GemVCare
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BChealth

C-PEPTIDE & β-CELL ANTIBODY TEST

Precise treatment with precise diagnosis

01 CLASSIFY YOUR DIABETES TYPE

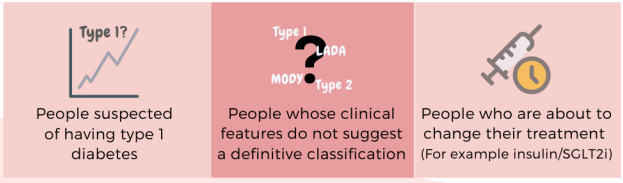
Different types of diabetes have **similar clinical characteristics**. At present, doctors mostly use the stepwise elimination method to distinguish the patient's diabetes type and determine a treatment plan. Unfortunately, this method is time-consuming and has low efficiency. Failure to correctly classify the type of diabetes causes many patients to **miss the optimal timeframe for treatment**. Doctors can use our test to accurately identify the patient's type of diabetes and decide on treatment options.

T1DM = Type 1 Diabetes Mellitus
LADA = Latent Autoimmune Diabetes of Adulthood
T2DM = Type 2 Diabetes Mellitus
MODY = Maturity-onset diabetes of the young ^

	T1DM	LADA	T2DM	MODY
Cause of disease	Interaction between innate and acquired factors			Genetic factor
Time of onset	During adolescence	During adulthood	At any time	Typically before 25 years old
Treat-ment	Mainly insulin	Use of insulin dependent on endogenous insulin level and clinical state	Mainly oral medication during early stages	Dependent on the specific gene mutation

† Some oral medications have a significant effect on specific gene mutations.

Who should get tested:



People suspected of having type 1 diabetes

People whose clinical features do not suggest a definitive classification

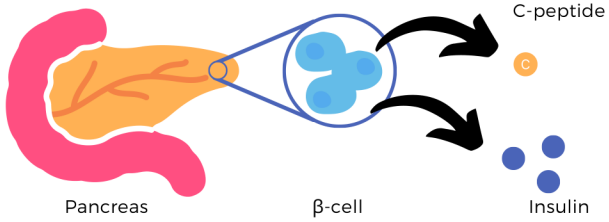
People who are about to change their treatment (For example insulin/SGLT2i)

^For more information, please refer to the **Monogenic Diabetes Test - MD35.**

02 C-PEPTIDE AND INSULIN

C-peptide as an indicator of insulin reserve

The beta cells in the pancreas secrete insulin to control blood sugar levels in our bodies. Therefore, **a lack of β-cells and abnormal β-cell function can lead to insulin insufficiency, resulting in diabetes**. C peptide is a fragment of the precursor insulin peptide (proinsulin). C-peptide is more stable than insulin, therefore it is a more suitable measure of insulin reserve.



Insulin Resistance

When blood sugar enters the bloodstream, the pancreas releases insulin, allowing the cells to take up take up sugar from the blood. However, insulin resistance cause cells to lose their sensitivity to insulin, which prevents blood sugar from entering the cells. Insulin resistance can increase the risk of dyslipidemia, hypertension, and type 2 diabetes.

About SGLT2i (Sodium-glucose co-transporter-2 inhibitor)

SGLT2i is used for lowering blood glucose and can protect the kidney and heart. However, patients with low C peptide reflecting insufficient insulin reserve cannot use glucose effectively. In these patients, the use of SGLT2i may precipitate ketosis due to excessive fat burning, especially during acute illness or stress. Before starting SGLT2i, it is worth excluding insulin insufficiency especially in patients with long disease duration poor glycemic control and/or low body weight.

