

# Diabetes Care

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Diabetes, P7

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## Part I.

## Introduction

In January 2004, the American Diabetes Association (ADA) published its latest compilation of ADA Clinical Practice Recommendations. According to the ADA, the aims of these recommendations are to provide clinicians, patients, researchers, and payors with the elements of diabetes care, treatment target goals, and quality-of-care measurement tools. Each of the statements published in the clinical practice recommendations has undergone evaluation by experts using the ADA evidence grading system.

Although evidence-based guidelines are scientifically grounded and provide a basis for the provision of care, health care professionals must continually incorporate patient-specific information when making clinical decisions. The purpose of this article is to provide (1) highlights from the 2004 ADA Clinical Practice Recommendations, (2) diagnosis criteria/target goals associated with diabetes, and (3) a suggested diabetes management schedule.

**The Department of Health and Hospitals, Bureau of Health Services Financing, and the University of Louisiana at Monroe, School of Pharmacy, continue to develop Disease Management programs to address the educational component of the Louisiana Medicaid Pharmacy Benefits Management system.**

**Selected Medicaid recipients and their health care practitioners receive these educational brochures. We appreciate your taking time to review these and incorporating this information into your practice as you deem appropriate.**

**Thank you for your continued participation in the Medicaid program. Should you need additional information concerning the Disease Management program, please contact M.J. Terrebonne at (225)342-9768.**

# Highlights from Revised Sections in the Standards of Medical Care in the 2004 ADA Clinical Practice Recommendations

(Note: For the complete 2004 ADA Clinical Practice Recommendations, visit [http://care.diabetesjournals.org/content/vol27/suppl\\_1/](http://care.diabetesjournals.org/content/vol27/suppl_1/))

## Classification/Diagnosis Screening

- A fasting plasma glucose (FPG) is the preferred test for diabetes screening and diagnosis in children and non-pregnant adults. The oral glucose tolerance test (OGTT) is the preferred diabetes screening test in pregnancy.
- The use of the hemoglobin A1C is not recommended for the diagnosis of diabetes.
- An impaired fasting glucose (IFG) or an impaired glucose tolerance (IGT) is now termed pre-diabetes. (See Table 1.)
- Patients with pre-diabetes should be counseled on lifestyle modification and followed yearly for screening of glycemic parameters.

## Glycemic Control

- Measure A1C at least 2 times per year in patients who are meeting glycemic goals and measure 4 times per year in patients whose therapy has changed or if glycemic goals are not being met.
- Continually assess the glycemic management plan to achieve a goal A1C of < 7%.
- An A1C goal of < 6% may be considered in individual patients. The benefits of this goal must be weighed against the risks of hypoglycemia particularly in those patients diagnosed with Type 1 diabetes.

**Table 1. Diabetes Diagnosis Criteria**

<b>Pre-Diabetes IFG</b>	FPG 100–125 mg/dl after no caloric intake for 8 hours <b>or</b>
<b>IGT</b>	2-hour postload 75g glucose challenge 140–199 mg/dl
<b>Diabetes</b>	Random plasma glucose $\geq$ 200 mg/dl with symptoms <b>or</b> FPG $\geq$ 126 mg/dl <b>or</b> 2-hour plasma glucose $\geq$ 200 mg/dl postload 75g glucose challenge

## Aspirin Therapy

- Recommend aspirin therapy (75-162 mg/day) as a primary and secondary prevention strategy to reduce the incidence of cardiovascular events.
- Aspirin is not recommended in persons under 21 years of age due to the possibility of developing Reye's Syndrome.
- The use of aspirin is contraindicated if aspirin allergy, bleeding tendency, concomitant use of anticoagulants, recent gastrointestinal hemorrhage, and/or clinically active liver disease are present.



