HEAT ATTACK LAB ASSESSMENT
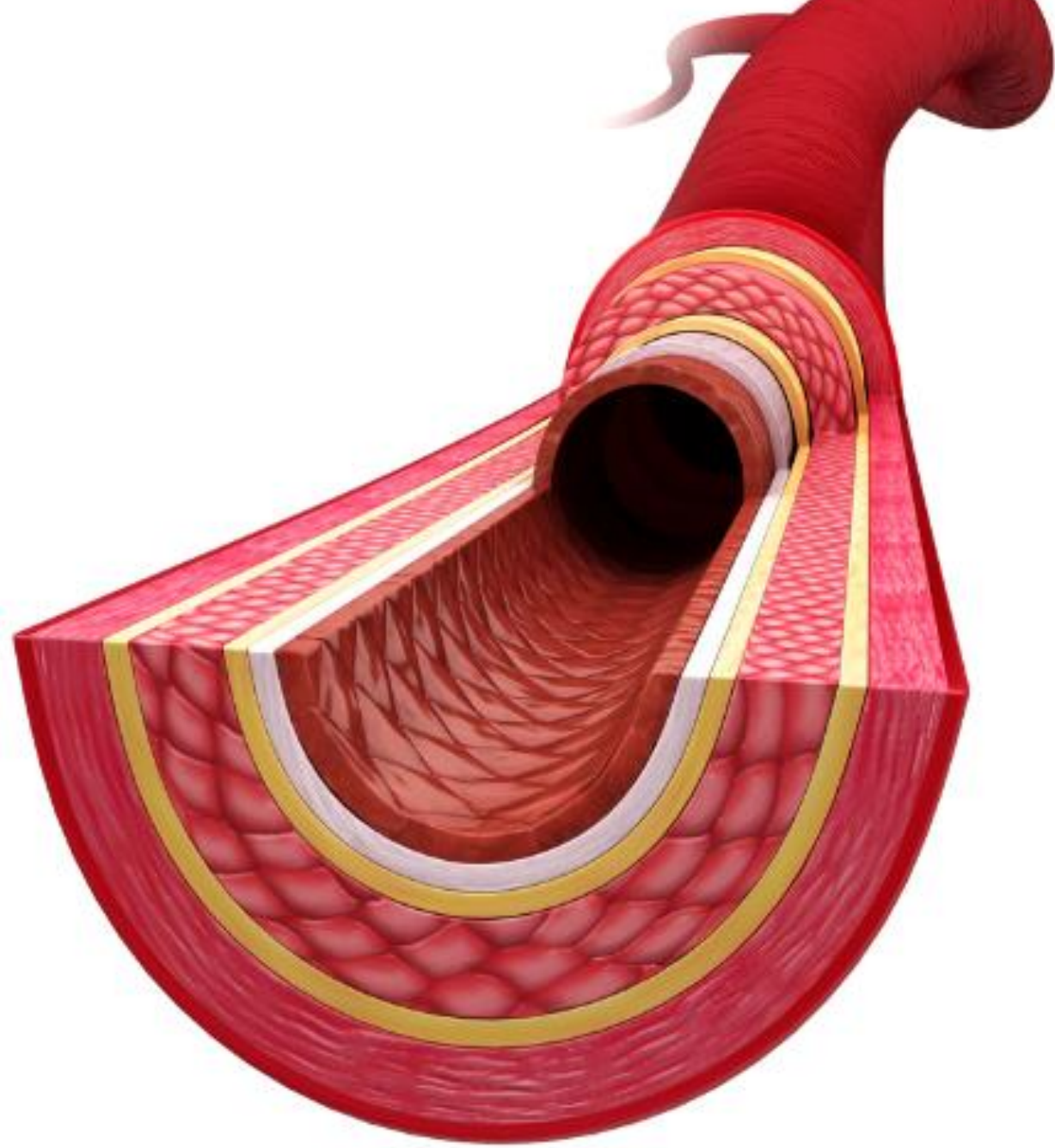
NMR $50
Homocysteine $18
Insulin $10
CRP$ 12
A1c $8
Magnesium $12
draw fee $10
Total cost $120

50 year old male with chronic pain all over and especially low back pain

Surface Area of Vascular Endothelium

The vascular endothelium makes up 14,000 square feet of surface area (6 ½ tennis courts).

