

DIABETES

EDUCATION

BOOK



CROSSROADS
MEDICAL MISSION

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GENERAL

DIABETES

EDUCATION

WHAT IS INSULIN RESISTANCE

- Insulin Resistance is what usually leads to developing Type 2 Diabetes, and is the source of the problem.
- Insulin is a chemical in your body that opens the door of your cells so that sugar can get out of your blood stream and into your cells, where it can be used up for energy.
- When you have Insulin Resistance, its like the lock to the door on the cells have been changed and insulin can't open that door anymore. Therefore, the sugar in your blood is high.
- When that happens, your pancreas (which makes the insulin) tries to solve the problem by producing more insulin. This can help for a little while, but eventually the extra insulin won't work either. We call this stage Pre-Diabetes.
- Several things put you at risk for Insulin Resistance:
 - ◇ Being overweight or obese
 - ◇ Not exercising or being active
 - ◇ Having a large waist measurement
 - * For women, you want your waist to measure less than 35 inches around
 - * For men, you want your waist to measure less than 40 inches around.
 - ◇ Have an immediate family member with Type 2 Diabetes
 - ◇ Being diagnosed with Polycystic Ovarian Syndrome
 - ◇ Being over 45 years old
 - ◇ Have high blood pressure
 - ◇ Have a low HDL (good cholesterol)
 - ◇ Have high levels of fat (triglycerides) in your blood
- How to prevent or even reverse Insulin Resistance:
 - ◇ Lose Weight by eating a balanced, healthy diet
 - ◇ Exercise

Diabetes

What is diabetes?

Diabetes occurs when a person's body doesn't make enough insulin or can't use insulin the right way. Insulin helps your cells use blood sugar for energy. Diabetes causes the sugar to build up in your blood.

Diabetes can generally be classified as type 1 or type 2. If you have type 1, your body makes little or no insulin. If you have type 2, your body makes some insulin but can't use it properly. Most adults with diabetes have type 2.

What health problems can diabetes cause?

Over time, high blood sugar levels can damage your eyes, blood vessels, nerves and kidneys. Damage to your nerves can lead to foot sores, problems with digestion and impotence. Damage to your blood vessels increases your risk of heart attack and stroke. Many of these problems can be delayed or prevented with treatment.

How is diabetes treated?

The goal in treating diabetes is to keep the level of sugar in your blood as close to normal as possible--not too high (called hyperglycemia) or too low (called hypoglycemia). You can do this by eating right, by exercising and by taking insulin or medicine if your doctor prescribes it.

Regularly checking your blood sugar is a key to helping you control it. Blood sugar checks can help you see how food, exercise and insulin or medicine affects your level. Checking your blood sugar also allows you and your doctor to change your treatment plan if needed.

Call your doctor if:

- You start feeling very thirsty and are urinating more.
 - You feel sick to your stomach or vomit more than once.
 - You start breathing deeper and faster.
 - Your breath smells sweet.
 - You start to tremble, feel weak and drowsy, and then feel confused or dizzy, or start seeing double.
- You feel uncoordinated.

How do I check my blood sugar level?

To check your blood sugar level, you'll need to prick your finger to get a drop of blood for the test. Spring-loaded devices, which prick your finger when you press them against your skin, make this simple and less painful.

After you prick your finger, you place the drop of blood onto a test strip. The test strip will change color. The color tells you how much sugar is in your blood.

You then either insert the strip into a blood sugar meter or compare the color of the strip to a color chart to figure out your blood sugar level.

Tips on blood sugar testing

- Wash your hands and dry them well before doing the test.
- Pay attention to expiration dates for test strips.
- Use a big enough drop of blood.
- Be sure your meter is set right.
- Keep your meter clean.
- Check the batteries of your meter.
- Follow the instructions for the test carefully.
- Write down the results and show them to your doctor.

How often should I check my blood sugar level?

Check your blood sugar as often as your doctor suggests. You'll probably need to do it more often at first. You'll also check it more often when you feel sick or stressed, when you're changing your medicine, or if you're pregnant. People taking insulin may need to check their levels more often.

Keep track of your blood sugar levels by writing them down. You can also keep track of what you've eaten and how active you've been during the day. This will help you see how eating and exercise affect your blood sugar level.

What should my blood sugar level be?

Talk with your doctor about what range of blood sugar levels is best for you. A level of 80 to 120 before meals is often a good goal, but not everyone with diabetes can get their blood sugar levels this low.

Be sure to talk with your doctor about what to do if your blood sugar level isn't within the range that's best for you.

How does food affect my blood sugar level?

