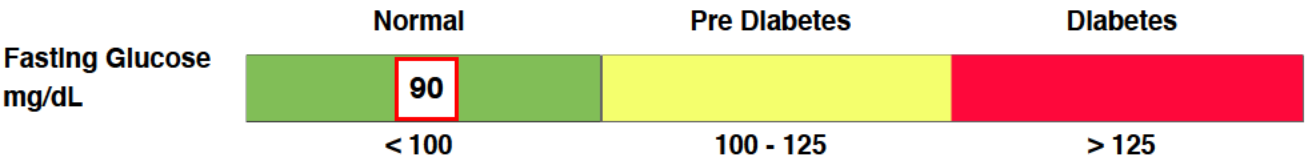
PRECISION HEALTH REPORTS

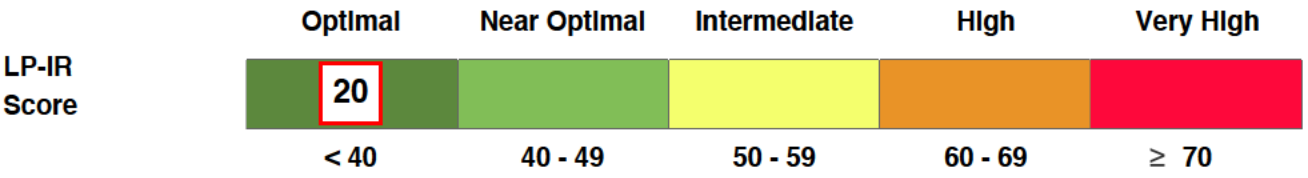
Name: Matthew Martin
Date of Birth: [redacted]
Age: 44
Report Date: 10/10/2020
Gender: Male

YOUR DIABETES RISK SUMMARY

Fasting Glucose Level



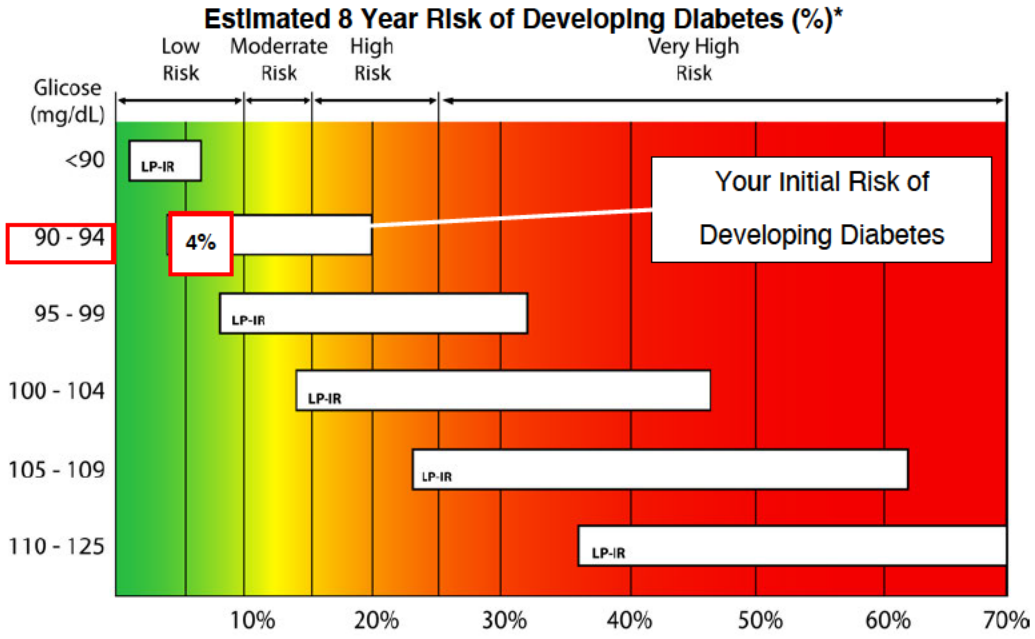
NMR Lipoprotein Insulin Resistance Score (LP-IR)



