

# Diabetes Overview

## Basics of Diabetes



# Objectives

- Review the prevalence of diabetes, how it develops and the risk of developing diabetes
- Review diabetes diagnosis
- Identify the key areas of medically managing diabetes
- Discuss lifestyle changes and self-management goals for patients living with diabetes



# Case for Change

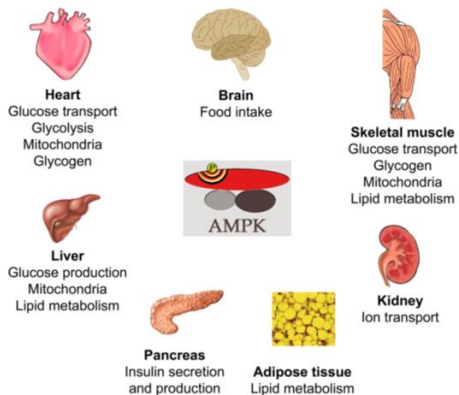


**DIABETES IS  
DEADLY**

Every 23 seconds someone is diagnosed with diabetes. This means 22 Million people in the U.S. have diabetes (1 out of 11 People).

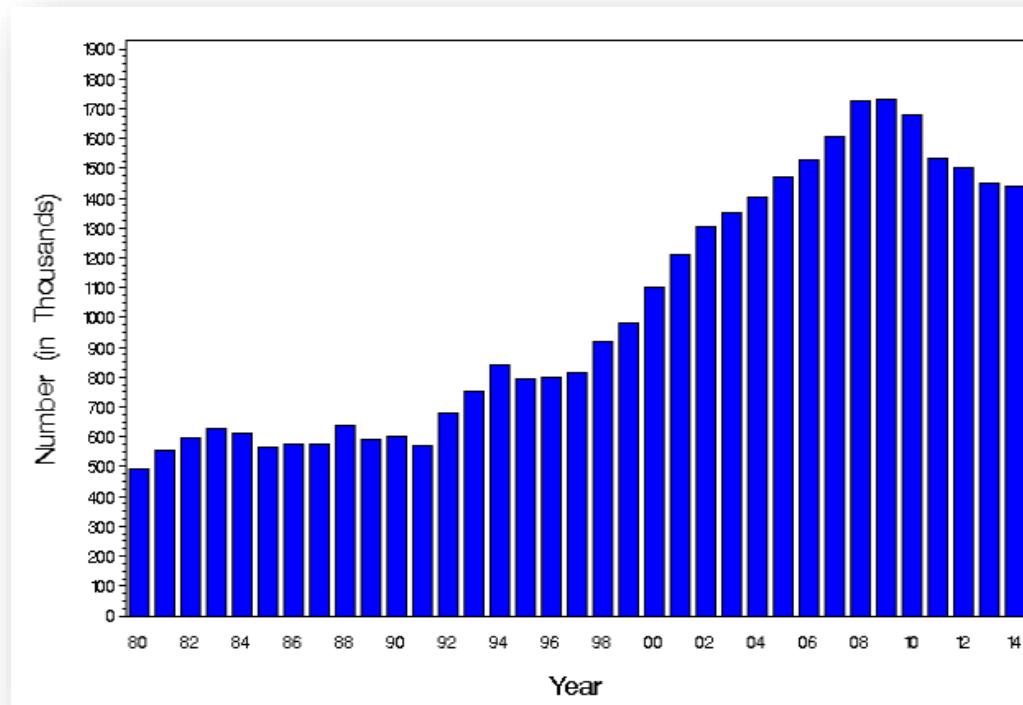
In the U.S., diabetes is one of the leading causes of death.

Diabetes doubles the risk of heart attack or stroke and can cause kidney failure, blindness, and lower limb amputation. <sup>1</sup>



# 1.4 million were newly diagnosed in 2014

Annual Number (in Thousands) of New Cases of Diagnosed Diabetes Among Adults Aged 18-79 Years, United States, 1980-2014



Source: <https://www.cdc.gov/diabetes/statistics/incidence/fig1.htm>



# Diagnosed between 40 and 64

More than 60% of people are diagnosed between the age of 40 and 64<sub>6</sub>



# Diabetes in different populations



- African Americans, Latinos, and Hispanics are **70%** more likely to have type 2 diabetes. <sup>1</sup>
- American Indian and Alaskan Natives are **50%** more likely— with some tribes having even higher rates. <sup>2</sup>
- Asian Americans, Native Hawaiians, and Pacific Islanders are **20%** more likely to have type 2 diabetes than their Non-Hispanic White counterparts.