Anytime you eat, you put sugar in your blood. Eating the right way can help control your blood sugar level.

It's important for you to learn how what you eat affects your blood sugar level, how you feel and your overall health. As a general rule, just following a healthy diet is wise. Your doctor may help you find a dietitian who can help you learn how to make wise food choices. See the box below for some tips on eating right.

Tips on eating right

- Eat at about the same time every day. This helps keep your insulin or medicine and sugar levels steady.
- Try to eat 3 times a day. Have a snack at bedtime if you're taking medicine or insulin. Avoid other snacking unless you're exercising or treating hypoglycemia.
- If you're overweight, lose weight. Even losing just a little weight, such as 5 to 15 pounds, can

lower your blood sugar levels.

- Eat plenty of fiber. Green leafy vegetables, grains and fruits are good choices. Fiber helps you feel full.
- Eat fewer "empty" calories, such as foods high in sugar and fat, and alcohol.

What about smoking and alcohol?

You should stop smoking as soon as possible. It's probably okay to drink some alcohol. But it's best not to have more than about 1 serving a day with a meal. A serving is 4 ounces of wine, 12 ounces of beer or 1.5 ounces of hard liquor. If you drink on an empty stomach, you risk causing a drop in your blood sugar.

Will exercising help my blood sugar level?

Yes. Exercising is especially good for people who have diabetes because it can help the body better use insulin, resulting in a lower blood sugar level.

Exercise is also good for your heart, your cholesterol levels, your blood pressure and your weight - all factors that can affect your risk of heart attack and stroke.

Exercise also seems to make people feel better about themselves and feel less anxious.

Talk with your doctor about starting an exercise program. He or she can help you make a plan.

What is a hemoglobin 'A1C' test?

Often called the 'Hemoglobin A1C,' this is a blood test that shows how well your sugars are being controlled (or not) over the last two months. It helps your doctor decide if any changes to your treatment are needed.

Organizations

American Diabetes Association (<http://www.diabetes.org>) 800-232-3472

Adapted from the American Academy of Physicians

HEALTHY

LIFESTYLE

CHOICES

Diabetes and Exercise

How can exercise help my diabetes?

Exercise can help control your weight and lower your blood sugar level. It also lowers your risk of heart disease, a condition which is common in people who have diabetes. Exercise can also help you feel better about yourself and increase your overall health.

What kind of exercise should I do?

Talk to your doctor about what kind of exercise is right for you. The type of exercise you can do will depend on whether you have any other health problems. Most doctors recommend aerobic exercise, which makes you breathe more deeply and makes your heart work harder. Examples of aerobic exercise include walking, jogging, aerobic dance or bicycling. If you have problems with the nerves in your feet or legs, your doctor may want you to do a type of exercise that won't put stress on your feet. These exercises include swimming, bicycling, rowing or chair exercises.

No matter what kind of exercise you do, you should warm up before you start and cool down when you're done. To warm up, spend 5 to 10 minutes doing a low-intensity exercise such as walking. Then gently stretch for another 5 to 10 minutes. Repeat these steps after exercising to cool down.

When you start an exercise program, go slowly. Then gradually increase the intensity and length of your sessions as you become more fit. Talk to your doctor for specific advice.

Are there any risks to exercising for people with diabetes?

Yes, although the benefits far outweigh the risks. Exercise changes the way your body reacts to insulin. Regular exercise makes your body more sensitive to insulin, and your blood sugar level may get too low (called hypoglycemia) after exercising. You may need to check your blood sugar level before and after exercising. Your doctor can tell you what your blood sugar level should be before and after exercise.

If your blood sugar level is too low or too high right before you plan to exercise, it's better to wait until the level improves. It is especially important to watch your blood sugar level if you exercise in really hot or cold conditions, because the temperature changes how your body absorbs insulin.

How will I know if my blood sugar is too low while I'm exercising?

Hypoglycemia usually occurs gradually, so you need to pay attention to how you're feeling during exercise. You may feel a change in your heartbeat, suddenly sweat more, feel shaky or anxious, or feel hungry. When you feel this way, you should stop exercising and follow your doctor's advice about how to treat hypoglycemia. Your doctor may suggest you keep candy or juice on hand to treat hypoglycemia.

What else should I do to exercise properly?

Many people with diabetes have problems with the nerves in their feet and legs, sometimes without even knowing it. So it's important that you wear shoes that fit well and have plenty of room when you exercise. Otherwise you could develop blisters or other sores on your feet that can lead to infection and other problems. You should check your feet before and after you exercise to make sure there are no blisters or other sores.

Should I drink more fluids during exercise?