## Lipid Management

- For adults, screen for lipid disorders yearly or more often if needed to achieve target goal. For suggested pediatric lipid screening, refer to guideline.
- Lower LDL cholesterol in adults to a target of  $< 100\text{mg/dl}$ , lower triglycerides to  $< 150\text{mg/dl}$ , and increase HDL to  $> 40\text{mg/dl}$ . (Note: In women, an HDL goal of  $10\text{mg/dl}$  higher may be appropriate.)
- For patients over the age of 40 with a total cholesterol =  $135\text{mg/dl}$ , consider statin therapy to achieve an LDL reduction of  $\sim 30\%$  regardless of baseline LDL levels. This reduction in baseline LDL has been associated with a  $25\%$  reduction in the rate of first coronary event.
- In patients with (1) clinical cardiovascular disease, (2) low HDL, and (3) approximately normal levels of LDL, lowering triglycerides and increasing HDL with a fibrate may be associated with a reduction in cardiovascular events.
- In children and adolescents with diabetes, an LDL target of  $< 100\text{mg/dl}$  should be reached using nutritional modification and medication therapy based on LDL level and other cardiovascular risk factors in addition to the diagnosis of diabetes.
- Combination therapy using a statin with a fibrate or niacin may be useful in reaching desired lipid targets; however, combination therapy appears to be associated with an increased risk for adverse events.

## Blood Pressure Control

- Measure blood pressure at every visit.
- Blood pressure treatment goal is systolic blood pressure (SBP)  $< 130\text{ mmHg}$  and diastolic blood pressure (DBP)  $< 80\text{ mmHg}$ .
- Patients with a SBP  $130 - 139\text{ mmHg}$  or DBP  $80 - 89\text{ mmHg}$  should be encouraged to make lifestyle and behavioral modifications. If after 3 months, blood pressure targets are not met, then prescribe a pharmacological agent that blocks the renin angiotensin system.
- Patients with hypertension, SBP =  $140\text{ mmHg}$  or DBP =  $90\text{ mmHg}$ , should be prescribed medication therapy as well as counseled on lifestyle and behavioral modifications to reduce the risks associated with hypertension.
- Patients with hypertension should be treated with a drug class that has been associated with a decrease in cardiovascular events in people who are concomitantly diagnosed with hypertension and diabetes. These drug



classes include: ACE (angiotensin converting enzyme) inhibitors, ARBs (angiotensin receptor blockers),  $\beta$ - blockers, thiazide diuretics, and calcium channel blockers.

- Current opinion suggests that all non-pregnant patients concomitantly diagnosed with diabetes and hypertension should be treated with a regimen that includes an ACE inhibitor or an ARB. (See Table 2.) If one class is not tolerated, then try the other. If required, a thiazide diuretic should be added to achieve blood pressure target.
- The following statements are reported as clinical trial evidence in the recommendations:
  - (1) ACE inhibitors delay the progression of nephropathy in patients with Type 1 diabetes, hypertension, and any degree of albuminuria.
  - (2) Both ACE inhibitors and ARBs delay the progression to macroalbuminuria in patients with Type 2 diabetes, hypertension, and microalbuminuria.
  - (3) ARBs have been shown to delay the progression of nephropathy in patients with Type 2 diabetes, hypertension, and macroalbuminuria.

Refer to Table 3 for albuminuria lab values.

## Retinopathy Screening & Treatment

- Optimal glycemic and blood pressure control reduce the risks of diabetic retinopathy.
- Aspirin therapy does not prevent retinopathy.
- Patients diagnosed with Type 1 diabetes should have a comprehensive (with dilation) eye exam within 3-5 years of the initial diagnosis of diabetes.
- Patients diagnosed with Type 2 diabetes should have a comprehensive (with dilation) eye exam shortly after the initial diagnosis of diabetes.
- Subsequent exams should be completed on a yearly basis; however, less frequent exams (every 2-3 years) for low-risk patients may be appropriate if so deemed by the eye care professional's clinical judgment.
- If retinopathy is progressing, more frequent eye exams are indicated.