The LP-IR Score is derived from several lipoprotein markers of insulin resistance.[1] The higher your LP-IR score, the greater your risk of developing diabetes in the future.[2 5]

Your Diabetes Risk*

Your probability of developing diabetes within 8 years depends on both your LP-IR Score and fasting glucose level.[2 3 5]



Your Estimated 8 Year Risk Is Modifiable*

Glucose Category (mg/dL)	< 90	90 - 94	95 - 99	100 - 104	105 - 109	110 - 125
Estimated Risk with Current LP-IR Score (20)	2%	5%	10%	17%	28%	58%
Estimated Diabetic Risk for LP-IR Score < 25	2%	5%	10%	17%	28%	58%

*Based on data from the Multi Ethnic Study of Atherosclerosis

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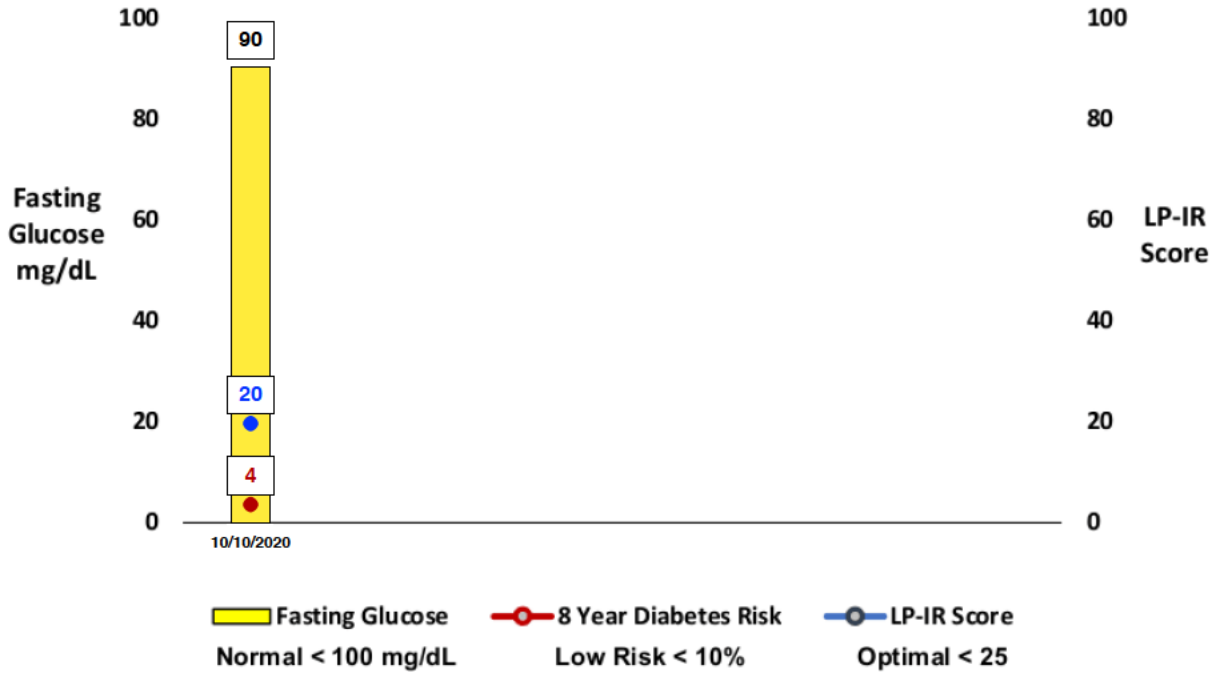
DIABETES RISK TRACKING

Test	Date	Fasting Glucose (mg/dL)	LP-IR Score	Estimated 8 Year Diabetic Risk (Percent)	(Risk Category)
1	10/10/2020	90	20	4%	LOW



Your risk of developing diabetes depends on your degree of insulin resistance and fasting glucose levels.[3,5]

Lifestyle interventions producing weight loss and increased insulin sensitivity have been shown to significantly lower LP-IR scores, lower glucose, and are associated with preventing or delaying the onset of type 2 diabetes.[6-11]

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YOUR DIABETES RISK SUMMARY

Let's look at your values and in each section of the report.

