

The logo for OwnaHealth features a stylized white letter 'O' on a dark blue background. The 'O' is formed by two concentric circles with arrows pointing in a clockwise direction. To the right of the 'O', the words 'wnaHealth' are written in a clean, white, sans-serif font.

# OwnaHealth

RECLAIM YOUR HEALTH



# **Low-Carb, High-Impact A Fresh Approach to Type 2 Diabetes**

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Endocrinologist

February 24, 2026





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## Type 2 diabetes in adults

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Type 2 diabetes mellitus is a progressive disorder defined by deficits in insulin secretion and increased insulin resistance that lead to abnormal glucose metabolism and related metabolic derangements.[1] Although the aetiologies

### How Type

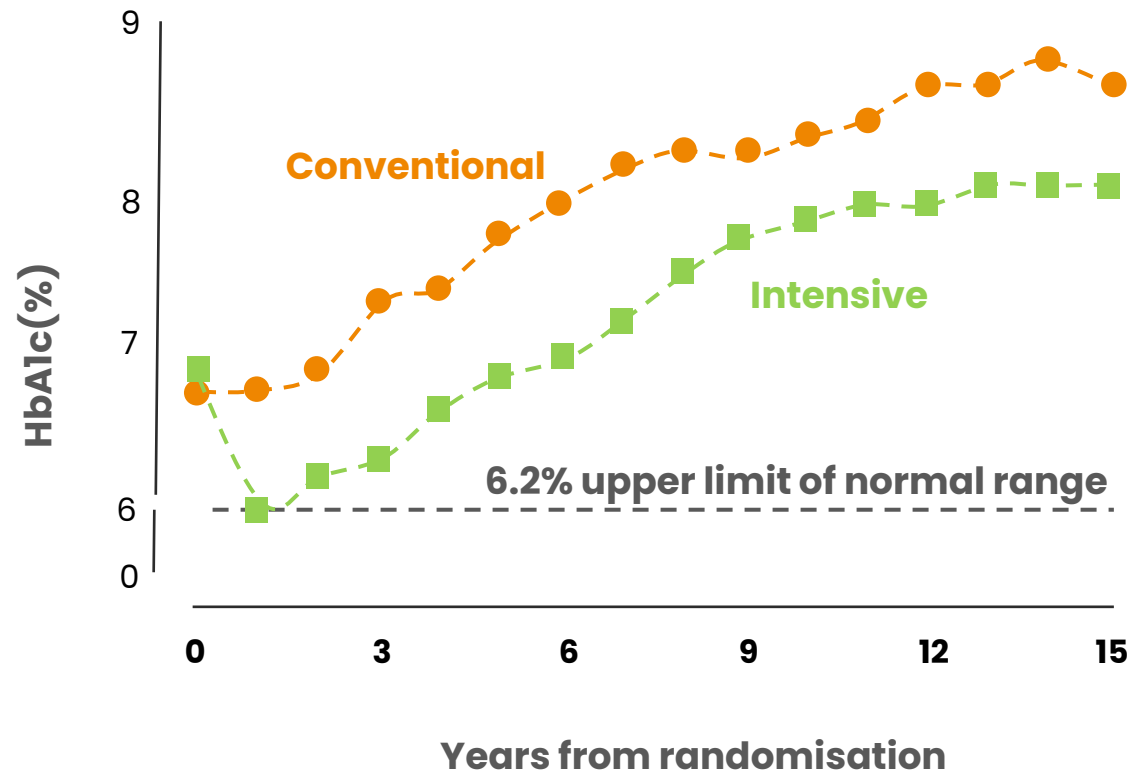
### How diabetes pro

Type 2 diabetes is a progress time. Understanding the type plan.

# IDF Global Clinical Practice Recommendations for Managing Type 2 Diabetes – 2025

Type 2 diabetes is a silent, progressive disease with chronic hyperglycaemia often preceded by IH. Earlier detection of T2DM provides an

# UKPDS: Effects of Management On HbA<sub>1c</sub>



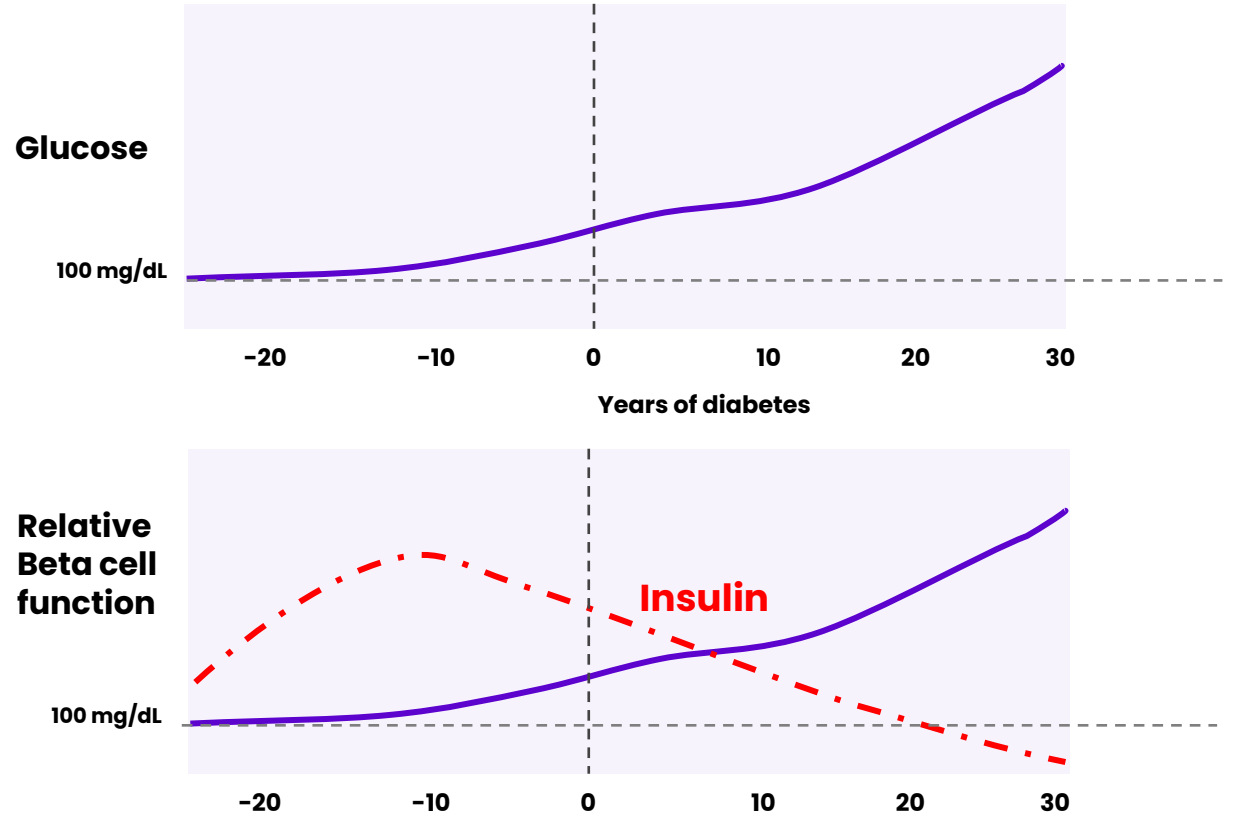
UKPDS Group. Lancet. 1998;352:837-853

# Diagnosis of Diabetes

	<b>TYPE 2</b>
<b>Fasting Glucose (mg/dl) *</b>	<b><math>\geq</math> 126</b>
<b>Random Blood Glucose (mg/dl)</b>	<b><math>\geq</math> 200</b>
<b>HbA1c *</b>	<b><math>\geq</math> 6.5%</b>