Yes. When you're exercising, your body uses more fluid to keep you cool. By the time you feel thirsty, you may already be getting dehydrated. Dehydration (not enough fluid in your body) can affect your blood sugar level. Drink plenty of fluid before, during and after exercise.

Exercise checklist for people with diabetes

Talk to your doctor about the right exercise for you.

Check your blood sugar level before and after exercising.

Check your feet for blisters or sores before and after exercising.

Wear the proper shoes and socks.

Drink plenty of fluid before, during and after exercising.

Warm up before exercising and cool down afterward.

Have a snack handy in case your blood sugar level drops too low.

Organizations

American Diabetes Association (<http://www.diabetes.org>) 800-232-3472

Adapted from the American Academy of Physicians

TIPS FOR EATING HEALTHY ON A BUDGET

Everyone who has ever tried to change their eating habits and become healthy can testify that it is more expensive to stay on a healthy diet. Even though, in the long run, you save money on medications, lifestyle and generally feel better, it makes it very difficult to get started. We have put together some tips and ideas on how to save money and eat healthy at the same time.

- Avoid fast food. It may seem like a cheap option, but when compared to what you can make at home for that price, it is certainly not cheap.
- Go grocery shopping only once a week, and make sure you are not hungry!!!
- Always take a list with you to the grocery store.
- When grocery shopping, try sticking to the outside aisles of the store. All your essentials are located out there – produce, meat, milk, and bread. Only go in the aisle for the things that are on your list, instead of wandering down each aisle.
- Try to plan meals for the whole family, instead of buying “special health” food for yourself. The Diabetic Diet is what everyone should eat, and making those changes will help everyone.
- Being Diabetic doesn’t require any special foods. Just watch your portions and read your labels.
- Remember your portion size should not be bigger than a deck of cards.
- Cut out the junk food, such as doughnuts, chips, sodas, etc... There are really good substitutes these days.
- Instead of drinking soda, drink water. If you don’t like water, trying mixing in some of your favorite sugar free juice or lemons to give it some flavor. If you really just can’t give it up, at least try to drink diet soda.
- Buy generic options. Many times, health food will charge a higher price just because it has the label “healthy.” You may be able to find the same thing in generic, such as for cereal or snack foods.
- Store your bread products in the fridge or freezer. It extends their life and you won’t have to waste any. Remember, as a Diabetic, you don’t want to be eating too much bread anyway.
- If its white or enriched, see if they have a whole grain or nonenriched substitute – breads, flour, etc... Enriched means they have stripped all the good nutrients away. Your body has to work a little bit to digest the whole grain and that’s a good thing.
- Try eating oatmeal instead of sugary cereal. Buy the container of oatmeal (not the sugary prepackaged kind). Its much cheaper and better for you.
- When buying meat, buy in bulk then separate it at home into separate freezer bags that contain only what your family’s serving size is. It will be less expensive, and by thawing only what you should eat, it will cut down on the temptation to eat more.
- Hopefully, you will spend the majority of your grocery budget in the fresh and frozen produce section.
- When buying produce, check to make sure it’s dry. It cuts down on the weight and may save you a little money.
- If you have a farmer’s market or veggie stand in your area, you may be able to get produce cheaper there.
- Buying fruits and veggies that are in season will also save you money (and taste better). Here’s a bit of a list to guide you, as long as you live here in the South:
 - ◇ From March to Early June: Asparagus, Broccoli, Lettuce, Peas, Onions, Mushrooms, and Strawberries
 - ◇ June: Apples, Broccoli, Cabbage, Peas, Peppers, Garlic, New Potatoes, Onions, Radishes, Raspberries, Strawberries, Tomatoes
 - ◇ July: Squash, Apples, Apricots, Beets, Black Eyed Peas, Blackberries, Blueberries, Cabbage, Cantaloupes, Carrots, Cherries, Corn, Cucumbers, Eggplant, Green Beans, Garlic, Green Beans,

Lima Beans, Potatoes, Onions, Radishes, Peaches, Peppers, Plums, Tomatoes, Watermelons

- ◇ August: Squash, Apples, Apricots, Beets, Berries, Cantaloupes, Carrots,
- ◇ Cherries, Blackberries, Blueberries, Cabbage Cucumber, Eggplant, Garlic, Green Beans, Lima Beans, Potatoes, Okra, Onions, Parsnips, Peaches, Pears, Peppers, Plums, Radishes, Tomatoes, Watermelons, Yams
- ◇ September: Apples, Blueberries, Brussel Sprouts, Broccoli, Cabbage,
- ◇ Cantaloupes, Carrots, Cauliflower, Collard/Mustard/Turnip Greens, Green Beans, Kale, Mushrooms, Okra, Peaches, Peppers, Plums, Pumpkins, Raspberries, Squash, Tomatoes, Turnips, Yams
- ◇ October: Broccoli, Brussel Sprouts, Cabbage, Cauliflower,
- ◇ Collard/Mustard/Turnip Greens, Peas, Peppers, Potatoes, Pumpkins, Raspberries, Soybeans, Spinach, Tomatoes, Turnips