Sources:

Images Via Creative Commons

<http://main.diabetes.org/dorg/PDFs/Advocacy/flyer-advocate-latino.pdf>, <http://main.diabetes.org/dorg/PDFs/Advocacy/flyer-advocate-aii.pdf>,  
[http://www.cdc.gov/media/matte/2011/11\\_diabetes\\_Native\\_American.pdf](http://www.cdc.gov/media/matte/2011/11_diabetes_Native_American.pdf), <http://main.diabetes.org/dorg/PDFs/Advocacy/flyer-advocate-aanhi.pdf>



**Center for Clinical Systems Improvement**

# Estimated costs of diabetes

Estimated costs of diagnosed diabetes in 2012 was \$245 billion



# Pre-diabetes

**Pre-diabetes** is a condition in which blood sugar levels are higher than normal but not high enough to be classified as diabetes

Eighty-six million American adults have prediabetes; 9 out of 10 are unaware that they have it

In the average primary care practice, up to one-third of patients age 18 or older and up to half of patients age 65 or older could have prediabetes

People with prediabetes have an increased risk of heart disease and stroke

Early and intensive lifestyle interventions are important for preventing or delaying diabetes





# What is Diabetes?

- Diabetes is a disorder of our body's metabolism. Metabolism is the chemical processes in our cells that produce energy needed to sustain life.
- As a part of metabolism, blood sugar compounds like starches and carbohydrate are broken down to provide heat and energy for our body.
- On the next screen, we are going to play a short video. The video reviews type 2 diabetes.



# Type 2 Diabetes Review

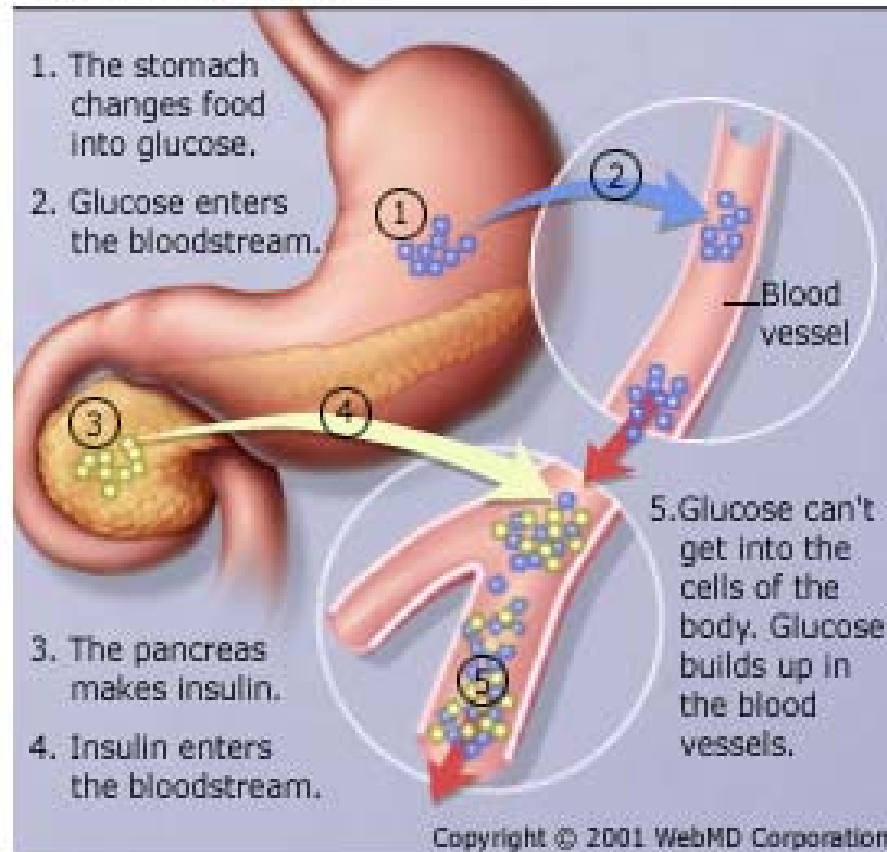
- Video link is:

<https://www.youtube.com/watch?v=JAjZv41iUJU>



# How Diabetes Develops

## Type 2 Diabetes



# Type 1 and Type 2 Diabetes

Type 1 Diabetes

Type 2 Diabetes



Type  
*Diabetes*  
**1**



# Risk Factors for Type 2 Diabetes

## Genetics and non-lifestyle risks

- Family history of diabetes
- Age greater than 45 years

## Lifestyle

- Excess body weight (especially around the waist)
- Low HDL cholesterol (under 35 mg/dL) High triglycerides (250 mg/dL or more)
- Secondary diabetes – resulting from medication use (e.g. prednisone)
- Low activity level (exercising fewer than 3 times a week)