Fasting Glucose Level

Your initial fasting glucose is 90 mg/dL which places you in the Normal Range.

NMR Lipoprotein Insulin Resistance Score (LP-IR)

Your initial LP-IR Score is < 25 which places you in the Optimal Range.

What You Need to Know About NMR LP-IR Score [1-5,12,13]

1. Changes of lipid and lipoprotein metabolism are one of the earliest manifestations of insulin resistance.
2. The LP-IR Score is a weighted combination of six NMR lipoprotein variables reflective of IR that ranges from 0 (most insulin sensitive) to 100 (most insulin resistant).
3. Multiple landmark clinical studies confirm **the higher your LP-IR Score, the greater your risk of developing diabetes.**
4. **Importantly, the LP-IR score remains significantly predictive of diabetic risk even after adjustment for other factors including:**
    a. **Age**
    b. **Gender**
    c. **Race**
    d. **Waist circumference**
    e. **Body mass index**
    f. **Family history of diabetes**
    g. **Physical activity**
    h. **Glucose**
    i. **Insulin**
    j. **Lipids (HDL-C and triglycerides)**

Your Overall Diabetes Risk

Your estimated likelihood of developing diabetes within 8 years depends on both your LP-IR Score and fasting glucose level. The higher the LP-IR Score and fasting glucose, the greater the risk.

Given your initial fasting glucose of 90 mg/dL and your LP-IR Score of 20, your Estimated 8-Year Risk of Developing Diabetes is 4% (LOW RISK).

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Your Estimated 8 Year Diabetic Risk Is Modifiable

Diabetic risk decreases with lower LP-IR Scores, lower fasting glucose values, or the combination of lowering both LP-IR Score and fasting glucose.

The table below shows your risk of developing diabetes:

1. At your current LP-IR Score (<25) - First Row of Boxes
2. At an optimal LP-IR Score is optimally low (< 25) - Second Row of Boxes
3. Note - In both cases, the lower your LP-IR score and the lower your fasting blood glucose, the lower the risk of developing diabetes.

Your Estimated 8 Year Risk of Developing Diabetes (%)

Glucose Category (mg/dL)	< 90	90 - 94	95 - 99	100 - 104	105 - 109	110 - 125
Estimated Risk with Current LP-IR Score (20)	2%	5%	10%	17%	28%	58%
Estimated Diabetic Risk for LP-IR Score < 25	2%	5%	10%	17%	28%	58%

Lifestyle interventions producing weight loss and increased insulin sensitivity have been shown to significantly lower LP-IR scores, lower glucose, and are associated with preventing or delaying the onset of type 2 diabetes.[6-11]

Your health care team will work with you to address these opportunities.