\* On two separate occasions

# Natural History Of Type 2 Diabetes

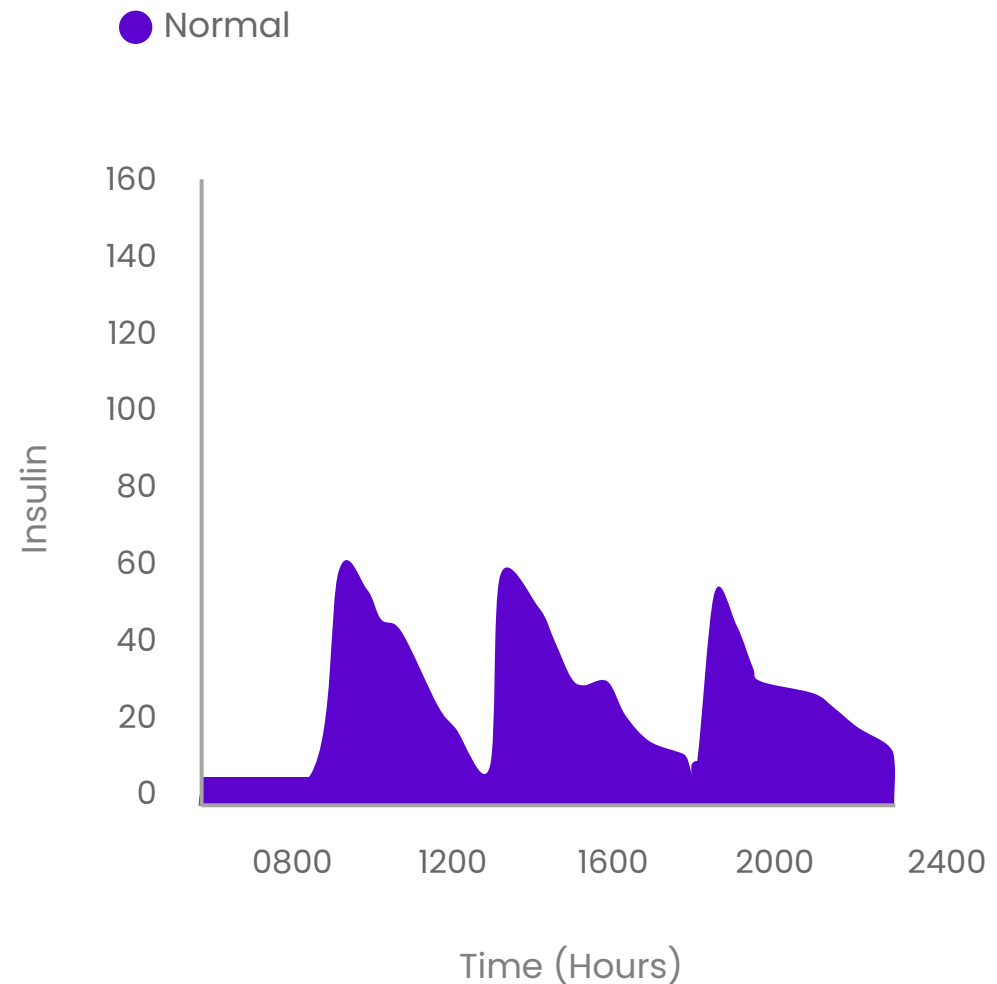


Christian Weyer, et al. *Journal of Clinical Investigation* 1999;104(6):787–794. doi: 10.1172/JCI7231  
Tabák AG, et al. *Lancet*. 2009 Jun 27;373(9682):2215–21. doi: 10.1016/S0140-6736(09)60619-X.

# Normal Insulin Secretion

Secreted mostly in response to eating carbohydrates

Promotes fat storage and inhibits ability to mobilize and oxidize body fat

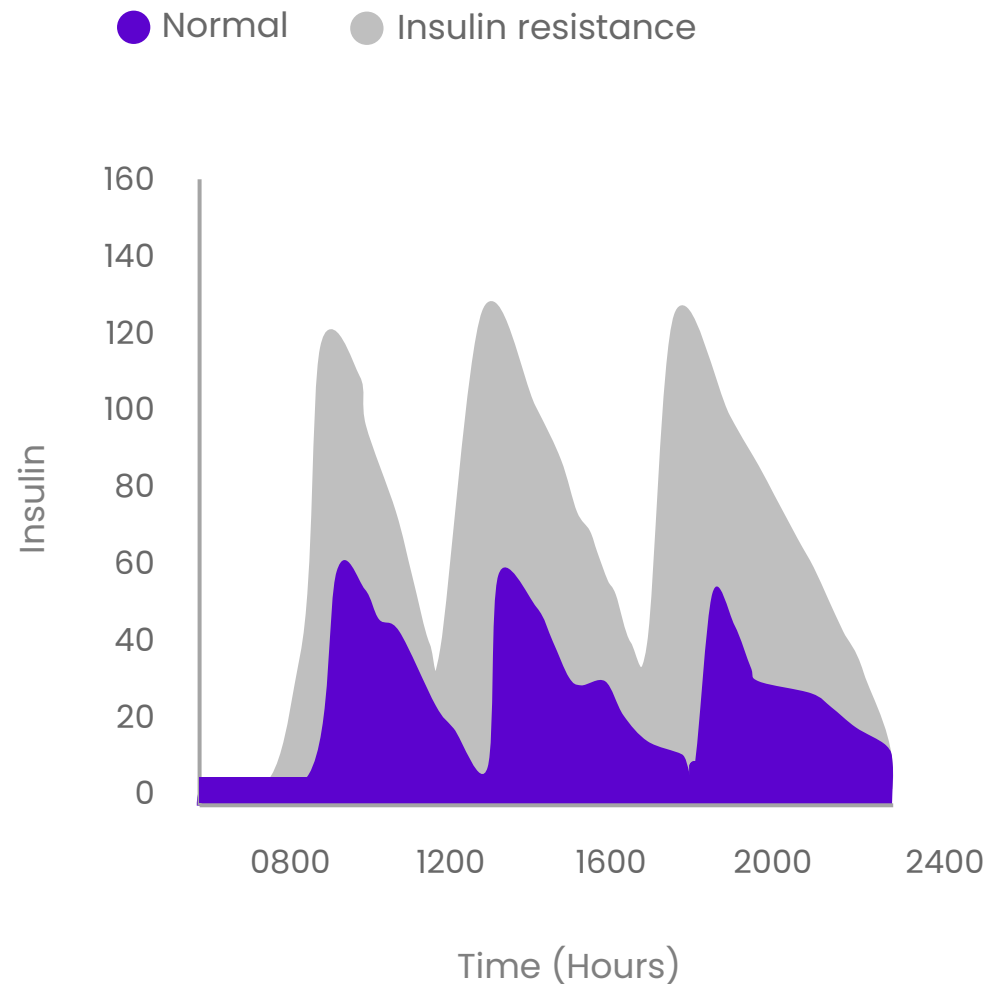


Coppack et al. J. Lipid Res.1994 Kolb et al. BMC Med. 2020  
Lippincott's Illustrated Reviews: Biochemistry, Sixth Edition (2014)

# Insulin Resistance

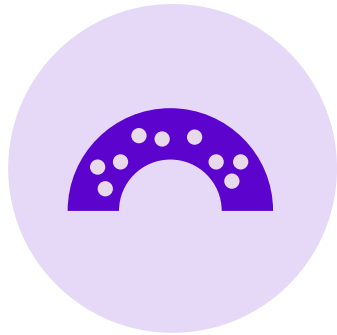
Occurs when cells—particularly in the liver, muscle, and fat—become less responsive to insulin.

