

AT CAN HELP YOU MANAGE DIABETES

One in every 11 Americans has diabetes. So chances are you or someone you know may be living with this chronic condition. In 2012, 29.1 million Americans (9.3 percent of the population) had diabetes according to the Centers for Disease Control and Prevention (CDC).

Diabetes, also known as diabetes mellitus, is a set of diseases that alter how the body uses blood sugar (glucose), resulting in too much sugar in the blood. While the body needs glucose for energy, too much sugar can cause serious health problems.

If not properly managed, diabetes can lead to myriad health complications, disabilities, and even death. Following your medical professional's recommended lifestyle changes and managing your symptoms with the appropriate tools are key to preventing and delaying the onset of diabetic complications. Fortunately, numerous assistive technology (AT) products are available to help you simplify the complexities of living with diabetes.

Did You Know?

The highest rates of diabetes are found among:

- ✓ Seniors over Age 65 – 26%
- ✓ American Indians/Alaskan Natives – 16%
- ✓ Non-Hispanic Blacks – 13%
- ✓ Hispanics – 13%

Source: National Diabetes Statistics Report, 2014
(<http://www.cdc.gov/diabetes/pubs/references14.htm>)

Products for Daily Health Management

Blood glucose meters

Most people with diabetes have to monitor their blood glucose levels regularly. Blood glucose meters, which measure the amount of glucose in the blood, detect and keep track of changes in glucose levels. For most blood glucose meters, you have to prick the fingertip with a lancet, place a drop of blood on a test strip that has been inserted into the device, and then wait for a reading to appear on the screen.



Many different types of blood glucose meters are available, varying in price, features, and information storage and retrieval capabilities. For example, some meters can keep track of results, the dates and times of tests taken, and trends over time. Some meters even allow you to download blood glucose readings on a computer and e-mail them to your healthcare provider. There are also blood glucose meters with voice output capabilities if you are blind or have low vision.

Insulin syringes, pumps, and pens

You may have to take insulin to manage your diabetes. The syringe is the most commonly used method for insulin injection. People who prefer this method learn how to fill the syringe with the right amount of insulin and self-administer the injection as needed.

The insulin pump is another insulin delivery method that is becoming increasingly popular – especially among people with type 1 diabetes. Insulin pumps are small, computerized devices that deliver doses of insulin 24 hours a day through a catheter (i.e., a flexible plastic tube that is inserted into fatty tissue and taped to the skin). Pumps can be programmed to release a small dose of insulin continuously throughout the day to keep blood glucose levels in check. At the push of a button, you can release an additional dose of insulin when you eat foods such as bread and pasta that may raise your glucose levels.

Types of Diabetes

Type 1

- ✓ Body does not make enough insulin.
- ✓ Accounts for 5% of diagnosed cases among adults.

Type 2

- ✓ Body cannot use insulin properly.
- ✓ Accounts for 90-95% of diagnosed cases among adults.

Gestational

- ✓ Mother's body does not use insulin properly.
- ✓ About 9.2% of pregnant women develop the condition.

Prediabetes

- ✓ Body has higher than normal blood sugar levels, but lower levels than for diabetes.
- ✓ Raises risk for developing diabetes.

Another method for insulin delivery is an insulin pen. These pens inject insulin into the system through a needle, much like that of a syringe. Insulin pens come either pre-filled with insulin or with cartridges of insulin that you have to insert into the pen.

Automatic pill dispensers

You may have diabetic complications that require you to take several different types of medication many times a day, a task that some people find a little wearisome. Automatic pill dispensers are intended to simplify this daily task. Depending on the dispenser you choose, you can organize your pills in advance by day and time, set audible alarms/reminders, and program your device so that the correct medication(s) is dispensed at a specified day and time. Some automatic pill dispensers also offer the option to set an alarm for other treatment-related activities (e.g., insulin injections), and the ability to record personalized reminders.

Blood pressure cuffs

Two in every three people with diabetes have high blood pressure or take prescription medication to lower their blood pressure. You can monitor your blood pressure at home on a regular basis using blood pressure cuffs, also known as sphygmomanometers. Blood pressure cuffs come in a variety of models. A digital cuff displays the pressure reading on a screen, while a manual one requires you to listen to the pulse through a stethoscope and monitor a pressure gauge. Voice output sphygmomanometers are also available if you are blind or have low vision.

Products for Diabetic Complications

Magnifiers

Diabetes can lead to a number of eye complications, including diabetic retinopathy (retina blood vessel damage), glaucoma (optic nerve damage), and cataracts (eye-lens clouding). Diabetic retinopathy and glaucoma can result in vision loss and blindness and cataracts can lead to blurred vision or discoloration.

