

PREDIABETES IN MICHIGAN — The FACTS

Prevalence and cost of prediabetes

In the United States, 54 million adults have prediabetes.¹ In Michigan, it is estimated about 2 million adults have prediabetes (Table 1).

- Many people who have prediabetes don't know it. About **18%** of adults with prediabetes in Michigan are aware they have it.²
- The cost is \$443 for each person with prediabetes each year.³ The cost of prediabetes to Michigan is over **\$1 billion annually**.
- Almost 2 million adolescents in the United States have prediabetes⁴—and there are roughly 145,600 adolescents with prediabetes in Michigan (Table 2). Hispanic youth are more likely than white or black youth to have prediabetes. Prediabetes is also more common in boys than girls.
- Among adults, men are more likely than women to have prediabetes (Table 2). White males are more likely to have prediabetes than black males. And, prediabetes is more common in Hispanic females.

What is prediabetes?

Before people develop Type 2 diabetes, their blood sugar levels are higher than normal but not yet high enough to be diagnosed as diabetes. This condition is called "prediabetes."⁵

The long-term damage associated with diabetes, especially to the heart, may already be starting in prediabetes.⁵ Most people with prediabetes will develop Type 2 diabetes within the next 10 years unless they make changes in their lifestyle.⁶

Table 1. Prevalence of prediabetes (%) and estimated number of adults with prediabetes in Michigan in 2006, Fasting Blood Glucose (FBG) Diagnostic Range (100-125mg/dl).⁷

	All Adults 18+	Older Adults 45+
Estimated National Prevalence*	28.9%	36.6%
Estimated Number in Michigan	2,198,100	1,427,600

* Since prediabetes prevalence cannot be estimated for Michigan specifically, the national prevalence rate is applied to Michigan's population to derive the estimated number of adults in Michigan affected by prediabetes.

Table 2. Prevalence of prediabetes (%) and estimated number of people with prediabetes in Michigan by age group, sex and race/ethnicity (2006).⁷

	Estimated National Prevalence		Estimated Number in Michigan
	%	95% CI	
Children 12-17	16.2%	12.0 - 21.6	107,800 - 194,100
Male	22.7%	17.7 - 28.6	81,600 - 131,800
Female	9.7%	4.5 - 19.7	19,700 - 86,200
All Adults 18+	28.9%	25.8 - 32.3	1,962,300 - 2,456,700
Male	35.4%	30.3 - 40.7	1,119,400 - 1,503,600
Hispanic	32.6%	24.6 - 41.7	33,000 - 56,000
Black	27.7%	23.3 - 32.7	108,100 - 151,700
White	36.2%	30.2 - 42.7	901,200 - 1,274,300
Female	22.9%	20.2 - 25.9	790,100 - 1,013,000
Hispanic	30.8%	23.8 - 39.0	27,600 - 45,200
Black	21.2%	15.9 - 27.8	86,900 - 152,000
White	21.9%	18.7 - 25.5	586,300 - 799,500
Older Adults 45+	36.6%	31.3 - 42.2	1,220,900 - 1,646,000
Male	45.5%	38.1 - 53.1	695,800 - 969,800
Hispanic	42.6%	31.0 - 55.1	11,700 - 20,800
Black	36.6%	29.2 - 44.2	56,400 - 85,300
White	46.4%	37.8 - 55.2	588,900 - 860,000
Female	28.6%	24.3 - 33.5	504,000 - 694,900
Hispanic	36.2%	23.9 - 50.7	8,900 - 18,800
Black	32.5%	22.7 - 44.0	57,100 - 110,600
White	27.6%	22.4 - 33.7	390,800 - 587,900

Prediabetes does not mean Diabetes

People with prediabetes may delay the onset of Type 2 diabetes and possibly return their blood glucose levels to normal.

Modest lifestyle changes, including weight loss (5-10% of body weight) and physical activity (150 minutes per week), are more effective in preventing or delaying onset of diabetes than drug therapy. These lifestyle changes can decrease the incidence of Type 2 diabetes by 58%.⁸

Programs are located throughout Michigan to encourage healthy nutrition and regular physical activity.

Who should be screened?

