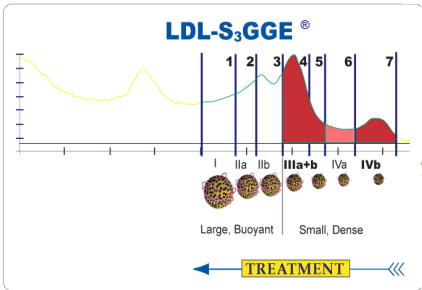


Apolipoprotein B (Apo B)



- Structural protein on LDL
- Indicates exactly how many LDLs are present in the blood
- Goal for secondary prevention: Less than 40-60 mg/dl
- Treatment: Same as for elevated LDL

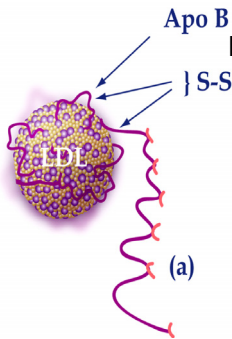
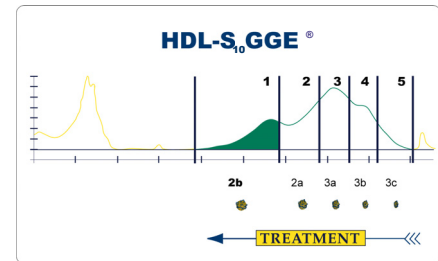


LDL Subclasses – 7 Particle size regions

- 3 large and 4 small subclasses of LDLs
- Smaller LDL particles, IIIa, IIIb, IVa, IVb, enter endothelium 40% faster than larger particles
- Goal: IIIa+IIIb less than 15%, IVb less than 5%.
- Treatment: Weight control, healthy diet, regular exercise, niacin, fenofibrate.

HDL2b

- Important measure of reverse cholesterol transport
- Contains natural antioxidant, which protects arterial cell walls
- Goal: 20-35% in men and postmenopausal women
- 30-45% in premenopausal and postmenopausal women on HRT
- Treatment: Weight loss, healthy diet, regular exercise, and niacin



Lipoprotein (a) [Lp (a)]

- LDL particle with an attached abnormal protein - genetically determined
- High levels may raise risk of coronary artery disease by 300% because of associated increased plaque formation, plaque rupture, and increased coagulation
- Goal: Less than 30 mg/dl, though used to stratify risk. Other risks treated more aggressively.
- Treatment: Niacin, fenofibrate, and estrogen.

Fibrinogen

- Naturally occurring important protein needed for normal blood clotting
- Elevated fibrinogen promotes excessive platelet clumping and progression of atherosclerosis
- Goal: Less than 350 - 400 mg/dl, though used to stratify risk
- Treatment: Other risks treated more aggressively

Homocysteine

- Naturally occurring amino acid produced in human body
- Too much homocysteine is associated with irritation and inflammation inside arterial walls
- Goal: Less than 10-15 μmol/L
- Treatment: Fruits, vegetables (leafy green vegetables), lentils, asparagus, spinach, most beans
- Pharmacologic treatment controversial

Laboratory tests routinely performed at physician offices may show “normal” results ...

NCEP ATP III Lipid Tests

	Normal	Inter-mediate	At Risk	Last Visit	Alert Value	ATP III Goal	Reference Range*
Total Cholesterol (mg/dL)	161				>=200	<200	136 - 225
LDL-C (mg/dL)	97				>=100	<100	64 - 147
HDL-C (mg/dL)	42				<40	>=40	32 - 63
Triglycerides (mg/dL)	109				>=150	<150	59 - 233

... While emerging factors may indicate “abnormalities” that need to be managed

Advanced Cardiovascular Risk Markers

	Normal	Inter-mediate	At Risk	Last Visit	Alert Value	BHL Goal †	Reference Range**
LDL IIIa+b (%)			28.90		>=20	<=15	13.6 - 43.0*
LDL IVb (%)		5.6			>=10	<=5	1.7 - 9.8*
HDL2b (%)			6		<10	>20	7 - 30*
Apo B (mg/dL)		82			>120	<60	60 - 140
Lp(a), Extended Range (mg/dL)			32		>=30	<30	0 - 30
Homocysteine (µmol/L)		10.6			>=14	<10	4.0 - 15.4
CRP (hs) (mg/L)	0.3				>3.0	<1.0	0.0 - 5.0
Fibrinogen (mg/dL)			448		>=350	<350	180 - 350
Insulin (µU/ml)	7				>=12	<10	3 - 25
Glucose (mg/dL)	91				>=100	<100	70 - 99

Traditional Testing For Risk Factors



Advanced Screening for Emerging Risk Factors

- Total Cholesterol
- LDL
- HDL
- Triglycerides
- Glucose

- Total Cholesterol
- LDL
- HDL
- Triglycerides
- Glucose
- Apo-B
- LDL-C sub classification (7 sizes)
- HDL-C sub classification (5 sizes)
- Homocysteine
- Lipoprotein (a)
- C-Reactive Protein
- Fibrinogen
- Insulin

NCEP ATP III Disease Management Guidelines May Miss High Risk Individuals