In order to keep blood sugar levels normal, the pancreas compensates by producing more insulin, leading to chronic hyperinsulinemia.



# Insulin Resistance

## Identifying Signs and Symptoms



### High Triglycerides

> 150 mg/dL



### Low HDL

< 40 mg/dL in males  
< 50 mg/dL in females



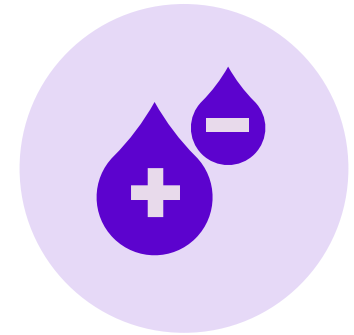
### Hypertension

Systolic BP  $\geq$  130 or  
Diastolic BP  $\geq$  85 mm Hg



### Weight gain

Inc waist  
circumference  
(i.e. central obesity)



### Dysglycemia

(FPG)  $\geq$  100 mg/dL

## Insulin Resistance

# Identifying Signs and Symptoms

**Type 2 Diabetes is a Severe Manifestation of Insulin Resistance**

### High Triglycerides

> 150 mg/dL

### Low HDL

< 40 mg/dL in males  
< 50 mg/dL in females

### Hypertension

Systolic BP  $\geq$  130 or  
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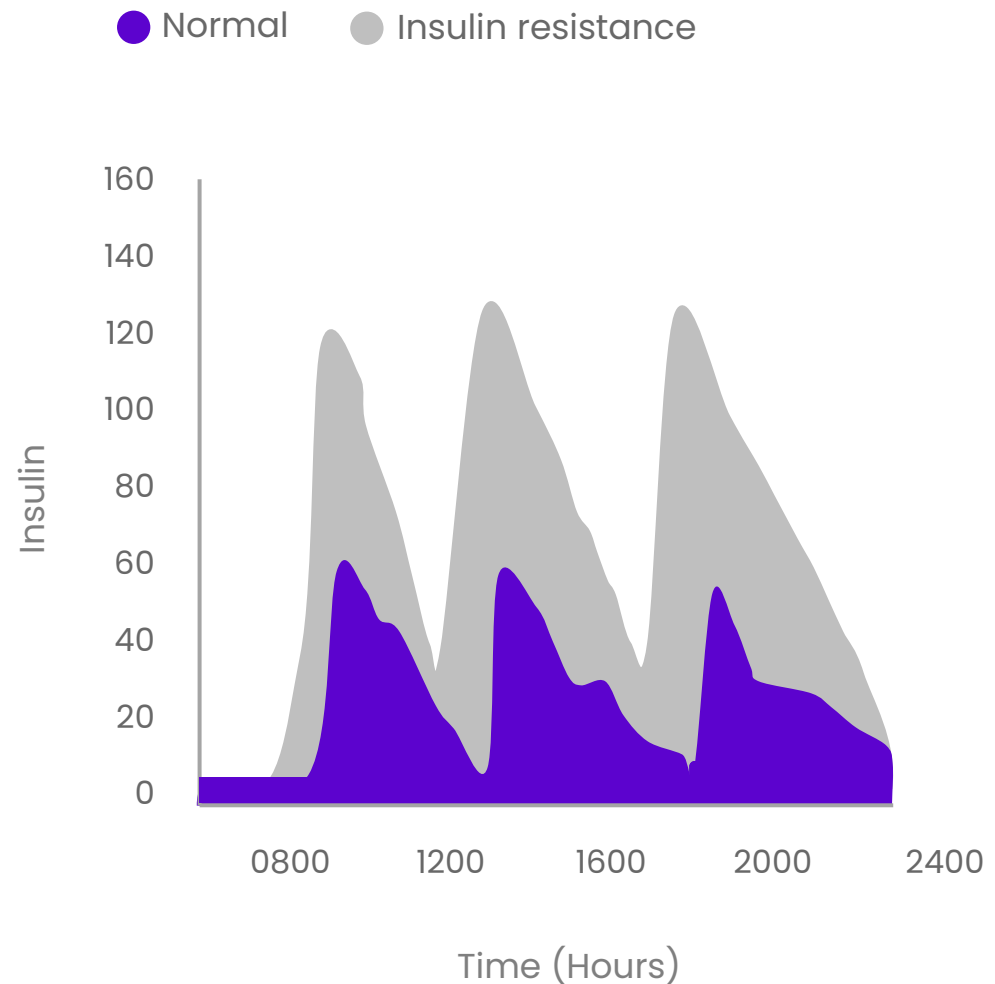
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# Insulin Resistance

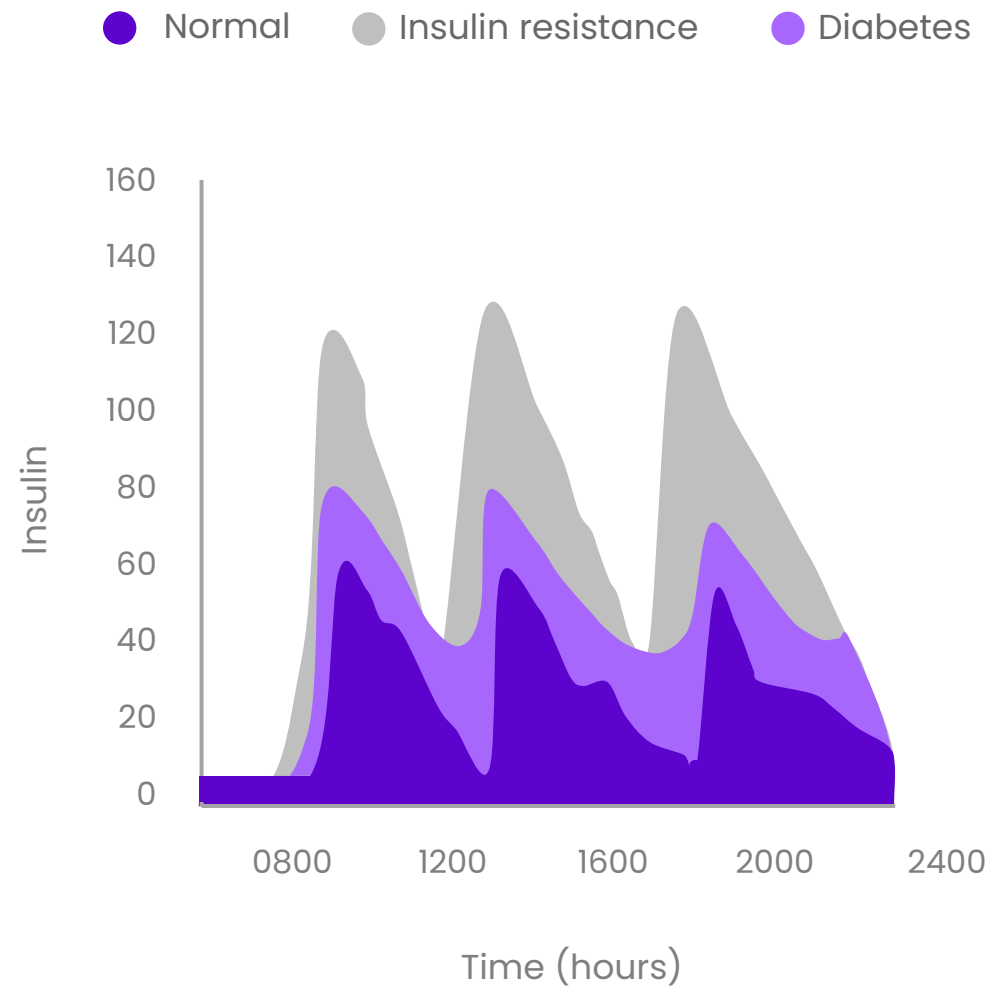
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# Type 2 Diabetes