- Gardening is a great money saving option and ticket to healthy food. It doesn't necessarily mean you have to till an acre of land. If you live in an apartment or have a small yard, just one plant in a container can produce several of your favorite vegetables.
- When grocery shopping, avoid all last minute counter purchases. The people who run the store know how hard it is to resist that candy bar when you have to stand in line. Just pick up a magazine, do some quick reading, and try to ignore the temptation until you get to the front of the line.
- Being Diabetic is a big change, but it doesn't have to flip you totally upside down. Taking a few of these steps can help you take control of your life and your health.

HEALTHY TIPS FOR EATING OUT

Being Diabetic doesn't mean you can't go out to eat. Going out to eat is one of life's treats, and you have every right to continue to enjoy it. There are ways to go out and still stay healthy.

Tip #1: Ask your waiter if the item you want comes grilled instead of fried.

Tip #2: Ask to have the sauce or glaze on the side. You can still indulge, but

you don't have to coat the entire meal. Dip your fork into the sauce first, then put a bite of food on the fork. You will still taste the sauce and by the end of the meal, you'll be surprised how little it took for you enjoy the meal just the same.

Tip #3: Unlike what your parents may have told you, it is not a crime and no one

else is going to starve if you don't finish your meal. Restaurants are specializing in larger portions these days. You can always ask for a to go box and enjoy your food again later.

Tip #4: Go ahead and get the appetizer or starter for the meal. Usually, if you

pick a light appetizer or get a salad in the beginning of the meal, you won't want to eat as much of the main course.

Tip #5: If you tend to need a night snack to go with medication and you are

planning to eat out late, you can just switch them around. Eat your snack earlier in the evening and then eat out as planned.

Tip #6: It's generally best to avoid fast food, but it is okay on occasion as long as

you make healthier choices. Remember, some of the burgers or sandwiches can have over an entire day's daily allowance of fat and calories. Avoid anything with the terms "jumbo, super sized, giant or deluxe."

Tip #7: Be careful when you see the words "fat free." Being fat free can still

mean that it is full of sugar – not a good idea if you're Diabetic.

Tip #8: Don't completely deny yourself anything, but remember PORTION SIZE!

HOW TO READ A NUTRITION LABEL

Several years ago, food companies were required to provide the public with the nutrition facts for their products, in order to provide us with the opportunity to make informed choices. So, every product you purchase should have a white label on the side stating the amounts of certain categories of food. Unfortunately, it is a little like interpreting another language, and is not usually helpful. Here is a guide to being able to read a label, and know as a Diabetic, whether you should or shouldn't eat that item.

- The first thing to check is the SERVING SIZE, and it should be located at the top of the Nutrition Box. The rest of the categories are for that serving size, not for the entire container of food. For example, if you look at a bowl of cereal, it may state the serving size is 1 cup. That means the calories, fat and sugar amount listed is for only that 1 cup of cereal, not the whole box of cereal.
- Amounts will be listed in 2 ways. Next to the category will be a measurement term (g = Grams, mg = Milligrams, etc...). In the second column will be the percentage of the Daily Allowance of that category. A product is:
 - ◇ A good source of a particular nutrient if one serving provides 10 to 19% of the daily value
 - ◇ High in a given category if it contains 20% or more of the daily value
 - ◇ Low in a given nutrient if the Daily Value is 5% or less
- Next, going down the list, CALORIES should be listed next. If weight loss is one of your goals, this number counts. The lower this number, the better.
- The TOTAL FAT category can be really confusing, because there is good fat and bad fat. If it is unsaturated, it's good (that can be monounsaturated or polyunsaturated). These can actually help lower your cholesterol and protect your heart – very important for Diabetics. If it is saturated (no un-) or transfat are bad fats and will increase your cholesterol levels and clog your arteries. A general guideline for how much fat to eat in a day is around 40 – 60 grams per day for women and 60 – 80 grams per day for men.
- The SODIUM level does not directly affect your blood sugar, but it can affect your blood pressure. And many times, if you are Diabetic, you also have High Blood Pressure. You want to aim to keep your sodium level below 2400 mg per day or less.
- The TOTAL CARBOHYDRATE level needs to be very important to you. The Carbohydrate level will directly raise your blood sugar. This level is more important than the sugar level, because it actually includes the sugar level in it. And sometimes, nutritious foods have a high sugar level, but an okay level of carbohydrates, such as milk or fruit.
- FIBER is an important part of any diet. Try to eat at least 25 – 30 grams of fiber per day.
- The SUGAR level can really make the label extra confusing. Just because something is high or low in sugar (or even “sugar free”), it can still be high in carbohydrates and make it a bad choice for your blood sugar. So, try to concentrate on the TOTAL CARBOHYDRATE level.
- Lastly, they will list the ingredients of the food in order of greatest to least. Try to avoid any item that lists High Fructose Corn Syrup as one of the top 5 items – that is just another type of sugar. Also, beware of any oils that are Hydrogenated or Partially Hydrogenated.

