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Prediabetes

What is prediabetes?

Prediabetes means that your blood glucose, or blood sugar [<https://medlineplus.gov/bloodglucose.html>] , levels are higher than normal but not high enough to be called diabetes [<https://medlineplus.gov/diabetes.html>] . Glucose comes from the foods you eat. Too much glucose in your blood can damage your body over time.

If you have prediabetes, you are more likely to develop type 2 diabetes [<https://medlineplus.gov/diabetestype2.html>] , heart disease [<https://medlineplus.gov/heartdiseases.html>] , and stroke [<https://medlineplus.gov/stroke.html>] . But if you make some lifestyle changes now, you may be able to delay or prevent type 2 diabetes.

What causes prediabetes?

Prediabetes usually happens when your body has a problem with insulin. Insulin is a hormone that helps the glucose get into your cells to give them energy. A problem with insulin could be:

- Insulin resistance, a condition in which the body can't use its insulin properly. It makes it hard for your cells to get glucose from your blood. This can cause your blood sugar levels to rise.
- Your body can't make enough insulin to keep your blood sugar levels at a healthy level

Researchers think that being overweight and not getting regular physical activity are major factors in causing prediabetes.

Who is at risk for prediabetes?

About 1 out of every 3 adults has prediabetes. It is more common in people who:

- Are overweight or have obesity [<https://medlineplus.gov/obesity.html>]
- Are age 45 or older
- Have a parent, brother, or sister with diabetes
- Are African American, Alaska Native, American Indian, Asian American, Hispanic/Latino, Native Hawaiian, or Pacific Islander American
- Are not physically active
- Have health conditions such as high blood pressure [<https://medlineplus.gov/highbloodpressure.html>] and high cholesterol [<https://medlineplus.gov/cholesterol.html>]
- Have had gestational diabetes [<https://medlineplus.gov/diabetesandpregnancy.html>] (diabetes in pregnancy)
- Have a history of heart disease or stroke
- Have metabolic syndrome [<https://medlineplus.gov/metabolicsyndrome.html>]
- Have polycystic ovary syndrome [<https://medlineplus.gov/polycysticovarysyndrome.html>] (PCOS)

What are the symptoms of prediabetes?

Most people don't know they have prediabetes because usually there are no symptoms.

Some people with prediabetes may have darkened skin in the armpit or on the back and sides of the neck. They may also have many small skin growths in those same areas.

How is prediabetes diagnosed?

There are a few different blood tests that can diagnose prediabetes. The most common ones are:

- Fasting plasma glucose [<https://medlineplus.gov/lab-tests/blood-glucose-test/>] (FPG) test, which measures your blood sugar at a single point in time. You need to fast (not eat or drink) for at least 8 hours before the test. The results of the test are given in mg/dL (milligrams per deciliter):
 - A normal level is 99 or below
 - Prediabetes is 100 to 125
 - Type 2 diabetes is 126 and above
- A1C test [<https://medlineplus.gov/a1c.html>] , which measures your average blood sugar over the past 3 months. The results of an A1C test are given as a percentage. The higher the percentage, the higher your blood sugar levels have been.
 - A normal level is below 5.7%
 - Prediabetes is between 5.7 to 6.4%
 - Type 2 diabetes is above 6.5%

If I have prediabetes, will I get diabetes?

If you have prediabetes, you may be able to delay or prevent [<https://medlineplus.gov/howtopreventdiabetes.html>] type 2 diabetes through lifestyle changes:

- Losing weight [<https://medlineplus.gov/weightcontrol.html>] , if you are overweight
- Getting regular physical activity [<https://medlineplus.gov/howmuchexercisedoineed.html>]
- Following a healthy, reduced-calorie eating plan

In some cases, your health care provider may also recommend taking diabetes medicines [<https://medlineplus.gov/diabetesmedicines.html>] .

Can prediabetes be prevented?