High glucose + High insulin



# Hyperinsulinemia as an Independent Risk Factor



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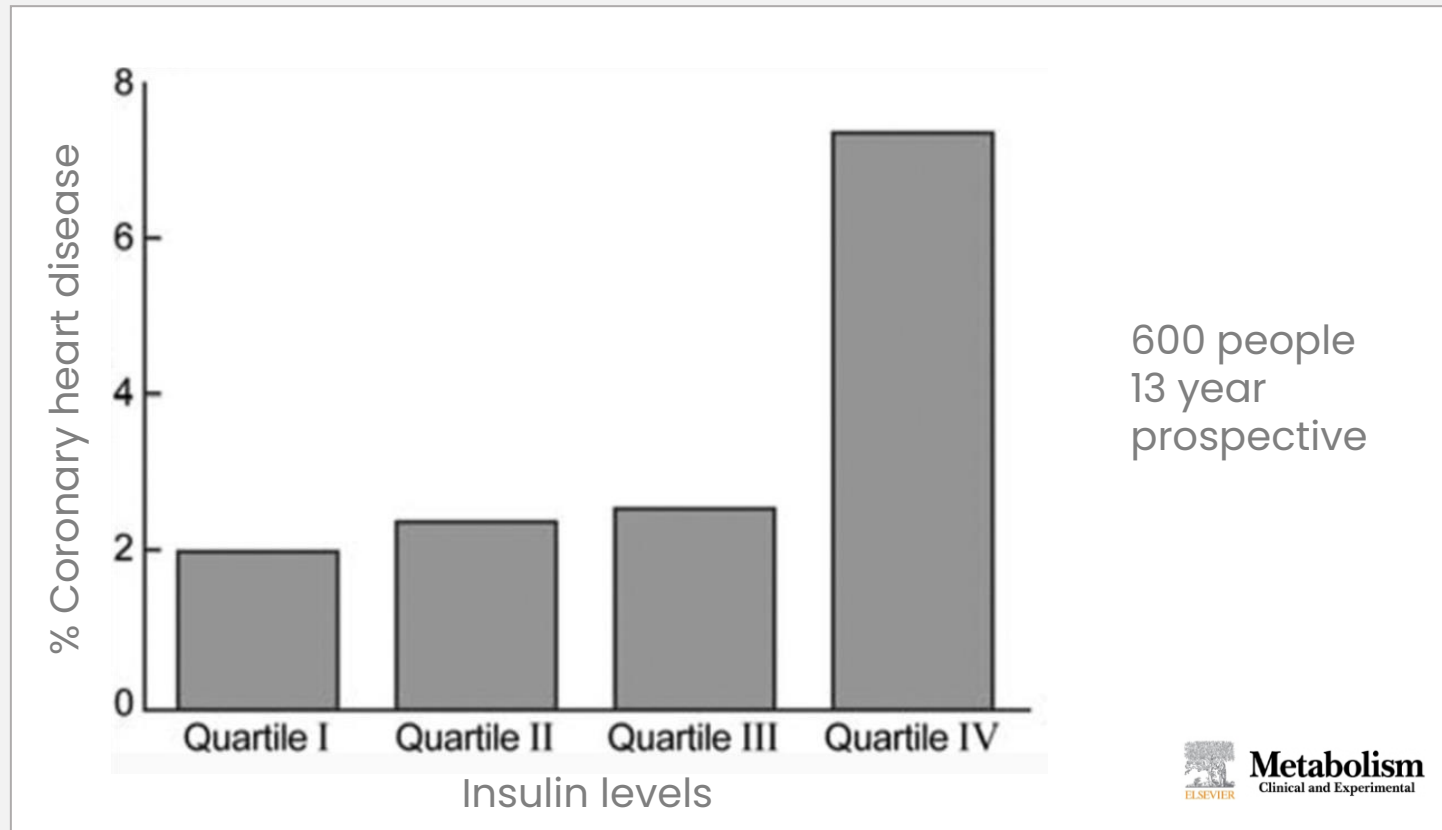


ORIGINAL ARTICLE

## Hyperinsulinemia as an Independent Risk Factor for Ischemic Heart Disease

Jean-Pierre Després, Ph.D., Benoît Lamarche, M.Sc., Pascale Mauriège, Ph.D., Bernard Cantin, M.D.,  
Gilles R. Dagenais, M.D., Sital Moorjani, Ph.D., and Paul-J. Lupien, M.D.et al.

# Hyperinsulinemia is a Predictor of coronary heart disease

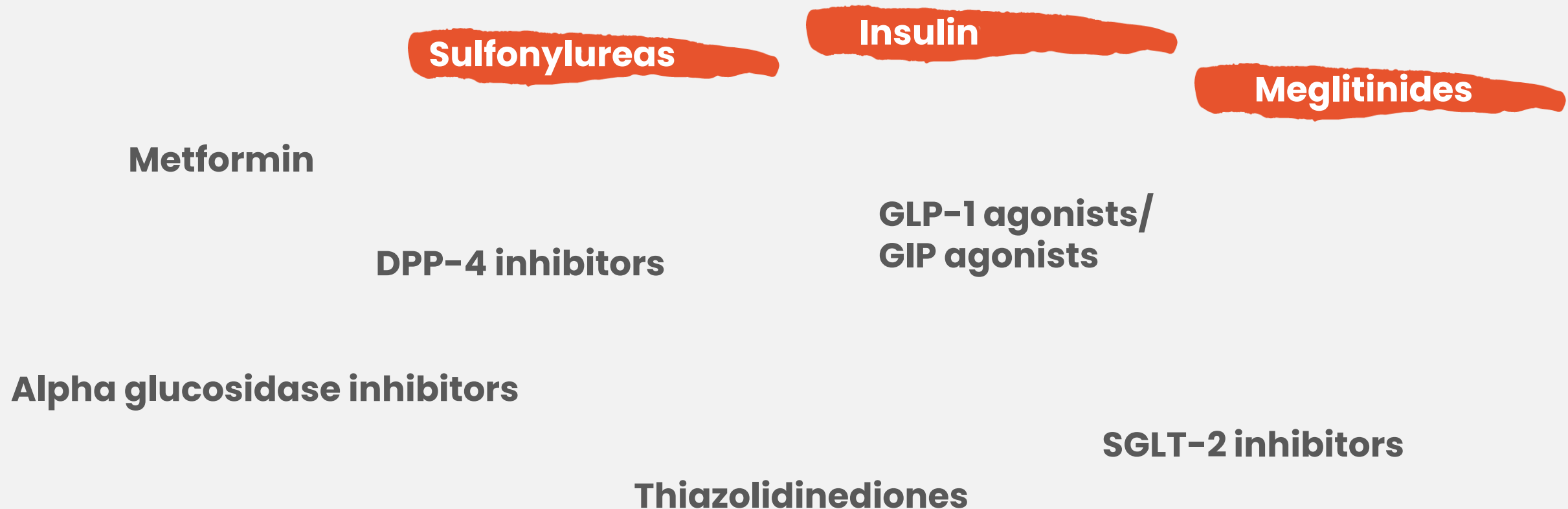


Goal of treatment of type 2 DM:  
**Treat the hyperinsulinemia**  
(insulin resistance)