EXAMPLE (Bad Choice for Diabetics):

NUTRITION FACTS	
Serving Size: 1 can	
Servings per container: 1	
Amount per serving:	
Calories 140	Calories from Fat 0
	%Daily Value
Total Fat 0 g	0 %
Sodium 50 mg	2 %
Total Carb 39 g	13 %
Fiber 0 g	0 %
Sugar 39 g	
Protein 0 g	0 %

Ingredients: Carbonated Water, High Fructose Corn Syrup, Caramel Color, Phosphoric Acid, Natural Flavors, Caffeine

This example is a can of regular soda. You can tell it would not be a great idea for someone with Diabetes because it is high in sugar and very low in some of the other categories. You're looking for balance, as well as low Carbohydrates.

EXAMPLE (Good Choice for Diabetics):

NUTRITION FACTS	
Serving Size: 2 cups	
Servings per container: 16	
Amount per serving:	
Calories 15	Calories from Fat 0
	%Daily Value
Total Fat 0 g	0 %
Sodium 15 mg	1 %
Total Carb 4 g	1 %
Fiber 1 g	5 %
Sugar 2 g	
Protein 1 g	

Ingredients: Iceberg Lettuce, Carrots, Red Cabbage,

This example is a bag of mixed salad. This is a great option because it has a low carbohydrate number, and Fiber is actually a component of the carbohydrate. It also is more balanced than the soda listed above.

There are all kinds of terms out there for nutrition content, such as “Fat Free” or “Sugar Free.” Unfortunately, they don’t all mean what they say. Here is your interpretation so you will always know what it really means:

Calories

- Calorie Free : Less than 5 calories per serving
- Low Calorie : 40 calories or less per serving

Fat

- Fat Free : Less than 0.5 g of fat or saturated fat per serving
- Saturated Fat Free : Less than 0.5 g of saturated fat
- Low Fat : 3 g or less of total fat
- Low Saturated Fat : 1 g or less of saturated fat
- Reduced Fat : at least 25% less fat than the regular version

Sodium

- Sodium Free : Less than 5 mg of sodium per serving
- Very low sodium : 35 mg of sodium or less
- Low sodium : 140 mg of sodium or less
- Reduced sodium : at least 25% less sodium than the regular version

Cholesterol

- Cholesterol Free : Less than 2 mg per serving
- Low Cholesterol : 20 mg or less
- Reduced Cholesterol : at least 25% less cholesterol than the regular version

Sugar

- Sugar Free : Less than 0.5 grams of sugar per serving
- Reduced sugar : at least 25% less sugar per serving than the regular version

Fiber

- High Fiber : 5 g or more of fiber per serving
- Good Source of Fiber: 2.5 g to 4.9 g of fiber per serving

Adapted from the American Diabetes Association

HEALTHCARE

MANAGEMENT

EXAM/TEST (These should be done once a year, if possible)		20__	20__	20__	20__	20__
Year performed:						
Y E A R L Y	Dilated eye exam⁶ Date					
	Oral/dental exam Date					
	Foot exam⁷ Date (Neurovascular)					
	Albumin:creatinine ratio⁸ (^a urine test) Date/value					
	Glomerular filtration rate⁹ (urine test) Date/value					
	Hemoglobin¹⁰ (blood work) Date/value					
	Lipid profile¹¹ (blood work) Date/values					
	Diabetes education/ Date nutrition referral¹²					
	Flu vaccine Date					
	Microalbuminuria Date					
	Clinical breast exam/ Date Prostate exam¹³ (circle exam)					
	PAP/PSA¹³ Date/ result (circle exam)					
	Mammogram Date/result Date/result					
	Fecal occult blood test Date/ result					
L E S O F T E N	Pneumococcal vaccine¹⁴ Date			Td Date		EKG¹⁵ Date
	Bone densitometry Date					Sigmoidoscopy/ colonoscopy Date

HEMOGLOBIN A1C

If you have recently become Diabetic or have been Diabetic for a while, you have probably heard the term Hemoglobin A1C. This is a blood test done that shows how your blood sugars have been over a 2 to 3 month period of time. Your results are usually provided as a percent, such as 6% or 7%. Each percent gets is matched to a number that tells us what your blood sugar is averaging over that 3 month time frame.