Low vision magnifiers come in a variety of styles to suit a wide range of needs. Handheld magnifiers provide you with a quick and easy way to read fine print (e.g., labels on prescription bottles), while stand magnifiers provide magnification for lengthier materials (e.g., novels, newspapers). Magnifiers mounted on eyeglasses can help you complete activities that require both of your hands to be free (e.g., using blood glucose meters), and video camera magnifiers can display magnified images on a screen or monitor.

Magnifiers are also available for your computer. If you have low vision, magnification software (e.g., ZoomText) enlarges content on a computer screen so you can read the displayed text more easily. Another useful AT product if you are blind or have low vision is the screen reader (e.g., JAWS). This is a software program that reads the displayed content aloud through a speech synthesizer, enabling you to know what is shown on the

screen. With magnification and screen reader software, you can access the internet to learn more about your condition, connect with medical professionals, and network with others with diabetes online.

Hemodialysis machines

Over time, diabetes may lead to progressive kidney failure and may require treatment. Hemodialysis machines provide a treatment for progressive kidney failure by clearing wastes and extra fluid from the blood. The machine itself acts as an artificial kidney. It comprises plastic tubing that carries your blood to a fibrous membrane that filters impurities out. This “cleansed” blood is then returned back to your body via more plastic tubing.

Hemodialysis machines are available in clinical settings or for home use. However, extensive training is necessary before using one at home. Consult with your doctor if you are interested in in-home treatment.



Braces, splints, orthoses, and diabetic socks

Neuropathy, or nerve damage, affects about half of all people with diabetes. Peripheral neuropathy can cause tingling, pain, numbness, or weakness in the feet and hands. Prescription drugs and over-the-counter medications are available to help alleviate pain resulting from diabetic neuropathy. There are also therapeutic aides and tools available that can help increase function and overall independence. They include:

- Hand/foot braces and splints – Supports and stabilizes the body part that it is wrapped around to compensate for muscle weakness and help relieve nerve compression.
- Orthoses or inserts (i.e., removable insoles) – Provides pressure relief and shock absorption, reducing the risk of skin breakdown or ulcers.
- Diabetic socks – Lessens the chance of blistering; controls moisture to reduce risk of fungal infections; and prevents the development of foot ulcers through extra cushioning.

Mobile Apps for Diabetes Management

Nowadays, it seems like there is a mobile application (app) for everything and diabetes management is no exception. Some available apps that can help you simplify diabetes management include:

- [Fooducate](#) – Scan barcodes to find the pros and cons of packaged foods (e.g., nutritional value, sugar, trans fats, additives and preservatives) with this app available for Android and iOS devices.
- [Glooko](#) – Download readings from multiple blood glucose meters and see how often your readings fall within or out of the target glucose range with this app available for Android and iOS devices.
- [Diabetic Audio Recipes Lite](#) – Search through this diabetes cookbook to find a selection of healthy, low sugar/sugar free, and low fat recipes with this Android app.
- [Diabetes Buddy](#) – Record your daily carb intake, log and monitor glucose levels, track your blood pressure, and log insulin injections and/or medications with this iOS app.
- [OnTrack](#) – Keep track of your daily, weekly, and monthly average glucose levels; generate detailed graphs and reports to share with your physician; and set reminders as needed with this Android app.



For more Android and iOS apps for your mobile devices, you can also visit Google Play or Apple iTunes stores and search for “diabetes.”

Next Steps

As a person with diabetes, you do not have to let diabetic complications become impediments to your pursuit of an independent, fulfilling life. A wide array of AT products is available to help you manage diabetes. If you want to learn more about available AT products to ease life’s tasks, AbleData is a good place to begin. Search the website (<https://abledata.acl.gov/>) or give us a call at 1-800-227-0216 today. Se habla español.

More Resources

To learn more about diabetes and its causes, symptoms, complications, and treatment options, check out the following sites:

- CDC: www.cdc.gov/diabetes/home/index.html
- National Diabetes Education Program (NDEP): ndep.nih.gov
- National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK): www.niddk.nih.gov
- American Diabetes Association: www.diabetes.org