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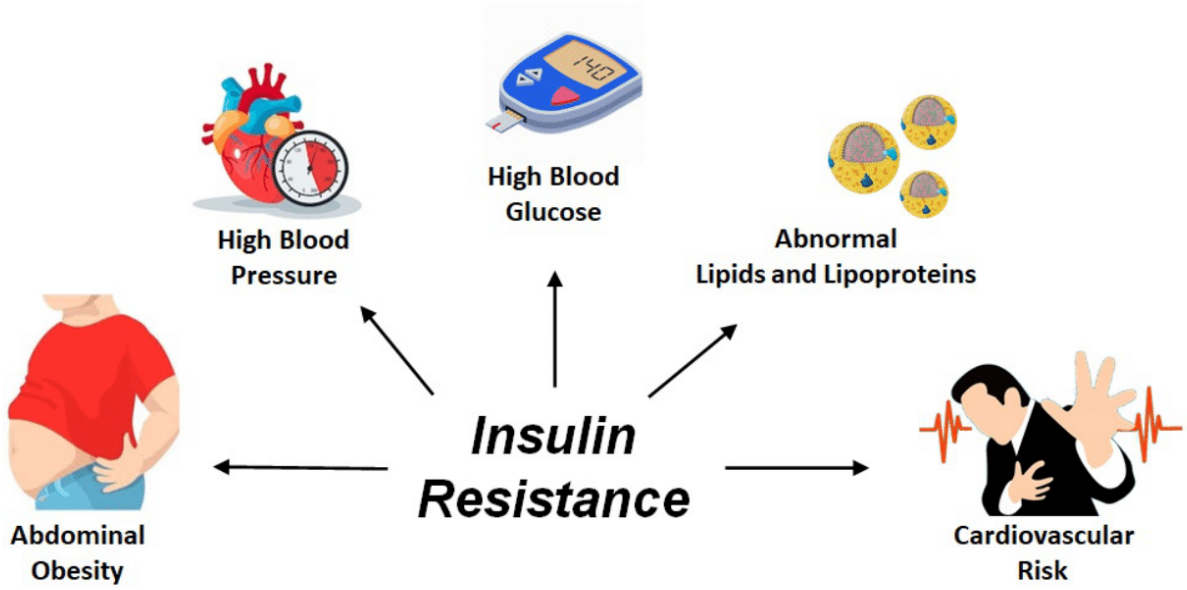
What You Need to Know About Insulin Resistance and Cardiometabolic Risk

1. Insulin is a hormone produced by the pancreas that works in liver cells, muscle cells and fat cells (adipose tissue) to regulate glucose and energy metabolism.
2. Insulin sensitive (IS) individuals have cells that react normally to insulin. In contrast, insulin resistance (IR) is a condition in which liver cells, muscle cells and fat cells are progressively more resistant to insulin over time.
3. As IR increases, many cardiometabolic risk factors worsen together including abdominal obesity, blood pressure, blood glucose, blood lipid (cholesterol and triglyceride) and atherogenic particle number (LDL particle number and apolipoprotein B) levels.[12] [14] [15]



4. IR significantly increases the risk of cardiovascular events, risk of developing diabetes, and can limit the effectiveness of therapies used to treat other risk factors.[16] [17]
5. Unfortunately, it is common for IR to be present for many years before blood glucose values, blood pressure or other clinical features appear abnormal.[18]

What You Need to Know About Insulin Resistance and Risk of Diabetes

1. Risk for development of diabetes is most commonly determined by measurement of blood glucose levels. In the fasting state, glucose values less than 100 mg/dL are considered "normal", while values 100-125 mg/dL are considered "pre-diabetic". Diabetes is diagnosed at fasting glucose of greater than or equal to 126 mg/dl on two separate occasions.[19]

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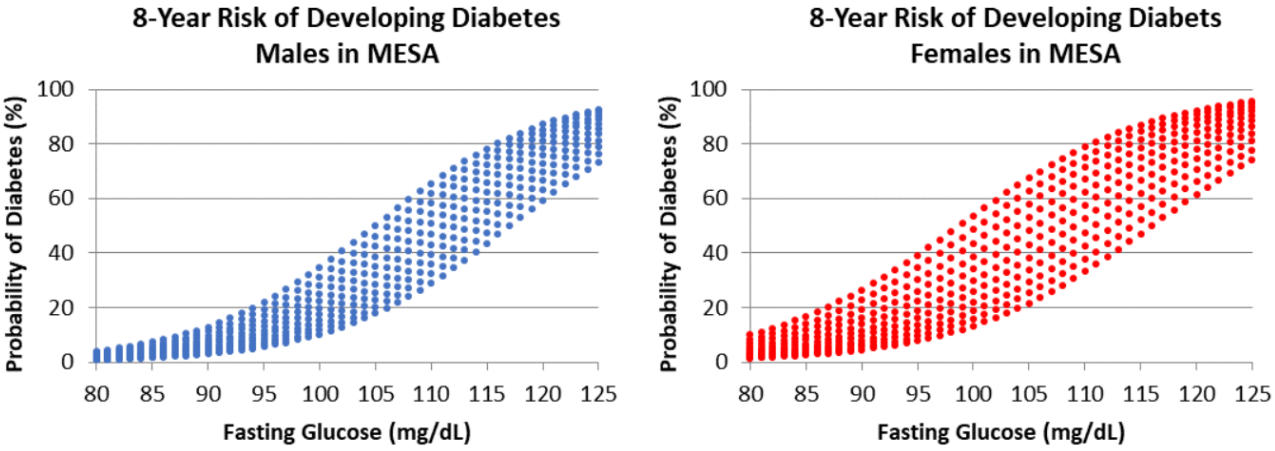
2. While the risk of diabetes increases as glucose levels rise, there is a wide range of individual diabetic risk at any given glucose value.[20] [21]