Goal: Keep your Hemoglobin A1C less than 7%.

How to compare Hemoglobin A1C to your Blood Sugar

HEMOGLOBIN A1C	BLOOD SUGAR
4%	60
5%	90
6%	120
7%	150
8%	180
9%	210
10%	240
11%	270
12%	300
13%	330

Diabetic Medications

How is diabetes treated?

The goal of diabetes treatment is to keep your blood sugar level as close to normal as possible. The first step is to have a healthy diet and to exercise. This may mean you'll need to change your diet and exercise habits. You'll also have to watch your weight, or even lose weight, to keep your blood sugar level as normal as possible. Your doctor will talk to you about the kinds of food you should eat and how much exercise you'll need every week.

Sometimes diet and exercise alone can't keep your blood sugar levels normal. Then your doctor will talk to you about other treatments, such as medicine or insulin shots.

Many people with diabetes find it fairly easy to keep track of their own blood sugar level at home. Your doctor can use the results to see how your treatment is working.

Are there medicines I can take?

Several kinds of medicine can help you control your blood sugar level. Some medicines are pills that you take by mouth (orally). Oral medicine doesn't work for everyone, though. Some people need to take insulin. If you need insulin, you'll have to give yourself a shot. Most people with type 2 diabetes start with an oral medicine. Your doctor will tell you which kind of medicine you should take and why.

What is combination therapy?

Combination therapy uses 2 medicines to help you control your blood sugar level. It can also help with other health problems (such as having high blood pressure or high cholesterol levels, or being overweight). Each medicine works in a slightly different way. This therapy can combine 2 oral medicines, or 1 oral medicine plus insulin.

What medicines could my doctor prescribe?

Six kinds of diabetes medicine are available in pill form: sulfonylureas, metformin, thiazolidinediones, alpha-glucosidase inhibitors, repaglinide and nateglinide. Each medicine has good points and bad points. Your doctor will decide which medicine is right for you.

Sulfonylureas

Sulfonylureas (glyburide, Glucotrol, others) are the most commonly prescribed diabetes medicines. They are inexpensive and have few side effects. These medicines help your body make insulin. They can be taken alone or with metformin, an alpha-glucosidase inhibitor, pioglitazone or insulin. If you're allergic to sulfa, you can't take a sulfonylurea.

Metformin

Metformin (Glucophage) may be prescribed for people with diabetes who are overweight, because it may help with weight problems. It helps the body use insulin better. Metformin can cause problems like nausea or diarrhea in some people. It can be taken with a sulfonylurea.

Thiazolidinediones

This class of medicines includes rosiglitazone (Avandia) and pioglitazone (Actos). An older medicine, troglitazone (brand name: Rezulin) is no longer being made because of the risk of liver problems. Rosiglitazone and pioglitazone appear less likely to cause liver problems, but people taking them need periodic liver tests. These medicines help your body respond better to insulin. Rosiglitazone and pioglitazone can be used alone or in combination with other diabetes medicines.

Alpha-glucosidase inhibitors

Alpha-glucosidase inhibitors (Precose, Glyset) work in your stomach and bowels to slow down the absorption of sugar. If another medicine doesn't control your blood sugar, you might use this kind. This medicine can cause stomach or bowel problems, so it may not be a good choice if you have a history of stomach or bowel trouble. It can be taken alone or with a sulfonylurea.

Repaglinide

Repaglinide (Prandin) is taken with meals to control your blood sugar. Your doctor can tell you how to adjust the dose according to the number of meals you eat. Repaglinide can be taken alone or with metformin.

Nateglinide

Nateglinide (Starlix) is taken with meals to keep your blood sugar level from getting too high after you eat. Nateglinide can be taken alone or with metformin.

Insulin

Insulin may be prescribed, particularly when it is believed that one's insulin levels are low. This applies to all Type 1 diabetics, and many long-term Type 2 diabetics.

Organizations

American Diabetes Association (<http://www.diabetes.org>) 800-232-3472

Adapted from the American Academy of Physicians

COMPLICATIONS

OF

DIABETES

Diabetes: Preventing Diabetic Complications

What are diabetic complications?