**Table 2. Available ACE Inhibitors and ARBs**

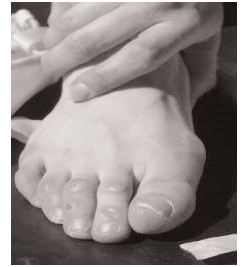
<b>ACE inhibitors</b>	<b>Benazepril</b> (Lotensin®) <b>Captopril</b> (Capoten®) <b>Enalapril</b> (Vasotec®) <b>Fosinopril</b> (Monopril®) <b>Lisinopril</b> (Prinivil®, Zestril®) <b>Moexipril</b> (Univasc®) <b>Perindopril</b> (Aceon®) <b>Quinapril</b> (Accupril®) <b>Ramipril</b> (Altace®) <b>Trandolopril</b> (Mavik®)
<b>ARBs</b>	<b>Candesartan</b> (Atacand®) <b>Eprosartan</b> (Teveten®) <b>Irbesartan</b> (Avapro®) <b>Losartan</b> (Cozaar®) <b>Olmesartan</b> (Benicar®) <b>Telmisartan</b> (Micardis®) <b>Valsartan</b> (Diovan®)

**Table 3. Albumin Excretion Parameters**

Category	Spot Collection
	$\mu\text{g}/\text{mg}$ creatinine
<b>Normal</b>	<b>&lt; 30</b>
<b>Microalbuminuria</b>	<b>30-299</b>
<b>Macroalbuminuria</b>	<b>? 300</b>

## Foot Care

- Perform a visual inspection of the patient's feet at each routine visit.
- Comprehensive foot exams should be completed yearly, can take place in a primary care setting, and should include the use of a Semmes-Weinstein monofilament, tuning fork, palpation, and a visual examination.
- During the foot exam, include an initial screening for peripheral arterial disease (PAD), a history for claudication, and an assessment of pedal pulses. Because PAD may present without symptoms, consider obtaining an ankle-brachial index.
- Instruct and encourage patients (or their caregiver) to perform daily feet self-examinations.



## Summary

This update has summarized some of the sections that were revised in the 2004 American Diabetes Clinical Practice Recommendations. The complete Recommendations can be used as a framework for the development of comprehensive, patient-centered diabetes management plans. These plans must include a strong emphasis on controlling blood glucose, blood pressure, and cholesterol. Continuous, comprehensive diabetes management can prevent or control diabetes-related macrovascular (heart disease, stroke, and circulatory problems) and microvascular (blindness, amputations, and end-stage renal disease) complications.

To facilitate the development of diabetes management plans, this update contains charts (on the next page) that can be utilized by providers who care for patients diagnosed with diabetes. One chart lists diabetes-related diagnoses and treatment goals, and the second chart, a Diabetes Management Flowsheet, can be used to track diabetes clinical measures. These charts have been developed in accordance with the 2004 ADA Clinical Practice Recommendations. For full-page versions of these charts go to <http://rxweb.ulm.edu/pharmacy/oore/default.htm>, click on "Disease Management", then "Disease Management Tools".

## References

American Diabetes Association Clinical Practice Recommendations, Diabetes Care 27 (Suppl. 1): S1 - S150, 2004.



## Part II. Introduction

This section contains a secondary claims data analysis that was performed to evaluate compliance with these recommended tests. It also measures the outcomes of Louisiana Medicaid recipients with diabetes. These process and outcome measures will be tracked on a continuous basis and distributed to providers who deliver care to this population.

### **Methods**

The measurement year was January 1, 2003 through December 31, 2003. Recipients with diabetes were selected for this study using criteria from the National Committee for Quality Assurance's (NCQA) Health Plan Employer Data and Information Set (HEDIS 2004)<sup>1</sup>. The inclusion criteria for the study group were:

1. No more than one, 1-month gap in Medicaid eligibility during the measurement year of January 1, 2003 - December 31, 2003. Must be enrolled in December 2003.
2. Age 18 - 75 of December 31, 2003.
3. A diagnosis or drug claim defined as at least one of the following:
  - a. One or more face-to-face encounters in acute inpatient or emergency room setting with a primary or secondary diagnosis of diabetes (ICD-9-CM codes 250.xx, 357.2, 362.0x, 366.41, or 648.0x) during the 2003 measurement year or the year prior to the measurement year,
  - b. Two or more face-to-face encounters in an ambulatory setting with a primary or secondary diagnosis of diabetes on different dates of service,
  - c. One or more prescriptions for insulin or oral hypoglycemics/antihyperglycemics during the measurement year or year prior to the measurement year (Note: The codes used to identify medications that count toward this measure are located on NCQA's website at [www.ncqa.org/Programs/HEDIS/legal2004.htm](http://www.ncqa.org/Programs/HEDIS/legal2004.htm)).

