

# Diabetes

## What is diabetes?

Diabetes mellitus, often referred to simply as diabetes, is a chronic disease. It occurs when the pancreas does not produce insulin, or when the body cannot effectively use insulin. Insulin helps to regulate the blood sugar level. Elevated blood sugar is a common effect of uncontrolled diabetes and over time seriously damages many organs of the body, especially the nerves and blood vessels.<sup>1</sup>

## Main Types

*Type 1 diabetes* occurs when the pancreas cannot produce insulin. Without insulin, this type rapidly becomes fatal. This type was previously called insulin-dependent or juvenile-onset diabetes. Symptoms of type 1 diabetes may occur suddenly.

*Type 2 diabetes* develops when the body cannot effectively use insulin. Type 2 accounts for 90-95 percent of people with diabetes nationwide. It was formerly called non-insulin-dependent or adult-onset diabetes. Its symptoms are often less marked. Thus, type 2 may be diagnosed several years after onset, when complications have already arisen.

*Gestational diabetes* is a form of glucose intolerance during pregnancy, and is usually diagnosed through prenatal screening, rather than reported symptoms. Women who have had gestational diabetes are more likely to develop type 2 diabetes later in life.<sup>1</sup>

## Risk Factors

- Age (>45 years)
- Obese or overweight
- Family history
- Gestational diabetes
- Habitual inactivity
- Race (minorities)
- Pre-diabetes†
- High blood pressure
- High cholesterol

Check [your diabetes risk](#)

## Symptoms

- Excessive thirst
- Frequent urination
- Constant hunger
- Weight loss
- Fatigue
- Vision changes
- Tingling/numbness in hands or feet
- Very dry skin
- Frequent infections

## Consequences

- Blindness
- Nerve disorders
- Kidney failure
- Heart disease
- Stroke
- Diarrhea
- Sexual dysfunction
- Foot ulcers
- Amputation
- Teeth loss

†: **Pre-diabetes** is a condition in which individuals have blood sugar levels higher than normal but not high enough yet to be considered diabetes. People with pre-diabetes are at high risk of developing type 2 diabetes.

## What is the burden of diabetes?

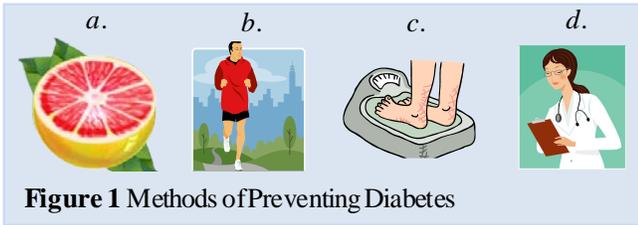
In 2013, it is estimated that 446,063 Missouri adults suffered from diabetes, with a prevalence of 9.6 per 100 people. The prevalence was highest in people over 65 years, males, and Hispanics. Diabetes also led to numerous emergency room visits, hospitalizations and deaths, and hospital charges totaled \$300 million in 2012. In addition, 329,901 Missouri adults had pre-diabetes. For county or detailed data, click the six links (Table 1).

**Table 1** Burden of Diabetes in Missouri, 2012-2013

Disease	Year	Whole State		People with Highest Rate	Link to County / Detailed Data
		Burden	Number		
<b>Diabetes</b>					
Prevalence <sup>a,2</sup>	2013	446,063	9.6 per 100	age≥65, males, Hispanics	<a href="#">prevalence</a>
Emergency Room Visits <sup>b,3</sup>	2012	12,141	2.0 per 1,000	age≥65, AA <sup>c</sup>	<a href="#">emergency</a>
Hospitalizations <sup>b,4</sup>	2012	11,684	18.4 per 10,000	age≥65, males, AA	<a href="#">hospitalization</a>
Death <sup>b,5</sup>	2013	1,477	20.5 per 100,000	age≥65, males, AA	<a href="#">mortality</a>
Hospital charges <sup>b,6</sup>	2012	\$300 million	—	age 45-64, males, whites	<a href="#">charges</a>
<b>Pre-Diabetes</b>					
Prevalence <sup>a,1</sup>	2013	329,901	7.1 per 100	age≥65, females, whites	<a href="#">pre-diabetes</a>

<sup>a</sup> In adults. <sup>b</sup> In all age groups. <sup>c</sup> African-Americans.