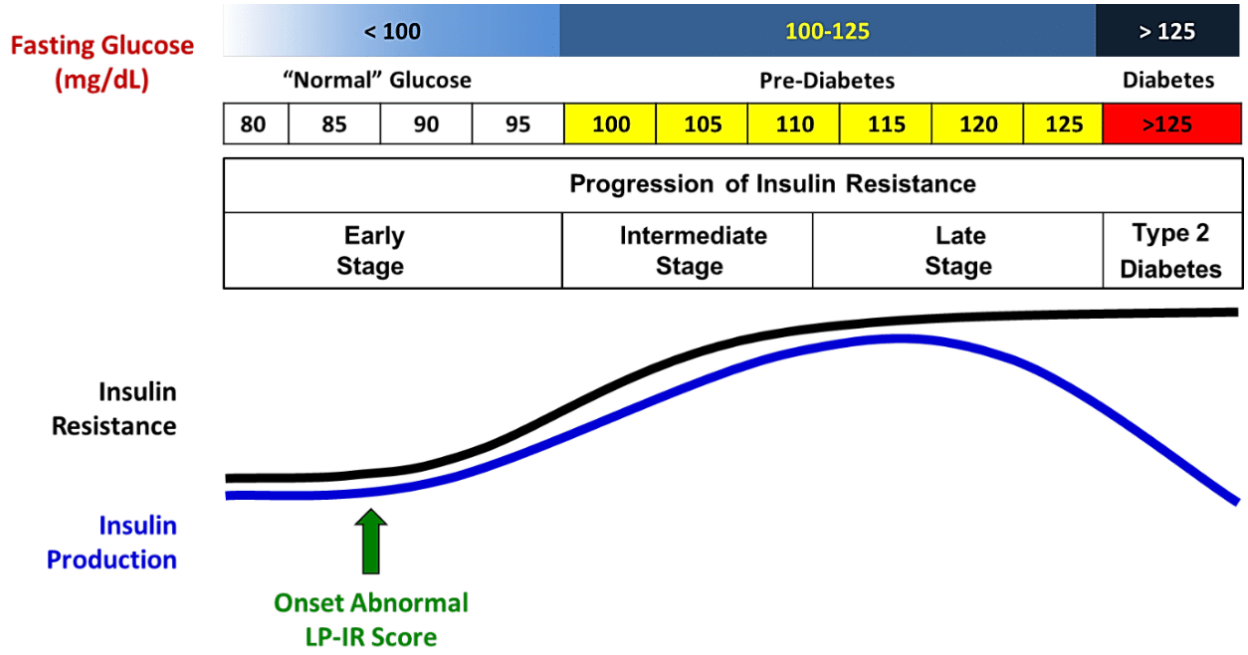
   This can be seen in men and women followed in the Multi-Ethnic Study of Atherosclerosis (MESA).



As a result, blood glucose is an insensitive predictor of individual risk for developing diabetes.