# Pharmacological Treatment for type 2 Diabetes

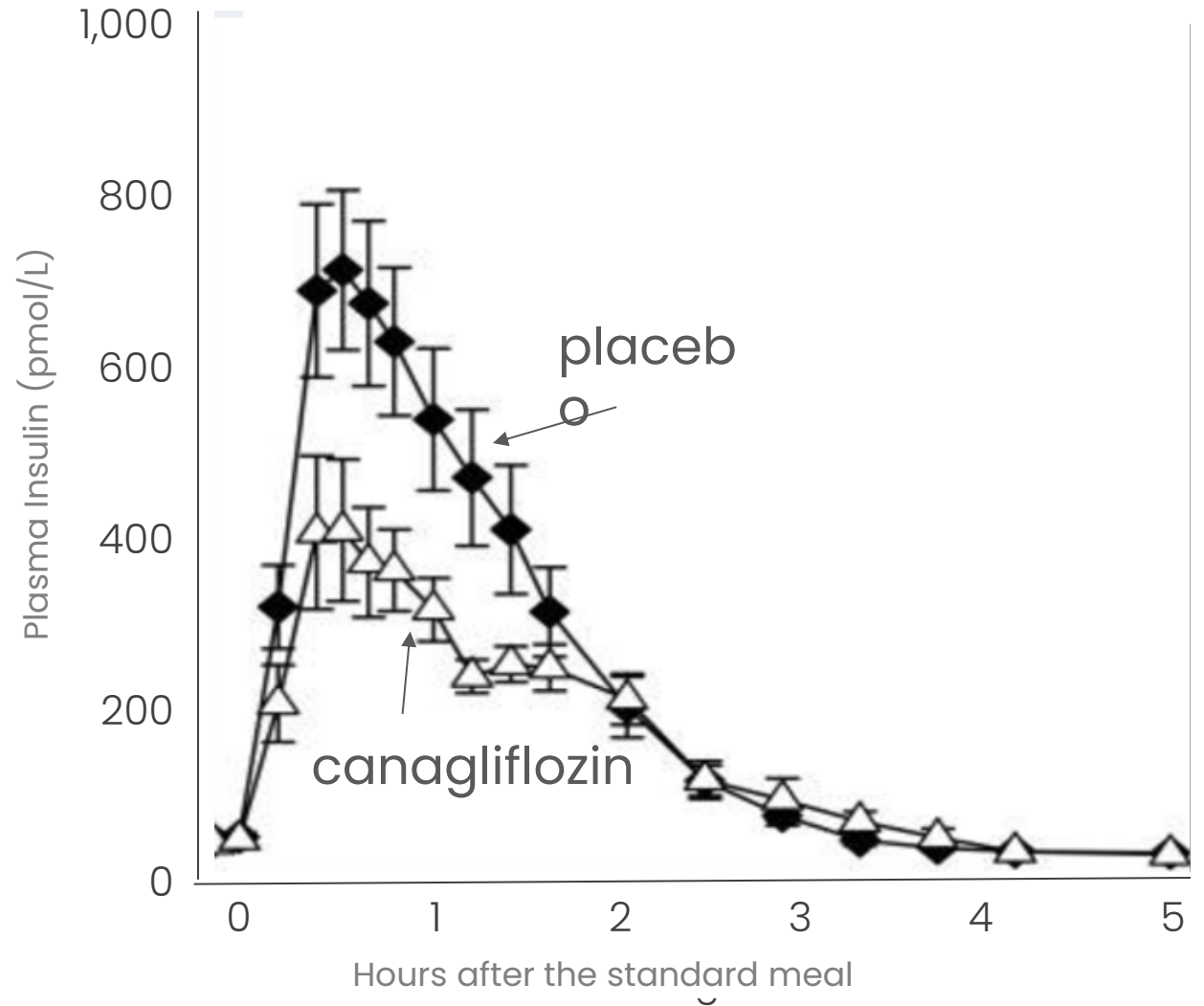


# Pharmacological Treatment for type 2 Diabetes



# New medications

SGLT-2 inhibitors  
decrease insulin levels

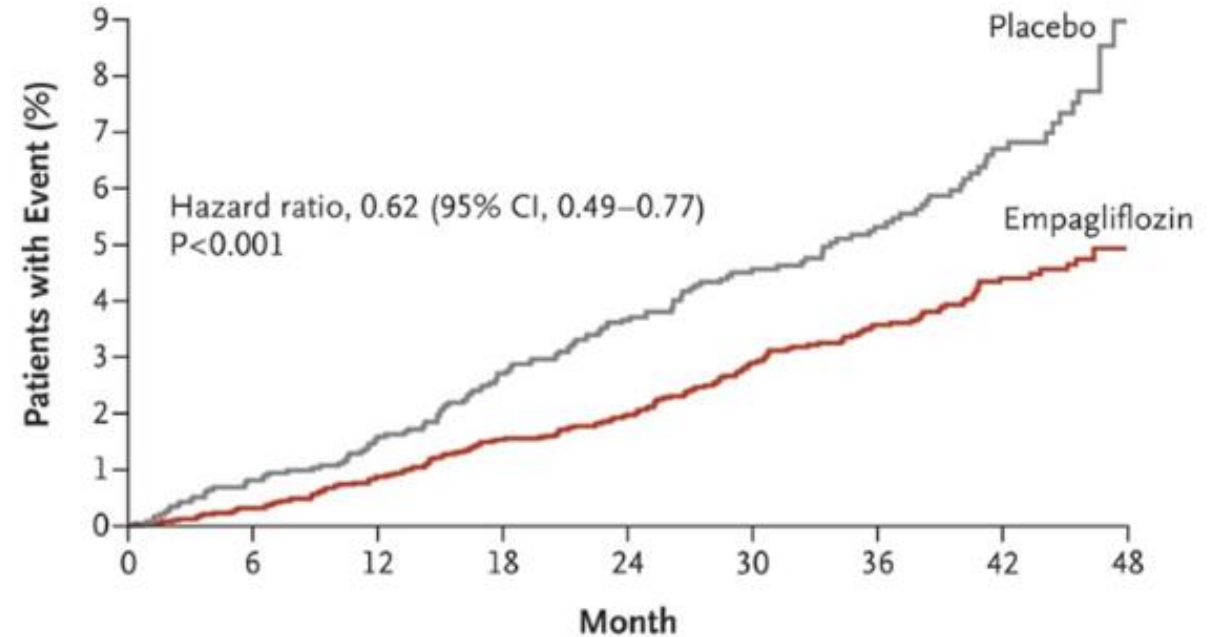


# New medications

that DECREASE insulin levels  
> Improve mortality

## Empagliflozin

**B** Death from Cardiovascular Causes



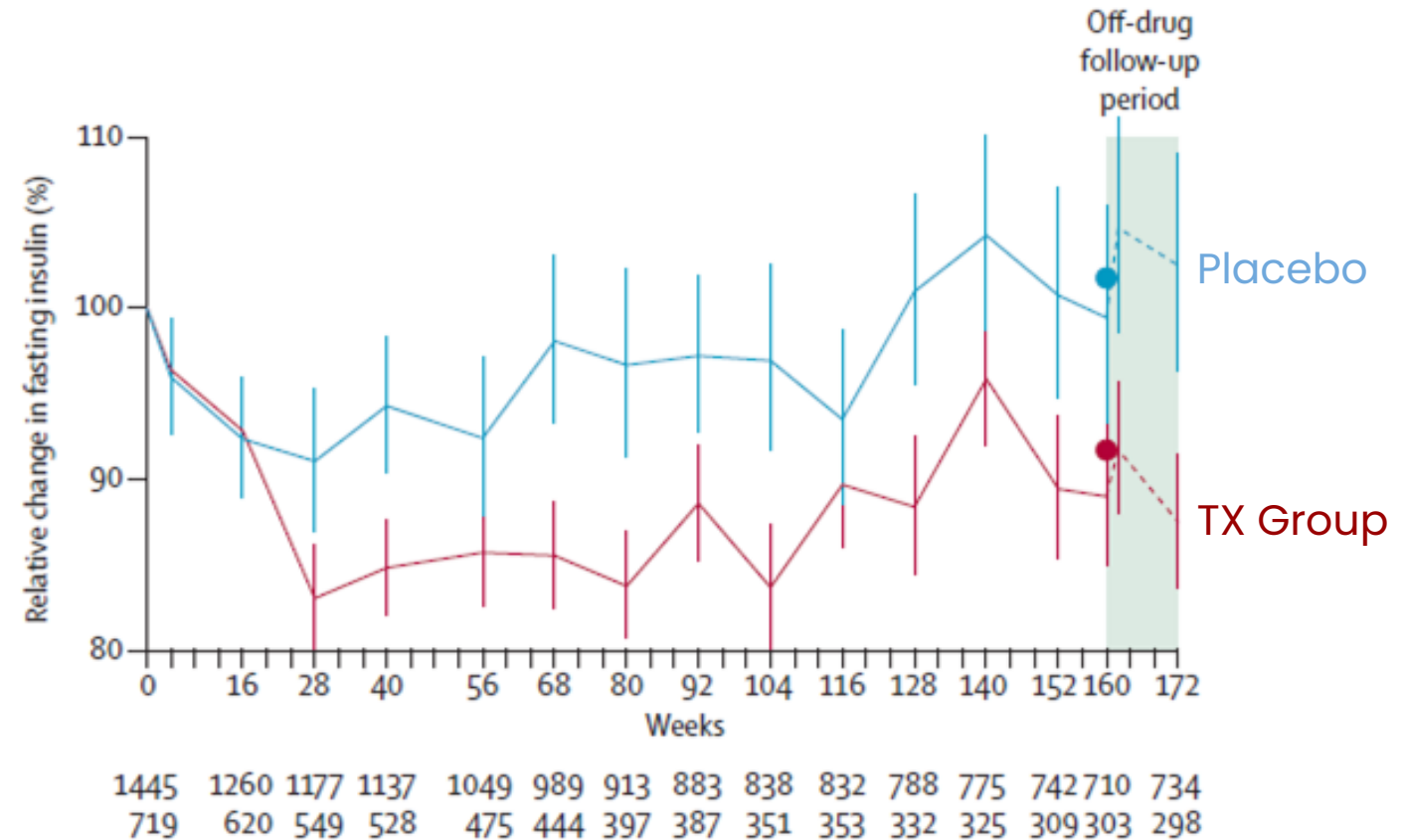
**No. at Risk**

Empagliflozin	4687	4651	4608	4556	4128	3079	2617	1722	414