Diabetic complications are health problems caused by diabetes. Diabetes causes your blood sugar level to be higher than normal. Over time, high blood sugar levels can damage your blood vessels and nerves. This damage can cause problems in many areas of the body. Keep reading to learn more about some diabetic complications and how to prevent them.

1) Nerve damage

Nerve damage (also called diabetic neuropathy) makes it hard for your nerves to send messages to the brain and other parts of the body. If you have nerve damage, you may lose feeling in parts of your body or have a painful tingling feeling.

Neuropathy most often affects the feet and legs. If you have neuropathy, you may not be able to feel a sore on your foot. The sore can become infected, and, in serious cases, the foot may have to be amputated (removed). People who have neuropathy may continue walking on a foot that has damaged joints or bones. This can lead to a condition called Charcot foot that causes the injured foot to become deformed. However, this problem can often be avoided.

If you have diabetes, check your feet every day. If you see swelling and redness and feel warmth in your foot, see your doctor immediately. These can be signs of Charcot foot. Your doctor should also check your feet at least once a year.

Warning signs of nerve damage

See your doctor if you have:

- Loss of feeling (numbness)
- Sharp pain or tingling feeling
- Sores on your feet
- Muscle weakness
- Burning feeling
- Inability to get an erection (in men)

2) Eye problems

The retina is the part of the eye that is sensitive to light and helps you see. Diabetes can damage and weaken the small blood vessels in the retina. This damage is called diabetic retinopathy.

When the blood vessels are weak, they can leak fluid. This causes swelling in the eye that blurs your vision. If the retinopathy gets worse, it may lead to blindness by causing your retina to break away from the back of the eye.

Laser surgery can often be used to treat or slow down retinopathy, especially if the problem is found early. People who have diabetes should see their eye doctor once a year for an eye exam.

Call your doctor if you have:

- Blurred vision for more than 2 days
- Sudden loss of vision in 1 or both eyes
- Black spots, cobwebs or flashing lights in your vision
- Redness in your eye

- Pain or pressure in your eye

3) Kidney damage

Diabetes can also damage the blood vessels in your kidneys so they can't filter out the body's waste. This damage is called diabetic nephropathy. Some people who have nephropathy will eventually need dialysis (a treatment that eliminates waste from the blood) or kidney transplants.

The risk for nephropathy is increased if you have both diabetes and high blood pressure, so it is important to control both of these conditions.

Protein in the urine is usually the first sign of nephropathy. This should be checked yearly. If your doctor notices early signs of this, he or she can put you on medicine that helps protect your kidneys from damage.

4) Heart disease and stroke

People with diabetes are at greater risk for heart disease and stroke. The risk is even greater for people who have diabetes and smoke, have high blood pressure, have a family history of heart disease or are overweight.

Heart disease is easiest to treat when it is caught early. It is very important to see your doctor on a regular basis. He or she can test for early signs of heart disease or stroke.

The recommended cholesterol level for a person with diabetes is the same as for someone with heart disease. If your cholesterol is higher than the recommended level, your doctor will talk to you about lifestyle changes and medication to help get your cholesterol under control.

What can I do to prevent or delay diabetic complications?

To prevent problems, keep your blood sugar level as close to normal as possible and follow your doctor's instructions. The following are some other tips:

- Eat a variety of healthy foods. Avoid foods that are high in fat and sugar.
- Maintain a healthy weight. If you're overweight, your doctor can give you advice on how to lose weight safely.
- Control your blood pressure and cholesterol levels.
- Be physically active on a regular basis.
- Quit smoking.
- See your doctor regularly, even when you feel fine. Your doctor will check for early signs of complications.
- Call your doctor right away if you have any of the warning signs listed in this handout.

Organizations

American Diabetes Association (<http://www.diabetes.org>) 800-232-3472

Adapted from the American Academy of Physicians

Diabetes: Care of Eyes and Feet

How does diabetes affect my body?

Diabetes causes the level of sugar in your blood to be higher than normal. A high blood sugar level can damage your blood vessels and the nerves that run throughout your body.

Damage to your blood vessels and nerves can lead to a number of problems, including blindness and trouble with your feet that can lead to the need for amputation. You can help prevent these problems by following the tips in the box below. The most important thing is to control your blood sugar level.

Tips on preventing foot and eye problems

- Control your blood sugar, blood pressure and cholesterol levels
- Exercise regularly
- See your family doctor regularly
- Eat a good diet (talk to your doctor about what to eat)
- Quit smoking
- Avoid alcohol

What kind of eye problems am I at risk of?