References

- AbleData: Products. (n.d.). Retrieved January 6, 2015, from <https://abledata.acl.gov/abledata.cfm?pageid=19327&ksectionid=19327&top=12410>
- The Best Diabetes iPhone & Android Apps of the Year. (n.d.). Retrieved January 26, 2015, from <http://www.healthline.com/health-slideshow/top-iphone-android-apps-diabetes>
- Blood Glucose Meter: How to Choose. (n.d.). Retrieved November 19, 2014, from <http://www.mayoclinic.org/diseases-conditions/diabetes/in-depth/blood-glucose-meter/art-20046335>
- Checking Your Blood Glucose. (n.d.). Retrieved January 29, 2015, from <http://www.diabetes.org/living-with-diabetes/treatment-and-care/blood-glucose-control/checking-your-blood-glucose.html>
- Diabetic Socks. (n.d.). Retrieved January 26, 2015, from <http://www.diabetes.co.uk/diabetic-socks.html>
- Diabetes Definition. (n.d.) Retrieved February 26, 2015, from <http://www.mayoclinic.org/diseases-conditions/diabetes/basics/definition/con-20033091>
- Facts about Cataract. (n.d.). Retrieved January 26, 2015, from https://www.nei.nih.gov/health/cataract/cataract_facts
- Facts about Glaucoma. (n.d.). Retrieved January 26, 2015, from https://www.nei.nih.gov/health/glaucoma/glaucoma_facts
- Guide to Buying Low Vision Magnifiers. (n.d.). Retrieved November 19, 2014, from <http://www.allaboutvision.com/buysmart/magnifiers.htm>
- High Blood Pressure. (n.d.). Retrieved January 26, 2015, from <http://www.diabetes.org/are-you-at-risk/lower-your-risk/bloodpressure.html?loc=atrisk-slabnav>
- Home Hemodialysis. (n.d.). Retrieved January 7, 2015, from <https://www.kidney.org/atoz/content/homehemo>
- Insulin & Other Injectables. (n.d.). Retrieved January 26, 2015, from <http://www.diabetes.org/living-with-diabetes/treatment-and-care/medication/insulin/?loc=lwd-slabnav>
- Insulin Pumps. (n.d.). Retrieved November 19, 2014, from <http://www.diabetes.org/living-with-diabetes/treatment-and-care/medication/insulin/insulin-pumps.html>
- Insulin Routines. (n.d.). Retrieved November 19, 2014, from <http://www.diabetes.org/living-with-diabetes/treatment-and-care/medication/insulin/insulin-routines.html>
- Kidney Disease (Nephropathy). (n.d.). Retrieved November 18, 2014, from <http://www.diabetes.org/living-with-diabetes/complications/kidney-disease-nephropathy.html>
- National Diabetes Statistics Report, 2014. (2014, October 27). Retrieved November 3, 2014, from <http://www.cdc.gov/diabetes/pubs/references14.htm>
- Neuropathy (Nerve Damage). (n.d.). Retrieved November 19, 2014, from <http://www.diabetes.org/living-with-diabetes/complications/neuropathy/>

Screen Readers. (n.d.). Retrieved January 6, 2015, from
<http://www.afb.org/prodBrowseCatResults.asp?CatID=49>

Shoes and Orthotics for Diabetics. (n.d.). Retrieved January 26, 2015, from
<http://www.aofas.org/footcaremd/conditions/diabetic-foot/Pages/Shoes-and-Orthotics-for-Diabetics.aspx>

Treatment for Diabetes Nerve Pain. (n.d.). Retrieved January 7, 2015, from
<http://www.webmd.com/diabetes/peripheral-neuropathy-treating-nerve-pain?page=4#2>

Type 2 diabetes. (n.d.). Retrieved November 4, 2014, from
<http://www.mayoclinic.org/diseases-conditions/type-2-diabetes/basics/complications/con-20031902>



This publication was written and produced by AbleData. AbleData is funded by the National Institute on Disability and Rehabilitation Research (NIDRR) of the U.S. Department of Education (Ed) under contract number ED-OSE-13-C-0064 and operated by New Editions Consulting, Inc.

Address: AbleData, 103 W Broad Street, Suite 400, Falls Church, Virginia 22046
Telephone: 800-227-0216 (Se habla español.)
TTY: 703-992-8313
Fax: 703-356-8314

All AbleData publications, the AbleData database of assistive technology, and other AbleData resources are available on the AbleData website, <https://abledata.acl.gov/>. Copyright 2014, New Editions Consulting, Inc.

The records in AbleData are provided for information purposes only. Neither ED nor New Editions Consulting, Inc. has examined, reviewed, or tested any product, device or information contained in AbleData. ED and New Editions Consulting, Inc. make no endorsement, representation, or warranty express or implied as to any product, device or information set forth in AbleData. The views expressed in this document do not necessarily represent the opinions of ED, the NIDRR, or New Editions Consulting, Inc.