## Other Diagnoses

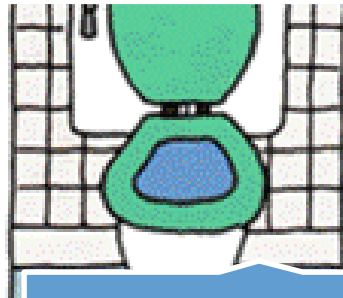
- Diabetes during a previous pregnancy (gestational diabetes)
- Polycystic ovarian syndrome
- Impaired glucose tolerance on an oral glucose tolerance test



# Symptoms of Diabetes



Unusual thirst



Frequent urination



Blurred vision



Fatigue



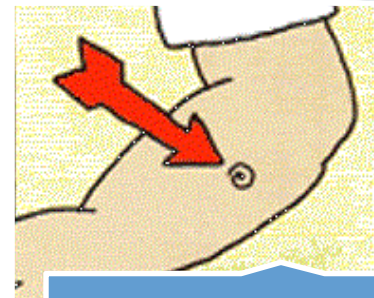
Tingling/numbness in the extremities



Unexplained weight loss



Frequent infections, including bladder infections



Wounds that won't heal

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# Diagnosing Diabetes

- Several tests that measure blood sugar levels are used to diagnose Diabetes
- The most common are fasting blood sugar (FBS) and Hemoglobin A1c (A1c)

	Fasting Blood Sugar	Hemoglobin A1c (HbA1c or A1c)
How is it measured?	From blood drawn after the patient fasts overnight or has not eaten for approximately 8 hours	Blood draw
What does it measure?	Blood glucose	Average percent of circulating blood glucose over the past 3 or 4 months
What is a normal result?	<100 mg/dL	≤5.6%
What is the result for a patient with diabetes?	126 mg/dL or higher	≥6.5%



# Medical Management of Type 2 Diabetes

## Oral Medications

- **Metformin** (brand names include Glucophage) is the most commonly used first medication. It works by decreasing the amount of glucose produced by the liver
- Additional medications may be added to Metformin and include:
  - Glucotrol
  - Actos
  - Victoza
  - Amaryl
  - Invokana
  - Januvia
  - Avandia
  - Farxiga
  - Onglyza
- These anti-diabetes medications work by increasing the ability of the body's cells to recognize and respond to insulin, reducing glucose production by the liver and/or reducing glucose levels in the blood

Images Via Creative Commons





# Medical Management of Type 1 or 2 Diabetes

## Injectable and other modes of medication

- Insulin is used if the patient 's diabetes is not controlled by anti-diabetes medications alone.
  - There are several methods of insulin absorption, such as injectables, inhalants, pumps, and other devices
  - Injectables are the most common route of insulin absorption; some common methods include:
    - Rapid acting; Humalog, Novolog
    - Short acting: Humulin R, Novolin R
    - Intermediate acting: NPH (Humulin N, Novolin N)
    - Long acting: Levemir, Lantus, Toujeo
  - Examples of inhalants include:
    - Afrezza
  - Examples of pumps and devices include:
    - Insulin pumps: small, computerized devices that help manage blood sugar; these devices release rapid-acting insulin into the body through a small catheter

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# Medical Management of Diabetes

- It is important for patients to engage in a self-management plan to control their blood sugar
- Dietary changes and adding exercise can help anti-diabetes medications to be more effective
- It is also important for patients to make sure that they avoid low blood sugar (hypoglycemia)