❖ NMR LipoProfile ® test

	nmol/L	Reference Interval[1]				
		Percentile[1]	20th	50th	80th	95th
		Low	Moderate	Borderline High	High	Very High
LDL-P (LDL Particle Number)	2713	< 1000	1000 - 1299	1300 - 1599	1600 - 2000	> 2000

❖ Lipids

	mg/dL	Optimal	Near or Above Optimal	Borderline High	High	Very High
LDL-C (calculated)	177	< 100	100 - 129	130 - 159	160 - 189	≥ 190

	mg/dL		mg/dL		mg/dL
HDL-C	34	**Triglycerides**	184	**Total Cholesterol**	246
	Desirable ≥ 40		Desirable < 150		Desirable < 200

Historical Reporting

LDL-P

500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200 2300

▶ 2713 (12/21/2022)

LDL-C

50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230

▶ 177 (12/21/2022)

❖ LDL and HDL Particles

Percentile in Reference Population ①

		high	75th	50th	25th	low
HDL-P (total)	µmol/L **25.2**		34.9	30.5	26.7	

		low	25th	50th	75th	high
SMALL LDL-P	nmol/L **1982**		117	527	839	

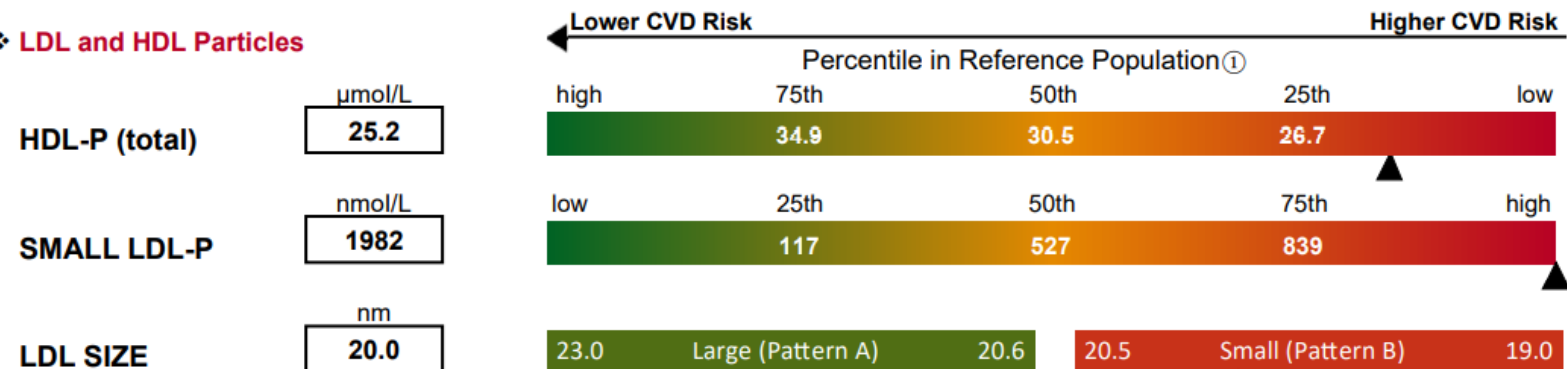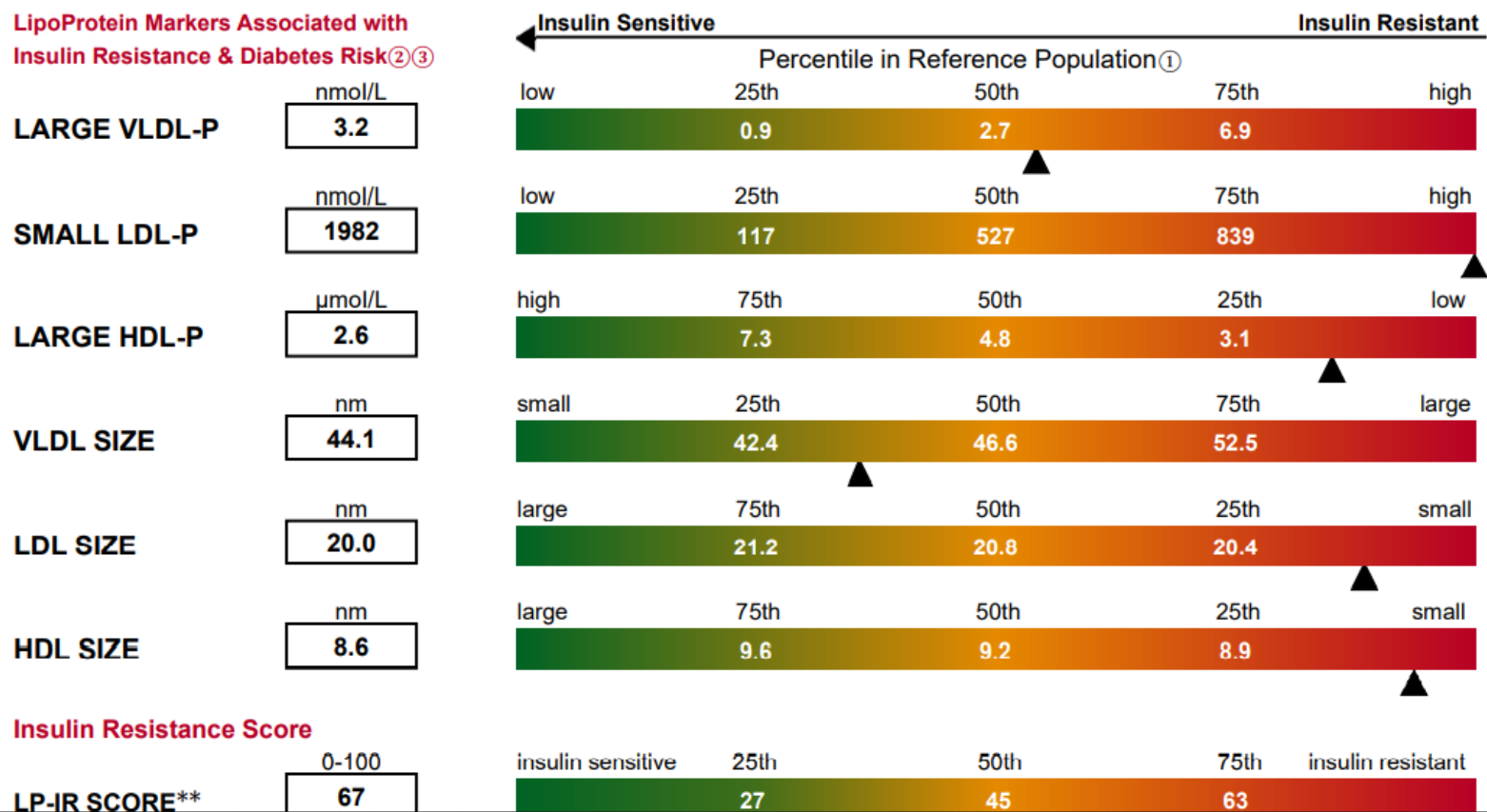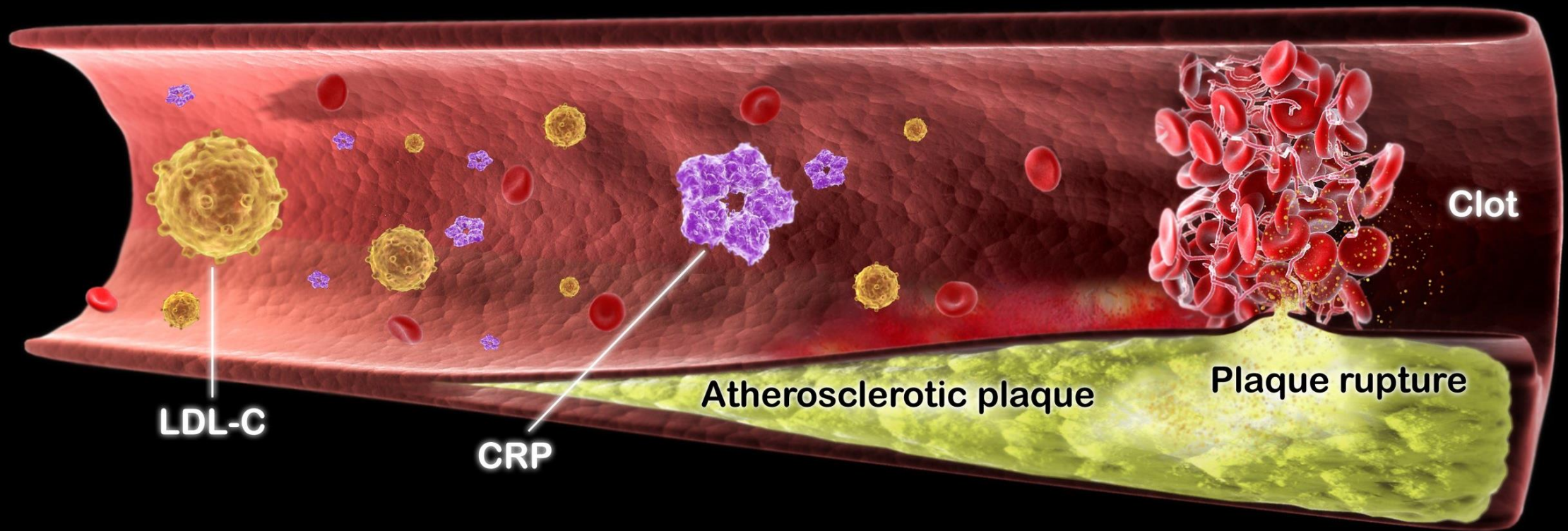|				
LDL SIZE	nm **20.0**	23.0 Large (Pattern A) 20.6	20.5 Small (Pattern B) 19.0	

Small LDL-P and LDL Size are associated with CVD risk, but not after LDL-P is taken into account.