1. Measure your C-peptide level
2. Consider early insulin therapy for patients with low C-peptide levels
3. Use SGLT2i to protect your organs

Sources:

1. Pihoker, C., Gilliam, L. K., Hampe, C. S., & Lernmark, A. (2005). Autoantibodies in Diabetes. Diabetes, 54(Supplement 2). doi:10.2337/diabetes.54.suppl_2.s52
2. Rosenstock, J., & Ferrannini, E. (2015). Euglycemic Diabetic Ketoacidosis: A Predictable, Detectable, and Preventable Safety Concern With SGLT2 Inhibitors. Diabetes Care, 38(9), 1638-1642. doi:10.2337/dc15-1380

03 GEMVCARE TEST

According to a jointly published report by two reputable diabetes organizations, the **American Diabetes Association** and the **European Association for Study of Diabetes**, it is recommended to test patients for C peptide and islet cell antibodies for diabetes classification.[1] An **International Experts Group** also recommended C-peptide and islet cell antibody tests as a method for diagnosis and management of latent autoimmune diabetes in adults (LADA).[2]

The test includes:

1 C-peptide

- Indication of insulin secretion in your body
- People with severe insulin deficiency need insulin injections

2 Homeostatic Model Assessment for Insulin Resistance (HOMA-IR)

- Reflects the body's sensitivity to insulin, which helps determine the treatment approach and medication options

3 β-cell Autoantibodies

- Destroys β-cells, associated to type 1 diabetes and LADA
- Includes: Anti-glutamic acid decarboxylase (Anti-GAD) antibody, Anti-islet tyrosine phosphatase 2 (Anti-IA2) antibody

Interpretation of your test results: [3]

	T1DM	LADA	T2DM	MODY
C-peptide levels	Low	Gradual decline	Low to high	Low to normal
Islet cells antibodies	Positive	Positive	Negative	Negative
Insulin Resistance	Negative	Negative	Positive	Negative
% of adult patients with diabetes [4]	1-2%	6-8%	90%	1-3%
Genetic impact on the risk of onset#	Increase risk of diabetes			Directly cause onset of diabetes

Note: Patients with diabetes often have multiple biomarkers related to his/her diabetes.

#Please visit our website for other genetic testing services.

Sources:

1. Holt, Richard I. G., et al. "The Management of Type 1 Diabetes in Adults. A Consensus Report by the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD)." Diabetologia, vol. 64, no. 12, 2021, pp. 2609–2652., https://doi.org/10.1007/s00125-021-05568-3.
2. Buzzetti, Raffaella, et al. "Management of Latent Autoimmune Diabetes in Adults: A Consensus Statement From an International Expert Panel." Diabetes, vol. 69, no. 10, 2020, pp. 2037–2047., https://doi.org/10.2337/dbi20-0017.
3. Kreider, K. E. (2019). The Diagnosis and Management of Atypical Types of Diabetes. The Journal for Nurse Practitioners, 15(2). doi:10.1016/j.nurpra.2018.09.022
4. Luk, Andrea O.y., et al. "Diabetes-Related Complications and Mortality in Patients With Young-Onset Latent Autoimmune Diabetes: A 14-Year Analysis of the Prospective Hong Kong Diabetes Register." Diabetes Care, vol. 42, no. 6, 2019, pp. 1042–1050., https://doi.org/10.2337/dc18-1796.

04 SERVICE FLOW

STEP 1

Specimen collection*:

1. **C-peptide test** requires 3ml of EDTA anticoagulant blood (fasting or after glucose stimulation by glucagon or after meal)
2. **β-cells antibodies test** requires 3ml of coagulant blood

STEP 2

The specimen will be delivered directly to our testing centre

STEP 3

Your health report will be completed in 14 working days

STEP 4

The report will be explained to you by your healthcare provider

Please check with your doctor or our service provider for sampling arrangements

05 ABOUT US

GemVCare - commited to helping the public prevent chronic diseases and improving the health of patients.

With professional genetic testing technology for chronic diseases, medical professionals can customize precise treatments and management models according to your personal genetic profile and health conditions so that you can live your best life.

OUR PARTNERS

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