# Diabetes



**Figure 1** Methods of Preventing Diabetes

## How is diabetes prevented?

Choosing a healthy lifestyle and using medication can largely prevent or delay the onset of type 2 diabetes.<sup>1</sup>

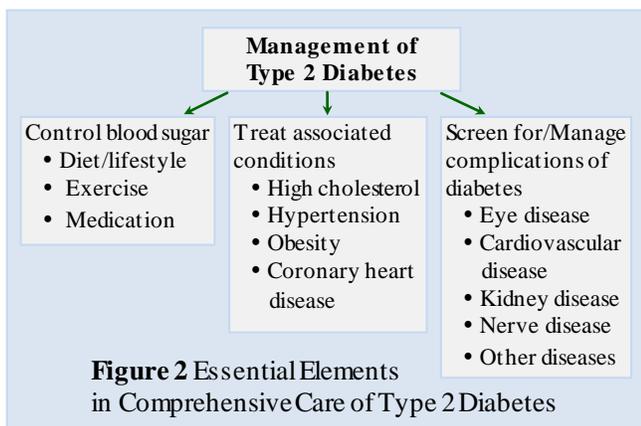
- Reduce fat amount in foods, and eat more fiber-rich foods, vegetables and fruits.
- Increase physical activity to moderate intensity, at least 30 minutes on most days.
- Keep body weight normal (body mass index, 18.5 – 24.9).
- Follow doctor’s indication to use the drug metformin if a person has pre-diabetes and is at high risk for progression to diabetes (Figure 1).

## Why is early diagnosis important?

Diagnosis of pre-diabetes provides a chance to prevent the onset of diabetes; early diagnosis for diabetes provides the opportunity to prevent development of complications. An inexpensive blood test can accomplish early diagnosis.

## How is diabetes treated?

Diabetes cannot be cured, but proper treatment can delay or prevent development of diabetes and its complications. Treatment must be comprehensive and individually specific; the key is to keep blood



**Figure 2** Essential Elements in Comprehensive Care of Type 2 Diabetes



**Figure 3** Control of Blood Sugar Levels

### Methods

- Check blood sugar at least daily
- Follow specific advice from doctor
- Maintain blood sugar level as close to normal as possible

Each visit to doctor, have a:	Discuss with doctor:
<ul style="list-style-type: none"> <li>• Blood sugar test and log record review</li> <li>• Blood pressure check</li> <li>• Foot exam</li> <li>• A1C test, 2-4 times/year</li> </ul>	<ul style="list-style-type: none"> <li>• Diet</li> <li>• Exercise</li> <li>• Weight control</li> <li>• Smoking cessation</li> <li>• Use of medications</li> </ul>
At least once a year, have a:	As indicated, have a:
<ul style="list-style-type: none"> <li>• Dilated eye exam</li> <li>• Dental exam</li> <li>• Blood cholesterol test</li> <li>• Flu vaccine</li> </ul>	<ul style="list-style-type: none"> <li>• Urine kidney test</li> <li>• Pneumonia vaccine</li> </ul>

glucose levels as near normal as possible (Figure 3). While controlling blood sugar tends to dominate the care of type 1 diabetes, the management of type 2 diabetes must also include treating associated conditions (high cholesterol, etc.) and screening for/managing complications (eye disease, etc., Figure 2).<sup>1</sup> Good management should last for life and follow the Standards of Care (Table 2).

## Resource organizations

1. Missouri Actions to Prevent Chronic Disease and Control Risk Factors.....  
<http://health.mo.gov/living/healthcondiseases/chronic/diabetes/index.php>
2. Centers for Disease Control and Prevention.....<http://www.cdc.gov/>
3. American Diabetes Association.....<http://www.diabetes.org/>
4. Juvenile Diabetes Research Foundation International.....<http://www.jdrf.org>
5. National Institutes of Diabetes and Digestive and Kidney Diseases.....<http://www.niddk.nih.gov>
6. National Heart, Lung, and Blood Institute.....<http://www.nhlbi.nih.gov/index.htm>
7. National Diabetes Education Program.....<http://www.ndep.nih.gov>
8. Other organizations.....<http://health.mo.gov/living/healthcondiseases/chronic/diabetes/relatedlinks.htm>

## Data sources

1. Harrison’s Principle of Internal Medicine, 17th edition, page 2275-2304, 2008
2. Missouri County Level Study 2011.....  
[http://health.mo.gov/data/mica/County\\_Level\\_Study\\_12/map.php?key=011117&title=Missouri\\_County\\_Level\\_Study\\_2011-Health\\_and\\_Preventive\\_Practices-<br>Has\\_diabetes&checkBox=C&profile\\_type=01](http://health.mo.gov/data/mica/County_Level_Study_12/map.php?key=011117&title=Missouri_County_Level_Study_2011-Health_and_Preventive_Practices-<br>Has_diabetes&checkBox=C&profile_type=01)
3. Emergency Room MICA, 2012.....<http://health.mo.gov/data/mica/mica/er.php>
4. Hospitalization MICA, 2012.....[http://health.mo.gov/data/mica/mica/hosp\\_new.php](http://health.mo.gov/data/mica/mica/hosp_new.php)
5. Death MICA, 2013.....<http://health.mo.gov/data/mica/mica/death.php>
6. Hospital charges, MICA, 2012.....[http://health.mo.gov/data/mica/mica/hospa\\_new\\_alt.php](http://health.mo.gov/data/mica/mica/hospa_new_alt.php)
7. BRFSS 2013, CDC.....[http://www.cdc.gov/brfss/annual\\_data/annual\\_data.htm](http://www.cdc.gov/brfss/annual_data/annual_data.htm)