LipoProtein Markers Associated with Insulin Resistance & Diabetes Risk ②③

Percentile in Reference Population ①

		low	25th	50th	75th	high
LARGE VLDL-P	nmol/L **3.2**		0.9	2.7	6.9	

		low	25th	50th	75th	high
SMALL LDL-P	nmol/L **1982**		117	527	839	

		high	75th	50th	25th	low
LARGE HDL-P	µmol/L **2.6**		7.3	4.8	3.1	

		small	25th	50th	75th	large
VLDL SIZE	nm **44.1**		42.4	46.6	52.5	

		large	75th	50th	25th	small
LDL SIZE	nm **20.0**		21.2	20.8	20.4	

		large	75th	50th	25th	small
HDL SIZE	nm **8.6**		9.6	9.2	8.9	

Insulin Resistance Score

		insulin sensitive	25th	50th	75th	insulin resistant
LP-IR SCORE**	0-100 **67**		27	45	63	

High Sensitivity C-reactive protein

LDL-C

CRP

Atherosclerotic plaque

Plaque rupture

Clot

C-Reactive Protein, Cardiac

Test	Current Result and Flag		Previous Result and Date	Units	Reference Interval
▲ **C-Reactive Protein, Cardiac** [02]	**8.54**	**High**		mg/L	0.00-3.00

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                                    Relative Risk for Future Cardiovascular Event
                                        Low                     <1.00
                                        Average         1.00 - 3.00
                                        High                    >3.00
```

Predictive role of C-reactive protein in sudden death: a meta-analysis of prospective studies

Ruhua Zhou [1], Jingjing Xu [2], Jiaochen Luan [2], Weiyun Wang [2], Xinzhi Tang [1], Yanling Huang [3], Ziwen Su [1], Lei Yang [3], Zejuan Gu [2]

Affiliations + expand

https://pubmed.ncbi.nlm.nih.gov/35225715/

Objective: C-reactive protein (CRP) is a powerful predictor of and risk factor for cardiovascular disease. However, the relationship between CRP and sudden death (SD) is controversial. Therefore, we performed a meta-analysis to evaluate the association between CRP and SD.

Conclusions: This meta-analysis confirmed that CRP is an independent predictor of SD. These results support the recommendation of recording the CRP concentration for risk assessment of SD in clinical practice.
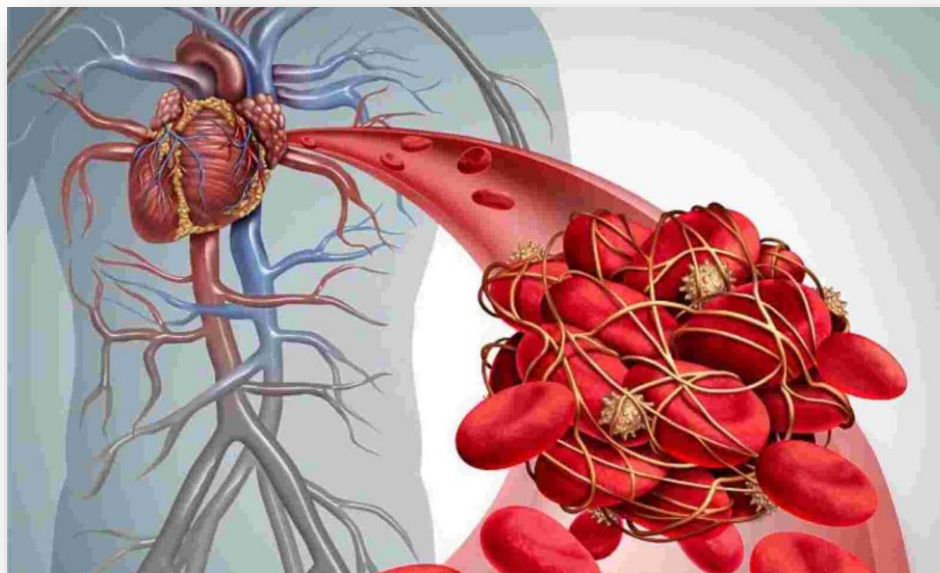
https://pubmed.ncbi.nlm.nih.gov/35225715/

2 HOMOCYSTEINE

Healthy rage in 5 to 6. This is a brain inflammatory marker. **This person is at 41!**

Homocyst(e)ine (706994)		$18.00

Homocyst(e)ine

Test	Current Result and Flag	Previous Result and Date	Units	Reference Interval
Homocyst(e)ine [02]	13.2		umol/L	0.0-14.5

Role of homocysteine in the development of cardiovascular disease

Paul Ganguly and Sreyoshi Fatima Alam

The published literature indicates that homocysteine is an independent cardiovascular disease risk factor modifiable by nutrition and exercise. However, it is now widely accepted that food sources alone cannot consistently supply the levels of nutrients necessary to sustain optimal homocysteine metabolism. In fact, emerging studies are uncovering novel nutritional strategies for lowering high homocysteine levels offering new possibilities for preventing cardiovascular disease.

Hemoglobin A1c

Test	Current Result and Flag	Previous Result and Date	Units	Reference Interval
Hemoglobin A1c [02]	5.4		%	4.8-5.6
Please Note: [02]				