3. Insulin resistance (IR) is the principal metabolic disorder that leads to increased blood glucose levels and development of type 2 diabetes mellitus.[22] [23] As cells become resistant to insulin, blood glucose levels rise.[24]

4. Insulin resistance is a condition that progresses over time. As IR worsens, the pancreas releases increasing amounts of insulin in an attempt to "force" liver cells, muscle cells and fat cells to respond and maintain normal blood glucose levels.[13] [24]



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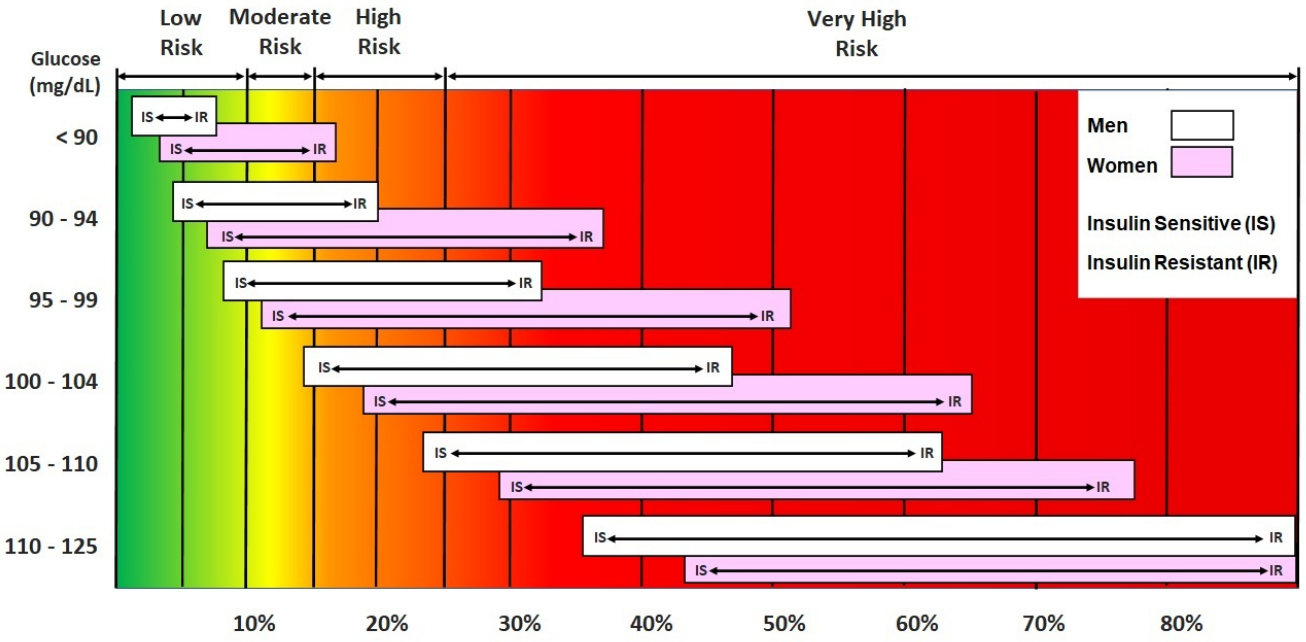
5. Over time, fasting blood glucose values reach "prediabetic" levels (100 - 125 mg/dL) and usually stay in this range for many years. So long as the pancreas produces higher levels of insulin needed to overcome cellular insulin resistance, glucose levels remain fairly stable.[24]

6. Eventually, the pancreas is unable to maintain high levels of insulin production. The combination of cellular IR and declining insulin levels lead to progressively higher blood glucose levels and risk for development of type 2 diabetes.[24]

7. Your risk of developing diabetes depends on your degree of insulin resistance and fasting glucose levels [3 5] As one moves from being insulin sensitive (IS) to insulin resistant (IR), the risk of diabetes increases at any given fasting glucose value. Likewise, as fasting glucose increases, risk of diabetes increases at a given level of IR.[3]

   The graph below shows risk of developing diabetes over 8 years for men (white bars) and women (pink bars) followed in the Multi-Ethnic Study of Atherosclerosis.