# Symptoms of Hypoglycemia (low blood sugar)

## SYMPTOMS OF LOW BLOOD SUGAR



lifeinamitten.com

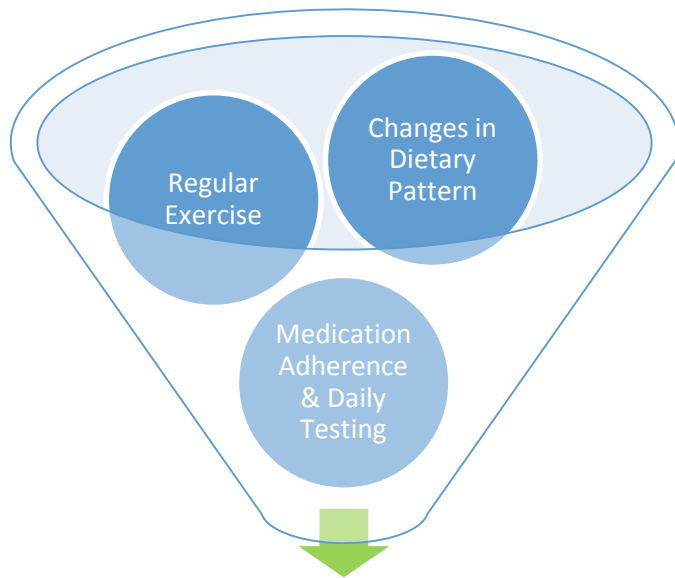


# Managing Hypoglycemia

- Consume 15-20 grams of glucose or simple carbohydrates
  - glucose tablets or gel tube (follow package instructions)
  - 2 tablespoons of raisins
  - 1 tablespoon sugar, honey, or corn syrup
  - 4 ounces (1/2 cup) of juice or regular soda (not diet), 8 ounces of nonfat or 1% milk
  - hard candies, jellybeans, or gumdrops (see package to determine how many to consume)
- Recheck your blood glucose after 15 minutes
- If hypoglycemia continues, repeat
- Once blood glucose returns to normal, eat a small snack if your next planned meal or snack is more than an hour or two away



# Potential Lifestyle Changes and Self-management Goals



- Maintaining healthy blood sugar levels
- Maintaining a healthy weight
- Maintaining blood pressure below 140/90 mmHg
- Getting regular foot exams to check for neuropathy
- Getting regular eye exams to check for glaucoma

Care team members can help patients by asking “Is there anything you would like to do for your health in the next week or two?”



# Barriers to Lifestyle Changes

- Financial Limitations
- Health Literacy
- Emotional Impact and Conflict
- Lack of Social Support
- Language and Cultural Differences
- Environment and Physical Surroundings
- Job Flexibility



# Quality Metrics in the Practice

Frequency	Test	Impact
<b>Annual</b>	Micro-albumin testing, to detect protein in the urine	The first indication of kidney disease
	Foot exam for neuropathy, to detect foot sores	Foot sores could result in amputation if not managed
	Retinal eye exam by ophthalmologist or optometrist	Diabetes is most common cause of blindness and exams are necessary to avoid complications
<b>Every Visit</b>	A1C measurement (goal below 6.5)	Gives good estimate of blood sugar control over past 2-3 months
	Blood pressure (systolic below 140; diastolic below 90)	This is as important as controlling blood sugar in patients with diabetes.



# How do I help manage diabetes in my practice?

The screenshot displays a web-based medical registry tool. The browser window shows the URL <https://holmes.caregroup.org/scripts/mqems32.de/IMC/WLN-MYCRPT>. The page has a navigation bar with tabs for Profile, Problems, Results, Reports, Notes, Medications, Orders, Sheets, and Hem/Onc Clinic. The 'Profile' tab is active, showing patient information such as address (123 MAIN STREET, ANYWHERE, MA 12345), language (SPANISH), and insurance (HMO BLUE/BL CHOICE/BLOW P.P.P.). Below this, there are sections for 'Problems' (e.g., MASSEAL TH MANAGER CASE, NEURODEMOOD HEALTH PLAN), 'Medications' (e.g., Hepatitis B Vax, Zoster Vax Live), and 'Orders' (e.g., Sorbener). The interface is cluttered with various data points and links, typical of a complex medical information system.

- Use of the registry tool
- Pre-visit planning





# How can care teams support process for diabetes management?

## Previsit Planning

Plan 1 to 2 weeks ahead of the visit to ensure all vital tests are completed and referrals placed to ensure the provider has the vital results to support for the best care for the patient and avoid additional visits and rework.

## Morning Huddles

Highlight with provider the exams that are pending and need to be completed and additional ways to support the provider

## Support annual planned visits

Encourage patients to complete lab tests and other preventive procedures prior to the annual visit. Ensure the annual visit includes a foot exam, blood pressure, BMI, and urine testing for protein (micro-albumin and review of a completed retinal eye exam

## Support patients in their self-management goals.

Recognize the challenges of living with a chronic condition by demonstrating empathy and patient support. If you have been trained, partner with the patient to create a self-management action plan. Schedule follow-up calls or visits with the patient to evaluate their success and challenges with the action plan.



# Continued Learning Opportunities

- If possible, ask to shadow the diabetes education program your practice or organization regularly refers to
  - Note the patient education materials provided
  - Use same language to minimize confusion
  - Assess the patients health literacy and ability to understand the education
  - Monitor the patient's ability to use the information within their home, work and social environment



# Continued Learning: Evidence-based Guidelines

- Become familiar with the evidence-based guidelines used within the practice you are serving
- Review the American Diabetes Association website and familiarize yourself with the resources and patient support information



# Thank You

- Input
- Sharing experiences
- Questions

Next Steps:  
Complete the  
evaluation and print  
the certificate of  
completion