If you are at risk for prediabetes, those same lifestyle changes (losing weight, regular physical activity, and a healthy eating plan) may prevent you from getting it.

NIH: National Institute of Diabetes and Digestive and Kidney Diseases


Start Here

- About Prediabetes [<https://www.heart.org/en/health-topics/diabetes/about-diabetes/about-prediabetes>] (American Heart Association)
- Prediabetes [<https://familydoctor.org/condition/prediabetes/?adfree=true>] (American Academy of Family Physicians)
Also in Spanish [<https://es.familydoctor.org/condicion/prediabetes-es/?adfree=true>]
- Prediabetes -- Your Chance to Prevent Type 2 Diabetes [<https://www.cdc.gov/diabetes/prevention-type-2/prediabetes-prevent-type-2.html>] (Centers for Disease Control and Prevention)
Also in Spanish [<https://www.cdc.gov/diabetes/es/prevention-type-2/la-prediabetes-su-oportunidad-para-prevenir-la-diabetes-tipo-2.html>]

Diagnosis and Tests

- A1C: MedlinePlus Health Topic [<https://medlineplus.gov/a1c.html>]  (National Library of Medicine)
Also in Spanish [<https://medlineplus.gov/spanish/a1c.html>]
- Blood Glucose and A1C: Diagnosis [<https://diabetes.org/about-diabetes/diagnosis>] (American Diabetes Association)
- Blood Glucose Test [<https://medlineplus.gov/lab-tests/blood-glucose-test/>]  (National Library of Medicine)
Also in Spanish [<https://medlineplus.gov/spanish/pruebas-de-laboratorio/prueba-de-glucosa-en-la-sangre/>]
- Diabetes Tests [<https://medlineplus.gov/lab-tests/diabetes-tests/>]  (National Library of Medicine)
Also in Spanish [<https://medlineplus.gov/spanish/pruebas-de-laboratorio/pruebas-de-diabetes/>]

Diabetes Tests and Diagnosis [https://www.niddk.nih.gov/health-information/diabetes/overview/tests-diagnosis]


 (National Institute of Diabetes and Digestive and Kidney Diseases)

Also in Spanish [https://www.niddk.nih.gov/health-information/informacion-de-la-salud/diabetes/informacion-general/pruebas-diagnostico]



Prevention and Risk Factors

- Diabetes Risk Factors [https://www.heart.org/en/health-topics/diabetes/understand-your-risk-for-diabetes]
(American Heart Association)
- Surprising Truth about Prediabetes [https://www.cdc.gov/diabetes/prevention-type-2/truth-about-prediabetes.html]
(Centers for Disease Control and Prevention)
Also in Spanish [https://www.cdc.gov/diabetes/es/prevention-type-2/la-sorprendente-verdad-sobre-la-prediabetes.html]



Living With

- How to Prevent Diabetes: MedlinePlus Health Topic [https://medlineplus.gov/howtopreventdiabetes.html]
 (National Library of Medicine)
Also in Spanish [https://medlineplus.gov/spanish/howtopreventdiabetes.html]

Related Issues

- Diabetes, Heart Disease, and Stroke [https://www.niddk.nih.gov/health-information/diabetes/overview/preventing-problems/heart-disease-stroke]  (National Institute of Diabetes and Digestive and Kidney Diseases)
Also in Spanish [https://www.niddk.nih.gov/health-information/informacion-de-la-salud/diabetes/informacion-general/prevenir-problemas/diabetes-enfermedades-cardiacas-accidentes-cerebrovasculares]
- Insulin Resistance and Prediabetes [https://www.niddk.nih.gov/health-information/diabetes/overview/what-is-diabetes/prediabetes-insulin-resistance]  (National Institute of Diabetes and Digestive and Kidney Diseases)
Also in Spanish [https://www.niddk.nih.gov/health-information/informacion-de-la-salud/diabetes/informacion-general/que-es/resistencia-insulina-prediabetes]