```
Prediabetes: 5.7 - 6.4
Diabetes: >6.4
Glycemic control for adults with diabetes: <7.0
```

Insulin

Test	Current Result and Flag	Previous Result and Date	Units	Reference Interval
Insulin [02]	7.2		uIU/mL	2.6-24.9

186 references

https://www.mdpi.com/1422-0067/22/15/7797

https://www.drhughwegwerth.com/post/we-compare-different-magnesium-powders

Magnesium, RBC

Test	Current Result and Flag	Previous Result and Date	Units	Reference Interval
Magnesium, RBC [B, 01]	4.5		mg/dL	4.2-6.8

Antinuclear Antibodies, IFA

Magnesium, RBC

Test	Current Result and Flag	Previous Result and Date	Units	Reference Interval
Magnesium, RBC [A, 02]	6.1		mg/dL	4.2-6.8

Quantitative Association Between Serum/Dietary Magnesium and Cardiovascular Disease/Coronary Heart Disease Risk: A Dose-Response Meta-analysis of Prospective Cohort Studies

Lingyun Zhao [1] [2], Meng Hu [1], Lei Yang [3], Haoming Xu [1], Wenyan Song [1], Yazhi Qian [1], Meimi Zhao [1]

https://pubmed.ncbi.nlm.nih.gov/31815866/

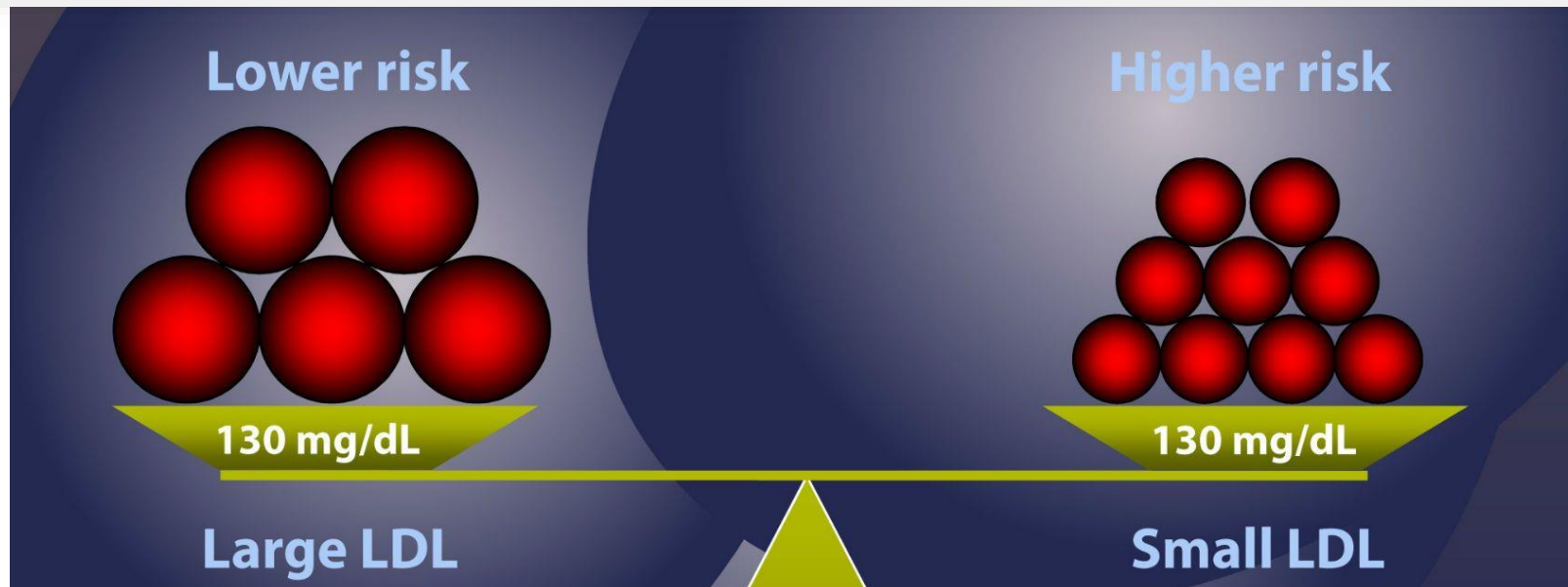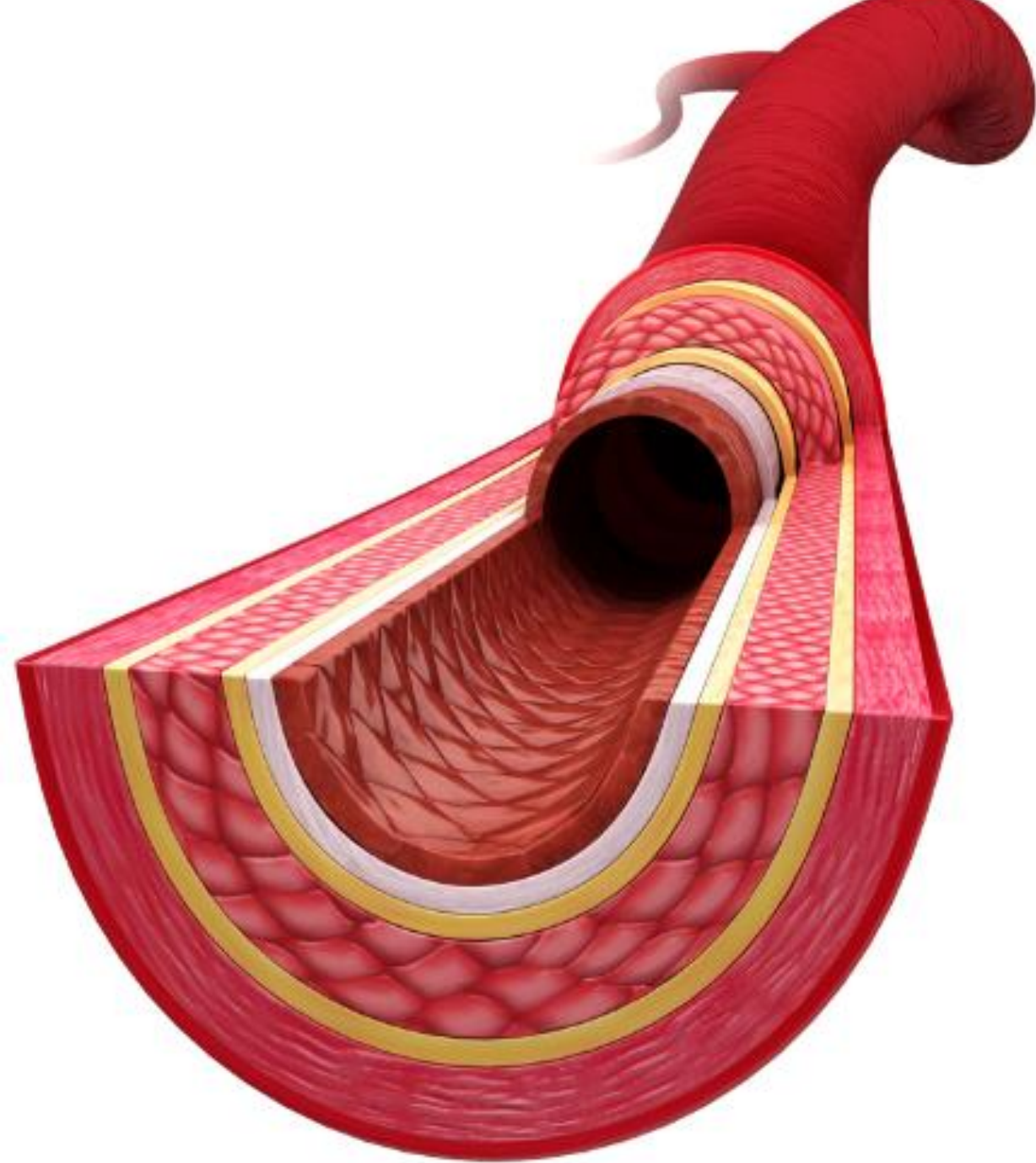# 3 LDL PARTICLE NUMBER "THE BAD"

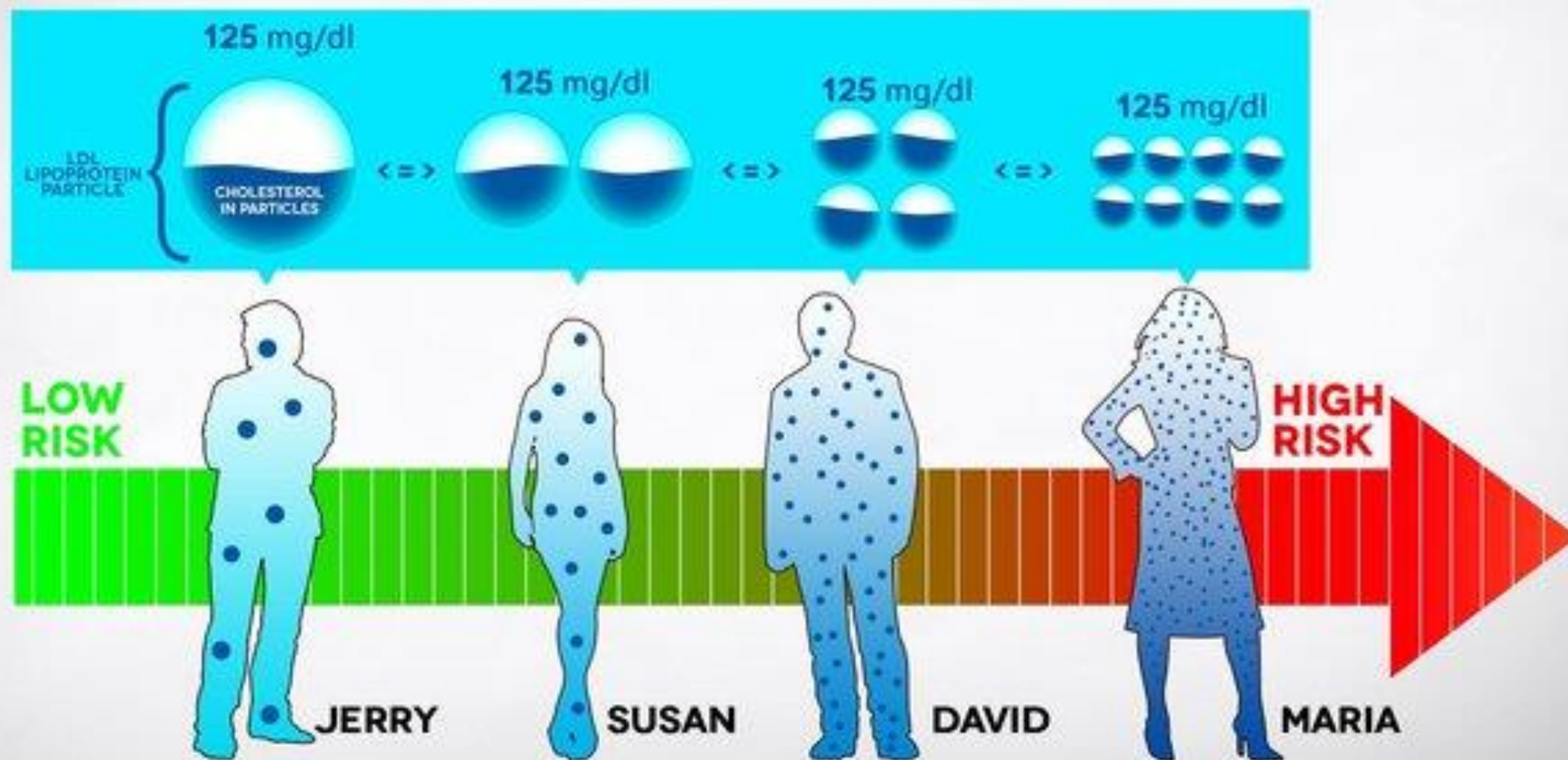768 NMR LipoProfile® With Insulin Resistance Markers (With Graph) (123638) $50.00

Lower risk   Higher risk

130 mg/dL   130 mg/dL

Large LDL   Small LDL

❖ NMR LipoProfile ® test

Reference Interval[1]

	Percentile[1]	20th	50th	80th	95th
	nmol/L	Low	Moderate	Borderline High	High	Very High