Recipients were excluded from the study group if they met any of the following criteria:

1. A diagnosis of gestational diabetes (ICD-9-CM code 648.8) during the measurement year.
2. A diagnosis of polycystic ovaries (ICD-9-CM code 256.4) without a face-to-face visit \ during the measurement year or the year prior to the measurement year.
3. A diagnosis of steroid-induced diabetes (ICD-9-CM code 962.0) during the measurement year.

### **Results**

A total of 751,309 eligible Medicaid recipients were identified for the study period. These recipients were eligible for Medicaid for at least 11 of the 12 months of the measurement year and were eligible during the anchor month of December 2003. Of these recipients, 32,012 were classified as having diabetes, resulting in a prevalence of 4.26% within the Louisiana Medicaid population.

Figure 1 shows the percent of the study group with one or more of the key tests or screenings necessary for diabetes control. Only 21.5% of the recipients were monitored for diabetic nephropathy during the 2003 measurement year. Less than half (42%) of the recipients had a LDL-C screening in the measurement year or the year prior to the measurement year. Slightly more than one-fourth (25.6%) of the recipients had a dilated eye exam during the measurement year. Only 38.7% of the recipients had a glycosylated hemoglobin test during the measurement year.

**Figure 1.**

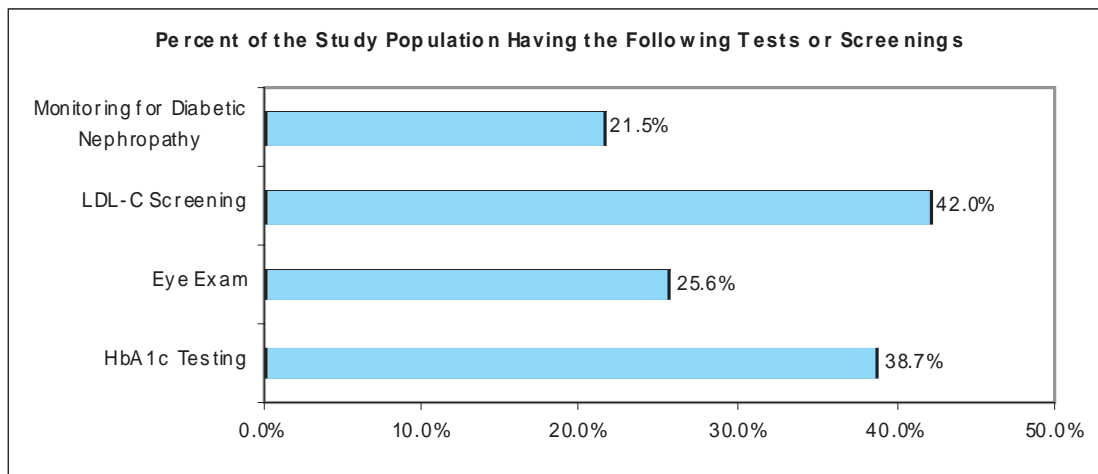


Figure 1 Notes:

1. Monitoring for Diabetic Nephropathy = Recipients who have been screened for microalbuminuria during the measurement year and recipients who already have evidence of nephropathy as demonstrated by treatment for nephropathy or a visit to a nephrologist during the measurement year. For a list of specific diagnosis and procedure codes used, please contact mmassey@ulm.edu.
2. LDL-C Screening = Recipients having a claim with a CPT code associated with LDL-C screening during the measurement year or the year prior to the measurement year (CPT 80061, 83715, 83716, 83721).
3. Dilated Eye Exam = Recipients having a claim/encounter with an associated eye exam CPT code by an eye care professional during the measurement year.
4. HbA1c Testing = Recipients having a claim with CPT code of 83036 (hemoglobin, glycosylated) during the measurement year.

Diabetes outcomes measurements tracked for 2003 are presented in Figure 2. Recipients visited a physician an average of 6.43 times, were admitted to the hospital an average of 0.69 times, and visited the emergency room an average of 1.21 times during the measurement year.