Placebo	2333	2303	2280	2243	2012	1503	1281	825	177

# New medications

GLP-1 agonists decrease insulin levels

## Fasting Insulin 0-172 weeks

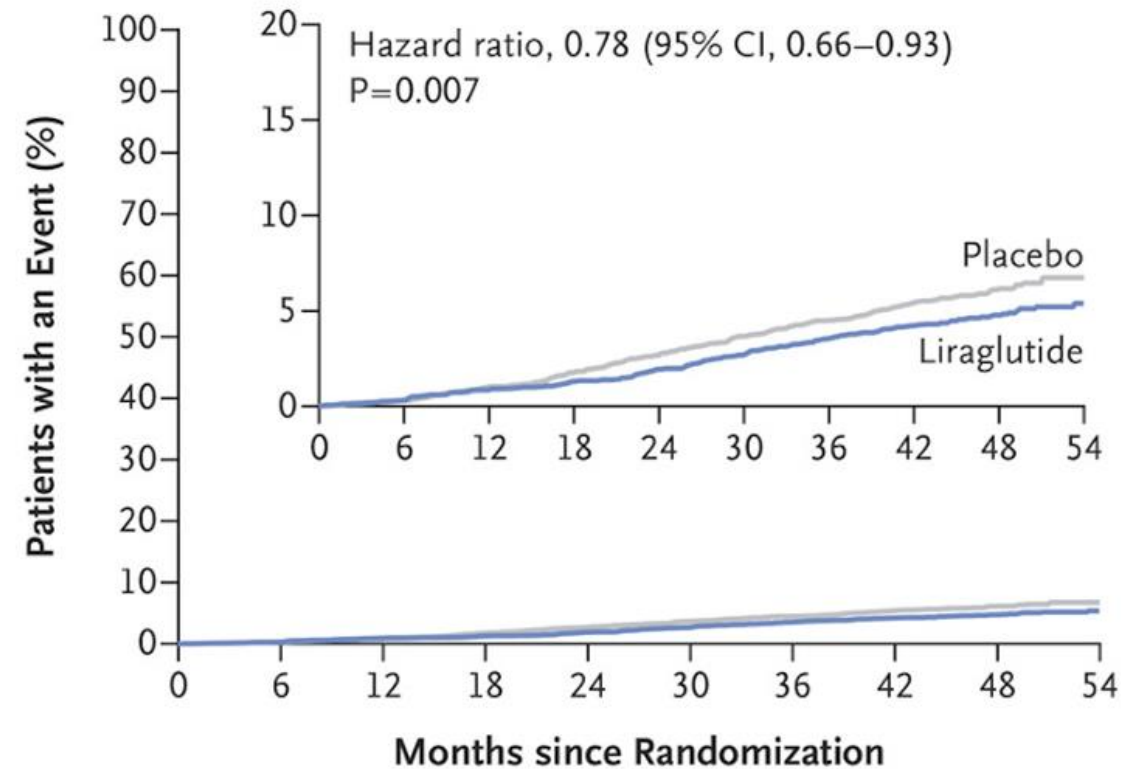


# New medications

that DECREASE insulin levels  
> Improve mortality

## Liraglutide

### B Death from Cardiovascular Causes



#### No. at Risk

Liraglutide	4668	4641	4599	4558	4505	4445	4382	4322	1723	484
Placebo	4672	4648	4601	4546	4479	4407	4338	4267	1709	465