Uncontrolled or poorly controlled diabetes can damage the small blood vessels of the retina (called retinopathy). The retina is the part of the eye that's sensitive to light and sends messages to your brain about what you see.

When the blood vessels of your retina are damaged, fluid can leak from them and cause swelling in your macula. The macula is the part of your eye that gives you sharp, clear vision.

If the retinopathy worsens, your eye may begin to form new blood vessels over the retina. These vessels are fragile and can break easily and bleed. Scar tissue may form, which can cause the retina to break away from the back of the eye

When retinopathy is found early, laser treatment can help keep you from losing your vision. If it's not treated, retinopathy can cause blindness.

How should I take care of my eyes?

The main thing is to have your eyes checked regularly--at least once a year. You won't notice the early signs of problems because the changes in your eyes can only be seen through special equipment.

Call your doctor if you:

- Have blurred vision for more than 2 days
- Suddenly lose vision in one or both eyes
- See black spots, cobwebs or flashing lights that aren't really there

What about my feet?

Your feet may not be receiving a good blood supply due to damaged blood vessels. Also, the damage to your nerves may cause you to lose feeling in your feet. Diabetes can also damage your body's ability to

fight infection.

All of these things can work together to turn even minor foot injuries (such as blisters, calluses or ingrown toenails) into very serious infections that could lead to the loss of your foot. Taking care of your feet helps prevent problems.

How can I take care of my feet?

Check your feet every day for blisters, scratches or sores. If it's hard to check the bottoms of your feet, put a mirror on the floor and look at the reflection. Call your doctor if you notice anything unusual, including foot pain, coldness, a shiny appearance to your skin, loss of hair on the foot or toes, or thickened nails. Be sure to have your feet checked by your doctor at least once a year. The tips listed in the box below can help you prevent problems.

Tips on caring for your feet

- Wash your feet daily with warm (not hot) water and soap.
- Gently pat (don't rub) your feet dry.
- Use lotion, but not between your toes.
- Change your socks and shoes once a day. Don't go barefoot.
- Wear soft leather shoes (deerskin is best) that provide plenty of room for your toes.
- If your toes rub each other, put lamb's wool between them.
- To cut your toenails, first soak your feet in warm water for 10 minutes to soften your nails. Cut your nails straight across. Don't cut into the corners or close to your skin.
- Keep your feet warm but avoid getting your feet too close to hot surfaces (water bottles, heaters, fireplaces).
- Don't treat corns or calluses without first calling your doctor.

Organizations

American Diabetes Association (<http://www.diabetes.org>) 800-232-3472

Adapted from the American Academy of Physicians

HAVING HIGH BLOOD PRESSURE WITH DIABETES

- Having Hypertension (High Blood Pressure) puts you at risk for heart attack, stroke, eye problems, and kidney disease – *notice it's the same for Diabetes*
- As many as 2 out of 3 adults with Diabetes have Hypertension
- What is Hypertension?
 - Hypertension is the measurement of the force of blood flow inside your arteries and veins.
 - When you have your blood pressure checked, you are always told 2 numbers (top number and bottom number).
 - * The top number (“systolic”) is the force of blood when your heart is in the middle of pumping and the pressure inside your veins and arteries is at its highest (like when you turn the water hose on full blast and the force inside the hose is highest)
 - * The bottom number (“diastolic”) is the force of blood when your heart is in the middle of relaxing between heartbeats (when you turn the hose off and there is nothing pushing the water out of the hose).
 - * Using that same example of a water hose, imagine stepping on it right in the middle. The force behind of water behind where you have stepped is getting higher and higher since the water can't get through or only a small amount is getting through. That is similar to what happens inside your blood vessels when they lose their flexibility and plaques build up inside.
 - ◇ Hypertension (high blood pressure) is anything over 130 / 80.
- Hypertension is what we call a “silent” disease, because you rarely know you have it until you have it checked. That makes it extra dangerous because it is causing damage when you don't even know you should be fighting it.
- What can you do to bring your blood pressure down?
 - Keeping your blood sugar under control is very important!
 - Lose weight. Keeping yourself at a healthy weight will help immensely.
 - Exercise at least 30 minutes every day. Be sure to check with your Health Care Provider before starting exercise though, because if your blood pressure is too high, you may be putting yourself at more risk.
 - Stop Smoking!!!! Need we say more?

Occasionally, your Health Care Provider may want to start you on a blood pressure medication. There are lots of medications out there that can help your blood pressure be controlled, but all of them will work better if you also do the first 4 things on this list.