**Figure 2.**

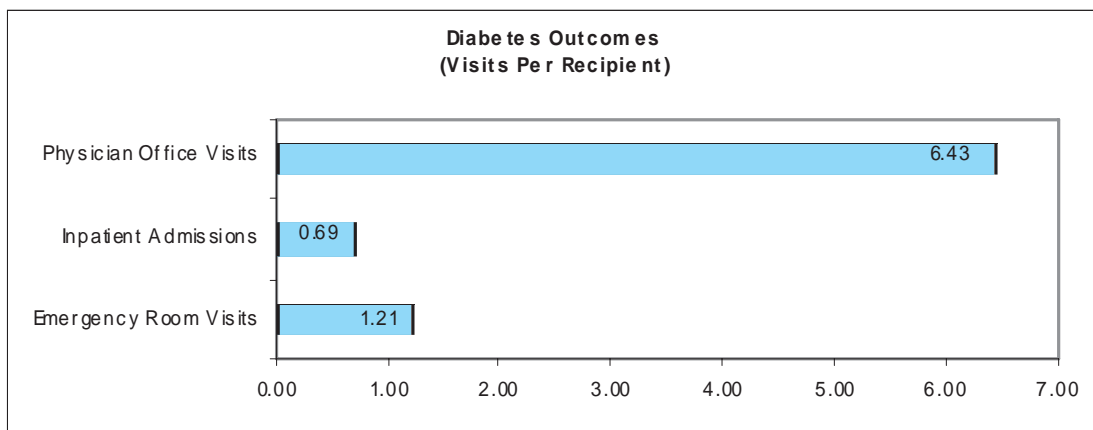


Figure 2 Notes:

1. Physician Office Visits = Outpatient or physician claim with a CPT code of 99201-99220, 99241-99245, or 99271-99275.
2. Inpatient Admissions = Inpatient claim with a bill type designating an admission or first claim.
3. Emergency Room Visits = Claim with a CPT code of 99281, 99282, 99283, 99284, 99285, 99288.

The average number of antidiabetic prescriptions filled per recipient and per user, grouped by therapeutic class, is shown in Figure 3. The "per recipient" figures indicate the frequency of use of each drug class, while the "per user" figures provide an average of the number of prescriptions filled in a therapeutic class for users of that therapeutic class. For example, only 1,624 prescriptions were filled for alpha-glucosidase inhibitors, resulting in a per-recipient number of 0.05 (1,624 divided by 32,012). However, since only 286 recipients had 1,624 prescriptions filled for alpha-glucosidase inhibitors, the average number of prescriptions per user was 5.68.

**Figure 3.**

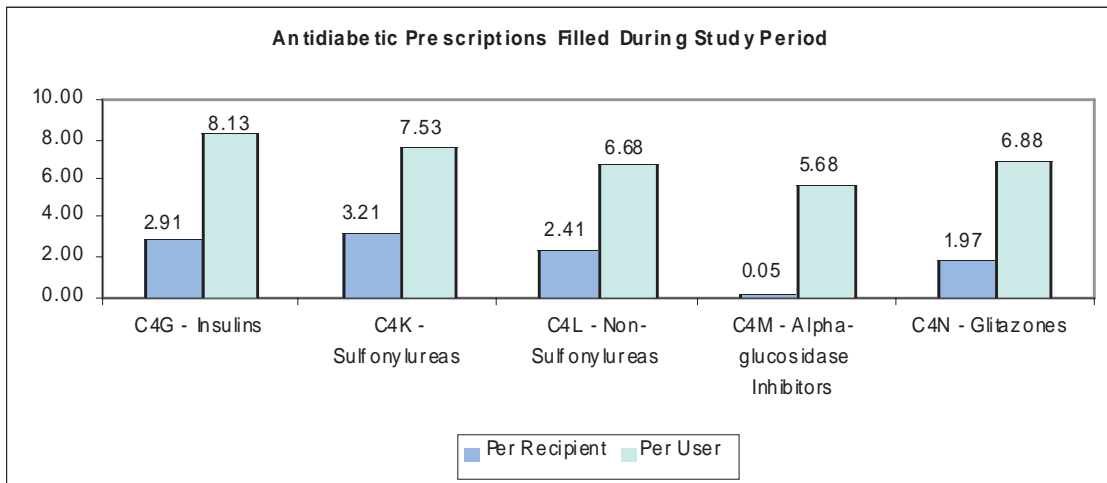


Figure 3 Notes:

1. Antidiabetic Prescriptions Filled Per Recipient = Count of the prescriptions filled during the study period, grouped by therapeutic class, divided by the number of recipients in the study group (32,012).
2. Antidiabetic Prescriptions Filled Per User = Count of the prescriptions filled during the study period, grouped by therapeutic class, divided by the number of users of each therapeutic class.
3. Metformin belongs to therapeutic class C4L (Non-sulfonylureas).

### **Conclusion**

This report is an update of baseline measures for testing, drug utilization, and outcomes for the Louisiana Medicaid population. Future studies will provide updates to these benchmarks. With increased patient education and improved compliance with the recommended tests and drug therapies, the number of hospitalizations and emergency room visits could potentially decrease, thus resulting in improved patient outcomes.

## References

1. HEDIS 2004 Technical Specifications. National Committee for Quality Assurance; 2003.

Educational material provided to Louisiana Medicaid providers by the Louisiana Medicaid Pharmacy Benefits Management Program in the Department of Health and Hospitals and developed by the University of Louisiana at Monroe School of Pharmacy.

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**IPC Printing**  
**11632 Industriplex Blvd.**  
**Baton Rouge, LA 70809**  
**(225)751-4500**

# Complete Wellness: A Guide to Managing Your Health

\* The following is an abbreviated version of the education material sent to selected Medicaid recipients.

## Diabetes From Head to Toe: How Diabetes Affects Your Body

By: Michelle Massey; Larry J. Humble, R.Ph.; and Gary Merchant  
The University of Louisiana at Monroe School of Pharmacy

Approximately 18 million Americans have diabetes. When you have diabetes, your body either doesn't make enough insulin, or can't use its own insulin like it should. This prevents the sugar that you eat from being turned into energy that you can burn. The sugars build up in your blood causing many serious health problems.

Diabetes is the seventh leading cause of death in the United States. If you have been diagnosed with diabetes you can still live a long and healthy life, but it is very important that you learn about your disease and how it can affect your body.

### Control the ABCs of Diabetes

**A1C** - This test measures average blood glucose levels over the last 3 months. *Target: A1C less than 7%.*

**Blood Pressure** - High blood pressure causes heart disease. *Target: Blood Pressure less than or equal to 130/80.*

**Cholesterol** - Bad cholesterol, or LDL, builds up and clogs your arteries. *Target: Cholesterol (LDL) less than 100.*

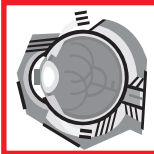
### Your Eyes

Diabetes is a leading cause of vision loss and blindness in Americans, and anyone with diabetes is at risk for these diseases. If you have diabetes you are 25-30 times more likely to lose your sight to eye disease.

Eye diseases caused by diabetes include:

- **Diabetic retinopathy** - Damage to the blood vessels in the retina.
- **Cataract** - Clouding of the eye's lens.
- **Glaucoma** - Increase in fluid pressure inside the eye that leads to optic nerve damage and loss of vision.

See your eye doctor at least once each year. Make sure your doctor knows that you have diabetes.



### Your Teeth

The plaque that builds up on your teeth is full of germs and bacteria. High blood sugar, caused by diabetes, helps these germs grow.



Some of the problems that diabetes may cause are:

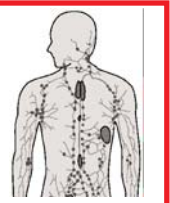
- Red, sore, or swollen gums that bleed when you brush your teeth;
- Bad breath;
- Gum disease;
- Loose or sensitive teeth.

To help stop these problems you should:

- See your dentist at least twice each year for cleaning, check-up, and complete mouth exam.
- Learn the best way to brush and floss, and learn the early warning signs of tooth, mouth and gum problems.