Clinical Trials


- ClinicalTrials.gov: Insulin Resistance [https://clinicaltrials.gov/search?cond=%22Insulin+Resistance%22&aggFilters=status:not%20rec]  (National Institutes of Health)
- ClinicalTrials.gov: Prediabetic State [https://clinicaltrials.gov/search?cond=%22Prediabetic+State%22&aggFilters=status:not%20rec]  (National Institutes of Health)

Journal Articles

References and abstracts from MEDLINE/PubMed (National Library of Medicine)

- Article: Twelve-Week Curcumin Supplementation Improves Glucose Homeostasis and Gut Health in Prediabetic...
[https://www.ncbi.nlm.nih.gov/pubmed/40647269]
- Article: The effect of barley savigh consumption on blood sugar among pre-diabetic...
[https://www.ncbi.nlm.nih.gov/pubmed/40604206]
- Article: Interleukin-1 β in circulating mononuclear cells predicts steatotic liver disease improvement after weight...
[https://www.ncbi.nlm.nih.gov/pubmed/40514652]
- Prediabetes -- see more articles [https://pubmed.ncbi.nlm.nih.gov/?term=%22Prediabetic+State%22%5Bmajr%3Anoexp%5D+AND+humans%5Bmh%5D+AND+english%5Bla%5D+AND+%22last+1+Year%22+%5Bedat%5D+AND+%28patient+education+handout%5Bpt%5D+OR+guideline%5Bpt%5D+OR+clinical+trial%5Bpt%5D%29++NOT+%28letter%5Bpt%5D+OR+case+reports%5Bpt%5D+OR+editorial%5Bpt%5D+OR+comment%5Bpt%5D%29+AND+free+full+text%5Bsb%5D+]

Find an Expert

- American Diabetes Association [https://diabetes.org/]
- National Institute of Diabetes and Digestive and Kidney Diseases [https://www.niddk.nih.gov] 

Children

- Prediabetes in Children -- Five Things Parents Need to Know [<https://www.merckmanuals.com/home/news/editorial/2020/10/28/13/18/prediabetes-in-children>] (Merck & Co., Inc.)
Also in Spanish [<https://www.merckmanuals.com/es-us/hogar/news/editorial/2020/10/28/13/18/prediabetes-in-children>]

Patient Handouts

- Blood sugar test [<https://medlineplus.gov/ency/article/003482.htm>] (Medical Encyclopedia)
Also in Spanish [<https://medlineplus.gov/spanish/ency/article/003482.htm>]
- Glucose tolerance test - non-pregnant [<https://medlineplus.gov/ency/article/003466.htm>] (Medical Encyclopedia)
Also in Spanish [<https://medlineplus.gov/spanish/ency/article/003466.htm>]
- Prediabetes [<https://medlineplus.gov/ency/patientinstructions/000778.htm>] (Medical Encyclopedia)
Also in Spanish [<https://medlineplus.gov/spanish/ency/patientinstructions/000778.htm>]



MEDICAL ENCYCLOPEDIA

Blood sugar test [<https://medlineplus.gov/ency/article/003482.htm>]

Glucose tolerance test - non-pregnant [<https://medlineplus.gov/ency/article/003466.htm>]

Prediabetes [<https://medlineplus.gov/ency/patientinstructions/000778.htm>]

Related Health Topics

A1C [<https://medlineplus.gov/a1c.html>]

Diabetes [<https://medlineplus.gov/diabetes.html>]

Diabetes in Children and Teens [<https://medlineplus.gov/diabetesinchildrenandteens.html>]

Diabetes Type 2 [<https://medlineplus.gov/diabetestype2.html>]

How to Prevent Diabetes [<https://medlineplus.gov/howtopreventdiabetes.html>]

Metabolic Syndrome [<https://medlineplus.gov/metabolicsyndrome.html>]

National Institutes of Health

The primary NIH organization for research on *Prediabetes* is the National Institute of Diabetes and Digestive and Kidney

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