**Diet** is very powerful way of **decreasing**  
**insulin resistance**

# Low-Carb Lowers Insulin More Than Low-Fat Even with Equal Weight Loss



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ORIGINAL ARTICLE



## A Low-Carbohydrate as Compared with a Low-Fat Diet in Severe Obesity

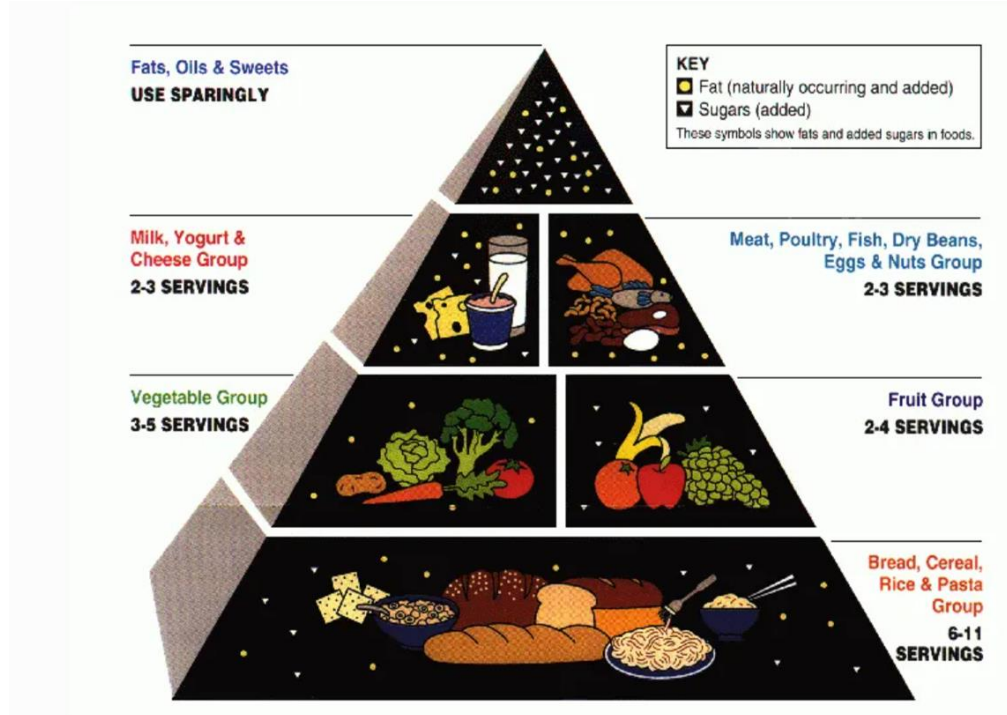
**Authors:** Frederick F. Samaha, M.D., Nayyar Iqbal, M.D., Prakash Seshadri, M.D., Kathryn L. Chicano, C.R.N.P., Denise A. Daily, R.D., Joyce McGrory, C.R.N.P., Terrence Williams, B.S., Monica Williams, B.S., Edward J. Gracely, Ph.D., and Linda Stern, M.D. [Author Info & Affiliations](#)

Published May 22, 2003 | N Engl J Med 2003;348:2074-2081 | DOI: 10.1056/NEJMoa022637

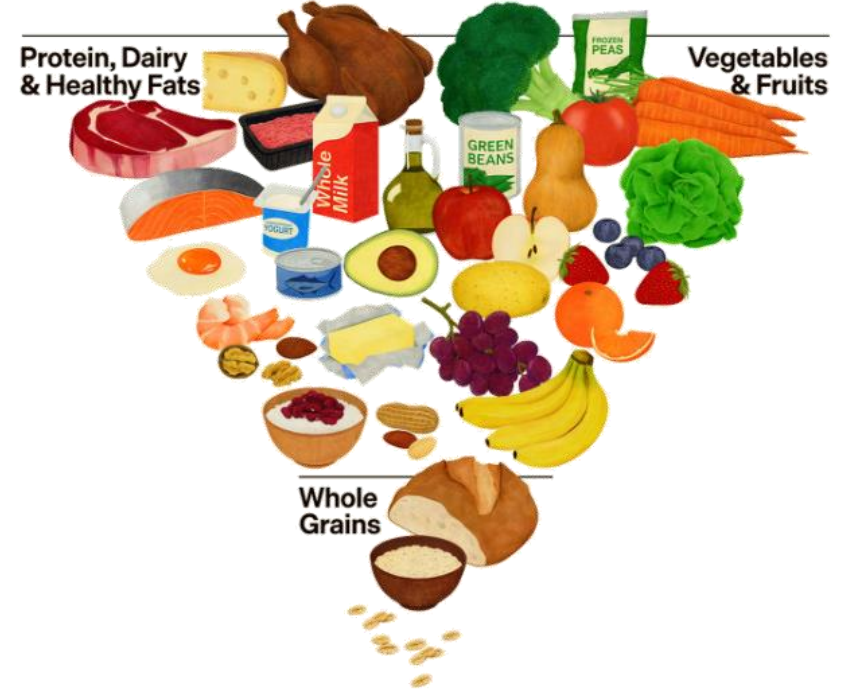
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# The food Pyramid