Estimated 8 Year Risk of Developing Diabetes (%)



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LabCorp

Patient Report

Specimen ID: 282-298-4185-0
Control ID: B0107261218

Acct #: [redacted] **Phone:** (919) 569-5971 **Rte:** 00

MARTIN, MATTHEW
[redacted]

Precision Health Reports Inc
8300 Health Park Dr Ste 316
Raleigh NC 27615

Patient Details
DOB: [redacted]
Age(y/m/d): 044/[redacted]
Gender: M
Patient ID:

Specimen Details
Date collected: 10/08/2020 1134 Local
Date received: 10/08/2020
Date entered: 10/08/2020
Date reported: 10/10/2020 1735 ET

Physician Details
Ordering: W CROMWELL
Referring:
ID: 3471161
NPI: 1699777565

General Comments & Additional Information
Alternate Control Number: B0107261218
Total Volume: Not Provided
Alternate Patient ID: Not Provided
Fasting: Yes

Ordered Items
NMR LipoProfile+Lipids; Glucose; Drawing Fee

TESTS	RESULT	FLAG	UNITS	REFERENCE INTERVAL	LAB
NMR LipoProfile+Lipids					
LDL Particle Number					01
LDL-P [A]	**1426**	**High**	nmol/L	<1000	01
			Low	**< 1000**	
			Moderate	**1000 - 1299**	
			Borderline-High	**1300 - 1599**	
			High	**1600 - 2000**	
			Very High	**> 2000**	
Lipids					01
LDL-C (NIH Calc)	**112**	**High**	mg/dL	0-99	01
			Optimal	**< 100**	
			Above optimal	**100 - 129**	
			Borderline	**130 - 159**	
			High	**160 - 189**	
			Very high	**> 189**	
HDL-C [A]	58		mg/dL	>39	01
Triglycerides [A]	72		mg/dL	0-149	01
Cholesterol, Total [A]	183		mg/dL	100-199	01
LDL and HDL Particles					01
HDL-P (Total) [A]	**28.3**	**Low**	umol/L	>=30.5	01
Small LDL-P [A]	462		nmol/L	<=527	01
LDL Size [A]	21.3		nm	>20.5	01

** INTERPRETATIVE INFORMATION**
PARTICLE CONCENTRATION AND SIZE

	<--Lower CVD Risk		Higher CVD Risk-->		
LDL AND HDL PARTICLES	Percentile in Reference Population				
HDL-P (total)	High	75th	50th	25th	Low
	>34.9	34.9	30.5	26.7	<26.7
Small LDL-P	Low	25th	50th	75th	High
	<117	117	527	839	>839
LDL Size	<-Large (Pattern A)->		<-Small (Pattern B)->		
	23.0	20.6	20.5	19.0	

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Patient: MARTIN, MATTHEW
DOB: [redacted] **Patient ID:** **Control ID:** B0107261218
Specimen ID: 282 298 4185 0
Date collected: 10/08/2020 1134 Local

TESTS	RESULT	FLAG	UNITS	REFERENCE INTERVAL	LAB
Comment:					01
Small LDL-P and LDL Size are associated with CVD risk, but not after LDL-P is taken into account.					
Insulin Resistance Score					01
LP-IR Score [A]	<25			<=45	01
INSULIN RESISTANCE MARKER <--Insulin Sensitive Insulin Resistant--> Percentile in Reference Population Insulin Resistance Score LP-IR Score Low 25th 50th 75th High <27 27 45 63 >63					
Comment:					01
LP-IR Score is inaccurate if patient is non-fasting. The LP-IR score is a laboratory developed index that has been associated with insulin resistance and diabetes risk and should be used as one component of a physician's clinical assessment.					
Glucose	90		mg/dL	65-99	02

Comments:
[A] This test was developed and its performance characteristics determined by LabCorp. It has not been cleared or approved by the Food and Drug Administration.

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