THE CARES APPROACH

to Patient-Centered Diabetes Management:

ONE SIZE NO LONGER FITS ALL

DIABETES CARES SPECTRUM GUIDANCE TOOLKIT

What is diabetes?

Diabetes mellitus is a condition of improper sugar metabolism, where sugar levels in the blood are too high. When food is eaten, the body naturally breaks it down into sugar molecules, called glucose, which are then carried by the bloodstream to the body's cells and used for energy. In normal metabolism, food intake triggers the production of insulin, a hormone made by the pancreas that helps move glucose into the cells so that it can be used for fuel or stored as fat. When the body makes little to no insulin or does not use insulin well (called insulin resistance), glucose stays in the bloodstream instead of entering the cells, causing elevated levels of glucose in the blood.

Diabetes is a chronic (long-lasting) disease, affecting over 30 million American adults through various types. The three main types of diabetes are type 1, type 2 and gestational diabetes (diabetes during pregnancy). Type 2 diabetes is the most common form, with obesity as primary risk factor for developing the disease, which contributes to insulin resistance.

THREE MAIN TYPES OF DIABETES

Type 1 diabetes	Type 2 diabetes	Gestational diabetes
No insulin production	**Poor** insulin production or **poor** insulin use	**Inadequate** insulin production for pregnancy needs
Can develop at any age, but usually diagnosed in *children* and *young adults*	Can develop at any age, but most often affects *middle-aged* and *older persons*	Develops *during pregnancy*; however, usually goes away after childbirth
Requires insulin treatment	Diet, exercise, and possibly oral medications or insulin	Diet, exercise, and metformin or insulin if needed
Immune system destroys insulin-producing cells	Insulin production decreases as diabetes progresses	Increased risk of developing type 2 diabetes later in life
~5–10% of diabetics	**~90%** of diabetics	**~5%** of pregnant women

Prediabetes, where blood glucose levels are higher than normal, but not high enough to be classified as type 2 diabetes, affects more than 84 million American adults. Although blood glucose levels are not as high in prediabetes as in type 2 diabetes, the condition still increases the risk for developing type 2 diabetes, heart disease, and even stroke. Lifestyle changes, such as weight loss through diet and exercise, can help reverse prediabetes and reduce the risk of future diabetes.

Many people with diabetes—and even prediabetes—are unaware that they have the disease. When left untreated, diabetes can result in serious health problems that can not only affect a person's quality of life but also have a life-long impact.

WHEN DIABETES IS NOT CONTROLLED

Over time, persistently elevated blood glucose levels can damage other structures of the body. This is mainly due to damaged blood vessels, which become narrowed from repeated high glucose concentrations, consequently restricting normal blood flow. Health problems that can develop from uncontrolled high glucose levels can include:

- **Heart and artery problems**—high blood pressure, heart disease, heart attack, and stroke
- **Kidney disease *(diabetic nephropathy)***—impaired filtering of the blood causes toxin buildup
- **Eye problems *(diabetic retinopathy)***—decreased vision and blindness
- **Dental disease**—infection, gum disease, and dry mouth
- **Nerve damage *(diabetic neuropathy)***—can affect limb sensation and organ function
- **Foot problems**—infection, ulcers, pain, and possibly gangrene
- **Sexual and bladder problems**—urine retention, bladder leaks, decreased sex drive, and erectile dysfunction

GLUCOSE CONTROL IN DIABETES

Along with lifestyle changes, including a healthy diet and increased exercise, medications may be necessary to help control blood glucose levels. Medication selection can depend on the type of diabetes, as well as other factors such as coexisting health conditions, the cost of medication, age, the risk for low blood glucose levels, and daily schedule.

- ***Insulin replacement***—Multiple insulin types exist— ranging from rapid to long-acting— that can work in as little as 15 minutes and/or last up to 24 or more hours. Insulin is usually administered by a needle and syringe or in a prefilled injectable pen at specific times during the day. An insulin pump, which is connected to the body through a needle that stays attached to the skin, gives steady insulin doses 24 hours a day.

- ***Injectable antihyperglycemic (non-insulin) drugs***—These medications are given together with other antihyperglycemic (glucose-lowering) drugs.
  - **Glucagon-like peptide 1 (GLP-1) agents—**increases insulin production by the pancreas, slows stomach emptying, and helps reduce appetite.
  - **Amylin-like agents—**mimics the action of amylin (pancreatic hormone), which reduces the release of glucagon after eating, slows stomach emptying, and triggers a feeling of being full.

- ***Oral antihyperglycemics***—Many different classes of oral medications are used for diabetes control, and work in different ways.
  - **Biguanides and thiazolidinediones—**increase the body's sensitivity to insulin
  - **Sulfonylureas and meglitinides—**stimulate the pancreas to produce more insulin
  - **Alpha-glucosidase inhibitors—**delay glucose absorption from the intestine
  - **Sodium-glucose co-transporter 2 (SGLT2) inhibitors—**increase glucose elimination from the body in urine
  - **Dipeptidyl peptidase-4 (DPP 4) inhibitors—**stimulate the pancreas to make more insulin and delay glucose absorption from the intestine
  - **Glucagon-like peptide 1 (GLP-1) agents—**oral formulation of non-insulin injectable drug

BEING PROACTIVE IN DIABETIC CARE

There are many ways to actively engage in managing diabetes in order to help improve blood glucose levels and reduce the potential risk for associated health problems. Here are some ways that you and your diabetes care specialist can work together for optimal care.

What you can do	With your diabetic care team
• Stop smoking • Follow your diabetes meal plan • Exercise • Be consistent with taking medicine • Check your blood glucose daily • Keep a blood glucose diary • Tell your diabetes team about any symptoms of high or low blood glucose	• A1C testing • Set blood pressure goals • Set cholesterol goals • Periodic diabetic eye exams • Periodic diabetic foot exams • Nutrition education • Smoking cessation assistance

Sometimes blood glucose levels can reach extremely low or high levels that are potentially life-threatening. A blood glucose level that is too low can cause symptoms of shakiness or jitteriness, sweating, dizziness, confusion, extreme fatigue, and even unconsciousness. When the blood glucose level is too high, it can cause symptoms of excessive thirst, increased urination, fatigue, abdominal pain, nausea or vomiting, confusion, and trouble breathing. Tell your diabetic care team of any symptoms of low or high blood glucose immediately, as this may be an indication that changes in diet, activity or medicines are appropriate. Extremes of either low or high blood glucose levels may also require emergency care.

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This activity is provided by Med Learning Group.
This activity is co-provided by Ultimate Medical Academy/CCM and AMEDCO.
Supported by educational grants from Lilly, Boehringer Ingelheim Pharmaceuticals and Lilly, and Merck & Co.