The American Diabetes Association recommends adults be tested for prediabetes if they are **45 years or older**. Prediabetes testing should also be considered for **adults of all ages who are overweight/obese and have one or more of the following risk factors** (the same risk factors for diabetes):

- Physical inactivity
- Hypertension or history of CVD
- Low HDL cholesterol and high triglycerides
- First degree relative with diabetes
- History of previous IFG or IFT
- Women with polycystic ovarian syndrome (PCOS)
- History of gestational diabetes or giving birth to a baby weighing more than 9 lbs
- Member of an ethnic or minority group (African Americans, Latinos, Native Americans, Asian Americans and Pacific Islanders)

Roughly 65% of Michigan's adult population are either 45 and older or overweight/obese. Fortunately, more than half of them are receiving the necessary screening once every 3 years.²

Table 3. Diagnostic Test Criteria for Prediabetes and Diabetes.

	Normal	Prediabetes	Diabetes
HbA1c (A1c)	Less than 5.7%	5.7% – 6.4%	Greater than 6.4%
Fasting Blood Glucose (FBG)	Less than 100mg/dl	100 – 125 mg/dl	Greater than 125 mg/dl
Oral Glucose Tolerance (OGTT)	Less than 140mg/dl	140 – 199 mg/dl	Greater than 199 mg/dl

Referral Resources in Michigan

Diabetes Self Management Education:

www.michigan.gov/diabetes

Michigan Partners on the Path (PATH) chronic disease management program:

www.MiPath.org

YMCA:

www.ymca.net

Michigan State University Extension Service (nutrition resources in every county):

www.msue.msu.edu

EnhanceFitness:

www.projectenhance.org

WeightWatchers:

www.weightwatchers.com

More information about Prediabetes

Michigan Diabetes Program:

www.michigan.gov/diabetes

Michigan Diabetes Partners in Action (DPAC):

www.dpacmi.org

National Kidney Foundation of Michigan:

www.nkfm.org

American Diabetes Association:

www.diabetes.org

Northern Michigan Diabetes Initiative:

www.nmdiabetes.org

American Heart Association Heart of Diabetes:

www.iknowdiabetes.org

National Diabetes Education Program:

www.ndep.nih.gov

1. Centers for Disease Control and Prevention. National diabetes fact sheet: general information and national estimates on diabetes in the United States, 2007. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2008. <http://apps.nccd.cdc.gov/DDTSTRS/default.aspx>

2. Numerator: 2006 Michigan Behavioral Risk Factor Survey, Bureau of Epidemiology, Division of Genomics, Perinatal Health and Chronic Disease Epidemiology, MDCH. Denominator: Population estimate based on Michigan 2006 population data from the National Center for Health Statistics.

3. Medical Cost Associated with Prediabetes. Zhang Y, Dall TM, Chen Y, Baldwin A, Yang W, Mann S, Moore V, Le Nestour E, and Quick WW. Pop Hlth Mgt 12(3): 157-163, 2009.

4. Prevalence of Impaired Fasting Glucose and Its Relationship With Cardiovascular Disease Risk Factors in US Adolescents, 1999-2000. D Williams, B Cadwell, Y Cheng, C Cowie, E Gregg, L Geiss, M Engelgau, K Narayan and G Imperatore. Pediatrics 116: 1122-1126, 2005.

5. American Diabetes Association. <http://www.diabetes.org/prediabetes.jsp>

6. National Institute of Health. NIH Publication No. 09-4893, October 2008. <http://diabetes.niddk.nih.gov/DM/pubs/insulinresistance/>

7. Prevalence based on the lab results from the 2005-2006 National Health and Nutrition Examination Survey (NHANES) for the morning session and fasting ≥ 8 hours, National Center for Health Statistics. Population estimates based on Michigan 2006 population data from the National Center for Health Statistics. Population estimate rounded to the nearest 100.

8. The Prevention or Delay of Type 2 Diabetes. American Diabetes Association (ADA) and National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). Diabetes Care 25:742-749, 2002.

9. Overweight/Obese: 2008 Michigan Behavioral Risk Factor Survey, Bureau of Epidemiology, Division of Genomics, Perinatal Health and Chronic Disease Epidemiology, MDCH. Age 45+: Population estimate based on Michigan 2008 population data from the National Center for Health Statistics.

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