LDL-P (LDL Particle Number)	2713	< 1000	1000 - 1299	1300 - 1599	1600 - 2000	> 2000

1. Reference population (5,362 men and women) not on lipid medication enrolled in the Multi-Ethnic Study of Atherosclerosis (MESA). Mora, et al. Atherosclerosis 2007.

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	mg/dL			mg/dL			mg/dL
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	Desirable ≥ 40		Desirable < 150			Desirable < 200

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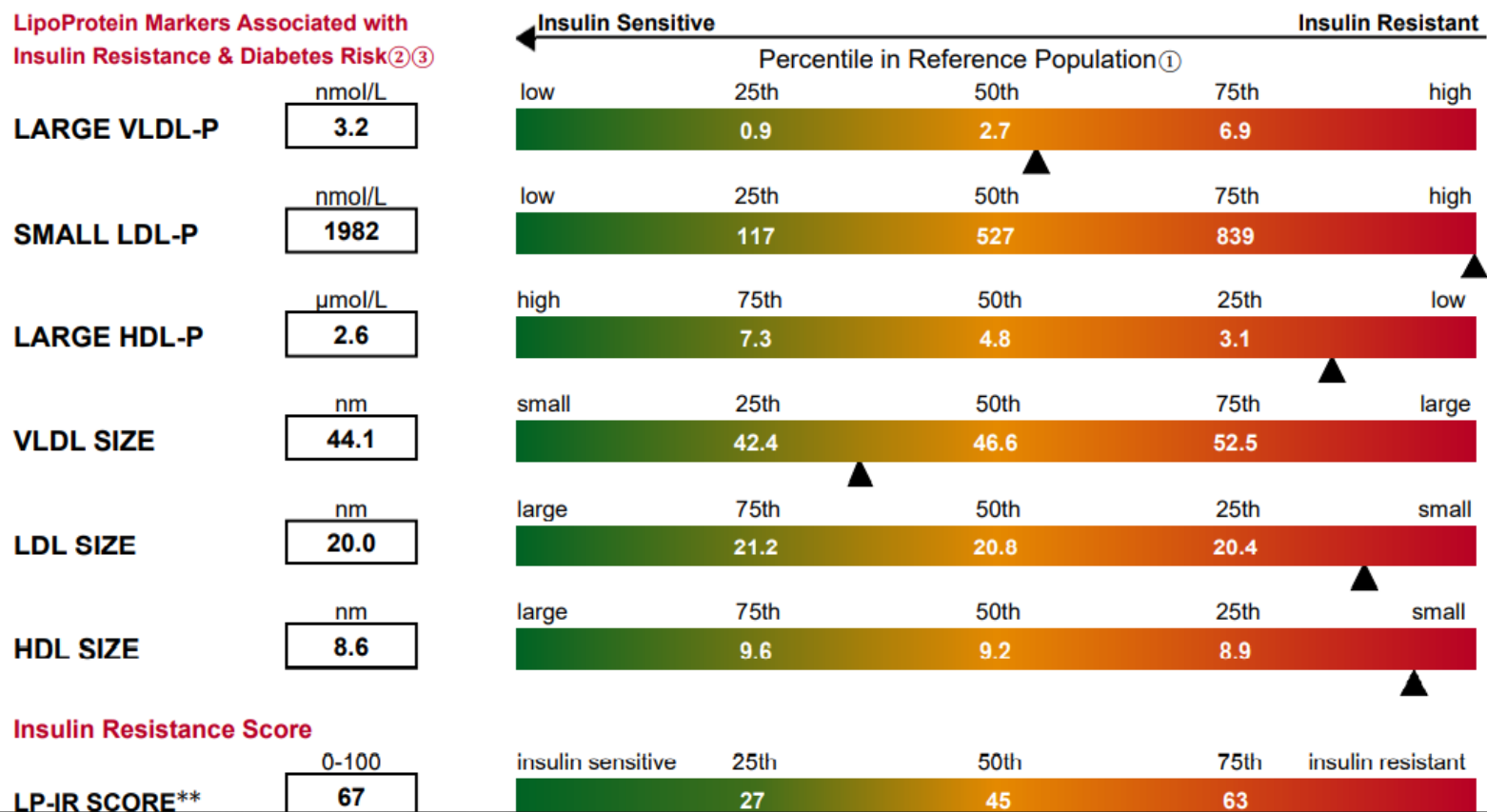|					
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LARGE HDL-P	µmol/L 2.6		7.3	4.8	3.1 ▲	

		small	25th	50th	75th	large
VLDL SIZE	nm 44.1		42.4 ▲	46.6	52.5	

		large	75th	50th	25th	small
LDL SIZE	nm 20.0		21.2	20.8	20.4 ▲	
HDL SIZE	nm 8.6		9.6	9.2	8.9	▲

Insulin Resistance Score

		insulin sensitive	25th	50th	75th	insulin resistant
LP-IR SCORE**	0-100 67		27	45	63	

LDL-C ≠ LDL-P

For many people, LDL-C does not accurately estimate LDL-P.
Two people with the same LDL-C can have different LDL-P.

Alex, 42
LDL-C : 94
LDL-P : 923

Bryan, 42
LDL-C : 94
LDL-P : 1806

NMR LipoProfile ® test		Reference Range[1]					
Percentile[1]			20th	50th	80th	95th	
nmol/L		Low	Moderate	Borderline High	High	Very High	
LDL-P (LDL Particle Number)	1600	< 1000	1000 - 1299	1300 - 1599	1600 - 2000	> 2000	

1. Reference population (5,362 men and women) not on lipid medication enrolled in the Multi-Ethnic Study of Atherosclerosis (MESA). Mora, et al. Atherosclerosis 2007.