### Diabetic Neuropathies

Diabetic neuropathies are nerve disorders caused by diabetes. About one-half of people who have diabetes have some type of nerve damage caused by their diabetes. These disorders seem to be worse for people who have trouble keeping their blood sugar levels regulated, who are overweight, or who have high blood pressure. These nerve disorders can cause pain, numbness or loss of feeling in your feet, hands or legs. They can also cause serious problems to your other major organs such as your heart, digestive system, sex organs and circulatory system.



### Your Heart and Blood Vessels

Diabetes can cause serious problems to your heart and blood vessels. People with diabetes are also at greater risk for heart disease. Some problems your diabetes may cause are:

- High cholesterol
- High blood pressure
- Fatty deposits in your blood vessels.

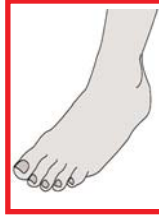


## Your Kidneys



You should have your kidneys checked if you have diabetes. The blood vessels in your kidneys may be damaged. If the blood vessels are damaged your kidneys will not be able to filter your body's waste. This can happen early on in diabetes so you should not wait to have them checked.

## Your Feet



Be very cautious of problems with your feet. Examine your feet daily. Diabetes often leads to circulation and blood vessel problems and, if not prevented, can lead to amputation. It is very important that you take care of your feet.

Some things that you should watch for are:

- Feet that feel cold
- Numbness or tingling
- Ulcers or sores on feet that won't heal
- Toes look a bluish color or feet look red or pale.

These are some things that can help you reduce your risk of amputation:

- Get a complete foot exam from your doctor each year.
- Check your feet each night for any signs of sores or change in color.
- Wash your feet very well every day, especially after sweating.  
Always dry your feet very well.
- Wear thick socks and shoes that fit well. Avoid open shoes.

## Medication Management



Make a list of all your medicines, including their strengths, and the way you take them. Give a copy of this list to all your health care providers. Don't forget to list non-prescription vitamin supplements and herbal medicines.

- Update your list with every change, and review it at least once a year.
- Discuss how to use your medicines and supplies to get the best results at the lowest cost.
- Ask your doctor if you need aspirin for heart attack or

Educational material provided to Louisiana Medicaid recipients and providers by the Louisiana Medicaid Pharmacy Benefits Management Program (PBM) in the Department of Health and Hospitals and developed by the University of Louisiana at Monroe School of Pharmacy.

*Ask your doctor, nurse, and/or pharmacist about the information contained in this brochure*

## Keep Your Blood Sugar Level Under Control



It is very important that you keep your blood sugar level under control. You can still have some sugar, but be careful with the amount of sugar that you eat. Your body will often give you signs if your blood sugar gets too low or too high.

### If your blood sugar is too low:

- You may feel tired, disoriented or cranky
- You may become shaky or sweaty

#### What to do:

- Check your blood sugar immediately,
- If it is too low you should drink some fruit juice or a non-diet soda to help get your sugar back to normal.

### If your blood sugar is too high:

- You may feel very thirsty
- You may have blurred vision
- May need to urinate a lot

#### What to do:

- Check your blood sugar immediately,
- Contact your doctor. It is a good idea to go ahead and talk to

## Helpful Tips for Anyone With Diabetes

### Get Physical.....Be More Active

Turn off the T.V. and walk, swim, dance, play, or do any type of exercise. This is not only good for your diabetes, but will make you feel better overall. (Talk to your healthcare provider before starting any extreme exercise plan.)

### Eat a Healthy Diet

- Eat smaller portions
- Eat more vegetables
- Cut down on salts, sugars and fats

### Quit Smoking

- Tobacco use increases your risk of diabetes complica-

## For More Information Contact:

### American Diabetes Association

1701 N. Beauregard Street  
Alexandria, VA 22311  
Phone: 1-800-342-2383  
Internet: [www.diabetes.org](http://www.diabetes.org)

### National Diabetes Information Clearinghouse

1 Information Way  
Bethesda, MD 20892-3560  
Phone: 1-800-860-8747  
Internet: [www.diabetes.niddk.nih.gov](http://www.diabetes.niddk.nih.gov)

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*Complete Wellness:*  
A Guide to Disease Management