1992



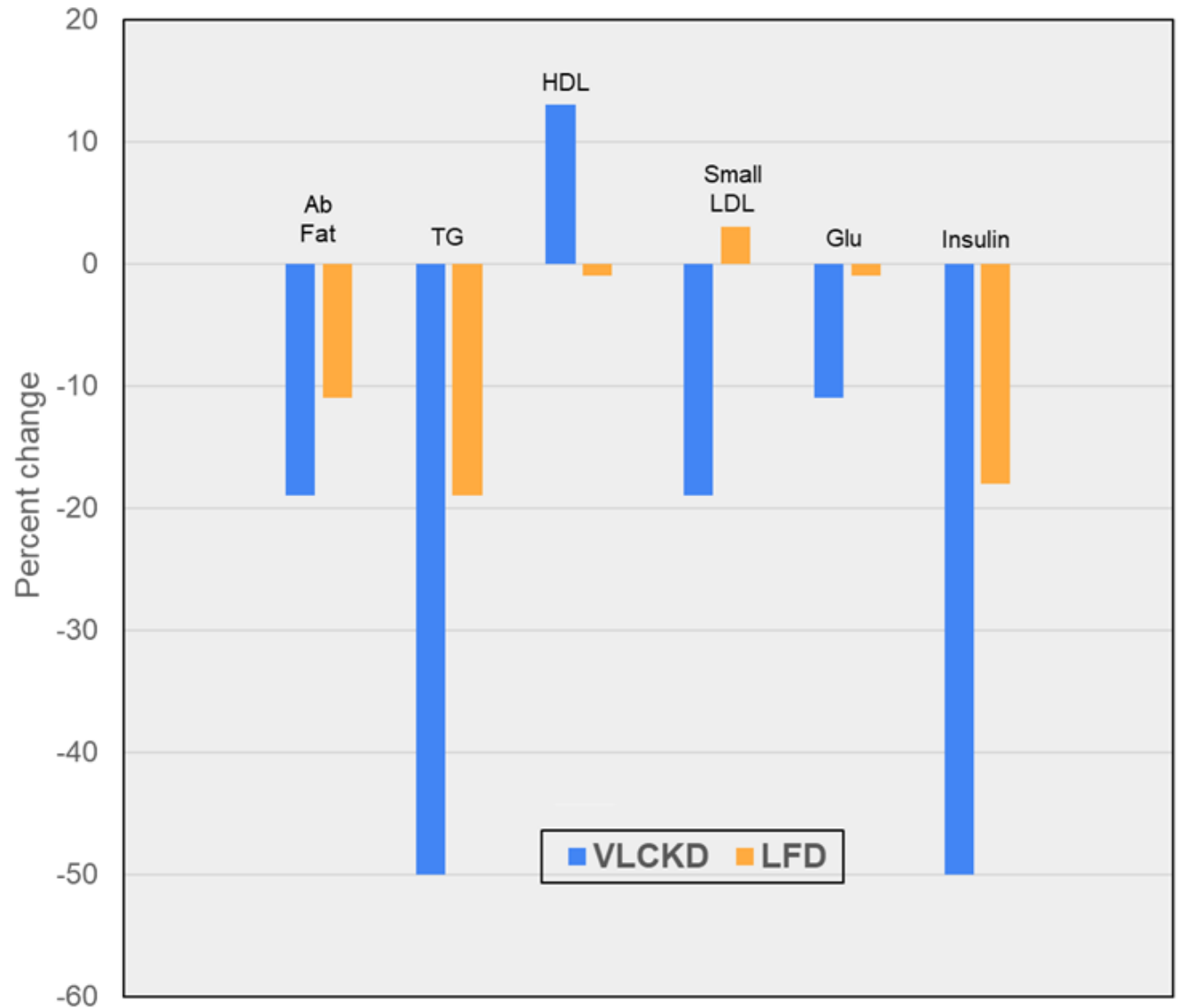
2026



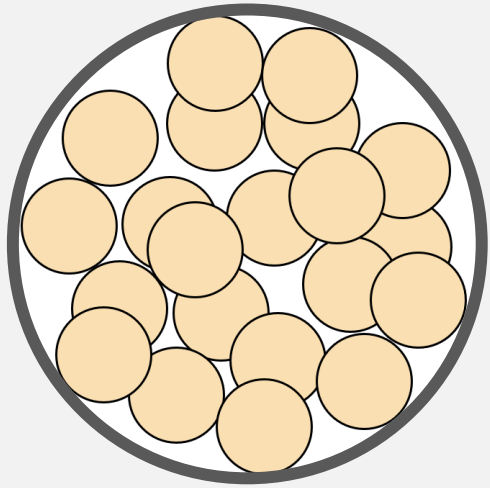


"Reducing overall carbohydrate intake for individuals with diabetes has demonstrated the most evidence for improving glycemia and may be applied in a variety of eating patterns that meet individual needs and preferences."

# Carbohydrate restriction improves all the features of metabolic syndrome

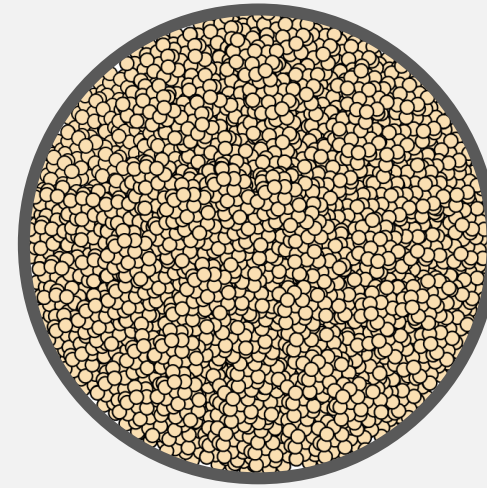


# A Low-Carb Diet shifts LDL cholesterol pattern B into A



## Pattern A LDL

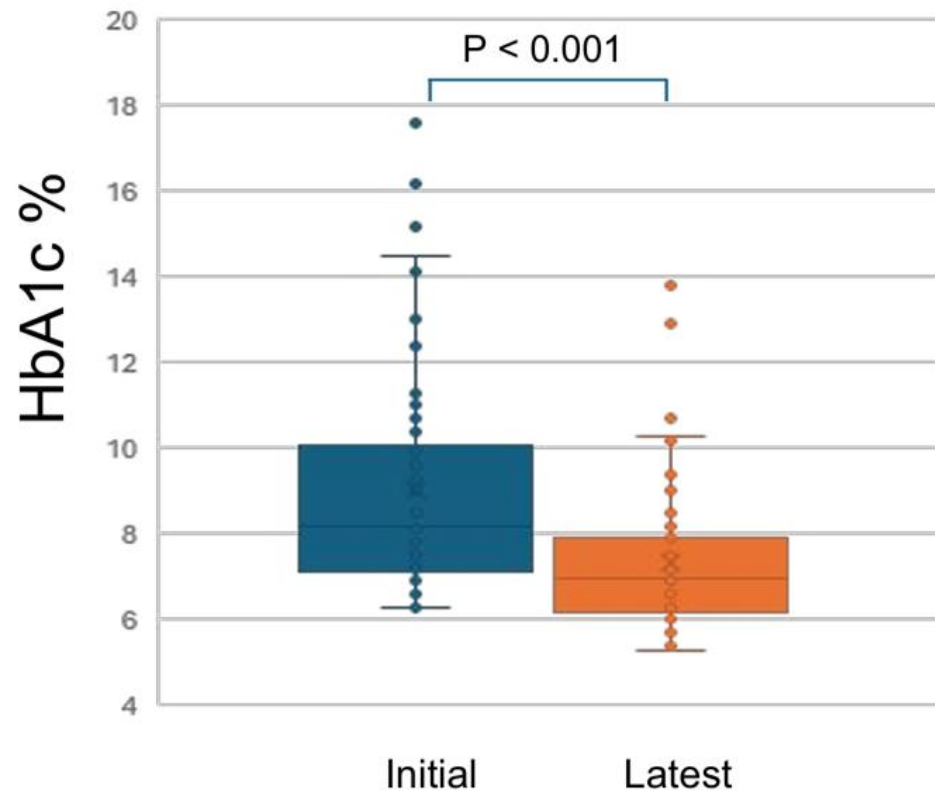
Low insulin  
**Less** associated with **CVD**



## Pattern B LDL

Found with high insulin levels  
**Strongly** associated with **CVD**

# Change in A1c in Medicaid patients with Type 2 Diabetes



**80** patients had two A1c results



A1c decreased from **9%** to **7.32%**



**57%** of patients stopped taking insulin

# Conclusion

- Insulin resistance precedes Type 2 diabetes.
- Insulin resistance can be identified in patients with hypertension, abdominal obesity, high TG, low HDL, and dysglycemia.
- Diabetes is a severe manifestation of insulin resistance.
- Insulin resistance is a risk factor for CAD and other chronic diseases.
- A low carbohydrate diet is a very powerful tool to reduce insulin resistance in any population.

# Hear about a **Patients't Journey**



THANK YOU



JOIN US IN MAKING A REAL DIFFERENCE